



Spire STL Pipeline Project

Draft Resource Report 2
Water Use and Quality

FERC Docket No. PF16-9-000

Pre-filing draft
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Public



RESOURCE REPORT 2 - WATER USE AND QUALITY	
SUMMARY OF FILING INFORMATION	
Information	Found in
1. Identify all perennial surface waterbodies crossed by the proposed project and their water quality classification - Title 18 Code of Federal Regulations (CFR) part (§) 380.12(d)(1)	Section 2.1, Table 2.2-1
2. Identify all waterbody crossings that may have contaminated waters or sediments - 18 CFR § 380.12(d)(1)	Section 2.1, Table 2.2-1
3. Identify watershed areas, designated surface water protection areas, and sensitive waterbodies crossed by the proposed project - 18 CFR § 380.12(d)(1)	Section 2.1, Table 2.2-1
4. Provide a table (based on National Wetlands Inventory [NWI] maps if delineations have not been done) identifying all wetlands, by milepost and length, crossed by the proposed project (including abandoned pipeline), and the total acreage and acreage of each wetland type that would be affected by construction - 18 CFR § 380.12(d)(1,4)	Section 2.3, Table 2.3-1
5. Discuss construction and restoration methods proposed for crossing wetlands, and compare them to staff's Wetland and Waterbody Construction and Mitigation Procedures - 18 CFR § 380.12(d)(2)	Section 2.3.2 and Table 2.3-2
6. Describe the proposed waterbody construction, impact mitigation, and restoration methods to be used to cross surface waters and compare to the staff's Wetland and Waterbody Construction and Mitigation Procedures - 18 CFR § 380.12(d)(2)	Section 2.3.2 and Table 2.3-2
7. Provide original NWI maps or the appropriate state wetland maps, if NWI maps are not available, that show all proposed facilities and include milepost locations for proposed pipeline routes - 18 CFR § 380.12(d)(4)	Appendix 2-F
8. Identify all U.S. Environmental Protection Agency - or state-designated aquifers crossed - 18 CFR § 380.12(d)(9)	Section 2.1



RESOURCE REPORT 2 - WATER USE AND QUALITY	
INFORMATION RECOMMENDED OR OFTEN MISSING	
Information	Found in
1. Identify proposed mitigation for impacts on groundwater resources.	Section 2.1.4
2. Discuss the potential for blasting to affect water wells, springs, and wetlands, and associated mitigation.	To be provided in the FERC application.
3. Identify all sources of water required for construction [e.g. hydrostatic testing, dust suppression, horizontal directional drills (HDD)], the quantity of water required, and methods for withdrawal. Identify the treatment of discharge, discharge volumes, rates, and locations, and any waste products generated.	Section 2.2.4, To be provided in the FERC application.
4. Identify operational water requirements for proposed liquefied natural gas facilities, including the operational use, source(s), and volumes	Not Applicable
5. If underground storage of natural gas is proposed, identify how water produced from the storage field will be disposed.	Not Applicable
6. If salt caverns are proposed for storage of natural gas, identify the source locations, the quantity of water required, the method and rate of water withdrawal, and disposal locations and methods.	Not Applicable
7. Provide a site-specific construction plan for each proposed HDD crossing in accordance with section V.B.6.d of the Federal Energy Regulatory Commission’s Wetland and Waterbody Construction and Mitigation Procedures.	Appendix 2-C
9. Identify mitigation measures to avoid impacts on springs; especially those used for drinking water or livestock.	Section 2.1.2
10. Identify mitigation measures to ensure that public or private water supplies are returned to their former capacity or replaced in the event of damage resulting from construction.	Section 2.1.2 and Appendix 2-A
11. In addition to identifying perennial surface waterbodies crossed or affected by the project, also identify intermittent and ephemeral waterbodies.	Table 2.2-1



RESOURCE REPORT 2 - WATER USE AND QUALITY	
INFORMATION RECOMMENDED OR OFTEN MISSING	
Information	Found in
12. Show the locations of wetlands and waterbodies relative to the construction and permanent rights-of-way and additional temporary workspaces on mile posted alignment sheets or aerial photography	Appendix 1-B
13. If wetlands would be filled or permanently lost or altered, describe proposed measures to compensate for permanent wetland losses. Include copies of any compensatory mitigation plans and discuss the status of agency consultations/approvals.	Section 2.3.2, Further information to be provided in the FERC application.
14. Describe measures to avoid or minimize impacts on forested wetlands. If impacts are unavoidable, describe proposed measures to restore forested wetlands following construction.	Section 2.3.2
15. Describe techniques to be used to minimize turbidity and sedimentation impacts associated with offshore trenching, if applicable.	Not applicable.



Table of Contents

Water Use and Quality	2-1
2.1 Groundwater Resources.....	2-1
2.1.1 Illinois	2-1
2.1.2 Missouri.....	2-3
2.1.3 Water Supply Wells.....	2-5
2.1.4 Groundwater Impacts and Mitigation	2-6
2.2 Surface Water Resources	2-7
2.2.1 Contaminated Sediments.....	2-12
2.2.2 Public Watershed Areas	2-13
2.2.3 Floodplains	2-15
2.2.4 Hydrostatic Test Water and Water for Dust Suppression.....	2-16
2.2.5 Construction Permits	2-17
2.2.6 Sensitive Surface Waters.....	2-17
2.2.7 Waterbody Construction and Mitigation Procedures.....	2-19
2.3 Wetlands	2-21
2.3.1 Existing Resources.....	2-22
2.3.2 Wetland Construction and Operation Impacts	2-22
2.3.3 Wetland Mitigation Procedures.....	2-28
2.4 References.....	2-29
Tables	
2.1-1 Water Supply Wells and Springs within 150 Feet of the Project Construction Areas.....	2-6
2.2-1 Waterbodies Crossed by the Project.....	2-9
2.2-2 Public Water Supply Watershed Areas Crossed by the Project or in Proximity to Aboveground Facilities	2-15
2.2-3 Hydrostatic Test Water Segments, Volumes, Sources, and Discharge Locations	2-17
2.3-1 Wetlands Crossed by the Project	2-24
2.3-2 Summary of Wetlands Affected by Construction and Operations.....	2-27
Figure	
2.2-1 Source Water Protection Areas.....	2-14



Appendices

- 2-A Spill Prevention, Control, and Countermeasure Plan
- 2-B HDD Contingency Plan (to be provided in the FERC application)
- 2-C Site-Specific Waterbody Drawings
- 2-D Stormwater Pollution Prevention Plan (to be provided in the FERC application)
- 2-E Wetland Delineation and Stream Identification Report (to be provided in the FERC application)
- 2-F NWI Mapping



Acronyms and Abbreviations

ATWS	Additional temporary workspace
BMP	Best management practices
CFR	Code of Federal Regulations
CWS	Community Water Supply
E&SCP	Erosion and Sediment Control Plan
Enable MRT	Enable Mississippi River Transmission, LLC
FEMA	Federal Emergency Management Agency
FERC	Federal Energy Regulatory Commission
FUSRAP	Formerly Utilized Sites Remedial Action Program
gpd	gallons per day
gpm	gallons per minute
HDD	horizontal directional drill
IAWC	Illinois American Water Company
IEPA	Illinois Environmental Protection Agency
ISGS	Illinois State Geological Survey
LGC	Laclede Gas Company
MDNR	Missouri Department of Natural Resources
MP	Milepost
MPSC	Missouri Public Service Commission
NHD	National Hydrography Data
NPDES	National Pollutant Discharge Elimination System
NSQS	National Sediment Quality Survey
NWI	National Wetlands Inventory
PHMSA	Pipeline and Hazardous Materials Safety Administration
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
REX	Rockies Express Pipeline LLC
SPCC Plan	Spill Prevention, Control, and Countermeasure Plan



Spire	Spire STL Pipeline LLC
SWPA	Source Water Protection Area
USACE	United States Army Corps of Engineers
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey



Water Use and Quality

This resource report provides information on the groundwater, surface water, and wetland resources for the Spire STL Pipeline LLC (“Spire”) Spire STL Pipeline Project (“Project”) within Illinois and Missouri. Potential impacts and mitigation measures associated with the construction of the Project are also discussed.

Wetland and waterbody field surveys were initiated in September 2016 and are ongoing. To date field surveys have been conducted along certain portions of the pipeline routes. These surveys identified waterbodies and wetlands crossed or otherwise impacted by the Project. Due to continuing survey permission, surveys have not been completed along the entire Project route or at aboveground facilities, access roads and contractor yards. For the areas not yet field surveyed within the Project areas, desktop analysis was conducted utilizing the following sources:

- National Wetland Inventory (“NWI”) Maps; and
- National Hydrography Datasets (“NHD”).

Spire anticipates that biological field surveys on accessible properties will be completed in 2016. Additional field verified resources will be provided in the FERC application.

2.1 Groundwater Resources

2.1.1 Illinois

There are three principal aquifer types in Illinois. These are generally categorized as sand and gravel aquifers within the unconsolidated geologic materials overlying the bedrock; shallow bedrock aquifers lying within approximately 500 feet of land surface; and deep bedrock aquifers lying at depths greater than 500 feet of land surface (Illinois Water Supply, 2016). The 24-inch pipeline along the Illinois portion of the Project overlies the Pennsylvanian, Mississippian, Silurian-Devonian, and Cambrian-Ordovician Aquifer systems. They consist primarily of consolidated sediments and are under confined conditions. Many surficial aquifer systems overlay the Pennsylvania and Mississippian Aquifer systems, which generally consist of sand and gravel at or near the land surface or surficial deposits generally less than 100 feet thick.

2.1.1.1 Pennsylvanian Aquifer

The Pennsylvanian Aquifers in western Illinois typically yield from less than one to 100 gallons per minute (“gpm”). The depth to the top of the Pennsylvanian rocks can be less than 100 feet deep within the Project area. The Pennsylvanian aquifers commonly are used for water supplies in areas where they are buried beneath less than 100 feet of Quaternary deposits. Large volumes of water stored in surficial aquifer systems serve to replenish ground water withdrawn from wells completed in the Pennsylvanian aquifers. Near southern parts of Illinois, the depth to saltwater decreases, the Pennsylvania rocks thicken, and only 10 percent of the Pennsylvanian rocks contains freshwater. The reported yields of wells are from less than one to more than 100 gpm (Lloyd et al., 1995).



Fresh ground-water withdrawals from the Pennsylvania aquifers are relatively small and during 1985 they were less than four percent of the total withdrawals in Illinois. According to the United States Geological Survey (“USGS”), approximately two percent of the groundwater withdrawn in Illinois is used for agricultural purposes, four percent is used for public and domestic water supply, and one percent is used for commercial, industrial, or energy generation purposes (Maupin et al., 2014).

2.1.1.2 Mississippian Aquifer

The Mississippian aquifer is overlaid with many surficial aquifers as well as the Pennsylvanian aquifer. The quality of the ground water in surficial aquifers in Illinois is such that the water is generally adequate or can be treated and made adequate for most uses. However in some places in Illinois, nitrate concentrations are larger than the maximum levels for drinking water and are possibly due to contamination. Almost all the Mississippian rocks are considered to be aquifers in western Illinois and are generally used for water supply where they are less than 200 feet below land surface, where more water can be obtained from them than from the overlying surficial aquifer system. Recharge to the Mississippian aquifers occur primarily by water that percolates downward through the overlying deposits and Pennsylvanian rocks (Lloyd et al., 1995).

Fresh ground-water withdrawals from the Mississippian aquifers during 1985 were less than three percent of the total ground water withdrawn in Illinois. The most prevalent groundwater quality concerns in areas crossed by the proposed Project in Illinois consist of oil, gas, coal, and agricultural activities. Thousands of oil and gas wells are located throughout Illinois, with most being in the southern one-third of the state. Brine-waste impoundments have been associated with many of the production wells and salinity has increased in nearby water-supply wells. Coal production has resulted in surface-mined areas that may also be a threat to shallow aquifers, and acid mine drainage also may be a threat to ground-water quality. Agriculture is of major economic importance within the state but the use of fertilizers, herbicides, and insecticides applied over large areas potentially contaminate recharge areas. (Clarke et al., 1986).

2.1.1.3 Silurian-Devonian Aquifer

In western and northwestern Illinois where the Silurian-Devonian aquifer is covered by Mississippian rocks, the extent of freshwater beneath the younger rocks is greater. The aquifer is most commonly used for water supply where it is overlain by less than 200 feet of Quaternary deposits. It is recharged from the overlying surficial aquifer system in areas where water levels in the surficial aquifer system are higher than those in the Silurian-Devonian aquifer (Lloyd et al., 1995).

The yields of wells completed in the Silurian-Devonian aquifer range from less than 5 to more than 1,000 gpm. However chloride concentrations might be greater than 250 milligrams per liter where the aquifer is overlain by Devonian, Mississippian, or Pennsylvanian shales in Southwestern Illinois. The withdrawals from the Silurian-Devonian aquifer were about 15 percent of the total ground water withdrawn in Illinois. Public supply was the largest use category in Illinois (Lloyd et al., 1995).



2.1.1.4 Cambrian-Ordovician Aquifer

The Cambrian-Ordovician aquifer system is buried beneath the Silurian and Devonian rocks. It consists of three principal aquifers, St. Peter-Prairie du Chien-Jordan, Ironton-Galesville, and the Mount Simon, which are of consolidated rocks. The bulk of the Project crosses the St. Peter-Prairie du Chien-Jordan aquifer. The average altitude of the top of the aquifer is about 250 feet above sea level in the area where the aquifer contains fresh water. The thickness of the aquifer averages 400 feet in areas where the aquifer contains fresh water. Before substantial volumes of groundwater were withdrawn from the Cambrian-Ordovician aquifer system, water levels in the St. Peter-Prairie du Chien-Jordan aquifer are estimated to have ranged about 500 feet above sea level along the Mississippi River in West-central Illinois (Lloyd et al., 1995).

Most of the data on the quality of water from the Cambrian-Ordovician aquifer system is from northern Illinois where wells are open to more than one aquifer system. Toward southwestern Illinois where the aquifers are deeply buried, the water changes to a sodium bicarbonate chloride type, still further down gradient the water changes to a sodium chloride type, and sulfate is one of the dominant dissolved constituents of the water in the aquifer system. Thus, the Cambrian-Ordovician aquifer system is relied on for large groundwater supplies in northern Illinois (Lloyd et al., 1995).

2.1.1.5 Sole Source Aquifers

The Mahomet Valley Aquifer is the only United States Environmental Protection Agency (“USEPA”) designated Sole Source Aquifer located within Illinois. No impacts are anticipated to the aquifer, since the Project area is approximately 30 miles south of the designated boundary. No known state-designated primary aquifers are located in the Project area in Illinois [Illinois Environmental Protection Agency (“IEPA”), 2016a].

The Illinois State Geological Survey (“ISGS”) indicates that there are several Karst areas crossed by the pipeline centerline and also located within a one-mile buffer of the pipeline centerline (ISGS, 2016). The Project traverses a karst area between Milepost (“MP”) 0.00 and MP 44.38 (USGS, 2005). Resource Report 6 illustrates mapped karst terrain data identified within the Project area. Spire has proposed locations of workspaces associated with the crossing of the Mississippi River and is conducting geotechnical boring at these locations to determine the geology and feasibility of the drills. The plan and profile of the proposed these river crossings are depicted in Appendix 2-C.

Spire does not anticipate using groundwater as a source for hydrostatic test water.

2.1.2 Missouri

Within the Project areas in Missouri, groundwater is developed from the surficial aquifer system, the Mississippian Aquifer, and the Ozark Plateaus aquifer system. The upper most aquifers in the area are unconsolidated sand and gravel of the surficial aquifer system, which is divided into stream-valley alluvial aquifers and glacial-drift aquifers. The Ozark Plateaus aquifer system consists of three aquifers: the Springfield plateau aquifer, the Ozark aquifer, and the St. Francois aquifer, which are in consolidated rocks (Miller et al., 1997).



2.1.2.1 Surficial Aquifer System

In many places in northern Missouri, the bedrock contains slightly saline to saline water and surficial aquifers are the only sources of fresh ground water. Alluvial deposits along the Mississippi and Missouri Rivers as well as glacial drift deposits form an important stream-valley aquifer system.

- Missouri River Valley: The alluvial material of stream-valley aquifers average about 90 feet in thickness but can be as much as 160 feet thick in the vicinity of the Project. The saturated thickness of the aquifer averages about 80 feet. Reported yields of the wells in the aquifers range from less than 100 to about 3,000 gpm. Millions of gallons per day (“gpd”) of water are withdrawn from the stream-valley aquifers. Public supply was the largest use for withdrawal, followed industrial use, mining, thermoelectric power, and agricultural. The remainder of the water withdrawn was used for domestic and commercial purposes (Miller et al., 1997).
- Mississippi River Valley: Part of the Mississippi River Valley Alluvial aquifer is located in the bootheel of Missouri and is the principal source of irrigation water. The thickness of the Mississippi River Valley alluvial aquifer ranges from a featheredge along the ridge to more than 250 feet near the Mississippi River and generally increases to the southeast. Wells typically yield 1,000 gpm. The water in the Mississippi River Valley alluvial aquifer is mostly unconfined and aquifer water levels rise and fall in response to changes in stream water levels. The aquifer discharges to a network of agricultural drainage ditches and into major streams. The chemical quality of the water in the aquifer generally meets the standards recommended for public water supplies by the USEPA; excessive concentration of iron and manganese have been reported. The water can also contain concentrations of pesticides and nutrients as a result of agricultural activities. Withdrawals of freshwater from the Mississippi River Valley alluvial aquifer total million gpd. Agricultural practices were the main use for withdrawal, followed by public supply, industrial use, mining, thermoelectric power, and domestic and commercial uses (Miller et al., 1997).
- Glacial Drift Aquifers: In Missouri, the maximum southern extent of glacial ice and glacial drift deposits was about the present location of the Missouri River. Water generally is obtained from sand beds that range from 20 to 40 feet in thickness. Yields of wells in the aquifer are highly variable and range from less than 10 to about 1,000 gpm. Water in the aquifer is suitable for most uses. The water is hard and commonly is a calcium bicarbonate type but in many places in Missouri it is a sodium sulfate type. The source of sulfate is dissolution of gypsum in areas where the high-sulfate water in underlying rock leak upwards (Miller et al., 1997).

2.1.2.2 Mississippian Aquifer

The Mississippian aquifer is the uppermost aquifer in northern Missouri. The aquifer extends over all of the Missouri River except for small areas near the Mississippi and the Missouri Rivers where the rocks that compose the aquifer have been removed by erosion. The aquifer is thinnest near these areas and averages about 200 feet, but can exceed 400 feet in depth in Northwestern Missouri. Recharge to the aquifer is mostly from precipitation that falls on areas where the aquifer is exposed at the land surface or is overlain by a thin blanket of younger rocks. The aquifer contains freshwater only in the eastern on-third of its extent. The very saline water is thought to have entered the Mississippian aquifer either by upward leakage from the underlying Cambrian-Ordovician aquifer or by the discharge of eastward moving saline water.



2.1.2.3 Ozark Plateau Aquifer System

The portion of the Project that crosses the Ozark Plateau aquifer system, crosses the Ozark aquifer. North of the Missouri River, rocks that are equivalent to the Ozark aquifer are called the Cambrian-Ordovician aquifer. The Cambrian-Ordovician aquifer averages about 1,200 feet deep within the Project area and contains freshwater only in a small area in the southern part of the aquifer (Miller et al., 1997).

Total fresh groundwater withdrawals from the Ozark Plateau aquifer system during 1990 were 330 million gpd. Forty-two percent were withdrawn for agricultural purposes, 27 percent was used for public supply, 16 percent was used for industrial, mining, and thermoelectric power, and 15 percent was withdrawn for domestic and commercial supplies (Miller et al., 1997).

No known state-designated sole source aquifers are located in the Project area in Missouri (USEPA, 2016).

The Geosciences Technical Resource Assessment Tool from the Missouri Department of Natural Resources ("MDNR") Missouri Geological Survey indicate an abundance of sinkholes located within the Project area (MDNR, 2016a). Several sinkholes are crossed by the Project centerline south of the Missouri River crossing (MDNR, 2016a). No karst formations were located within Missouri (USGS, 2005). Resource Report 6 illustrates mapped karst terrain data identified within the Project area.

Spire does not anticipate using groundwater as a source for hydrostatic test water.

2.1.3 Water Supply Wells

Spire utilized groundwater data from the IEPA, the ISGS, and the MDNR to obtain information on public and private wells located within 150 feet of the Project area and if Source Water Protection Areas ("SWPAs") are located within the Project area. Table 2.1-1 provides information on water supply wells and springs within 150 feet of the Project construction areas.

Spire will determine if blasting is necessary for this Project. Should it become necessary, Spire will take measures to protect drinking water wells within 150 feet of the construction area. Spire is continuing to work with landowners regarding private water wells and springs within 150 feet of the Project to help minimize potential impacts. If additional information is acquired, it will be provided in the FERC application. Additional information on public water supply intakes can be found in Section 2.2.2. Additional information regarding blasting activities can be found in Resource Report 6.

2.1.3.1 Illinois

Five private wells are located within 150 feet of the proposed Project through Greene, and Jersey Counties, Illinois. No wells were located within 150 feet of the proposed Project in Scott County, Illinois. No designated community water supply ("CWS") wells, water supply lakes, or IEPA regulated recharge areas are located within 150 feet of the 24-inch pipeline Project in Illinois (IEPA, 2016b). No protected watersheds or locally zoned aquifer protection areas are present within the immediate Project area in Illinois (IEPA, 2016b).

Adherence to the FERC *Upland Erosion Control, Revegetation, and Maintenance Plan* ("Plan") and *Wetland and Waterbody Construction and Mitigation Procedures* ("Procedures") (FERC, 2013a and 2013b) and implementation



of Best Management Practices (“BMPs”) during construction and restoration is expected to prevent or mitigate impacts to water supply wells.

Table 2.1-1. Water Supply Wells and Springs within 150 Feet of the Project Construction Areas

County, State	Supply Type and Well Number	Use	MP	Approximate Distance from Construction Work Area (feet)	Approximate Distance from Pipeline Centerline (feet)
24-Inch Pipeline					
Greene County, Illinois	120612057400	Private Water	13.8	117	172
Greene County, Illinois	120612043300	Private Water	28.3	98	133
Greene County, Illinois	120612043600	Private Water	29.0	68	103
Access Roads					
Greene County, Illinois	120612054900	Private Water	24.6	145	430
Jersey County, Illinois	120830019700	Private Water	36.2	89	469

Note:

- ¹ Facilities not listed in this table do not impact water supply wells.

2.1.3.2 Missouri

No public or private wells were identified within 150 feet of the Project area in St. Charles and St. Louis County, Missouri. No protected watersheds or a locally zoned aquifer protection areas are present within the Project area in Missouri (MDNR, 2016b). No public drinking water groundwater wells were found within the immediate Project area in Missouri (MDNR, 2016c).

2.1.4 Groundwater Impacts and Mitigation

Construction, operation, and maintenance of the proposed facilities are not expected to have long-term impacts on groundwater resources. Impacts are expected to be reduced or avoided by implementation of the construction practices outlined in the FERC’s Plan and Procedures and as described in the mitigation measures detailed below.

No sole-source aquifers are located within one-mile of the Project and the Project has been designed to have minimal impacts on groundwater. Pipeline construction activities may affect groundwater resources through minor, temporary impacts to shallow aquifers in proximity to the proposed facilities. These impacts may include increased turbidity, groundwater table fluctuations, short-term disruption of recharge, and localized flow along the pipeline trench or contamination from a spill or leak of hazardous substances. Most potential impacts will be avoided or minimized due to the use of the standard construction methods and mitigation measures described in FERC’s Plan; FERC’s Procedures; and the Spill Prevention, Control, and Countermeasure (“SPCC”) Plan



(Appendix 2-A). Typically, the proposed pipeline will be buried a minimum of 36 inches below the ground surface using standard open trench construction methods. The major groundwater resources are deeper than the trenches and pipeline placement. Trenchless crossings will exceed these trench depths; however, these activities are not expected to have an impact on groundwater quality due to the relatively narrow diameter of the boreholes. Long-term aquifer recharge will not be affected by pipeline construction or subsequent operations due to the relatively narrow right-of-way width.

Spire will implement a SPCC Plan for the Project to protect surface and groundwater resources during construction. The SPCC Plan describes preventive measures such as personnel training, equipment inspection, and refueling procedures to reduce the likelihood of spills. It also includes mitigation measures such as containment and cleanup, to reduce potential impacts should a spill occur. The SPCC Plan can be found in Appendix 2-A.

Spire does not intend to blast in close proximity to private/public water wells. Spire will offer to landowners to conduct a pre-construction evaluation on active wells within 150 feet of the proposed Project work area. If requested by the landowner and feasible at the time of sampling, the well may be tested for yield and water quality. Upon request by a landowner who had a pre-construction test, a post construction test may be performed. Spire will document any landowner choosing to opt out of pre-construction evaluation. Landowners participating in the testing program will be contacted by a Spire representative, and a qualified independent contractor will perform the testing. To maintain responsiveness to the concerns of affected landowners, Spire will evaluate landowner complaints or damage associated with construction. Wells within 150 feet of the construction area are to be staked and flagged for visibility.

If contaminated groundwater is encountered during construction, Spire will notify the affected landowner and coordinate with the appropriate federal and state agencies in accordance with applicable notification requirements. In the unlikely event that private landowner wells are damaged by Spire during construction, Spire will negotiate a settlement with the landowner that may include repair or replacement. Spire plans to provide adequate temporary accommodations or a temporary water supply to affected homeowners while their well is repaired or replaced in the event that no other potable water source is readily available.

2.2 Surface Water Resources

Surface waterbodies located in the southwestern portion of Illinois drain into the Mississippi River. Surface waterbodies in the northeast portion of Missouri, drain into the Mississippi and Missouri Rivers.

Field surveys began in September 2016 to identify water resources within the Project study area and are ongoing and expected to be completed on accessible properties in 2016. A preliminary list of waterbodies crossed by the Project, based on desktop and field review, can be found in Table 2.2-1.

Waterbodies are subdivided into perennial, intermittent, or ephemeral classes, depending on the permanence or duration of flow. Perennial waterbodies typically flow or contain standing water year round, and under normal circumstances are capable of supporting populations of fish and macroinvertebrates. Intermittent waterbodies flow or contain standing water seasonally, are typically dry for part of the year, and do not usually support populations of fish or macroinvertebrates which are directly dependent on water. Ephemeral waterbodies



generally contain water only in response to precipitation or spring snowmelt, and usually do not support populations of fish or macroinvertebrates. A total of 68 stream segments are crossed by the Project area. Of these waterbodies, 18 were classified as perennial, 33 as intermittent, and 16 as ephemeral. One lake, adjacent to the Mississippi River, is crossed by the Project.

Three perennial waterbodies greater than 100 feet wide were identified within the Project area. The Mississippi River is approximately 5,600 feet wide bank-to-bank at the crossing of the 24-inch pipeline at the Illinois and Missouri border. The Missouri River is approximately 2,300 feet wide bank-to-bank at the crossing of the 24-inch pipeline in Missouri. The Mississippi and Missouri Rivers are proposed to be crossed using HDD; therefore, no direct impact to the river is anticipated. Other streams greater than 100 feet wide crossed by the Project include Macoupin Creek (Feature ID: SIL-TMA-039), which is proposed to be open cut. Spire is evaluating using trenchless methods at this crossing. The site-specific cross-section drawings are depicted in Appendix 2-C.

Locations of the streams are provided on the Construction Alignment Sheets in Resource Report 1, Appendix 1-B.

A review of statewide 303(d) Impaired Waters through the IEPA and the MDNR identified waterbodies crossed by the proposed Project that are designated as impaired. Under Section 303(d) of the 1972 Clean Water Act, states, territories and authorized tribes are required to develop a list of waters which do not meet or are not expected to meet applicable water quality standards. The law requires that these jurisdictions establish priority rankings for waters on the lists and develop action plans emphasizing a reduction of Total Maximum Daily Loads (“TMDLs”) to improve water quality. Impaired waterbodies crossed by the proposed 24-inch pipeline and Line 880 workspaces and identified pollutants are presented in Table 2.2-1. The proposed Project crosses several streams in Illinois and Missouri listed on the respective 2016 List of Impaired Waterbodies for the 303(d) program. Further discussion on the impairment of the streams is provided in Section 2.2.1.

Spire plans to open-cut streams in accordance with the FERC’s Plan and Procedures. Spire plans to use BMP during the installation, including BMPs such as mulch socks, immediate temporary stabilization, erosion control matting, etc. These BMPs are to be identified, installed, and maintained, as dictated within the Project-specific Erosion and Sediment Control Plan (“E&SCP”) and Stormwater Pollution Prevention Plan, which will be included as Appendix 2-D of the FERC application. Please refer to Resource Report 1, Appendix 1-B for the locations of waterbodies relative to the construction and permanent right-of-way and additional temporary workspaces (“ATWS”).

The Project crossing of the Mississippi and Missouri Rivers along with one unnamed tributary to the Mississippi River (Feature ID: NHD-915), one lake [Feature ID: NHD-924/NWI-505 (SMO-WJW-001)], and one unnamed tributary to the Missouri River (Feature ID: NHD-949) will be conducted by a HDD. The site-specific cross-section drawings are depicted in Appendix 2-C. One potable water intake was located within three miles downstream of the proposed HDD crossing for the Portage De Sioux Water Treatment Plant, as further discussed in Section 2.2.2 (MDNR, 2016a). Spire’s HDD Contingency Plan will be developed and included as Appendix 2-B with the FERC application and will contain further details regarding the HDD crossings.



Table 2.2-1. Waterbodies Crossed by the Project

Feature ID ¹	MP	Waterbody Name	Flow Regime ²	Crossing Width (feet) ³	State Water Quality Classification ^{4,5}	County, State	Fishery Type ⁶	Impaired Designated Use (Identified Pollutant) ⁷	Crossing Method
24-Inch Pipeline									
SIL-JJP-003	1.3	UNT to Little Sandy Creek	IT	10	GEN, PFPWS	Scott, IL	WWF	No	Open Cut
NHD-150	1.6	UNT to Little Sandy Creek	IT	N/A	GEN, PFPWS	Scott, IL	WWF	No	Open Cut
NHD-181	1.8	UNT to Little Sandy Creek	IT	N/A	GEN, PFPWS	Scott, IL	WWF	No	Open Cut
SIL-TMA-003	2.2	UNT to Little Sandy Creek	E	3	GEN, PFPWS	Scott, IL	WWF	No	Open Cut
SIL-JJP-005	2.6	UNT to Little Sandy Creek	P	20	GEN, PFPWS	Scott, IL	WWF	No	Open Cut
SIL-JJP-007	2.6	UNT to Little Sandy Creek	E	2.5	GEN, PFPWS	Scott, IL	WWF	No	Timber Mats
SIL-JJP-008	2.6	UNT to Little Sandy Creek	E	4	GEN, PFPWS	Scott, IL	WWF	No	Timber Mat
SIL-TMA-005	2.7	UNT to Little Sandy Creek	IT	16	GEN, PFPWS	Scott, IL	WWF	No	Open Cut
SIL-JJP-009	2.8	UNT to Little Sandy Creek	E	5	GEN, PFPWS	Scott, IL	WWF	No	Timber Mats
SIL-JJP-014	3.4	UNT to Little Sandy Creek	E	6	GEN, PFPWS	Scott, IL	WWF	No	Open Cut
SIL-JJP-013	3.4	Little Sandy Creek	P	40	GEN, PFPWS	Scott, IL	WWF	No	Open Cut
SIL-TMA-009	3.4	UNT to Little Sandy Creek	E	6	GEN, PFPWS	Scott, IL	WWF	No	Timber Mats
SIL-TMA-010	3.5	UNT to Little Sandy Creek	E	6	GEN, PFPWS	Greene, IL	WWF	No	Open Cut
SIL-TMA-011	3.7	UNT to Little Sandy Creek	IT	8	GEN, PFPWS	Greene, IL	WWF	No	Open Cut
SIL-TMA-012	3.7	UNT to Little Sandy Creek	E	4	GEN, PFPWS	Greene, IL	WWF	No	Open Cut
SIL-JJP-018	4.0	UNT to Little Sandy Creek	P	25	GEN, PFPWS	Greene, IL	WWF	No	Open Cut
SIL-TMA-015	4.0	UNT to Little Sandy Creek	E	6	GEN, PFPWS	Greene, IL	WWF	No	Open Cut
SIL-TMA-014	4.1	UNT to Little Sandy Creek	E	5	GEN, PFPWS	Greene, IL	WWF	No	Silt Fence, No Impact
SIL-TMA-016	4.2	UNT to Little Sandy Creek	IT	8	GEN, PFPWS	Greene, IL	WWF	No	Open Cut
SIL-TMA-018	4.3	UNT to Little Sandy Creek	P	9	GEN, PFPWS	Greene, IL	WWF	No	Open Cut
SIL-JJP-026	5.6	UNT to Hurricane Creek	IT	2.5	GEN, PFPWS	Greene, IL	WWF	No	Open Cut
SIL-JJP-027	5.7	UNT to Hurricane Creek	IT	4	GEN, PFPWS	Greene, IL	WWF	No	Open Cut
SIL-TMA-020	6.4	Hurricane Creek	P	12	GEN, PFPWS	Greene, IL	WWF	No	Open Cut
SIL-TMA-026	8.8	UNT to Seminary Creek	IT	7	GEN, PFPWS	Greene, IL	WWF	No	Open Cut
SIL-JJP-031	10.3	UNT to Seminary Creek	E	4	GEN, PFPWS	Greene, IL	WWF	No	Open Cut
SIL-TMA-021	10.3	UNT to Seminary Creek	P	30	GEN, PFPWS	Greene, IL	WWF	No	Open Cut
SIL-JJP-029	10.3	UNT to Seminary Creek	E	3	GEN, PFPWS	Greene, IL	WWF	No	Timber Mats
SIL-TMA-022	10.8	UNT to Seminary Creek	E	4	GEN, PFPWS	Greene, IL	WWF	No	Open Cut
SIL-TMA-024	11.3	UNT to Seminary Creek	E	4	GEN, PFPWS	Greene, IL	WWF	No	Open Cut
SIL-TMA-031	13.2	UNT to Apple Creek	P	15	GEN, PFPWS	Greene, IL	WWF	No	Open Cut
SIL-TMA-033/ NHD-670	13.9	Apple Creek	P	65	GEN, PFPWS	Greene, IL	WWF	Aquatic Life (Dissolved Oxygen), Primary Contact Recreation (Fecal Coliform)	Open Cut
SIL-TMA-035	17.1	UNT to Coates Creek	P	3	GEN, PFPWS	Greene, IL	WWF	No	Timber Mats
SIL-TMA-036	17.6	UNT to Coates Creek	P	5	GEN, PFPWS	Greene, IL	WWF	No	Open Cut



Table 2.2-1. Waterbodies Crossed by the Project (Continued)

Feature ID ¹	MP	Waterbody Name	Flow Regime ²	Crossing Width (feet) ³	State Water Quality Classification ^{4,5}	County	Fishery Type ⁶	Impaired Waters with Identified Pollutant ⁷	Crossing Method
24-Inch Pipeline (continued)									
NHD-687	18.7	Coates Creek	IT	N/A	GEN, PFPWS	Greene, IL	WWF	No	Open Cut
NHD-688	19.1	UNT to Coates Creek	IT	N/A	GEN, PFPWS	Greene, IL	WWF	No	Open Cut
NHD-694	20.8	UNT to Macoupin Creek	IT	N/A	GEN, PFPWS	Greene, IL	WWF	No	Open Cut
SIL-TMA-040	24.2	UNT to Macoupin Creek	E	3	GEN, PFPWS	Greene, IL	WWF	No	Open Cut
SIL-TMA-038	24.7	UNT to Macoupin Creek	IT	4	GEN, PFPWS	Greene, IL	WWF	No	Open Cut
SIL-TMA-039	24.9	Macoupin Creek	P	100	GEN, PFPWS	Greene, IL	WWF	Primary Recreation (Fecal Coliform)	Open Cut
NHD-732	25.5	UNT to Macoupin Creek	IT	N/A	GEN, PFPWS	Greene, IL	WWF	No	Open Cut
NHD-741	26.6	UNT to Macoupin Creek	IT	N/A	GEN, PFPWS	Greene, IL	WWF	No	Open Cut
NHD-734	27.2	UNT to Macoupin Creek	IT	N/A	GEN, PFPWS	Greene, IL	WWF	No	Open Cut
SIL-DFW-002	31.2	UNT to Wines Branch	IT	3.5	GEN, PFPWS	Jersey, IL	WWF	No	Silt Fence/Timber Mats
SIL-DFW-001	31.2	Wines Branch	P	25	GEN, PFPWS	Jersey, IL	WWF	No	Open Cut
NHD-758	31.5	Wines Branch	IT	N/A	GEN, PFPWS	Jersey, IL	WWF	No	Open Cut
NHD-761	33.3	UNT to Otter Creek	IT	N/A	GEN, PFPWS	Jersey, IL	WWF	No	Timber Mats
NHD-769	34.8	UNT to Otter Creek	IT	N/A	GEN, PFPWS	Jersey, IL	WWF	No	Open Cut
NHD-784	36.3	Otter Creek	P	N/A	GEN, PFPWS	Jersey, IL	WWF	No	Open Cut
NHD-854	41.0	UNT to Otter Creek	IT	N/A	GEN, PFPWS	Jersey, IL	WWF	No	Open Cut
NHD-861	41.0	UNT to Otter Creek	IT	N/A	GEN, PFPWS	Jersey, IL	WWF	No	Open Cut
NHD-869	41.5	UNT to Otter Creek	IT	N/A	GEN, PFPWS	Jersey, IL	WWF	No	Open Cut
NHD-874	42.0	UNT to Mill Creek	IT	N/A	GEN, PFPWS	Jersey, IL	WWF	No	Open Cut
NHD-902	43.7	UNT to Mississippi River	IT	N/A	GEN, PFPWS	Jersey, IL	WWF	No	Open Cut
NHD-908	44.0	UNT to Mississippi River	IT	N/A	GEN, PFPWS	Jersey, IL	WWF	No	Open Cut
NHD-913	44.5	UNT to Mississippi River	IT	N/A	GEN, PFPWS	Jersey, IL	WWF	No	Open Cut
NHD-915	44.6	UNT to Mississippi River	IT	N/A	GEN, PFPWS	Jersey, IL	WWF	No	HDD
NHD-921	44.8	Mississippi River	P	5,600	<u>Illinois:</u> GEN, PFPWS <u>Missouri:</u> LWW, AQL, WBC-Category A, SCR, DWS, IND	Jersey, IL St. Charles, MO	WWF	<u>Illinois:</u> Fish Consumption (Polychlorinated Biphenyls and Mercury), Primary Contact Recreation (Fecal Coliform) <u>Missouri:</u> Category B (<i>E. coli</i>)	HDD
NHD-924/NWI-505 (SMO-WJW-001)	45.45	Luesse Lake	N/A	N/A	AQL, WBC - Category B, SCR, LWW, IRR	St. Charles, MO	NA	NA	HDD
NHD-937	47.28	UNT to Mississippi River	P	N/A	AQL, WBC - Category B, SCR, LWW, IRR	St. Charles, MO	WWF	No	Open Cut
NHD-949	57.15	UNT to Missouri River	P	N/A	AQL, WBC - Category B, SCR, LWW, IRR	St. Charles, MO	WWF	No	HDD
NHD-951	57.39	Missouri River	P	2,300	IRR, LWW, AQL, WBC - Category B, SCR, DWS, IND	St. Charles, MO	WWF	WBC-Category B (<i>E. coli</i>)	HDD
Line 880 Modifications									
SMO-DFW-001	0.30	UNT to Missouri River	E	5	AQL, WBC - Category B, SCR, LWW, IRR	St. Louis, MO	WWF	No	Open Cut
SMO-DFW-008	2.20	Coldwater Creek	P	48	LWW, AQL, WBC - Category B, IND ⁸	St. Louis, MO	WWF	AQL (Chloride) and WBC - Category B, SCR (<i>E. coli</i>)	Open Cut



Table 2.2-1. Waterbodies Crossed by the Project (Continued)

Feature ID ¹	MP	Waterbody Name	Flow Regime ²	Crossing Width (feet) ³	State Water Quality Classification ^{4,5}	County	Fishery Type ⁶	Impaired Waters with Identified Pollutant ⁷	Crossing Method
REX Receipt Station									
NHD-026 ⁹	0.0	UNT to North Little Sandy Creek	IT	N/A	AQL, WBC - Category B, SCR, LWW, IRR	Scott, IL	WWF	No	Area to be field verified
Access Roads									
NHD-100	1.0	UNT to Little Sandy Creek	IT	N/A	GEN, PFPWS	Scott, IL	WWF	No	TAR-003 - Timber Mats
NHD-711	24.6	UNT to Macoupin Creek	IT	N/A	GEN, PFPWS	Greene, IL	WWF	No	TAR-012 - Timber Mats
NHD-732	25.7	UNT to Macoupin Creek	IT	N/A	GEN, PFPWS	Greene, IL	WWF	No	TAR-013 - Timber Mats
NHD-732	25.9	UNT to Macoupin Creek	IT	N/A	GEN, PFPWS	Greene, IL	WWF	No	TAR-014 - Timber Mats

Notes:

- ¹ Map Designation - the unique code designated to the waterbodies identified during the field surveys. Field delineations are occurring concurrently with this filing. A unique identifier was also assigned to NHD that was used to supplement field delineations on properties that lack of access permission or in areas that are pending studies. Project facilities not listed do not impact streams. Impacts associated with the facilities will be refined in the FERC application.
- ² Flow regime based on USGS topographic mapping and onsite field review. IT - Intermittent; E - Ephemeral; and P - Perennial.
- ³ Crossing width is the bank-to-bank width of stream at the pipeline or access road centerline crossing unless noted otherwise. N/A-Not applicable indicates that these waterbodies that are desktop identified and therefore no crossing lengths are currently known.
- ⁴ Water quality standards are contained in 35 IAC Section 302. Water use designation and site-specific water quality standards are contained in 35 IAC Section 303. General Use Waters (GEN) - Except as otherwise specifically provided, all waters of the State [IL] must meet the general use standards of Subpart B of Part 302. The General Use standards will protect the State's [IL] water for aquatic life (except as provided in Section 302.213), wildlife, agricultural use, secondary contact use and most industrial uses and ensure the aesthetic quality of the State's [IL] aquatic environment. Public and Food Processing Water Supplies (PFPWS) - Except as otherwise specifically provided and in addition to the general use standards of Subpart B, Part 302, waters of the State shall meet the public and food processing water supply standards of Subpart C, Part 302, at any point at which water is withdrawn for treatment and distribution as potable supply for food processing.
- ⁵ Water quality classifications in MO are contained in 10 CSR 20-7.031. Last revised January 29, 2014 (MDNR, 2014). Codes for the designated uses are as follows: IRR - Irrigation, LWW - Livestock & Wildlife Watering, AQL - Protection of Warm Water Aquatic Life and Human Health-Fish Consumption, SCR - Secondary Contact Recreation, DWS - Drinking Water Supply, WBC - Whole Body Contact Recreation, IND - Industrial.
- ⁶ Initial consultation with the IEPA have indicated that all waters of Illinois are considered general use waters and no waters of the state are designated as cold water fisheries (IEPA, 2016d). Water Quality Standards Table C of Missouri 10CSR20.7 lists Waters Designated for Cold-Water Fisheries (MDNR, 2014). Luesse Lake is contained within the Mississippi River valley and was designated by the NWI layer as a L1UBHH - Lacustrine, Limnetic, Unconsolidated Bottom.
- ⁷ State impaired waters have been defined by the Section 303(d) lists for Illinois (IEPA, 2016c) and Missouri (MDNR, 2016d).
- ⁸ Also classified by the MDNR as a Metropolitan No-Discharge Stream, located in Chapter 7 10 CSR 20-7.031 of the Clean Water Commission created by the MDNR. Last revised January 29, 2014 (MDNR, 2014).
- ⁹ Spire to confirm based on field delineations and will revisit the facility design in the FERC application.



2.2.1 Contaminated Sediments

The primary potential sources of sediment contamination in the Project area are agricultural fields containing fertilizers and pesticides, leachate from feed lots and leeching fields, or natural background geologic sources. The USEPA's National Sediment Quality Survey ("NSQS") National Sediment Inventory was examined to generally characterize potential contamination of aquatic bed sediment found throughout the Project area. According to the NSQS reports, the Macoupin Watershed (Hydrologic Unit Code #07130012) is identified as an area of probable concern (USEPA, 2004a). The USEPA's List of Sediment Sites with Substantial Contamination was also examined for Superfund sites within the Project area. 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. The Project is located approximately 11.5 miles northeast of these landfills and therefore no issues of contamination are expected during construction. No superfund sites are located within one-mile of the Project area (USEPA, 2004b).

Spire searched the IEPA, IDNR, and MDNR databases for potential contaminated streams and sites. A review of statewide 303(d) Impaired Waters through IEPA and MDNR (IEPA, 2016c); (MDNR, 2016d) and identified several the waterbodies crossed by the proposed Project in Illinois and Missouri that are designated as impaired. The streams listed in Table 2.2.1 include Apple Creek, Macoupin Creek, and the Mississippi River in Illinois and the Mississippi River, Missouri River, and Coldwater Creek in Missouri. The IEPA does not specify special requirements for any of the stream crossings in the proposed Project area. However, Missouri will not validate a Section 404 Permit issued on a water that is listed as impaired by inorganic sediment, aquatic habitat alteration, or an unknown impairment. No streams crossed by the Project in Missouri are listed impaired under these designations.

The Project crosses Coldwater Creek within the metropolitan no-discharge stream reach as found in 10CSR 20-7.031, Table F (MDNR, 2014). Spire will apply for an Individual 401 water quality certification through the United States Army Corps of Engineers ("USACE") for the crossing of Coldwater Creek. Spire is continuing coordination with the 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 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 not contamination or a pathway for future contamination at the crossing location (Prebianca, 2016, Rankin, 2016). Copies of the correspondence are provided in Appendix 1-C.

Spire plans to cross all streams in Illinois and in Missouri in accordance with the FERC's Plan and Procedures. The potential for impacting the contaminated sediments on the Project is minimal; however, erosion-control devices, such as straw/hay bales or silt fence, will be installed to prevent sediment from entering the waterbodies from the disturbed Project area. Additional procedures to avoid or mitigate contaminant impacts are provided in the SPCC Plan in Appendix 2-A and in Appendix 2-D.



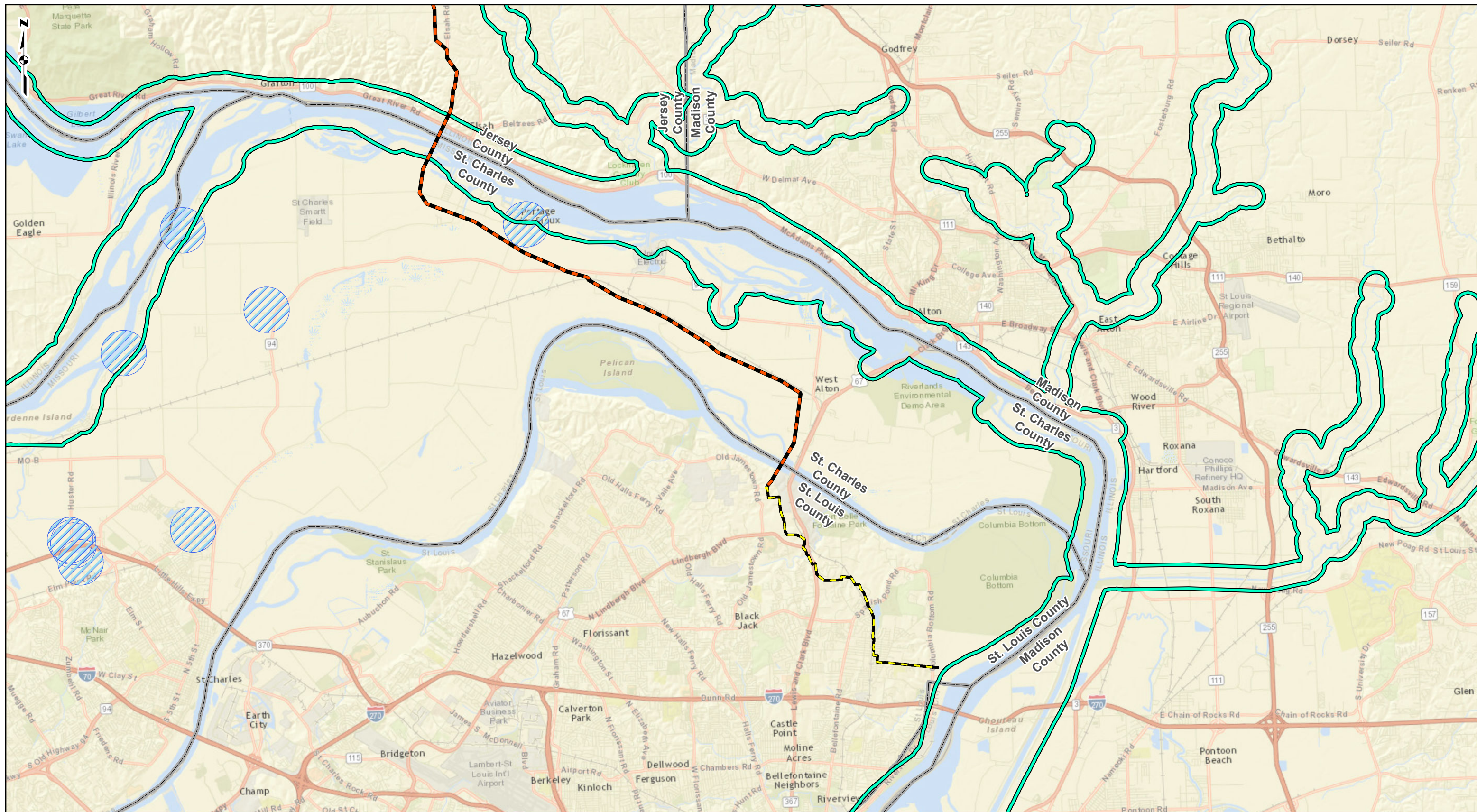
2.2.2 Public Watershed Areas

The Mississippi River in Illinois and in Missouri are designated by the state's respective 303(b) lists as a drinking or public water supply (IEPA, 2016); (MDNR, 2016d). The Mississippi River Water Supply Intake Protection Area, designated by the IEPA, is sourced from the Illinois American Water Company ("IAWC") divisions in Granite City and Alton City. No water supply intakes were located three miles downstream of the Mississippi River crossing in Illinois (IEPA, 2016b), however the intake for the Portage De Sioux Public Water Treatment Plant in Missouri is located 2.5 miles downstream of the crossing of the Mississippi River. The proposed centerline for the 24-inch pipeline in St. Charles County, Missouri is approximately 270 feet outside the half-mile buffer for a source water assessment radius for the Portage De Sioux Public Water Treatment Plant. No blasting is currently proposed in St. Charles County.

The Project is not located within any regulated recharge area, city groundwater ordinance buffers, CWS lake watersheds, or CWS surface water intakes within Illinois (IEPA, 2016b).

According to the MDNR's Section 305(b) list, the Missouri River is listed as a drinking water supply (MDNR, 2016d). No public drinking water pumping and booster station, tanks, active water wells, water intakes or springs, supply districts, or intake watersheds for lakes or rivers were identified within the immediate Project area or three miles downstream of the waters in Missouri (MDNR, 2016a). Copies of correspondence are provided in Appendix 1-C.

Spire is currently developing a HDD Contingency Plan for the crossing of the Mississippi and Missouri Rivers along with one unnamed tributary to the Mississippi River (Feature ID: NHD-915), Lake Luesse (Feature ID: NHD-924/NWI-505/SMO-WJW-001) and one unnamed tributary to the Missouri River (Feature ID: NHD-949). No adverse impacts are anticipated for the Mississippi River Water Supply Intake Protection Area as the IAWC intake location is located approximately 10 miles downstream of the Project's HDD location and the HDD Contingency Plan will be prepared to satisfy FERC's requirements in accordance with Section V.B.6.d of the FERC's Procedures (IEPA, 2016b). This plan will be submitted in the FERC application. Spire consulted the IEPA regarding this intake protection area; IEPA confirmed that there are no crossing restrictions associated with the area (Cook, 2016). Copies of correspondence are provided in Appendix 1-C. Figure 2.2-1 identifies the location of the SWPAs.



PROJECT LOCATION

JERSEY COUNTY,
ILLINOIS AND
ST. CHARLES AND
ST. LOUIS
COUNTIES, MISSOURI

REFERENCE: WORLD STREET MAP, 2016, ESRI, HERE, DELORME, USGS, INTERMAP, INCREMENT P, NRCAN, ESRI JAPAN, METI, ESRI CHINA (HONG KONG), ESRI (THAILAND), MAPMYINDIA, © OPENSTREETMAP CONTRIBUTORS, AND THE GIS USER COMMUNITY, ACCESSED 10/2016.

DRAFT

LEGEND

- 24-INCH PIPELINE
- LINE 880 MODIFICATIONS
- COUNTY BOUNDARY
- MISSISSIPPI RIVER WATER INTAKE PROTECTION AREA
- SWA PORTAGE DES SIOUX PUBLIC WATER TREATMENT PLANT

0 1 2 4 Miles

FIGURE 2.1-1

SPiRE STL PIPELINE PROJECT

DRAWN BY: PMH
CHECKED: EFJ

DATE: 10/14/2016
APPROVED: LMF



Table 2.2-2. Public Water Supply Watershed Areas Crossed by the Project or in Proximity to Aboveground Facilities

County, State	Approximate MPs	Surface Water Supply	Distance/Direction of Water Supply from Project Facilities (miles)	Project Facilities Upstream/ Downstream of Withdrawals
24-Inch Pipeline				
St. Charles County, Missouri	N of 48.6	Public Water Treatment Plant	2.5	Mississippi River Crossing Upstream of Intake

Note:

- ¹ Facilities not listed do not impact public water supplies.

2.2.3 Floodplains

2.2.3.1 Illinois

Portions of the 24-inch pipeline will be located within the 100-year Federal Emergency Management Agency (“FEMA”) floodplains of Apple Creek and Macoupin Creek in Greene County, Illinois and Otter Creek and the Mississippi River in Jersey County, Illinois. Impacts are unavoidable, due to the long linear nature of the floodplain and the route of the Project. Construction of the pipeline throughout these areas will not result in any permanent fill in the floodplains. Spire will prepare and submit required documentation for a County Floodplain Development Permit for the portions of the proposed pipeline and associated construction right-of-way, access roads, and ATWS located within the FEMA 100-year flood zones in Jersey County and Greene County, Illinois. Additional details will be provided in the FERC application.

2.2.3.2 Missouri

A portion of the 24-inch pipeline will be located within the 100-year FEMA floodplain and FEMA regulatory floodway of the Mississippi River, Missouri River, and tributaries to the Missouri River, including Coldwater Creek. This includes the crossing of the Mississippi River and the crossing of the Missouri River as well as the proposed 24-inch pipeline alignment approximately between MP 44.5 through MP 57.5. Construction of the pipeline throughout these areas will not result in any permanent fill in the floodplains. Based on the proposed activities, a Floodplain Development Permit Application Form with associated Floodplain Study and Engineering No-Rise Certification will be required to be submitted to the St. Louis County Department of Transportation for the proposed activities within St. Louis County.

The MRT Bi-directional Station at the southern end of Line 880 is currently proposed to be within the limits of the Mississippi River FEMA 100-year floodway. Spire is determining if permanent structures, surface sites, or access roads will not be located within FEMA regulatory floodways. If necessary, Spire will perform a hydrologic and hydraulic analysis as part of the permit submittals.



Spire will prepare and submit required documentation to St. Charles County and the City of West Alton for Floodplain Development Permits and No-Rise Certifications for the portions of the Project workspaces, access roads, and ATWS located within the FEMA 100-year flood zones in St. Charles County and within the City of West Alton municipal limits.

Further details on the Project design across these areas as well as effects from construction impacts will be provided in the FERC application.

Spire is proposing to provide a minimum depth of cover of approximately 5 feet over the pipeline across waterbodies. The proposed cover will generally provide adequate scour protection from high flows and flooding. Prior to construction, field observations will be conducted to determine stability of the banks and appropriate bank stabilization techniques.

Copies of correspondence are provided in Resource Report 1, Appendix 1-C.

2.2.4 Hydrostatic Test Water and Water for Dust Suppression

The Project will be hydrostatically tested to ensure that it is capable of safely operating at the design pressure. Though Spire has not yet finalized water sources for hydrostatic testing, it is anticipated that water will be obtained from municipal water sources. Test segments of the pipeline will be capped and filled with water and pressurized to a minimum of 1.25 to 1.5 times (based on location class) the designed operating pressure for a minimum of eight hours in accordance with the Pipeline and Hazardous Materials Safety Administration (“PHMSA”) requirements prior to being placed in service. Loss of pressure that cannot be attributed to other factors, such as temperature changes, will be investigated. Leaks detected will be repaired and the segment will be retested. Upon completion of the test, the water may be pumped to the next segment for testing or the water may be discharged in accordance with state permitting requirements. Spire proposes to haul water offsite for disposal at an appropriate treatment facility for the testing of Line 880. Test water will be discharged through an energy-dissipating device in compliance with National Pollutant Discharge Elimination System (“NPDES”) permit conditions. Once a segment of pipe has been successfully tested and dried, the test cap and manifold will be removed, and the pipe will be connected to the remainder of the pipeline.

Table 2.2-3, which will be provided in the FERC application, will detail potential hydrostatic water sources for testing the aboveground facilities and pipeline segments, the number of test sections, approximate volume of water to be used and proposed discharge locations.

Water required for dust suppression and drilling operations will also be obtained from municipal sources. Water utilized for the drilling operations will be hauled offsite for disposal at an appropriate facility.

Copies of correspondence are provided in Resource Report 1, Appendix 1-C.



Table 2.2-3. Hydrostatic Test Water Segments, Volumes, Sources, and Discharge Locations

Number of Test Sections	Reference MPs for Section		Approximate Volume (gallons)	Potential Sources and Discharge Locations
	Begin MP	End MP		
24-Inch Pipeline				
TBD	TBD	TBD	TBD	TBD
TBD	TBD	TBD	TBD	TBD
Line 880 Modifications				
TBD	TBD	TBD	TBD	TBD
TBD	TBD	TBD	TBD	TBD

2.2.5 Construction Permits

The Project will obtain federal and state-authorized water permits, and will conduct those crossings as specified in state-authorized permits. A summary of permits and approvals associated with the proposed construction and operation of the Project is provided in Resource Report 1, Table 1.6-1. In addition, Spire anticipates obtaining permits to conduct the crossings of the Mississippi and Missouri Rivers.

Floodplain development permits from Greene County, Illinois; Jersey County, Illinois; St. Louis County, Missouri; St. Charles County, Missouri; and the City of West Alton, Missouri will also be obtained.

Spire will obtain a state-issued NPDES general permit(s) (if required) for construction and trench dewatering and hydrostatic test water discharge, as applicable, prior to construction.

Spire is evaluating locations where blasting may be required on the Project. To minimize blasting, large stones in the trench will generally be broken apart with conventional rock-trenching methods where possible. Locations where blasting is anticipated will be identified in Resource Report 6. Should blasting be required, Spire will submit a blasting plan for FERC review and approval in the FERC application.

Copies of correspondence are provided in Resource Report 1, Appendix 1-C.

2.2.6 Sensitive Surface Waters

Sensitive waterbodies include those designated under Section 305(b) or Section 303(d) of the CWA; those for domestic use; those where fish or other listed species are present; outstanding or exceptional quality waterbodies, waters of recreational importance, protected watershed areas, surface waters that have important riparian areas, rivers on the designated rivers inventory.

No known wild trout streams, high quality waters, waterbodies listed as outstanding or exceptional quality, or state or federal wilds and scenic rivers occur within the Project area [IEPA, 2016e; MDNR, 2016b; MDNR, 2014; and the United States Fish and Wildlife Service (USFWS), 2016].



The Project will cross several Section 303(d) waters, including; Apple Creek, Macoupin Creek, and the Mississippi River in Illinois and the Mississippi River, Missouri River, and Coldwater Creek in Missouri. Apple Creek is impaired for aquatic life due to dissolved oxygen, Macoupin Creek is impaired for primary contact recreation due to fecal coliform, and in Illinois the Mississippi River is impaired for primary contact recreation and fish consumption for mercury, polychlorinated biphenyl, and fecal coliform. In Missouri, the Mississippi River is impaired for water body contact recreation for *Escherichia coli*. Other listed streams in Missouri include the Missouri River which is impaired for water contact recreation due to the presence of *E. coli* and Coldwater creek whose designated uses are impaired for aquatic life, primary water contact recreation, and secondary contact recreation from the presence of chloride and *E. coli* (IEPA, 2016c); (MDNR, 2016d). Coldwater Creek is also listed by the MDNR as a metropolitan no discharge stream and was previously discussed in Section 2.2.1 (Prebianca, 2016). The Project does not cross waters impaired by suspended solids, turbidity, or siltation; therefore there are no regulatory restrictions for the crossing of 303(d) listed streams on the Project. The correspondence will be provided Resource Report 1, Appendix 1-C of the FERC application.

The Mississippi and Missouri Rivers both contain sensitive resource statuses within the Project area. The Project's crossing of the Mississippi River contains status listings of a CWS water intake zone with at least one water intake three miles downstream from the Project's crossing, it's listed by the USACE Rock Island District as a Section 10 federally navigable water, it's listed as a state fish and wildlife designated area, and it also contains federally-listed and state-listed threatened and endangered species (IEPA, 2016b); (USACE, 2016b); (USFWS, 2013). The Missouri River is also designated as a critical resource for federally-listed and state-listed threatened and endangered species and as a Section 10 federally navigable water (USACE, 2016c); (USFWS, 2013). Although trenchless methods generally avoid impacts on water quality by avoiding impact to the stream bank and bottom, a potential for an inadvertent return of drilling mud may occur. The release could result in a plume extending from the discharge point downstream.

To avoid and minimize the effects on the Mississippi and Missouri Rivers, Spire will construct the pipeline in accordance with FERC's Plan and Procedures, as well as other federal and state requirements identified during the permitting process. These measures will include:

- requiring temporary E&SC measures installed and maintained along the construction right-of-way;
- maintaining appropriate water flow downstream of the crossing;
- requiring construction to be completed within specified hourly time frames based on size of crossing;
- Spire will adhere to the state guidelines as opposed to the guidelines found in the FERC's Procedures;
- routinely inspecting construction equipment for leaks and storing fuel and hazardous materials in upland areas at least 100 feet from waterbodies;
- responding quickly to leaks and spills by implementing measures outlined in the Project's SPCC Plan; and
- implementing the HDD Contingency Plan related to inadvertent returns; the plan would include a protocol for contacting all appropriate agencies as well as methodology on reducing the pressure of the drill or stopping the drill so the leak would stop. The plan will also include a protocol for containing and cleaning up the spill.



Operation of the pipeline facilities is not anticipated to impact the CWS or federally-listed and state-listed threatened and endangered species and their habitats

2.2.7 Waterbody Construction and Mitigation Procedures

Spire intends to implement the FERC's Plan and Procedures as a minimum standard for crossing and restoring waterbodies affected by the Project. These crossings include conventional open-cut techniques, dry ditch crossing methods (dam and pump, flume techniques), and HDD techniques. Spire proposes to limit waterbody impacts by reducing the crossing width to 75 feet at the waterbody crossings.

The Project, as proposed, will not cause permanent impacts on any surface waterbodies. Construction will follow the Plan and Procedures which contain BMPs intended to reduce ground disturbance, minimize E&S runoff, and promote revegetation within the construction area.

Per the USACE Nationwide Permit for Missouri, the permittee must not excavate from or discharge into the listed waters on the Missouri Combined Stream Spawning List during the specified seasonal restrictions. No streams crossed by the Project within St. Charles or St. Louis Counties, Missouri, are listed on the spawning list and no streams crossed by the Project are designated within the one mile buffer receiving waters for the listed streams (USACE, 2012). At this time, the IEPA (Twait, 2016) and MDNR have indicated they do not have instream construction timing restrictions for warmwater fisheries. Timing restrictions that differ from the FERC Procedures developed in consultation with the applicable state agencies is allowed under Section V of the FERC Procedures. Therefore, Spire anticipates that construction can occur at any time of year on the waterbodies crossed by the Project.

2.2.7.1 Open-Cut

Construction methods utilized at waterbody crossings are highly dependent on the characteristics of the waterbody encountered. Waterbodies less than 100 feet wide will typically be crossed via the conventional open-cut method. Minor waterbodies with no discernible flow at the time of construction may be crossed using the conventional trenching method (i.e., bed and bank disturbance with no stream flow bypass equipment installed). For conventional trench crossings, the pipeline will be placed deep enough to meet the five-foot minimum cover requirement, provided no rock is encountered.

Equipment will operate from the banks of the waterbody to the maximum extent practicable to excavate a trench. As required by the FERC Procedures, flow will be maintained at all times. Excavated material from the trench will be placed on the bank above the ordinary high water mark for use as backfill. The pipe segment will be prefabricated and weighted, as necessary, to provide negative buoyancy and placed below scour depth. Typical backfill cover requirements will be met, contours will be restored within the waterbody, and the banks will be stabilized via seeding and/or the installation of erosion control matting or riprap. Excess excavated materials will be distributed in an upland area in accordance with applicable regulations.

Impacts on water quality will be minimized through the implementation of measures outlined in the FERC Procedures. The pipeline trench will be excavated immediately prior to pipe installation to limit the duration of construction within the waterbody to 24 hours for crossings less than 10 feet and 48 hours for crossings between



10 feet and 100 feet. Excavated materials will be stored no less than 10 feet from the edge of the waterbody and temporary erosion control devices will be utilized to prevent the sediment from reentering the waterbody.

2.2.7.2 Flume

The flume crossing method is an alternative to the open-cut method in which water flow is temporarily directed through one or more flume pipes placed over the excavation area. Temporary dams (consisting of sandbags, bladders, or other impervious materials) are installed upstream and downstream of the proposed crossing, and are used to divert water into the flume(s). The use of the flume allows trenching and pipeline installation to occur primarily under dry conditions without significant disruption of water flow.

2.2.7.3 Dam and Pump

The dam and pump crossing method is similar to the flume crossing method in that it is an alternative to the open-cut method that allows trenching and pipeline installation to occur under relatively dry conditions with minimal impact to water flow. This method involves the temporary installation of dams (consisting of sandbags, bladders, or other impervious materials) upstream and downstream of the proposed crossing. Pumps are then used to dewater the excavation area and to transport the water flow around the construction work area.

2.2.7.4 Horizontal Directional Drill

The HDD crossing method is typically utilized at large or sensitive waterbodies. The HDD method allows for construction across a waterbody without the excavation of a trench, by drilling a hole significantly below conventional pipeline depth, and pulling the pipeline through the pre-drilled hole. Spire will utilize HDDs to avoid direct impacts on sensitive resources and/or to avoid areas in which constructability by conventional means is not feasible.

HDDs will be utilized to cross the Mississippi and Missouri Rivers, along with one unnamed tributary to the Mississippi River (Feature ID: NHD-915), Luesse Lake (Feature ID: NHD-924/NWI-505/SMO-WJW-001), and one unnamed tributary to the Missouri River (Feature ID: NHD-949). Spire is conducting geotechnical boring at the HDD locations to determine the geology and feasibility of the drills. The HDDs will allow for trenchless construction across the waterbodies and will eliminate planned impacts from construction activities within the waterbodies. Spire does not anticipate clearing in between the entry and exit points of each crossing which would also minimize disturbance to the ground surface in these areas. Pipe sections long enough to span each HDD crossing will be staged and welded in the construction work areas.

The HDD of the Mississippi River crossing will include an entry/exit pit north of the Mississippi River and an entry/exit pit south of the Mississippi River. The HDD crossing will extend to a minimum depth of 25 feet below the river bed. Between the HDD entry and exit locations, access is required to perform inadvertent return monitoring and to layout the guidance system wireline (unless a gyroscopic tool is required). The access will require line of sight to survey the guidance system. This may require selective cutting of limbs, but no trees will be removed. Access will be through foot traffic. The site-specific cross-section drawings are depicted in Appendix 2-C.



The Missouri River crossing will include an entry/exit pit north of the Missouri River and an entry/exit pit south of the Missouri River. The HDD crossing will extend to a minimum depth of 25 feet below the river bed. Between the HDD entry and exit locations, access is required to perform inadvertent return monitoring and to layout the guidance system wireline (unless a gyroscopic tool is required). The access will require line of sight to survey the guidance system. This may require selective cutting of limbs, but no trees will be removed. Access will be through foot traffic. The site-specific cross-section drawings are depicted in Appendix 2-C.

A successful HDD crossing will result in no planned impacts on the banks, bed or water quality of the waterbodies being crossed. However, during any HDD, the possibility exists for drilling mud to reach the surface. In the event of the inadvertent release of drilling mud, Spire will implement measures in its plan to minimize impacts to sensitive resources. The inadvertent release of drilling mud plan is included in Appendix 2-B.

Successful HDD outcomes are location dependent and require appropriate soil conditions that are conducive to drilling. Spire is in process of conducting geotechnical borings at its proposed HDD crossings. This includes an extensive program of geotechnical borings located on the both the bank and within the river at each crossing. Results of this work will determine the appropriate location of each drill and the feasibility of the drill at each location.

If released into the environment, fuels, lubricants or other potentially hazardous materials used during routine construction can temporarily impact aquatic habitats and resources. To minimize these potential impacts, Spire will restrict the storage location and use of hazardous materials. Spire's SPCC Plan incorporates these restrictions to minimize potential for impacts during construction, and contains measures to mitigate releases should they occur.

Refueling and lubricating of vehicles and/or equipment will occur no closer than 100 feet from a waterbody unless no feasible alternative exists or a greater setback is stipulated by a permitting agency. Spire will also locate additional temporary workspaces ("ATWS") a minimum of 50 feet from waterbody and wetland boundaries unless a reduced setback is requested on a site-specific basis and a modification is approved in accordance with FERC's Procedures. Proposed exceptions to FERC's Plan and Procedures is provided in Resource Report 1, Appendix 1-F.

2.3 Wetlands

Spire performed a desktop review of National Wetlands Inventory ("NWI") data and aerial photography to identify potential wetlands in the Project area. NWI-mapped wetlands are shown in Appendix 2-F. Field surveys initiated in September 2016 and are continuing through October 2016, to locate wetlands within the proposed Project area using the Routine On-Site Determination Method defined in the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest Region (Version 2.0) (USACE, 2010) and guidance from the USACE regarding atypical situations in agricultural fields (GAI, 2016). Copies of the wetland delineation and stream identification report will be included in Appendix 2-E in the FERC application.



2.3.1 Existing Resources

A comprehensive Wetland Delineation and Stream Identification Report including a corresponding narrative, delineation and NWI maps, survey forms, etc. for the proposed Project will be included in Appendix 2-E of the FERC application. A unique identifier was assigned to National Wetland Inventory (“NWI”) data that was used to supplement field delineations on properties that lack of access permission or in areas that are pending studies. Fifteen PFO, three PSS, one PUB, and 22 PEM wetlands are impacted by the Project. Fourteen of the total 41 wetlands were sourced from NWI mapping. Approximately 3.11 acres of wetland will be affected by the construction of the Project, including fifteen PEM wetlands, totaling approximately 1.65 acres, located within agricultural, residential, or open lands. Table 2.3-1 details the wetlands crossed by the Project.

2.3.2 Wetland Construction and Operation Impacts

Wetland crossing methods will be determined based on site-specific conditions at the time of construction. Wetlands with soils that can support construction equipment may be crossed using the conventional lay method. Spire may utilize the push/float method to install the pipeline in wetlands if conditions, such as a flooded trench, are encountered during construction. Both of these methods are discussed further below.

2.3.2.1 Conventional Lay

Wetland crossings for the Project may be accomplished via the conventional lay method in accordance with all applicable permits and the FERC Procedures. Construction techniques for this method are similar to the open-cut method in upland areas, however topsoil segregation techniques will be utilized to facilitate revegetation following the completion of construction activities. In some cases, site-specific conditions may not support construction equipment, but the area will still be crossed using the conventional lay method. In these instances, construction mats will be used to minimize disturbances to wetland hydrology and maintain soil structure.

2.3.2.2 Push/Float

The push/float method of construction may be used in inundated lowland or saturated wetland areas where conventional pipe laying equipment cannot be supported, and in areas that have a sufficient amount of water at the time of construction that would allow for pipe to be floated through the open trench. Implementation of this method requires excavation of the trench using low-ground weight equipment, thereby limiting the need for grubbing and grading activities over the trench line or working side of the right-of-way. Topsoil segregation will not be implemented in areas where there is standing water or inundation at the time of construction.

Coated and weighted pipe will be welded at a staging area where floats are attached to the pipe. The welded pipe will be pushed along the water-filled trench until it is in place. Once in place over the trench, the floats will be cut and the pipe will be allowed to sink into place. The trench will then be backfilled using previously excavated material. Utilization of this method reduces wetland impacts and soil compaction by minimizing the number of construction passes necessary to install the pipe.



2.3.2.3 Horizontal Directional Drill

The HDD crossing method is typically utilized at large wetland crossings. This method allows for construction across wetland without the excavation of a trench, by drilling a hole significantly below conventional pipeline depth, and pulling the pipeline through the pre-drilled hole. Wetlands proposed to be crossed by HDD are associated with the river crossings.



Table 2.3-1. Wetlands Crossed by the Project

Wetland I.D.	Approximate MP	NWI Classification ¹	Source ²	Approximate Crossing Length (feet) ³	Area Affected by Construction (acres) ⁴	Area Affected by Operation (acres) ⁵	Crossing Method ⁶
24-Inch Pipeline							
WIL-JJP-002	1.2	PEM	FD	0	< 0.01	0.00	Workspace Only
WIL-TMA-001	2.2	PEM	FD	0	< 0.01	0.00	Workspace Only
WIL-TMA-002	3.3	PFO	FD	0	0.02	0.01	Workspace Only
WIL-JJP-005	3.4	PFO	FD	67	0.08	0.03	Open Cut
WIL-JJP-006	3.7	PEM	FD	60	0.08	0.00	Open Cut
WIL-JJP-006A	3.7	PSS	FD	0	< 0.01	0.00	Workspace Only
WIL-JJP-010	5.1	PEM	FD	0	0.01	0.00	Workspace Only
WIL-JJP-011	5.6	PEM	FD	0	0.01	0.00	Workspace Only
WIL-JJP-012A	5.6	PEM	FD	29	0.11	0.00	Open Cut
WIL-JJP-012	5.6	PFO	FD	66	0.10	0.04	Open Cut
WIL-JJP-013	5.7	PEM	FD	90	0.14	0.00	Open Cut
WIL-JJP-015B	10.8	PSS	FD	39	0.05	0.01	Open Cut
WIL-JJP-015B	10.8	PEM	FD	0	0.03	0.00	Open Cut
WIL-JJP-015A	10.8	PEM	FD	22	0.05	0.00	Open Cut
NWI-029	13.9	PFO1A	NWI	72	0.18	0.05	Open Cut
WIL-JJP-001	13.9	PEM	FD	46	0.07	0.00	Open Cut
WIL-TMA-006	14.1	PEM	FD	72	0.20	0.00	Open Cut
WIL-TMA-007	14.3	PEM	FD	22	0.04	0.00	Open Cut
WIL-TMA-008	14.3	PEM	FD	308	0.49	0.00	Open Cut
WIL-TMA-007	14.4	PEM	FD	29	0.10	0.00	Open Cut
WIL-TMA-009	17.1	PEM	FD	62	0.12	0.00	Open Cut
NWI-051	18.7	PFO1A	NWI	20	0.03	0.01	Open Cut
WIL-TMA-014	24.7	PEM	FD	45	0.08	0.00	Open Cut
WIL-TMA-015	24.7	PSS	FD	0	0.01	0.00	Workspace Only
WIL-TMA-010	24.7	PEM	FD	20	< 0.01	0.00	Open Cut
WIL-TMA-013	24.9	PFO	FD	0	0.01	0.01	Open Cut
NWI-066	25.0	PFO1A	NWI	147	0.25	0.10	Open Cut
NWI-076	34.8	PFO1A	NWI	21	0.07	0.01	Open Cut



Table 2.3-1. Wetlands Crossed by the Project (Continued)

Wetland I.D. ¹	Approximate MP	NWI Classification ²	Source ³	Approximate Crossing Length (feet) ⁴	Area Affected by Construction (acres) ⁵	Area Affected by Operation (acres) ⁵	Crossing Method
24-Inch Pipeline (continued)							
NWI-084	36.2	PEM1A	NWI	21	0.04	0.00	Open Cut
WIL-DFW-002	43.3	PEM	FD	50	0.11	0.00	Open Cut
NWI-105	45.3	PFO1AH	NWI	377	0.00	0.00	HDD ⁷
WMO-WJW-001	45.6	PFO	FD	330	0.00	0.00	HDD ⁷
NWI-103	47.3	PFO1Ah	NWI	0	< 0.01	0.00	Workspace Only
NWI-114	55.1	PFO1AX	NWI	21	0.04	0.01	Open Cut
NWI-2	55.2	PUBF	NWI	288	0.49	0.33	Open Cut
NWI-143	56.0	PFO1A	NWI	0	< 0.01	0.00	Workspace Only
NWI-147	56.5	PEM1AD	NWI	20	0.03	0.00	Open Cut
NWI-160	57.1	PEM1A	NWI	0	0.04	0.00	Workspace Only
NWI-167	57.2	PFO1A	NWI	98	0.00	0.00	HDD ⁷
NWI-166	45.3	PFO1A	NWI	412	0.00	0.00	HDD ⁷
Access Roads							
WIL-TMA-007	14.4	PEM	FD	91	0.03	0.00	TAR-009 - Open Cut

Notes:

- ¹ Map Designation - the unique code designated to the wetlands identified during the field surveys. Field delineations are occurring concurrently with this filing. A unique identifier was also assigned to National Wetland Inventory (“NWI”) data that was used to supplement field delineations on properties that lack of access permission or in areas that are pending studies. Facilities not listed do not impact wetlands. Impacts associated with the facilities will be refined in the FERC application.
- ² Cowardin classification: PEM - Palustrine Emergent; PFO - Palustrine Forested; PSS - Palustrine Scrub-Shrub; and PUB - Palustrine Unconsolidated Bottom.
- ³ FD - Field Delineation. NWI used where field delineations not conducted due to lack of access permission.
- ⁴ Length of Crossing is representative of the centerline crossing length. Where the crossing length is zero-foot, the wetland is crossed by workspace but not the pipeline.
- ⁵ Area affected by construction is the total area of wetland within the construction right-of-way. Area affected by operation on PEM wetlands are 0.0 as these wetlands will revert back to the same type following construction. Operational impacts on PSS wetlands in this column are based on a 10-foot-wide operational impact that will be converted to herbaceous wetlands due to pipeline maintenance. Operational impacts on PFO wetlands in this column reflect potential for selective thinning of trees within 15 feet of the pipeline that have roots that could compromise the integrity of the pipeline coating. These do not equal the sum of this column due to rounding.
- ⁶ Workspace only - includes ATWS and access; and Open cut - pipeline crossing.
- ⁷ Wetland is encompassed by the HDD. Spire does not intend to clear vegetation within the permanent right-of-way above the HDD path; therefore impacts to this wetland are not anticipated.



Spire will obtain geotechnical core data to determine the final design depth and profile for the crossings. Should the crossing profiles and depths change based on results of the geotechnical studies, Spire will provide the FERC with updated plan and profile drawings for the HDD crossings.

2.3.2.4 Wetland Construction and Operation Impacts

Wetlands that are open cut may experience temporary construction impacts that may include loss of herbaceous and scrub-shrub vegetation, soil disturbance associated with grading, trenching, and stump removal, sedimentation and turbidity increases, and hydrological profile changes. Impacts to forested wetlands may include long-term conversion to emergent and/or scrub-shrub wetland types through tree removal. No permanent loss of wetlands are expected to occur from the construction of the Project but functional changes to the wetland community may result. Upon the completion of construction, topsoil, contour elevations and hydrologic patterns will be restored and disturbed areas will be reseeded to promote the re-establishment of native hydrophytic vegetation. TWS and additional temporary workspaces (“ATWS”) will be restored to preconstruction grades and contours reseeded. TWS and ATWS areas will not be maintained for operation of the Project and will be allowed to revert to their preconstruction land use and vegetation cover types. Wetlands that are encompassed as part of a HDD are not anticipated to be directly impacted from construction activities and impacts to these features will be avoided.

Spire will protect and minimize potential adverse impacts on wetlands by complying with the applicable permit conditions issued by appropriate regulatory agencies with respect to construction and operation of the Project facilities within wetlands, and through implementation of FERC’s Procedures. Spire has reduced its construction right-of-way in and around wetlands during construction to 75 feet in accordance with FERC’s Procedures. Site-specific exceptions to the FERC Procedures where greater than 75 feet of construction workspace is needed in wetlands are identified in Resource Report 1, Appendix 1-F. ATWS may also be required in and around wetland areas to facilitate certain crossings. The size of ATWS adjacent to wetlands varies along the length of the Project. ATWS size was dictated by the corresponding adjacent topography and both wetland-related and unrelated Project needs given the limited viable staging options along the Project’s route. Where possible, ATWS has been located at least 50 feet from wetlands. Locating ATWS within 50 feet of wetlands is necessary in certain locations to facilitate road crossings, provide additional spoil storage area, and topsoil segregation. Areas where ATWS has been proposed within 50 feet of a wetland is provided in Resource Report 1, Appendix 1-F.

Construction equipment in wetlands will be limited to that essential for clearing the right-of-way, excavating the trench, fabricating and installing the pipeline, backfilling the trench and restoring the right-of-way. Prior to grading activities, erosion controls will be placed as required along the downslope edge of the construction right-of-way and around additional temporary workspace (“ATWS”) to minimize impacts to adjacent wetlands. Erosion and sedimentation controls will be properly installed and maintained throughout construction to protect wetlands from sediment that may migrate from disturbed areas during construction. Where there is no reasonable access except through wetlands, non-essential equipment would be allowed if the ground is firm or is stabilized with construction mats to avoid rutting. In order to preserve the existing seedbank and promote revegetation of the wetlands, Spire will segregate the top 12 inches of soil from the area disturbed by trenching activities except in saturated wetlands. Topsoil will be restored back to its original location immediately after backfilling is complete.



Seed mixes spread on the restored topsoil for temporary stabilization will include annual rye grass at a rate of 40 pounds per acre (unless standing water is present) or appropriate mixes recommended by permitting agencies. To minimize inadvertent spills of fluids used during construction, any lubricating oils and fuels will be stored in upland areas at least 100 feet from wetland boundaries, whenever possible, or additional materials (such as spill kits) or secondary containment structures will be employed.

The majority of the wetlands impacted by the Project will be restored and will revert to pre-existing conditions after construction has been completed. In accordance with FERC’s Procedures, Spire will maintain a mowed corridor through wetlands; keeping this portion of each feature in an herbaceous state to allow for periodic pipeline patrols and operational surveys. PEM wetlands will be restored to pre-construction conditions and no permanent impacts are anticipated to these features. For PSS wetlands, the maintained corridor will be up to 10 feet centered on the pipeline, converting this portion of each feature to PEM wetland types. For PFO wetlands, trees within 15 feet of the pipeline that have roots that could compromise the integrity of the pipeline coating will be selectively removed. Therefore converting a 30-foot corridor in PFO wetlands to PSS or PEM wetland types. Wetlands that are encompassed between HDD entry and exits points will not be routinely maintained; therefore long-term impacts to these features are not anticipated.

Table 2.3-2. Summary of Wetlands Affected by Construction and Operations

Cowardin and NWI Classification¹	Length of Each Type Crossed (feet)²	Wetland Area Affected During Construction (acre)³	Wetland Area Affected During Operation (acre)
24-Inch Pipeline			
PFO	1,630	0.78	0.27
PSS	39	0.05	0.01
PEM	902	1.76	0.00
PUB	288	0.49	0.33
Subtotals	2,859	3.08	0.61
Access Roads			
PFO	0	0.00	0.00
PSS	0	0.00	0.00
PEM	91	0.03	0.00
Subtotals	91	0.03	0.00
Totals			
Subtotal PFO	1,630	0.78	0.27
Subtotal PSS	39	0.05	0.01
Subtotal PEM	993	1.79	0.00
Subtotal PUB	288	0.49	0.33
Totals	2,950	3.11	0.61



Table 2.3-2. Summary of Wetlands Affected by Construction and Operations (Continued)

Notes:

- ¹ NWI Wetland Type: PFO - Palustrine Forested; PSS - Palustrine Scrub-Shrub; PEM - Palustrine Emergent; and PUB - Palustrine Unconsolidated Bottom. Facilities not listed do not impact wetlands.
- ² The length of the crossing was calculated from field delineated or NWI polygons, rounded to the nearest foot. These do not equal the sum of this column due to rounding.
- ³ Area affected by construction is the total area of wetland within the construction right-of-way. Area affected by operation on PEM wetlands are 0.0 as these wetlands will revert back to the same type following construction. Operational impacts on PSS wetlands in this column are based on a 10-foot-wide operational impact that will be converted to herbaceous wetlands due to pipeline maintenance. Operational impacts on PFO wetlands in this column reflect potential for selective thinning of trees within 15 feet of the pipeline that have roots that could compromise the integrity of the pipeline coating. These may not equal the sum of this column due to rounding.

2.3.3 Wetland Mitigation Procedures

Following restoration, wetlands will be monitored in accordance with FERC's Procedures and/or in accordance with protocols specified by the applicable permitting agencies. Revegetation of impacted wetlands will be monitored periodically for the first three years following construction. Revegetation will be considered successful when the native vegetation cover is at least 80 percent of either the cover documented for the wetland prior to construction, or at least 80 percent of the cover in adjacent wetland areas that were not disturbed by construction.

Spire has identified all necessary permits and approvals that will be required for construction of the Project through wetlands. These permits, as well as anticipated submittal and receipt dates are outlined in Resource Report 1. The USACE, St. Louis District is the regulating federal agency for impacts to wetlands and the Project. Construction associated with the Project will impact wetlands and waterbodies and is subject to Section 404 of the CWA; therefore Spire will submit a pre-construction notification package to the USACE for coverage under Nationwide Permit 12-Utility Lines concurrently with the FERC application. In compliance with federal and state regulatory permitting frameworks relative to wetland protection, Spire will also develop a Project-specific wetland mitigation plan prior to construction in consultation with the USACE St. Louis District and other regulatory agencies. The mitigation plan will provide measures to compensate for permanent wetland conversion and in certain states, stream-related impacts. Spire is coordinating with the USACE and applicable state regulatory agencies for guidance during the development of the proposed mitigation measures and plans.



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APPENDIX 2-A

Spill Prevention, Control, and Countermeasure Plan



Spire STL Pipeline Project

Spill Prevention, Control, and Countermeasure Plan

FERC Docket No. PF16-9-000

Draft
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Public



Table of Contents

Spill Prevention, Control, and Countermeasure Plan.....	1
1.0 Spill Prevention.....	1
1.1 Spill Response.....	2
1.2 Responsibilities.....	3
1.2.1 Environmental Manager	3
1.2.2 Lead Environmental Inspector	3
1.2.3 Field Construction Manager.....	3
1.2.4 Contractor Spill Coordinator	4
1.2.5 All Personnel	4
1.3 Federal and State Agency Contacts.....	4
1.3.1 Federal	4
1.3.2 Illinois	5
1.3.3 Missouri.....	5
1.4 References.....	6

Attachments

- A Environmental Protection Agency - List of Hazardous Substances and Reportable Quantities
- B Illinois Emergency Release Notification
- C Missouri Emergency Release Notification



Acronyms and Abbreviations

CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
FERC	Federal Energy Regulatory Commission
IEMA	Illinois Emergency Management Agency
LEPC	Local Emergency Planning Committees
MDNR	Missouri Department of Natural Resources
Procedures	FERC's Wetland and Waterbody Construction and Mitigation Procedures
SPCC Plan	Spill Prevention, Control, and Countermeasure Plan
Spire	Spire STL Pipeline LLC
USEPA	United States Environmental Protection Agency



Spill Prevention, Control, and Countermeasure Plan

Construction activities related to natural gas pipelines and aboveground facilities often require storage of hazardous and non-hazardous products and wastes. All efforts will be made to prevent spills of any amount of these products. The scope of this Spill Prevention, Control, and Countermeasure (“SPCC”) Plan describes the planning and prevention control measures that will be implemented by Spire STL Pipeline LLC (“Spire”) and its contractors to minimize impacts resulting from spills of fuels, petroleum products or other controlled substances during the construction of the Spire STL Pipeline Project. This Spill Prevention, Control, and Countermeasure Plan (“SPCC Plan”) was developed in accordance with the Federal Energy Regulation Commission’s (“FERC’s”) *Wetland and Waterbody Construction and Mitigation Procedures* (“Procedures”) and federal, state, and local regulations.

1.0 Spill Prevention

The following practices will be implemented with the goal of preventing spills and minimizing the impact of spills which may unintentionally occur.

- All employees and contractors handling fuels and other hazardous materials or involved in the operation and maintenance of equipment will be properly trained in the prevention of spills, rules and regulations applicable to their work, proper containment and cleanup of spills, and reporting responsibilities.
- All equipment shall be in good operating condition and inspected on a regular basis.
- Fuel trucks transporting fuel to on-site equipment are to travel only on approved access roads.
- Concrete coating activities shall not occur within 100 feet of a wetland or waterbody boundary, unless the location is a pre-approved site for such use (i.e., an existing industrial site).
- Bulk quantities of both diesel fuel and gasoline may be stored at the work area in aboveground tanks, which will be diked or be of double-wall secondary containment design, or smaller containers. No underground tanks will be used. A Material Safety Data Sheet for each hazardous material will be maintained on-site.
- Fuel will be stored at the Contractor Storage yard within secondary containment and, as much as practical, all equipment will be refueled there. Any equipment that must be refueled in the field will be fueled from tanks carried to the work area and returned to secondary containment when refueling is complete.
- Lesser quantities of fuel, solvents, and lubricants (i.e., motor oils, hydraulic fluid) may be stored at the work area as necessary to service equipment provided that this storage does not conflict with other parts of this SPCC Plan. Secondary containment will be provided for these storage areas.
- All fuel storage areas will be located at least 200 feet from active private water wells and at least 400 feet from community and municipal water wells. Equipment servicing, lubricating, and refueling will also be in accordance with these requirements whenever possible.



- Use of hazardous materials for vehicle maintenance will follow the same requirements mentioned above for equipment refueling. Impervious or sorbent materials will be placed under the work area before the work begins. Additional sorbent materials will also be readily available. Waste materials created during maintenance (i.e., used oil) will be collected for proper disposal. The work site and the vehicle will be inspected after the maintenance work is complete to ensure that all hazardous materials are properly contained. All waste material, including partially used or empty containers, discarded parts, dirty rags, and used sorbent material, as well as discarded hazardous materials containers (i.e., oil cans, grease tubes) will be collected and placed in open-top drums for proper disposal.
- All motor fuel, lube oil, chemicals, and other polluting substances will be tightly sealed and clearly labeled during transportation and storage.
- Fuel trucks, pumps, mechanics' vehicles, and contractor personnel vehicles will be equipped with spill kits containing absorbent materials approved for petroleum products.
- Runoff resulting from construction equipment washing operations will not be permitted to directly enter any waterbody or wetland area.
- Construction equipment, vehicles, materials, hazardous materials, chemicals, fuels, lubricating oils, and petroleum products will be parked, stored, or serviced 100 feet from all waterbodies and wetlands when not in use and when possible.

1.1 Spill Response

In the event of a spill, the following will occur:

- the source will be immediately stopped;
- the spill will be contained by placing sorbent booms or constructing dikes;
- the spill will be collected with sorbent materials, skimmed off water surfaces with booms, and/or contaminated soil will be excavated;
- the waste materials will be properly disposed at agency-approved facilities, as required, selected by the Contractor; and
- after completing the cleanup, as coordinated with the necessary contacts, the affected areas will be restored as close as possible to their previous conditions.



1.2 Responsibilities

All spills, regardless of size, must be reported immediately to Spire’s Lead Environmental Inspector and the Contractor’s Spill Coordinator:

Name	Office	Evenings and Weekends
TBD, Lead Environmental Inspector	TBD	TBD
TBD, Contractor Spill Coordinator	TBD	TBD
TBD, Field Construction Manager (contacted by Spill Coordinator)	TBD	TBD
TBD, Environmental Manager (contacted by Lead Environmental Inspector)	TBD	TBD

A Spire representative will report the spill to the federal, state, and local agencies (if applicable). The agencies’ contact information is provided in Section 1.3.

The following roles and responsibilities have been established in regards to spill reporting and cleanup.

1.2.1 Environmental Manager

Spire will designate an Environmental Manager to serve as the liaison who promptly reports spills to appropriate federal, state, and local agencies as required; directs cleanup and waste disposal; and facilitates agencies requests and reporting procedures. The Environmental Manager will be in daily communication with the Lead Environmental Inspector who is at construction sites.

1.2.2 Lead Environmental Inspector

Spire will designate a Lead Environmental Inspector with responsibilities set forth by the Environmental Manager. The Lead Environmental Inspector monitors the Contractor’s compliance with the SPCC Plan, immediately notifies to the Spill Coordinator of a spill, and works directly with the Spill Coordinator and Field Construction Manager to accurately record specifics of any spill (according to Section 1.3.1). The Lead Environmental Inspector also conducts follow up inspections until the spill is properly cleaned up.

1.2.3 Field Construction Manager

Spire will designate a Field Construction Manager to manage construction activities, work with the Spill Coordinator and Lead Environmental Inspector in the event of a spill, determine proper containment measures, and ensure cleanup is completed in accordance with the SPCC Plan. The Field Construction Manager should also document the following types of information in the event of a spill: work stoppages, injuries, fires, and/or extent of exposure to workers at the site.



1.2.4 Contractor Spill Coordinator

Designated and employed by the Contractor, the Spill Coordinator documents every spill using a spill report form regardless of the size/volume of the spill and immediately notifies the Field Construction Manager and Lead Environmental Inspector. The Spill Coordinator coordinates personnel, equipment, and materials needed for containment appropriate for the size of the spill. The Spill Coordinator will immediately communicate to the Environmental Manager and/or Lead Environmental Inspector if reportable quantities are released during the spill, in which the Environmental Manager notifies appropriate agencies. Other duties of the Spill Coordinator include: ensure proper transport and disposal of contaminated materials at an agency-approved disposal facility and monitor containment structures for compliance with the SPCC Plan.

1.2.5 All Personnel

Spire and Contractor personnel are responsible for dialing 911 during an emergency, life-threatening event. In the event of a spill, regardless of size, any Spire or Contractor personnel to witness the event should immediately contact the Spill Coordinator and Lead Environmental Inspector.

Only Contractor's Authorized Personnel trained to handle fuel, lubricants, or other hazardous substances and trained on this SPCC Plan, notification procedures, and non-compliance consequences should be handling such materials.

1.3 Federal and State Agency Contacts

1.3.1 Federal

The National Response Center and state and local authorities must be notified by phone for any spill of hazardous material meeting or exceeding reportable quantities. Reportable quantities of hazardous substances, established by the Comprehensive Environmental Response, Compensation, and Liability Act ("CERCLA") Section 102(a), are provided in Attachment A. The United States Environmental Protection Agency ("USEPA") (2016) handles spills/releases to inland lands and inland waters while the United States Coast Guard handles those at the Mississippi River, coastal waters, the Great Lakes, and ports and harbors. Contact the National Response Center at 800-424-8802.

The following information should be obtained when a release or spill occurs (USEPA, 2015):

- your name, location, organization, and telephone number;
- name and address of the party responsible for the incident; or name of the carrier or vessel, the railcar/truck number, or other identifying information;
- date and time of the incident;
- location of the incident;
- source and cause of the release or spill;



- types of material(s) released or spilled;
- quantity of materials released or spilled;
- medium (e.g., land, water) affected by release or spill;
- danger or threat posed by the release or spill;
- number and types of injuries or fatalities (if any);
- weather conditions at the incident location;
- whether an evacuation has occurred;
- other agencies notified or about to be notified; and
- any other information that may help emergency personnel respond to the incident.

1.3.2 Illinois

According to the Illinois Emergency Management Agency’s (“IEMA”) (2016a) Emergency Release Notification Factsheet (Attachment B), releases of extremely hazardous substances equal to or exceeding reportable quantities require immediate notification to the following Illinois agencies:

- IEMA at 217-782-7860 or 800-782-7860
- Illinois Environmental Management Protection Agency at 217-782-3637

At the county level, the following contacts are listed as the IEMA (2016b) Local Emergency Planning Committees’ (“LEPC”) release reporting contacts.

1.3.2.1 Scott County

- Scott County Emergency Services Disaster Agency, Ms. Lorrie Koch: 217-742-5751

1.3.2.2 Greene County

- Sheriff’s Office, Mr. Cale Hoesman: 217-942-6901

1.3.2.3 Jersey County

- Jersey County Emergency Management Agency, Mr. Larry Mead: 618-498-6881

1.3.3 Missouri

According to the Missouri Department of Natural Resources (“MDNR”) (2016), the Environmental Emergency Response Section should be notified of a release of hazardous substance equal to or exceeding reportable quantities. Missouri’s emergency notification procedures are provided in Attachment C.

- MDNR, Environmental Emergency Response: 573-634-2436

The following county level LEPC contacts are also to be contacted.



1.3.3.1 St. Charles County

- Office of Emergency Management/LEPC, Ms. Kelly Bobeen or Mr. Justin Hendee: 636-9494-3023

1.3.3.2 St. Louis County

- Office of Emergency Management/LEPC, Mr. Mark Diedrich: 314-615-9500

1.4 References

Illinois Emergency Management Agency. 2016a. *Emergency Release Notification Factsheet*. Accessed September 2016 from <https://www.illinois.gov/iema/Preparedness/SERC/Documents/EmerNotFactsheet2-04.pdf>.

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United States Environmental Protection Agency. 2015. *What Information is Needed When Reporting an Oil Spill or Hazardous Substance Release?* Accessed September 2016 from <https://www.epa.gov/emergency-response/what-information-needed-when-reporting-oil-spill-or-hazardous-substance-release>.

United States Government Publishing Office. *Reportable Quantities (RQs) for CERCLA Section 102(a) Hazardous Substances*. Accessed September 2016 from <https://www.gpo.gov/fdsys/pkg/CFR-2011-title40-vol28/pdf/CFR-2011-title40-vol28-sec302-4.pdf>.



ATTACHMENT A
Environmental Protection Agency - List of
Hazardous Substances and Reportable Quantities

§ 302.4

40 CFR Ch. I (7–1–11 Edition)

the United States and is located in, on, or under any other waters, other than a vessel or a public vessel;

Onshore facility means any facility (including, but not limited to, motor vehicles and rolling stock) of any kind located in, on, or under, any land or non-navigable waters within the United States;

Person means an individual, firm, corporation, association, partnership, consortium, joint venture, commercial entity, United States Government, State, municipality, commission, political subdivision of a State, or any interstate body;

Release means any spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping, or disposing into the environment (including the abandonment or discarding of barrels, containers, and other closed receptacles containing any hazardous substance or pollutant or contaminant), but excludes:

(1) Any release which results in exposure to persons solely within a workplace, with respect to a claim which such persons may assert against the employer of such persons;

(2) Emissions from the engine exhaust of a motor vehicle, rolling stock, aircraft, vessel, or pipeline pumping station engine;

(3) Release of source, byproduct, or special nuclear material from a nuclear incident, as those terms are defined in the Atomic Energy Act of 1954, if such release is subject to requirements with respect to financial protection established by the Nuclear Regulatory Commission under section 170 of such Act, or for the purposes of section 104 of the Comprehensive Environmental Response, Compensation, and Liability Act or any other response action, any release of source, byproduct, or special nuclear material from any processing site designated under section 102(a)(1) or 302(a) of the Uranium Mill Tailings Radiation Control Act of 1978; and

(4) The normal application of fertilizer;

Reportable quantity (“RQ”) means that quantity, as set forth in this part, the release of which requires notification pursuant to this part;

United States include the several States of the United States, the Dis-

trict of Columbia, the Commonwealth of Puerto Rico, Guam, American Samoa, the United States Virgin Islands, the Commonwealth of the Northern Marianas, and any other territory or possession over which the United States has jurisdiction; and

Vessel means every description of watercraft or other artificial contrivance used, or capable of being used, as a means of transportation on water.

[50 FR 13474, Apr. 4, 1985, as amended at 67 FR 45321, July 9, 2002; 73 FR 76959, Dec. 18, 2008]

§ 302.4 Designation of hazardous substances.

(a) *Listed hazardous substances.* The elements and compounds and hazardous wastes appearing in table 302.4 are designated as hazardous substances under section 102(a) of the Act.

(b) *Unlisted hazardous substances.* A solid waste, as defined in 40 CFR 261.2, which is not excluded from regulation as a hazardous waste under 40 CFR 261.4(b), is a hazardous substance under section 101(14) of the Act if it exhibits any of the characteristics identified in 40 CFR 261.20 through 261.24.

NOTE: The numbers under the column headed “CASRN” are the Chemical Abstracts Service Registry Numbers for each hazardous substance. The “Statutory Code” column indicates the statutory source for designating each substance as a CERCLA hazardous substance: “1” indicates that the statutory source is section 311(b)(2) of the Clean Water Act, “2” indicates that the source is section 307(a) of the Clean Water Act, “3” indicates that the source is section 112 of the Clean Air Act, and “4” indicates that the source is section 3001 of the Resource Conservation and Recovery Act (RCRA). The “RCRA Waste Number” column provides the waste identification numbers assigned to various substances by RCRA regulations. The “Pounds (kg)” column provides the reportable quantity adjustment for each hazardous substance in pounds and kilograms. Appendix A to § 302.4, which lists CERCLA hazardous substances in sequential order by CASRN, provides a per-substance grouping of regulatory synonyms (*i.e.*, names by which each hazardous substance is identified in other statutes and their implementing regulations).

Environmental Protection Agency

§ 302.4

TABLE 302.4—LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES

[Note: All Comments/Notes Are Located at the End of This Table]

Hazardous substance	CASRN	Statutory code†	RCRA waste No.	Final RQ pounds (Kg)
A2213	30558431	4	U394	5000 (2270)
Acenaphthene	83-32-9	2		100 (45.4)
Acenaphthylene	208-96-8	2		5000 (2270)
Acetaldehyde	75-07-0	1,3,4	U001	1000 (454)
Acetaldehyde, chloro-	107-20-0	4	P023	1000 (454)
Acetaldehyde, trichloro-	75-87-6	4	U034	5000 (2270)
Acetamide	60-35-5	3		100 (45.4)
Acetamide, N-(aminothioxomethyl)-	591-08-2	4	P002	1000 (454)
Acetamide, N-(4-ethoxyphenyl)-	62-44-2	4	U187	100 (45.4)
Acetamide, N-9H-fluorene-2-yl-	53-96-3	3,4	U005	1 (0.454)
Acetamide, 2-fluoro-	640-19-7	4	P057	100 (45.4)
Acetic acid	64-19-7	1		5000 (2270)
Acetic acid, (2,4-dichlorophenoxy)-, salts & esters	94-75-7	1,3,4	U240	100 (45.4)
Acetic acid, ethyl ester	141-78-6	4	U112	5000 (2270)
Acetic acid, fluoro-, sodium salt	62-74-8	4	P058	10 (4.54)
Acetic acid, lead(2+) salt	301-04-2	1,4	U144	10 (4.54)
Acetic acid, thallium(1+) salt	563-68-8	4	U214	100 (45.4)
Acetic acid, (2,4,5-trichlorophenoxy)-	93-76-5	1,4	See F027	1000 (454)
Acetic anhydride	108-24-7	1		5000 (2270)
Acetone	67-64-1	4	U002	5000 (2270)
Acetone cyanohydrin	75-86-5	1,4	P069	10 (4.54)
Acetonitrile	75-05-8	3,4	U003	5000 (2270)
Acetophenone	98-86-2	3,4	U004	5000 (2270)
2-Acetylaminofluorene	53-96-3	3,4	U005	1 (0.454)
Acetyl bromide	506-96-7	1		5000 (2270)
Acetyl chloride	75-36-5	1,4	U006	5000 (2270)
1-Acetyl-2-thiourea	591-08-2	4	P002	1000 (454)
Acrolein	107-02-8	1,2,3,4	P003	1 (0.454)
Acrylamide	79-06-1	3,4	U007	5000 (2270)
Acrylic acid	79-10-7	3,4	U008	5000 (2270)
Acrylonitrile	107-13-1	1,2,3,4	U009	100 (45.4)
Adipic acid	124-04-9	1		5000 (2270)
Aldicarb	116-06-3	4	P070	1 (0.454)
Aldicarb sulfone	1646884	4	P203	100 (45.4)
Aldrin	309-00-2	1,2,4	P004	1 (0.454)
Allyl alcohol	107-18-6	1,4	P005	100 (45.4)
Allyl chloride	107-05-1	1,3		1000 (454)
Aluminum phosphide	20859-73-8	4	P006	100 (45.4)
Aluminum sulfate	10043-01-3	1		5000 (2270)
4-Aminobiphenyl	92-67-1	3		1 (0.454)
5-(Aminomethyl)-3-isoxazolol	2763-96-4	4	P007	1000 (454)
4-Aminopyridine	504-24-5	4	P008	1000 (454)
Amitrole	61-82-5	4	U011	10 (4.54)
Ammonia	7664-41-7	1		100 (45.4)
Ammonium acetate	631-61-8	1		5000 (2270)
Ammonium benzoate	1863-63-4	1		5000 (2270)
Ammonium bicarbonate	1066-33-7	1		5000 (2270)
Ammonium bichromate	7789-09-5	1		10 (4.54)
Ammonium bifluoride	1341-49-7	1		100 (45.4)
Ammonium bisulfite	10192-30-0	1		5000 (2270)
Ammonium carbamate	1111-78-0	1		5000 (2270)
Ammonium carbonate	506-87-6	1		5000 (2270)
Ammonium chloride	12125-02-9	1		5000 (2270)
Ammonium chromate	7788-98-9	1		10 (4.54)
Ammonium citrate, dibasic	3012-65-5	1		5000 (2270)
Ammonium fluoborate	13826-83-0	1		5000 (2270)
Ammonium fluoride	12125-01-8	1		100 (45.4)
Ammonium hydroxide	1336-21-6	1		1000 (454)
Ammonium oxalate	6009-70-7	1		5000 (2270)
	5972-73-6			
	14258-49-2			
Ammonium picrate	131-74-8	4	P009	10 (4.54)
Ammonium silicofluoride	16919-19-0	1		1000 (454)
Ammonium sulfamate	7773-06-0	1		5000 (2270)
Ammonium sulfide	12135-76-1	1		100 (45.4)
Ammonium sulfite	10196-04-0	1		5000 (2270)
Ammonium tartrate	14307-43-8	1		5000 (2270)
	3164-29-2			
Ammonium thiocyanate	1762-95-4	1		5000 (2270)

§ 302.4

40 CFR Ch. I (7-1-11 Edition)

TABLE 302.4—LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES—Continued

[Note: All Comments/Notes Are Located at the End of This Table]

Hazardous substance	CASRN	Statutory code†	RCRA waste No.	Final RQ pounds (Kg)
Ammonium vanadate	7803-55-6	4	P119	1000 (454)
Amyl acetate	628-63-7	1		5000 (2270)
iso-Amyl acetate	123-92-2			
sec-Amyl acetate	626-38-0			
tert-Amyl acetate	625-16-1			
Aniline	62-53-3	1,3,4	U012	5000 (2270)
o-Anisidine	90-04-0	3		100 (45.4)
Anthracene	120-12-7	2		5000 (2270)
Antimony††	7440-36-0	2		5000 (2270)
ANTIMONY AND COMPOUNDS	N.A.	2,3		**
Antimony Compounds	N.A.	2,3		**
Antimony pentachloride	7647-18-9	1		1000 (454)
Antimony potassium tartrate	28300-74-5	1		100 (45.4)
Antimony tribromide	7789-61-9	1		1000 (454)
Antimony trichloride	10025-91-9	1		1000 (454)
Antimony trifluoride	7783-56-4	1		1000 (454)
Antimony trioxide	1309-64-4	1		1000 (454)
Argentate(1-), bis(cyano-C)-, potassium	506-61-6	4	P099	1 (0.454)
Aroclor 1016	12674-11-2	1,2,3		1 (0.454)
Aroclor 1221	11104-28-2	1,2,3		1 (0.454)
Aroclor 1232	11141-16-5	1,2,3		1 (0.454)
Aroclor 1242	53469-21-9	1,2,3		1 (0.454)
Aroclor 1248	12672-29-6	1,2,3		1 (0.454)
Aroclor 1254	11097-69-1	1,2,3		1 (0.454)
Aroclor 1260	11096-82-5	1,2,3		1 (0.454)
Aroclors	1336-36-3	1,2,3		1 (0.454)
Arsenic††	7440-38-2	2,3		1 (0.454)
Arsenic acid H3AsO4	7778-39-4	4	P010	1 (0.454)
ARSENIC AND COMPOUNDS	N.A.	2,3		**
Arsenic Compounds (inorganic including arsine)	N.A.	2,3		**
Arsenic disulfide	1303-32-8	1		1 (0.454)
Arsenic oxide As2O3	1327-53-3	1,4	P012	1 (0.454)
Arsenic oxide As2O5	1303-28-2	1,4	P011	1 (0.454)
Arsenic pentoxide	1303-28-2	1,4	P011	1 (0.454)
Arsenic trichloride	7784-34-1	1		1 (0.454)
Arsenic trioxide	1327-53-3	1,4	P012	1 (0.454)
Arsenic trisulfide	1303-33-9	1		1 (0.454)
Arsine, diethyl-	692-42-2	4	P038	1 (0.454)
Arsinic acid, dimethyl-	75-60-5	4	U136	1 (0.454)
Arsonous dichloride, phenyl-	696-28-6	4	P036	1 (0.454)
Asbestos†††	1332-21-4	2,3		1 (0.454)
Auramine	492-80-8	4	U014	100 (45.4)
Azaserine	115-02-6	4	U015	1 (0.454)
Aziridine	151-56-4	3,4	P054	1 (0.454)
Aziridine, 2-methyl-	75-55-8	3,4	P067	1 (0.454)
Azirino[2',3':3,4]pyrrolo[1,2-a]indole-4,7-dione, 6-amino-8- [[[aminocarbonyl]oxy]methyl]-1,1a,2,8,8a,8b- hexahydro-8a-methoxy-5- (1alpha,8beta,8aalpha, 8balpha)]-	50-07-7	4	U010	10 (4.54)
Barban	101279	4	U280	10 (4.54)
Barium cyanide	542-62-1	1,4	P013	10 (4.54)
Bendiocarb	22781233	4	U278	100 (45.4)
Bendiocarb phenol	22961826	4	U364	1000 (454)
Benomyl	17804352	4	U271	10 (4.54)
Benz[j]aceanthrylene, 1,2-dihydro-3-methyl-	56-49-5	4	U157	10 (4.54)
Benz[c]acridine	225-51-4	4	U016	100 (45.4)
Benzal chloride	98-87-3	4	U017	5000 (2270)
Benzamide, 3,5-dichloro-N-(1,1-dimethyl-2-propynyl)-	23950-58-5	4	U192	5000 (2270)
Benz[a]anthracene	56-55-3	2,4	U018	10 (4.54)
1,2-Benzanthracene	56-55-3	2,4	U018	10 (4.54)
Benz[a]anthracene, 7,12-dimethyl-	57-97-6	4	U094	1 (0.454)
Benzenamine	62-53-3	1,3,4	U012	5000 (2270)
Benzenamine, 4,4'-carbonimidoylbis (N,N dimethyl)-	492-80-8	4	U014	100 (45.4)
Benzenamine, 4-chloro-	106-47-8	4	P024	1000 (454)
Benzenamine, 4-chloro-2-methyl-, hydrochloride	3165-93-3	4	U049	100 (45.4)
Benzenamine, N,N-dimethyl-4-(phenylazo)-	60-11-7	3,4	U093	10 (4.54)
Benzenamine, 2-methyl-	95-53-4	3,4	U328	100 (45.4)
Benzenamine, 4-methyl-	106-49-0	4	U353	100 (45.4)
Benzenamine, 4,4'-methylenebis [2-chloro-	101-14-4	3,4	U158	10 (4.54)

Environmental Protection Agency

§ 302.4

TABLE 302.4—LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES—Continued

[Note: All Comments/Notes Are Located at the End of This Table]

Hazardous substance	CASRN	Statutory code†	RCRA waste No.	Final RQ pounds (Kg)
Benzenamine, 2-methyl-,hydrochloride	636-21-5	4	U222	100 (45.4)
Benzenamine, 2-methyl-5-nitro-	99-55-8	4	U181	100 (45.4)
Benzenamine, 4-nitro-	100-01-6	4	P077	5000 (2270)
Benzene ^a	71-43-2	1,2,3,4	U019	10 (4.54)
Benzeneacetic acid, 4-chloro- α -(4-chlorophenyl)- α -hydroxy-, ethyl ester.	510-15-6	3,4	U038	10 (4.54)
Benzene, 1-bromo-4-phenoxy-	101-55-3	2,4	U030	100 (45.4)
Benzenebutanoic acid, 4-[bis(2-chloroethyl)amino]-	305-03-3	4	U035	10 (4.54)
Benzene, chloro-	108-90-7	1,2,3,4	U037	100 (45.4)
Benzene, (chloromethyl)-	100-44-7	1,3,4	P028	100 (45.4)
Benzenediamine, ar-methyl-	95-80-7	3,4	U221	10 (4.54)
	496-72-0			
	823-40-5			
	25376-45-8			
1,2-Benzenedicarboxylic acid, bis(2-ethylhexyl) ester	117-81-7	2,3,4	U028	100 (45.4)
1,2-Benzenedicarboxylic acid, dibutyl ester	84-74-2	1,2,3,4	U069	10 (4.54)
1,2-Benzenedicarboxylic acid, diethyl ester	84-66-2	2,4	U088	1000 (454)
1,2-Benzenedicarboxylic acid, dimethyl ester	131-11-3	2,3,4	U102	5000 (2270)
1,2-Benzenedicarboxylic acid, dioctyl ester	117-84-0	2,4	U107	5000 (2270)
Benzene, 1,2-dichloro-	95-50-1	1,2,4	U070	100 (45.4)
Benzene, 1,3-dichloro-	541-73-1	2,4	U071	100 (45.4)
Benzene, 1,4-dichloro-	106-46-7	1,2,3,4	U072	100 (45.4)
Benzene, 1,1'-(2,2-dichloroethylidene) bis[4-chloro-	72-54-8	1,2,4	U060	1 (0.454)
Benzene, (dichloromethyl)-	98-87-3	4	U017	5000 (2270)
Benzene, 1,3-diisocyanatomethyl-	91-08-7	3,4	U223	100 (45.4)
	584-84-9			
	26471-62-5			
Benzene, dimethyl-	1330-20-7	1,3,4	U239	100 (45.4)
1,3-Benzenediol	108-46-3	1,4	U201	5000 (2270)
1,2-Benzenediol,4-[1-hydroxy-2-(methyl amino)ethyl]-	51-43-4	4	P042	1000 (454)
Benzeneethanamine, alpha,alpha-dimethyl-	122-09-8	4	P046	5000 (2270)
Benzene, hexachloro-	118-74-1	2,3,4	U127	10 (4.54)
Benzene, hexahydro-	110-82-7	1,4	U056	1000 (454)
Benzene, methyl-	108-88-3	1,2,3,4	U220	1000 (454)
Benzene, 1-methyl-2,4-dinitro-	121-14-2	1,2,3,4	U105	10 (4.54)
Benzene, 2-methyl-1,3-dinitro-	606-20-2	1,2,4	U106	100 (45.4)
Benzene, (1-methylethyl)-	98-82-8	3,4	U055	5000 (2270)
Benzene, nitro-	98-95-3	1,2,3,4	U169	1000 (454)
Benzene, pentachloro-	608-93-5	4	U183	10 (4.54)
Benzene, pentachloronitro-	82-68-8	3,4	U185	100 (45.4)
Benzenesulfonic acid chloride	98-09-9	4	U020	100 (45.4)
Benzenesulfonyl chloride	98-09-9	4	U020	100 (45.4)
Benzene,1,2,4,5-tetrachloro-	95-94-3	4	U207	5000 (2270)
Benzenethiol	108-98-5	4	P014	100 (45.4)
Benzene,1,1'-(2,2,2-trichloroethylidene) bis[4-chloro-	50-29-3	1,2,4	U061	1 (0.454)
Benzene,1,1'-(2,2,2-trichloroethylidene) bis[4-methoxy-	72-43-5	1,3,4	U247	1 (0.454)
Benzene, (trichloromethyl)-	98-07-7	3,4	U023	10 (4.54)
Benzene, 1,3,5-trinitro-	99-35-4	4	U234	10 (4.54)
Benzidine	92-87-5	2,3,4	U021	1 (0.454)
Benzo[a]anthracene	56-55-3	2,4	U018	10 (4.54)
1,3-Benzodioxole, 5-(1-propenyl)-1	120-58-1	4	U141	100 (45.4)
1,3-Benzodioxole, 5-(2-propenyl)-	94-59-7	4	U203	100 (45.4)
1,3-Benzodioxole, 5-propyl-	94-58-6	4	U090	10 (4.54)
1,3-Benzodioxol-4-ol, 2,2-dimethyl-	22961826	4	U364	1000 (454)
1,3-Benzodioxol-4-ol, 2,2-dimethyl-, methyl carbamate	22781233	4	U278	100 (45.4)
Benzo[b]fluoranthene	205-99-2	2		1 (0.454)
Benzo[k]fluoranthene	207-08-9	2		5000 (2270)
7-Benzofuranol, 2,3-dihydro-2,2-dimethyl-	1563388	4	U367	10 (4.54)
7-Benzofuranol, 2,3-dihydro-2,2-dimethyl-, methylcarbamate.	1563-66-2	1,4	P127	10 (4.54)
Benzoic acid	65-85-0	1		5000 (2270)
Benzoic acid, 2-hydroxy-, compd. with (3aS-cis)-1,2,3,3a,8,8a-hexahydro-1,3a,8-trimethylpyrrolo[2,3-b]indol-5-yl methylcarbamate ester (1:1).	57647	4	P188	100 (45.4)
Benzonitrile	100-47-0	1		5000 (2270)
Benzo[st]pentaphene	189-55-9	4	U064	10 (4.54)
Benzo[ghi]perylene	191-24-2	2		5000 (2270)
2H-1-Benzopyran-2-one, 4-hydroxy-3-(3-oxo-1-phenylbutyl)-, & salts.	81-81-2	4	P001 U248	100 (45.4)

§ 302.4

40 CFR Ch. I (7-1-11 Edition)

TABLE 302.4—LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES—Continued

[Note: All Comments/Notes Are Located at the End of This Table]

Hazardous substance	CASRN	Statutory code†	RCRA waste No.	Final RQ pounds (Kg)
Benzo[a]pyrene	50-32-8	2,4	U022	1 (0.454)
3,4-Benzopyrene	50-32-8	2,4	U022	1 (0.454)
p-Benzoquinone	106-51-4	3,4	U197	10 (4.54)
Benzotrichloride	98-07-7	3,4	U023	10 (4.54)
Benzoyl chloride	98-88-4	1		1000 (454)
Benzyl chloride	100-44-7	1,3,4	P028	100 (45.4)
Beryllium ††	7440-41-7	2,3,4	P015	10 (4.54)
BERYLLIUM AND COMPOUNDS	N.A.	2,3		**
Beryllium chloride	7787-47-5	1		1 (0.454)
Beryllium compounds	N.A.	2,3		**
Beryllium fluoride	7787-49-7	1		1 (0.454)
Beryllium nitrate	13597-99-4	1		1 (0.454)
	7787-55-5			
Beryllium powder ††	7440-41-7	2,3,4	P015	10 (4.54)
alpha-BHC	319-84-6	2		10 (4.54)
beta-BHC	319-85-7	2		1 (0.454)
delta-BHC	319-86-8	2		1 (0.454)
gamma-BHC	58-89-9	1,2,3,4	U129	1 (0.454)
2,2'-Bioxirane	1464-53-5	4	U085	10 (4.54)
Biphenyl	92-52-4	3		100 (45.4)
[1,1'-Biphenyl]-4,4'-diamine	92-87-5	2,3,4	U021	1 (0.454)
[1,1'-Biphenyl]-4,4'-diamine,3,3'-dichloro-	91-94-1	2,3,4	U073	1 (0.454)
[1,1'-Biphenyl]-4,4'-diamine,3,3'-dimethoxy-	119-90-4	3,4	U091	100 (45.4)
[1,1'-Biphenyl]-4,4'-diamine,3,3'-dimethyl-	119-93-7	3,4	U095	10 (4.54)
Bis(2-chloroethoxy) methane	111-91-1	2,4	U024	1000 (454)
Bis(2-chloroethyl) ether	111-44-4	2,3,4	U025	10 (4.54)
Bis(chloromethyl) ether	542-88-1	2,3,4	P016	10 (4.54)
Bis(2-ethylhexyl) phthalate	117-81-7	3,4	U028	100 (45.4)
Bromoacetone	598-31-2	4	P017	1000 (454)
Bromoform	75-25-2	2,3,4	U225	100 (45.4)
Bromomethane	74-83-9	2,3,4	U029	1000 (454)
4-Bromophenyl phenyl ether	101-55-3	2,4	U030	100 (45.4)
Brucine	357-57-3	4	P018	100 (45.4)
1,3-Butadiene	106-99-0	3		10 (4.54)
1,3-Butadiene, 1,1,2,3,4,4-hexachloro-	87-68-3	2,3,4	U128	1 (0.454)
1-Butanamine, N-butyl-N-nitroso-	924-16-3	4	U172	10 (4.54)
1-Butanol	71-36-3	4	U031	5000 (2270)
2-Butanone	78-93-3	3,4	U159	5000 (2270)
2-Butanone, 3,3-dimethyl-1(methylthio)-, O-[(methylamino)carbonyl] oxime.	39196-18-4	4	P045	100 (45.4)
2-Butanone peroxide	1338-23-4	4	U160	10 (4.54)
2-Butenal	123-73-9	1,4	U053	100 (45.4)
	4170-30-3			
2-Butene, 1,4-dichloro-	764-41-0	4	U074	1 (0.454)
2-Butenoic acid, 2-methyl-, 7-[2,3-dihydroxy-2-(1-methoxyethyl)-3-methyl-1-oxobutoxy] methyl]-2,3, 5,7-tetrahydro-1H-pyrrolizin-1-yl ester, [1S-[1alpha(Z), 7(2S*,3R*),7aalpha]]-.	303-34-4	4	U143	10 (4.54)
Butyl acetate	123-86-4	1		5000 (2270)
iso-Butyl acetate	110-19-0			
sec-Butyl acetate	105-46-4			
tert-Butyl acetate	540-88-5			
n-Butyl alcohol	71-36-3	4	U031	5000 (2270)
Butylamine	109-73-9	1		1000 (454)
iso-Butylamine	78-81-9			
sec-Butylamine	513-49-5			
tert-Butylamine	13952-84-6			
	75-64-9			
Butyl benzyl phthalate	85-68-7	2		100 (45.4)
n-Butyl phthalate	84-74-2	1,2,3,4	U069	10 (4.54)
Butyric acid	107-92-6	1		5000 (2270)
iso-Butyric acid	79-31-2			
Cacodylic acid	75-60-5	4	U136	1 (0.454)
Cadmium ††	7440-43-9	2		10 (4.54)
Cadmium acetate	543-90-8	1		10 (4.54)
CADMIUM AND COMPOUNDS	N.A.	2,3		**
Cadmium bromide	7789-42-6	1		10 (4.54)
Cadmium chloride	10108-64-2	1		10 (4.54)
Cadmium compounds	N.A.	2,3		**

Environmental Protection Agency

§ 302.4

TABLE 302.4—LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES—Continued

[Note: All Comments/Notes Are Located at the End of This Table]

Hazardous substance	CASRN	Statutory code†	RCRA waste No.	Final RQ pounds (Kg)
Calcium arsenate	7778-44-1	1		1 (0.454)
Calcium arsenite	52740-16-6	1		1 (0.454)
Calcium carbide	75-20-7	1		10 (4.54)
Calcium chromate	13765-19-0	1,4	U032	10 (4.54)
Calcium cyanamide	156-62-7	3		1000 (454)
Calcium cyanide Ca(CN)2	592-01-8	1,4	P021	10 (4.54)
Calcium dodecylbenzenesulfonate	26264-06-2	1		1000 (454)
Calcium hypochlorite	7778-54-3	1		10 (4.54)
Captan	133-06-2	1,3		10 (4.54)
Carbamic acid, 1H-benzimidazol-2-yl, methyl ester	10605217	4	U372	10 (4.54)
Carbamic acid, [1-((butylamino)carbonyl)-1H-benzimidazol-2-yl]-,methyl ester.	17804352	4	U271	10 (4.54)
Carbamic acid, (3-chlorophenyl)-, 4-chloro-2-butynyl ester	101279	4	U280	10 (4.54)
Carbamic acid, [(dibutylamino-thio)methyl-, 2,3-dihydro-2,2-dimethyl-7-benzofuranyl ester.	55285148	4	P189	1000 (454)
Carbamic acid, dimethyl-,1-[(dimethyl-amino)carbonyl]-5-methyl-1H-pyrazol-3-yl ester.	644644	4	P191	1 (0.454)
Carbamic acid, dimethyl-, 3-methyl-1-(1-methylethyl)-1H-pyrazol-5-yl ester.	119380	4	P192	100 (45.4)
Carbamic acid, ethyl ester	51-79-6	3,4	U238	100 (45.4)
Carbamic acid, methyl-, 3-methylphenyl ester	1129415	4	P190	1000 (454)
Carbamic acid, methylnitroso-, ethyl ester	615-53-2	4	U178	1 (0.454)
Carbamic acid, [1,2-phenylenebis(iminocarbonothioyl)]bis-, dimethyl ester.	23564058	4	U409	10 (4.54)
Carbamic acid, phenyl-, 1-methylethyl ester	122429	4	U373	1000 (454)
Carbamic chloride, dimethyl-	79-44-7	3,4	U097	1 (0.454)
Carbamodithioic acid, 1,2-ethanediylbis-, salts & esters	111-54-6	4	U114	5000 (2270)
Carbamothioic acid, bis(1-methylethyl)-, S-(2,3-dichloro-2-propenyl) ester.	2303-16-4	4	U062	100 (45.4)
Carbamothioic acid, bis(1-methylethyl)-, S-(2,3,3-trichloro-2-propenyl) ester.	2303175	4	U389	100 (45.4)
Carbamothioic acid, dipropyl-, S-(phenylmethyl) ester	52888809	4	U387	5000 (2270)
Carbaryl	63-25-2	1,3,4	U279	100 (45.4)
Carbendazim	10605217	4	U372	10 (4.54)
Carbofuran	1563-66-2	1,4	P127	10 (4.54)
Carbofuran phenol	1563388	4	U367	10 (4.54)
Carbon disulfide	75-15-0	1,3,4	P022	100 (45.4)
Carbonic acid, dithallium(1+) salt	6533-73-9	4	U215	100 (45.4)
Carbonic dichloride	75-44-5	1,3,4	P095	10 (4.54)
Carbonic difluoride	353-50-4	4	U033	1000 (454)
Carbonochloridic acid, methyl ester	79-22-1	4	U156	1000 (454)
Carbon oxyfluoride	353-50-4	4	U033	1000 (454)
Carbon tetrachloride	56-23-5	1,2,3,4	U211	10 (4.54)
Carbonyl sulfide	463-58-1	3		100 (45.4)
Carbosulfan	55285148	4	P189	1000 (454)
Catechol	120-80-9	3		100 (45.4)
Chloral	75-87-6	4	U034	5000 (2270)
Chloramben	133-90-4	3		100 (45.4)
Chlorambucil	305-03-3	4	U035	10 (4.54)
Chlordane	57-74-9	1,2,3,4	U036	1 (0.454)
Chlordane, alpha & gamma isomers	57-74-9	1,2,3,4	U036	1 (0.454)
CHLORDANE (TECHNICAL MIXTURE AND METABOLITES).	57-74-9	1,2,3,4	U036	1 (0.454)
CHLORINATED BENZENES	N.A.	2		**
Chlorinated camphene	8001-35-2	1,2,3,4	P123	1 (0.454)
CHLORINATED ETHANES	N.A.	2		**
CHLORINATED NAPHTHALENE	N.A.	2		**
CHLORINATED PHENOLS	N.A.	2		**
Chlorine	7782-50-5	1,3		10 (4.54)
Chlornaphazine	494-03-1	4	U026	100 (45.4)
Chloroacetaldehyde	107-20-0	4	P023	1000 (454)
Chloroacetic acid	79-11-8	3		100 (45.4)
2-Chloroacetophenone	532-27-4	3		100 (45.4)
CHLOROALKYL ETHERS	N.A.	2		**
p-Chloroaniline	106-47-8	4	P024	1000 (454)
Chlorobenzene	108-90-7	1,2,3,4	U037	100 (45.4)
Chlorobenzilate	510-15-6	3,4	U038	10 (4.54)
p-Chloro-m-cresol	59-50-7	2,4	U039	5000 (2270)
Chlorodibromomethane	124-48-1	2		100 (45.4)

§ 302.4

40 CFR Ch. I (7-1-11 Edition)

TABLE 302.4—LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES—Continued

[Note: All Comments/Notes Are Located at the End of This Table]

Hazardous substance	CASRN	Statutory code†	RCRA waste No.	Final RQ pounds (Kg)
1-Chloro-2,3-epoxypropane	106-89-8	1,3,4	U041	100 (45.4)
Chloroethane	75-00-3	2,3		100 (45.4)
2-Chloroethyl vinyl ether	110-75-8	2,4	U042	1000 (454)
Chloroform	67-66-3	1,2,3,4	U044	10 (4.54)
Chloromethane	74-87-3	2,3,4	U045	100 (45.4)
Chloromethyl methyl ether	107-30-2	3,4	U046	10 (4.54)
beta-Chloronaphthalene	91-58-7	2,4	U047	5000 (2270)
2-Chloronaphthalene	91-58-7	2,4	U047	5000 (2270)
2-Chlorophenol	95-57-8	2,4	U048	100 (45.4)
o-Chlorophenol	95-57-8	2,4	U048	100 (45.4)
4-Chlorophenyl phenyl ether	7005-72-3	2		5000 (2270)
1-(o-Chlorophenyl)thiourea	5344-82-1	4	P026	100 (45.4)
Chloroprene	126-99-8	3		100 (45.4)
3-Chloropropionitrile	542-76-7	4	P027	1000 (454)
Chlorosulfonic acid	7790-94-5	1		1000 (454)
4-Chloro-o-toluidine, hydrochloride	3165-93-3	4	U049	100 (45.4)
Chlorpyrifos	2921-88-2	1		1 (0.454)
Chromic acetate	1066-30-4	1		1000 (454)
Chromic acid	11115-74-5	1		10 (4.54)
	7738-94-5			
Chromic acid H2CrO4, calcium salt	13765-19-0	1,4	U032	10 (4.54)
Chromic sulfate	10101-53-8	1		1000 (454)
Chromium ††	7440-47-3	2		5000 (2270)
CHROMIUM AND COMPOUNDS	N.A.	2,3		**
Chromium Compounds	N.A.	2,3		**
Chromous chloride	10049-05-5	1		1000 (454)
Chrysene	218-01-9	2,4	U050	100 (45.4)
Cobalt Compounds	N.A.	3		**
Cobaltous bromide	7789-43-7	1		1000 (454)
Cobaltous formate	544-18-3	1		1000 (454)
Cobaltous sulfamate	14017-41-5	1		1000 (454)
Coke Oven Emissions	N.A.	3		1 (0.454)
Copper ††	7440-50-8	2		5000 (2270)
COPPER AND COMPOUNDS	N.A.	2		**
Copper cyanide Cu(CN)	544-92-3	4	P029	10 (4.54)
Coumaphos	56-72-4	1		10 (4.54)
Creosote	N.A.	4	U051	1 (0.454)
Cresol (cresylic acid)	1319-77-3	1,3,4	U052	100 (45.4)
m-Cresol	108-39-4	3		100 (45.4)
o-Cresol	95-48-7	3		100 (45.4)
p-Cresol	106-44-5	3		100 (45.4)
Cresols (isomers and mixture)	1319-77-3	1,3,4	U052	100 (45.4)
Cresylic acid (isomers and mixture)	1319-77-3	1,3,4	U052	100 (45.4)
Crotonaldehyde	123-73-9	1,4	U053	100 (45.4)
	4170-30-3			
Cumene	98-82-8	3,4	U055	5000 (2270)
m-Cumenyl methylcarbamate	64006	4	P202	10 (4.54)
Cupric acetate	142-71-2	1		100 (45.4)
Cupric acetoarsenite	12002-03-8	1		1 (0.454)
Cupric chloride	7447-39-4	1		10 (4.54)
Cupric nitrate	3251-23-8	1		100 (45.4)
Cupric oxalate	5893-66-3	1		100 (45.4)
Cupric sulfate	7758-98-7	1		10 (4.54)
Cupric sulfate, ammoniated	10380-29-7	1		100 (45.4)
Cupric tartrate	815-82-7	1		100 (45.4)
Cyanide Compounds	N.A.	2,3		**
CYANIDES	N.A.	2,3		**
Cyanides (soluble salts and complexes) not otherwise specified.	N.A.	4	P030	10 (4.54)
Cyanogen	460-19-5	4	P031	100 (45.4)
Cyanogen bromide (CN)Br	506-68-3	4	U246	1000 (454)
Cyanogen chloride (CN)Cl	506-77-4	1,4	P033	10 (4.54)
2,5-Cyclohexadiene-1,4-dione	106-51-4	3,4	U197	10 (4.54)
Cyclohexane	110-82-7	1,4	U056	1000 (454)
Cyclohexane, 1,2,3,4,5,6-hexachloro-, (1α, 2α, 3β-, 4α, 5α, 6β).	58-89-9	1,2,3,4	U129	1 (0.454)
Cyclohexanone	108-94-1	4	U057	5000 (2270)
2-Cyclohexyl-4,6-dinitrophenol	131-89-5	4	P034	100 (45.4)
1,3-Cyclopentadiene, 1,2,3,4,5,5-hexachloro-	77-47-4	1,2,3,4	U130	10 (4.54)

Environmental Protection Agency

§ 302.4

TABLE 302.4—LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES—Continued

[Note: All Comments/Notes Are Located at the End of This Table]

Hazardous substance	CASRN	Statutory code†	RCRA waste No.	Final RQ pounds (Kg)
Cyclophosphamide	50-18-0	4	U058	10 (4.54)
2,4-D Acid	94-75-7	1,3,4	U240	100 (45.4)
2,4-D Ester	94-11-1	1		100 (45.4)
	94-79-1			
	94-80-4			
	1320-18-9			
	1928-38-7			
	1928-61-6			
	1929-73-3			
	2971-38-2			
	25168-26-7			
	53467-11-1			
2,4-D, salts and esters	94-75-7	1,3,4	U240	100 (45.4)
Daunomycin	20830-81-3	4	U059	10 (4.54)
DDD	72-54-8	1,2,4	U060	1 (0.454)
4,4'-DDD	72-54-8	1,2,4	U060	1 (0.454)
DDE ^b	72-55-9	2		1 (0.454)
DDE ^b	3547-04-4	3		5000 (2270)
4,4'-DDE	72-55-9	2		1 (0.454)
DDT	50-29-3	1,2,4	U061	1 (0.454)
4,4'-DDT	50-29-3	1,2,4	U061	1 (0.454)
DDT AND METABOLITES	N.A.	2		**
DEHP	117-81-7	2,3,4	U028	100 (45.4)
Diallate	2303-16-4	4	U062	100 (45.4)
Diazinon	333-41-5	1		1 (0.454)
Diazomethane	334-88-3	3		100 (45.4)
Dibenz[a,h]anthracene	53-70-3	2,4	U063	1 (0.454)
1,2:5,6-Dibenzanthracene	53-70-3	2,4	U063	1 (0.454)
Dibenzo[a,h]anthracene	53-70-3	2,4	U063	1 (0.454)
Dibenzofuran	132-64-9	3		100 (45.4)
Dibenzo[a,i]pyrene	189-55-9	4	U064	10 (4.54)
1,2-Dibromo-3-chloropropane	96-12-8	3,4	U066	1 (0.454)
Dibromoethane	106-93-4	1,3,4	U067	1 (0.454)
Dibutyl phthalate	84-74-2	1,2,3,4	U069	10 (4.54)
Di-n-butyl phthalate	84-74-2	1,2,3,4	U069	10 (4.54)
Dicamba	1918-00-9	1		1000 (454)
Dichlobenil	1194-65-6	1		100 (45.4)
Dichlone	117-80-6	1		1 (0.454)
Dichlorobenzene	25321-22-6	1		100 (45.4)
1,2-Dichlorobenzene	95-50-1	1,2,4	U070	100 (45.4)
1,3-Dichlorobenzene	541-73-1	2,4	U071	100 (45.4)
1,4-Dichlorobenzene	106-46-7	1,2,3,4	U072	100 (45.4)
m-Dichlorobenzene	541-73-1	2,4	U071	100 (45.4)
o-Dichlorobenzene	95-50-1	1,2,4	U070	100 (45.4)
p-Dichlorobenzene	106-46-7	1,2,3,4	U072	100 (45.4)
DICHLOROBENZIDINE	N.A.	2		**
3,3'-Dichlorobenzidine	91-94-1	2,3,4	U073	1 (0.454)
Dichlorobromomethane	75-27-4	2		5000 (2270)
1,4-Dichloro-2-butene	764-41-0	4	U074	1 (0.454)
Dichlorodifluoromethane	75-71-8	4	U075	5000 (2270)
1,1-Dichloroethane	75-34-3	2,3,4	U076	1000 (454)
1,2-Dichloroethane	107-06-2	1,2,3,4	U077	100 (45.4)
1,1-Dichloroethylene	75-35-4	1,2,3,4	U078	100 (45.4)
1,2-Dichloroethylene	156-60-5	2,4	U079	1000 (454)
Dichloroethyl ether	111-44-4	2,3,4	U025	10 (4.54)
Dichloroisopropyl ether	108-60-1	2,4	U027	1000 (454)
Dichloromethane	75-09-2	2,3,4	U080	1000 (454)
Dichloromethoxyethane	111-91-1	2,4	U024	1000 (454)
Dichloromethyl ether	542-88-1	2,3,4	P016	10 (4.54)
2,4-Dichlorophenol	120-83-2	2,4	U081	100 (45.4)
2,6-Dichlorophenol	87-65-0	4	U082	100 (45.4)
Dichlorophenylarsine	696-28-6	4	P036	1 (0.454)
Dichloropropane	26638-19-7	1		1000 (454)
1,1-Dichloropropane	78-99-9			
1,3-Dichloropropane	142-28-9			
1,2-Dichloropropane	78-87-5	1,2,3,4	U083	1000 (454)
Dichloropropane—Dichloropropene (mixture)	8003-19-8	1		100 (45.4)
Dichloropropene	26952-23-8	1		100 (45.4)
2,3-Dichloropropene	78-88-6			

§ 302.4

40 CFR Ch. I (7-1-11 Edition)

TABLE 302.4—LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES—Continued

[Note: All Comments/Notes Are Located at the End of This Table]

Hazardous substance	CASRN	Statutory code†	RCRA waste No.	Final RQ pounds (Kg)
1,3-Dichloropropene	542-75-6	1,2,3,4	U084	100 (45.4)
2,2-Dichloropropionic acid	75-99-0	1		5000 (2270)
Dichlorvos	62-73-7	1,3		10 (4.54)
Dicofol	115-32-2	1		10 (4.54)
Dieldrin	60-57-1	1,2,4	P037	1 (0.454)
1,2,3,4-Diepoxybutane	1464-53-5	4	U085	10 (4.54)
Diethanolamine	111-42-2	3		100 (45.4)
Diethylamine	109-89-7	1		100 (45.4)
N,N-Diethylaniline	91-66-7	3		1000 (454)
Diethylarsine	692-42-2	4	P038	1 (0.454)
1,4-Diethyleneoxide	123-91-1	3,4	U108	100 (45.4)
Diethylene glycol, dicarbamate	5952261	4	U395	5000 (2270)
Diethylhexyl phthalate	117-81-7	2,3,4	U028	100 (45.4)
N,N'-Diethylhydrazine	1615-80-1	4	U086	10 (4.54)
O,O-Diethyl S-methyl dithiophosphate	3288-58-2	4	U087	5000 (2270)
Diethyl-p-nitrophenyl phosphate	311-45-5	4	P041	100 (45.4)
Diethyl phthalate	84-66-2	2,4	U088	1000 (454)
O,O-Diethyl O-pyrazinyl phosphorothioate	297-97-2	4	P040	100 (45.4)
Diethylstilbestrol	56-53-1	4	U089	1 (0.454)
Diethyl sulfate	64-67-5	3		10 (4.54)
Dihydrosafrole	94-58-6	4	U090	10 (4.54)
Diisopropylfluorophosphate (DFP)	55-91-4	4	P043	100 (45.4)
1,4:5,8-Dimethanonaphthalene, 1,2,3,4,10,10-hexachloro-1,4,4a,5,8,8a-hexahydro-, (1alpha,4alpha,4beta,5alpha,8alpha,8beta)-	309-00-2	1,2,4	P004	1 (0.454)
1,4:5,8-Dimethanonaphthalene, 1,2,3,4,10,10-hexachloro-1,4,4a,5,8,8a-hexahydro-, (1alpha,4alpha,4beta,5beta,8beta,8beta)-	465-73-6	4	P060	1 (0.454)
2,7:3,6-Dimethanonaphth[2,3-b]oxirene,3,4,5,6,9,9-hexachloro-1a,2,2a,3,6,6a,7,7a-octahydro-, (1alpha,2beta,2alpha,3beta,6beta,6alpha,7beta,7alpha)-	60-57-1	1,2,4	P037	1 (0.454)
2,7:3,6-Dimethanonaphth[2,3-b]oxirene,3,4,5,6,9,9-hexachloro-1a,2,2a,3,6,6a,7,7a-octahydro-, (1alpha,2beta,2alpha,3beta,6beta,6alpha,7beta,7alpha)-, & metabolites.	72-20-8	1,2,4	P051	1 (0.454)
Dimethoate	60-51-5	4	P044	10 (4.54)
3,3'-Dimethoxybenzidine	119-90-4	3,4	U091	100 (45.4)
Dimethylamine	124-40-3	1,4	U092	1000 (454)
Dimethyl aminoazobenzene	60-11-7	3,4	U093	10 (4.54)
p-Dimethylaminoazobenzene	60-11-7	3,4	U093	10 (4.54)
N,N-Dimethylaniline	121-69-7	3		100 (45.4)
7,12-Dimethylbenz[a]anthracene	57-97-6	4	U094	1 (0.454)
3,3'-Dimethylbenzidine	119-93-7	3,4	U095	10 (4.54)
alpha, alpha-Dimethylbenzylhydroperoxide	80-15-9	4	U096	10 (4.54)
Dimethylcarbamoyl chloride	79-44-7	3,4	U097	1 (0.454)
Dimethylformamide	68-12-2	3		100 (45.4)
1,1-Dimethylhydrazine	57-14-7	3,4	U098	10 (4.54)
1,2-Dimethylhydrazine	540-73-8	4	U099	1 (0.454)
alpha, alpha-Dimethylphenethylamine	122-09-8	4	P046	5000 (2270)
2,4-Dimethylphenol	105-67-9	2,4	U101	100 (45.4)
Dimethyl phthalate	131-11-3	2,3,4	U102	5000 (2270)
Dimethyl sulfate	77-78-1	3,4	U103	100 (45.4)
Dimetilan	644644	4	P191	1 (0.454)
Dinitrobenzene (mixed)	25154-54-5	1		100 (45.4)
m-Dinitrobenzene	99-65-0			
o-Dinitrobenzene	528-29-0			
p-Dinitrobenzene	100-25-4			
4,6-Dinitro-o-cresol, and salts	534-52-1	2,3,4	P047	10 (4.54)
Dinitrophenol	25550-58-7	1		10 (4.54)
2,5-Dinitrophenol	329-71-5			
2,6-Dinitrophenol	573-56-8			
2,4-Dinitrophenol	51-28-5	1,2,3,4	P048	10 (4.54)
Dinitrotoluene	25321-14-6	1,2		10 (4.54)
3,4-Dinitrotoluene	610-39-9			
2,4-Dinitrotoluene	121-14-2	1,2,3,4	U105	10 (4.54)
2,6-Dinitrotoluene	606-20-2	1,2,4	U106	100 (45.4)
Dinoseb	88-85-7	4	P020	1000 (454)
Di-n-octyl phthalate	117-84-0	2,4	U107	5000 (2270)

Environmental Protection Agency

§ 302.4

TABLE 302.4—LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES—Continued

[Note: All Comments/Notes Are Located at the End of This Table]

Hazardous substance	CASRN	Statutory code†	RCRA waste No.	Final RQ pounds (Kg)
1,4-Dioxane	123-91-1	3,4	U108	100 (45.4)
DIPHENYLHYDRAZINE	N.A.	2		**
1,2-Diphenylhydrazine	122-66-7	2,3,4	U109	10 (4.54)
Diphosphoramidate, octamethyl-	152-16-9	4	P085	100 (45.4)
Diphosphoric acid, tetraethyl ester	107-49-3	1,4	P111	10 (4.54)
Dipropylamine	142-84-7	4	U110	5000 (2270)
Di-n-propylnitrosamine	621-64-7	2,4	U111	10 (4.54)
Diquat	85-00-7	1		1000 (454)
	2764-72-9			
Disulfoton	298-04-4	1,4	P039	1 (0.454)
Dithiobiuret	541-53-7	4	P049	100 (45.4)
1,3-Dithiolane-2-carboxaldehyde, 2,4-dimethyl-, O- [(methylamino)-carbonyl]oxime.	26419738	4	P185	100 (45.4)
Diuron	330-54-1	1		100 (45.4)
Dodecylbenzenesulfonic acid	27176-87-0	1		1000 (454)
Endosulfan	115-29-7	1,2,4	P050	1 (0.454)
alpha-Endosulfan	959-98-8	2		1 (0.454)
beta-Endosulfan	33213-65-9	2		1 (0.454)
ENDOSULFAN AND METABOLITES	N.A.	2		**
Endosulfan sulfate	1031-07-8	2		1 (0.454)
Endothall	145-73-3	4	P088	1000 (454)
Endrin	72-20-8	1,2,4	P051	1 (0.454)
Endrin aldehyde	7421-93-4	2		1 (0.454)
ENDRIN AND METABOLITES	N.A.	2		**
Endrin, & metabolites	72-20-8	1,2,4	P051	1 (0.454)
Epichlorohydrin	106-89-8	1,3,4	U041	100 (45.4)
Epinephrine	51-43-4	4	P042	1000 (454)
1,2-Epoxybutane	106-88-7	3		100 (45.4)
Ethanal	75-07-0	1,3,4	U001	1000 (454)
Ethanamine, N,N-diethyl-	121-44-8	1,3,4	U404	5000 (2270)
Ethanamine, N-ethyl-N-nitroso-	55-18-5	4	U174	1 (0.454)
1,2-Ethanediamine, N,N-dimethyl-N'-2- pyridinyl-N'-(2-thienylmethyl)-.	91-80-5	4	U155	5000 (2270)
Ethane, 1,2-dibromo-	106-93-4	1,3,4	U067	1 (0.454)
Ethane, 1,1-dichloro-	75-34-3	2,3,4	U076	1000 (454)
Ethane, 1,2-dichloro-	107-06-2	1,2,3,4	U077	100 (45.4)
Ethanedinitrile	460-19-5	4	P031	100 (45.4)
Ethane, hexachloro-	67-72-1	2,3,4	U131	100 (45.4)
Ethane, 1,1'-[methylenebis(oxy)]bis[2- chloro-	111-91-1	2,4	U024	1000 (454)
Ethane, 1,1'-oxybis-	60-29-7	4	U117	100 (45.4)
Ethane, 1,1'-oxybis[2-chloro-	111-44-4	2,3,4	U025	10 (4.54)
Ethane, pentachloro-	76-01-7	4	U184	10 (4.54)
Ethane, 1,1,1,2-tetrachloro-	630-20-6	4	U208	100 (45.4)
Ethane, 1,1,2,2-tetrachloro-	79-34-5	2,3,4	U209	100 (45.4)
Ethanethioamide	62-55-5	4	U218	10 (4.54)
Ethane, 1,1,1-trichloro-	71-55-6	2,3,4	U226	1000 (454)
Ethane, 1,1,2-trichloro-	79-00-5	2,3,4	U227	100 (45.4)
Ethanimidiothioic acid, 2-(dimethylamino)-N-hydroxy-2-oxo- methyl ester.	30558431	4	U394	5000 (2270)
Ethanimidiothioic acid, 2-(dimethylamino)-N- [[[(methylamino)carbonyl]oxy]-2-oxo-, methyl ester.	23135220	4	P194	100 (45.4)
Ethanimidiothioic acid, N-[[[(methylamino) carbonyl]oxy]-, methyl ester.	16752-77-5	4	P066	100 (45.4)
Ethanimidiothioic acid, N,N'- [thiobis[(methylimino) carbonyloxy]]bis-, dimethyl ester.	59669260	4	U410	100 (45.4)
Ethanol, 2-ethoxy-	110-80-5	4	U359	1000 (454)
Ethanol, 2,2'-(nitrosoimino)bis-	1116-54-7	4	U173	1 (0.454)
Ethanol, 2,2'-oxybis-, dicarbamate	5952261	4	U395	5000 (2270)
Ethanone, 1-phenyl-	98-86-2	3,4	U004	5000 (2270)
Ethene, chloro-	75-01-4	2,3,4	U043	1 (0.454)
Ethene, (2-chloroethoxy)-	110-75-8	2,4	U042	1000 (454)
Ethene, 1,1-dichloro-	75-35-4	1,2,3,4	U078	100 (45.4)
Ethene, 1,2-dichloro-(E)	156-60-5	2,4	U079	1000 (454)
Ethene, tetrachloro-	127-18-4	2,3,4	U210	100 (45.4)
Ethene, trichloro-	79-01-6	1,2,3,4	U228	100 (45.4)
Ethion	563-12-2	1		10 (4.54)
Ethyl acetate	141-78-6	4	U112	5000 (2270)
Ethyl acrylate	140-88-5	3,4	U113	1000 (454)
Ethylbenzene	100-41-4	1,2,3		1000 (454)

§ 302.4

40 CFR Ch. I (7-1-11 Edition)

TABLE 302.4—LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES—Continued

[Note: All Comments/Notes Are Located at the End of This Table]

Hazardous substance	CASRN	Statutory code†	RCRA waste No.	Final RQ pounds (Kg)
Ethyl carbamate	51-79-6	3,4	U238	100 (45.4)
Ethyl chloride	75-00-3	2,3		100 (45.4)
Ethyl cyanide	107-12-0	4	P101	10 (4.54)
Ethylenebisdithiocarbamic acid, salts & esters	111-54-6	4	U114	5000 (2270)
Ethylenediamine	107-15-3	1		5000 (2270)
Ethylenediamine-tetraacetic acid (EDTA)	60-00-4	1		5000 (2270)
Ethylene dibromide	106-93-4	1,3,4	U067	1 (0.454)
Ethylene dichloride	107-06-2	1,2,3,4	U077	100 (45.4)
Ethylene glycol	107-21-1	3		5000 (2270)
Ethylene glycol monoethyl ether	110-80-5	4	U359	1000 (454)
Ethylene oxide	75-21-8	3,4	U115	10 (4.54)
Ethylenethiourea	96-45-7	3,4	U116	10 (4.54)
Ethylenimine	151-56-4	3,4	P054	1 (0.454)
Ethyl ether	60-29-7	4	U117	100 (45.4)
Ethylidene dichloride	75-34-3	2,3,4	U076	1000 (454)
Ethyl methacrylate	97-63-2	4	U118	1000 (454)
Ethyl methanesulfonate	62-50-0	4	U119	1 (0.454)
Famphur	52-85-7	4	P097	1000 (454)
Ferric ammonium citrate	1185-57-5	1		1000 (454)
Ferric ammonium oxalate	2944-67-4	1		1000 (454)
	55488-87-4			
Ferric chloride	7705-08-0	1		1000 (454)
Ferric fluoride	7783-50-8	1		100 (45.4)
Ferric nitrate	10421-48-4	1		1000 (454)
Ferric sulfate	10028-22-5	1		1000 (454)
Ferrous ammonium sulfate	10045-89-3	1		1000 (454)
Ferrous chloride	7758-94-3	1		100 (45.4)
Ferrous sulfate	7720-78-7	1		1000 (454)
	7782- 63-0			
Fine mineral fibers ^c	N.A.	3		**
Fluoranthene	206-44-0	2,4	U120	100 (45.4)
Fluorene	86-73-7	2		5000 (2270)
Fluorine	7782-41-4	4	P056	10 (4.54)
Fluoroacetamide	640-19-7	4	P057	100 (45.4)
Fluoroacetic acid, sodium salt	62-74-8	4	P058	10 (4.54)
Formaldehyde	50-00-0	1,3,4	U122	100 (45.4)
Formetanate hydrochloride	23422539	4	P198	100 (45.4)
Formic acid	64-18-6	1,4	U123	5000 (2270)
Formparanate	17702577	4	P197	100 (45.4)
Fulminic acid, mercury(2+)-salt	628-86-4	4	P065	10 (4.54)
Fumaric acid	110-17-8	1		5000 (2270)
Furan	110-00-9	4	U124	100 (45.4)
2-Furancarboxaldehyde	98-01-1	1,4	U125	5000 (2270)
2,5-Furandione	108-31-6	1,3,4	U147	5000 (2270)
Furan, tetrahydro-	109-99-9	4	U213	1000 (454)
Furfural	98-01-1	1,4	U125	5000 (2270)
Furfuran	110-00-9	4	U124	100 (45.4)
Glucopyranose, 2-deoxy-2-(3-methyl-3-nitroso-ureido)-,D-	18883-66-4	4	U206	1 (0.454)
D-Glucose, 2-deoxy-2-[(methylnitrosoamino)-carbonyl]amino]-	18883-66-4	4	U206	1 (0.454)
Glycidylaldehyde	765-34-4	4	U126	10 (4.54)
Glycol ethers ^d	N.A.	3		**
Guanidine, N-methyl-N'-nitro-N-nitroso-	70-25-7	4	U163	10 (4.54)
Guthion	86-50-0	1		1 (0.454)
HALOETHERS	N.A.	2		**
HALOMETHANES	N.A.	2		**
Heptachlor	76-44-8	1,2,3,4	P059	1 (0.454)
HEPTACHLOR AND METABOLITES	N.A.	2		**
Heptachlor epoxide	1024-57-3	2		1 (0.454)
Hexachlorobenzene	118-74-1	2,3,4	U127	10 (4.54)
Hexachlorobutadiene	87-68-3	2,3,4	U128	1 (0.454)
HEXACHLOROCYCLOHEXANE (all isomers)	608-73-1	2		**
Hexachlorocyclopentadiene	77-47-4	1,2,3,4	U130	10 (4.54)
Hexachloroethane	67-72-1	2,3,4	U131	100 (45.4)
Hexachlorophene	70-30-4	4	U132	100 (45.4)
Hexachloropropene	1888-71-7	4	U243	1000 (454)
Hexaethyl tetraphosphate	757-58-4	4	P062	100 (45.4)
Hexamethylene-1,6-diisocyanate	822-06-0	3		100 (45.4)
Hexamethylphosphoramide	680-31-9	3		1 (0.454)

Environmental Protection Agency

§ 302.4

TABLE 302.4—LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES—Continued

[Note: All Comments/Notes Are Located at the End of This Table]

Hazardous substance	CASRN	Statutory code†	RCRA waste No.	Final RQ pounds (Kg)
Hexane	110-54-3	3		5000 (2270)
Hexone	108-10-1	3,4	U161	5000 (2270)
Hydrazine	302-01-2	3,4	U133	1 (0.454)
Hydrazinecarbothioamide	79-19-6	4	P116	100 (45.4)
Hydrazine, 1,2-diethyl-	1615-80-1	4	U086	10 (4.54)
Hydrazine, 1,1-dimethyl-	57-14-7	3,4	U098	10 (4.54)
Hydrazine, 1,2-dimethyl-	540-73-8	4	U099	1 (0.454)
Hydrazine, 1,2-diphenyl-	122-66-7	2,3,4	U109	10 (4.54)
Hydrazine, methyl-	60-34-4	3,4	P068	10 (4.54)
Hydrochloric acid	7647-01-0	1,3		5000 (2270)
Hydrocyanic acid	74-90-8	1,4	P063	10 (4.54)
Hydrofluoric acid	7664-39-3	1,3,4	U134	100 (45.4)
Hydrogen chloride	7647-01-0	1,3		5000 (2270)
Hydrogen cyanide	74-90-8	1,4	P063	10 (4.54)
Hydrogen fluoride	7664-39-3	1,3,4	U134	100 (45.4)
Hydrogen phosphide	7803-51-2	3,4	P096	100 (45.4)
Hydrogen sulfide H2S	7783-06-4	1,4	U135	100 (45.4)
Hydroperoxide, 1-methyl-1-phenylethyl-	80-15-9	4	U096	10 (4.54)
Hydroquinone	123-31-9	3		100 (45.4)
2-Imidazolidinethione	96-45-7	3,4	U116	10 (4.54)
Indeno(1,2,3-cd)pyrene	193-39-5	2,4	U137	100 (45.4)
Iodomethane	74-88-4	3,4	U138	100 (45.4)
1,3-Isobenzofurandione	85-44-9	3,4	U190	5000 (2270)
Isobutyl alcohol	78-83-1	4	U140	5000 (2270)
Isodrin	465-73-6	4	P060	1 (0.454)
Isolan	119380	4	P192	100 (45.4)
Isophorone	78-59-1	2,3		5000 (2270)
Isoprene	78-79-5	1		100 (45.4)
Isopropanolamine dodecylbenzenesulfonate	42504-46-1	1		1000 (454)
3-Isopropylphenyl N-methylcarbamate	64006	4	P202	10 (4.54)
Isosafrole	120-58-1	4	U141	100 (45.4)
3(2H)-Isoxazolone, 5-(aminomethyl)-	2763-96-4	4	P007	1000 (454)
Kepona	143-50-0	1,4	U142	1 (0.454)
Lasiocarpine	303-34-4	4	U143	10 (4.54)
Lead††	7439-92-1	2		10 (4.54)
Lead acetate	301-04-2	1,4	U144	10 (4.54)
LEAD AND COMPOUNDS	N.A.	2,3		**
Lead arsenate	7784-40-9	1		1 (0.454)
	7645-25-2			
	10102-48-4			
Lead, bis(acetato-O)tetrahydroxytri-	1335-32-6	4	U146	10 (4.54)
Lead chloride	7758-95-4	1		10 (4.54)
Lead compounds	N.A.	2,3		**
Lead fluoborate	13814-96-5	1		10 (4.54)
Lead fluoride	7783-46-2	1		10 (4.54)
Lead iodide	10101-63-0	1		10 (4.54)
Lead nitrate	10099-74-8	1		10 (4.54)
Lead phosphate	7446-27-7	4	U145	10 (4.54)
Lead stearate	1072-35-1	1		10 (4.54)
	7428-48-0			
	52652-59-2			
	56189-09-4			
Lead subacetate	1335-32-6	4	U146	10 (4.54)
Lead sulfate	7446-14-2	1		10 (4.54)
	15739-80-7			
Lead sulfide	1314-87-0	1		10 (4.54)
Lead thiocyanate	592-87-0	1		10 (4.54)
Lindane	58-89-9	1,2,3,4	U129	1 (0.454)
Lindane (all isomers)	58-89-9	1,2,3,4	U129	1 (0.454)
Lithium chromate	14307-35-8	1		10 (4.54)
Malathion	121-75-5	1		100 (45.4)
Maleic acid	110-16-7	1		5000 (2270)
Maleic anhydride	108-31-6	1,3,4	U147	5000 (2270)
Maleic hydrazide	123-33-1	4	U148	5000 (2270)
Malononitrile	109-77-3	4	U149	1000 (454)
Manganese, bis (dimethylcarbamodithioato-S,S')-	15339363	4	P196	10 (4.54)
Manganese Compounds	N.A.	3		**
Manganese dimethyldithiocarbamate	15339363	4	P196	10 (4.54)
MDI	101-68-8	3		5000 (2270)

§ 302.4

40 CFR Ch. I (7-1-11 Edition)

TABLE 302.4—LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES—Continued

[Note: All Comments/Notes Are Located at the End of This Table]

Hazardous substance	CASRN	Statutory code†	RCRA waste No.	Final RQ pounds (Kg)
MEK	78-93-3	3,4	U159	5000 (2270)
Melphalan	148-82-3	4	U150	1 (0.454)
Mercaptodimethur	2032-65-7	1,4	P199	10 (4.54)
Mercuric cyanide	592-04-1	1		1(0.454)
Mercuric nitrate	10045-94-0	1		10 (4.54)
Mercuric sulfate	7783-35-9	1		10 (4.54)
Mercuric thiocyanate	592-85-8	1		10 (4.54)
Mercurous nitrate	10415-75-5	1	10 (4.54)	7782-86-7
Mercury	7439-97-6	2,3,4	U151	1 (0.454)
MERCURY AND COMPOUNDS	N.A.	2,3		**
Mercury, (acetato-O)phenyl-	62-38-4	4	P092	100 (45.4)
Mercury Compounds	N.A.	2,3		**
Mercury fulminate	628-86-4	4	P065	10 (4.54)
Methacrylonitrile	126-98-7	4	U152	1000 (454)
Methanamine, N-methyl-	124-40-3	1,4	U092	1000 (454)
Methanamine, N-methyl-N-nitroso-	62-75-9	2,3,4	P082	10 (4.54)
Methane, bromo-	74-83-9	2,3,4	U029	1000 (454)
Methane, chloro-	74-87-3	2,3,4	U045	100 (45.4)
Methane, chloromethoxy-	107-30-2	3,4	U046	10 (4.54)
Methane, dibromo-	74-95-3	4	U068	1000 (454)
Methane, dichloro-	75-09-2	2,3,4	U080	1000 (454)
Methane, dichlorodifluoro-	75-71-8	4	U075	5000 (2270)
Methane, iodo-	74-88-4	3,4	U138	100 (45.4)
Methane, isocyanato-	624-83-9	3,4	P064	10 (4.54)
Methane, oxybis(chloro-	542-88-1	2,3,4	P016	10 (4.54)
Methanesulfonyl chloride, trichloro-	594-42-3	4	P118	100 (45.4)
Methanesulfonic acid, ethyl ester	62-50-0	4	U119	1 (0.454)
Methane, tetrachloro-	56-23-5	1,2,3,4	U211	10 (4.54)
Methane, tetranitro-	509-14-8	4	P112	10 (4.54)
Methanethiol	74-93-1	1,4	U153	100 (45.4)
Methane, tribromo-	75-25-2	2,3,4	U225	100 (45.4)
Methane, trichloro-	67-66-3	1,2,3,4	U044	10 (4.54)
Methane, trichlorofluoro-	75-69-4	4	U121	5000 (2270)
Methanimidamide, N,N-dimethyl-N'-[3-[[[(methylamino)carbonyl]oxy]phenyl]-, monohydrochloride.	23422539	4	P198	100 (45.4)
Methanimidamide, N,N-dimethyl-N'-[2-methyl-4-[[[(methylamino) carbonyl]oxy]phenyl]-, 6,9-Methano-2,4,3-benzodioxathiepin, 6,7,8,9,10,10-hexachloro-1,5,5a,6,9,9a-hexahydro-, 3-oxide.	115-29-7	1,2,4	P050	1 (0.454)
4,7-Methano-1H-indene, 1,4,5,6,7,8,8-heptachloro-3a,4,7,7a-tetrahydro-	76-44-8	1,2,3,4	P059	1 (0.454)
4,7-Methano-1H-indene, 1,2,4,5,6,7,8,8-octachloro-2,3,3a,4,7,7a-hexahydro—	57-74-9	1,2,3,4	U036	1 (0.454)
Methanol	67-56-1	3,4	U154	5000 (2270)
Methapyrilene	91-80-5	4	U155	5000 (2270)
1,3,4-Metheno-2H-cyclobuta[cd]pentalen-2-one, 1,1a,3,3a,4,5,5a,5b,6-decachlorooctahydro-	143-50-0	1,4	U142	1 (0.454)
Methiocarb	2032-65-7	1,4	P199	10 (4.54)
Methyl	16752-77-5	4	P066	100 (45.4)
Methoxychlor	72-43-5	1,3,4	U247	1 (0.454)
Methyl alcohol	67-56-1	3,4	U154	5000 (2270)
2-Methyl aziridine	75-55-8	3,4	P067	1 (0.454)
Methyl bromide	74-83-9	2,3,4	U029	1000 (454)
1-Methylbutadiene	504-60-9	4	U186	100 (45.4)
Methyl chloride	74-87-3	2,3,4	U045	100 (45.4)
Methyl chlorocarbonate	79-22-1	4	U156	1000 (454)
Methyl chloroform	71-55-6	2,3,4	U226	1000 (454)
3-Methylcholanthrene	56-49-5	4	U157	10 (4.54)
4,4'-Methylenebis(2-chloroaniline)	101-14-4	3,4	U158	10 (4.54)
Methylene bromide	74-95-3	4	U068	1000 (454)
Methylene chloride	75-09-2	2,3,4	U080	1000 (454)
4,4'-Methylenedianiline	101-77-9	3		10 (4.54)
Methylene diphenyl diisocyanate	101-68-8	3		5000 (2270)
Methyl ethyl ketone	78-93-3	3,4	U159	5000 (2270)
Methyl ethyl ketone peroxide	1338-23-4	4	U160	10 (4.54)
Methyl hydrazine	60-34-4	3,4	P068	10 (4.54)
Methyl iodide	74-88-4	3,4	U138	100 (45.4)
Methyl isobutyl ketone	108-10-1	3,4	U161	5000 (2270)
Methyl isocyanate	624-83-9	3,4	P064	10 (4.54)

Environmental Protection Agency

§ 302.4

TABLE 302.4—LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES—Continued

[Note: All Comments/Notes Are Located at the End of This Table]

Hazardous substance	CASRN	Statutory code†	RCRA waste No.	Final RQ pounds (Kg)
2-Methylacetonitrile	75-86-5	1,4	P069	10 (4.54)
Methyl mercaptan	74-93-1	1,4	U153	100 (45.4)
Methyl methacrylate	80-62-6	1,3,4	U162	1000 (454)
Methyl parathion	298-00-0	1,4	P071	100 (45.4)
4-Methyl-2-pentanone	108-10-1	3,4	U161	5000 (2270)
Methyl tert-butyl ether	1634-04-4	3		1000 (454)
Methylthiourea	56-04-2	4	U164	10 (4.54)
Metolcarb	1129415	4	P190	1000 (454)
Mevinphos	7786-34-7	1		10 (4.54)
Mexacarbate	315-18-4	1,4	P128	1000 (454)
Mitomycin C	50-07-7	4	U010	10 (4.54)
MNNG	70-25-7	4	U163	10 (4.54)
Monoethylamine	75-04-7	1		100 (45.4)
Monomethylamine	74-89-5	1		100 (45.4)
Naled	300-76-5	1		10 (4.54)
5,12-Naphthacenedione, 8-acetyl-10-[(3-amino-2,3,6-trideoxy-alpha-L-lyxo-hexopyranosyl)oxy]-7,8,9,10-tetrahydro-6,8,11-trihydroxy-1-methoxy-, (8S-cis)-	20830-81-3	4	U059	10 (4.54)
1-Naphthalenamine	134-32-7	4	U167	100 (45.4)
2-Naphthalenamine	91-59-8	4	U168	10 (4.54)
Naphthalenamine, N,N'-bis(2-chloroethyl)-	494-03-1	4	U026	100 (45.4)
Naphthalene	91-20-3	1,2,3,4	U165	100 (45.4)
Naphthalene, 2-chloro-	91-58-7	2,4	U047	5000 (2270)
1,4-Naphthalenedione	130-15-4	4	U166	5000 (2270)
2,7-Naphthalenedisulfonic acid, 3,3'-[(3,3'-dimethyl-(1,1'-biphenyl)-4,4'-diyl)-bis(azo)]bis(5-amino-4-hydroxy)-tetrasodium salt.	72-57-1	4	U236	10 (4.54)
1-Naphthalenol, methylcarbamate	63-25-2	1,3,4	U279	100 (45.4)
Naphthenic acid	1338-24-5	1		100 (45.4)
1,4-Naphthoquinone	130-15-4	4	U166	5000 (2270)
alpha-Naphthylamine	134-32-7	4	U167	100 (45.4)
beta-Naphthylamine	91-59-8	4	U168	10 (4.54)
alpha-Naphthylthiourea	86-88-4	4	P072	100 (45.4)
Nickel††	7440-02-0	2		100 (45.4)
Nickel ammonium sulfate	15699-18-0	1		100 (45.4)
NICKEL AND COMPOUNDS	N.A.	2,3		**
Nickel carbonyl Ni(CO)4, (T-4)-	13463-39-3	4	P073	10 (4.54)
Nickel chloride	7718-54-9	1		100 (45.4)
	37211-05-5			
Nickel compounds	N.A.	2,3		**
Nickel cyanide Ni(CN)2	557-19-7	4	P074	10 (4.54)
Nickel hydroxide	12054-48-7	1		10 (4.54)
Nickel nitrate	14216-75-2	1		100 (45.4)
Nickel sulfate	7786-81-4	1		100 (45.4)
Nicotine, & salts	54-11-5	4	P075	100 (45.4)
Nitric acid	7697-37-2	1		1000 (454)
Nitric acid, thallium (1+) salt	10102-45-1	4	U217	100 (45.4)
Nitric oxide	10102-43-9	4	P076	10 (4.54)
p-Nitroaniline	100-01-6	4	P077	5000 (2270)
Nitrobenzene	98-95-3	1,2,3,4	U169	1000 (454)
4-Nitrobiphenyl	92-93-3	3		10 (4.54)
Nitrogen dioxide	10102-44-0	1,4	P078	10 (4.54)
	10544-72-6			
Nitrogen oxide NO	10102-43-9	4	P076	10 (4.54)
Nitrogen oxide NO2	10102-44-0	1,4	P078	10 (4.54)
	10544-72-6			
Nitroglycerine	55-63-0	4	P081	10 (4.54)
Nitrophenol (mixed)	25154-55-6	1		100 (45.4)
m-Nitrophenol	554-84-7			
o-Nitrophenol	88-75-5	1,2		100 (45.4)
p-Nitrophenol	100-02-7	1,2,3,4	U170	100 (45.4)
2-Nitrophenol	88-75-5	1,2		100 (45.4)
4-Nitrophenol	100-02-7	1,2,3,4	U170	100 (45.4)
NITROPHENOLS	N.A.	2		**
2-Nitropropane	79-46-9	3,4	U171	10 (4.54)
NITROSAMINES	N.A.	2		**
N-Nitrosodi-n-butylamine	924-16-3	4	U172	10 (4.54)
N-Nitrosodiethanolamine	1116-54-7	4	U173	1 (0.454)
N-Nitrosodiethylamine	55-18-5	4	U174	1 (0.454)

§ 302.4

40 CFR Ch. I (7-1-11 Edition)

TABLE 302.4—LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES—Continued

[Note: All Comments/Notes Are Located at the End of This Table]

Hazardous substance	CASRN	Statutory code†	RCRA waste No.	Final RQ pounds (Kg)
N-Nitrosodimethylamine	62-75-9	2,3,4	P082	10 (4.54)
N-Nitrosodiphenylamine	86-30-6	2		100 (45.4)
N-Nitroso-N-ethylurea	759-73-9	4	U176	1 (0.454)
N-Nitroso-N-methylurea	684-93-5	3,4	U177	1 (0.454)
N-Nitroso-N-methylurethane	615-53-2	4	U178	1 (0.454)
N-Nitrosomethylvinylamine	4549-40-0	4	P084	10 (4.54)
N-Nitrosomorpholine	59-89-2	3		1 (0.454)
N-Nitrosopiperidine	100-75-4	4	U179	10 (4.54)
N-Nitrosopyrrolidine	930-55-2	4	U180	1 (0.454)
Nitrotoluene	1321-12-6	1		1000 (454)
m-Nitrotoluene	99-08-1			
o-Nitrotoluene	88-72-2			
p-Nitrotoluene	99-99-0			
5-Nitro-o-toluidine	99-55-8	4	U181	100 (45.4)
Octamethylpyrophosphoramide	152-16-9	4	P085	100 (45.4)
Osmium oxide OsO ₄ , (T-4)-	20816-12-0	4	P087	1000 (454)
Osmium tetroxide	20816-12-0	4	P087	1000 (454)
7-Oxabicyclo[2.2.1]heptane-2,3-dicarboxylic acid	145-73-3	4	P088	1000 (454)
Oxamyl	23135220	4	P194	100 (45.4)
1,2-Oxathiolane, 2,2-dioxide	1120-71-4	3,4	U193	10 (4.54)
2H-1,3,2-Oxazaphosphorin-2-amine, N,N-bis(2-chloroethyl)tetrahydro-, 2-oxide.	50-18-0	4	U058	10 (4.54)
Oxirane	75-21-8	3,4	U115	10 (4.54)
Oxiranecarboxyaldehyde	765-34-4	4	U126	10 (4.54)
Oxirane, (chloromethyl)-	106-89-8	1,3,4	U041	100 (45.4)
Paraformaldehyde	30525-89-4	1		1000 (454)
Paraldehyde	123-63-7	4	U182	1000 (454)
Parathion	56-38-2	1,3,4	P089	10 (4.54)
PCBs	1336-36-3	1,2,3		1 (0.454)
PCNB	82-68-8	3,4	U185	100 (45.4)
Pentachlorobenzene	608-93-5	4	U183	10 (4.54)
Pentachloroethane	76-01-7	4	U184	10 (4.54)
Pentachloronitrobenzene	82-68-8	3,4	U185	100 (45.4)
Pentachlorophenol	87-86-5	1,2,3,4	See F027	10 (4.54)
1,3-Pentadiene	504-60-9	4	U186	100 (45.4)
Perchloroethylene	127-18-4	2,3,4	U210	100 (45.4)
Phenacetin	62-44-2	4	U187	100 (45.4)
Phenanthrene	85-01-8	2		5000 (2270)
Phenol	108-95-2	1,2,3,4	U188	1000 (454)
Phenol, 2-chloro-	95-57-8	2,4	U048	100 (45.4)
Phenol, 4-chloro-3-methyl-	59-50-7	2,4	U039	5000 (2270)
Phenol, 2-cyclohexyl-4,6-dinitro-	131-89-5	4	P034	100 (45.4)
Phenol, 2,4-dichloro-	120-83-2	2,4	U081	100 (45.4)
Phenol, 2,6-dichloro-	87-65-0	4	U082	100 (45.4)
Phenol, 4,4'-(1,2-diethyl-1,2-ethenediyl)bis-, (E)	56-53-1	4	U089	1 (0.454)
Phenol, 2,4-dimethyl-	105-67-9	2,4	U101	100 (45.4)
Phenol, 4-(dimethylamino)-3,5-dimethyl-, methylcarbamate (ester).	315-18-4	1,4	P128	1000 (454)
Phenol, (3,5-dimethyl-4-(methylthio)-, methylcarbamate	2032-65-7	1,4	P199	10 (4.54)
Phenol, 2,4-dinitro-	51-28-5	1,2,3,4	P048	10 (4.54)
Phenol, methyl-	1319-77-3	1,3,4	U052	100 (45.4)
Phenol, 2-methyl-4,6-dinitro-, & salts	534-52-1	2,3,4	P047	10 (4.54)
Phenol, 2,2'-methylenebis[3,4,6-trichloro-	70-30-4	4	U132	100 (45.4)
Phenol, 2-(1-methylethoxy)-, methylcarbamate	114-26-1	3,4	U411	100 (45.4)
Phenol, 3-(1-methylethyl)-, methyl carbamate	64006	4	P202	10 (4.54)
Phenol, 3-methyl-5-(1-methylethyl)-, methyl carbamate	2631370	4	P201	1000 (454)
Phenol, 2-(1-methylpropyl)-4,6-dinitro-	88-85-7	4	P020	1000 (454)
Phenol, 4-nitro-	100-02-7	1,2,3,4	U170	100 (45.4)
Phenol, pentachloro-	87-86-5	1,2,3,4	See F027	10 (4.54)
Phenol, 2,3,4,6-tetrachloro-	58-90-2	4	See F027	10 (4.54)
Phenol, 2,4,5-trichloro-	95-95-4	1,3,4	See F027	10 (4.54)
Phenol, 2,4,6-trichloro-	88-06-2	1,2,3,4	See F027	10 (4.54)
Phenol, 2,4,6-trinitro-, ammonium salt	131-74-8	4	P009	10 (4.54)
L-Phenylalanine, 4-[bis(2-chloroethyl)amino]-	148-82-3	4	U150	1 (0.454)
p-Phenylenediamine	106-50-3	3		5000 (2270)
Phenylmercury acetate	62-38-4	4	P092	100 (45.4)
Phenylthiourea	103-85-5	4	P093	100 (45.4)
Phorate	298-02-2	4	P094	10 (4.54)
Phosgene	75-44-5	1,3,4	P095	10 (4.54)

Environmental Protection Agency

§ 302.4

TABLE 302.4—LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES—Continued

[Note: All Comments/Notes Are Located at the End of This Table]

Hazardous substance	CASRN	Statutory code†	RCRA waste No.	Final RQ pounds (Kg)
Phosphine	7803-51-2	3,4	P096	100 (45.4)
Phosphoric acid	7664-38-2	1		5000 (2270)
Phosphoric acid, diethyl 4-nitrophenyl ester	311-45-5	4	P041	100 (45.4)
Phosphoric acid, lead(2+) salt (2:3)	7446-27-7	4	U145	10 (4.54)
Phosphorodithioic acid, O,O-diethyl S-[2-(ethylthio)ethyl] ester.	298-04-4	1,4	P039	1 (0.454)
Phosphorodithioic acid, O,O-diethyl S-[(ethylthio)methyl] ester.	298-02-2	4	P094	10 (4.54)
Phosphorodithioic acid, O,O-diethyl S-methyl ester	3288-58-2	4	U087	5000 (2270)
Phosphorodithioic acid, O,O-dimethyl S-[2(methylamino)-2-oxoethyl] ester.	60-51-5	4	P044	10 (4.54)
Phosphoro-fluoridic acid, bis(1-methylethyl) ester	55-91-4	4	P043	100 (45.4)
Phosphorothioic acid, O,O-diethyl O-(4-nitrophenyl) ester	56-38-2	1,3,4	P089	10 (4.54)
Phosphorothioic acid, O,O-diethyl O-pyrazinyl ester	297-97-2	4	P040	100 (45.4)
Phosphorothioic acid, O-[4-[(dimethylamino) sulfonyl]phenyl] O,O-dimethyl ester.	52-85-7	4	P097	1000 (454)
Phosphorothioic acid, O,O-dimethyl O-(4-nitrophenyl) ester.	298-00-0	1,4	P071	100 (45.4)
Phosphorus	7723-14-0	1,3		1 (0.454)
Phosphorus oxychloride	10025-87-3	1		1000 (454)
Phosphorus pentasulfide	1314-80-3	1,4	U189	100 (45.4)
Phosphorus sulfide	1314-80-3	1,4	U189	100 (45.4)
Phosphorus trichloride	7719-12-2	1		1000 (454)
Physostigmine	57476	4	P204	100 (45.4)
Physostigmine salicylate	57647	4	P188	100 (45.4)
PHTHALATE ESTERS	N.A.	2		**
Phthalic anhydride	85-44-9	3,4	U190	5000 (2270)
2-Picoline	109-06-8	4	U191	5000 (2270)
Piperidine, 1-nitroso-	100-75-4	4	U179	10 (4.54)
Plumbane, tetraethyl-	78-00-2	1,4	P110	10 (4.54)
POLYCHLORINATED BIPHENYLS	1336-36-3	1,2,3		1 (0.454)
Polycyclic Organic Matter*	N.A.	3		**
POLYNUCLEAR AROMATIC HYDROCARBONS	N.A.	2		**
Potassium arsenate	7784-41-0	1		1 (0.454)
Potassium arsenite	10124-50-2	1		1 (0.454)
Potassium bichromate	7778-50-9	1		10 (4.54)
Potassium chromate	7789-00-6	1		10 (4.54)
Potassium cyanide K(CN)	151-50-8	1,4	P098	10 (4.54)
Potassium hydroxide	1310-58-3	1		1000 (454)
Potassium permanganate	7722-64-7	1		100 (45.4)
Potassium silver cyanide	506-61-6	4	P099	1 (0.454)
Promecarb	2631370	4	P201	1000 (454)
Pronamide	23950-58-5	4	U192	5000 (2270)
Propanal, 2-methyl-2-(methylsulfonyl)-, O-[(methylamino)carbonyl] oxime.	1646884	4	P203	100 (45.4)
Propanal, 2-methyl-2-(methylthio)-, O-[(methylamino)carbonyl]oxime.	116-06-3	4	P070	1 (0.454)
1-Propanamine	107-10-8	4	U194	5000 (2270)
1-Propanamine, N-propyl-	142-84-7	4	U110	5000 (2270)
1-Propanamine, N-nitroso-N-propyl-	621-64-7	2,4	U111	10 (4.54)
Propane, 1,2-dibromo-3-chloro-	96-12-8	3,4	U066	1 (0.454)
Propane, 1,2-dichloro-	78-87-5	1,2,3,4	U083	1000 (454)
Propanedinitrile	109-77-3	4	U149	1000 (454)
Propanenitrile	107-12-0	4	P101	10 (4.54)
Propanenitrile, 3-chloro-	542-76-7	4	P027	1000 (454)
Propanenitrile, 2-hydroxy-2-methyl-	75-86-5	1,4	P069	10 (4.54)
Propane, 2-nitro-	79-46-9	3,4	U171	10 (4.54)
Propane, 2,2'-oxybis[2-chloro-	108-60-1	2,4	U027	1000 (454)
1,3-Propane sultone	1120-71-4	3,4	U193	10 (4.54)
1,2,3-Propanetriol, trinitrate	55-63-0	4	P081	10 (4.54)
Propanoic acid, 2-(2,4,5-trichlorophenoxy)-	93-72-1	1,4	See F027	100 (45.4)
1-Propanol, 2,3-dibromo-, phosphate (3:1)	126-72-7	4	U235	10 (4.54)
1-Propanol, 2-methyl-	78-83-1	4	U140	5000 (2270)
2-Propanone	67-64-1	4	U002	5000 (2270)
2-Propanone, 1-bromo-	598-31-2	4	P017	1000 (454)
Propargite	2312-35-8	1		10 (4.54)
Propargyl alcohol	107-19-7	4	P102	1000 (454)
2-Propanal	107-02-8	1,2,3,4	P003	1 (0.454)
2-Propanamide	79-06-1	3,4	U007	5000 (2270)

§ 302.4

40 CFR Ch. I (7-1-11 Edition)

TABLE 302.4—LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES—Continued

[Note: All Comments/Notes Are Located at the End of This Table]

Hazardous substance	CASRN	Statutory code†	RCRA waste No.	Final RQ pounds (Kg)
1-Propene, 1,3-dichloro-	542-75-6	1,2,3,4	U084	100 (45.4)
1-Propene, 1,1,2,3,3,3-hexachloro-	1888-71-7	4	U243	1000 (454)
2-Propenenitrile	107-13-1	1,2,3,4	U009	100 (45.4)
2-Propenenitrile, 2-methyl-	126-98-7	4	U152	1000 (454)
2-Propenoic acid	79-10-7	3,4	U008	5000 (2270)
2-Propenoic acid, ethyl ester	140-88-5	3,4	U113	1000 (454)
2-Propenoic acid, 2-methyl-, ethyl ester	97-63-2	4	U118	1000 (454)
2-Propenoic acid, 2-methyl-, methyl ester	80-62-6	1,3,4	U162	1000 (454)
2-Propen-1-ol	107-18-6	1,4	P005	100 (45.4)
Propham	122429	4	U373	1000 (454)
beta-Propiolactone	57-57-8	3		10 (4.54)
Propionaldehyde	123-38-6	3	1000 (454)	
Propionic acid	79-09-4	1		5000 (2270)
Propionic anhydride	123-62-6	1		5000 (2270)
Propoxur (Baygon)	114-26-1	3,4	U411	100 (45.4)
n-Propylamine	107-10-8	4	U194	5000 (2270)
Propylene dichloride	78-87-5	1,2,3,4	U083	1000 (454)
Propylene oxide	75-56-9	1,3		100 (45.4)
1,2-Propylenimine	75-55-8	3,4	P067	1 (0.454)
2-Propyn-1-ol	107-19-7	4	P102	1000 (454)
Prosulfocarb	52888809	4	U387	5000 (2270)
Pyrene	129-00-0	2		5000 (2270)
Pyrethrins	121-29-9	1		1 (0.454)
	121-21-1			
	8003-34-7			
3,6-Pyridazinedione, 1,2-dihydro-	123-33-1	4	U148	5000 (2270)
4-Pyridinamine	504-24-5	4	P008	1000 (454)
Pyridine	110-86-1	4	U196	1000 (454)
Pyridine, 2-methyl-	109-06-8	4	U191	5000 (2270)
Pyridine, 3-(1-methyl-2-pyrrolidinyl)-, (S)-, & salts	54-11-5	4	P075	100 (45.4)
2,4-(1H,3H)-Pyrimidinedione, 5-[bis(2-chloroethyl)amino]-	66-75-1	4	U237	10 (4.54)
4(1H)-Pyrimidinone, 2,3-dihydro-6-methyl-2-thioxo-	56-04-2	4	U164	10 (4.54)
Pyrrolidine, 1-nitroso-	930-55-2	4	U180	1 (0.454)
Pyrrolo[2,3-b]indol-5-ol, 1,2,3,3a,8,8a-hexahydro-1,3a,8-trimethyl-, methylcarbamate (ester), (3aS-cis)-	57476	4	P204	100 (45.4)
Quinoline	91-22-5	1,3		5000 (2270)
Quinone	106-51-4	3,4	U197	10 (4.54)
Quintobenzene	82-68-8	3,4	U185	100 (45.4)
Radionuclides (including radon)	N.A.	3		§
Reserpine	50-55-5	4	U200	5000 (2270)
Resorcinol	108-46-3	1,4	U201	5000 (2270)
Safrole	94-59-7	4	U203	100 (45.4)
Selenious acid	7783-00-8	4	U204	10 (4.54)
Selenious acid, dithallium (1+) salt	12039-52-0	4	P114	1000 (454)
Selenium††	7782-49-2	2		100 (45.4)
SELENIUM AND COMPOUNDS	N.A.	2,3		**
Selenium Compounds	N.A.	2,3		**
Selenium dioxide	7446-08-4	1,4	U204	10 (4.54)
Selenium oxide	7446-08-4	1,4	U204	10 (4.54)
Selenium sulfide SeS2	7488-56-4	4	U205	10 (4.54)
Selenourea	630-10-4	4	P103	1000 (454)
L-Serine, diazoacetate (ester)	115-02-6	4	U015	1 (0.454)
Silver ††	7440-22-4	2		1000 (454)
SILVER AND COMPOUNDS	N.A.	2		**
Silver cyanide Ag(CN)	506-64-9	4	P104	1 (0.454)
Silver nitrate	7761-88-8	1		1 (0.454)
Silvex (2,4,5-TP)	93-72-1	1,4	See F027	100 (45.4)
Sodium	7440-23-5	1		10 (4.54)
Sodium arsenate	7631-89-2	1		1 (0.454)
Sodium arsenite	7784-46-5	1		1 (0.454)
Sodium azide	26628-22-8	4	P105	1000 (454)
Sodium bichromate	10588-01-9	1		10 (4.54)
Sodium bifluoride	1333-83-1	1		100 (45.4)
Sodium bisulfite	7631-90-5	1		5000 (2270)
Sodium chromate	7775-11-3	1		10 (4.54)
Sodium cyanide Na(CN)	143-33-9	1,4	P106	10 (4.54)
Sodium dodecylbenzenesulfonate	25155-30-0	1		1000 (454)
Sodium fluoride	7681-49-4	1		1000 (454)
Sodium hydrosulfide	16721-80-5	1		5000 (2270)

Environmental Protection Agency

§ 302.4

TABLE 302.4—LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES—Continued

[Note: All Comments/Notes Are Located at the End of This Table]

Hazardous substance	CASRN	Statutory code†	RCRA waste No.	Final RQ pounds (Kg)
Sodium hydroxide	1310-73-2	1		1000 (454)
Sodium hypochlorite	7681-52-9	1		100 (45.4)
	10022-70-5			
Sodium methylate	124-41-4	1		1000 (454)
Sodium nitrite	7632-00-0	1		100 (45.4)
Sodium phosphate, dibasic	7558-79-4	1		5000 (2270)
	10039-32-4			
	10140-65-5			
Sodium phosphate, tribasic	7601-54-9	1		5000 (2270)
	7758-29-4			
	7785-84-4			
	10101-89-0			
	10124-56-8			
	10361-89-4			
Sodium selenite	7782-82-3	1		100 (45.4)
	10102-18-8			
Streptozotocin	18883-66-4	4	U206	1 (0.454)
Strontium chromate	7789-06-2	1		10 (4.54)
Strychnidin-10-one, & salts	57-24-9	1,4	P108	10 (4.54)
Strychnidin-10-one, 2,3-dimethoxy-	357-57-3	4	P018	100 (45.4)
Strychnine, & salts	57-24-9	1,4	P108	10 (4.54)
Styrene	100-42-5	1,3		1000 (454)
Styrene oxide	96-09-3	3		100 (45.4)
Sulfuric acid	7664-93-9	1		1000 (454)
	8014-95-7			
Sulfuric acid, dimethyl ester	77-78-1	3,4	U103	100 (45.4)
Sulfuric acid, dithallium (1+) salt	7446-18-6	1,4	P115	100 (45.4)
	10031-59-1			
Sulfur monochloride	12771-08-3	1		1000 (454)
Sulfur phosphide	1314-80-3	1,4	U189	100 (45.4)
2,4,5-T	93-76-5	1,4	See F027	1000 (454)
2,4,5-T acid	93-76-5	1,4	See F027	1000 (454)
2,4,5-T amines	2008-46-0	1		5000 (2270)
	1319-72-8			
	3813-14-7			
	6369-96-6			
	6369-97-7			
2,4,5-T esters	93-79-8	1		1000 (454)
	1928-47-8			
	2545-59-7			
	25168-15-4			
	61792-07-2			
2,4,5-T salts	13560-99-1	1		1000 (454)
TCDD	1746-01-6	2,3		1 (0.454)
TDE	72-54-8	1,2,4	U060	1 (0.454)
1,2,4,5-Tetrachlorobenzene	95-94-3	4	U207	5000 (2270)
2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	2,3		1 (0.454)
1,1,1,2-Tetrachloroethane	630-20-6	4	U208	100 (45.4)
1,1,2,2-Tetrachloroethane	79-34-5	2,3,4	U209	100 (45.4)
Tetrachloroethylene	127-18-4	2,3,4	U210	100 (45.4)
2,3,4,6-Tetrachlorophenol	58-90-2	4	See F027	10 (4.54)
Tetraethyl pyrophosphate	107-49-3	1,4	P111	10 (4.54)
Tetraethyl lead	78-00-2	1,4	P110	10 (4.54)
Tetraethyldithiopyrophosphate	3689-24-5	4	P109	100 (45.4)
Tetrahydrofuran	109-99-9	4	U213	1000 (454)
Tetranitromethane	509-14-8	4	P112	10 (4.54)
Tetraphosphoric acid, hexaethyl ester	757-58-4	4	P062	100 (45.4)
Thallic oxide	1314-32-5	4	P113	100 (45.4)
Thallium ††	7440-28-0	2		1000 (454)
THALLIUM AND COMPOUNDS	N.A.	2		**
Thallium (I) acetate	563-68-8	4	U214	100 (45.4)
Thallium (I) carbonate	6533-73-9	4	U215	100 (45.4)
Thallium chloride TlCl	7791-12-0	4	U216	100 (45.4)
Thallium (I) nitrate	10102-45-1	4	U217	100 (45.4)
Thallium oxide Tl ₂ O ₃	1314-32-5	4	P113	100 (45.4)
Thallium (I) selenite	12039-52-0	4	P114	1000 (454)
Thallium (I) sulfate	7446-18-6	1,4	P115	100 (45.4)
	10031-59-1			
Thioacetamide	62-55-5	4	U218	10 (4.54)

§ 302.4

40 CFR Ch. I (7-1-11 Edition)

TABLE 302.4—LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES—Continued

[Note: All Comments/Notes Are Located at the End of This Table]

Hazardous substance	CASRN	Statutory code†	RCRA waste No.	Final RQ pounds (Kg)
Thiodicarb	59669260	4	U410	100 (45.4)
Thiodiphosphoric acid, tetraethyl ester	3689-24-5	4	P109	100 (45.4)
Thiofanox	39196-18-4	4	P045	100 (45.4)
Thioimidodicarbonic diamide [(H ₂ N)C(S)] ₂ NH	541-53-7	4	P049	100 (45.4)
Thiomethanol	74-93-1	1,4	U153	100 (45.4)
Thioperoxydicarbonic diamide [(H ₂ N)C(S)] ₂ S ₂ , tetramethyl-	137-26-8	4	U244	10 (4.54)
Thiophanate-methyl	23564058	4	U409	10 (4.54)
Thiophenol	108-98-5	4	P014	100 (45.4)
Thiosemicarbazide	79-19-6	4	P116	100 (45.4)
Thiourea	62-56-6	4	U219	10 (4.54)
Thiourea, (2-chlorophenyl)-	5344-82-1	4	P026	100 (45.4)
Thiourea, 1-naphthalenyl-	86-88-4	4	P072	100 (45.4)
Thiourea, phenyl-	103-85-5	4	P093	100 (45.4)
Thiram	137-26-8	4	U244	10 (4.54)
Tirpate	26419738	4	P185	100 (45.4)
Titanium tetrachloride	7550-45-0	3		1,2,41000 (454)
Toluene	108-88-3	1,2,3,4	U220	1000 (454)
Toluenediamine	95-80-7	3,4	U221	10 (4.54)
	496-72-0			
	823-40-5			
	25376-45-8			
2,4-Toluene diamine	95-80-7	3,4	U221	10 (4.54)
	496-72-0			
	823-40-5			
	25376-45-8			
Toluene diisocyanate	91-08-7	3,4	U223	100 (45.4)
	584-84-9			
	26471-62-5			
2,4-Toluene diisocyanate	91-08-7	3,4	U223	100 (45.4)
	584-84-9			
	26471-62-5			
o-Toluidine	95-53-4	3,4	U328	100 (45.4)
p-Toluidine	106-49-0	4	U353	100 (45.4)
o-Toluidine hydrochloride	636-21-5	4	U222	100 (45.4)
Toxaphene	8001-35-2	1,2,3,4	P123	1 (0.454)
2,4,5-TP acid	93-72-1	1,4	See F027	100 (45.4)
2,4,5-TP esters	32534-95-5	1		100 (45.4)
Triallate	2303175	4	U389	100 (45.4)
1H-1,2,4-Triazol-3-amine	61-82-5	4	U011	10 (4.54)
Trichlorfon	52-68-6	1		100 (45.4)
1,2,4-Trichlorobenzene	120-82-1	2,3		100 (45.4)
1,1,1-Trichloroethane	71-55-6	2,3,4	U226	1000 (454)
1,1,2-Trichloroethane	79-00-5	2,3,4	U227	100 (45.4)
Trichloroethylene	79-01-6	1,2,3,4	U228	100 (45.4)
Trichloromethanesulfonyl chloride	594-42-3	4	P118	100 (45.4)
Trichloromonofluoromethane	75-69-4	4	U121	5000 (2270)
Trichlorophenol	25167-82-2	1		10 (4.54)
2,3,4-Trichlorophenol	15950-66-0			
2,3,5-Trichlorophenol	933-78-8			
2,3,6-Trichlorophenol	933-75-5			
3,4,5-Trichlorophenol	609-19-8			
2,4,5-Trichlorophenol	95-95-4	1,3,4	See F027	10 (4.54)
2,4,6-Trichlorophenol	88-06-2	1,2,3,4	See F027	10 (4.54)
Triethanolamine dodecylbenzenesulfonate	27323-41-7	1		1000 (454)
Triethylamine	121-44-8	1,3,4	U404	5000 (2270)
Trifluralin	1582-09-8	3		10 (4.54)
Trimethylamine	75-50-3	1		100 (45.4)
2,2,4-Trimethylpentane	540-84-1	3		1000 (454)
1,3,5-Trinitrobenzene	99-35-4	4	U234	10 (4.54)
1,3,5-Trioxane, 2,4,6-trimethyl-	123-63-7	4	U182	1000 (454)
Tris(2,3-dibromopropyl) phosphate	126-72-7	4	U235	10 (4.54)
Trypan blue	72-57-1	4	U236	10 (4.54)
Unlisted Hazardous Wastes Characteristic of Corrosivity ..	N.A.	4	D002	100 (45.4)
Unlisted Hazardous Wastes Characteristic of Ignitability ...	N.A.	4	D001	100 (45.4)
Unlisted Hazardous Wastes Characteristic of Reactivity ...	N.A.	4	D003	100 (45.4)
Unlisted Hazardous Wastes Characteristic of Toxicity: Arsenic (D004)	N.A.	4	D004	1 (0.454)

Environmental Protection Agency

§ 302.4

TABLE 302.4—LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES—Continued

[Note: All Comments/Notes Are Located at the End of This Table]

Hazardous substance	CASRN	Statutory code†	RCRA waste No.	Final RQ pounds (Kg)
Barium (D005)	N.A.	4	D005	1000 (454)
Benzene (D018)	N.A.	1,2,3,4	D018	10 (4.54)
Cadmium (D006)	N.A.	4	D006	10 (4.54)
Carbon tetrachloride (D019)	N.A.	1,2,4	D019	10 (4.54)
Chlordane (D020)	N.A.	1,2,4	D020	1 (0.454)
Chlorobenzene (D021)	N.A.	1,2,4	D021	100 (45.4)
Chloroform (D022)	N.A.	1,2,4	D022	10 (4.54)
Chromium (D007)	N.A.	4	D007	10 (4.54)
o-Cresol (D023)	N.A.	4	D023	100 (45.4)
m-Cresol (D024)	N.A.	4	D024	100 (45.4)
p-Cresol (D025)	N.A.	4	D025	100 (45.4)
Cresol (D026)	N.A.	4	D026	100 (45.4)
2,4-D (D016)	N.A.	1,4	D016	100 (45.4)
1,4-Dichlorobenzene (D027)	N.A.	1,2,4	D027	100 (45.4)
1,2-Dichloroethane (D028)	N.A.	1,2,4	D028	100 (45.4)
1,1-Dichloroethylene (D029)	N.A.	1,2,4	D029	100 (45.4)
2,4-Dinitrotoluene (D030)	N.A.	1,2,4	D030	10 (4.54)
Endrin (D012)	N.A.	1,4	D012	1 (0.454)
Heptachlor (and epoxide) (D031)	N.A.	1,2,4	D031	1 (0.454)
Hexachlorobenzene (D032)	N.A.	2,4	D032	10 (4.54)
Hexachlorobutadiene (D033)	N.A.	2,4	D033	1 (0.454)
Hexachloroethane (D034)	N.A.	2,4	D034	100 (45.4)
Lead (D008)	N.A.	4	D008	10 (4.54)
Lindane (D013)	N.A.	1,4	D013	1 (0.454)
Mercury (D009)	N.A.	4	D009	1 (0.454)
Methoxychlor (D014)	N.A.	1,4	D014	1 (0.454)
Methyl ethyl ketone (D035)	N.A.	4	D035	5000 (2270)
Nitrobenzene (D036)	N.A.	1,2,4	D036	1000 (454)
Pentachlorophenol (D037)	N.A.	1,2,4	D037	10 (4.54)
Pyridine (D038)	N.A.	4	D038	1000 (454)
Selenium (D010)	N.A.	4	D010	10 (4.54)
Silver (D011)	N.A.	4	D011	1 (0.454)
Tetrachloroethylene (D039)	N.A.	2,4	D039	100 (45.4)
Toxaphene (D015)	N.A.	1,4	D015	1 (0.454)
Trichloroethylene (D040)	N.A.	1,2,4	D040	100 (45.4)
2,4,5-Trichlorophenol (D041)	N.A.	1,4	D041	10 (4.54)
2,4,6-Trichlorophenol (D042)	N.A.	1,2,4	D042	10 (4.54)
2,4,5-TP (D017)	N.A.	1,4	D017	100 (45.4)
Vinyl chloride (D043)	N.A.	2,3,4	D043	1 (0.454)
Uracil mustard	66-75-1	4	U237	10 (4.54)
Uranyl acetate	541-09-3	1		100 (45.4)
Uranyl nitrate	10102-06-4	1		100 (45.4)
	36478-76-9			
Urea, N-ethyl-N-nitroso-	759-73-9	4	U176	1 (0.454)
Urea, N-methyl-N-nitroso-	684-93-5	3,4	U177	1 (0.454)
Urethane	51-79-6	3,4	U238	100 (45.4)
Vanadic acid, ammonium salt	7803-55-6	4	P119	1000 (454)
Vanadium oxide V2O5	1314-62-1	1,4	P120	1000 (454)
Vanadium pentoxide	1314-62-1	1,4	P120	1000 (454)
Vanadyl sulfate	27774-13-6	1		1000 (454)
Vinyl acetate	108-05-4	1,3		5000 (2270)
Vinyl acetate monomer	108-05-4	1,3		5000 (2270)
Vinylamine, N-methyl-N-nitroso-	4549-40-0	4	P084	10 (4.54)
Vinyl bromide	593-60-2	3		100 (45.4)
Vinyl chloride	75-01-4	2,3,4	U043	1 (0.454)
Vinylidene chloride	75-35-4	1,2,3,4	U078	100 (45.4)
Warfarin, & salts	81-81-2	4	P001, U248	100 (45.4)
Xylene	1330-20-7	1,3,4	U239	100 (45.4)
m-Xylene	108-38-3	3		1000 (454)
o-Xylene	95-47-6	3		1000 (454)
p-Xylene	106-42-3	3		100 (45.4)
Xylene (mixed)	1330-20-7	1,3,4	U239	100 (45.4)
Xylenes (isomers and mixture)	1330-20-7	1,3,4	U239	100 (45.4)
Xylenol	1300-71-6	1		1000 (454)
Yohimban-16-carboxylic acid, 11,17-dimethoxy-18-[(3,4,5-trimethoxybenzoyl)oxy]-, methyl ester (3beta,16beta,17alpha, 18beta,20alpha).	50-55-54	4	U200	5000 (2270)
Zinc††	7440-66-6	2		1000 (454)
ZINC AND COMPOUNDS	N.A.	2		**

§ 302.4

40 CFR Ch. I (7-1-11 Edition)

TABLE 302.4—LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES—Continued

[Note: All Comments/Notes Are Located at the End of This Table]

Hazardous substance	CASRN	Statutory code†	RCRA waste No.	Final RQ pounds (Kg)
Zinc acetate	557-34-6	1		1000 (454)
Zinc ammonium chloride	52628-25-8	1		1000 (454)
	14639-97-5			
	14639-98-6			
Zinc, bis(dimethylcarbomodithioato-S,S')-	137304	4	P205	10 (4.54)
Zinc borate	1332-07-6	1		1000 (454)
Zinc bromide	7699-45-8	1		1000 (454)
Zinc carbonate	3486-35-9	1		1000 (454)
Zinc chloride	7646-85-7	1		1000 (454)
Zinc cyanide Zn(CN)2	557-21-1	1,4	P121	10 (4.54)
Zinc fluoride	7783-49-5	1		1000 (454)
Zinc formate	557-41-5	1		1000 (454)
Zinc hydrosulfite	7779-86-4	1		1000 (454)
Zinc nitrate	7779-88-6	1		1000 (454)
Zinc phenolsulfonate	127-82-2	1		5000 (2270)
Zinc phosphide Zn3P2	1314-84-7	1,4	P122, U249	100 (45.4)
Zinc silicofluoride	16871-71-9	1		5000 (2270)
Zinc sulfate	7733-02-0	1		1000 (454)
Ziram	137304	4	P205	10 (4.54)
Zirconium nitrate	13746-89-9	1		5000 (2270)
Zirconium potassium fluoride	16923-95-8	1		1000 (454)
Zirconium sulfate	14644-61-2	1		5000 (2270)
Zirconium tetrachloride	10026-11-6	1		5000 (2270)
F001		4	F001	10 (4.54)
The following spent halogenated solvents used in degreasing; all spent solvent mixtures/blends used in degreasing containing, before use, a total of ten percent or more (by volume) of one or more of the halogenated solvents listed below or those solvents listed in F002, F004, and F005; and still bottoms from the recovery of these spent solvents and spent solvent mixtures.				
(a) Tetrachloroethylene	127-18-4	2,3,4	U210	100 (45.4)
(b) Trichloroethylene	79-01-6	1,2,3,4	U228	100 (45.4)
(c) Methylene chloride	75-09-2	2,3,4	U080	1000 (454)
(d) 1,1,1-Trichloroethane	71-55-6	2,3,4	U226	1000 (454)
(e) Carbon tetrachloride	56-23-5	1,2,3,4	U211	10 (4.54)
(f) Chlorinated fluorocarbons	N.A.			5000 (2270)
F002		4	F002	10 (4.54)
The following spent halogenated solvents; all spent solvent mixtures/blends containing, before use, a total of ten percent or more (by volume) of one or more of the halogenated solvents listed below or those solvents listed in F001, F004, or F005; and still bottoms from the recovery of these spent solvents and spent solvent mixtures.				
(a) Tetrachloroethylene	127-18-4	2,3,4	U210	100 (45.4)
(b) Methylene chloride	75-09-2	2,3,4	U080	1000 (454)
(c) Trichloroethylene	79-01-6	1,2,3,4	U228	100 (45.4)
(d) 1,1,1-Trichloroethane	71-55-6	2,3,4	U226	1000 (454)
(e) Chlorobenzene	108-90-7	1,2,3,4	U037	100 (45.4)
(f) 1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1			5000 (2270)
(g) o-Dichlorobenzene	95-50-1	1,2,4	U070	100 (45.4)
(h) Trichlorofluoromethane	75-69-4	4	U121	5000 (2270)
(i) 1,1,2-Trichloroethane	79-00-5	2,3,4	U227	100 (45.4)
F003		4	F003	100 (45.4)
The following spent non-halogenated solvents and the still bottoms from the recovery of these solvents.				
(a) Xylene	1330-20-7			1000 (454)
(b) Acetone	67-64-1			5000 (2270)
(c) Ethyl acetate	141-78-6			5000 (2270)
(d) Ethylbenzene	100-41-4			1000 (454)
(e) Ethyl ether	60-29-7			100 (45.4)
(f) Methyl isobutyl ketone	108-10-1			5000 (2270)
(g) n-Butyl alcohol	71-36-3			5000 (2270)
(h) Cyclohexanone	108-94-1			5000 (2270)
(i) Methanol	67-56-1			5000 (2270)
F004		4	F004	100 (45.4)
The following spent non-halogenated solvents and the still bottoms from the recovery of these solvents:				
(a) Cresols/Cresylic acid	1319-77-3	1,3,4	U052	100 (45.4)

Environmental Protection Agency

§ 302.4

TABLE 302.4—LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES—Continued

[Note: All Comments/Notes Are Located at the End of This Table]

Hazardous substance	CASRN	Statutory code†	RCRA waste No.	Final RQ pounds (Kg)
(b) Nitrobenzene	98-95-3	1,2,3,4	U169	1000 (454)
F005		4	F005	100 (45.4)
The following spent non-halogenated solvents and the still bottoms from the recovery of these solvents:				
(a) Toluene	108-88-3	1,2,3,4	U220	1000 (454)
(b) Methyl ethyl ketone	78-93-3	3,4	U159	5000 (2270)
(c) Carbon disulfide	75-15-0	1,3,4	P022	100 (45.4)
(d) Isobutanol	78-83-1	4	U140	5000 (2270)
(e) Pyridine	110-86-1	4	U196	1000 (454)
F006		4	F006	10 (4.54)
Wastewater treatment sludges from electroplating operations except from the following processes: (1) sulfuric acid anodizing of aluminum, (2) tin plating on carbon steel, (3) zinc plating (segregated basis) on carbon steel, (4) aluminum or zinc-aluminum plating on carbon steel, (5) cleaning/stripping associated with tin, zinc and aluminum plating on carbon steel, and (6) chemical etching and milling of aluminum.				
F007		4	F007	10 (4.54)
Spent cyanide plating bath solutions from electroplating operations.				
F008		4	F008	10 (4.54)
Plating bath residues from the bottom of plating baths from electroplating operations where cyanides are used in the process.				
F009		4	F009	10 (4.54)
Spent stripping and cleaning bath solutions from electroplating operations where cyanides are used in the process.				
F010		4	F010	10 (4.54)
Quenching bath residues from oil baths from metal heat treating operations where cyanides are used in the process.				
F011		4	F011	10 (4.54)
Spent cyanide solutions from salt bath pot cleaning from metal heat treating operations.				
F012		4	F012	10 (4.54)
Quenching wastewater treatment sludges from metal heat treating operations where cyanides are used in the process.				
F019		4	F019	10 (4.54)
Wastewater treatment sludges from the chemical conversion coating of aluminum except from zirconium phosphating in aluminum can washing when such phosphating is an exclusive conversion coating process. Wastewater treatment sludges from the manufacturing of motor vehicles using a zinc phosphating process will not be subject to this listing at the point of generation if the wastes are not placed outside on the land prior to shipment to a landfill for disposal and are either: disposed in a Subtitle D municipal or industrial landfill unit that is equipped with a single clay liner and is permitted, licensed or otherwise authorized by the state; or disposed in a landfill unit subject to, or otherwise meeting, the landfill requirements in § 258.40, § 264.301 or § 265.301. For the purposes of this listing, motor vehicle manufacturing is defined in § 261.31(b)(4)(i) and § 261.31(b)(4)(ii) describes the recordkeeping requirements for motor vehicle manufacturing facilities				
F020		4	F020	1 (0.454)
Wastes (except wastewater and spent carbon from hydrogen chloride purification) from the production or manufacturing use (as a reactant, chemical intermediate, or component in a formulating process) of tri- or tetrachlorophenol or of intermediates used to produce their pesticide derivatives. (This listing does not include wastes from the production of hexachlorophene from highly purified 2,4,5-trichlorophenol.)				
F021		4	F021	1 (0.454)

§ 302.4

40 CFR Ch. I (7–1–11 Edition)

TABLE 302.4—LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES—Continued

[Note: All Comments/Notes Are Located at the End of This Table]

Hazardous substance	CASRN	Statutory code†	RCRA waste No.	Final RQ pounds (Kg)
Wastes (except wastewater and spent carbon from hydrogen chloride purification) from the production or manufacturing use (as a reactant, chemical intermediate, or component in a formulating process) of pentachlorophenol or of intermediates used to produce its derivatives.				
F022		4	F022	1 (0.454)
Wastes (except wastewater and spent carbon from hydrogen chloride purification) from the manufacturing use (as a reactant, chemical intermediate, or component in a formulating process) of tetra-, penta-, or hexachlorobenzenes under alkaline conditions.				
F023		4	F023	1 (0.454)
Wastes (except wastewater and spent carbon from hydrogen chloride purification) from the production of materials on equipment previously used for the production or manufacturing use (as a reactant, chemical intermediate, or a component in a formulating process) of tri- and tetrachlorophenols. (This listing does not include wastes from equipment used only for the production or use of hexachlorophene from highly purified 2,4,5-trichlorophenol.)				
F024		4	F024	1 (0.454)
Process wastes, including but not limited to, distillation residues, heavy ends, tars, and reactor clean-out wastes, from the production of certain chlorinated aliphatic hydrocarbons by free radical catalyzed processes. These chlorinated aliphatic hydrocarbons are those having carbon chain lengths ranging from one to and including five, with varying amounts and positions of chlorine substitution. (This listing does not include wastewaters, wastewater treatment sludges, spent catalysts, and wastes listed in 40 CFR 261.31 or 261.32.)				
F025		4	F025	1 (0.454)
Condensed light ends, spent filters and filter aids, and spent desiccant wastes from the production of certain chlorinated aliphatic hydrocarbons, by free radical catalyzed processes. These chlorinated aliphatic hydrocarbons are those having carbon chain lengths ranging from one to and including five, with varying amounts and positions of chlorine substitution.				
F026		4	F026	1 (0.454)
Wastes (except wastewater and spent carbon from hydrogen chloride purification) from the production of materials on equipment previously used for the manufacturing use (as a reactant, chemical intermediate, or component in a formulating process) of tetra-, penta-, or hexachlorobenzene under alkaline conditions.				
F027		4	F027	1 (0.454)
Discarded unused formulations containing tri-, tetra-, or pentachlorophenol or discarded unused formulations containing compounds derived from these chlorophenols. (This listing does not include formulations containing hexachlorophene synthesized from prepurified 2,4,5- trichlorophenol as the sole component.)				
F028		4	F028	1 (0.454)
Residues resulting from the incineration or thermal treatment of soil contaminated with EPA Hazardous Waste Nos. F020, F021, F022, F023, F026, and F027.				
F032		4	F032	1 (0.454)

Environmental Protection Agency

§ 302.4

TABLE 302.4—LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES—Continued

[Note: All Comments/Notes Are Located at the End of This Table]

Hazardous substance	CASRN	Statutory code†	RCRA waste No.	Final RQ pounds (Kg)
Wastewaters (except those that have not come into contact with process contaminants), process residuals, preservative drippage, and spent formulations from wood preserving processes generated at plants that currently use or have previously used chlorophenolic formulations (except potentially cross-contaminated wastes that have had the F032 waste code deleted in accordance with §261.35 of this chapter or potentially cross-contaminated wastes that are otherwise currently regulated as hazardous wastes (i.e., F034 or F035), and where the generator does not resume or initiate use of chlorophenolic formulations). This listing does not include K001 bottom sediment sludge from the treatment of wastewater from wood preserving processes that use creosote and/or pentachlorophenol.				
F034		4	F034	1 (0.454)
Wastewaters (except those that have not come into contact with process contaminants), process residuals, preservative drippage, and spent formulations from wood preserving processes generated at plants that use creosote formulations. This listing does not include K001 bottom sediment sludge from the treatment of wastewater from wood preserving processes that use creosote and/or pentachlorophenol.				
F035		4	F035	1 (0.454)
Wastewaters (except those that have not come into contact with process contaminants), process residuals, preservative drippage, and spent formulations from wood preserving processes generated at plants that use inorganic preservatives containing arsenic or chromium. This listing does not include K001 bottom sediment sludge from the treatment of wastewater from wood preserving processes that use creosote and/or pentachlorophenol.				
F037		4	F037	1 (0.454)
Petroleum refinery primary oil/water/solids separation sludge-Any sludge generated from the gravitational separation of oil/water/solids during the storage or treatment of process wastewaters and oily cooling wastewaters from petroleum refineries. Such sludges include, but are not limited to those generated in oil/water/solids separators; tanks and impoundments; ditches and other conveyances; sumps; and stormwater units receiving dry weather flow. Sludges generated in stormwater units that do not receive dry weather flow, sludges generated from non-contact once-through cooling waters segregated for treatment from other process or oily cooling waters, sludges generated in aggressive biological treatment units as defined in §261.31(b)(2) (including sludges generated in one or more additional units after wastewaters have been treated in aggressive biological treatment units) and K051 wastes are not included in this listing. This listing does include residuals generated from processing or recycling oil-bearing hazardous secondary materials excluded under §261.4(a)(12)(i), if those residuals are to be disposed of.				
F038		4	F038	1 (0.454)

§ 302.4

40 CFR Ch. I (7–1–11 Edition)

TABLE 302.4—LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES—Continued

[Note: All Comments/Notes Are Located at the End of This Table]

Hazardous substance	CASRN	Statutory code†	RCRA waste No.	Final RQ pounds (Kg)
Petroleum refinery secondary (emulsified) oil/water/solids separation sludge-Any sludge and/or float generated from the physical and/or chemical separation of oil/water/solids in process wastewaters and oily cooling wastewaters from petroleum refineries. Such wastes include, but are not limited to, all sludges and floats generated in: induced air flotation (IAF) units, tanks and impoundments, and all sludges generated in DAF units. Sludges generated in stormwater units that do not receive dry weather flow, sludges generated from non-contact once-through cooling waters segregated for treatment from other process or oily cooling waters, sludges and floats generated in aggressive biological treatment units as defined in §261.31(b)(2) (including sludges and floats generated in one or more additional units after wastewaters have been treated in aggressive biological treatment units) and F037, K048, and K051 wastes are not included in this listing.				
F039		4	F039	1 (0.454)
Leachate (liquids that have percolated through land disposed wastes) resulting from the disposal of more than one restricted waste classified as hazardous under subpart D of 40 CFR part 261. (Leachate resulting from the disposal of one or more of the following EPA Hazardous Wastes and no other hazardous wastes retains its EPA Hazardous Waste Number(s): F020, F021, F022, F026, F027, and/or F028.)				
K001		4	K001	1 (0.454)
Bottom sediment sludge from the treatment of wastewaters from wood preserving processes that use creosote and/or pentachlorophenol.				
K002		4	K002	10 (4.54)
Wastewater treatment sludge from the production of chrome yellow and orange pigments.				
K003		4	K003	10 (4.54)
Wastewater treatment sludge from the production of molybdate orange pigments.				
K004		4	K004	10 (4.54)
Wastewater treatment sludge from the production of zinc yellow pigments.				
K005		4	K005	10 (4.54)
Wastewater treatment sludge from the production of chrome green pigments.				
K006		4	K006	10 (4.54)
Wastewater treatment sludge from the production of chrome oxide green pigments (anhydrous and hydrated).				
K007		4	K007	10 (4.54)
Wastewater treatment sludge from the production of iron blue pigments.				
K008		4	K008	10 (4.54)
Oven residue from the production of chrome oxide green pigments.				
K009		4	K009	10 (4.54)
Distillation bottoms from the production of acetaldehyde from ethylene.				
K010		4	K010	10 (4.54)
Distillation side cuts from the production of acetaldehyde from ethylene.				
K011		4	K011	10 (4.54)
Bottom stream from the wastewater stripper in the production of acrylonitrile.				
K013		4	K013	10 (4.54)
Bottom stream from the acetonitrile column in the production of acrylonitrile.				
K014		4	K014	5000 (2270)
Bottoms from the acetonitrile purification column in the production of acrylonitrile.				
K015		4	K015	10 (4.54)

Environmental Protection Agency

§ 302.4

TABLE 302.4—LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES—Continued

[Note: All Comments/Notes Are Located at the End of This Table]

Hazardous substance	CASRN	Statutory code†	RCRA waste No.	Final RQ pounds (Kg)
Still bottoms from the distillation of benzyl chloride.				
K016		4	K016	1 (0.454)
Heavy ends or distillation residues from the production of carbon tetrachloride.				
K017		4	K017	10 (4.54)
Heavy ends (still bottoms) from the purification column in the production of epichlorohydrin.				
K018		4	K018	1 (0.454)
Heavy ends from the fractionation column in ethyl chloride production.				
K019		4	K019	1 (0.454)
Heavy ends from the distillation of ethylene dichloride in ethylene dichloride production.				
K020		4	K020	1 (0.454)
Heavy ends from the distillation of vinyl chloride in vinyl chloride monomer production.				
K021		4	K021	10 (4.54)
Aqueous spent antimony catalyst waste from fluoromethanes production.				
K022		4	K022	1 (0.454)
Distillation bottom tars from the production of phenol/acetone from cumene.				
K023		4	K023	5000 (2270)
Distillation light ends from the production of phthalic anhydride from naphthalene.				
K024		4	K024	5000 (2270)
Distillation bottoms from the production of phthalic anhydride from naphthalene.				
K025		4	K025	10 (4.54)
Distillation bottoms from the production of nitrobenzene by the nitration of benzene.				
K026		4	K026	1000 (454)
Stripping still tails from the production of methyl ethyl pyridines.				
K027		4	K027	10 (4.54)
Centrifuge and distillation residues from toluene diisocyanate production.				
K028		4	K028	1 (0.454)
Spent catalyst from the hydrochlorinator reactor in the production of 1,1,1-trichloroethane.				
K029		4	K029	1 (0.454)
Waste from the product steam stripper in the production of 1,1,1-trichloroethane.				
K030		4	K030	1 (0.454)
Column bottoms or heavy ends from the combined production of trichloroethylene and perchloroethylene.				
K031		4	K031	1 (0.454)
By-product salts generated in the production of MSMA and cacodylic acid.				
K032		4	K032	10 (4.54)
Wastewater treatment sludge from the production of chlordane.				
K033		4	K033	10 (4.54)
Wastewater and scrub water from the chlorination of cyclopentadiene in the production of chlordane.				
K034		4	K034	10 (4.54)
Filter solids from the filtration of hexachlorocyclopentadiene in the production of chlordane.				
K035		4	K035	1 (0.454)
Wastewater treatment sludges generated in the production of creosote.				
K036		4	K036	1 (0.454)
Still bottoms from toluene reclamation distillation in the production of disulfoton.				
K037		4	K037	1 (0.454)
Wastewater treatment sludges from the production of disulfoton.				
K038		4	K038	10 (4.54)

§ 302.4

40 CFR Ch. I (7–1–11 Edition)

TABLE 302.4—LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES—Continued

[Note: All Comments/Notes Are Located at the End of This Table]

Hazardous substance	CASRN	Statutory code†	RCRA waste No.	Final RQ pounds (Kg)
Wastewater from the washing and stripping of phorate production.				
K039		4	K039	10 (4.54)
Filter cake from the filtration of diethylphosphorodithioic acid in the production of phorate.				
K040		4	K040	10 (4.54)
Wastewater treatment sludge from the production of phorate.				
K041		4	K041	1 (0.454)
Wastewater treatment sludge from the production of toxaphene.				
K042		4	K042	10 (4.54)
Heavy ends or distillation residues from the distillation of tetrachlorobenzene in the production of 2,4,5-T.				
K043		4	K043	10 (4.54)
2,6-Dichlorophenol waste from the production of 2,4-D.				
K044		4	K044	10 (4.54)
Wastewater treatment sludges from the manufacturing and processing of explosives.				
K045		4	K045	10 (4.54)
Spent carbon from the treatment of wastewater containing explosives.				
K046		4	K046	10 (4.54)
Wastewater treatment sludges from the manufacturing, formulation and loading of lead-based initiating compounds.				
K047		4	K047	10 (4.54)
Pink/red water from TNT operations.				
K048		4	K048	10 (4.54)
Dissolved air flotation (DAF) float from the petroleum refining industry.				
K049		4	K049	10 (4.54)
Slop oil emulsion solids from the petroleum refining industry.				
K050		4	K050	10 (4.54)
Heat exchanger bundle cleaning sludge from the petroleum refining industry.				
K051		4	K051	10 (4.54)
API separator sludge from the petroleum refining industry.				
K052		4	K052	10 (4.54)
Tank bottoms (leaded) from the petroleum refining industry.				
K060		4	K060	1 (0.454)
Ammonia still lime sludge from coking operations.				
K061		4	K061	10 (4.54)
Emission control dust/sludge from the primary production of steel in electric furnaces.				
K062		4	K062	10 (4.54)
Spent pickle liquor generated by steel finishing operations of facilities within the iron and steel industry (SIC Codes 331 and 332).				
K064		4	K064	10 (4.54)
Acid plant blowdown slurry/sludge resulting from the thickening of blowdown slurry from primary copper production.				
K065		4	K065	10 (4.54)
Surface impoundment solids contained in and dredged from surface impoundments at primary lead smelting facilities.				
K066		4	K066	10 (4.54)
Sludge from treatment of process wastewater and/or acid plant blowdown from primary zinc production.				
K069		4	K069	10 (4.54)

Environmental Protection Agency

§ 302.4

TABLE 302.4—LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES—Continued

[Note: All Comments/Notes Are Located at the End of This Table]

Hazardous substance	CASRN	Statutory code†	RCRA waste No.	Final RQ pounds (Kg)
Emission control dust/sludge from secondary lead smelting. (Note: This listing is stayed administratively for sludge generated from secondary acid scrubber systems. The stay will remain in effect until further administrative action is taken. If EPA takes further action effecting the stay, EPA will publish a notice of the action in the FEDERAL REGISTER.)				
K071		4	K071	1 (0.454)
Brine purification muds from the mercury cell process in chlorine production, where separately prepurified brine is not used.				
K073		4	K073	10 (4.54)
Chlorinated hydrocarbon waste from the purification step of the diaphragm cell process using graphite anodes in chlorine production.				
K083		4	K083	100 (45.4)
Distillation bottoms from aniline production.				
K084		4	K084	1 (0.454)
Wastewater treatment sludges generated during the production of veterinary pharmaceuticals from arsenic or organo-arsenic compounds.				
K085		4	K085	10 (4.54)
Distillation or fractionation column bottoms from the production of chlorobenzenes.				
K086		4	K086	10 (4.54)
Solvent washes and sludges, caustic washes and sludges, or water washes and sludges from cleaning tubs and equipment used in the formulation of ink from pigments, driers, soaps, and stabilizers containing chromium and lead.				
K087		4	K087	100 (45.4)
Decanter tank tar sludge from coking operations.				
K088		4	K088	10 (4.54)
Spent potliners from primary aluminum reduction.				
K090		4	K090	10 (4.54)
Emission control dust or sludge from ferrochromium-silicon production.				
K091		4	K091	10 (4.54)
Emission control dust or sludge from ferrochromium production.				
K093		4	K093	5000 (2270)
Distillation light ends from the production of phthalic anhydride from ortho-xylene.				
K094		4	K094	5000 (2270)
Distillation bottoms from the production of phthalic anhydride from ortho-xylene.				
K095		4	K095	100 (45.4)
Distillation bottoms from the production of 1,1,1-trichloroethane.				
K096		4	K096	100 (45.4)
Heavy ends from the heavy ends column from the production of 1,1,1-trichloroethane.				
K097		4	K097	1 (0.454)
Vacuum stripper discharge from the chlordane chlorinator in the production of chlordane.				
K098		4	K098	1 (0.454)
Untreated process wastewater from the production of toxaphene.				
K099		4	K099	10 (4.54)
Untreated wastewater from the production of 2,4-D.				
K100		4	K100	10 (4.54)
Waste leaching solution from acid leaching of emission control dust/sludge from secondary lead smelting.				
K101		4	K101	1 (0.454)
Distillation tar residues from the distillation of aniline-based compounds in the production of veterinary pharmaceuticals from arsenic or organo-arsenic compounds.				
K102		4	K102	1 (0.454)

§ 302.4

40 CFR Ch. I (7–1–11 Edition)

TABLE 302.4—LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES—Continued

[Note: All Comments/Notes Are Located at the End of This Table]

Hazardous substance	CASRN	Statutory code†	RCRA waste No.	Final RQ pounds (Kg)
Residue from the use of activated carbon for decolorization in the production of veterinary pharmaceuticals from arsenic or organo-arsenic compounds.				
K103		4	K103	100 (45.4)
Process residues from aniline extraction from the production of aniline.				
K104		4	K104	10 (4.54)
Combined wastewater streams generated from nitrobenzene/aniline production.				
K105		4	K105	10 (4.54)
Separated aqueous stream from the reactor product washing step in the production of chlorobenzenes.				
K106		4	K106	1 (0.454)
Wastewater treatment sludge from the mercury cell process in chlorine production.				
K107		4	K107	10 (4.54)
Column bottoms from product separation from the production of 1,1- dimethylhydrazine (UDMH) from carboxylic acid hydrazines.				
K108		4	K108	10 (4.54)
Condensed column overheads from product separation and condensed reactor vent gases from the production of 1,1- dimethylhydrazine (UDMH) from carboxylic acid hydrazides.				
K109		4	K109	10 (4.54)
Spent filter cartridges from product purification from the production of 1,1-dimethylhydrazine (UDMH) from carboxylic acid hydrazides.				
K110		4	K110	10 (4.54)
Condensed column overheads from intermediate separation from the production of 1,1- dimethylhydrazine (UDMH) from carboxylic acid hydrazides.				
K111		4	K111	10 (4.54)
Product washwaters from the production of dinitrotoluene via nitration of toluene.				
K112		4	K112	10 (4.54)
Reaction by-product water from the drying column in the production of toluenediamine via hydrogenation of dinitrotoluene.				
K113		4	K113	10 (4.54)
Condensed liquid light ends from the purification of toluenediamine in the production of toluenediamine via hydrogenation of dinitrotoluene.				
K114		4	K114	10 (4.54)
Vicinals from the purification of toluenediamine in the production of toluenediamine via hydrogenation of dinitrotoluene.				
K115		4	K115	10 (4.54)
Heavy ends from the purification of toluenediamine in the production of toluenediamine via hydrogenation of dinitrotoluene.				
K116		4	K116	10 (4.54)
Organic condensate from the solvent recovery column in the production of toluene diisocyanate via phosgenation of toluenediamine.				
K117		4	K117	1 (0.454)
Wastewater from the reactor vent gas scrubber in the production of ethylene dibromide via bromination of ethene.				
K118		4	K118	1 (0.454)
Spent adsorbent solids from purification of ethylene dibromide in the production of ethylene dibromide via bromination of ethene.				
K123		4	K123	10 (4.54)
Process wastewater (including supernates, filtrates, and washwaters) from the production of ethylenebisdithiocarbamic acid and its salts.				
K124		4	K124	10 (4.54)

Environmental Protection Agency

§ 302.4

TABLE 302.4—LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES—Continued

[Note: All Comments/Notes Are Located at the End of This Table]

Hazardous substance	CASRN	Statutory code†	RCRA waste No.	Final RQ pounds (Kg)
Reactor vent scrubber water from the production of ethylenedisithiocarbamic acid and its salts. K125	4	K125	10 (4.54)
Filtration, evaporation, and centrifugation solids from the production of ethylenedisithiocarbamic acid and its salts. K126	4	K126	10 (4.54)
Baghouse dust and floor sweepings in milling and packaging operations from the production or formulation of ethylenedisithiocarbamic acid and its salts. K131	4	K131	100 (45.4)
Wastewater from the reactor and spent sulfuric acid from the acid dryer from the production of methyl bromide. K132	4	K132	1000 (454)
Spent absorbent and wastewater separator solids from the production of methyl bromide. K136	4	K136	1 (0.454)
Still bottoms from the purification of ethylene dibromide in the production of ethylene dibromide via bromination of ethene. K141	4	K141	1 (0.454)
Process residues from the recovery of coal tar, including, but not limited to, collecting sump residues from the production of coke from coal or the recovery of coke by-products produced from coal. This listing does not include K087 (decanter tank tar sludges from coking operations). K142	4	K142	1 (0.454)
Tar storage tank residues from the production of coke from coal or from the recovery of coke by-products produced from coal. K143	4	K143	1 (0.454)
Process residues from the recovery of light oil, including, but not limited to, those generated in stills, decanters, and wash oil recovery units from the recovery of coke by-products produced from coal. K144	4	K144	1 (0.454)
Wastewater sump residues from light oil refining, including, but not limited to, intercepting or contamination sump sludges from the recovery of coke by-products produced from coal. K145	4	K145	1 (0.454)
Residues from naphthalene collection and recovery operations from the recovery of coke by-products produced from coal. K147	4	K147	1 (0.454)
Tar storage tank residues from coal tar refining. K148	4	K148	1 (0.454)
Residues from coal tar distillation, including, but not limited to, still bottoms. K149	4	K149	10 (4.54)
Distillation bottoms from the production of alpha-(or methyl-) chlorinated toluenes, ring-chlorinated toluenes, benzoyl chlorides, and compounds with mixtures of these functional groups. [This waste does not include still bottoms from the distillation of benzyl chloride.] K150	4	K150	10 (4.54)
Organic residuals, excluding spent carbon adsorbent, from the spent chlorine gas and hydrochloric acid recovery processes associated with the production of alpha- (or methyl-) chlorinated toluenes, ring-chlorinated toluenes, benzoyl chlorides, and compounds with mixtures of these functional groups. K151	4	K151	10 (4.54)

§ 302.4

40 CFR Ch. I (7–1–11 Edition)

TABLE 302.4—LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES—Continued

[Note: All Comments/Notes Are Located at the End of This Table]

Hazardous substance	CASRN	Statutory code†	RCRA waste No.	Final RQ pounds (Kg)
Wastewater treatment sludges, excluding neutralization and biological sludges, generated during the treatment of waste-waters from the production of alpha- (or methyl-) chlorinated toluenes, ring-chlorinated toluenes, benzoyl chlorides, and compounds with mixtures of these functional groups.				
K156 Organic waste (including heavy ends, still bottoms, light ends, spent solvents, filtrates, and decantates) from the production of carbamates and carbamoyl oximes. (This listing does not apply to wastes generated from the manufacture of 3-iodo-2-propynyl n-butylcarbamate.)		4	K156	10 (4.54)
K157 Wastewaters (including scrubber waters, condenser waters, washwaters, and separation waters) from the production of carbamates and carbamoyl oximes. (This listing does not apply to wastes generated from the manufacture of 3-iodo-2-propynyl n-butylcarbamate.)		4	K157	10 (4.54)
K158 Bag house dusts and filter/separation solids from the production of carbamates and carbamoyl oximes. (This listing does not apply to wastes generated from the manufacture of 3-iodo-2-propynyl n-butylcarbamate.)		4	K158	10 (4.54)
K159 Organics from the treatment of thiocarbamate wastes.		4	K159	10 (4.54)
K161 Purification solids (including filtration, evaporation, and centrifugation solids), bag-house dust and floor sweepings from the production of dithiocarbamate acids and their salts. (This listing does not include K125 or K126).		4	K161	1 (0.454)
K169 ¹ Crude oil storage tank sediment from petroleum refining operations.		4	K169	10 (4.54)
K170 ¹ Clarified slurry oil tank sediment and/or in-line filter/separation solids from petroleum refining operations.		4	K170	1 (0.454)
K171 ¹ Spent hydrotreating catalyst from petroleum refining operations. (This listing does not include inert support media.)		4	K171	1 (0.454)
K172 ¹ Spent hydrorefining catalyst from petroleum refining operations. (This listing does not include inert support media.)		4	K172	1 (0.454)
K174 ¹		4	K174	1 (0.454)
K175 ¹		4	K175	1 (0.454)
K176 Baghouse filters from the production of antimony oxide, including filters from the production of intermediates (e.g., antimony metal or crude antimony oxide)		4	K176	1 (0.454)
K177 Slag from the production of antimony oxide that is speculatively accumulated or disposed, including slag from the production of intermediates (e.g., antimony metal or crude antimony oxide)		4	K177	5,000 (2270)
K178 Residues from manufacturing and manufacturing-site storage of ferric chloride from acids formed during the production of titanium dioxide using the chloride-ilmenite process.		4	K178	1000 (454)
K181		4	K181	##

Environmental Protection Agency

§ 302.4

TABLE 302.4—LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES—Continued

[Note: All Comments/Notes Are Located at the End of This Table]

Hazardous substance	CASRN	Statutory code†	RCRA waste No.	Final RQ pounds (Kg)
Nonwastewaters from the production of dyes and/or pigments (including nonwastewaters commingled at the point of generation with nonwastewaters from other processes) that, at the point of generation, contain mass loadings of any of the constituents identified in paragraph (c) of section 261.32 that are equal to or greater than the corresponding paragraph (c) levels, as determined on a calendar year basis				

† Indicates the statutory source defined by 1, 2, 3, and 4, as described in the note preceding Table 302.4.
 ‡ Indicates the statutory source defined by 1,2,3, and 4, as described in the note preceding Table 302.4.
 †† No reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released is larger than 100 micrometers (0.004 inches).
 ††† The RQ for asbestos is limited to friable forms only.
 ## The Agency may adjust the statutory RQ for this hazardous substance in a future rulemaking; until then the statutory one-pound RQ applies.
 § The adjusted RQs for radionuclides may be found in Appendix B to this table.
 ** Indicates that no RQ is being assigned to the generic or broad class.
 a Benzene was already a CERCLA hazardous substance prior to the CAA Amendments of 1990 and received an adjusted 10-pound RQ based on potential carcinogenicity in an August 14, 1989, final rule (54 FR 33418). The CAA Amendments specify that "benzene (including benzene from gasoline)" is a hazardous air pollutant and, thus, a CERCLA hazardous substance.
 b The CAA Amendments of 1990 list DDE (3547-04-4) as a CAA hazardous air pollutant. The CAS number, 3547-04-4, is for the chemical, p,p'-dichlorodiphenylethane. DDE or p,p'-dichlorodiphenyldichloroethylene, CAS number 72-55-9, is already listed in Table 302.4 with a final RQ of 1 pound. The substance identified by the CAS number 3547-04-4 has been evaluated and listed as DDE to be consistent with the CAA section 112 listing, as amended.
 c Includes mineral fiber emissions from facilities manufacturing or processing glass, rock, or slag fibers (or other mineral derived fibers) of average diameter 1 micrometer or less.
 d Includes mono- and di-ethers of ethylene glycol, diethylene glycol, and triethylene glycol R-(OCH2CH2)n-OR' where:
 n = 1, 2, or 3;
 R = alkyl C7 or less; or
 R = phenyl or alkyl substituted phenyl;
 R' = H or alkyl C7 or less; or
 OR' consisting of carboxylic acid ester, sulfate, phosphate, nitrate, or sulfonate.
 e Includes organic compounds with more than one benzene ring, and which have a boiling point greater than or equal to 100 °C.
 f See 40 CFR 302.6(b)(1) for application of the mixture rule to this hazardous waste.

APPENDIX A TO § 302.4—SEQUENTIAL CAS REGISTRY NUMBER LIST OF CERCLA HAZARDOUS SUBSTANCES

CASRN	Hazardous substance
50000	Formaldehyde.
50077	Azirino[2',3':3,4]pyrrolo[1,2-a]indole-4,7-dione,6-amino-8-[[[(aminocarbonyloxy)methyl]-1,1a,2,8,8a, 8b-hexahydro-8a-methoxy-5-methyl-, [1aS-(1aalpha, 8beta,8aalpna,8balpna)]- Mitomycin C.
50180	Cyclophosphamide. 2H-1,3,2-Oxazaphosphorin-2-amine, N,N-bis(2-chloroethyl)tetrahydro-, 2-oxide.
50293	Benzene, 1,1'-(2,2,2-trichloroethylidene)bis[4-chloro-. DDT. 4,4'-DDT.
50328	Benzo[a]pyrene. 3,4-Benzopyrene.
50555	Reserpine. Yohimban-16-carboxylic acid,11,17-dimethoxy-18-[(3 ,4,5-trimethoxybenzoyl)oxy]-, methyl ester (3beta, 16beta,17alpha,18beta,20alpha)-
51285	Phenol, 2,4-dinitro-. 2,4-Dinitrophenol.
51434	Epinephrine. 1,2-Benzenediol,4-[1-hydroxy-2-(methylamino)ethyl]-.
51796	Carbamic acid, ethyl ester. Ethyl carbamate. Urethane.

APPENDIX A TO § 302.4—SEQUENTIAL CAS REGISTRY NUMBER LIST OF CERCLA HAZARDOUS SUBSTANCES—Continued

CASRN	Hazardous substance
52686	Trichlorfon.
52857	Famphur. Phosphorothioic acid, O-[4-[(dimethylamino)sulfonyl]phenyl] O,O-dimethyl ester.
53703	Dibenz[a,h]anthracene. Dibenzo[a,h]anthracene. 1,2:5,6-Dibenzanthracene.
53963	Acetamide, N-9H-fluoren-2-yl-. 2-Acetylaminofluorene.
54115	Nicotine, & salts. Pyridine, 3-(1-methyl-2-pyrroldinyl)-, (S)-, & salts.
55185	Ethanamine, N-ethyl-N-nitroso-. N-Nitrosodiethylamine.
55630	Nitroglycerine. 1,2,3-Propanetriol, trinitrate.
55914	Diisopropylfluorophosphate (DFP). Phosphorofluoridic acid, bis(1-methylethyl) ester.
56042	Methylthiouracil. 4(1H)-Pyrimidinone, 2,3-dihydro-6-methyl-2-thioxo-.
56235	Carbon tetrachloride. Methane, tetrachloro-.
56382	Parathion. Phosphorothioic acid, O,O-diethyl O-(4-nitrophenyl) ester.
56495	Benz[j]aceanthrylene, 1,2-dihydro-3-methyl-3-Methylcholanthrene.

§ 302.4

40 CFR Ch. I (7–1–11 Edition)

APPENDIX A TO § 302.4—SEQUENTIAL CAS
REGISTRY NUMBER LIST OF CERCLA HAZ-
ARDOUS SUBSTANCES—Continued

APPENDIX A TO § 302.4—SEQUENTIAL CAS
REGISTRY NUMBER LIST OF CERCLA HAZ-
ARDOUS SUBSTANCES—Continued

CASRN	Hazardous substance
56531	Diethylstilbestrol.
56553	Phenol, 4,4'-(1,2-diethyl-1,2-ethenediyl)bis-, (E). Benzo[a]anthracene.
56724	Benzo[a]anthracene. 1,2-Benzanthracene.
57147	Coumaphos. Hydrazine, 1,1-dimethyl-.
57249	1,1-Dimethylhydrazine. Strychnidin-10-one, & salts.
57476	Strychnine, & salts. Physostigmine. Pyrrolo[2,3-b]indol-5-ol, 1,2,3,3a,8,8a-hexahydro-1,3a,8-trimethyl-, methylcarbamate (ester), (3aS-cis)-.
57578	beta-Propiolactone.
57647	Benzoic acid, 2-hydroxy-, compd. with (3aS-cis)-1,2,3,3a,8,8a-hexahydro-1,3a,8-trimethylpyrrolo[2,3-b]indol-5-yl methylcarbamate ester (1:1). Physostigmine salicylate.
57749	Chlordane. Chlordane, alpha & gamma isomers. CHLORDANE (TECHNICAL MIXTURE AND METABOLITES). 4,7-Methano-1H-indene, 1,2,4,5,6,7,8,8-octachloro-2,3,3a,4,7,7a-hexahydro-.
57976	Benzo[a]anthracene, 7,12-dimethyl-.
58899	7,12-Dimethylbenzo[a]anthracene. γ-BHC. Cyclohexane, 1,2,3,4,5,6-hexachloro-(1α,2α,3β,4α,5α,6β)-.
58902	Lindane. Lindane (all isomers).
59507	Phenol, 2,3,4,6-tetrachloro-.
59892	2,3,4,6-Tetrachlorophenol. p-Chloro-m-cresol.
60004	Phenol, 4-chloro-3-methyl-.
60117	N-Nitrosomorpholine. Ethylenediamine-tetraacetic acid (EDTA).
60297	Benzenamine, N,N-dimethyl-4-(phenylazo)-.
60344	Dimethyl aminoazobenzene. p-Dimethylaminoazobenzene. Ethane, 1,1'-oxybis-.
60355	Ethyl ether.
60515	Hydrazine, methyl-.
60571	Methyl hydrazine. Acetamide. Dimethoate. Phosphorodithioic acid, O,O-dimethyl S-[2(methylamino)-2-oxoethyl] ester.
61825	Dieldrin. 2,7:3,6-Dimethanonaphth[2,3-b]oxirene, 3,4,5,6,9,9-hexachloro-1a,2, 2a,3,6,6a,7,7a-octahydro-, (1aalpha,2beta,2alpha,3beta,6beta, 6aalpha,7beta, 7aalpha)-.
62384	Amitrole. 1H-1,2,4-Triazol-3-amine.
62442	Mercury, (acetato-O)phenyl-.
62500	Phenylmercury acetate. Acetamide, N-(4-ethoxyphenyl)-.
62533	Phenacetin. Ethyl methanesulfonate.
62555	Methanesulfonic acid, ethyl ester.
62566	Aniline. Benzenamine.
62737	Ethanethioamide. Thioacetamide. Thiourea. Dichlorvos.

CASRN	Hazardous substance
62748	Acetic acid, fluoro-, sodium salt.
62759	Fluoroacetic acid, sodium salt. Methanamine, N-methyl-N-nitroso-.
63252	N-Nitrosodimethylamine. Carbaryl.
64006	1-Naphthalenol, methylcarbamate. m-Cumenyl methylcarbamate.
64006	3-Isopropylphenyl N-methylcarbamate. Phenol, 3-(1-methylethyl)-, methyl carbamate. Phenol, 3-(1-methylethyl)-, methyl carbamate (m-Cumenyl methylcarbamate).
64186	Formic acid.
64197	Acetic acid.
64675	Diethyl sulfate.
65850	Benzoic acid.
66751	Uracil mustard. 2,4-(1H,3H)-Pyrimidinedione, 5-[bis(2-chloroethyl) amino]-.
67561	Methanol.
67641	Methyl alcohol. Acetone.
67663	2-Propanone. Chloroform.
67721	Methane, trichloro-.
68122	Ethane, hexachloro-.
70257	Hexachloroethane. Dimethylformamide. Guanidine, N-methyl-N'-nitro-N-nitroso-MNNG.
70304	Hexachlorophene. Phenol, 2,2'-methylenebis[3,4,6-tri-chloro-.
71363	n-Butyl alcohol. 1-Butanol.
71432	Benzene.
71556	Ethane, 1,1,1-trichloro-.
72208	Methyl chloroform. 1,1,1-Trichloroethane. Endrin. Endrin, & metabolites. 2,7:3,6-Dimethanonaphth[2,3-b]oxirene, 3,4,5,6,9,9-hexachloro-1a,2,2a,3,6,6a,7,7a-octahydro-, (1aalpha,2beta,2alpha,3alpha, 6alpha,6beta,7beta,7aalpha)-, & metabolites.
72435	Benzene, 1,1'-(2,2-trichloroethylidene)bis[4-methoxy-.
72548	Methoxychlor. Benzene, 1,1'-(2,2-dichloroethylidene)bis[4-chloro-.
72559	DDD. TDE. 4,4'-DDD.
72571	DDE. 4,4'-DDE. Trypan blue.
74839	2,7-Naphthalenedisulfonic acid, 3,3'-[(3,3'-dimethyl-(1,1'-biphenyl)-4,4'-diyl)-bis(azo)]bis(5-amino-4-hydroxy)-tetrasodium salt.
74873	Bromomethane. Methane, bromo-.
74884	Methyl bromide. Chloromethane. Methane, chloro-.
74895	Methyl chloride. Iodomethane. Methane, iodo-.
74908	Methyl iodide. Monomethylamine. Hydrocyanic acid. Hydrogen cyanide.

Environmental Protection Agency

§ 302.4

APPENDIX A TO § 302.4—SEQUENTIAL CAS
REGISTRY NUMBER LIST OF CERCLA HAZ-
ARDOUS SUBSTANCES—Continued

CASRN	Hazardous substance
74931	Methanethiol. Methyl mercaptan. Thiomethanol.
74953	Methane, dibromo-.
75003	Methylene bromide. Chloroethane.
75014	Ethyl chloride. Ethene, chloro-.
75047	Vinyl chloride.
75058	Monoethylamine.
75058	Acetonitrile.
75070	Acetaldehyde. Ethanal.
75092	Dichloromethane. Methane, dichloro-.
75150	Methylene chloride.
75207	Carbon disulfide.
75218	Calcium carbide.
75252	Ethylene oxide. Oxirane. Bromoform.
75274	Methane, tribromo-.
75343	Dichlorobromomethane. Ethane, 1,1-dichloro-.
75354	Ethylidene dichloride. 1,1-Dichloroethane. Ethene, 1,1-dichloro-.
75365	Vinylidene chloride. 1,1-Dichloroethylene.
75445	Acetyl chloride. Carbonic dichloride. Phosgene.
75503	Trimethylamine.
75558	Aziridine, 2-methyl-.
75569	2-Methyl aziridine. 1,2-Propylenimine.
75605	Propylene oxide. Arsinic acid, dimethyl-.
75649	Cacodylic acid. tert-Butylamine.
75694	Methane, trichlorofluoro-.
75718	Trichloromonofluoromethane. Dichlorodifluoromethane.
75865	Methane, dichlorodifluoro-.
75876	Acetone cyanohydrin. Propanenitrile, 2-hydroxy-2-methyl-.
75990	2-Methyl lactonitrile. Acetaldehyde, trichloro-.
76017	Chloral. 2,2-Dichloropropionic acid.
76448	Ethane, pentachloro-.
77474	Pentachloroethane. Heptachlor. 4,7-Methano-1H-indene, 1,4,5,6,7,8,8-heptachloro-3a,4,7,7a-tetrahydro-.
77781	Hexachlorocyclopentadiene. 1,3-Cyclopentadiene, 1,2,3,4,5,5-hexa- chloro-.
78002	Dimethyl sulfate. Sulfuric acid, dimethyl ester.
78022	Plumbane, tetraethyl-.
78022	Tetraethyl lead.
78022	Isophorone.
78022	Isoprene.
78022	iso-Butylamine.
78022	Isobutyl alcohol.
78022	1-Propanol, 2-methyl-.
78022	Propane, 1,2-dichloro-.
78022	Propylene dichloride. 1,2-Dichloropropane.
78022	2,3-Dichloropropene.

APPENDIX A TO § 302.4—SEQUENTIAL CAS
REGISTRY NUMBER LIST OF CERCLA HAZ-
ARDOUS SUBSTANCES—Continued

CASRN	Hazardous substance
78933	2-Butanone. MEK. Methyl ethyl ketone.
78999	1,1-Dichloropropane.
79005	Ethane, 1,1,2-trichloro-.
79016	1,1,2-Trichloroethane. Ethene, trichloro-.
79061	Trichloroethylene. Acrylamide.
79094	2-Propenamide.
79107	Propionic acid. Acrylic acid.
79118	2-Propenoic acid. Chloroacetic acid.
79196	Hydrazinecarbothioamide. Thiosemicarbazide.
79221	Carbonochloridic acid, methyl ester. Methyl chlorocarbonate.
79312	iso-Butyric acid.
79345	Ethane, 1,1,2,2-tetrachloro-.
79447	1,1,2,2-Tetrachloroethane. Carbamic chloride, dimethyl-.
79469	Dimethylcarbamoyl chloride. Propane, 2-nitro-.
80159	2-Nitropropane. alpha,alpha-Dimethylbenzylhydroperoxide.
80626	Hydroperoxide, 1-methyl-1-phenylethyl-.
81812	Methyl methacrylate. 2-Propenoic acid, 2-methyl-, methyl ester. Warfarin, & salts.
82688	2H-1-Benzopyran-2-one, 4-hydroxy-3-(3-oxo-1-phenylbutyl)-, & salts. Benzene, pentachloronitro-.
83329	PCNB. Pentachloronitrobenzene. Quintobenzene.
84662	Acenaphthene. Diethyl phthalate.
84742	1,2-Benzenedicarboxylic acid, diethyl ester. Di-n-butyl phthalate. Dibutyl phthalate. n-Butyl phthalate. 1,2-Benzenedicarboxylic acid, dibutyl ester.
85007	Diquat.
85018	Phenanthrene.
85449	Phthalic anhydride. 1,3-Isobenzofurandione.
85687	Butyl benzyl phthalate.
86306	N-Nitrosodiphenylamine.
86500	Guthion.
86737	Fluorene.
86884	alpha-Naphthylthiourea. Thiourea, 1-naphthalenyl-.
87650	Phenol, 2,6-dichloro-.
87683	2,6-Dichlorophenol. Hexachlorobutadiene.
87865	1,3-Butadiene, 1,1,2,3,4,4-hexachloro-.
88062	Pentachlorophenol. Phenol, pentachloro-.
88722	Phenol, 2,4,6-trichloro-.
88755	2,4,6-Trichlorophenol. o-Nitrotoluene.
88857	o-Nitrophenol. 2-Nitrophenol. Dinoseb. Phenol, 2-(1-methylpropyl)-4,6-dinitro-.
90040	o-Anisidine.
91087	Benzene, 1,3-diisocyanatomethyl-.
	Toluene diisocyanate. 2,4-Toluene diisocyanate.

§ 302.4

40 CFR Ch. I (7–1–11 Edition)

APPENDIX A TO § 302.4—SEQUENTIAL CAS
REGISTRY NUMBER LIST OF CERCLA HAZ-
ARDOUS SUBSTANCES—Continued

APPENDIX A TO § 302.4—SEQUENTIAL CAS
REGISTRY NUMBER LIST OF CERCLA HAZ-
ARDOUS SUBSTANCES—Continued

CASRN	Hazardous substance
91203	Naphthalene.
91225	Quinoline.
91587	beta-Chloronaphthalene. Naphthalene, 2-chloro-.
91598	2-Chloronaphthalene. beta-Naphthylamine. 2-Naphthalenamine.
91667	N,N-Diethylaniline.
91805	Methapyriene. 1,2-Ethanediamine, N,N-dimethyl-N'-2-pyridinyl- N'- (2-thienylmethyl)-.
91941	[1,1'-Biphenyl]-4,4'-diamine,3,3'-dichloro- 3,3'-Dichlorobenzidine.
92524	Biphenyl.
92671	4-Aminobiphenyl.
92875	Benzidine. [1,1'-Biphenyl]-4,4'-diamine.
92933	4-Nitrobiphenyl. Propanoic acid, 2-(2,4,5-trichlorophenoxy)-. Silvex (2,4,5-TP). 2,4,5-TP acid.
93765	Acetic acid, (2,4,5-trichlorophenoxy)-.
93721	2,4,5-T. 2,4,5-T acid.
93798	2,4,5-T esters.
94111	2,4-D Ester.
94586	Dihydroxafrole. 1,3-Benzodioxole, 5-propyl-.
94597	Safrole. 1,3-Benzodioxole, 5-(2-propenyl)-.
94791	2,4-D Ester.
94804	2,4-D Ester.
95476	o-Xylene.
95487	o-Cresol.
95501	Benzene, 1,2-dichloro- o-Dichlorobenzene. 1,2-Dichlorobenzene.
95534	Benzenamine, 2-methyl- o-Toluidine.
95578	o-Chlorophenol. Phenol, 2-chloro-. 2-Chlorophenol.
95807	Benzenediamine, ar-methyl- Toluenediamine. 2,4-Toluene diamine.
95943	Benzene, 1,2,4,5-tetrachloro- 1,2,4,5-Tetrachlorobenzene.
95954	Phenol, 2,4,5-trichloro- 2,4,5-Trichlorophenol.
96093	Styrene oxide.
96128	Propane, 1,2-dibromo-3-chloro- 1,2-Dibromo-3-chloropropane.
96457	Ethylenethiourea. 2-Imidazolidinethione.
97632	Ethyl methacrylate. 2-Propenoic acid, 2-methyl-, ethyl ester.
98011	Furfural.
98077	2-Furancarboxaldehyde. Benzene, (trichloromethyl)-. Benzotrichloride.
98099	Benzenesulfonic acid chloride. Benzenesulfonyl chloride.
98828	Benzene, (1-methylethyl)- Cumene.
98862	Acetophenone. Ethanone, 1-phenyl-.
98873	Benzal chloride. Benzene, (dichloromethyl)-.
98884	Benzoyl chloride.
98953	Benzene, nitro-.

CASRN	Hazardous substance
	Nitrobenzene.
99081	m-Nitrotoluene.
99354	Benzene, 1,3,5-trinitro- 1,3,5-Trinitrobenzene.
99558	Benzenamine, 2-methyl-5-nitro- 5-Nitro-o-toluidine.
99650	m-Dinitrobenzene.
99990	p-Nitrotoluene.
100016	Benzenamine, 4-nitro- p-Nitroaniline.
100027	p-Nitrophenol. Phenol, 4-nitro- 4-Nitrophenol.
100254	p-Dinitrobenzene.
100414	Ethylbenzene.
100425	Styrene.
100447	Benzene, (chloromethyl)- Benzyl chloride.
100470	Benzonitrile.
100754	N-Nitrosopiperidine. Piperidine, 1-nitroso-.
101144	Benzenamine, 4,4'-methylenebis(2-chloro- 4,4'-Methylenebis(2-chloroaniline)).
101279	Barban. Carbamic acid, (3-chlorophenyl)-, 4-chloro-2- butynyl ester.
101553	Benzene, 1-bromo-4-phenoxy- 4-Bromophenyl phenyl ether.
101688	MDI. Methylene diphenyl diisocyanate. 4,4'-Methylenedianiline.
101779	Phenylthiourea.
103855	Thiourea, phenyl- sec-Butyl acetate.
105464	Phenol, 2,4-dimethyl- 2,4-Dimethylphenol.
105679	p-Xylene. p-Cresol.
106423	Benzene, 1,4-dichloro- p-Dichlorobenzene.
106445	1,4-Dichlorobenzene.
106467	Benzenamine, 4-chloro- p-Chloroaniline.
106478	Benzenamine, 4-methyl- p-Toluidine.
106490	p-Phenylenediamine.
106503	p-Benzoquinone.
106514	2,5-Cyclohexadiene-1,4-dione. Quinone.
106887	1,2-Epoxybutane.
106898	1-Chloro-2,3-epoxypropane. Epichlorohydrin.
106934	Oxirane, (chloromethyl)- Dibromoethane. Ethane, 1,2-dibromo- Ethylene dibromide.
106990	1,3-Butadiene.
107028	Acrolein. 2-Propenal.
107051	Allyl chloride.
107062	Ethane, 1,2-dichloro- Ethylene dichloride. 1,2-Dichloroethane.
107108	n-Propylamine. 1-Propanamine.
107120	Ethyl cyanide. Propanenitrile.
107131	Acrylonitrile. 2-Propenenitrile.
107153	Ethylenediamine.

Environmental Protection Agency

§ 302.4

APPENDIX A TO § 302.4—SEQUENTIAL CAS
REGISTRY NUMBER LIST OF CERCLA HAZ-
ARDOUS SUBSTANCES—Continued

APPENDIX A TO § 302.4—SEQUENTIAL CAS
REGISTRY NUMBER LIST OF CERCLA HAZ-
ARDOUS SUBSTANCES—Continued

CASRN	Hazardous substance
107186	Allyl alcohol.
107197	2-Propen-1-ol. Propargyl alcohol.
107200	2-Propyn-1-ol. Acetaldehyde, chloro-. Chloroacetaldehyde.
107211	Ethylene glycol.
107302	Chloromethyl methyl ether. Methane, chloromethoxy-.
107493	Diphosphoric acid, tetraethyl ester. Tetraethyl pyrophosphate.
107926	Butyric acid.
108054	Vinyl acetate. Vinyl acetate monomer.
108101	Hexone. Methyl isobutyl ketone. 4-Methyl-2-pentanone.
108247	Acetic anhydride.
108316	Maleic anhydride. 2,5-Furandione.
108383	m-Xylene.
108394	m-Cresol.
108463	Resorcinol. 1,3-Benzenediol.
108601	Dichloroisopropyl ether. Propane, 2,2"-oxybis[2-chloro-.
108883	Benzene, methyl-. Toluene.
108907	Benzene, chloro-. Chlorobenzene.
108941	Cyclohexanone.
108952	Phenol.
108985	Benzenethiol.
109068	Thiophenol. Pyridine, 2-methyl-. 2-Picoline.
109739	Butylamine.
109773	Malononitrile. Propanedinitrile.
109897	Diethylamine.
109999	Furan, tetrahydro-. Tetrahydrofuran.
110009	Furan. Furfuran.
110167	Maleic acid.
110178	Fumaric acid.
110190	iso-Butyl acetate.
110543	Hexane.
110758	Ethene, (2-chloroethoxy)-. 2-Chloroethyl vinyl ether.
110805	Ethanol, 2-ethoxy-. Ethylene glycol monoethyl ether.
110827	Benzene, hexahydro-. Cyclohexane.
110861	Pyridine.
111422	Diethanolamine.
111444	Bis(2-chloroethyl) ether. Dichloroethyl ether. Ethane, 1,1'-oxybis[2-chloro-.
111546	Carbamodithioic acid, 1,2-ethanediylbis-, salts & esters. Ethylenebisdithiocarbamic acid, salts & esters.
111911	Bis(2-chloroethoxy) methane. Dichloromethoxyethane. Ethane, 1,1'-[methylenebis(oxy)]bis(2-chloro-.
114261	Phenol, 2-(1-methylethoxy)-, methylcarbamate. Propoxur (Baygon).
115026	Azaserine.
115297	L-Serine, diazoacetate (ester). Endosulfan.

CASRN	Hazardous substance
115322	6,9-Methano-2,4,3-benzodioxathiepin, 6,7,8,9,10,10-hexachloro-1,5,5a,6,9,9a- hexahydro-, 3-oxide.
116063	Dicofol. Aldicarb. Propanal, 2-methyl-2-(methylthio)-, O- [(methylamino)carbonyl]oxime.
117806	Dichlone.
117817	1,2-Benzenedicarboxylic acid, bis(2-ethylhexyl) ester. Bis(2-ethylhexyl)phthalate. DEHP. Diethylhexyl phthalate.
117840	Di-n-octyl phthalate.
118741	1,2-Benzenedicarboxylic acid, dioctyl ester. Benzene, hexachloro-. Hexachlorobenzene.
119380	Carbamic acid, dimethyl-, 3-methyl-1-(1- methylethyl)-1H-pyrazol-5-yl ester. Isolan.
119904	[1,1'-Biphenyl]-4,4'-diamine,3,3'-dimethoxy-. 3,3'-Dimethoxybenzidine.
119937	[1,1'-Biphenyl]-4,4'-diamine,3,3'- dimethyl-. 3,3'-Dimethylbenzidine.
120127	Anthracene.
120581	Isosafrole. 1,3-Benzodioxole, 5-(1-propenyl)-.
120809	Catechol.
120821	1,2,4-Trichlorobenzene.
120832	Phenol, 2,4-dichloro-. 2,4-Dichlorophenol.
121142	Benzene, 1-methyl-2,4-dinitro-. 2,4-Dinitrotoluene.
121211	Pyrethrins.
121299	Pyrethrins.
121448	Ethanamine, N,N-diethyl-. Triethylamine.
121697	N,N-Dimethylaniline.
121755	Malathion.
122098	alpha,alpha-Dimethylphenethylamine. Benzeneethanamine, alpha,alpha-dimethyl-.
122429	Carbamic acid, phenyl-, 1-methylethyl ester. Propham.
122667	Hydrazine, 1,2-diphenyl-. 1,2-Diphenylhydrazine.
123319	Hydroquinone.
123331	Maleic hydrazide. 3,6-Pyridazinedione, 1,2-dihydro-.
123386	Propionaldehyde.
123626	Propionic anhydride.
123637	Paraldehyde. 1,3,5-Trioxane, 2,4,6-trimethyl-.
123739	Crotonaldehyde. 2-Butenal.
123864	Butyl acetate.
123911	1,4-Diethyleneoxide. 1,4-Dioxane.
123922	iso-Amyl acetate.
124049	Adipic acid.
124403	Dimethylamine. Methanamine, N-methyl-.
124414	Sodium methylate.
124481	Chlorodibromomethane.
126727	Tris(2,3-dibromopropyl) phosphate. 1-Propanol, 2,3-dibromo-, phosphate (3:1).
126987	Methacrylonitrile. 2-Propenenitrile, 2-methyl-.
126998	Chloroprene.
127184	Ethene, tetrachloro-. Perchloroethylene.

§ 302.4

40 CFR Ch. I (7–1–11 Edition)

APPENDIX A TO § 302.4—SEQUENTIAL CAS REGISTRY NUMBER LIST OF CERCLA HAZARDOUS SUBSTANCES—Continued

CASRN	Hazardous substance
	Tetrachloroethylene.
127822	Zinc phenolsulfonate.
129000	Pyrene.
130154	1,4-Naphthalenedione. 1,4-Naphthoquinone.
131113	Dimethyl phthalate. 1,2-Benzenedicarboxylic acid, dimethyl ester.
131748	Ammonium picrate. Phenol, 2,4,6-trinitro-, ammonium salt.
131895	Phenol, 2-cyclohexyl-4,6-dinitro-. 2-Cyclohexyl-4,6-dinitrophenol.
132649	Dibenzofuran.
133062	Captan.
133904	Chloramben.
134327	alpha-Naphthylamine. 1-Naphthalenamine.
137268	Thioperoxydicarbonic diamide ([H2N]C(S))2S2, tetramethyl-. Thiram.
137304	Zinc, bis(dimethylcarbomodithioato-S,S')-. Ziram.
140885	Ethyl acrylate. 2-Propenoic acid, ethyl ester.
141786	Acetic acid, ethyl ester. Ethyl acetate.
142289	1,3-Dichloropropane.
142712	Cupric acetate.
142847	Dipropylamine. 1-Propanamine, N-propyl-.
143339	Sodium cyanide Na(CN).
143500	Kepone. 1,3,4-Metheno-2H-cyclobuta[cd]pentalen-2-one, 1,1a,3,3a,4,5,5a,5b,6-decachlorooctahydro-.
145733	Endothall. 7-Oxabicyclo[2.2.1]heptane-2,3-dicarboxylic acid.
148823	L-Phenylalanine, 4-[bis(2-chloroethyl)amino]-. Melphalan.
151508	Potassium cyanide K(CN).
151564	Azirdine. Ethylenimine.
152169	Diphosphoramidate, octamethyl-. Octamethylpyrophosphoramidate.
156605	Ethene, 1,2-dichloro- (E). 1,2-Dichloroethylene.
156627	Calcium cyanamide.
189559	Benzo[rs]pentaphene. Dibenzo[a,i]pyrene.
191242	Benzo[ghi]perylene.
193395	Indeno(1,2,3-cd)pyrene.
205992	Benzo[b]fluoranthene.
206440	Fluoranthene.
207089	Benzo(k)fluoranthene.
208968	Acenaphthylene.
218019	Chrysene.
225514	Benzo[c]acridine.
297972	O,O-Diethyl O-pyrazinyl phosphorothioate. Phosphorothioic acid, O,O-diethyl O-pyrazinyl ester.
298000	Methyl parathion. Phosphorothioic acid, O,O-dimethyl O-(4-nitrophenyl) ester.
298022	Phorate. Phosphorodithioic acid, O,O-diethyl S-[(ethylthio) methyl] ester.
298044	Disulfoton. Phosphorodithioic acid, O,O-diethyl S-[2-(ethylthio)ethyl] ester.

APPENDIX A TO § 302.4—SEQUENTIAL CAS REGISTRY NUMBER LIST OF CERCLA HAZARDOUS SUBSTANCES—Continued

CASRN	Hazardous substance
300765	Naled.
301042	Acetic acid, lead(2+) salt. Lead acetate.
302012	Hydrazine.
303344	Lasiocarpine. 2-Butenoic acid, 2-methyl-, 7-[[2,3-dihydroxy-2-(1-methoxyethyl)-3-methyl-1-oxobutoxy]methyl]-2,3,5,7a-tetrahydro-1H-pyrrolizin-1-yl ester, [1S-[1alpha(Z),7(2S*,3R*),7aalpha]]-.
305033	Benzenebutanoic acid, 4-[bis(2-chloroethyl)amino]-. Chlorambucil.
309002	Aldrin. 1,4:5,8-Dimethanonaphthalene, 1,2,3,4,10,10-hexachloro-1,4,4a,5,8,8a-hexahydro-, (1alpha,4alpha,4abeta,5alpha,8alpha,8abeta)-.
311455	Diethyl-p-nitrophenyl phosphate. Phosphoric acid, diethyl 4-nitrophenyl ester.
315184	Mexacarbate. Phenol, 4-(dimethylamino)-3,5-dimethyl-, methylcarbamate (ester).
319846	alpha—BHC.
319857	beta—BHC.
319868	delta—BHC.
329715	2,5-Dinitrophenol.
330541	Diuron.
333415	Diazinon.
334883	Diazomethane.
353504	Carbon oxyfluoride. Carbonic difluoride.
357573	Brucine. Strychnidin-10-one, 2,3-dimethoxy-.
460195	Cyanogen. Ethanedinitrile.
463581	Carbonyl sulfide.
465736	Isodrin. 1,4:5,8-Dimethanonaphthalene, 1,2,3,4,10,10-hexachloro-1,4,4a,5,8,8a-hexahydro-, (1alpha,4alpha,4abeta,5beta,8beta,8abeta)-.
492808	Auramine. Benzenamine, 4,4'-carbonimidoylbis[N,N-dimethyl]-.
494031	Chlornaphazine. Naphthalenamine, N,N'-bis(2-chloroethyl)-.
496720	Benzenediamine, ar-methyl-. Toluenediamine. 2,4-Toluene diamine.
504245	4-Aminopyridine. 4-Pyridinamine.
504609	1-Methylbutadiene. 1,3-Pentadiene.
506616	Argentate(1-), bis(cyano-C)-, potassium. Potassium silver cyanide. Silver cyanide Ag(CN).
506649	Cyanogen bromide (CN)Br.
506683	Cyanogen chloride (CN)Cl.
506774	Ammonium carbonate.
506876	Acetyl bromide.
506967	Methane, tetranitro-.
509148	Tetranitromethane.
510156	Benzenoacetic acid, 4-chloro- α -(4-chlorophenyl)- α -hydroxy-, ethyl ester. Chlorobenzilate. sec-Butylamine.
513495	o-Dinitrobenzene.
528290	2-Chloroacetophenone.
532274	4,6-Dinitro-o-cresol, and salts.
534521	

Environmental Protection Agency

§ 302.4

**APPENDIX A TO § 302.4—SEQUENTIAL CAS
REGISTRY NUMBER LIST OF CERCLA HAZ-
ARDOUS SUBSTANCES—Continued**

**APPENDIX A TO § 302.4—SEQUENTIAL CAS
REGISTRY NUMBER LIST OF CERCLA HAZ-
ARDOUS SUBSTANCES—Continued**

CASRN	Hazardous substance
540738	Phenol, 2-methyl-4,6-dinitro-, & salts. Hydrazine, 1,2-dimethyl- 1,2-Dimethylhydrazine.
540841	2,2,4-Trimethylpentane.
540885	tert-Butyl acetate.
541093	Uranyl acetate.
541537	Dithiobiuret. Thioimidodicarbonic diamide [(H ₂ N)C(S)] ₂ NH.
541731	Benzene, 1,3-dichloro- m-Dichlorobenzene. 1,3-Dichlorobenzene.
542621	Barium cyanide.
542756	1-Propene, 1,3-dichloro- 1,3-Dichloropropene.
542767	Propanenitrile, 3-chloro- 3-Chloropropionitrile.
542881	Bis(chloromethyl)ether. Dichloromethyl ether. Methane, oxybis(chloro- Cadmium acetate.
543908	Cobaltous formate.
544183	Copper cyanide Cu(CN).
544923	m-Nitrophenol.
554847	Nickel cyanide Ni(CN) ₂ .
557197	Zinc cyanide Zn(CN) ₂ .
557211	Zinc cyanide Zn(CN) ₂ .
557346	Zinc acetate.
557415	Zinc formate.
563122	Ethion.
563688	Acetic acid, thallium(1+) salt. Thallium(I) acetate.
573568	2,6-Dinitrophenol.
584849	Benzene, 1,3-diisocyanatomethyl- Toluene diisocyanate. 2,4-Toluene diisocyanate.
591082	Acetamide, N-(aminothioxomethyl)- 1-Acetyl-2-thiourea.
592018	Calcium cyanide Ca(CN) ₂ .
592041	Mercuric cyanide.
592858	Mercuric thiocyanate.
592870	Lead thiocyanate.
593602	Vinyl bromide.
594423	Methanesulfonyl chloride, trichloro- Trichloromethanesulfonyl chloride.
598312	Bromoacetone. 2-Propanone, 1-bromo- Benzene, 2-methyl-1,3-dinitro- 2,6-Dinitrotoluene.
606202	HEXACHLOROXYCLOHEXANE (all isomers).
608731	Benzene, pentachloro- Pentachlorobenzene.
608935	3,4,5-Trichlorophenol. 3,4-Dinitrotoluene.
609198	Carbamic acid, methylnitroso-, ethyl ester.
610399	N-Nitroso-N-methylurethane.
615532	Di-n-propylnitrosamine. 1-Propanamine, N-nitroso-N-propyl-.
621647	Methane, isocyanato- Methyl isocyanate.
624839	tert-Amyl acetate. sec-Amyl acetate.
625161	Amyl acetate.
626380	Fulminic acid, mercury(2+) salt.
628637	Mercury fulminate.
628864	Selenourea.
630104	Ethane, 1,1,1,2-tetrachloro- 1,1,1,2-Tetrachloroethane.
630206	Ammonium acetate.
631618	Benzenamine, 2-methyl-, hydrochloride.
636215	

CASRN	Hazardous substance
640197	o-Toluidine hydrochloride. Acetamide, 2-fluoro- Fluoroacetamide.
644644	Carbamic acid, dimethyl-, 1-[(dimethyl- amino)carbonyl]-5-methyl-1H-pyrazol-3-yl ester. Dimetilan.
680319	Hexamethylphosphoramide.
684935	N-Nitroso-N-methylurea. Urea, N-methyl-N-nitroso-.
692422	Arsine, diethyl- Diethylarsine.
696286	Arsonous dichloride, phenyl- Dichlorophenylarsine.
757584	Hexaethyl tetraphosphate. Tetraphosphoric acid, hexaethyl ester.
759739	N-Nitroso-N-ethylurea. Urea, N-ethyl-N-nitroso-.
764410	1,4-Dichloro-2-butene. 2-Butene, 1,4-dichloro-.
765344	Glycidylaldehyde. Oxiranecarboxyaldehyde.
815827	Cupric tartrate.
822060	Hexamethylene-1,6-diisocyanate.
823405	Benzenediamine, ar-methyl- Toluenediamine. 2,4-Toluene diamine.
924163	N-Nitrosodi-n-butylamine. 1-Butanamine, N-butyl-N-nitroso-.
930552	N-Nitrosopyrrolidine. Pyrrolidine, 1-nitroso- 2,3,6-Trichlorophenol. 2,3,5-Trichlorophenol.
933755	alpha-Endosulfan.
933788	Heptachlor epoxide.
959988	Endosulfan sulfate. Chromic acetate.
1024573	Ammonium bicarbonate.
1031078	Lead stearate.
1066304	Ammonium carbamate.
1066337	Ethanol, 2,2'-(nitrosoimino)bis- N-Nitrosodiethanolamine.
1072351	1,2-Oxathiolane, 2,2-dioxide. 1,3-Propane sultone.
1111780	Carbamic acid, methyl-, 3-methylphenyl ester. Metolcarb.
1116547	Ferric ammonium citrate.
1120714	Dichlobenil. Xylenol.
1129415	Arsenic oxide As ₂ O ₅ . Arsenic pentoxide. Arsenic disulfide. Arsenic trisulfide.
1185575	Antimony trioxide.
1194656	Potassium hydroxide.
1300716	Sodium hydroxide.
1303282	Thallic oxide.
1303328	Thallium oxide Tl ₂ O ₃ .
1303339	Vanadium oxide V ₂ O ₅ .
1309644	Vanadium pentoxide. Phosphorus pentasulfide. Phosphorus sulfide. Sulfur phosphide.
1310583	Zinc phosphide Zn ₃ P ₂ .
1310732	Lead sulfide.
1314325	2,4,5-T amines. Cresol (cresylic acid). Cresols (isomers and mixture). Cresylic acid (isomers and mixture).
1314621	Phenol, methyl-.
1314803	
1314847	
1314870	
1319728	
1319773	

§ 302.4

40 CFR Ch. I (7–1–11 Edition)

APPENDIX A TO § 302.4—SEQUENTIAL CAS
REGISTRY NUMBER LIST OF CERCLA HAZ-
ARDOUS SUBSTANCES—Continued

APPENDIX A TO § 302.4—SEQUENTIAL CAS
REGISTRY NUMBER LIST OF CERCLA HAZ-
ARDOUS SUBSTANCES—Continued

CASRN	Hazardous substance
1320189	2,4-D Ester.
1321126	Nitrotoluene.
1327533	Arsenic oxide As ₂ O ₃ .
1330207	Arsenic trioxide.
	Benzene, dimethyl-.
	Xylene.
	Xylene (mixed).
	Xylenes (isomers and mixture).
1332076	Zinc borate.
1332214	Asbestos.
1333831	Sodium bifluoride.
1335326	Lead subacetate.
	Lead, bis(acetato-O)tetrahydroxytri.
1336216	Ammonium hydroxide.
1336363	Aroclors.
	PCBs.
	POLYCHLORINATED BIPHENYLS.
1338234	Methyl ethyl ketone peroxide.
	2-Butanone peroxide.
1338245	Naphthenic acid.
1341497	Ammonium bifluoride.
1464535	1,2:3,4-Diepoxybutane.
	2,2'-Bioxirane.
1563388	7-Benzofuranol, 2,3-dihydro-2,2-dimethyl-.
	Carbofuran phenol.
1563662	7-Benzofuranol, 2,3-dihydro-2,2-dimethyl-, methylcarbamate.
	Carbofuran.
1582098	Trifluralin.
1615801	Hydrazine, 1,2-diethyl-.
	N,N'-Diethylhydrazine.
1634044	Methyl tert-butyl ether.
1646884	Aldicarb sulfone.
	Propanal, 2-methyl-2-(methyl-sulfonyl)-, O-[(methylamino)carbonyl] oxime.
1746016	TCDD.
	2,3,7,8-Tetrachlorodibenzo-p-dioxin.
1762954	Ammonium thiocyanate.
1863634	Ammonium benzoate.
1888717	Hexachloropropene.
	1-Propene, 1,1,2,3,3,3-hexachloro-.
1918009	Dicamba.
1928387	2,4-D Ester.
1928478	2,4,5-T esters.
1928616	2,4-D Ester.
1929733	2,4-D Ester.
2008460	2,4,5-T amines.
2032657	Mercaptodimethur.
	Methiocarb.
	Phenol, (3,5-dimethyl-4-(methylthio)-, methylcarbamate.
2303164	Carbamothioic acid, bis(1-methylethyl)-, S-(2,3-dichloro-2-propenyl) ester.
	Diallate.
2303175	Carbamothioic acid, bis(1-methylethyl)-, S-(2,3,3-trichloro-2-propenyl) ester.
	Triallate.
2312358	Propargite.
2545597	2,4,5-T esters.
2631370	Phenol, 3-methyl-5-(1-methylethyl)-, methyl carbamate.
	Promecarb.
2763964	3(2H)-Isoxazolone, 5-(aminomethyl)-.
	5-(Aminomethyl)-3-isoxazolol.
2764729	Diquat
2921882	Chlorpyrifos.
2944674	Ferric ammonium oxalate.
2971382	2,4-D Ester.
3012655	Ammonium citrate, dibasic.
3164292	Ammonium tartrate.

CASRN	Hazardous substance
3165933	Benzenamine, 4-chloro-2-methyl-, hydrochloride.
	4-Chloro-o-toluidine, hydrochloride.
3251238	Cupric nitrate.
3288582	O,O-Diethyl S-methyl dithiophosphate.
	Phosphorodithioic acid, O,O-diethyl S-methyl ester.
3486359	Zinc carbonate.
3547044	DDE.
3689245	Tetraethyldithiopyrophosphate.
	Thiodiphosphoric acid, tetraethyl ester.
3813147	2,4,5-T amines.
4170303	Crotonaldehyde.
	2-Butenal.
4549400	N-Nitrosomethylvinylamine.
	Vinylamine, N-methyl-N-nitroso-.
5344821	Thiourea, (2-chlorophenyl)-.
	1-(o-Chlorophenyl)thiourea.
5893663	Cupric oxalate.
5952261	Ethanol, 2,2'-oxybis-, dicarbamate.
	Diethylene glycol, dicarbamate.
5972736	Ammonium oxalate.
6009707	Ammonium oxalate.
6369966	2,4,5-T amines.
6369977	2,4,5-T amines.
6533739	Carbonic acid, dithallium(1+) salt.
	Thallium(I) carbonate.
7005723	4-Chlorophenyl phenyl ether.
7421934	Endrin aldehyde.
7428480	Lead stearate.
7439921	Lead.
7439976	Mercury.
7440020	Nickel.
7440224	Silver.
7440235	Sodium.
7440280	Thallium.
7440360	Antimony.
7440382	Arsenic.
7440417	Beryllium.
	Beryllium powder.
7440439	Cadmium.
7440473	Chromium.
7440508	Copper.
7440666	Zinc.
7446084	Selenium dioxide.
	Selenium oxide.
7446142	Lead sulfate.
7446186	Sulfuric acid, dithallium(1+) salt.
	Thallium(I) sulfate.
7446277	Lead phosphate.
	Phosphoric acid, lead(2+) salt (2:3).
7447394	Cupric chloride.
7488564	Selenium sulfide SeS ₂ .
7550450	Titanium tetrachloride.
7558794	Sodium phosphate, dibasic.
7601549	Sodium phosphate, tribasic.
7631892	Sodium arsenate.
7631905	Sodium bisulfite.
7632000	Sodium nitrite.
7645252	Lead arsenate.
7646857	Zinc chloride.
7647010	Hydrochloric acid.
	Hydrogen chloride.
7647189	Antimony pentachloride.
7664382	Phosphoric acid.
7664393	Hydrofluoric acid.
	Hydrogen fluoride.
7664417	Ammonia.
7664939	Sulfuric acid.
7681494	Sodium fluoride.

Environmental Protection Agency

§ 302.4

APPENDIX A TO § 302.4—SEQUENTIAL CAS
REGISTRY NUMBER LIST OF CERCLA HAZ-
ARDOUS SUBSTANCES—Continued

APPENDIX A TO § 302.4—SEQUENTIAL CAS
REGISTRY NUMBER LIST OF CERCLA HAZ-
ARDOUS SUBSTANCES—Continued

CASRN	Hazardous substance
7681529	Sodium hypochlorite.
7697372	Nitric acid.
7699458	Zinc bromide.
7705080	Ferric chloride.
7718549	Nickel chloride.
7719122	Phosphorus trichloride.
7720787	Ferrous sulfate.
7722647	Potassium permanganate.
7723140	Phosphorus.
7733020	Zinc sulfate.
7738945	Chromic acid.
7758294	Sodium phosphate, tribasic.
7758943	Ferrous chloride.
7758954	Lead chloride.
7758987	Cupric sulfate.
7761888	Silver nitrate.
7773060	Ammonium sulfamate.
7775113	Sodium chromate.
7778394	Arsenic acid H ₃ AsO ₄ .
7778441	Calcium arsenate.
7778509	Potassium bichromate.
7778543	Calcium hypochlorite.
7779864	Zinc hydrosulfite.
7779886	Zinc nitrate.
7782414	Fluorine.
7782492	Selenium.
7782505	Chlorine.
7782630	Ferrous sulfate.
7782823	Sodium selenite.
7782867	Mercurous nitrate.
7783008	Selenious acid.
7783064	Hydrogen sulfide H ₂ S.
7783359	Mercuric sulfate.
7783462	Lead fluoride.
7783495	Zinc fluoride.
7783508	Ferric fluoride.
7783564	Antimony trifluoride.
7784341	Arsenic trichloride.
7784409	Lead arsenate.
7784410	Potassium arsenate.
7784465	Sodium arsenite.
7785844	Sodium phosphate, tribasic.
7786347	Mevinphos.
7786814	Nickel sulfate.
7787475	Beryllium chloride.
7787497	Beryllium fluoride.
7787555	Beryllium nitrate.
7788989	Ammonium chromate.
7789006	Potassium chromate.
7789062	Strontium chromate.
7789095	Ammonium bichromate.
7789426	Cadmium bromide.
7789437	Cobaltous bromide.
7789619	Antimony tribromide.
7790945	Chlorosulfonic acid.
7791120	Thallium chloride TlCl.
7803512	Hydrogen phosphide. Phosphine.
7803556	Ammonium vanadate. Vanadic acid, ammonium salt.
8001352	Chlorinated camphene. Toxaphene.
8003198	Dichloropropane—Dichloropropene (mixture).
8003347	Pyrethrins.
8014957	Sulfuric acid.
10022705	Sodium hypochlorite.
10025873	Phosphorus oxychloride.
10025919	Antimony trichloride.
10026116	Zirconium tetrachloride.
10028225	Ferric sulfate.

CASRN	Hazardous substance
10031591	Sulfuric acid, dithallium(1+) salt. Thallium(I) sulfate.
10039324	Sodium phosphate, dibasic.
10043013	Aluminum sulfate.
10045893	Ferrous ammonium sulfate.
10045940	Mercuric nitrate.
10049055	Chromous chloride.
10099748	Lead nitrate.
10101538	Chromic sulfate.
10101630	Lead iodide.
10101890	Sodium phosphate, tribasic.
10102064	Uranyl nitrate.
10102188	Sodium selenite.
10102439	Nitric oxide. Nitrogen oxide NO. Nitrogen dioxide.
10102440	Nitrogen oxide NO ₂ .
10102451	Nitric acid, thallium(1+) salt. Thallium(I) nitrate.
10102484	Lead arsenate.
10108642	Cadmium chloride.
10124502	Potassium arsenite.
10124568	Sodium phosphate, tribasic.
10140655	Sodium phosphate, dibasic.
10192300	Ammonium bisulfite.
10196040	Ammonium sulfite.
10361894	Sodium phosphate, tribasic.
10380297	Cupric sulfate, ammoniated.
10415755	Mercurous nitrate.
10421484	Ferric nitrate.
10544726	Nitrogen dioxide. Nitrogen oxide NO ₂ .
10588019	Sodium bichromate.
10605217	Carbamic acid, 1H-benzimidazol-2-yl, methyl ester. Carbendazim.
11096825	Aroclor 1260.
11097691	Aroclor 1254.
11104282	Aroclor 1221.
11115745	Chromic acid.
11141165	Aroclor 1232.
12002038	Cupric acetoarsenite.
12039520	Selenious acid, dithallium(1+) salt. Thallium (I) selenite.
12054487	Nickel hydroxide.
12125018	Ammonium fluoride.
12125029	Ammonium chloride.
12135761	Ammonium sulfide.
12672296	Aroclor 1248.
12674112	Aroclor 1016.
12771083	Sulfur monochloride.
13463393	Nickel carbonyl Ni(CO) ₄ , (T-4)-.
13560991	2,4,5-T salts.
13597994	Beryllium nitrate.
13746899	Zirconium nitrate.
13765190	Calcium chromate. Chromic acid H ₂ CrO ₄ , calcium salt.
13814965	Lead fluoborate.
13826830	Ammonium fluoborate.
13952846	sec-Butylamine.
14017415	Cobaltous sulfamate.
14216752	Nickel nitrate.
14258492	Ammonium oxalate.
14307358	Lithium chromate.
14307438	Ammonium tartrate.
14639975	Zinc ammonium chloride.
14639986	Zinc ammonium chloride.
14644612	Zirconium sulfate.

§ 302.4

40 CFR Ch. I (7–1–11 Edition)

APPENDIX A TO § 302.4—SEQUENTIAL CAS REGISTRY NUMBER LIST OF CERCLA HAZARDOUS SUBSTANCES—Continued

CASRN	Hazardous substance
15339363	Manganese, bis(dimethylcarbamo-dithioato-S,S')-
15699180	Manganese dimethylidithiocarbamate.
15739807	Nickel ammonium sulfate.
15950660	Lead sulfate.
16721805	2,3,4-Trichlorophenol.
16752775	Sodium hydrosulfide.
16871719	Ethanimidothioic acid, N-[[[(methylamino)carbonyl]oxy]-, methyl ester. Methomyl.
16919190	Zinc silicofluoride.
16923958	Ammonium silicofluoride.
17702577	Zirconium potassium fluoride.
17804352	Formparanate.
18883664	Methanimidamide, N,N-dimethyl-N'-[2-methyl-4-[[[(methylamino)carbonyl]oxy]phenyl]-, Benomyl.
20816120	Carbamic acid, [1-[(butylamino)carbonyl]-1H-benzimidazol-2-yl]-, methyl ester.
20830813	D-Glucose, 2-deoxy-2[[[(methylnitrosoamino)carbonyl]amino]-, 2-deoxy-2-(3-methyl-3-nitrosoureido)-, D-. Streptozotocin.
20859738	Osmium oxide OsO ₄ , (T-4)-.
22781233	Osmium tetroxide.
22961826	Daunomycin.
23135220	5,12-Naphthacenedione, 8-acetyl-10-[(3-amino-2,3,6-trideoxy-alpha-L-lyxohexopyranosyl)oxy]-7,8,9,10-tetrahydro-6,8,11-trihydroxy-1-methoxy-, (8S-cis)-.
23422539	Aluminum phosphide.
23564058	Bendiocarb.
23950585	1,3-Benzodioxol-4-ol, 2,2-dimethyl-, methyl carbamate.
25154545	Bendiocarb phenol.
25154556	1,3-Benzodioxol-4-ol, 2,2-dimethyl-.
25155300	Ethanimidothioic acid, 2-(dimethylamino)-N-[[[(methylamino)carbonyl]oxy]-2-oxo-, methyl ester.
25167822	Oxamyl.
25168154	Methanimidamide, N,N-dimethyl-N'-[3-[[[(methylamino)carbonyl]oxy]phenyl]-, monohydrochloride.
25168267	Formetanate hydrochloride.
25321146	Carbamic acid, [1,2-phenylenebis(iminocarbonothioyl)]bis-, dimethyl ester.
25321226	Thiophanate-methyl.
25376458	Benzamide, 3,5-dichloro-N-(1,1-dimethyl-2-propynyl)-.
25550587	Pronamide.
26264062	Dinitrobenzene (mixed).
26419738	Nitrophenol (mixed).
26471625	Sodium dodecylbenzenesulfonate.
	Trichlorophenol.
	2,4,5-T esters.
	2,4-D Ester.
	Dinitrotoluene.
	Dichlorobenzene.
	Benzenediamine, ar-methyl-.
	Toluenediamine.
	2,4-Toluene diamine.
	Dinitrophenol.
	Calcium dodecylbenzenesulfonate.
	1,3-Dithiolane-2-carboxaldehyde, 2,4-dimethyl-, O-[[[(methylamino)carbonyl]oxime].
	Tirpate.
	Benzene, 1,3-diisocyanatomethyl-.
	Toluene diisocyanate.

APPENDIX A TO § 302.4—SEQUENTIAL CAS REGISTRY NUMBER LIST OF CERCLA HAZARDOUS SUBSTANCES—Continued

CASRN	Hazardous substance
26628228	2,4-Toluene diisocyanate.
26638197	Sodium azide.
26952238	Dichloropropane.
27176870	Dichloropropene.
27323417	Dodecylbenzenesulfonic acid.
27774136	Triethanolamine dodecylbenzene sulfonate.
28300745	Vanadyl sulfate.
30525894	Antimony potassium tartrate.
30558431	Paraformaldehyde.
32534955	Ethanimidothioic acid, 2-(dimethylamino)-N-hydroxy-2-oxo-, methyl ester. A2213.
33213659	2,4,5-TP esters.
36478769	beta - Endosulfan.
37211055	Uranyl nitrate.
39196184	Nickel chloride.
42504461	Thiofanox.
52628258	2-Butanone, 3,3-dimethyl-1-(methylthio)-,O-[[[(methylamino)carbonyl]oxime].
52652592	Isopropanolamine dodecylbenzenesulfonate.
52740166	Zinc ammonium chloride.
52888809	Lead stearate.
53467111	Calcium arsenite.
53469219	Carbamothioic acid, dipropyl-, S-(phenylmethyl) ester.
55285148	Prosulfocarb.
55488874	2,4-D Ester.
56189094	Aroclor 1242.
59669260	Carbamic acid, [[(dibutylamino)-thio]methyl-, 2,3-dihydro-2,2-dimethyl-7-benzofuranyl ester.
61792072	Carbosulfan.
	Ferric ammonium oxalate.
	Lead stearate.
	Ethanimidothioic acid, N,N'-[[thiois((methylimino)carbonyloxy)]bis-, dimethyl ester.
	Thiodicarb.
	2,4,5-T esters.

APPENDIX B TO § 302.4—RADIONUCLIDES

Radionuclide	Atomic Number	Final RQ Ci (Bq)
Radionuclides@		1&(3.7E 10)
Actinium-224	89	100 (3.7E 12)
Actinium-225	89	1 (3.7E 10)
Actinium-226	89	10 (3.7E 11)
Actinium-227	89	0.001 (3.7E 7)
Actinium-228	89	10 (3.7E 11)
Aluminum-26	13	10 (3.7E 11)
Americium-237	95	1000 (3.7E 13)
Americium-238	95	100 (3.7E 12)
Americium-239	95	100 (3.7E 12)
Americium-240	95	10 (3.7E 11)
Americium-241	95	0.01 (3.7E 8)
Americium-242m	95	0.01 (3.7E 8)
Americium-242	95	100 (3.7E 12)
Americium-243	95	0.01 (3.7E 8)
Americium-244m	95	1000 (3.7E 13)
Americium-244	95	10 (3.7E 11)
Americium-245	95	1000 (3.7E 13)
Americium-246m	95	1000 (3.7E 13)
Americium-246	95	1000 (3.7E 13)
Antimony-115	51	1000 (3.7E 13)
Antimony-116m	51	100 (3.7E 12)
Antimony-116	51	1000 (3.7E 13)
Antimony-117	51	1000 (3.7E 13)
Antimony-118m	51	10 (3.7E 11)

Environmental Protection Agency

§ 302.4

APPENDIX B TO § 302.4—RADIONUCLIDES—
Continued

APPENDIX B TO § 302.4—RADIONUCLIDES—
Continued

Radionuclide	Atomic Number	Final RQ Ci (Bq)
Antimony-119	51	1000 (3.7E 13)
Antimony-120 (16 min)	51	1000 (3.7E 13)
Antimony-120 (5.76 day)	51	10 (3.7E 11)
Antimony-122	51	10 (3.7E 11)
Antimony-124m	51	1000 (3.7E 13)
Antimony-124	51	10 (3.7E 11)
Antimony-125	51	10 (3.7E 11)
Antimony-126m	51	1000 (3.7E 13)
Antimony-126	51	10 (3.7E 11)
Antimony-127	51	10 (3.7E 11)
Antimony-128 (10.4 min)	51	1000 (3.7E 13)
Antimony-128 (9.01 hr)	51	10 (3.7E 11)
Antimony-129	51	100 (3.7E 12)
Antimony-130	51	100 (3.7E 12)
Antimony-131	51	1000 (3.7E 13)
Argon-39	18	1000 (3.7E 13)
Argon-41	18	10 (3.7E 11)
Arsenic-69	33	1000 (3.7E 13)
Arsenic-70	33	100 (3.7E 12)
Arsenic-71	33	100 (3.7E 12)
Arsenic-72	33	10 (3.7E 11)
Arsenic-73	33	100 (3.7E 12)
Arsenic-74	33	10 (3.7E 11)
Arsenic-76	33	100 (3.7E 12)
Arsenic-77	33	1000 (3.7E 13)
Arsenic-78	33	100 (3.7E 12)
Astatine-207	85	100 (3.7E 12)
Astatine-211	85	100 (3.7E 12)
Barium-126	56	1000 (3.7E 13)
Barium-128	56	10 (3.7E 11)
Barium-131m	56	1000 (3.7E 13)
Barium-131	56	10 (3.7E 11)
Barium-133m	56	100 (3.7E 12)
Barium-133	56	10 (3.7E 11)
Barium-135m	56	1000 (3.7E 13)
Barium-139	56	1000 (3.7E 13)
Barium-140	56	10 (3.7E 11)
Barium-141	56	1000 (3.7E 13)
Barium-142	56	1000 (3.7E 13)
Berkelium-245	97	100 (3.7E 12)
Berkelium-246	97	10 (3.7E 11)
Berkelium-247	97	0.01 (3.7E 8)
Berkelium-249	97	1 (3.7E 10)
Berkelium-250	97	100 (3.7E 12)
Beryllium-7	4	100 (3.7E 12)
Beryllium-10	4	1 (3.7E 10)
Bismuth-200	83	100 (3.7E 12)
Bismuth-201	83	100 (3.7E 12)
Bismuth-202	83	1000 (3.7E 13)
Bismuth-203	83	10 (3.7E 11)
Bismuth-205	83	10 (3.7E 11)
Bismuth-206	83	10 (3.7E 11)
Bismuth-207	83	10 (3.7E 11)
Bismuth-210m	83	0.1 (3.7E 9)
Bismuth-210	83	10 (3.7E 11)
Bismuth-212	83	100 (3.7E 12)
Bismuth-213	83	100 (3.7E 12)
Bismuth-214	83	100 (3.7E 12)
Bromine-74m	35	100 (3.7E 12)
Bromine-74	35	100 (3.7E 12)
Bromine-75	35	100 (3.7E 12)
Bromine-76	35	10 (3.7E 11)
Bromine-77	35	100 (3.7E 12)
Bromine-80m	35	1000 (3.7E 13)
Bromine-80	35	1000 (3.7E 13)
Bromine-82	35	10 (3.7E 11)
Bromine-83	35	1000 (3.7E 13)
Bromine-84	35	100 (3.7E 12)
Cadmium-104	48	1000 (3.7E 13)
Cadmium-107	48	1000 (3.7E 13)

Radionuclide	Atomic Number	Final RQ Ci (Bq)
Cadmium-109	48	1 (3.7E 10)
Cadmium-113m	48	0.1 (3.7E 9)
Cadmium-113	48	0.1 (3.7E 9)
Cadmium-115m	48	10 (3.7E 11)
Cadmium-115	48	100 (3.7E 12)
Cadmium-117m	48	10 (3.7E 11)
Cadmium-117	48	100 (3.7E 12)
Calcium-41	20	10 (3.7E 11)
Calcium-45	20	10 (3.7E 11)
Calcium-47	20	10 (3.7E 11)
Californium-244	98	1000 (3.7E 13)
Californium-246	98	10 (3.7E 11)
Californium-248	98	0.1 (3.7E 9)
Californium-249	98	0.01 (3.7E 8)
Californium-250	98	0.01 (3.7E 8)
Californium-251	98	0.01 (3.7E 8)
Californium-252	98	0.1 (3.7E 9)
Californium-253	98	10 (3.7E 11)
Californium-254	98	0.1 (3.7E 9)
Carbon-11	6	1000 (3.7E 13)
Carbon-14	6	10 (3.7E 11)
Cerium-134	58	10 (3.7E 11)
Cerium-135	58	10 (3.7E 11)
Cerium-137m	58	100 (3.7E 12)
Cerium-137	58	1000 (3.7E 13)
Cerium-139	58	100 (3.7E 12)
Cerium-141	58	10 (3.7E 11)
Cerium-143	58	100 (3.7E 12)
Cerium-144	58	1 (3.7E 10)
Cesium-125	55	1000 (3.7E 13)
Cesium-127	55	100 (3.7E 12)
Cesium-129	55	100 (3.7E 12)
Cesium-130	55	1000 (3.7E 13)
Cesium-131	55	1000 (3.7E 13)
Cesium-132	55	10 (3.7E 11)
Cesium-134m	55	1000 (3.7E 13)
Cesium-134	55	1 (3.7E 10)
Cesium-135m	55	100 (3.7E 12)
Cesium-135	55	10 (3.7E 11)
Cesium-136	55	10 (3.7E 11)
Cesium-137	55	1 (3.7E 10)
Cesium-138	55	100 (3.7E 12)
Chlorine-36	17	10 (3.7E 11)
Chlorine-38	17	100 (3.7E 12)
Chlorine-39	17	100 (3.7E 12)
Chromium-48	24	100 (3.7E 12)
Chromium-49	24	1000 (3.7E 13)
Chromium-51	24	1000 (3.7E 13)
Cobalt-55	27	10 (3.7E 11)
Cobalt-56	27	10 (3.7E 11)
Cobalt-57	27	100 (3.7E 12)
Cobalt-58m	27	1000 (3.7E 13)
Cobalt-58	27	10 (3.7E 11)
Cobalt-60m	27	1000 (3.7E 13)
Cobalt-60	27	10 (3.7E 11)
Cobalt-61	27	1000 (3.7E 13)
Cobalt-62m	27	1000 (3.7E 13)
Copper-60	29	100 (3.7E 12)
Copper-61	29	100 (3.7E 12)
Copper-64	29	1000 (3.7E 13)
Copper-67	29	100 (3.7E 12)
Curium-238	96	1000 (3.7E 13)
Curium-240	96	1 (3.7E 10)
Curium-241	96	10 (3.7E 11)
Curium-242	96	1 (3.7E 10)
Curium-243	96	0.01 (3.7E 8)
Curium-244	96	0.01 (3.7E 8)
Curium-245	96	0.01 (3.7E 8)
Curium-246	96	0.01 (3.7E 8)
Curium-247	96	0.01 (3.7E 8)

§ 302.4

40 CFR Ch. I (7-1-11 Edition)

APPENDIX B TO § 302.4—RADIONUCLIDES—
Continued

APPENDIX B TO § 302.4—RADIONUCLIDES—
Continued

Radionuclide	Atomic Number	Final RQ Ci (Bq)
Curium-248	96	0.001 (3.7E 7)
Curium-249	96	1000 (3.7E 13)
Dysprosium-155	66	100 (3.7E 12)
Dysprosium-157	66	100 (3.7E 12)
Dysprosium-159	66	100 (3.7E 12)
Dysprosium-165	66	1000 (3.7E 13)
Dysprosium-166	66	10 (3.7E 11)
Einsteinium-250	99	10 (3.7E 11)
Einsteinium-251	99	1000 (3.7E 13)
Einsteinium-253	99	10 (3.7E 11)
Einsteinium-254m	99	1 (3.7E 10)
Einsteinium-254	99	0.1 (3.7E 9)
Erbium-161	68	100 (3.7E 12)
Erbium-165	68	1000 (3.7E 13)
Erbium-169	68	100 (3.7E 12)
Erbium-171	68	100 (3.7E 12)
Erbium-172	68	10 (3.7E 11)
Europium-145	63	10 (3.7E 11)
Europium-146	63	10 (3.7E 11)
Europium-147	63	10 (3.7E 11)
Europium-148	63	10 (3.7E 11)
Europium-149	63	100 (3.7E 12)
Europium-150 (12.6 hr)	63	1000 (3.7E 13)
Europium-150 (34.2 yr)	63	10 (3.7E 11)
Europium-152m	63	100 (3.7E 12)
Europium-152	63	10 (3.7E 11)
Europium-154	63	10 (3.7E 11)
Europium-155	63	10 (3.7E 11)
Europium-156	63	10 (3.7E 11)
Europium-157	63	10 (3.7E 11)
Europium-158	63	1000 (3.7E 13)
Fermium-252	100	10 (3.7E 11)
Fermium-253	100	10 (3.7E 11)
Fermium-254	100	100 (3.7E 12)
Fermium-255	100	100 (3.7E 12)
Fermium-257	100	1 (3.7E 10)
Fluorine-18	9	1000 (3.7E 13)
Francium-222	87	100 (3.7E 12)
Francium-223	87	100 (3.7E 12)
Gadolinium-145	64	100 (3.7E 12)
Gadolinium-146	64	10 (3.7E 11)
Gadolinium-147	64	10 (3.7E 11)
Gadolinium-148	64	0.001 (3.7E7)
Gadolinium-149	64	100 (3.7E 12)
Gadolinium-151	64	100 (3.7E 12)
Gadolinium-152	64	0.001 (3.7E 7)
Gadolinium-153	64	10 (3.7E 11)
Gadolinium-159	64	1000 (3.7E 13)
Gallium-65	31	1000 (3.7E 13)
Gallium-66	31	10 (3.7E 11)
Gallium-67	31	100 (3.7E 12)
Gallium-68	31	1000 (3.7E 13)
Gallium-70	31	1000 (3.7E 13)
Gallium-72	31	10 (3.7E 11)
Gallium-73	31	100 (3.7E 12)
Germanium-66	32	100 (3.7E 12)
Germanium-67	32	1000 (3.7E 13)
Germanium-68	32	10 (3.7E 11)
Germanium-69	32	10 (3.7E 11)
Germanium-71	32	1000 (3.7E 13)
Germanium-75	32	1000 (3.7E 13)
Germanium-77	32	10 (3.7E 11)
Germanium-78	32	1000 (3.7E 13)
Gold-193	79	100 (3.7E 12)
Gold-194	79	10 (3.7E 11)
Gold-195	79	100 (3.7E 12)
Gold-198m	79	10 (3.7E 11)
Gold-198	79	100 (3.7E 12)
Gold-199	79	100 (3.7E 12)
Gold-200m	79	10 (3.7E 11)

Radionuclide	Atomic Number	Final RQ Ci (Bq)
Gold-200	79	1000 (3.7E 13)
Gold-201	79	1000 (3.7E 13)
Hafnium-170	72	100 (3.7E 12)
Hafnium-172	72	1 (3.7E 10)
Hafnium-173	72	100 (3.7E 12)
Hafnium-175	72	100 (3.7E 12)
Hafnium-177m	72	1000 (3.7E 13)
Hafnium-178m	72	0.1 (3.7E 9)
Hafnium-179m	72	100 (3.7E 12)
Hafnium-180m	72	100 (3.7E 12)
Hafnium-181	72	10 (3.7E 11)
Hafnium-182m	72	100 (3.7E 12)
Hafnium-182	72	0.1 (3.7E 9)
Hafnium-183	72	100 (3.7E 12)
Hafnium-184	72	100 (3.7E 12)
Holmium-155	67	1000 (3.7E 13)
Holmium-157	67	1000 (3.7E 13)
Holmium-159	67	1000 (3.7E 13)
Holmium-161	67	1000 (3.7E 13)
Holmium-162m	67	1000 (3.7E 13)
Holmium-162	67	1000 (3.7E 13)
Holmium-164m	67	1000 (3.7E 13)
Holmium-164	67	1000 (3.7E 13)
Holmium-166m	67	1 (3.7E 10)
Holmium-166	67	100 (3.7E 12)
Holmium-167	67	100 (3.7E 12)
Hydrogen-3	1	100 (3.7E 12)
Indium-109	49	100 (3.7E 12)
Indium-110 (69.1 min)	49	100 (3.7E 12)
Indium-110 (4.9 hr)	49	10 (3.7E 11)
Indium-111	49	100 (3.7E 12)
Indium-112	49	1000 (3.7E 13)
Indium-113m	49	1000 (3.7E 13)
Indium-114m	49	10 (3.7E 11)
Indium-115m	49	100 (3.7E 12)
Indium-115	49	0.1 (3.7E 9)
Indium-116m	49	100 (3.7E 12)
Indium-117m	49	100 (3.7E 12)
Indium-117	49	1000 (3.7E 13)
Indium-119m	49	1000 (3.7E 13)
Iodine-120m	53	100 (3.7E 12)
Iodine-120	53	10 (3.7E 11)
Iodine-121	53	100 (3.7E 12)
Iodine-123	53	10 (3.7E 11)
Iodine-124	53	0.1 (3.7E 9)
Iodine-125	53	0.01 (3.7E 8)
Iodine-126	53	0.01 (3.7E 8)
Iodine-128	53	1000 (3.7E 13)
Iodine-129	53	0.001 (3.7E 7)
Iodine-130	53	1 (3.7E 10)
Iodine-131	53	0.01 (3.7E 8)
Iodine-132m	53	10 (3.7E 11)
Iodine-132	53	10 (3.7E 11)
Iodine-133	53	0.1 (3.7E 9)
Iodine-134	53	100 (3.7E 12)
Iodine-135	53	10 (3.7E 11)
Iridium-182	77	1000 (3.7E 13)
Iridium-184	77	100 (3.7E 12)
Iridium-185	77	100 (3.7E 12)
Iridium-186	77	10 (3.7E 11)
Iridium-187	77	100 (3.7E 12)
Iridium-188	77	10 (3.7E 11)
Iridium-189	77	100 (3.7E 12)
Iridium-190m	77	1000 (3.7E 13)
Iridium-190	77	10 (3.7E 11)
Iridium-192m	77	100 (3.7E 12)
Iridium-192	77	10 (3.7E 11)
Iridium-194m	77	10 (3.7E 11)
Iridium-194	77	100 (3.7E 12)
Iridium-195m	77	100 (3.7E 12)

Environmental Protection Agency

§ 302.4

APPENDIX B TO § 302.4—RADIONUCLIDES—
Continued

APPENDIX B TO § 302.4—RADIONUCLIDES—
Continued

Radionuclide	Atomic Number	Final RQ Ci (Bq)
Iridium-195	77	1000 (3.7E 13)
Iron-52	26	100 (3.7E 12)
Iron-55	26	100 (3.7E 12)
Iron-59	26	10 (3.7E 11)
Iron-60	26	0.1 (3.7E 9)
Krypton-74	36	10 (3.7E 11)
Krypton-76	36	10 (3.7E 11)
Krypton-77	36	10 (3.7E 11)
Krypton-79	36	100 (3.7E 12)
Krypton-81	36	1000 (3.7E 13)
Krypton-83m	36	1000 (3.7E 13)
Krypton-85m	36	100 (3.7E 12)
Krypton-85	36	1000 (3.7E 13)
Krypton-87	36	10 (3.7E 11)
Krypton-88	36	10 (3.7E 11)
Lanthanum-131	57	1000 (3.7E 13)
Lanthanum-132	57	100 (3.7E 12)
Lanthanum-135	57	1000 (3.7E 13)
Lanthanum-137	57	10 (3.7E 11)
Lanthanum-138	57	1 (3.7E 10)
Lanthanum-140	57	10 (3.7E 11)
Lanthanum-141	57	1000 (3.7E 13)
Lanthanum-142	57	100 (3.7E 12)
Lanthanum-143	57	1000 (3.7E 13)
Lead-195m	82	1000 (3.7E 13)
Lead-198	82	100 (3.7E 12)
Lead-199	82	100 (3.7E 12)
Lead-200	82	100 (3.7E 12)
Lead-201	82	100 (3.7E 12)
Lead-202m	82	10 (3.7E 11)
Lead-202	82	1 (3.7E 10)
Lead-203	82	100 (3.7E 12)
Lead-205	82	100 (3.7E 12)
Lead-209	82	1000 (3.7E 13)
Lead-210	82	0.01 (3.7E 8)
Lead-211	82	100 (3.7E 12)
Lead-212	82	10 (3.7E 11)
Lead-214	82	100 (3.7E 12)
Lutetium-169	71	10 (3.7E 11)
Lutetium-170	71	10 (3.7E 11)
Lutetium-171	71	10 (3.7E 11)
Lutetium-172	71	10 (3.7E 11)
Lutetium-173	71	100 (3.7E 12)
Lutetium-174m	71	10 (3.7E 11)
Lutetium-174	71	10 (3.7E 11)
Lutetium-176m	71	1000 (3.7E 13)
Lutetium-176	71	1 (3.7E 10)
Lutetium-177m	71	10 (3.7E 11)
Lutetium-177	71	100 (3.7E 12)
Lutetium-178m	71	1000 (3.7E 13)
Lutetium-178	71	1000 (3.7E 13)
Lutetium-179	71	1000 (3.7E 13)
Magnesium-28	12	10 (3.7E 11)
Manganese-51	25	1000 (3.7E 13)
Manganese-52m	25	1000 (3.7E 13)
Manganese-52	25	10 (3.7E 11)
Manganese-53	25	1000 (3.7E 13)
Manganese-54	25	10 (3.7E 11)
Manganese-56	25	100 (3.7E 12)
Mendelevium-257	101	100 (3.7E 12)
Mendelevium-258	101	1 (3.7E 10)
Mercury-193m	80	10 (3.7E 11)
Mercury-193	80	100 (3.7E 12)
Mercury-194	80	0.1 (3.7E 9)
Mercury-195m	80	100 (3.7E 12)
Mercury-195	80	100 (3.7E 12)
Mercury-197m	80	1000 (3.7E 13)
Mercury-197	80	1000 (3.7E 13)
Mercury-199m	80	1000 (3.7E 13)
Mercury-203	80	10 (3.7E 11)

Radionuclide	Atomic Number	Final RQ Ci (Bq)
Molybdenum-90	42	100 (3.7E 12)
Molybdenum-93m	42	10 (3.7E 11)
Molybdenum-93	42	100 (3.7E 12)
Molybdenum-99	42	100 (3.7E 12)
Molybdenum-101	42	1000 (3.7E 13)
Neodymium-136	60	1000 (3.7E 13)
Neodymium-138	60	1000 (3.7E 13)
Neodymium-139m	60	100 (3.7E 12)
Neodymium-139	60	1000 (3.7E 13)
Neodymium-141	60	1000 (3.7E 13)
Neodymium-147	60	10 (3.7E 11)
Neodymium-149	60	100 (3.7E 12)
Neodymium-151	60	1000 (3.7E 13)
Neptunium-232	93	1000 (3.7E 13)
Neptunium-233	93	1000 (3.7E 13)
Neptunium-234	93	10 (3.7E 11)
Neptunium-235	93	1000 (3.7E 13)
Neptunium-236 (1.2 E 5 yr)	93	0.1 (3.7E 9)
Neptunium-236 (22.5 hr)	93	100 (3.7E 12)
Neptunium-237	93	0.01 (3.7E 8)
Neptunium-238	93	10 (3.7E 11)
Neptunium-239	93	100 (3.7E 12)
Neptunium-240	93	100 (3.7E 12)
Nickel-56	28	10 (3.7E 11)
Nickel-57	28	10 (3.7E 11)
Nickel-59	28	100 (3.7E 12)
Nickel-63	28	100 (3.7E 12)
Nickel-65	28	100 (3.7E 12)
Nickel-66	28	10 (3.7E 11)
Niobium-88	41	100 (3.7E 12)
Niobium-89 (66 min)	41	100 (3.7E 12)
Niobium-89 (122 min)	41	100 (3.7E 12)
Niobium-90	41	10 (3.7E 11)
Niobium-93m	41	100 (3.7E 12)
Niobium-94	41	10 (3.7E 11)
Niobium-95m	41	100 (3.7E 12)
Niobium-95	41	10 (3.7E 11)
Niobium-96	41	10 (3.7E 11)
Niobium-97	41	100 (3.7E 12)
Niobium-98	41	1000 (3.7E 13)
Osmium-180	76	1000 (3.7E 13)
Osmium-181	76	100 (3.7E 12)
Osmium-182	76	100 (3.7E 12)
Osmium-185	76	10 (3.7E 11)
Osmium-189m	76	1000 (3.7E 13)
Osmium-191m	76	1000 (3.7E 13)
Osmium-191	76	100 (3.7E 12)
Osmium-193	76	100 (3.7E 12)
Osmium-194	76	1 (3.7E 10)
Palladium-100	46	100 (3.7E 12)
Palladium-101	46	100 (3.7E 12)
Palladium-103	46	100 (3.7E 12)
Palladium-107	46	100 (3.7E 12)
Palladium-109	46	1000 (3.7E 13)
Phosphorus-32	15	0.1 (3.7E 9)
Phosphorus-33	15	1 (3.7E 10)
Platinum-186	78	100 (3.7E 12)
Platinum-188	78	100 (3.7E 12)
Platinum-189	78	100 (3.7E 12)
Platinum-191	78	100 (3.7E 12)
Platinum-193m	78	100 (3.7E 12)
Platinum-193	78	1000 (3.7E 13)
Platinum-195m	78	100 (3.7E 12)
Platinum-197m	78	1000 (3.7E 13)
Platinum-197	78	1000 (3.7E 13)
Platinum-199	78	1000 (3.7E 13)
Platinum-200	78	100 (3.7E 12)
Plutonium-234	94	1000 (3.7E 13)
Plutonium-235	94	1000 (3.7E 13)
Plutonium-236	94	0.1 (3.7E 9)

§ 302.4

40 CFR Ch. I (7-1-11 Edition)

APPENDIX B TO § 302.4—RADIONUCLIDES—
Continued

APPENDIX B TO § 302.4—RADIONUCLIDES—
Continued

Radionuclide	Atomic Number	Final RQ Ci (Bq)
Plutonium-237	94	1000 (3.7E 13)
Plutonium-238	94	0.01 (3.7E 8)
Plutonium-239	94	0.01 (3.7E 8)
Plutonium-240	94	0.01 (3.7E 8)
Plutonium-241	94	1 (3.7E 10)
Plutonium-242	94	0.01 (3.7E 8)
Plutonium-243	94	1000 (3.7E 13)
Plutonium-244	94	0.01 (3.7E 8)
Plutonium-245	94	100 (3.7E 12)
Polonium-203	84	100 (3.7E 12)
Polonium-205	84	100 (3.7E 12)
Polonium-207	84	10 (3.7E 11)
Polonium-210	84	0.01 (3.7E 8)
Potassium-40	19	1 (3.7E 10)
Potassium-42	19	100 (3.7E 12)
Potassium-43	19	10 (3.7E 11)
Potassium-44	19	100 (3.7E 12)
Potassium-45	19	1000 (3.7E 13)
Praseodymium-136	59	1000 (3.7E 13)
Praseodymium-137	59	1000 (3.7E 13)
Praseodymium-138m	59	100 (3.7E 12)
Praseodymium-139	59	1000 (3.7E 13)
Praseodymium-142m	59	1000 (3.7E 13)
Praseodymium-142	59	100 (3.7E 12)
Praseodymium-143	59	10 (3.7E 11)
Praseodymium-144	59	1000 (3.7E 13)
Praseodymium-145	59	1000 (3.7E 13)
Praseodymium-147	59	1000 (3.7E 13)
Promethium-141	61	1000 (3.7E 13)
Promethium-143	61	100 (3.7E 12)
Promethium-144	61	10 (3.7E 11)
Promethium-145	61	100 (3.7E 12)
Promethium-146	61	10 (3.7E 11)
Promethium-147	61	10 (3.7E 11)
Promethium-148m	61	10 (3.7E 11)
Promethium-148	61	10 (3.7E 11)
Promethium-149	61	100 (3.7E 12)
Promethium-150	61	100 (3.7E 12)
Promethium-151	61	100 (3.7E 12)
Protactinium-227	91	100 (3.7E 12)
Protactinium-228	91	10 (3.7E 11)
Protactinium-230	91	10 (3.7E 11)
Protactinium-231	91	0.01 (3.7E 8)
Protactinium-232	91	10 (3.7E 11)
Protactinium-233	91	100 (3.7E 12)
Protactinium-234	91	10 (3.7E 11)
Radium-223	88	1 (3.7E 10)
Radium-224	88	10 (3.7E 11)
Radium-225	88	1 (3.7E 10)
Radium-226 ϕ	88	0.1 (3.7E 9)
Radium-227	88	1000 (3.7E 13)
Radium-228	88	0.1 (3.7E 9)
Radon-220	86	0.1 (3.7E 9)
Radon-222	86	0.1 (3.7E 9)
Rhenium-177	75	1000 (3.7E 13)
Rhenium-178	75	1000 (3.7E 13)
Rhenium-181	75	100 (3.7E 12)
Rhenium-182 (12.7 hr)	75	10 (3.7E 11)
Rhenium-182 (64.0 hr)	75	10 (3.7E 11)
Rhenium-184m	75	10 (3.7E 11)
Rhenium-184	75	10 (3.7E 11)
Rhenium-186m	75	10 (3.7E 11)
Rhenium-186	75	100 (3.7E 12)
Rhenium-187	75	1000 (3.7E 13)
Rhenium-188m	75	1000 (3.7E 13)
Rhenium-188	75	1000 (3.7E 13)
Rhenium-189	75	1000 (3.7E 13)
Rhodium-99m	45	100 (3.7E 12)
Rhodium-99	45	10 (3.7E 11)
Rhodium-100	45	10 (3.7E 11)

Radionuclide	Atomic Number	Final RQ Ci (Bq)
Rhodium-101m	45	100 (3.7E 12)
Rhodium-101	45	10 (3.7E 11)
Rhodium-102m	45	10 (3.7E 11)
Rhodium-102	45	10 (3.7E 11)
Rhodium-103m	45	1000 (3.7E 13)
Rhodium-105	45	100 (3.7E 12)
Rhodium-106m	45	10 (3.7E 11)
Rhodium-107	45	1000 (3.7E 13)
Rubidium-79	37	1000 (3.7E 13)
Rubidium-81m	37	1000 (3.7E 13)
Rubidium-81	37	100 (3.7E 12)
Rubidium-82m	37	10 (3.7E 11)
Rubidium-83	37	10 (3.7E 11)
Rubidium-84	37	10 (3.7E 11)
Rubidium-86	37	10 (3.7E 11)
Rubidium-88	37	1000 (3.7E 13)
Rubidium-89	37	1000 (3.7E 13)
Rubidium-87	37	10 (3.7E 11)
Ruthenium-94	44	1000 (3.7E 13)
Ruthenium-97	44	100 (3.7E 12)
Ruthenium-103	44	10 (3.7E 11)
Ruthenium-105	44	100 (3.7E 12)
Ruthenium-106	44	1 (3.7E 10)
Samarium-141m	62	1000 (3.7E 13)
Samarium-141	62	1000 (3.7E 13)
Samarium-142	62	1000 (3.7E 13)
Samarium-145	62	100 (3.7E 12)
Samarium-146	62	0.01 (3.7E 8)
Samarium-147	62	0.01 (3.7E 8)
Samarium-151	62	10 (3.7E 11)
Samarium-153	62	100 (3.7E 12)
Samarium-155	62	1000 (3.7E 13)
Samarium-156	62	100 (3.7E 12)
Scandium-43	21	1000 (3.7E 13)
Scandium-44m	21	10 (3.7E 11)
Scandium-44	21	100 (3.7E 12)
Scandium-46	21	10 (3.7E 11)
Scandium-47	21	100 (3.7E 12)
Scandium-48	21	10 (3.7E 11)
Scandium-49	21	1000 (3.7E 13)
Selenium-70	34	1000 (3.7E 13)
Selenium-73m	34	100 (3.7E 12)
Selenium-73	34	10 (3.7E 11)
Selenium-75	34	10 (3.7E 11)
Selenium-79	34	10 (3.7E 11)
Selenium-81m	34	1000 (3.7E 13)
Selenium-81	34	1000 (3.7E 13)
Selenium-83	34	1000 (3.7E 13)
Silicon-31	14	1000 (3.7E 13)
Silicon-32	14	1 (3.7E 10)
Silver-102	47	100 (3.7E 12)
Silver-103	47	1000 (3.7E 13)
Silver-104m	47	1000 (3.7E 13)
Silver-104	47	1000 (3.7E 13)
Silver-105	47	10 (3.7E 11)
Silver-106m	47	10 (3.7E 11)
Silver-106	47	1000 (3.7E 13)
Silver-108m	47	10 (3.7E 11)
Silver-110m	47	10 (3.7E 11)
Silver-111	47	10 (3.7E 11)
Silver-112	47	100 (3.7E 12)
Silver-115	47	1000 (3.7E 13)
Sodium-22	11	10 (3.7E 11)
Sodium-24	11	10 (3.7E 11)
Strontium-80	38	100 (3.7E 12)
Strontium-81	38	1000 (3.7E 13)
Strontium-83	38	100 (3.7E 12)
Strontium-85m	38	1000 (3.7E 13)
Strontium-85	38	10 (3.7E 11)
Strontium-87m	38	100 (3.7E 12)

Environmental Protection Agency

§ 302.4

APPENDIX B TO § 302.4—RADIONUCLIDES—
Continued

APPENDIX B TO § 302.4—RADIONUCLIDES—
Continued

Radionuclide	Atomic Number	Final RQ Ci (Bq)
Strontium-89	38	10 (3.7E 11)
Strontium-90	38	0.1 (3.7E 9)
Strontium-91	38	10 (3.7E 11)
Strontium-92	38	100 (3.7E 12)
Sulfur-35	16	1 (3.7E 10)
Tantalum-172	73	100 (3.7E 12)
Tantalum-173	73	100 (3.7E 12)
Tantalum-174	73	100 (3.7E 12)
Tantalum-175	73	100 (3.7E 12)
Tantalum-176	73	10 (3.7E 11)
Tantalum-177	73	1000 (3.7E 13)
Tantalum-178	73	1000 (3.7E 13)
Tantalum-179	73	1000 (3.7E 13)
Tantalum-180m	73	1000 (3.7E 13)
Tantalum-180	73	100 (3.7E 12)
Tantalum-182m	73	1000 (3.7E 13)
Tantalum-182	73	10 (3.7E 11)
Tantalum-183	73	100 (3.7E 12)
Tantalum-184	73	10 (3.7E 11)
Tantalum-185	73	1000 (3.7E 13)
Tantalum-186	73	1000 (3.7E 13)
Technetium-93m	43	1000 (3.7E 13)
Technetium-93	43	100 (3.7E 12)
Technetium-94m	43	100 (3.7E 12)
Technetium-94	43	10 (3.7E 11)
Technetium-96m	43	1000 (3.7E 13)
Technetium-96	43	10 (3.7E 11)
Technetium-97m	43	100 (3.7E 12)
Technetium-97	43	100 (3.7E 12)
Technetium-98	43	10 (3.7E 11)
Technetium-99m	43	100 (3.7E 12)
Technetium-99	43	10 (3.7E 11)
Technetium-101	43	1000 (3.7E 13)
Technetium-104	43	1000 (3.7E 13)
Tellurium-116	52	1000 (3.7E 13)
Tellurium-121m	52	10 (3.7E 11)
Tellurium-121	52	10 (3.7E 11)
Tellurium-123m	52	10 (3.7E 11)
Tellurium-123	52	10 (3.7E 11)
Tellurium-125m	52	10 (3.7E 11)
Tellurium-127m	52	10 (3.7E 11)
Tellurium-127	52	1000 (3.7E 13)
Tellurium-129m	52	10 (3.7E 11)
Tellurium-129	52	1000 (3.7E 13)
Tellurium-131m	52	10 (3.7E 11)
Tellurium-131	52	1000 (3.7E 13)
Tellurium-132	52	10 (3.7E 11)
Tellurium-133m	52	1000 (3.7E 13)
Tellurium-133	52	1000 (3.7E 13)
Tellurium-134	52	1000 (3.7E 13)
Terbium-147	65	100 (3.7E 12)
Terbium-149	65	100 (3.7E 12)
Terbium-150	65	100 (3.7E 12)
Terbium-151	65	10 (3.7E 11)
Terbium-153	65	100 (3.7E 12)
Terbium-154	65	10 (3.7E 11)
Terbium-155	65	100 (3.7E 12)
Terbium-156m (5.0 hr)	65	1000 (3.7E 13)
Terbium-156m (24.4 hr)	65	1000 (3.7E 13)
Terbium-156	65	10 (3.7E 11)
Terbium-157	65	100 (3.7E 12)
Terbium-158	65	10 (3.7E 11)
Terbium-160	65	10 (3.7E 11)
Terbium-161	65	100 (3.7E 12)
Thallium-194m	81	100 (3.7E 12)
Thallium-194	81	1000 (3.7E 13)
Thallium-195	81	100 (3.7E 12)
Thallium-197	81	100 (3.7E 12)
Thallium-198m	81	100 (3.7E 12)
Thallium-198	81	10 (3.7E 11)

Radionuclide	Atomic Number	Final RQ Ci (Bq)
Thallium-199	81	100 (3.7E 12)
Thallium-200	81	10 (3.7E 11)
Thallium-201	81	1000 (3.7E 13)
Thallium-202	81	10 (3.7E 11)
Thallium-204	81	10 (3.7E 11)
Thorium-226	90	100 (3.7E 12)
Thorium-227	90	1 (3.7E 10)
Thorium-228	90	0.01 (3.7E 8)
Thorium-229	90	0.001 (3.7E 7)
Thorium-230	90	0.01 (3.7E 8)
Thorium-231	90	100 (3.7E 12)
Thorium-232 ϕ	90	0.001 (3.7E 7)
Thorium-234	90	100 (3.7E 12)
Thulium-162	69	1000 (3.7E 13)
Thulium-166	69	10 (3.7E 11)
Thulium-167	69	100 (3.7E 12)
Thulium-170	69	10 (3.7E 11)
Thulium-171	69	100 (3.7E 12)
Thulium-172	69	100 (3.7E 12)
Thulium-173	69	100 (3.7E 12)
Thulium-175	69	1000 (3.7E 13)
Tin-110	50	100 (3.7E 12)
Tin-111	50	1000 (3.7E 13)
Tin-113	50	10 (3.7E 11)
Tin-117m	50	100 (3.7E 12)
Tin-119m	50	10 (3.7E 11)
Tin-121m	50	10 (3.7E 11)
Tin-121	50	1000 (3.7E 13)
Tin-123m	50	1000 (3.7E 13)
Tin-123	50	10 (3.7E 11)
Tin-125	50	10 (3.7E 11)
Tin-126	50	1 (3.7E 10)
Tin-127	50	100 (3.7E 12)
Tin-128	50	1000 (3.7E 13)
Titanium-44	22	1 (3.7E 10)
Titanium-45	22	1000 (3.7E 13)
Tungsten-176	74	1000 (3.7E 13)
Tungsten-177	74	100 (3.7E 12)
Tungsten-178	74	100 (3.7E 12)
Tungsten-179	74	1000 (3.7E 13)
Tungsten-181	74	100 (3.7E 12)
Tungsten-185	74	10 (3.7E 11)
Tungsten-187	74	100 (3.7E 12)
Tungsten-188	74	10 (3.7E 11)
Uranium-230	92	1 (3.7E 10)
Uranium-231	92	1000 (3.7E 13)
Uranium-232	92	0.01 (3.7E 8)
Uranium-233	92	0.1 (3.7E 9)
Uranium-234 ϕ	92	0.1 (3.7E 9)
Uranium-235 ϕ	92	0.1 (3.7E 9)
Uranium-236	92	0.1 (3.7E 9)
Uranium-237	92	100 (3.7E 12)
Uranium-238 ϕ	92	0.1 (3.7E 9)
Uranium-239	92	1000 (3.7E 13)
Uranium-240	92	1000 (3.7E 13)
Vanadium-47	23	1000 (3.7E 13)
Vanadium-48	23	10 (3.7E 11)
Vanadium-49	23	1000 (3.7E 13)
Xenon-120	54	100 (3.7E 12)
Xenon-121	54	10 (3.7E 11)
Xenon-122	54	100 (3.7E 12)
Xenon-123	54	10 (3.7E 11)
Xenon-125	54	100 (3.7E 12)
Xenon-127	54	100 (3.7E 12)
Xenon-129m	54	1000 (3.7E 13)
Xenon-131m	54	1000 (3.7E 13)
Xenon-133m	54	1000 (3.7E 13)
Xenon-133	54	1000 (3.7E 13)
Xenon-135m	54	10 (3.7E 11)
Xenon-135	54	100 (3.7E 12)

§ 302.5

40 CFR Ch. I (7-1-11 Edition)

APPENDIX B TO § 302.4—RADIONUCLIDES—
Continued

Radionuclide	Atomic Number	Final RQ Ci (Bq)
Xenon-138	54	10 (3.7E 11)
Ytterbium-162	70	1000 (3.7E 13)
Ytterbium-166	70	10 (3.7E 11)
Ytterbium-167	70	1000 (3.7E 13)
Ytterbium-169	70	10 (3.7E 11)
Ytterbium-175	70	100 (3.7E 12)
Ytterbium-177	70	1000 (3.7E 13)
Ytterbium-178	70	1000 (3.7E 13)
Yttrium-86m	39	1000 (3.7E 13)
Yttrium-86	39	10 (3.7E 11)
Yttrium-87	39	10 (3.7E 11)
Yttrium-88	39	10 (3.7E 11)
Yttrium-90m	39	100 (3.7E 12)
Yttrium-90	39	10 (3.7E 11)
Yttrium-91m	39	1000 (3.7E 13)
Yttrium-91	39	10 (3.7E 11)
Yttrium-92	39	100 (3.7E 12)
Yttrium-93	39	100 (3.7E 12)
Yttrium-94	39	1000 (3.7E 13)
Yttrium-95	39	1000 (3.7E 13)
Zinc-62	30	100 (3.7E 12)
Zinc-63	30	1000 (3.7E 13)
Zinc-65	30	10 (3.7E 11)
Zinc-69m	30	100 (3.7E 12)
Zinc-69	30	1000 (3.7E 13)
Zinc-71m	30	100 (3.7E 12)
Zinc-72	30	100 (3.7E 12)
Zirconium-86	40	100 (3.7E 12)
Zirconium-88	40	10 (3.7E 11)
Zirconium-89	40	100 (3.7E 12)
Zirconium-93	40	1 (3.7E 10)
Zirconium-95	40	10 (3.7E 11)
Zirconium-97	40	10 (3.7E 11)

Ci—Curie. The curie represents a rate of radioactive decay. One curie is the quantity of any radioactive nuclide which undergoes 3.7E 10 disintegrations per second.

Bq—Becquerel. The becquerel represents a rate of radioactive decay. One becquerel is the quantity of any radioactive nuclide which undergoes one disintegration per second. One curie is equal to 3.7E 10 becquerel.

Ⓞ—Final RQs for all radionuclides apply to chemical compounds containing the radionuclides and elemental forms regardless of the diameter of pieces of solid material.

Ⓢ—The adjusted RQ of one curie applies to all radionuclides not otherwise listed. Whenever the RQs in table 302.4 and this appendix to the table are in conflict, the lowest RQ shall apply. For example, uranyl acetate and uranyl nitrate have adjusted RQs shown in table 302.4 of 100 pounds, equivalent to about one-tenth the RQ level for uranium-238 listed in this appendix.

E—Exponent to the base 10. For example, 1.3E 2 is equal to 130 while 1.3E 3 is equal to 1300.

m—Signifies a nuclear isomer which is a radionuclide in a higher energy metastable state relative to the parent isotope.

Ⓠ—Notification requirements for releases of mixtures or solutions of radionuclides can be found in § 302.6(b) of this rule. Final RQs for the following four common radionuclide mixtures are provided: radium-226 in secular equilibrium with its daughters (0.053 curie); natural uranium (0.1 curie); natural uranium in secular equilibrium with its daughters (0.052 curie); and natural thorium in secular equilibrium with its daughters (0.011 curie).

[54 FR 33449, Aug. 14, 1989]

EDITORIAL NOTE: For FEDERAL REGISTER citations affecting § 302.4, see the List of CFR Sections Affected, which appears in the Finding Aids section of the printed volume and at www.fdsys.gov.

§ 302.5 Determination of reportable quantities.

(a) *Listed hazardous substances.* The quantity listed in the column “Final RQ” for each substance in table 302.4, or in appendix B to table 302.4, is the reportable quantity (RQ) for that substance. The RQs in table 302.4 are in units of pounds based on chemical toxicity, while the RQs in appendix B to table 302.4 are in units of curies based on radiation hazard. Whenever the RQs in table 302.4 and appendix B to the table are in conflict, the lowest RQ shall apply.

(b) *Unlisted hazardous substances.* Unlisted hazardous substances designated by 40 CFR 302.4(b) have the reportable quantity of 100 pounds, except for those unlisted hazardous wastes which exhibit toxicity identified in 40 CFR 261.24. Unlisted hazardous wastes which exhibit toxicity have the reportable quantities listed in Table 302.4 for the contaminant on which the characteristic of toxicity is based. The reportable quantity applies to the waste itself, not merely to the toxic contaminant. If an unlisted hazardous waste exhibits toxicity on the basis of more than one contaminant, the reportable quantity for that waste shall be the lowest of the reportable quantities listed in Table 302.4 for those contaminants. If an unlisted hazardous waste exhibits the characteristic of toxicity and one or more of the other characteristics referenced in 40 CFR 302.4(b), the reportable quantity for that waste shall be the lowest of the applicable reportable quantities.

[51 FR 34547, Sept. 29, 1986, as amended at 54 FR 22538, May 24, 1989; 67 FR 45356, July 9, 2002]

§ 302.6 Notification requirements.

(a) Any person in charge of a vessel or an offshore or an onshore facility shall, as soon as he or she has knowledge of any release (other than a federally permitted release or application of a pesticide) of a hazardous substance from such vessel or facility in a quantity equal to or exceeding the reportable quantity determined by this part in any 24-hour period, immediately notify the National Response Center (1-800-424-8802; in Washington, DC 202-267-



ATTACHMENT B
Illinois Emergency Release Notification



ILLINOIS EMERGENCY MANAGEMENT AGENCY

Bruce Rauner
Governor

James K. Joseph
Director

EMERGENCY RELEASE NOTIFICATION FACT SHEET

- A. Immediate telephone notification shall be given by the owner or operator of a facility when a release equal to or exceeding the reportable quantity of an extremely hazardous substance¹ or a CERCLA hazardous substance² occurs at the facility.

In such incidents, notifications are to be made to the following:

1. Illinois Emergency Management Agency (IEMA)/State Emergency Response Commission (SERC) at 1-800-782-7860 (within state) or (217) 782-7860 (when calling from out-of-state);
2. Local Emergency Planning Committee (LEPC) that is likely to be affected by the release. The LEPC telephone number(s) may be obtained from the IEMA Website at <http://www.illinois.gov/iema/Preparedness/SERC/Pages/default.aspx>.
3. National Response Center (NRC) at 1-800-424-8802 (if the substance is a CERCLA hazardous substance).

Please Note: *Transportation-related incidents only require 9-1-1 notification.*

- B. Immediate telephone notification is also required if an incident or accident involving a hazardous material³ occurs which results in:

- 1) a member of the general public is killed;
- 2) a member of the general public receives injuries requiring hospitalization;
- 3) an authorized official of an emergency agency recommends an evacuation of an area by the general public;
- 4) a motor vehicle has overturned on a public highway;
- 5) Fire, breakage, release or suspected contamination occurs involving an etiologic agent;
- 6) Any release of petroleum (or oil) that produces a sheen on nearby surface water⁴ and/or threatens navigable waters;
- 7) Any spill or overflow of petroleum that results in a release to the environment that exceeds 25 gallons (25-gallon reporting threshold for USTs only).⁴ ASTs are not subject to the 25-gallon spill reporting threshold in 41 IAC 176.340 but are subject to 29 IAC 430.

In such incidents, notification shall be made as noted in Paragraph A, above, except no notification is required to the NRC, except items 6 and 7 (oil that impacts water and overfills emanating from underground storage tanks).

At a minimum, notification shall include:

- 1) the chemical name or identity of any substance involved in the release;
- 2) an indication of whether the substance is an extremely hazardous substance;
- 3) an estimate of the quantity in pounds of any such substance that was released into the environment;
- 4) the time and duration of the release;
- 5) the specific location of the release;
- 6) the medium or media (air, land, water) into which the release occurred;
- 7) any known or anticipated acute or chronic health risks associated with the emergency and, where appropriate, advice regarding medical attention necessary for exposed individuals;
- 8) proper precautions to take as a result of the release, including evacuations;
- 9) the name and telephone number of the person or persons to be contacted for further information.

WRITTEN FOLLOW-UP NOTICE IS REQUIRED WITH RESPECT TO INCIDENTS AS DESCRIBED IN PARAGRAPH A, ABOVE. As soon as practicable after such release (within 30 days), the owner or operator shall provide a written follow-up emergency notice (or notices, as more information becomes available) to the SERC and the LEPC, updating the information provided in the immediate notification and including additional information with respect to:

- 1) Actions taken to respond to and contain the release;
- 2) Any known or anticipated acute or chronic health risks associated with the release;
- 3) Where appropriate, advice regarding medical attention necessary for exposed individuals.

¹ See 40 CFR 355 for a listing of extremely hazardous substances (EHS)

² See 40 CFR 302.4 for a listing of Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) hazardous substances

³ See 49 CFR 172.101 for a list of hazardous materials

⁴ See 41 IAC 176.340 Reporting and Cleanup of Spills and Overfills (USTs).

(These rules are compiled in 29 IAC 430 and 29 IAC 620)

Last updated 4/2016



ATTACHMENT C
Missouri Emergency Release Notification

Rules of
Department of Natural Resources
Division 24—Hazardous Substance Emergency
Response Office
Chapter 3—Emergency Notification Procedures

Title	Page
10 CSR 24-3.010 Notification Procedures for Hazardous Substance Emergencies and for Emergency Notification of Releases of Hazardous Substances and Extremely Hazardous Substances	3



**Title 10—DEPARTMENT OF
NATURAL RESOURCES
Division 24—Hazardous Substance
Emergency Response Office
Chapter 3—Emergency Notification
Procedures**

**10 CSR 24-3.010 Notification Procedures
for Hazardous Substance Emergencies and
for Emergency Notification of Releases of
Hazardous Substances and Extremely Haz-
ardous Substances**

PURPOSE: This rule establishes a statewide emergency telephone number to notify Missouri whenever a hazardous substance emergency occurs and specifies the requirements for emergency notification and follow-up written notices in the event of a hazardous substance emergency, the release of a reportable quantity of a hazardous substance and the release of a reportable quantity of an extremely hazardous substance.

PUBLISHER'S NOTE: The publication of the full text of the material that the adopting agency has incorporated by reference in this rule would be unduly cumbersome or expensive. Therefore, the full text of that material will be made available to any interested person at both the Office of the Secretary of State and the office of the adopting agency, pursuant to section 536.031.4, RSMo. Such material will be provided at the cost established by state law.

(1) Any person having control over a hazardous substance shall contact Missouri by telephone at (573) 634-2436 or the National Response Center at (800) 424-8802 at the earliest practical moment upon discovery of an emergency involving a hazardous substance under his/her control. Information to be provided to Missouri to the best ability of the person having control over the hazardous substance includes: substance(s) involved, an indication of whether the substance is an extremely hazardous substance; the medium or media into which the release occurred; any known or anticipated acute or chronic health risks associated with the release and, where appropriate, advice regarding medical attention necessary for exposed individuals; proper precautions to take as a result of the release, including evacuation; amount of the substance(s) released or in danger of being released; location of the hazardous substance emergency and directions to the site; names, addresses and phone numbers of persons that may have information on the substances involved; when the hazardous substance emergency occurred, duration of the release

and when it was discovered; actions taken to cleanup the hazardous substance and to end the hazardous substance emergency and when those actions will be taken; and any other pertinent information requested by Missouri, or as specified in the Missouri hazardous waste management commission regulations at 10 CSR 25-7.264(2)(D) and (E) and 10 CSR 25-7.265(2)(D) and (E). Federal reporting requirements for releases of hazardous substances can be found in 40 CFR parts 302 and 355. In addition, state reporting requirements contained in 11 CSR 40-4.030 reference these regulations, and require that certain information be provided to Local Emergency Planning Committees (LEPCs) for reportable releases of hazardous substances and extremely hazardous substances.

(2) The person monitoring the statewide emergency telephone shall notify appropriate agencies of the hazardous substance emergency as designated in the Hazardous Substance Emergency Response Plan.

(3) Upon request, written follow-up notifications are required for releases of hazardous substances and extremely hazardous substances as listed in 40 CFR parts 302 and 355. If requested, the person having control of the hazardous substance or extremely hazardous substance shall provide a written follow-up emergency notice (or notices, as more information becomes available) to the department setting forth and updating the information with respect to—

- (A) Information required in section (1);
- (B) Actions taken to respond to and contain the release;
- (C) Any known or anticipated acute or chronic health risks associated with the release; and
- (D) Where appropriate, advice regarding medical attention necessary for exposed individuals.

(4) If requested, a written report shall be provided to the department for any other hazardous substance emergency. The requested reports shall contain the information as specified in sections (1) and (3) of this rule and any other pertinent information as requested by the department. In addition, state reporting requirements in 11 CSR 40-4.030 require that written follow-up reports be provided to the Department of Public Safety and appropriate LEPCs for any reportable releases of hazardous substances or extremely hazardous substances.

*AUTHORITY: section 260.520, RSMo (Supp. 1995). * Original rule filed Nov. 30, 1983, effective April 12, 1984. Emergency amend-*

ment filed Dec. 2, 1992, effective Jan. 1, 1993, expired April 30, 1993. Amended: Filed Oct. 5, 1992, effective April 8, 1993. Amended: Filed June 14, 1994, effective Jan. 29, 1995. Amended: Filed July 22, 1996, effective Feb. 28, 1997.

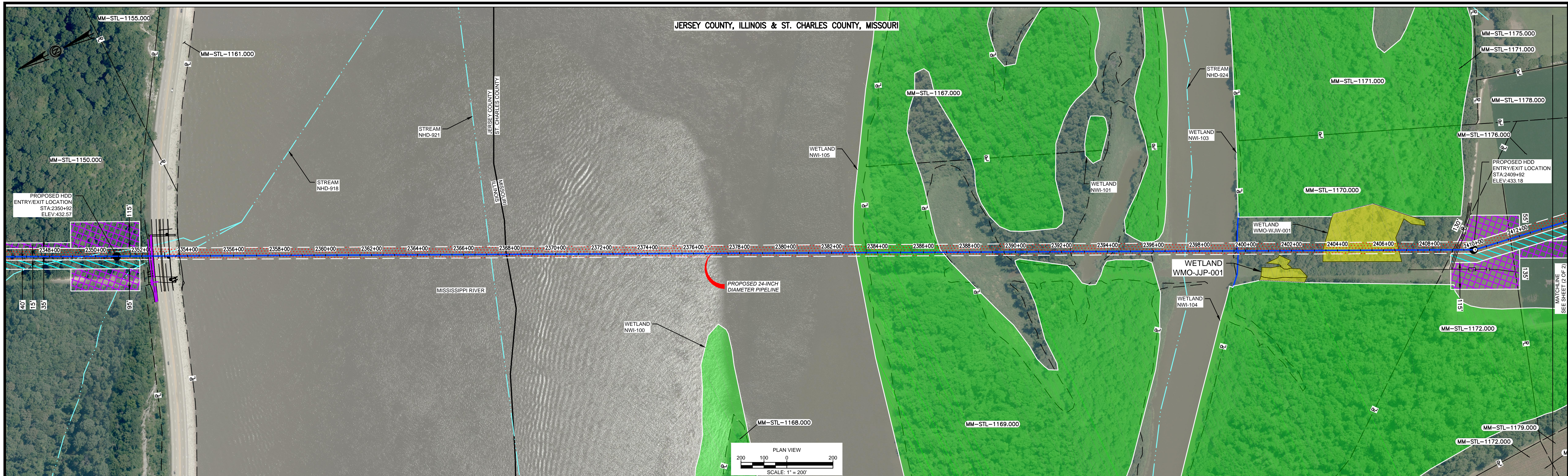
**Original authority 1983, amended 1993, 1995.*



APPENDIX 2-B
HDD Contingency Plan
(to be provided in the FERC application)



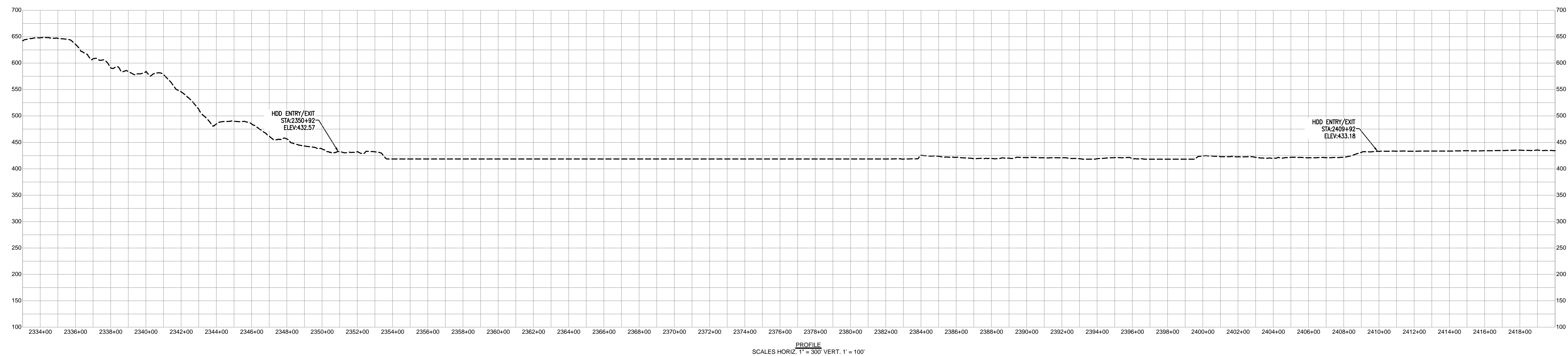
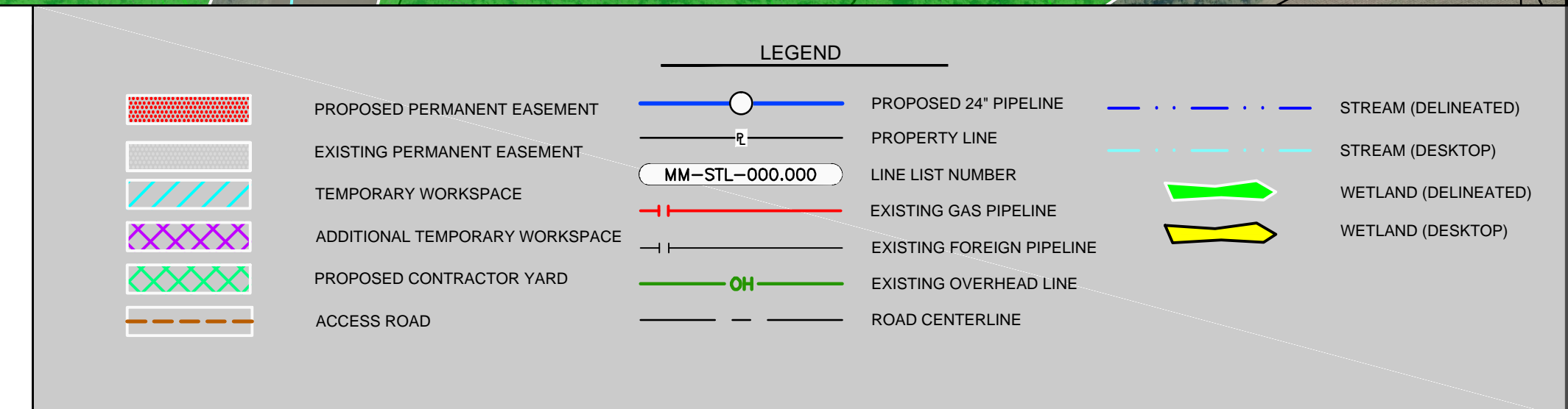
APPENDIX 2-C
Site-Specific Waterbody Drawings



DRAFT CONCEPTUAL HDD NOTES:

1. THE HDD BORE PATH DEPICTED ON THIS DRAWING IS CONSIDERED "DRAFT CONCEPTUAL" AND IS SUBJECT TO CHANGE BASED ON GEOTECHNICAL DATA, TOPOGRAPHICAL SURVEY, AND/OR ADDITIONAL INFORMATION REGARDING BIOLOGICAL FEATURE DELINEATIONS. THE HDD BORE PATH WILL BE ISSUED AS "FINAL CONCEPTUAL" AFTER COLLECTION AND EVALUATION OF BOTH TOPOGRAPHICAL SURVEY AND GEOTECHNICAL DATA AND AFTER BIOLOGICAL FEATURE DELINEATIONS ARE FINAL.
2. THIS DRAWING HAS BEEN PREPARED WITHOUT THE BENEFIT OF A COMPLETED GEOTECHNICAL INVESTIGATION PROGRAM. THE PRELIMINARY/CONCEPTUAL ALIGNMENTS WERE DETERMINED BASED UPON CURRENTLY AVAILABLE INFORMATION REGARDING THE CROSSING. IT IS POSSIBLE THAT ADDITIONAL CONSTRAINTS ASSOCIATED WITH THIS CROSSING WILL BE DISCOVERED AFTER A GEOTECHNICAL INVESTIGATION IS COMPLETED, RESULTING IN ALIGNMENT AND OTHER DESIGN CHANGES. ELEVATION DATA IS BASED ON PUBLICLY AVAILABLE DATASETS.

MISSISSIPPI HDD PLAN VIEW

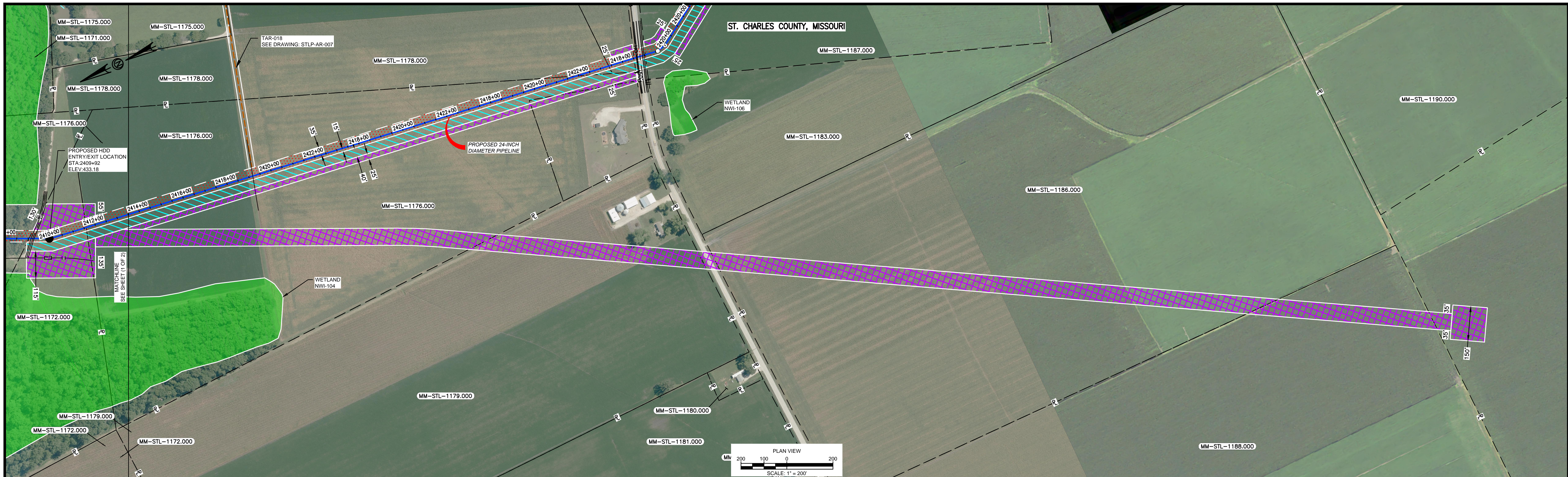


- NOTES:**
1. THE IMAGERY SHOWN WAS PROVIDED BY AERIAL DATA SERVICES, 2016. ADDITIONAL IMAGERY SUPPLEMENTED FROM USFWS-NWI AND USGS.
 2. EXISTING FEATURES SHOWN WERE SURVEYED BY MOTT MACDONALD AND DIGITIZED FROM IMAGERY. ALL LOCATIONS ARE APPROXIMATE AND SHALL BE VERIFIED BY CONTRACTOR.
 3. PROPERTY LINES DEPICTED ON THIS PLAN ARE BASED ON GIS TAX MAP DATA.

**DRAFT FERC FILING
10/2016**

REFERENCE DRAWINGS		REFERENCE DRAWINGS		REVISIONS				REVISIONS				APPROVALS				PREPARED FOR Spire STL Pipeline	PREPARED BY MOTT MACDONALD	PROJECT SPIRE STL PIPELINE PROJECT HDD PROFILE OVERVIEW MISSISSIPPI RIVER MAINLINE JERSEY COUNTY, ILLINOIS & ST. CHARLES COUNTY, MISSOURI				
DWG. NO.	TITLE	DWG. NO.	TITLE	NO.	REVISIONS	DATE	DRAWN	CK	APPR	NO.	REVISIONS	DATE	DRAWN	CK	APPR				DRAWN BY	DATE	ENG. APPROVAL	DATE
																	R.J.R.	10/2016	D.G.G.	10/2016		
																	E.B.	10/2016	J.E.W.	10/2016		

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DRAFT CONCEPTUAL HDD NOTES:

1. THE HDD BORE PATH DEPICTED ON THIS DRAWING IS CONSIDERED "DRAFT CONCEPTUAL" AND IS SUBJECT TO CHANGE BASED ON GEOTECHNICAL DATA, TOPOGRAPHICAL SURVEY, AND/OR ADDITIONAL INFORMATION REGARDING BIOLOGICAL FEATURE DELINEATIONS. THE HDD BORE PATH WILL BE ISSUED AS "FINAL CONCEPTUAL" AFTER COLLECTION AND EVALUATION OF BOTH TOPOGRAPHICAL SURVEY AND GEOTECHNICAL DATA AND AFTER BIOLOGICAL FEATURE DELINEATIONS ARE FINAL.
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MISSISSIPPI HDD PLAN VIEW

LEGEND

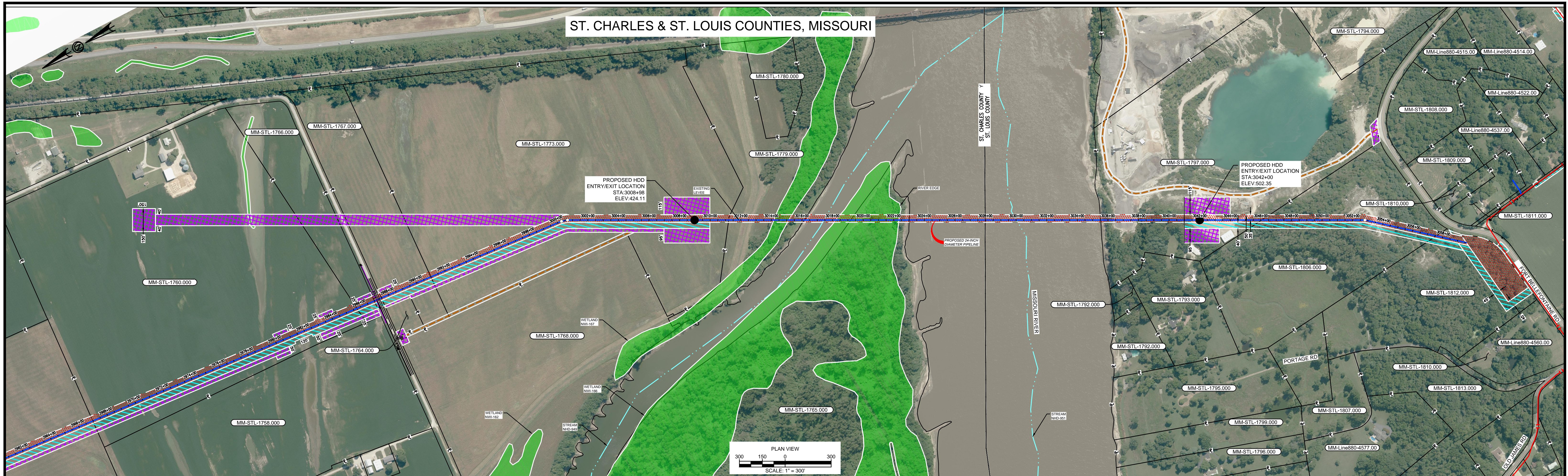
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	EXISTING PERMANENT EASEMENT		PROPERTY LINE		STREAM (DESKTOP)
	TEMPORARY WORKSPACE		LINE LIST NUMBER		WETLAND (DELINEATED)
	ADDITIONAL TEMPORARY WORKSPACE		EXISTING GAS PIPELINE		WETLAND (DESKTOP)
	PROPOSED CONTRACTOR YARD		EXISTING FOREIGN PIPELINE		
	ACCESS ROAD		EXISTING OVERHEAD LINE		
			ROAD CENTERLINE		

NOTES:
 1. THE IMAGERY SHOWN WAS PROVIDED BY AERIAL DATA SERVICES, 2016. ADDITIONAL IMAGERY SUPPLEMENTED FROM USFWS-NWI AND USGS.
 2. EXISTING FEATURES SHOWN WERE SURVEYED BY MOTT MACDONALD AND DIGITIZED FROM IMAGERY. ALL LOCATIONS ARE APPROXIMATE AND SHALL BE VERIFIED BY CONTRACTOR.
 3. PROPERTY LINES DEPICTED ON THIS PLAN ARE BASED ON GIS TAX MAP DATA.

DRAFT FERC FILING
10/2016

REFERENCE DRAWINGS		REFERENCE DRAWINGS		REVISIONS				REVISIONS				APPROVALS				PREPARED FOR Spire STL Pipeline	PREPARED BY MOTT MACDONALD	SPIRE STL PIPELINE PROJECT	
DWG. NO.	TITLE	DWG. NO.	TITLE	NO.	REVISIONS	DATE	DRAWN	CK	APPR	NO.	REVISIONS	DATE	DRAWN	CK	APPR			DATE	DATE
																			MISSISSIPPI RIVER MAINLINE
																			ST. CHARLES COUNTY, MISSOURI

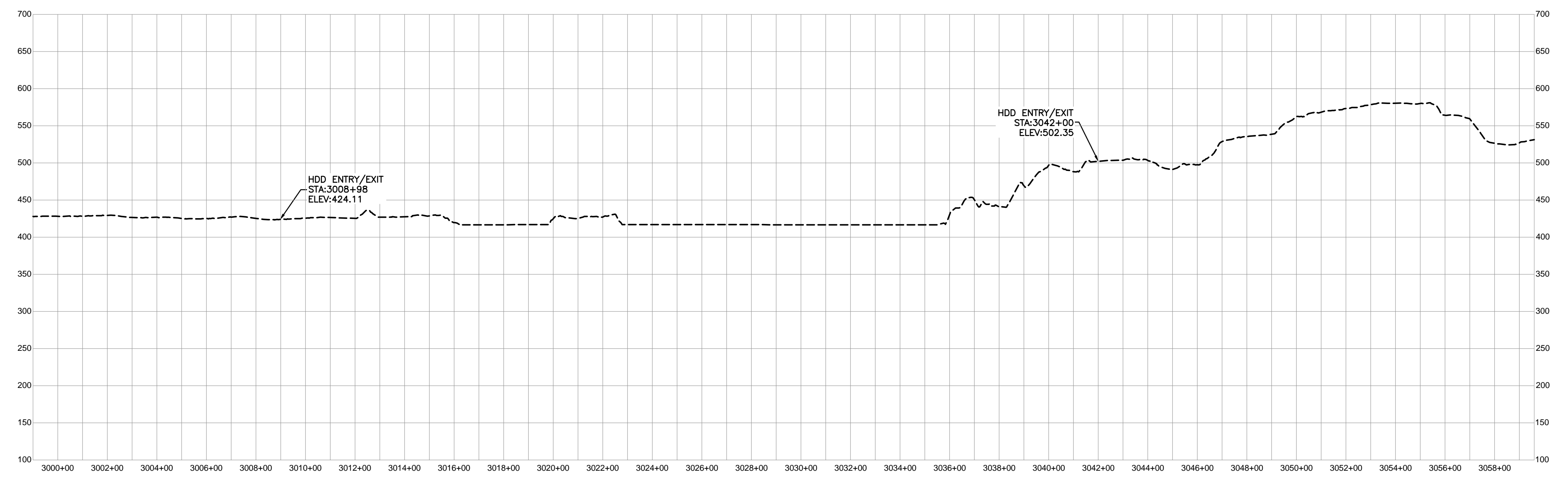
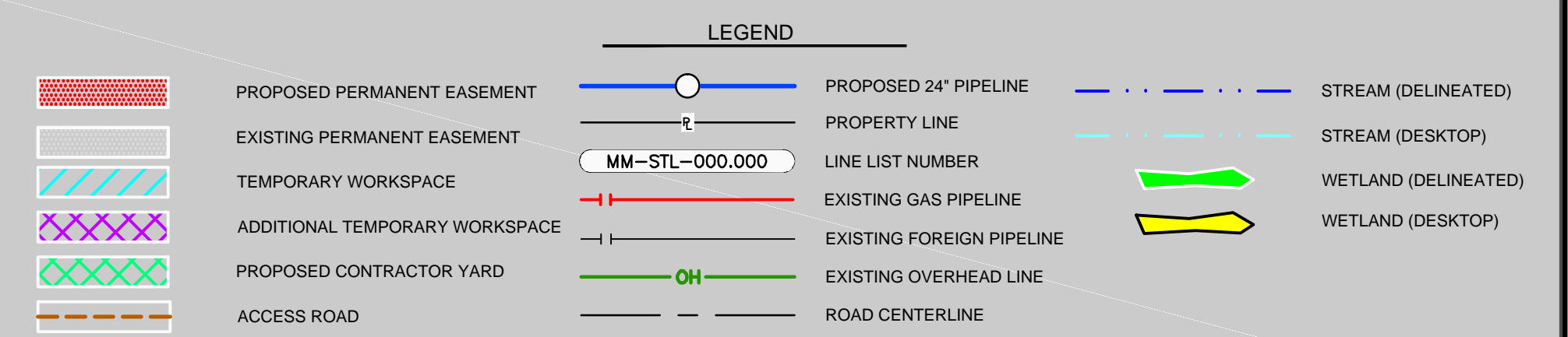
ST. CHARLES & ST. LOUIS COUNTIES, MISSOURI



DRAFT CONCEPTUAL HDD NOTES:

1. THE HDD BORE PATH DEPICTED ON THIS DRAWING IS CONSIDERED "DRAFT CONCEPTUAL" AND IS SUBJECT TO CHANGE BASED ON GEOTECHNICAL DATA, TOPOGRAPHICAL SURVEY, AND/OR ADDITIONAL INFORMATION REGARDING BIOLOGICAL FEATURE DELINEATIONS. THE HDD BORE PATH WILL BE ISSUED AS "FINAL CONCEPTUAL" AFTER COLLECTION AND EVALUATION OF BOTH TOPOGRAPHICAL SURVEY AND GEOTECHNICAL DATA AND AFTER BIOLOGICAL FEATURE DELINEATIONS ARE FINAL.
2. THIS DRAWING HAS BEEN PREPARED WITHOUT THE BENEFIT OF A COMPLETED GEOTECHNICAL INVESTIGATION PROGRAM. THE PRELIMINARY/CONCEPTUAL ALIGNMENTS WERE DETERMINED BASED UPON CURRENTLY AVAILABLE INFORMATION REGARDING THE CROSSING. IT IS POSSIBLE THAT ADDITIONAL CONSTRAINTS ASSOCIATED WITH THIS CROSSING WILL BE DISCOVERED AFTER A GEOTECHNICAL INVESTIGATION IS COMPLETED, RESULTING IN ALIGNMENT AND OTHER DESIGN CHANGES. ELEVATION DATA IS BASED ON PUBLICLY AVAILABLE DATASETS.

MISSOURI RIVER HDD PLAN VIEW



- NOTES:
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DRAFT FERC FILING
10/2016

REFERENCE DRAWINGS		REFERENCE DRAWINGS		REVISIONS				REVISIONS				APPROVALS				PREPARED FOR Spire STL Pipeline	PREPARED BY MOTT MACDONALD	SPIRE STL PIPELINE PROJECT HDD PROFILE OVERVIEW MISSOURI RIVER MAINLINE ST. CHARLES & ST. LOUIS COUNTIES, MISSOURI
DWG. NO.	TITLE	DWG. NO.	TITLE	NO.	REVISIONS	DATE	DRAWN	CK	APPR	NO.	REVISIONS	DATE	DRAWN	CK	APPR			



APPENDIX 2-D
Stormwater Pollution Prevention Plan
(to be provided in the FERC application)



APPENDIX 2-E

Wetland Delineation and Stream Identification Report (to be provided in the FERC application)



APPENDIX 2-F
NWI Mapping



**DRAFT FERC FILING
10/2016**

<p>① MILE POST</p> <p>○ PROPOSED M&R SITE</p> <p>● PROPOSED MAINLINE VALVE SITE</p>	<p>— PROPOSED 24-INCH DIAMETER PIPELINE</p> <p>— LINE 880 20-INCH DIAMETER RELOCATION</p> <p>— EXISTING LINE 880 20-INCH DIAMETER PIPELINE</p> <p>— PROPOSED ACCESS ROAD</p> <p>■ PROPOSED CONTRACTOR YARD</p>	<p>■ NWI WETLAND</p> <p>□ TOWNSHIP BOUNDARY</p> <p>□ COUNTY BOUNDARY</p> <p>□ STATE BOUNDARY</p> <p>□ USGS QUADRANGLE BOUNDARY</p>
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SPIRE STL PIPELINE NWI TOPOGRAPHIC MAP

ALSEY PRECINCT, SCOTT COUNTY AND ROODHOUSE TOWNSHIP,
GREENE COUNTY, ILLINOIS



ABSOLUTE SCALE:
1:24,000

REFERENCE SCALE:
1 IN = 2,000 FEET

PREPARED FOR

Spire STL Pipeline

PREPARED BY

M M

**MOTT
MACDONALD**

DRAWN BY:	AJ 08/04/2016
CHECKED BY:	EAP 08/05/2016
ENG. APPROVAL:	DG 10/19/2016
APPROVED BY:	JW 10/19/2016
REV. DATE:	10/2016
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MAPS COMPILED UTILIZING ESRI TOPOGRAPHIC BASEMAP.
WETLAND DATA SOURCED FROM U.S. FISH AND WILDLIFE SERVICE NATIONAL WETLAND INVENTORY (NWI) DATASET.



SEE PAGE 1

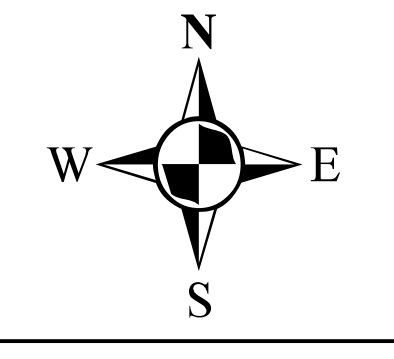
SEE PAGE 3

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10/2016

- ① MILE POST
- PROPOSED M&R SITE
- PROPOSED MAINLINE VALVE SITE
- PROPOSED 24-INCH DIAMETER PIPELINE
- LINE 880 20-INCH DIAMETER RELOCATION
- EXISTING LINE 880 20-INCH DIAMETER PIPELINE
- PROPOSED ACCESS ROAD
- PROPOSED CONTRACTOR YARD
- NWI WETLAND
- TOWNSHIP BOUNDARY
- COUNTY BOUNDARY
- STATE BOUNDARY
- USGS QUADRANGLE BOUNDARY

SPIRE STL PIPELINE NWI TOPOGRAPHIC MAP

ROODHOUSE & WHITE HALL TOWNSHIPS, GREENE COUNTY, ILLINOIS



ABSOLUTE SCALE:
1:24,000

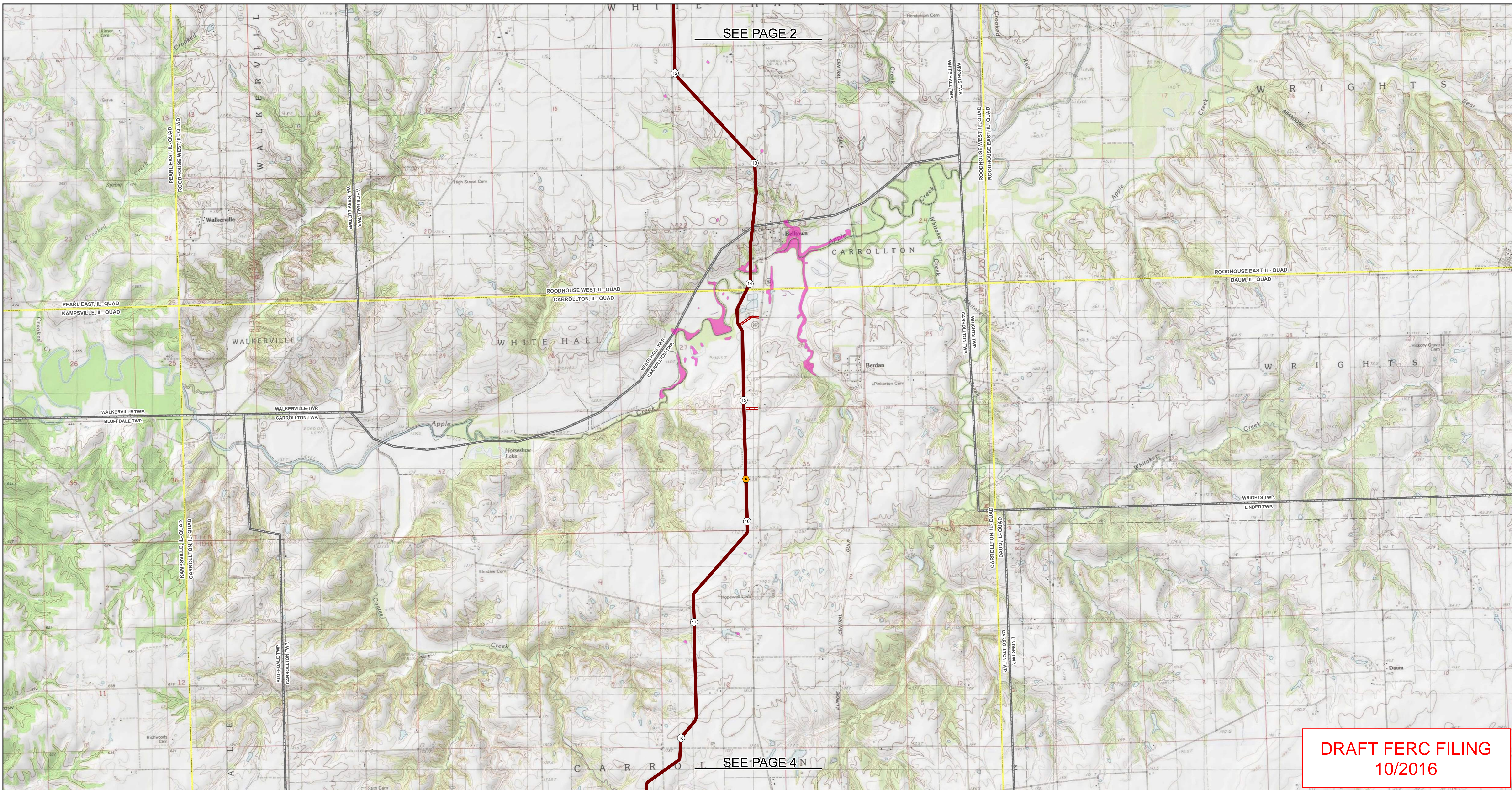
REFERENCE SCALE:
1 IN = 2,000 FEET

PREPARED FOR
Spire STL Pipeline

PREPARED BY
M M
MOTT MACDONALD

DRAWN BY:	AJ 08/04/2016
CHECKED BY:	EAP 08/05/2016
ENG. APPROVAL:	DG 10/19/2016
APPROVED BY:	JW 10/19/2016
REV. DATE:	10/2016
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PAGE:	STLP-NWI-002

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WETLAND DATA SOURCED FROM U.S. FISH AND WILDLIFE SERVICE NATIONAL WETLAND INVENTORY (NWI) DATASET.



SEE PAGE 2

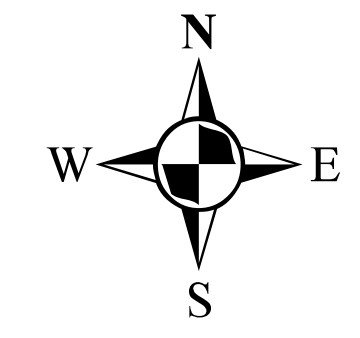
SEE PAGE 4 N

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①	MILE POST		PROPOSED 24-INCH DIAMETER PIPELINE		NWI WETLAND
○	PROPOSED M&R SITE		LINE 880 20-INCH DIAMETER RELOCATION		TOWNSHIP BOUNDARY
●	PROPOSED MAINLINE VALVE SITE		EXISTING LINE 880 20-INCH DIAMETER PIPELINE		COUNTY BOUNDARY
			PROPOSED ACCESS ROAD		STATE BOUNDARY
			PROPOSED CONTRACTOR YARD		USGS QUADRANGLE BOUNDARY

SPIRE STL PIPELINE NWI TOPOGRAPHIC MAP

WHITE HALL & CARROLLTON TOWNSHIPS, GREENE COUNTY, ILLINOIS



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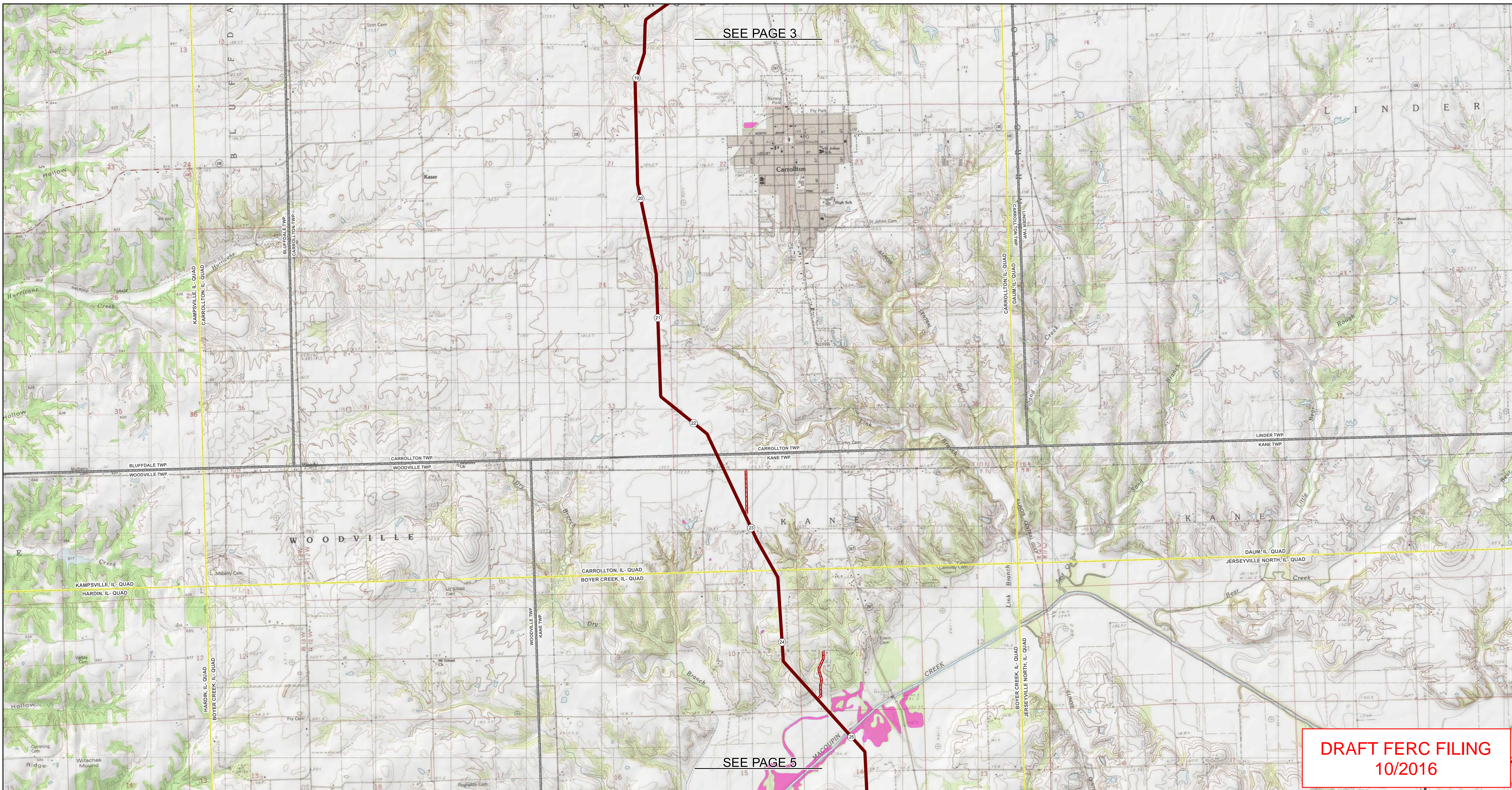
REFERENCE SCALE:
1 IN = 2,000 FEET

PREPARED FOR
**Spire
STL Pipeline**

PREPARED BY
**M
MOTT
MACDONALD**

DRAWN BY:	AJ 08/04/2016
CHECKED BY:	EAP 08/05/2016
ENG. APPROVAL:	DG 10/19/2016
APPROVED BY:	JW 10/19/2016
REV. DATE:	10/2016
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MAPS COMPILED UTILIZING ESRI TOPOGRAPHIC BASEMAP.
WETLAND DATA SOURCED FROM U.S. FISH AND WILDLIFE SERVICE NATIONAL WETLAND INVENTORY (NWI) DATASET.



SEE PAGE 3

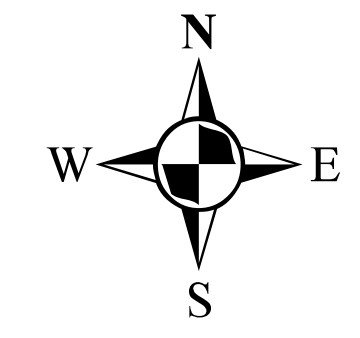
SEE PAGE 5

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- ① MILE POST
- PROPOSED M&R SITE
- PROPOSED MAINLINE VALVE SITE
- PROPOSED 24-INCH DIAMETER PIPELINE
- LINE 880 20-INCH DIAMETER RELOCATION
- EXISTING LINE 880 20-INCH DIAMETER PIPELINE
- PROPOSED ACCESS ROAD
- PROPOSED CONTRACTOR YARD
- NWI WETLAND
- TOWNSHIP BOUNDARY
- COUNTY BOUNDARY
- STATE BOUNDARY
- USGS QUADRANGLE BOUNDARY

SPIRE STL PIPELINE NWI TOPOGRAPHIC MAP

CARROLLTON & KANE TOWNSHIPS, GREENE COUNTY, ILLINOIS



ABSOLUTE SCALE:
1:24,000

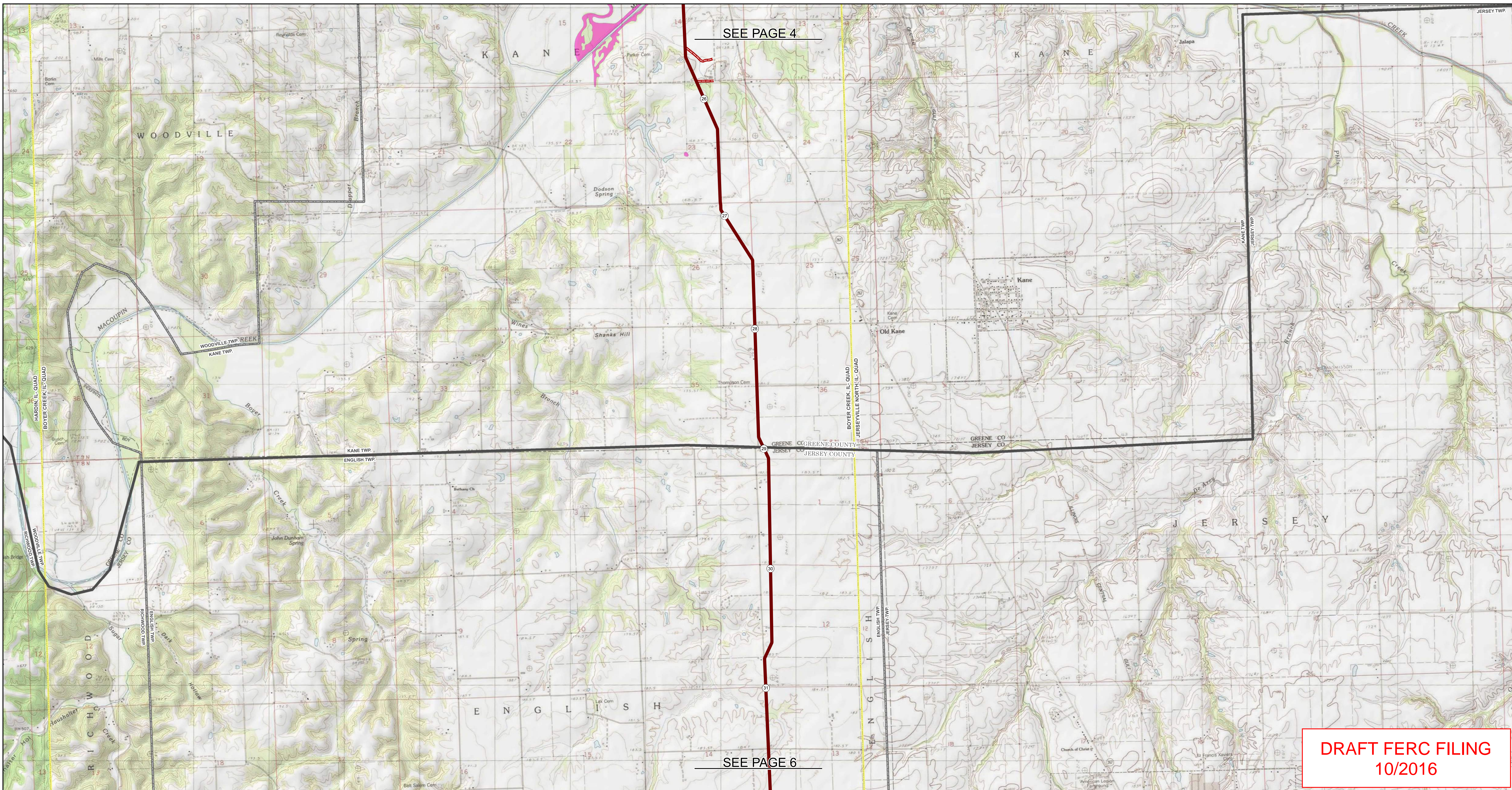
REFERENCE SCALE:
1 IN = 2,000 FEET

PREPARED FOR
**Spire
STL Pipeline**

PREPARED BY
**M
MOTT
MACDONALD**

DRAWN BY:	AJ 08/04/2016
CHECKED BY:	EAP 08/05/2016
ENG. APPROVAL:	DG 10/19/2016
APPROVED BY:	JW 10/19/2016
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**MAPS COMPILED UTILIZING ESRI TOPOGRAPHIC BASEMAP.
WETLAND DATA SOURCED FROM U.S. FISH AND WILDLIFE SERVICE NATIONAL WETLAND INVENTORY (NWI) DATASET.**



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10/2016**

<ul style="list-style-type: none"> ① MILE POST ○ PROPOSED M&R SITE ● PROPOSED MAINLINE VALVE SITE 	<ul style="list-style-type: none"> — PROPOSED 24-INCH DIAMETER PIPELINE — LINE 880 20-INCH DIAMETER RELOCATION — EXISTING LINE 880 20-INCH DIAMETER PIPELINE — PROPOSED ACCESS ROAD PROPOSED CONTRACTOR YARD 	<ul style="list-style-type: none"> NWI WETLAND TOWNSHIP BOUNDARY COUNTY BOUNDARY STATE BOUNDARY USGS QUADRANGLE BOUNDARY
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SPIRE STL PIPELINE NWI TOPOGRAPHIC MAP

KANE TOWNSHIP, GREENE COUNTY AND ENGLISH TOWNSHIP, JERSEY COUNTY, ILLINOIS



ABSOLUTE SCALE:
1:24,000

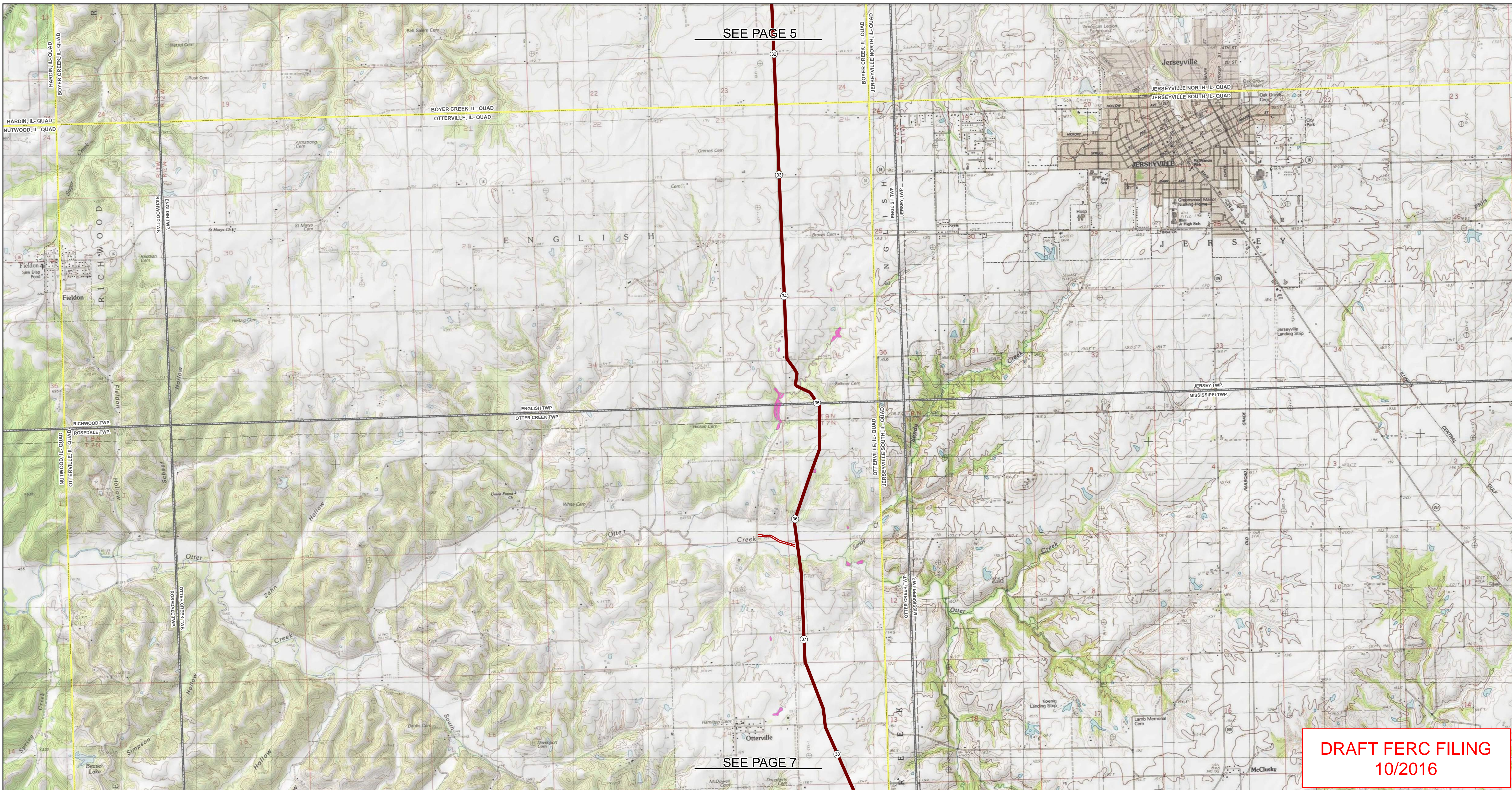
REFERENCE SCALE:
1 IN = 2,000 FEET

PREPARED FOR
Spire STL Pipeline

PREPARED BY
M M MOTT MACDONALD

DRAWN BY:	AJ 08/04/2016
CHECKED BY:	EAP 08/05/2016
ENG. APPROVAL:	DG 10/19/2016
APPROVED BY:	JW 10/19/2016
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PAGE:	STLP-NWI-005

MAPS COMPILED UTILIZING ESRI TOPOGRAPHIC BASEMAP. WETLAND DATA SOURCED FROM U.S. FISH AND WILDLIFE SERVICE NATIONAL WETLAND INVENTORY (NWI) DATASET.

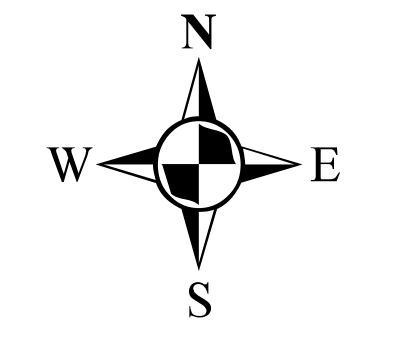


**DRAFT FERC FILING
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<p>① MILE POST</p> <p>○ PROPOSED M&R SITE</p> <p>● PROPOSED MAINLINE VALVE SITE</p>	<p>— PROPOSED 24-INCH DIAMETER PIPELINE</p> <p>— LINE 880 20-INCH DIAMETER RELOCATION</p> <p>— EXISTING LINE 880 20-INCH DIAMETER PIPELINE</p> <p>— PROPOSED ACCESS ROAD</p> <p>■ PROPOSED CONTRACTOR YARD</p>	<p>■ NWI WETLAND</p> <p> TOWNSHIP BOUNDARY</p> <p> COUNTY BOUNDARY</p> <p> STATE BOUNDARY</p> <p> USGS QUADRANGLE BOUNDARY</p>
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SPIRE STL PIPELINE NWI TOPOGRAPHIC MAP

ENGLISH & OTTER CREEK TOWNSHIPS, JERSEY COUNTY, ILLINOIS



ABSOLUTE SCALE:
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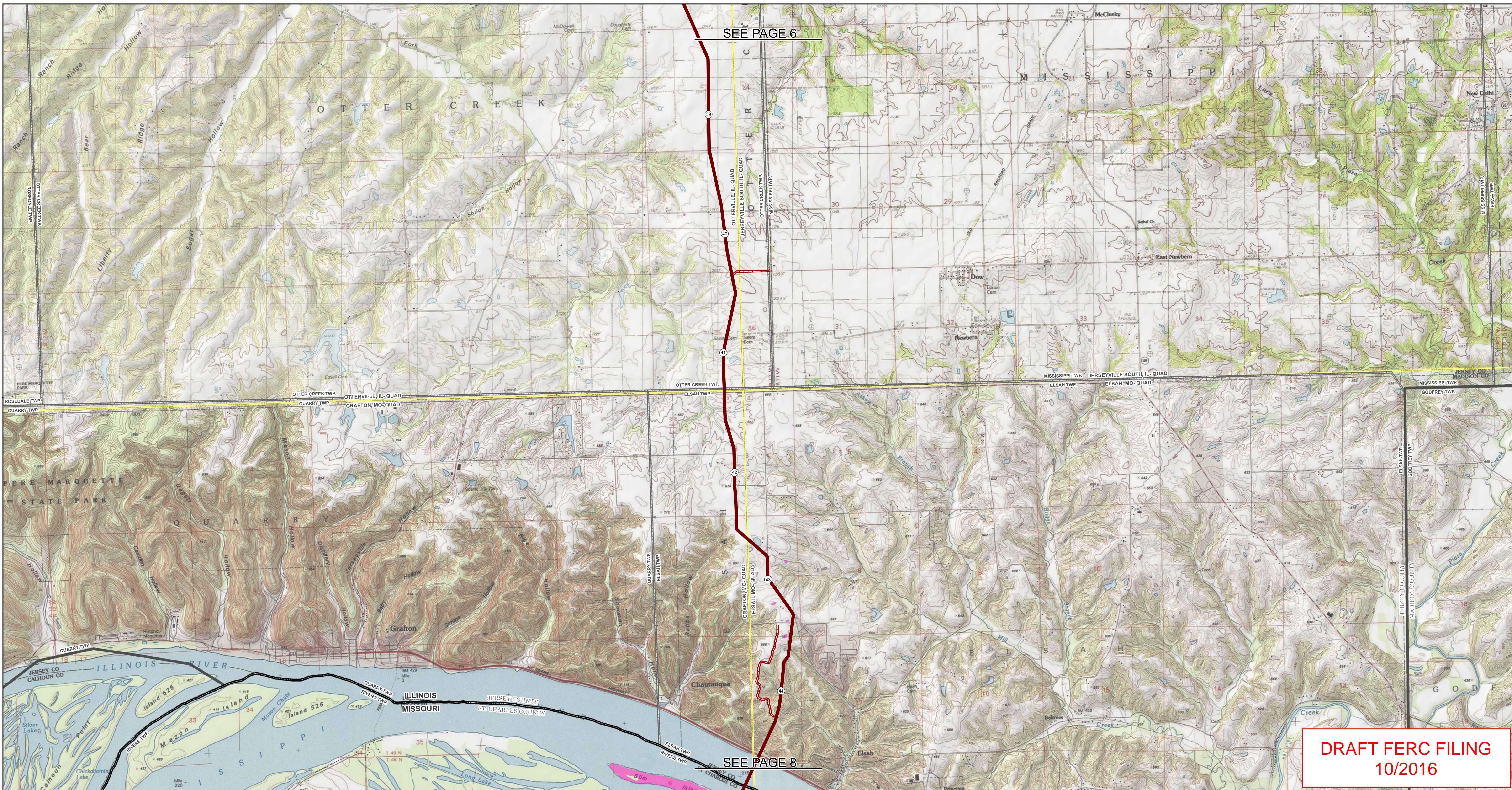
REFERENCE SCALE:
1 IN = 2,000 FEET

PREPARED FOR
Spire STL Pipeline

PREPARED BY
M M MOTT MACDONALD

DRAWN BY:	AJ 08/04/2016
CHECKED BY:	EAP 08/05/2016
ENG. APPROVAL:	DG 10/19/2016
APPROVED BY:	JW 10/19/2016
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10/2016**

①	MILE POST		PROPOSED 24-INCH DIAMETER PIPELINE		NWI WETLAND
○	PROPOSED M&R SITE		LINE 880 20-INCH DIAMETER RELOCATION		TOWNSHIP BOUNDARY
●	PROPOSED MAINLINE VALVE SITE		EXISTING LINE 880 20-INCH DIAMETER PIPELINE		COUNTY BOUNDARY
			PROPOSED ACCESS ROAD		STATE BOUNDARY
			PROPOSED CONTRACTOR YARD		USGS QUADRANGLE BOUNDARY

SPIRE STL PIPELINE NWI TOPOGRAPHIC MAP

OTTER CREEK & ELSAH TOWNSHIPS, JERSEY COUNTY, ILLINOIS



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1:24,000

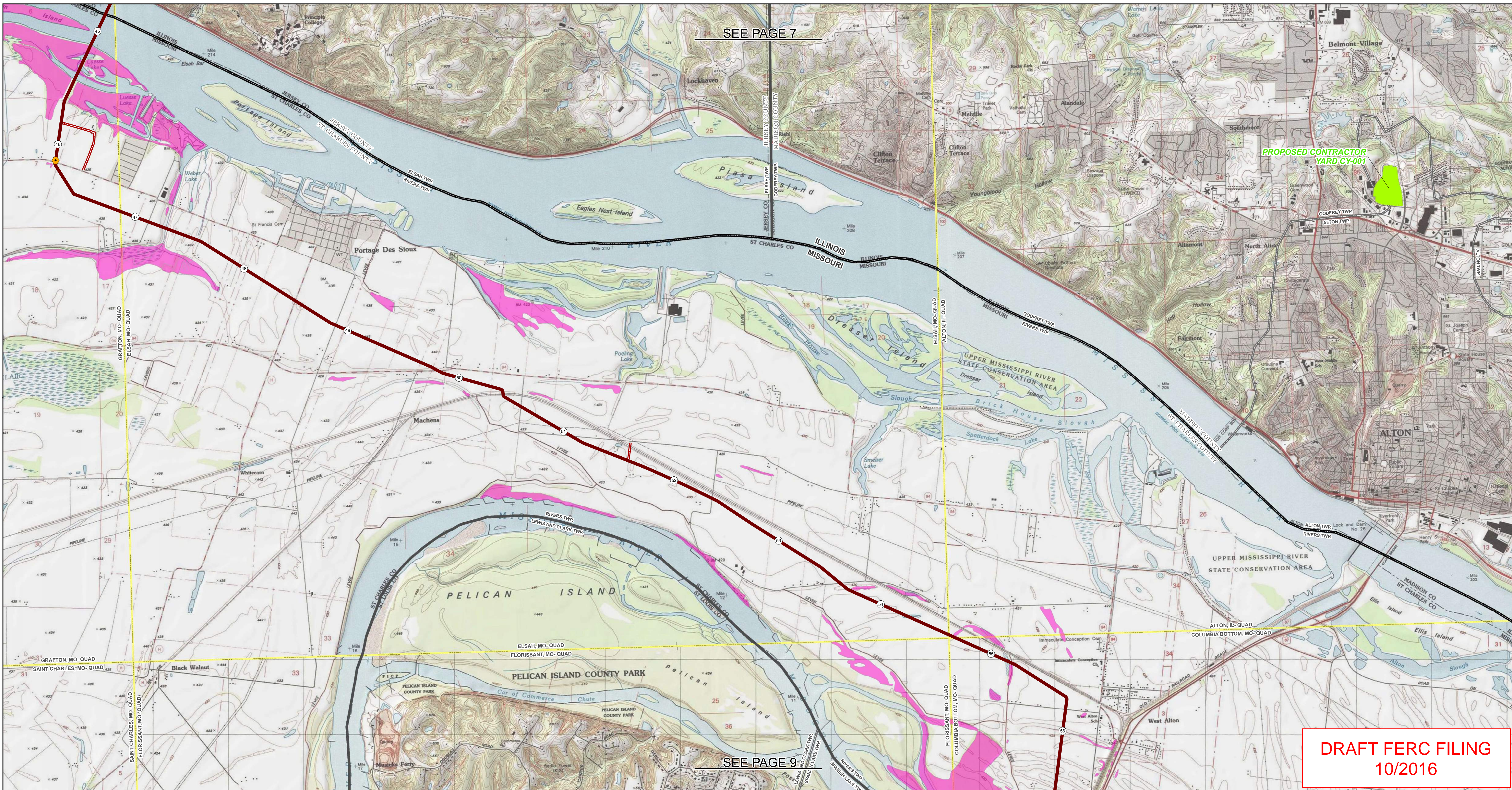
REFERENCE SCALE:
1 IN = 2,000 FEET

PREPARED FOR
Spire STL Pipeline

PREPARED BY
M M MOTT MACDONALD

DRAWN BY:	AJ 08/04/2016
CHECKED BY:	EAP 08/05/2016
ENG. APPROVAL:	DG 10/19/2016
APPROVED BY:	JW 10/19/2016
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PAGE:	STLP-NWI-007

MAPS COMPILED UTILIZING ESRI TOPOGRAPHIC BASEMAP.
WETLAND DATA SOURCED FROM U.S. FISH AND WILDLIFE SERVICE NATIONAL WETLAND INVENTORY (NWI) DATASET.



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10/2016

- | | | | | | |
|---|------------------------------|--|---|--|--------------------------|
| ① | MILE POST | | PROPOSED 24-INCH DIAMETER PIPELINE | | NWI WETLAND |
| ○ | PROPOSED M&R SITE | | LINE 880 20-INCH DIAMETER RELOCATION | | TOWNSHIP BOUNDARY |
| ● | PROPOSED MAINLINE VALVE SITE | | EXISTING LINE 880 20-INCH DIAMETER PIPELINE | | COUNTY BOUNDARY |
| | | | PROPOSED ACCESS ROAD | | STATE BOUNDARY |
| | | | PROPOSED CONTRACTOR YARD | | USGS QUADRANGLE BOUNDARY |

SPIRE STL PIPELINE NWI TOPOGRAPHIC MAP

RIVERS TOWNSHIP, ST. CHARLES COUNTY, MISSOURI AND GODFREY & ALTON TOWNSHIPS, MADISON COUNTY, ILLINOIS



ABSOLUTE SCALE:
 1:24,000
 REFERENCE SCALE:
 1 IN = 2,000 FEET

PREPARED FOR
Spire STL Pipeline
 PREPARED BY
M M
MOTT MACDONALD

DRAWN BY:	AJ 08/04/2016
CHECKED BY:	EAP 08/05/2016
ENG. APPROVAL:	DG 10/19/2016
APPROVED BY:	JW 10/19/2016
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REVISION:	1
DESC:	DRAFT FERC FILING
PAGE:	STLP-NWI-008

MAPS COMPILED UTILIZING ESRI TOPOGRAPHIC BASEMAP.
 WETLAND DATA SOURCED FROM U.S. FISH AND WILDLIFE SERVICE NATIONAL WETLAND INVENTORY (NWI) DATASET.

SEE PAGE 8

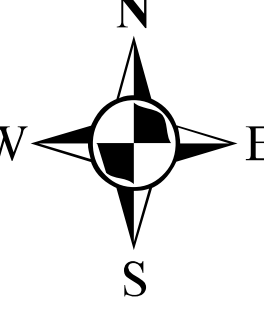
PROPOSED CONTRACTOR YARD CY-002

PROPOSED CONTRACTOR YARD CY-003

DRAFT FERC FILING
10/2016

SPIRE STL PIPELINE NWI TOPOGRAPHIC MAP

RIVERS TOWNSHIP, ST. CHARLES COUNTY, AND SPANISH LAKE & ST. FERDINAND TOWNSHIPS, ST. LOUIS COUNTY, MISSOURI

W  E
S

ABSOLUTE SCALE:
1:24,000

REFERENCE SCALE:
1 IN = 2,000 FEET

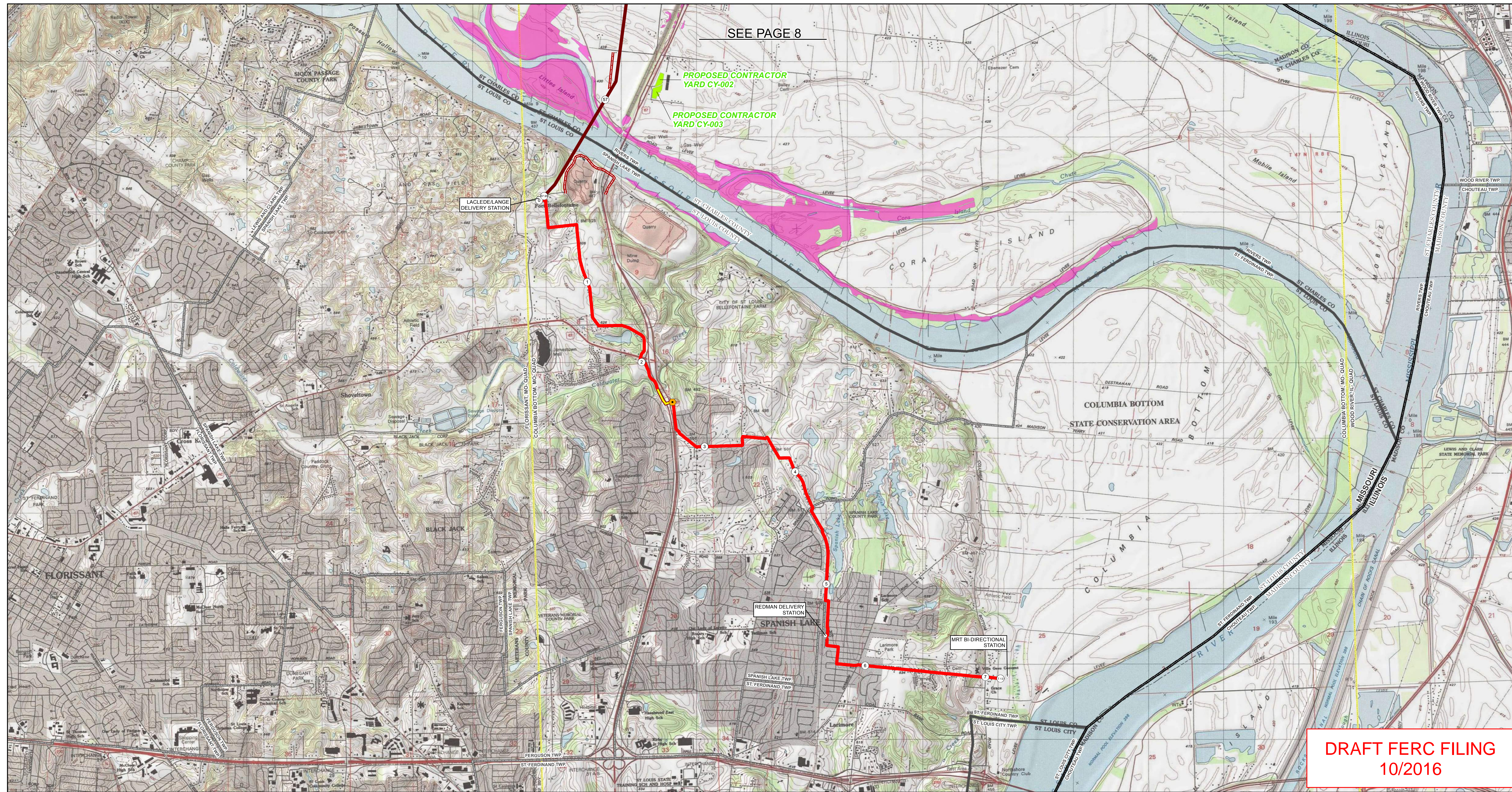
PREPARED FOR
Spire
STL Pipeline

PREPARED BY
M
MOTT
MACDONALD

DRAWN BY:	AJ 08/04/2016
CHECKED BY:	EAP 08/05/2016
ENG. APPROVAL:	DG 10/19/2016
APPROVED BY:	JW 10/19/2016
REV. DATE:	10/2016
REVISION:	1
DESC:	DRAFT FERC FILING
PAGE:	STLP-NWI-009

① MILE POST	PROPOSED 24-INCH DIAMETER PIPELINE	NWI WETLAND
○ PROPOSED M&R SITE	LINE 880 20-INCH DIAMETER RELOCATION	TOWNSHIP BOUNDARY
● PROPOSED MAINLINE VALVE SITE	EXISTING LINE 880 20-INCH DIAMETER PIPELINE	COUNTY BOUNDARY
	PROPOSED ACCESS ROAD	STATE BOUNDARY
	PROPOSED CONTRACTOR YARD	USGS QUADRANGLE BOUNDARY

MAPS COMPILED UTILIZING ESRI TOPOGRAPHIC BASEMAP.
WETLAND DATA SOURCED FROM U.S. FISH AND WILDLIFE SERVICE NATIONAL WETLAND INVENTORY (NWI) DATASET.



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