NRR-PMDAPEm Resource

From: Emily Clancy [Emily.Clancy@mdc.mo.gov]
Sent: Friday, November 16, 2012 4:25 PM
To: Fells, Carmen
Subject: RE: Callaway License Renewal Heritage Review maps
Attachments: CallawayPlant_NHR.pdf; CallawayNuclearPlant_TransmissionLines.pdf

Carmen,

As described in your June 1, 2012 letter, I have attached my Natural Heritage Review Reports for the Callaway Power Plant and the transmission corridors. There may be supplemental documentation to follow provided by Jennifer Campbell-Allison. She will back in the office November 27.

I am sorry for any inconveniences.

Emily

Hearing Identifier: NRR_PMDA
Email Number: 536

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Subject: RE: Callaway License Renewal Heritage Review maps
Sent Date: 11/16/2012 4:24:49 PM
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From: Emily Clancy

Created By: Emily.Clancy@mdc.mo.gov

Recipients:
"Fells, Carmen" <Carmen.Fells@nrc.gov>
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Files	**Size**	**Date & Time**
MESSAGE	352	11/16/2012 4:25:07 PM
CallawayPlant_NHR.pdf	678111	
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Missouri Department of Conservation

Natural Heritage Review Report

Resource Science Division
P. O. Box 180
Jefferson City, MO 65102
Prepared by: Emily Clancy
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Carmen Fells
Project Manager
Division of License Renewal
U.S. Nuclear Regulatory Commission

Project type:	Callaway Nuclear Power Plant
Location/Scope:	See Map Insert (last page)
County:	Callaway
Query reference:	Proposed Callaway Plant License Renewal
Query received:	June 5, 2012

This NATURAL HERITAGE REVIEW is not a site clearance letter. Rather, it identifies public lands and sensitive resources known to have been located close to and/or potentially affected by the proposed project. *On-site verification is the responsibility of the project. Natural Heritage records were identified at some date and location. This report considers records near but not necessarily at the project site. Animals move and, over time, so do plant communities. To say "there is a record" does not mean the species/habitat is still there. To say that "there is no record" does not mean a protected species will not be encountered. These records only provide one reference and other information (e.g. wetland or soils maps, on-site inspections or surveys) should be considered. Look for additional information about the biological and habitat needs of records listed in order to avoid or minimize impacts. More information may be found at http://mdc.mo.gov/discover-nature/places-go/natural-areas and mdc4.mdc.mo.gov/applications/mofwis/mofwis_search1.aspx. Contact information for the department's Natural History Biologist is online at http://mdc.mo.gov/contact-us.*

Records of federal-listed and/or state-listed (endangered) species or critical habitats within one-half mile of the transmission line:

The following federal and state-listed records are found within 1 miles of the Callaway Nuclear Power Plant:

Scientific Name	Common Name	Federal Status	State Status	State-rank	County	Last Observed	Twp/Rng	Section
Scaphirhynchus albus	Pallid Sturgeon	E	E	S1	Callaway	6/15/2007	T45N R08W	1
Acipenser fulvescens	Lake Sturgeon		E	S1	Osage	1/10/2007	T45N R08W	1
Acipenser fulvescens	Lake Sturgeon		E	S1	Osage	11/28/2005	T46N R07W	31
Acipenser fulvescens	Lake Sturgeon		E	S1	Callaway	11/17/2008	T45N R08W	1

The Missouri River is home to a number of species of state and federal concern, including Pallid sturgeon (*Scaphirhynchus albus*, federal/state endangered), Lake sturgeon (*Acipenser fulvescens*, state endangered), and others. The river's banks and floodplain are places one might encounter gray bats (*Myotis grisescens*, federal & state endangered), Indiana bats (*Myotis sodalis,* federal & state endangered), bald eagles (*Haliaeetus leucocephalus*, state endangered) and others, although there are no specific records within a

mile of any of the proposed activities. Terrestrial projects that manage construction and include operation plans to avoid runoff of sediment or pollutants are unlikely to affect the aquatic species. Projects that place fill in or discharge water to the river are subject to federal permits, and strict observance of conditions required in those permits is important to minimize risk of damage to endangered species.

Pallid sturgeons (*Scaphirhynchus albus*, federal and state-listed as "endangered") are big river fish that range widely in the Mississippi and Missouri River system (including parts of major tributaries). These fish inhabit bottom areas of open channels that have strong current and firm sandy substrate. They may also be found along sandbars and behind wing dikes. Pallid sturgeons feed on the bottom of the river and typically consume aquatic insects, crustaceans, mollusks, marine worms, fish and the eggs of other fish. they are currently threatened primarily by habitat modifications from dam construction, channelization and navigation maintenance of major rivers. These changes destroy spawning areas, reduce food supply or access to food, and block the sturgeon's ability to move within the river. See http://mdc.mo.gov/sites/default/files/resources/2010/08/9564_6504.pdf for Best Management Practices.

Lake Sturgeon (*Acipenser fulvescens*, state-listed endangered) are found in the Mississippi and Missouri Rivers but have also been known to occur in the larger tributaries of those two rivers. They prefer firm, silt-free bottoms of sand, gravel and rock. Over-harvest appears to have been responsible for the greatest decline in abundance of the Lake sturgeon. Pollution and restriction of migratory movements due to construction of dams have compounded the problems of over- exploitation. See http://mdc.mo.gov/sites/default/files/resources/2010/08/9547_6487.pdf for Best Management Proactices.

Natural Heritage records were identified at some date and at a more or less precise location. This report includes information about records near but not necessarily on the project site. Animals move and, over time, so do plant communities. To say "there is a record" does not mean the species/habitat is still there. To say that "there is no record" does not mean the project will not encounter something not recorded. On-site verification is the responsibility of the project. Incorporating information from Natural Heritage records into plans can help reduce adverse impacts to sensitive natural resources. However, these records only provide one reference and other information (e.g. wetland or soils maps, on-site inspections or surveys) should be considered. Compare biological and habitat needs of records listed to planned project activities to avoid or minimize impacts. More information may be found at www.mdc.mo.gov/nathis/endangered/ and mdc4.mdc.mo.gov/applications/mofwis/mofwis_search1.aspx. Find contact information on the department's nearest Natural History Biologist at http://www.mdc.mo.gov/nathis/contacts/.

Records of state-ranked (but not state-listed) species and natural communities of conservation concern. The Department tracks these species and natural communities due to population declines or apparent vulnerability.

The following state-ranked records are within 1 mile of the Callaway Nuclear Power Plant:

Scientific Name	Common Name	State-rank	County	Last Observed	Twp/Rng	Section
Notropis heterolepis	Blacknose Shiner	S2	Callaway	9/27/1995	T46N R07W	19
Mesic limestone/dolomite forest		S3	Callaway	12/21/1999	T46N R08W	36
Dolomite glade		S3	Callaway	4/23/1999	T46N R08W	25
Calephelis muticum	Swamp	S3	Callaway	8/19/2001	T46N R07W	5

	Metalmark					
Dolomite glade		S3	Callaway	6/21/2006	T46N R08W	9
Dry limestone/dolomite woodland		S3	Callaway	6/21/2006	T46N R08W	9
Macrhybopsis gelida	Sturgeon Chub	S3	Osage	6/13/2007	T45N R07W	6
Macrhybopsis gelida	Sturgeon Chub	S3	Callaway	10/2/2008	T45N R07W	6
Macrhybopsis gelida	Sturgeon Chub	S3	Callaway	9/17/2007	T45N R08W	1
Macrhybopsis gelida	Sturgeon Chub	S3	Callaway	10/30/2007	T45N R08W	1
Macrhybopsis gelida	Sturgeon Chub	S3	Callaway	10/5/2009	T45N R08W	1
Carpiodes velifer	Highfin Carpsucker	S2	Osage	5/30/2006	T46N R07W	31
Macrhybopsis gelida	Sturgeon Chub	S3	Callaway	10/5/2009	T45N R07W	6
Macrhybopsis gelida	Sturgeon Chub	S3	Callaway	10/5/2009	T45N R08W	1
Macrhybopsis gelida	Sturgeon Chub	S3	Callaway	10/5/2009	T45N R08W	1

Definitions of each rank:

- S1: Critically imperiled in the state because of extreme rarity of or because of some factor(s) making it especially vulnerable to extirpation from the state. Typically 5 or fewer occurrence or very few remaining individuals.
- S2: Imperiled in the state because of rarity or because of some factor(s) making it very vulnerable to extirpation from the state. (6 to 20 occurrences or few remaining individuals).
- S3: Vulnerable in the state means this species is rare and uncommon, or found only in a restricted range (even if abundant in some locations), or because of other factors making it vulnerable to extirpation. Typically 21 to 100 occurrences or between 3,000 and 10,000 individuals.

The Department encourages voluntary stewardship for all state ranked species to minimize the risk of further decline that could lead to listing.

See http://mdc.mo.gov/sites/default/files/resources/2010/04/2012_species_of_concern_11-29-2011.pdf for a complete list of species and communities of conservation concern.

Recommendations related to this project or site (not specific Natural Heritage records):

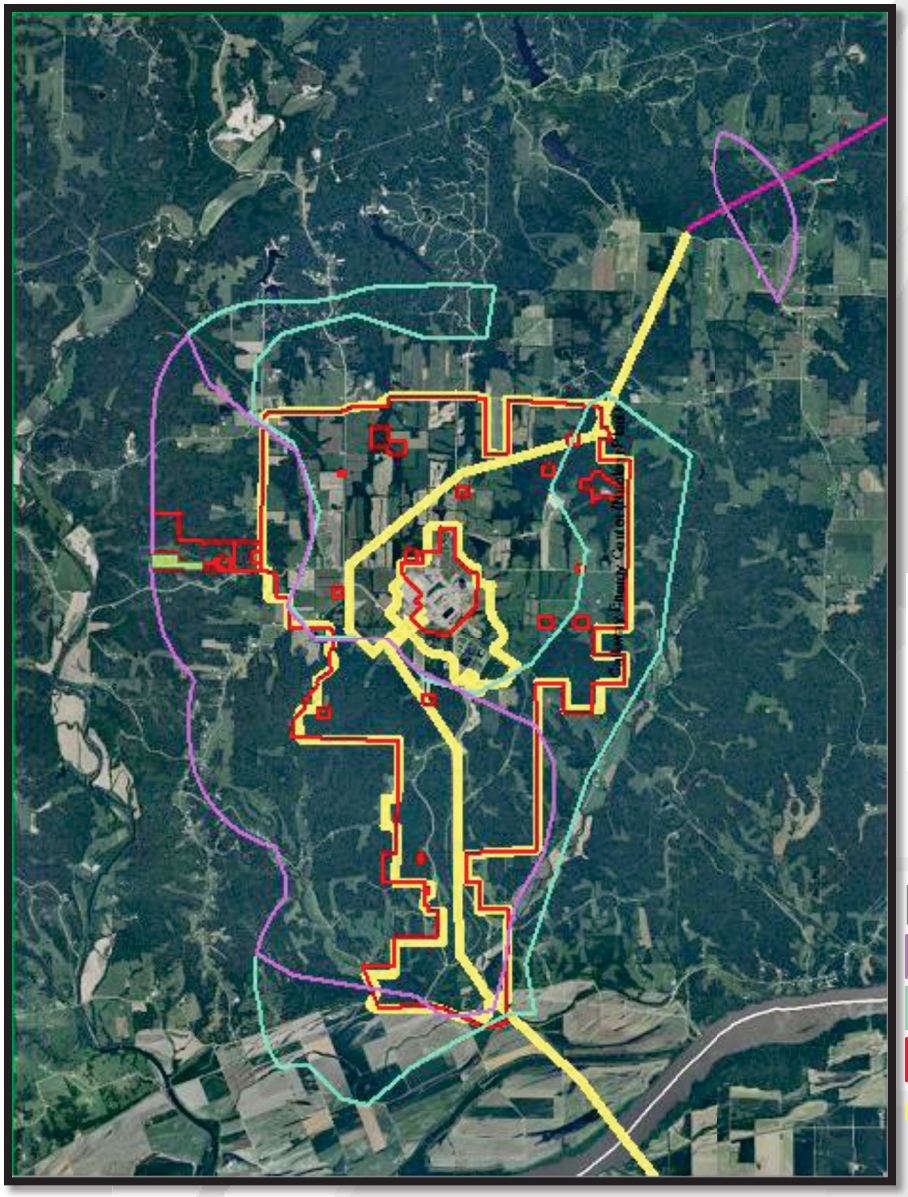
- Bald eagles (*Haliaeetus leucocephalus*) may nest near streams or water bodies in the project area. Nests are large and fairly easy to identify. While no longer listed as endangered, eagles continue to be protected by the federal government under the Bald and Golden Eagle Protection Act. Work managers should be alert for nesting areas within 1500 meters of project activities, and follow federal guidelines at http://www.fws.gov/migratorybirds/issues/BaldEagle/NationalBaldEagleManagementGuidelines.pdf if eagle nests are seen. See also MDC's Best Management Practices at http://mdc4.mdc.mo.gov/Documents/87.pdf.
- Gray bats (*Myotis grisescens*, federally and state listed "endangered") are likely to occur in the Callaway Nuclear Power Plant Area (see map insert), as they forage over streams, rivers, and reservoirs in this part of Missouri. Avoid entry or disturbance of any cave inhabited by gray bats and when possible retain forest vegetation along the stream and from the gray bat cave opening to the stream. See http://mdc.mo.gov/sites/default/files/resources/2010/08/9471_6416.pdf for Best Management Practices.
- Callaway County has known karst geologic features (e.g. caves, springs, and sinkholes, all characterized by subterranean water movement). Few karst features are recorded in heritage records, and ones not noted here may be encountered at the project site or affected by the project. Cave fauna (many of which are species of conservation concern) are influenced by changes to water quality, so check your project site for any karst features and make every effort to protect groundwater in the project area. See http://mdc.mo.gov/nathis/caves/manag_construc.htm for best management information.
- The project is within Missouri River Hills Conservation Opportunity Area, one of 35 in the state. COAs have been identified based on the diversity and rarity of species and habitats present, and the comparative likelihood/importance of projects to maintain them in the area over time. COAs have no regulatory role, but do reflect interest from multiple government agencies and citizen groups to work for conservation in the area. There may be ways your project or agency can contribute to or benefit from this COA. More information about it is available on line at http://www.mdc.mo.gov/nathis/cws/coa/.
- The Callaway Nuclear Power Plant is within Reform Hills this area is composed of an Ozark oak woodland/forest Hills. This area was selected to provide guidance to the Comprehensive Wildlife Strategy (CWS) and is used by the Department to identify conservation priorities and actions. Reform Hills contains glades and a cave.

Public Lands:

The Reform Conservation Area (CA) was purchased by AmerenUE for the purpose of producing electricity from the Callaway Nuclear Power Plant. The majority of the area is leased to the Missouri Department of Conservation (Department) to provide quality recreational opportunities, including hiking, nature study, hunting, and fishing to citizens of Missouri.

The land that comprises Reform CA has a unique history. The northern portion of Reform CA encompasses the bulk of the historic Coats' Prairie. Coats' Prairie, named after Reverend William Coats, was one of the earlier settlements in Callaway County. The southern portion of Reform, which was primarily a matrix of prairie, woodland, and forest, was generally settled by the 1860's.

In the early 1970's, AmerenUE purchased much of the Coats' Prairie region to begin developing a nuclear power plant. By 1975, AmerenUE had completed the purchase of present-day Reform CA and had built its Callaway Nuclear Power Plant. In 1975,



AmerenUE entered into a cooperative agreement with the Department to manage the majority of the property as a public use area. The initial plan called for development and implementation of fish, forest, and wildlife management plans, as well as several forms of public recreation. This cooperative arrangement has continued to the present time.

Auxvasse Natural Area is within 1 mile of the Callaway Power Plant. Missouri's Natural Areas represent some of the best—and last—examples of the state's original natural landscape, each offering a shining example of Missouri's outstanding biological and geological features. Visit http://mdc.mo.gov/discover-nature/places-go/natural-areas for more information about Natural Areas.

Callaway Nuclear Power Plant (yellow outline) considered in the review.

N

Legend

- Auxvasse Natural Area
- Missouri River Hills Conservation Opportunity Area
- Reform Hills
- Reform Conservation Area
- Callaway Property Features July 2012

These recommendations are ones project managers might prudently consider based on a general understanding of species needs and landscape conditions. Natural Heritage records largely reflect only sites visited by specialists in the last 30 years. This means that many privately owned tracts could host unknown remnants of species once but no longer common

Missouri Department of Conservation

Natural Heritage Review Report

Resource Science Division
P. O. Box 180
Jefferson City, MO 65102
Prepared by: Emily Clancy
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(573) 522 – 4115 ext. 3182

Carmen Fells
Project Manager
Division of License Renewal
U.S. Nuclear Regulatory Commission

Project type:	Callaway Nuclear Plant Transmission Lines
Location/Scope:	See map insert (last page)
County:	Callaway, Montgomery, Osage, & Gasconade
Query reference:	Montgomery Line to Montgomery Substation Loose Creek Line to Loose Creek Substation Bland Line to Bland Substation
Query received:	June 5, 2012

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Records of federal-listed and/or state-listed (endangered) species or critical habitats within one-half mile of the transmission line:

The following records are within ½ mile of the transmission lines:

Scientific Name	Common Name	Federal Status	State Status	State Rank	County	Last Observed	Twn/Rng	Section
Lampsilis abrupta	Pink Mucket Mussel	E	E	S2	Gasconade	1994-09	T44N R06W	29
Leptodea leptodon	Scaleshell Mussel	E	E	S1	Gasconade	11/8/2005	T44N R06W	29
Scaphirhynchus albus	Pallid Sturgeon	E	E	S1	Callaway	6/15/2007	T45N R08W	1
Cumberlandia monodonta	Spectaclecase Mussel	E		S3	Gasconade	1994-09	T44N R06W	29
Cumberlandia monodonta	Spectaclecase Mussel	E		S3	Gasconade	11/8/2005	T44N R06W	29
Fusconaia ebena	Ebonyshell Mussel		E	S1	Gasconade	1994-09	T44N R06W	29

Elliptio crassidens	Elephantear Mussel		E	S1	Gasconade	1994-09	T44N R06W	29
Acipenser fulvescens	Lake Sturgeon		E	S1	Osage	1/10/2007	T45N R08W	1
Cryptobranchus alleganiensis alleganiensis	Eastern Hellbender		E	S1	Maries	4/12/2007	T39N R09W	2
Acipenser fulvescens	Lake Sturgeon		E	S1	Callaway	11/17/2008	T45N R08W	1

Mussels are relatively immobile animals that are vulnerable to pollutants, upstream sediment discharges, channel alterations and other activities destructive to mussel habitat. Activities that alter, destabilize or destroy stream bottoms or banks or introduce silt, chemical or organic pollutants should be avoided. Avoid crossing flowing water but, if unavoidable, minimize crossing distance and use temporary crossings that do not restrict water flow. Best management for specific species may be found at http://.mdc.mo.gov/nathis/endangered/bmp.htm.

Pallid sturgeons (*scaphirhynchus albus*, federal and state listed as "endangered") are big river fish that range widely in the Mississippi and Missouri River system (including parts of major tributaries). These fish inhabit bottom areas of open channels that have strong current and firm sandy substrate. They may also be found along sandbars and behind wing dikes. Pallid sturgeons feed on the bottom of the river and typically consume aquatic insects, crustaceans, mollusks, marine worms, fish and the eggs of other fish. they are currently threatened primarily by habitat modifications from dam construction, channelization and navigation maintenance of major rivers. These changes destroy spawning areas, reduce food supply or access to food, and block the sturgeon's ability to move within the river. See http://mdc.mo.gov/sites/default/files/resources/2010/08/9564_6504.pdf for Best Management Practices.

Lake Sturgeon (*Acipenser fulvescens*, state-listed endangered) are found in the Mississippi and Missouri Rivers but have also been known to occur in the larger tributaries of those two rivers. They prefer firm, silt-free bottoms of sand, gravel and rock. Over-harvest appears to have been responsible for the greatest decline in abundance of the Lake sturgeon. Pollution and restriction of migratory movements due to construction of dams have compounded the problems of over- exploitation. See http://mdc.mo.gov/sites/default/files/resources/2010/08/9547_6487.pdf for Best Management Practices.

The Eastern Hellbender (*Cryptobranchus alleganiensis alleganiensis,* state-listed endangered) is a strictly aquatic salamander whose well-being is dependent on high-quality water systems with constant levels of dissolved oxygen, temperature, and flow. Proposed causes of decline for populations of hellbenders include stream impoundment, which causes the loss of shallow-water riffles and buries rocks in silt, and point and non-point source pollution. In addition, many hellbenders are killed because people mistakenly believe they are poisonous. Activities that change physical characteristics of rivers and streams (especially introducing silt loads or destabilizing gravel bars) or alter the flow of water should be avoided. See Best Management Practices at http://mdc.mo.gov/sites/default/files/resources/2010/08/9482_6424.pdf.

Natural Heritage records were identified at some date and at a more or less precise location. This report includes information about records near but not necessarily on the project site. Animals move and, over time, so do plant communities. To say "there is a record" does not mean the species/habitat is still there. To say that "there is no record" does not mean the project will not encounter something not recorded. On-site verification is the responsibility of the project. Incorporating information from Natural Heritage records into plans can help reduce adverse impacts to sensitive natural resources. However, these records only provide one reference and other information (e.g. wetland or soils maps, on-site inspections or surveys) should be considered. Compare biological and habitat needs of records listed to planned project activities to avoid or minimize impacts. More information may be found at www.mdc.mo.gov/nathis/endangered/ and mdc4.mdc.mo.gov/applications/mofwis/mofwis_search1.aspx. Find contact information on the department's nearest Natural History Biologist at http://www.mdc.mo.gov/nathis/contacts/.

Records of state-ranked (but not state-listed) species and natural communities of conservation concern. The Department tracks these species and natural communities due to population declines or apparent vulnerability.

The following are within ½ mile of the transmission lines:

Scientific Name	Common Name	State Rank	County	Last Observed	Twp/Rng	Section
Sandstone glade		S2	Montgomery	3/4/1998	T48N R06W	35
Ligumia recta	Black Sandshell	S2	Gasconade	1994-09	T44N R06W	29
Wet-mesic bottomland forest		S2	Montgomery	4/22/2000	T48N R06W	33
Floerkea proserpinacoides	False Mermaid	SU	Montgomery	4/24/2000	T48N R06W	34
Limestone glade		S2	Montgomery	4/26/1999	T48N R06W	36
Nothocalais cuspidata	Prairie Dandelion	S2	Montgomery	4/26/2006	T48N R06W	36
Marsupella sphacelata	A Liverwort	S1	Montgomery	3/30/1972	T48N R06W	26
Ligumia recta	Black Sandshell	S2	Gasconade	11/8/2005	T44N R06W	29
Malvastrum hispidum	Yellow False Mallow	S3	Montgomery	8/30/2007	T48N R06W	36
Taxidea taxus	American Badger	SU	Gasconade	12/22/2009	T44N R06W	8
Macrhybopsis gelida	Sturgeon Chub	S3	Osage	6/13/2007	T45N R07W	6
Macrhybopsis gelida	Sturgeon Chub	S3	Callaway	9/17/2007	T45N R08W	1
Macrhybopsis gelida	Sturgeon Chub	S3	Callaway	10/30/2007	T45N R08W	1
Macrhybopsis	Sturgeon	S3	Callaway	10/5/2009	T45N R08W	1

gelida	Chub					
Macrhybopsis gelida	Sturgeon Chub	S3	Osage	6/13/2007	T45N R08W	1
Macrhybopsis gelida	Sturgeon Chub	S3	Callaway	10/5/2009	T45N R08W	1
Dry-mesic limestone/dolomite woodland		S3	Montgomery	4/26/1999	T48N R06W	36
Dry-mesic loess/glacial till forest		S3	Callaway	3/4/1998	T47N R07W	28
Ozark - Warmwater - Large river		S?	Pulaski	10/29/1991	T35N R13W	20

Definition of each rank:

- S1=Critically imperiled in the state because of extreme rarity or because of some factor(s) making it especially vulnerable to extirpation from the state. (typically 5 or fewer occurrences or very few remaining individuals)
- S2=Imperiled in the state because of rarity or because of some factor(s) making it very vulnerable to extirpation from the state. (6 to 20 occurrences or few remaining individuals or acres)
- S3=Rare and uncommon in the state. (21 to 100 occurrences)
- SU=Unrankable: Possibly in peril in the state, but status uncertain; need more information.
- S?=Unranked: Species is not yet ranked in the state.

The Department encourages stewardship for all state-ranked species to minimize the risk of further decline that could lead to listing.

See http://mdc.mo.gov/sites/default/files/resources/2010/04/2012_species_of_concern_11-29-2011.pdf for a list of species and communities of conservation concern.

Recommendations related to this project or site (not specific Natural Heritage records):

- Bald eagles (*Haliaeetus leucocephalus*) may nest near streams or water bodies in the project area. Nests are large and fairly easy to identify. While no longer listed as endangered, eagles continue to be protected by the federal government under the Bald and Golden Eagle Protection Act. Work managers should be alert for nesting areas within 1500 meters of project activities, and follow federal guidelines at http://www.fws.gov/migratorybirds/issues/BaldEagle/NationalBaldEagleManagementGuidelines.pdf if eagle nests are seen. See Best Management Practices at http://mdc4.mdc.mo.gov/Documents/87.pdf.
- Gray bats (*Myotis grisescens*, federally and state listed "endangered") are likely to occur in the project area, as they forage over streams, rivers, and reservoirs in this part of Missouri. Avoid entry or disturbance of any cave inhabited by Gray bats and when

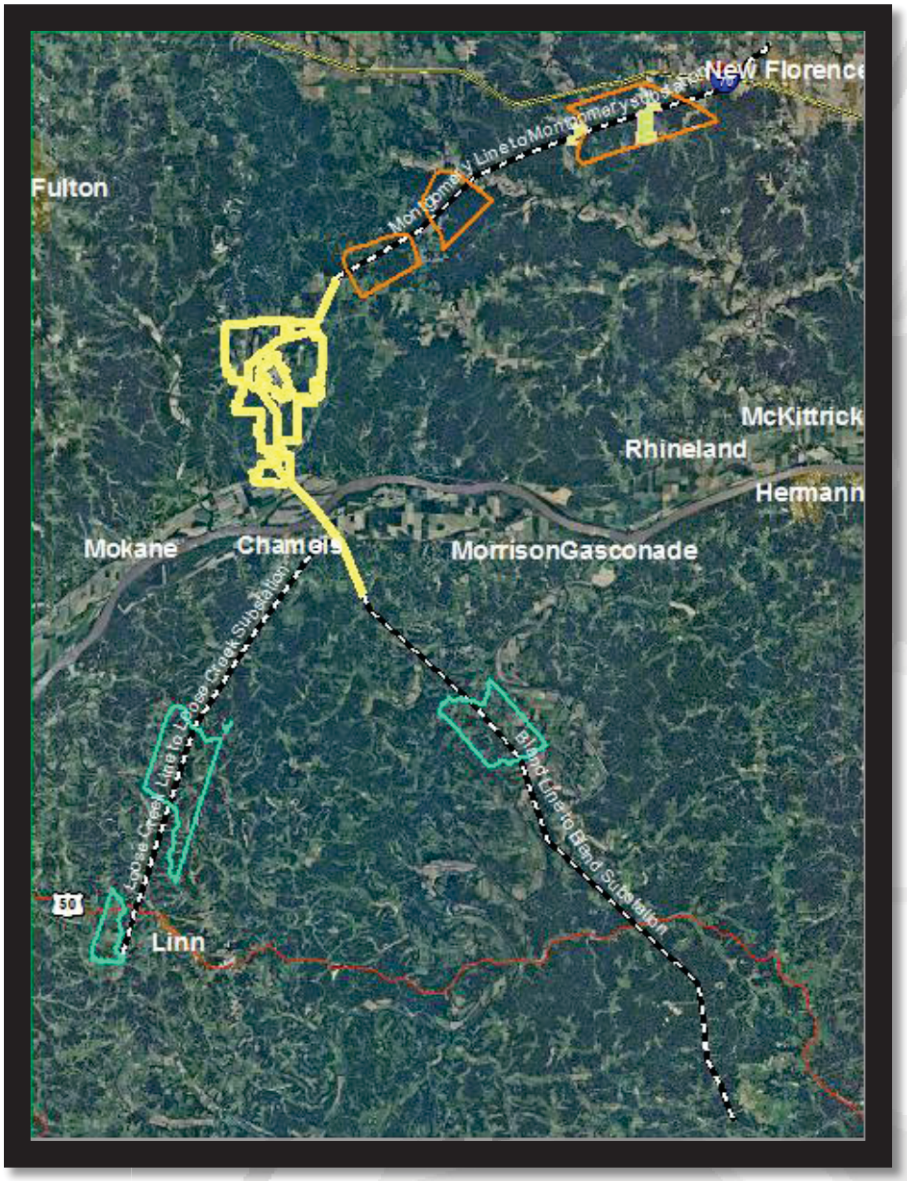
possible retain forest vegetation along the stream and from the gray bat cave opening to the stream. See http://mdc.mo.gov/104 for best management recommendations.

- Callaway, Montgomery, Osage, and Gasconade Counties have known karst geologic features (e.g. caves, springs, and sinkholes, all characterized by subterranean water movement). Few karst features are recorded in heritage records, and ones not noted here may be encountered at the project site or affected by the project. Cave fauna (many of which are species of conservation concern) are influenced by changes to water quality, so check your project site for any karst features and make every effort to protect groundwater in the project area. See http://mdc.mo.gov/nathis/caves/manag_construc.htm for best management information.
- The Montgomery Transmission Line passes through Missouri River Hills Conservation Area (COA). COAs have been identified based on the diversity and rarity of species and habitats present, and the comparative likelihood/importance of projects to maintain them in the area over time. COAs have no regulatory role, but do reflect interest from multiple government agencies and citizen groups to work for conservation in the area. There may be ways your project or agency can contribute to or benefit from this COA. More information about it is available on line at http://www.mdc.mo.gov/nathis/cws/coa/.
- The Loose Creek transmission line passes through a portion of Loose Creek that was part of an aquatic biodiversity assessment. The aquatic biodiversity assessment helps to provide guidance to the Comprehensive Wildlife Strategy (CWS). The CWS is used by the Department to identify conservation priorities and actions.
- The Bland transmission line passes through a portion of the Lower Gasconade that was part of an aquatic biodiversity assessment. The aquatic biodiversity assessment helps to provide guidance to the Comprehensive Wildlife Strategy (CWS). The CWS is used by the Department to identify conservation priorities and actions.

Public Lands:

The following Deparment lands are within ½ mile of the pipeline. If activities are planned that are on or will affect these areas, it is important to contact the site manager to coordinate plans and complete any required authorization.

Transmission Line	Conservation Area	Proximity to Line	Manager	Twn/Rng	Section
Montgomery	Loutre Lick Access	Line passes through	Jeff Demand (573) 254 – 3990 Jeff.Demand@mdc.mo.gov	T47N R06W	3 & 4
Montgomery	Danville –Baldwin Annex	Line passes through	Landry Jones (573) 254 – 3330 Landry.Jones@mdc.mo.gov	T48N R06W	36
Montgomery	Danville	Within ½ mile South	Landry Jones (573) 254 – 3330 Landry.Jones@mdc.mo.gov	T48N R05W	32
Bland	Helds Island Access	Within ½ mile East	Aaron Holsapple (573) 897 – 3797 Aaron.Holsapple@mdc.mo.gov	T44N R06W	21



Danville Glades Natural Area is near the right-of-way for the Montgomery Transmission Line (Section 36 of T48N R06W). This natural area features the largest high-quality limestone glade complex north of the Missouri River. If activities are planned that are on or will impact this area, it is important to contact the manager (573) 884 – 6861.

Legend

- Aquatic Biodiversity Assessment - potential COA
- Missouri River Hills Conservation Opportunity Area (COA)
- Transmission Line
- Callaway Property Features July 2012
- Interstate
- US highways

These recommendations are ones project managers might prudently consider based on a general understanding of species needs and landscape conditions. Natural Heritage records largely reflect only sites visited by specialists in the last 30 years. This means that many privately owned tracts could host unknown remnants of species once but no longer common.