4.0 Cumulative and Growth-inducing Effects

4.1 Cumulative Effects Boundaries

The cumulative effects boundaries include effects from the Proposed Action in the past, current, and reasonably foreseeable future in the Project vicinity.

4.2 Past, Present, and Reasonably Foreseeable Future Projects

4.2.1 Other Federal Project Activities

No additional federal projects are in the foreseeable future.

4.2.2 Other Local Projects

The water treatment plant located in Milan would be used for the foreseeable future. It is likely that an addition to the treatment plant or a new treatment plant and water distribution lines would be required during the 100-year life of the reservoir. In addition, the village of Pollock wastewater treatment facility plans to extend sewer lines to the Milan wastewater treatment plant. Conceptual designs have not been completed for recreational facilities. No new known business or residential developments have been planned or platted in the project vicinity.

4.3 Cumulative Effects Analysis

Note that direct and indirect impacts were addressed for each resource in Chapter 3. This section addresses cumulative impacts because of known past and foreseeable future private or public projects.

4.3.1 Climatology

The completion of foreseeable future projects would not have a cumulative impact on the climate of the East Locust Creek watershed, Sullivan County, or the 10-county region.

4.3.2 Land Use

4.3.2.1 Farmland Resources

The Proposed Action, including adjacent recreational areas, would affect approximately 273 acres of cropland and approximately 1,078 acres of pastureland through inundation or construction of the dam. Some of the affected agricultural land acres are designated as USDA prime farmland. Although no planned or platted developments are currently proposed, the development of the lake may lead to an additional loss of farmland if development occurs. However, it is anticipated that these impacts cumulatively would be very small percentages of the total amount of prime and statewide important farmland in Sullivan County.

4.3.2.2 Forest/Woodland Resources

Past forest changes include expansion of deciduous forest into upland areas as prairie fires were controlled and clearing of forest areas for fuel, particularly during the Great Depression of the 1930s.

Based on soils types, the 10-county region historically consists of 72 percent rangeland and 27 percent forest ecological site types, with the remaining areas consisting of water or undefined areas. NRCS mapped the ecological sites based on the region's soil types, and the ecological sites were determined by historical data, professional experience, field reviews, and scientific studies (NRCS 2015). The primary ecological sites comprise 62 percent of the 10-county region and include Till Upland Savanna (23 percent), Loess Upland Prairie (12 percent), Till Backslope Savanna (11 percent), Wet Floodplain Prairie (8 percent), and Till Protected Backslope Forest (8 percent). The remaining 43 ecological sites comprise 37 percent of the 10-county region (Table 4.3.2.2-1).

Table 4.3.2.2-1. 10-county Region Ecological Sites.

Ecological Site	Acres	Percent of 10-county Region
43 Remaining Ecological Sites Combined	1,362,271	37
Till Upland Savanna	821,398	23
Loess Upland Prairie	420,636	12
Till Backslope Savanna	391,287	11
Till Protected Backslope Forest	301,435	8
Wet Floodplain Prairie	288,998	8
Water	34,928	1
Ecological Site Undefined	14,569	n/a[1]
TOTAL ACRES	**3,635,522**	**100**

[1] Less than 1 percent
Source: NRCS 2015

Sullivan County has a similar, but more focused composition of ecological sites than the 10-county region. Based on soil types, Sullivan County consists of 67 percent rangeland and 32 percent forestland, with the remaining areas consisting of water and undefined areas. The primary ecological sites comprise 65 percent of Sullivan County and include Till Upland Savanna (41 percent), Till Backslope Savanna (13 percent), and Till Protected Backslope Forest (12 percent). The remaining 19 ecological sites comprise 34 percent of Sullivan County (Table 4.3.2.2-2).

Table 4.3.2.2-2. Sullivan County Ecological Sites.

Ecological Site	Acres	Percent of Sullivan County
Till Upland Savanna	170,384	41
19 Remaining Ecological Sites Combined	142,565	34
Till Backslope Savanna	51,944	13
Till Protected Backslope Forest	49,949	12
Water	1,682	n/a[1]
Ecological Site Undefined	412	n/a[1]
TOTAL ACRES	**416,936**	**100**

[1] Less than 1 percent
Source: NRCS 2015

Foreseeable future projects could affect forest resources for construction of distribution pipelines or the water treatment plant. Recreational facilities would generally avoid forest resources to the extent feasible because forest resources are valuable and aesthetically pleasing for recreational

activities. Relocation of some existing roads and utilities could result in small amounts of tree clearing. If residences are built nearby, some small amount of tree removal could result.

The NLCD shows the current land cover in the 10-county region by examining spectral changes in aerial images (Homer et al. 2015). Land cover in the 10-county region and in Sullivan County is primarily cultivated crops, forest, and hay/pasture/herbaceous. The primary differences between the 10-county region and Sullivan County on a relative basis is in the cultivated crops and hay/pasture/herbaceous land. Sullivan County has 14 percent less land that is cultivated crops and 13 percent more hay/pasture/herbaceous land. The remaining land covers are generally consistent with the next largest difference on a relative basis occurring between forest land covers (4 percent difference). The NLCD is summarized for the 10-county region in Table 4.3.2.2-3 and for Sullivan County in Table 4.3.2.2-4.

Table 4.3.2.2-3. 10-county Region 2011 National Land Cover Database Land Cover.

NLCD Land Cover	Acres	Percent of Total
Barren Land	2,346	0*
Cultivated Crops	848,696	23
Forest – Deciduous, Mixed, Evergreen, and Forested Wetlands	798,773	22
Developed – High, Medium, and Low Intensity and Open Space	176,330	5
Grassland – Hay, Pasture, Herbaceous, Emergent Wetlands, and Shrub/Scrub Wetlands	1,769,181	49
Open Water	40,344	1
TOTAL ACRES	**3,635,670**	**100**

* Value less than 1.

Table 4.3.2.2-4. Sullivan County 2011 National Land Cover Database Land Cover.

NLCD Land Cover	Acres	Percent of Total
Barren Land	63	0*
Cultivated Crops	38,401	9
Forest – Deciduous, Mixed, Evergreen, and Forested Wetlands	102,028	25
Developed – High, Medium, and Low Intensity and Open Space	16,741	4
Grassland – Hay, Pasture, Herbaceous, Emergent Wetlands, and Shrub/Scrub Wetlands	256,876	62
Open Water	2,827	1
TOTAL ACRES	**416,936**	**100**

*Value less than 1.

FOREST CHANGE IN THE 10-COUNTY REGION

The NLCD land covers and the ecological sites do not exactly match but can be grouped to show a general trend. Barren land and undefined land covers do not have similar corresponding land covers but comprise a small portion of the total land covers (less than 5 percent).

Comparing the historic land cover to the current land cover shows the loss of grassland and forestland resources since the 10-county region was settled and developed. The NLCD data shows the 10-county region has a 17 percent loss in forest (Table 4.3.4.4-5), and Sullivan County has a 24 percent loss (Table 4.3.2.2-6) when compared to the NRCS ecological sites. The Sullivan County ecological sites historically had 5 percent more forestland area than the 10-county region.

Table 4.3.2.2-5. Land Cover Change in the 10-county Region.

NLCD Land Cover	NLCD Land Cover (Acres)	Ecological Site Land Cover (Acres)	Land Cover Change (Acres)	Percent Change
Barren Land	2,346	0	2,346	--*
Cultivated Crops	848,696	0	848,696	--*
Forest – Deciduous, Mixed, Evergreen, and Forested Wetlands	798,773	965,369	-166,596	-17
Developed – High, Medium, and Low Intensity and Open	176,330	0	176,330	--*
Grassland – Hay, Pasture, Herbaceous, Emergent Wetlands, and Shrub/Scrub Wetlands	1,769,181	2,620,656	-851,475	-33
Open Water	40,344	34,928	5,416	16
Undefined	0	14,717	-14,717	--*
TOTAL ACRES	**3,635,670**	**3,635,670**	**n/a**	**n/a**

* Not applicable.
National Land Cover Database (NLCD)

Table 4.3.2.2-6. . Land Cover Change in Sullivan County.

NLCD Land Cover	NLCD Land Cover (Acres)	Ecological Site Land Cover (Acres)	Land Cover Change (Acres)	Percent Change
Barren Land	63	0	63	--*
Cultivated Crops	38,401	0	38,401	--*
Forest – Deciduous, Mixed, Evergreen, and Forested Wetlands	102,028	134,822	-32,794	-24
Developed – High, Medium, and Low Intensity and Open	16,741	0	16,741	--*
Grassland – Hay, Pasture, Herbaceous, Emergent Wetlands, and Shrub/Scrub Wetlands	256,876	280,020	-23,144	-8
Open Water	2,827	1,682	1,145	68.1
Undefined	0	412	-412	--*
TOTAL ACRES	**416,936**	**416,936**	**0**	**n/a**

***** Not applicable.
National Land Cover Database (NLCD)

More recent trends show a net gain in forest area in the 10-county region. From 2003 to 2013, the 10-county region had the following change in forest area (USFS 2016):

- **0 – 10 Percent Loss**: Adair County, Grundy County, and Chariton County
- **0 – 10 Percent Gain**: Sullivan County, Linn County, and Schuyler County
- **Greater than 10 Percent Gain**: Putnam County, Mercer County, Macon County, and Livingston County

Adair, Grundy, and Chariton counties are the only counties in the 10-county region that have experienced a loss in forest area of 0 to 10 percent from 2003 to 2013. Putnam, Mercer, Macon, and Livingston counties have experienced a greater than 10 percent gain in forest area. Sullivan County has had a 0 to 10 percent gain in forest area. Statewide, Missouri has experienced no net change in forest area in the same period (USFS 2016).

4.3.2.3 Residential

The location of the Proposed Action is in rural Sullivan County and is not near any residential communities. It is not anticipated to lead to extensive residential growth around the Proposed Action. Existing roadways and utilities would be sufficient to provide for local additional developments, although none are known at present.

4.3.2.4 Commercial/Industrial/Infrastructure/Utilities/Other

No known projects that would result in additional impacts to infrastructure or utilities are planned at this time. The Proposed Action is located near existing roadways that can handle anticipated recreational traffic, and no substantial impacts to utilities are anticipated. If additional businesses are located in the 10-county area, it is possible that roadway or utility improvements may be needed, but none are known at this time.

4.3.3 Water Resources

4.3.3.1 Streams

The 1987 East Locust Creek Plan-EIS called for 121 FWRs, and 72 of these structures were built. The 2006 Revised Plan-EIS called for 22 FWRs in the watershed, and nine of these structures were completed. A total of 81 of FWRs have been completed. Other changes in land use that have affected streams have also occurred, particularly during the periods of Euro-American exploration and settlement. The first such change was the extirpation of the North American beaver (*Castor canadensis*) from the region. The beaver would have maintained chains of beaver ponds along many of the smaller side tributaries and the main stem of East Locust Creek in the project vicinity; some of these ponds could potentially be quite substantial in size (Burchsted et al. 2010). The second such change was the removal of much of the native prairie vegetation on dryland areas in the watershed for cultivated row crops and other farming activities. This vegetation removal increased the rate of surface runoff into the streams. These two changes in land use resulted in more erosion and incising of streams in the region.

The Proposed Action would have immediate direct impacts on streams in the normal pool. Following avoidance and minimization, unavoidable impacts to streams will be mitigated according to an approved mitigation plan. Water treatment plant upgrades are anticipated to avoid additional stream impacts, although waterlines may result in temporary impacts. The relocation of existing roads and utilities could also result in temporary impacts.

The dam will alter biotic, chemical, and physical movement within East Locust Creek. Biotic life will be restricted from upstream and downstream reaches of the dam. Movement will only occur through the spillway, which would restrict many native species. Chemical and physical movement, including sediment and water, will also be altered from current, natural conditions.

4.3.3.2 Groundwater

Though there are a few registered wells located near the normal pool, the Proposed Action relies on surface water and thus would not have a cumulative impact on groundwater use in this area.

4.3.3.3 Wetlands

It has been estimated that almost 90 percent of Missouri's wetlands have been lost through a variety of man-made activities, mostly from agricultural activities, but also from other types of development (Epperson 1992). As mentioned in section 4.3.3.1 on stream cumulative impacts, the extirpation of beavers and the loss of beaver dams has been an additional substantial cause of wetland loss. According to Burchsted et al. (2010), "Under modern conditions, beaver dams create dynamic sequences of ponds and wet meadows among free-flowing segments. One beaver impoundment alone can exceed 1000 meters along the river, flood the valley laterally, and fundamentally alter biogeochemical cycles and ecological structures."

An additional change in the area that could have affected the extent of wetlands in the project vicinity was the construction of the now abandoned CB&Q rail line, which roughly paralleled the stream within the floodplain. The track embankment resulted in changes in the hydrology of the area, potentially creating more wetlands by slowing the drainage of water to the creek.

No future projects are known that would substantially affect wetlands. Future development, including construction of water transmission lines, could affect wetlands, but those projects would need to obtain permits and mitigate for impacts. Recreational development and the water treatment plant are anticipated to avoid wetland impacts. In addition, it should be noted that an existing 181-acre EWRP would be largely inundated by RW1. According to NRCS program policy, this easement must be replaced with a wetland of equal or greater ecological and economic value and result in no net loss of wetland acreage. The EWRP replacement is described in Appendix F.

The loss of wetlands because of the Proposed Action would be mitigated through compensatory mitigation. As mentioned for streams, water distribution lines associated with the potential water treatment plant could result in temporary impacts to wetlands. Future commercial or residential areas within the project vicinity could result in additional wetland impacts but none are planned or platted currently, and if any developments affect wetlands, they would be required to obtain appropriate permits and conduct compensatory mitigation, if necessary. Thus, there is no anticipated cumulative net loss of wetland functions or acreage from this or other projects.

4.3.3.4 Water Quality

Past agricultural development has resulted in degraded water quality in some parts of the region. The Proposed Action is anticipated to trap sediment and pollutants from the stream system. Developments such as the unincorporated community of Boynton and the railroad have resulted in small areas of contamination that could affect water quality in the project.

There is one foreseeable future project that is likely to affect water quality. The village of Pollock wastewater treatment facility is likely to construct sewer lines to connect to the Milan wastewater treatment plant, which is likely to reduce the number of coliform bacteria in East Locust Creek.

The Proposed Action and associated ecological flows water management plan would control the release of water to downstream sections, in turn buffering these sections from the impacts of climate change. BMPs would be followed during construction activities to mitigate project impacts to water quality.

4.3.4 Aquatic Resources

4.3.4.1 Fisheries

The Proposed Action would provide recreational fishing opportunities to the residents of Sullivan County. See the purpose and need section for the recreational demand. Lakes in Missouri provide habitat for bass, crappie, and blue gill, among other species. No other known projects would have cumulative impacts to fisheries.

4.3.4.2 Invertebrates

The Proposed Action and foreseeable future projects are not anticipated to have a cumulative effect on invertebrate species.

4.3.5 Terrestrial Vegetation

The completion of the Proposed Action and foreseeable future projects are not anticipated to have a cumulative impact on terrestrial vegetation.

4.3.6 Wildlife

The Proposed Action may provide habitat to waterfowl and shorebirds as a migratory stopover during spring and fall migration. No other known projects are likely to result in cumulative impacts to wildlife or waterfowl.

4.3.7 Threatened and Endangered Species

Land development outside the Proposed Action property boundary will not be controlled by the project proponent, and the project proponent will not be involved in land development outside the Proposed Action property boundary. The land within the East Locust Creek upstream watershed will be subject to watershed zoning regulations to protect the water quality of the reservoir. Residential development would be allowed by the zoning regulations and may occur outside the Proposed Action property boundary. The rate of development, areas that will develop, and types of development that will occur are not known.

Forested areas within Sullivan County could provide habitat for northern long-eared and Indiana bats. Development around the Proposed Action could cause the removal of potential bat habitat. The potential residential development area (Figure 4.3.7-1) was determined by drawing land outside the NCMRWC property that is within the East Locust Creek watershed and within 0.5 mile of the normal pool. Figure 4.3.7-1 shows the residential development area around the project.

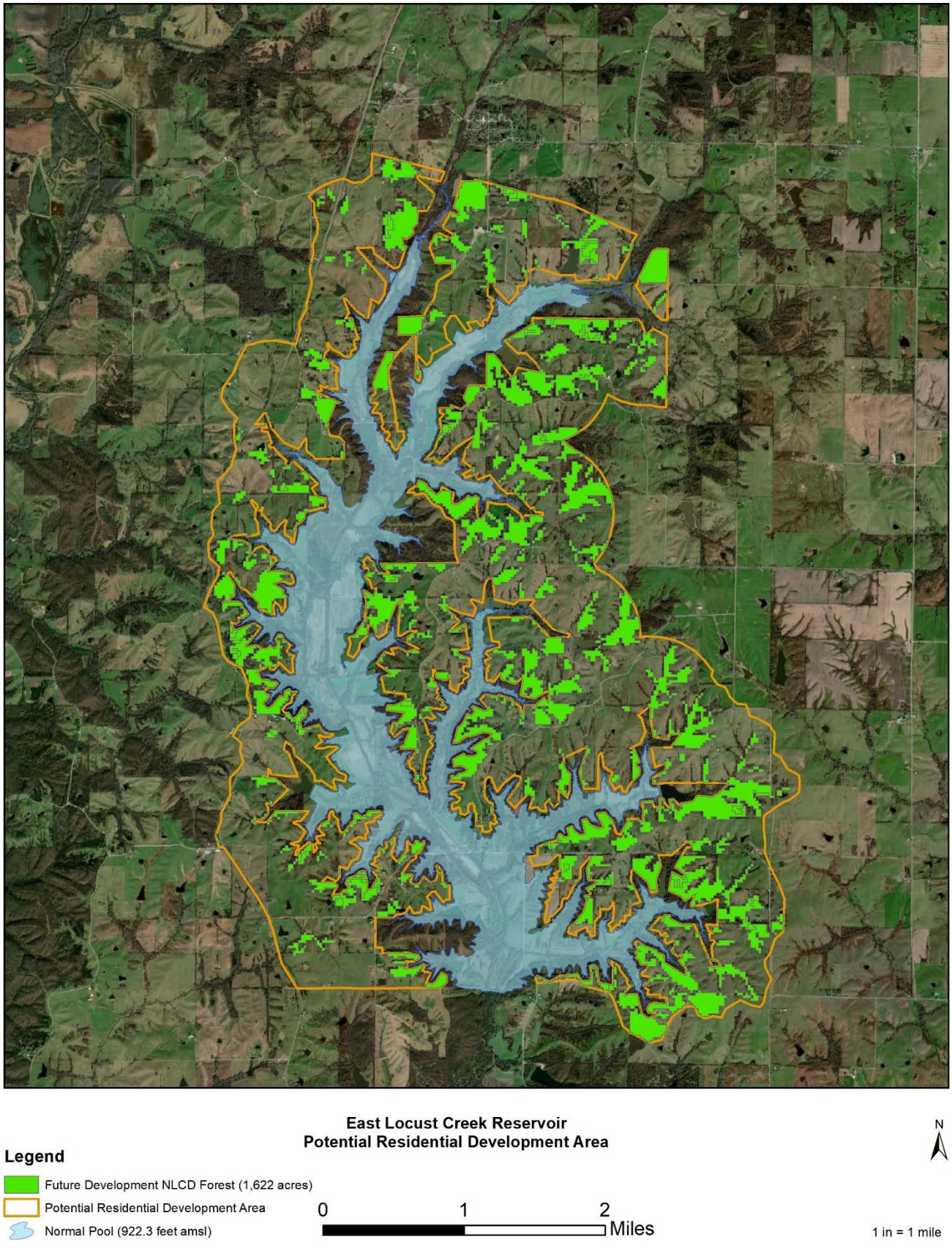

Figure 4.3.7-1. Potential Development Around the Project.

4.3.8 Economic and Social Resources

The lack of a reliable water supply in the past may have limited residential and business development in the 10-county region. The completion of the Proposed Action has the potential to increase economic vitality to the region by providing a reliable water supply. Increased business development in the region could occur with the addition of a reliable water source and recreational opportunities. No other projects are known to be planned in the project vicinity that would result in increased business opportunities.

4.3.9 Recreation and Visual Resources

The Proposed Action is anticipated to increase recreational opportunities in the future by providing an additional recreational supply. Substantial impacts outside the 10-county region are not anticipated.

There are no cumulative impacts to visual resources anticipated with the Proposed Action or foreseeable future projects.

4.3.10 Public Safety and Hazardous Materials

The completion of the Proposed Action or foreseeable future projects would not have a cumulative impact on public safety and hazardous materials.

4.3.11 Noise

Although the project would temporarily increase noise because of construction activities and permanently increase noise from potentially increased recreational traffic and motorboat usage, there are no sensitive receivers in the vicinity of the Proposed Action and no other projects are known that would result in a cumulative noise impact.

4.3.12 Geologic Resources

4.3.12.1 Geology

There would be no cumulative impacts from foreseeable future projects as a result of the Proposed Action.

4.3.12.2 Minerals

The Proposed Action would not have a cumulative impact on minerals.

4.3.12.3 Soils

With appropriate erosion control methods, the Proposed Action would not have a cumulative impact on soils. Soil loss would be minimized during construction activities by implementation of BMPs and an SWPPP.

4.3.13 Cultural Resources

The completion of the Proposed Action and foreseeable future projects may have a cumulative impact on cultural resources. Future residential and commercial development that may occur

around the proposed Project could impact cultural resources identified in the 2020 and 2006 cultural resources surveys or sites that are currently unknown.

4.4 Growth-inducing Effects

The Proposed Action would create an improved water supply to the residents and businesses in the 10-county region; helping to retain residents and businesses and potentially attracting new businesses and residents. A stable, dependable, affordable water supply could attract new businesses that would diversify the economy of the region.

In addition to increasing the water supply, the Proposed Action is anticipated to increase recreational activities that will diversify the economy because of the need to supply support to the increased visitors to the 10-county region.

Flood damage reduction downstream of the Proposed Action could increase profitability of agricultural producers through reduced insurance needs, reduced crop loss, and reduced damages to fences, terraces, and roads.

Although this project may result in some growth, there are no presently proposed, planned, or platted residential or commercial projects that would result in cumulative impacts to resources. Those projects, when developed, would need to comply with all applicable regulations.

1.0 Introduction and Purpose and Need

2.0 Alternatives Analysis

3.0 Affected Environment and Predicted Environmental Consequences

4.0 Cumulative and Growth-Inducing Effects

5.0 Comparison of Alternatives and Mitigation

6.0 Compliance and Consultation with Applicable Laws, Policies, and Plans

7.0 Public Involvement

8.0 References

9.0 List of Preparers

10.0 Distribution List

5.0 Comparison of Alternatives and Mitigation

5.1 Comparative Impacts of Alternatives

The comparative impacts of the No Action alternative and the Proposed Action are included in Table 5.2-1.

Table 5.2-1. Comparative Impacts.

Environmental Factors	No Action Alternative	Proposed Action	
Stream Impacts	None	49 miles	
Loss in Stream Function	None	Negative Impact (High)	
Wetland Impacts	None	362 acres	
Loss in Wetland Function	None	Negative (Moderate overall)	
		Reed Canarygrass	Negative Impact (Low)
		Farmed	Negative Impact (Low)
		Remaining	Negative Impact (High)
Federal Endangered Species	None	Negative Impact (High)	
Cultural Resources	None	Eight sites eligible for the NRHP	
Social and Economic	Negative	Positive Impact (High)	

5.2 Irreversible and Irretrievable Resource Changes

Irreversible and irretrievable environmental changes from the implementation of the Proposed Action would include loss of approximately 49 miles of streams, 362 acres of wetland, approximately 1,410 acres of riparian forest, and 11 sites eligible for the NRHP because of inundation and project-related impacts.

5.3 Unavoidable Adverse Effects

Unavoidable adverse effects would include impacts to approximately 49 miles of streams, 362 acres of wetlands, 1,410 acres of riparian forest, and 11 sites eligible for the NRHP because of inundation and project-related impacts.

5.4 Mitigation Measures

Following all avoidance and minimization efforts, compensatory mitigation measures would be developed for the unavoidable impacts. Mitigation conceptual planning assumptions are included in Appendix I.

5.4.1 Forest/Woodland Resources

Construction of the proposed reservoir would impact approximately 1,410 acres of riparian forest. See threatened and endangered species section for tree plantings and preservation.

5.4.2 Residential and Business Relocations

Acquisition of all residential and business properties was completed in compliance with the Uniform Act of 1970.

5.4.3 Utilities

Disruption of utility service would not be anticipated as a result of utility adjustments. The adjustment for these utilities would typically take place in the appropriate phase of construction. Utilities will be relocated to maintain service to existing customers. Figure 5.4.3-1 shows the proposed utility corridors.

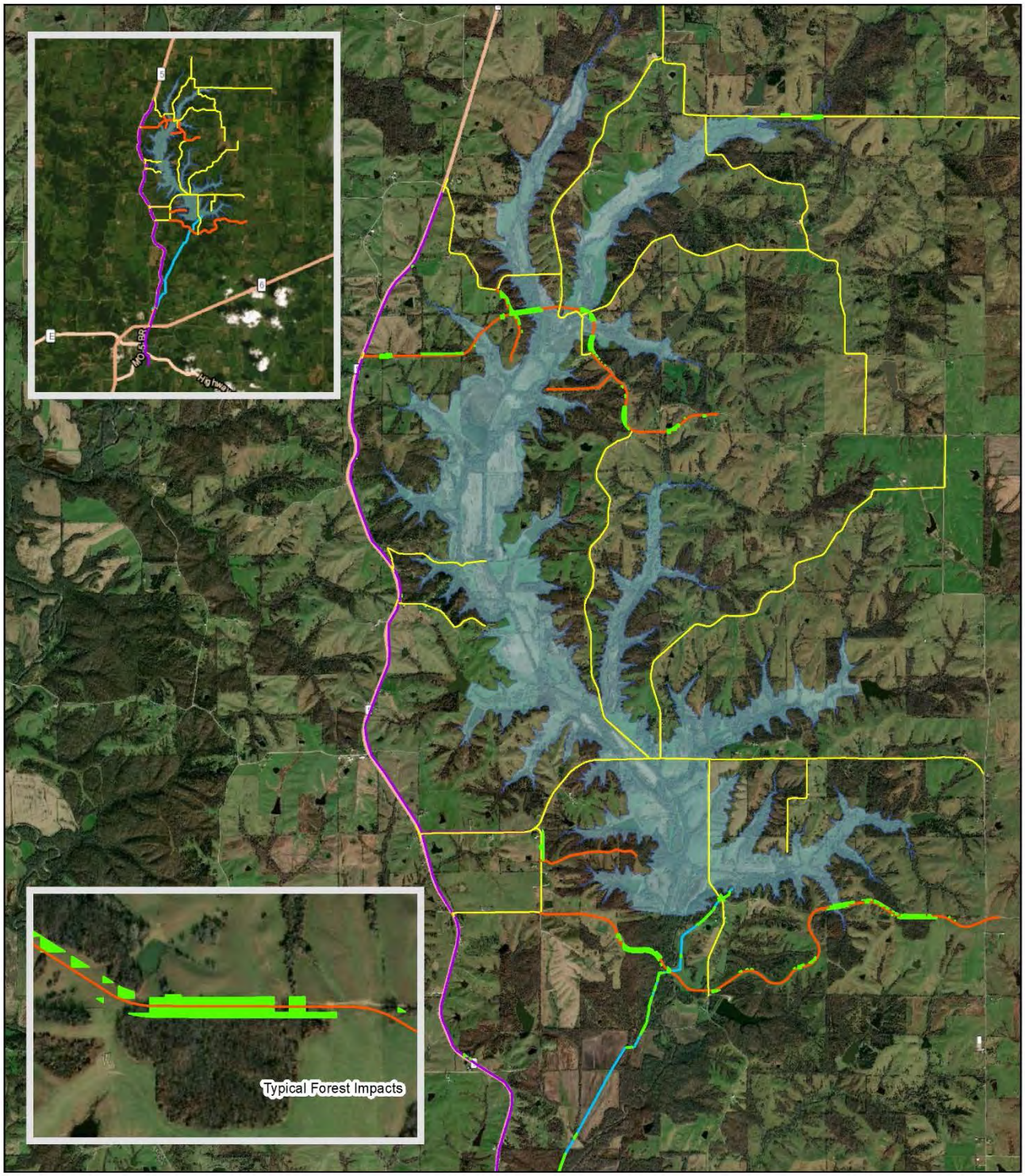

Figure 5.4.3-1. Project Utilities and Transportation Relocation.

5.4.4 Streams

Stream mitigation will follow the CWA Section 404(b)(1) guidelines. Because there are not sufficient mitigation bank stream credits or in-lieu fee provider stream credits, permittee-responsible stream mitigation would be provided. Mitigation conceptual planning assumptions are included in Appendix I.

Streams affected by the Proposed Action total 49 miles that would be lost because of inundation or dam construction. Stream mitigation would take place in the Central Plains Grand/Chariton Ecological Drainage Unit with a focus on the Lower Grand HUC 8 watershed. The goal of the mitigation efforts would be improving conditions at the Lower Grand River Conservation Opportunity Area (COA). Riverine habitats such as the Lower Locust Creek flowing through Pershing State Park and Fountain Grove Conservation Area (CA) have been described as “rare in Missouri.” The diverse aquatic fauna has served as an example of what was likely present throughout northern Missouri before channelization (Winston et al. 1998). “Every effort should be made to preserve these few remaining sections of stream with their aquatic life.” (Winston et al. 1998).

Mitigation measures would be developed in coordination with resource agencies including the USACE, USFWS, MDNR, and MDC. Potential projects include removing barriers which impede the passage of aquatic organisms, streambank stabilization, levee setback, riparian enhancement and protection, floodplain expansion, and addressing the impacts of channel avulsions affecting sensitive habitats along the lower portions of Locust and Yellow creeks.

Mitigation, both on-site and off-site, would require monitoring to ensure successful implementation and continued success of mitigation practices.

5.4.5 Groundwater

Any registered or unregistered wells within right-of-way (ROW) to be acquired would be properly abandoned according to Missouri Minimum Design Standards for Community Drinking Water Systems, paragraph 3.1.4.1.c, as well as in 10 CSR 23-3.110 – Plugging of Water Wells (MDNR 2013b; MDNR 2014a). Proper decommissioning of affected wells would not have a significant impact on groundwater quality.

5.4.6 Wetlands

Wetland mitigation will follow the CWA 404 (b)(1) guidelines. Because there are not sufficient mitigation bank wetland credits or in-lieu fee provider wetland credits, permittee-responsible wetland mitigation would be provided. Mitigation conceptual planning assumptions are included in Appendix I.

Unavoidable wetlands impacts would require compensatory mitigation following prescribed replacement to affected ratios. Preliminary jurisdictional determinations indicated approximately 362 total wetland acres affected, with 273.07 of PEM, 78.95 of PFO, and 9.74 of PSS. The preliminary jurisdictional determination also indicated 30.35 acres of open water. An existing 181-acre EWRP easement exists within RW1 and is included in the preliminary jurisdictional

determination values. According to NRCS program policy, this easement must be replaced with a wetland of equal or greater ecological value. The EWRP replacement is described in Appendix F. Wetlands were determined by NWI data associated with the utilities and road relocation and improvements. Wetland delineations and preliminary jurisdictional determinations are planned to be completed. The NWI data indicates there are 3.05 acres PEM, 9.19 acres PFO, and 0.76 acre of open water.

Appropriate mitigation sites would require adequate soils and hydrology to establish wetland vegetation. The NRCS wetlands team would provide technical assistance in restoring wetlands.

Wetland mitigation sites and extent would be determined in coordination with USACE and MDNR. Wetland mitigation locations would focus on areas upstream and downstream of the Proposed Action. Locations downstream provide similar conditions to the affected wetlands. The lake itself would provide suitable hydrologic regimes for wetland mitigation sites in areas upstream of and along the shoreline of the Proposed Action. If necessary, areas elsewhere within the HUC 8 watershed would be considered as potential wetland mitigation locations.

Permittee-responsible mitigation will require monitoring to ensure the success of the wetland mitigation areas.

5.4.7 Water Quality

To provide proper erosion control before, during, and after construction of the East Locust Creek reservoir and dam, a phased approach of erosion and sediment controls would be implemented. Prior to any construction taking place, BMPs would need to be temporarily installed and maintained throughout the construction period in locations identified on the plan sheets and SWPPP: The NPDES rules require an SWPPP on construction sites disturbing one or more acres. Potential BMPs would be needed at construction entrance(s), concrete washout areas, stockpile and staging areas, perimeter controls (sediment fence), sediment basins, sediment traps, diversion berms, diversion channels, stream crossings, and ditch checks.

During construction and mass grading, additional sediment fencing would be installed as needed. Erosion control blankets would be installed to provide permanent slope stabilization where indicated on the plans. Whenever activity has ceased for more than 14 days, disturbed areas would be temporarily seeded to provide protection to bare soils and reduce damage from sediment and runoff to downstream or off-site areas. The BMPs would be regularly inspected and maintained as indicated in the SWPPP throughout the life of the project to ensure proper erosion and sediment control protection is provided.

Once construction has been completed, removal of the temporary BMPs would require any disturbed areas to be stabilized with permanent seeding. Diversion channels are to remain in place until work in the downgradient area or natural channels is no longer required. When removed, the disturbed area shall be covered with topsoil and stabilized and seeded with mixes of appropriate native species.

In addition to protecting water quality, the BMPs include revegetation with native species and will reduce the chance of invasive or nonnative species being introduced to this area.

5.4.8 Threatened and Endangered Species

Indiana, Gray, and Northern Long-eared Bats

Voluntary measures to compensate for the loss of forested bat habitat and impacts to bats that could not be avoided and minimized include tree planting on NCMRWC property, tree preservation on NCMRWC property and within the High Hazard Zone, preservation of forested acres that will not be under a conservation easement, and wetland forest mitigation. Mitigation conceptual planning assumptions are included in Appendix I.

Forest Creation

Many areas outside the normal pool and within NCMRWC property will be planted to forest. Tree species will be selected based on the natural forest community and on favorable tree species for bat roosting habitat. Land parcels with acreage greater than one-half acre will be planted with trees to restore natural forests. A total of 553 acres of new forest will be created because of this planting.

Forested wetland impacts total 79 acres according to the USACE preliminary jurisdictional determination. The 79 forested wetland acres will be replaced with a minimum of 79 forested wetland acres. Stream impacts total 49 miles for the proposed reservoir. Riparian forest plantings and conservation easements are anticipated with a portion of the stream mitigation.

Forest Preservation

A total of 683 acres of existing forest outside the normal pool and on NCMRWC property will be preserved and will have a permanent conservation easement established. The preservation of these existing forested areas will provide permanent forested areas and bat roosting habitat. Forest management consistent with MDC forest management practices would be allowed.

An additional 361 acres of existing forest is intended to remain in perpetuity to protect water quality surrounding the reservoir. This area will be owned by the NCMRWC and will be intended to protect water quality, but in the interest of providing NCMRWC with flexibility to manage its property, will not have a permanent conservation easement established. The 361 acres was calculated by subtracting the recreational facilities, utilities and road relocation, dam construction, and potential tree clearing on NCMRWC property from the forested acres without a conservation easement.

The Lake Authority described in Section 3.8.4 Water Quality will provide 50 acres of forest preservation along stream resources within 500 feet of the NCMRWC property boundary.

Conservation Easement

A permanent conservation easement will be established on 1,236 acres for 553 acres of tree planting and 683 acres of forest preservation. The conservation easement will allow for the implementation of the Bat Habitat Compensation Plan and prohibit incompatible uses that might jeopardize the quality of bat habitat. Discussions with the Ozark Land Trust have occurred about having a certified land trust hold the conservation easement. A forest management plan is also being developed for the 1,236 acres of forest under permanent conservation easement.

A permanent conservation easement will also be established on 79 acres of forested wetlands. However, the location of the easement has not been determined.

The 50 forest acres along streams within the High Impact Zone will not have a permanent conservation easement but will be included as a zoning requirement under the Lake Authority. The zoning requirement was passed by the NCMRWC and is legally enforceable.

Plains Spotted Skunk

MDC coordination resulted in BMPs for the plains spotted skunk (MDC 2015b). No recorded sightings occurred within 10 miles of the Proposed Action.

5.4.9 Transportation Impacts

Ongoing coordination with MoDOT and Sullivan County will be done throughout the project construction period. Information on detours and road closures will be provided to emergency service providers, local residents and businesses, and the general public.

5.4.10 Hazardous Materials

Between 2012 and 2016, Targeted Brownfields Assessments found elevated arsenic concentrations in soil samples taken along the abandoned CB&Q railroad line. A study was conducted in 2017 to determine the extent of contamination by arsenic. Soil samples were collected at 20 locations along the former railroad line. All sample locations had arsenic concentrations exceeding the U.S. Environmental Protection Agency (USEPA) screening level for residential land use (0.68 mg/kg), and nine sample locations had arsenic concentrations above background concentrations as determined by the USGS for Sullivan County, Missouri (8.469 mg/kg). Results of the Tetra Tech investigation provided a range of concentrations from 4.0 to 130 mg/kg arsenic in the soil, with an average concentration of 20.3 mg/kg.

A review of the investigation results concluded that the actual maximum possible concentration of arsenic in the water of the proposed East Locust Creek reservoir would not exceed 60 percent of the USEPA drinking water standard. The investigation review is provided in Appendix B.

5.4.11 Construction Temporary Impacts

See water quality mitigation section for mitigation measures (5.5.7).

5.4.12 Cultural Resources

NRCS is currently working with SHPO to determine which impacts related to the proposed Project are adverse impacts requiring mitigation. NRCS has also reached out to the local tribes for an opportunity to comment. Mitigation will be completed for sites with adverse impacts. If discover previously unknown historic, cultural or archeological remains and artifacts are found during Project construction, the SHPO will be notified of what was found, and to the maximum extent practicable, construction activities that may affect the remains and artifacts will be avoided until the required coordination has been completed.

5.5 Relationship of Short-term Uses and Long-term Productivity

Despite loss of some acreage of farmland, flood damage reduction would provide locally controlled agricultural water management (rural water supply); fish and wildlife habitat enhancement; recreational development; and flood prevention. The short-term uses are also long-

term uses and provide benefits to the community. The Proposed Action would improve the long-term productivity for the agricultural industry in the project area because it is a dependable water supply and a means of flood prevention. In addition, the project would improve the long-term productivity for the recreation industry through the development of new recreation areas and opportunities.

1.0 Introduction and Purpose and Need

2.0 Alternatives Analysis

3.0 Affected Environment and Predicted Environmental Consequences

4.0 Cumulative and Growth-Inducing Effects

5.0 Comparison of Alternatives and Mitigation

6.0 Compliance and Consultation with Applicable Laws, Policies, and Plans

7.0 Public Involvement

8.0 References

9.0 List of Preparers

10.0 Distribution List

6.0 Applicable Laws and Policies

Review and implementation of the Proposed Action requires coordination and compliance with multiple federal and state laws, regulations, executive orders, and policies. The following sections have known application to the Proposed Action.

6.1 Federal Laws, Regulations, and Policies

Bald and Golden Eagle Protection Act

Bald and golden eagles have specific protection under the BGEPA;16 USC 668-668c., which is administered by the USFWS. Protections under this act prohibit "take" of bald and golden eagles.

Clean Water Act of 1972

The CWA is the principal law governing pollution control and water quality of waters of the U.S. Section 402 of the act establishes an NPDES permitting program to regulate the point source discharge of pollutants into waters of the U.S. Missouri administers state-level NPDES programs pursuant to authority delegated by the EPA.

Section 404, administered by the USACE with oversight from the EPA, is another permitting program that regulates the placement of dredged or fill materials into waters of the U.S. USACE issues nationwide permits on a state, regional, or nationwide basis for similar activities that cause minimal adverse environmental effects, both individually and cumulatively. Individual permits may also be issued for specific activities on specific water bodies under Section 404.

An individual Missouri State Water Quality Certification (Section 401) would also be required (EPA 2017a).

Endangered Species Act

Federally listed threatened and endangered species are protected under the Endangered Species Act of 1973 as amended (16 USC 1531 et seq.). Adverse effects on a federally listed species or its habitat would require consultation with the USFWS under Section 7 of the Endangered Species Act. Section 7, as amended, requires federal agencies to ensure that actions they authorize, fund, or carry out are not likely to jeopardize the continued existence of proposed, endangered, or threatened species or result in the destruction or adverse modification of their critical habitat (USFWS 2015a).

Executive Order 11988 for Floodplain Management

EO 11988 requires federal agencies to avoid, to the extent possible, the long- and short-term adverse impacts associated with the occupancy and modification of flood plains and to avoid direct and indirect support of floodplain development wherever there is a practicable alternative. Through this criterion, the EO strives to reduce the risk of flood loss, minimize the impact of floods on human safety, health, and welfare, and to restore and preserve the natural and beneficial values served by flood plains for the following actions (FEMA 2015):

- Acquiring, managing, and disposing of federal lands and facilities
- Providing federally undertaken, financed, or assisted construction and improvements

- Conducting federal activities and programs affecting land use, including but not limited to water and related land resources planning, regulation, and licensing activities

Executive Order 11990 for Protection of Wetlands

The purpose of EO 11990 is to "minimize the destruction, loss, or degradation of wetlands and to preserve and enhance the natural and beneficial values of wetlands." To meet these objectives, the EO requires federal agencies to consider alternatives to wetland sites and limit potential damage if an activity affecting a wetland cannot be avoided. The EO applies to acquisition, management, and disposition of federal lands and facilities construction and improvement projects which are undertaken, financed, or assisted by federal agencies, as well as to federal activities and programs affecting land use. This includes, but is not limited to, water and related land resources planning, regulation, and licensing activities (EPA 2016a).

Executive Order 12898 for Environmental Justice

President Clinton signed EO 12898, *Federal Actions to Address Environmental Justice in Minority and Low-Income Population*, in 1994. This EO focuses the attention of federal agencies on human health and environmental conditions in minority communities and low-income communities. Environmental justice analyses are performed to identify the potential for disproportionately high and adverse impacts on minority and low-income populations from proposed actions and to identify alternatives that might mitigate these impacts. This DSEIS includes an environmental justice analysis for the 10-county region (EPA 2016c).

Executive Order 12962 for Recreational Fisheries

EO 12962, which was implemented in 1995, mandates that federal agencies, to the extent permitted by law and where practicable, improve the quality, function, and sustainable productivity and distribution of U.S. aquatic resources for increased recreational fishing opportunities. Activities to accomplish this may include developing and encouraging partnerships between governments and the private sector to advance aquatic resource conservation and enhance recreational fishing opportunities; identifying recreational fishing opportunities that are limited by water quality and habitat degradation and promoting restoration to support viable, healthy, and, where feasible, self-sustaining recreational fisheries; fostering sound aquatic conservation and restoration endeavors to benefit recreational fisheries; supporting outreach programs designed to stimulate angler participation in the conservation and restoration of aquatic systems; and implementing laws under their purview in a manner that will conserve, restore, and enhance aquatic systems that support recreational fisheries.

In addition, this order establishes the National Recreational Fisheries Coordination Council, which oversees the actions of federal agencies to ensure they accomplish the goals outlined in the EO (EPA 2016b).

Executive Order 13112 for Invasive Species

In 1999, EO 13112 was issued to prevent the introduction of invasive species and to provide for their control. It directs federal agencies to identify applicable actions and to use programs and authorities to minimize the economic, ecological, and human health impacts caused by invasive species (White House 2016). To meet the intent of this order, the Proposed Action includes environmental commitments to prevent and control the spread of invasive species.

Farmland Protection Policy Act of 1995

The purpose of the FPPA is to ensure that impacts to prime or unique farmlands are considered in federal projects. It requires federal agencies to consider alternative actions that could lessen impacts and to ensure that their actions are compatible with state and local government and private programs to protect prime and unique farmland. The NRCS is responsible for administering this act. Farmlands were considered in the Proposed Action analysis using the key indicators of changes in farm acreage and production. Prime and unique farmlands would be protected to the extent possible during implementation of the Proposed Action consistent with the act (NRCS 2012).

Fish and Wildlife Coordination Act Under Section 12 of PL83-566

PL 83-566 projects are local projects installed with Federal assistance and are exempt from the provisions of the FWCA. However, PL 85-624, which contained the 1958 amendments to the FWCA, also added section 12 to PL 83-566. Section 12 (16 U.S.C. Section 1008) applies the principles of the FWCA to the PL 83-566 program. The NRCS State Conservationist must notify the USFWS so it may provide recommendations for fish and wildlife resources, in accordance with the provisions of PL 83-566 Section 12.

Hazardous Materials Acts

The EPA and other federal and state agencies regulate hazardous materials under the Toxic Substances Control Act; Comprehensive Environmental Response Compensation and Liability Act; RCRA; Superfund Amendments and Reauthorization Act; and Emergency Planning and Community Right-to-Know Act. RCRA gives the EPA the authority to control hazardous waste from the “cradle-to-grave.” This includes the generation, transportation, treatment, storage, and disposal of hazardous waste. RCRA also sets forth a framework for the management of nonhazardous solid wastes. The 1986 amendments to RCRA enabled the EPA to address environmental problems that could result from underground storage tanks containing petroleum and other hazardous substances (EPA 2017c).

Migratory Bird Treaty Act

Under the MBTA (16 USC 703-712: Ch. 128 *as* amended), construction activities in grassland, wetland, stream, and woodland habitats and those that occur on bridges (which, for example, may affect swallow nests on bridge girders) that would otherwise result in the taking of migratory birds, eggs, young, and/or active nests should be avoided. Although the provisions of MBTA are applicable year-round, most migratory bird nesting activity in Missouri occurs during the period of April 1 to July 15. However, some migratory birds are known to nest outside the aforementioned primary nesting season period. For example, raptors (such as hawks, falcons, and owls) can be expected to nest in woodland habitats during February 1 through July 15, whereas sedge wrens, which occur in some wetland habitats, normally nest from July 15 to September 10 (USFWS 2015b).

Missouri Clean Water Commission, Water Quality Standards, 10 CSR 20-7

Water quality in Missouri is regulated by classifying water bodies according to designated beneficial uses and then assigning specific numerical water quality criteria that must be maintained to protect the assigned beneficial uses. Water bodies that are not classified fall under the General Criteria (10 CSR 20-7.031[3]) for all waters of the state. East Locust Creek, from the mouth to Missouri Highway 6, is classified by the State of Missouri (10 CSR 20-7.031) as "P," which identifies "streams that maintain permanent flow even in drought periods." From Missouri Highway 6 to Section 12, Township 64N, Range 20W near Pollock, the stream is classified as "C," which identifies "streams that may cease flow in dry periods but maintain permanent pools which support aquatic life" (10 CSR 20-7.031). The remainder of the stream is unclassified. The state-designated beneficial uses for East Locust Creek are livestock and wildlife watering and the protection of warm water aquatic life and human health – fish consumption (10 CSR 20-7.031). Whole-body contact recreation is also a designated beneficial use for East Locust Creek (MDNR 2011b).

National Historic Preservation Act of 1966

The NHPA establishes protection of historic properties as federal policy in cooperation with states, tribes, local governments, and the public. Historic properties are those buildings, structures, sites, objects, and districts or properties of traditional religious and cultural importance to Native Americans that are determined to be eligible for inclusion in the NRHP. Section 106 of the act requires federal agencies to consider the effect of proposed actions on historic properties and gives the Advisory Council on Historic Preservation an opportunity to comment. The lead federal agency is responsible for consultation with the State Historic Preservation Officer and/or Tribal Historic Preservation Offices, tribes, applicants, interested parties, and local governments regarding federal undertakings. When previously unidentified cultural resources are encountered, the project includes environmental commitments to comply with the act (NPS 1992).

National Invasive Species Act of 1996

The purpose of the National Invasive Species Act of 1996 is to: (1) prevent unintentional introduction and dispersal of nonindigenous species in the waters of the U.S. through ballast water management and other requirements; (2) to coordinate federally funded or authorized research, prevention control, information dissemination, and other activities regarding the zebra mussel and other aquatic nuisance species; (3) to develop and carry out environmentally sound control methods to prevent, monitor, and control unintentional introductions of nonindigenous species from pathways other than ballast water exchange; (4) to understand and minimize economic and ecological impacts of nonindigenous aquatic nuisance species that become established, including zebra mussel; and (5) to establish a program of research and technology development and assistance to states in the management and removal of zebra mussels (ANS Task Force 2011). To comply with the act, the Proposed Action incorporates design features to minimize invasion of nonindigenous species and monitor the distribution network for effective prevention of their spread.

Native American Graves Protection and Repatriation Act of 1990

This repatriation act "describes the rights of Native American lineal descendants, Indian tribes, and Native Hawaiian organizations with respect to the treatment, repatriation, and disposition of Native American human remains, funerary objects, sacred objects, and objects of cultural patrimony, referred to collectively in the statute as cultural items, with which they can show a relationship of lineal descent or cultural affiliation" (NPS 1992).

Safe Drinking Water Act of 1974

This drinking water act gave the EPA the authority to set standards for drinking water quality in water delivered by public water suppliers. Analysis of water quality in the DSEIS indicates minor to no measurable changes from the existing conditions for the Proposed Action (EPA 2017b).

The Uniform Act of 1970

The Uniform Act is a federal law that "establishes minimum standards for federally funded programs and projects that require the acquisition of real property or displace persons from their homes, businesses, or farms. The Uniform Act's protections and assistance apply to the acquisition, rehabilitation, or demolition of real property for federal or federally funded projects.

Watershed Protection and Flood Prevention Act of 1954

This act, also known as PL 83-566, is a law that provides protection to watersheds from erosion, sedimentation, and flooding. Under this act, technical and financial assistance is provided to state and local governments through the NRCS to prevent erosion, floodwater, and sediment damage; to further the conservation, development, use, and disposal of water; and to further the conservation and proper use of land in authorized watersheds (NRCS n.d.).

7.0 Public Involvement

7.1 Agency Coordination

The NRCS is the lead federal agency and the USACE, the USDA RD, and the Federal Highway Administration are cooperating agencies. EPA, MDNR, MDC, and USFWS have provided assistance and guidance though conference calls and formal meetings. The formal meetings have followed a NEPA review plan agreed on by the group that determines the review process, timeframes, document distribution, and project schedule. The review process included the following steps:

1. Document submitted with track changes as needed.
2. Regulatory agencies provide written comments within 21 days.
3. Consultants review agency comments and provide a meeting agenda.
4. Formal meeting is held to discuss how best to address agency comments.
5. Consultants prepare and distribute meeting minutes.

Table 7.1-1 summarizes information on agency meetings and other coordination and approvals.

Table 7.1-1. Administrative Record.

Date	Record Type	What
1987	Report Published	Original East Locust Creek Watershed Plan-Environmental Assessment. (Included 49 additional small floodwater retarding structures but no multipurpose reservoir.)
1995	Report Published	Rhodes Engineering Company Inc. – Preliminary Engineering Report for North Central Missouri Regional Water Supply.
08-01-2003	Report Published	Burns & McDonnell Water System Feasibility Study – evaluated groundwater, four streams, four existing suppliers, and five reservoir locations. Recommended East Locust Creek Reservoir.
11-01-2003	Report Published	Burns & McDonnell Water System Master Plan – conceptual design of reservoir and review of environmental impacts.
05-20-2004	Report Published	Water Use Study of North Central Missouri Regional Water Commission – Report from Department of Natural Resources (DNR), resulted in increased firm yield requirement from 4.5 to 8.5 MGD.
09-22-2006	Regulatory Decision	Environmental Protection Agency (EPA) publishes a statement in the Federal Register (Volume 71, Issue 184) stating, "EPA's previous concerns have been resolved; therefore, EPA does not object to the proposed action." This is regarding the original Environmental Impact Statement (EIS) and the East Locust Creek Watershed Plan.
09-27-2006	Regulatory Decision	Notice of Intent (NOI) of the Record of Decision to proceed with the installation of the East Locust Creek Watershed Revised Plan was published. This revised plan provided for a firm yield of 7.0 million gallons of raw water per day.
01-01-2007	Report Published	East Locust Creek Watershed Revised Plan and EIS completed (NRCS 2006) – Reviewed the 2003 Water System Feasibility Study, concurring with its evaluation of 22 alternatives and its further consideration of eight of the alternatives and resulting recommendation for East Locust Creek Reservoir. Then, refined the alternatives analysis with a detailed analysis of four alternatives revolving around the proposed East Locust Creek Reservoir and small floodwater retarding structures.
05-19-2010	Meeting (Permitting)	Project team met with U.S. Army Corps of Engineers (USACE) district regulatory staff including Mark Frazier and state regulatory staff.

Date	Record Type	What
10-01-2010	Meeting (Permitting)	Allstate consultants and Brad Scott met informally with Jim Ptacek and Ward Lenz to discuss project status. Stream impact factor was first identified as a big issue at this meeting.
10-14-2010	Meeting (Permitting)	Allstate consultants met with USACE state regulatory staff in Jefferson City, Missouri, to discuss preliminary mitigation numbers.
11-18-2010	Meeting (Permitting)	The Project team met with EPA for a general project update and discussion.
11-18-2010	Meeting (Permitting)	Project team met with USACE Kansas City district in Kansas City, Missouri.
12-22-2010	Regulatory Decision	USACE notified the reservoir team that the Missouri Stream Mitigation Method linear impact factor can be based on the stream segment length instead of on the cumulative total of all affected lengths
03-21-2011	Meeting (Permitting)	Project team, Natural Resources Conservation Service (NRCS), and USACE met with Colonel Hoffman and left a list of 10 requests.
08-04-2011	Regulatory Decision	Email from Mark Frazier that contained responses to questions.
01-26-2012	Meeting (Permitting)	Project team, DNR, and USACE met in Jefferson City, Missouri, to introduce the project to Shelly Carter. Included in the discussion was the need for separate alternatives analysis for each purpose.
10-25-2013	Regulatory Decision	East Locust Creek Reservoir Preliminary Engineering Report approval letter from DNR.
03-07-2014	Meeting (Permitting)	East Locust Creek Reservoir and Little Otter Creek Reservoir teams, NRCS, Green Hills Regional Planning Commission, and DNR met with Colonel Sexton and Mark Frazier in Trenton, Missouri.
11-13-2014	Regulatory Decision	USACE signed letter agreeing to be a cooperating agency.
12-08-2014	Regulatory Decision	NOI to start the Draft Supplemental Environmental Impact Statement (DSEIS) process published in the Federal Register.
12-29-2014	Report Draft Submitted to Regulators	NRCS submitted first draft jurisdictional determination document on a 167-acre subarea.
02-04-2015	Report Draft Submitted to Regulators	Draft purpose and need section submitted to regulatory agencies (USACE, EPA, U.S. Fish and Wildlife Service [USFWS], DNR, etc.).
02-25-2015	Comments Received	USACE commented on purpose and need.
02-25-2015	Meeting (Permitting)	East Locust Creek Reservoir permitting meeting held with regulatory agencies.
03-31-2015	Meeting (Permitting)	Jurisdictional determination guidance meeting held with USACE and EPA
05-20-2015	Meeting (Permitting)	East Locust Creek Reservoir Draft SEIS (DSEIS) meeting held with agencies (MDNR, USFWS, EPA, USACE, and NRCS)
5-26 – 5-27-2015	Meeting (Permitting)	Project team and regulatory agencies (EPA, USACE) field check one region to refine jurisdictional determination process.
07-22-2015	Report Draft Submitted to Regulators	Revised purpose and need section, screening criteria section, and list of alternatives for consideration submitted to regulatory agencies.
08-06-2015	Meeting (Permitting)	East Locust Creek Reservoir permitting meeting with regulatory agencies scheduled, but then cancelled to allow more time for review.
08-14-2015	Regulatory Decision	Letter from U.S. Department of Agriculture (USDA) waived $341,000 payment in original NRCS contract for inundated PL-566 structures.
09-10-2015	Comments Received	Comments from USACE on DSEIS received.
09-15-2015	Regulatory Decision	Mark Frazier sent letter to Harold Deckerd regarding the coordination of reviews of DSEIS.

Date	Record Type	What
09-22-2015	Report Draft Submitted to Regulators	Project team submitted proposed DSEIS review plan to regulatory agencies.
09-25-2015	Meeting (Permitting)	East Locust Creek Reservoir permitting meeting held with regulatory agencies to discuss coordination.
09-25-2015	Comments Received	Received comments on the purpose and need from USACE. Comments questioned population projections.
10-08-2015	Comments Received	Received comments on the purpose and need from EPA. Comments questioned future demand projections.
10-13-2015	Comments Received	Comments received from EPA on purpose and need section of DSEIS.
01-07-2016	Report Draft Submitted to Regulators	Revised purpose and need section provided to regulatory agencies.
01-26-2016	Comments Received	Received comments on the purpose and need from USACE. Included objection to including “7 MGD” in the purpose.
02-08-2016	Regulatory Decision	Letter from Director of DNR, Sara Parker Pauley, to Brad Scott affirming the state’s support of the need for 7 MGD. (Copied to Colonel Sexton.)
02-26-2016	Comments Received	Received comments on the purpose and need from EPA. EPA requested we remove a specific quantity of water supply from the purpose statement.
02-29-2016	Meeting (Regulatory)	Aaron Ball and Jim Ptacek discussion.
03-24-2016	Meeting (Permitting)	Project team and agencies hold conference call to discuss USACE and EPA comments.
09-16-2016	Meeting (Permitting)	Project teams for East Locust Creek and Little Otter Creek reservoirs and various agencies met with Colonel Guttormsen.
09-19-2016	Meeting (Permitting)	Met with the U.S. Fish and Wildlife Service.
12-02-2016	Report Draft Submitted to Regulators	Revised purpose and need section provided to regulatory agencies.
01-09-2017	Comments Received	Received comments on the purpose and need from USACE. Comments revolve around declining population and potential alternatives for water supply.
01-18-2017	Comments Received	Received comments on the purpose and need from the EPA.
01-23-2017	Regulatory Decision	Preliminary Engineering Report approval extension granted by MDNR.
02-08-2017	Meeting (Permitting)	Teleconference to discuss agency comments with agencies (USACE, EPA, USFWS, NRCS, and MDNR). Project team informed to take the comments under advisement and move forward.
03-10-2017	Response to Regulatory Comments	North Central Missouri Regional Water Commission (NCMRWC) submitted responses to USACE and EPA comments to the NRCS. I have the letter on Commission letterhead, but not a confirmation of sending.
06-05-2017	Meeting (Permitting)	NRCS met with Colonel Guttormsen to discuss schedule for East Locust Creek Reservoir and Little Otter Creek projects. Agreed to consider revised schedule and submittal of East Locust Creek Reservoir DSEIS in its entirety instead of a piece at a time.
07-26-2017	Regulatory Decision	DNR Director Carol Comer sent letter of support affirming the need to design the reservoir for 7 MGD.
10-06-2017	Meeting (Permitting)	Project team met with USFWS to discuss fence clearing.
10-24-2017	Meeting (Permitting)	Project team met with USFWS and NRCS to discuss existing Indiana bat maternity roosts on Cunningham property.
01-18-2018	Comments Received	Comments received on DSEIS from NRCS.
04-11-2018	Meeting (Permitting)	Project team met with MDNR to discuss source water protection and mitigation.

Date	Record Type	What
04-16-2018	Regulatory Decision	USDA provided draft Letter of Conditions establishing conditions for gap funding of local share of costs.
07-31-2018	Comments Received	NRCS National Water Management Center provided comments to the project team on the East Locust Creek Reservoir DSEIS
08-23-2018	Regulatory Decision	DNR approved PER for East Locust Creek Reservoir.
10-04-2018	Report Draft Submitted to Regulators	Biological assessment submitted to USFWS.
11-14-2018	Report Draft Submitted to Regulators	DSEIS to submitted to agencies.
11-26-2018	Regulatory Decision	Letter of approval of multipurpose water resources fund plan.
11-27-2018	Regulatory Decision	USDA RD – Draft Letter of Conditions – updated
11-27-2018	Regulatory Decision	Missouri Department of Natural Resources (MDNR) approves of Source Water Protection Plan
01-28-2019	Report Draft Submitted to Regulators	DSEIS submitted to NRCS – added Rathbun letter
01-31-2019	Regulatory Decision	USFWS approved clearing for fences.
02-04-2019	Report Draft Submitted to Regulators	DSEIS submitted to agencies
03-01-2019	Comments Received	Received DSEIS comments from USACE.
04-16-2019	Comments Received	Received DSEIS comments from USFWS.
07-11-2019	Comments Received	Received additional comments on the draft biological assessment from USFWS.
10-11-2019	Regulatory Decision	NCMRWC approved resolution affirming commitment to meeting USFWS obligations.
10-23-2019	Report Draft Submitted to Regulators	Biological assessment submitted to USFWS.
12-04-2019	Comments Received	USFWS commented on biological assessment.
02-14-2020	Report Draft Submitted to Regulators	Biological assessment submitted to NRCS for distribution to USFWS.
02-28-2020	Report Draft Submitted to Regulators	Biological assessment and request for formal consultation sent to USFWS.
03-27-2020	Comments Received	Received comments from USFWS on the biological assessment indicating that USFWS needed a few more things before we can enter consultation.
04-07-2020	Meeting (Permitting)	Project team met with NRCS and USFWS to discuss biological assessment and consultation.
04-09-2020	Regulatory Decision	Federal Highway Administration (FHWA) became a cooperating federal agency for the DSEIS.
05-01-2020	Report Draft Submitted to Regulators	Biological assessment submitted to NRCS for distribution and USFWS for information.
05-12-2020	Report Draft Submitted to Regulators	DSEIS from NRCS to FHWA, Missouri Department of Transportation (MoDOT), USFWS, USACE, USDA-RD, and EPA

Date	Record Type	What
05-20-2020	Report Draft Submitted to Regulators	Missing appendices from 2020-05-12 DSEIS sent to agencies.
05-27-2020	Comments Received	EPA comments received on DSEIS.
05-28-2020	Meeting (Permitting)	Met with NRCS and USACE to discuss DSEIS, mitigation, and construction access.
6-10-2020	Comments Received	Received USFWS comments on the biological assessment.
6-11-2020	Comments Received	Comments received from USACE.
6-16-2020	Meeting (Permitting)	Project team met with USACE to discuss DSEIS and alternatives analysis.
6-16-2020	Meeting (Permitting)	Project team met with USACE to discuss mitigation.
8-07-2020	Meeting (Permitting)	Project team met with with Colonel Hannan (USACE), NRCS, and Senator Roy Blunt's staff to provide Colonel Hannan an overview of the project and discuss permitting.
8-13-2020	Report Published	Final biological assessment sent to NRCS, USDA-RD, and USFWS.
8-19-2020	Report Draft Submitted to Regulators	DSEIS submitted to USACE.
08-19-2020	Report Draft Submitted to Regulators	Updated DSEIS submitted to USACE.
08-21-2020	Meeting (Permitting)	Project team met with NRCS and USACE to discuss permitting and construction access.
08-27-2020	Meeting (Permitting)	Project team met with NRCS and USACE Planning and Regulatory Division to discuss Garden of Eden mitigation project modelling.
09-07-2020	Meeting (Permitting)	Project team met with MDNR and NRCS to give an update on the mitigation plan and 401 certification.
10-01-2020	Meeting (SEIS)	Project team met with EPA to discuss their comments on the SEIS.
10-23-2020	Notice of Availability	Notice of availability published on the federal register.
10-23-2020	Final Biological Opinion	Final biological opinion received from USFWS.
11-02-2020	Comments Received	Comments received from USDA RD.
11-10-2020	Public Hearing	NRCS, USACE, NCMRWC, Olsson, and Allstate held a public hearing to address questions and receiving comments on the SEIS and 404 permit application.
11-12-2020	Meeting (SEIS)	Project team met with NRCS and USDA RD to discuss their comments on the SEIS.
11-30-2020	Comments Received	Comments received from EPA.
12-02-2020	Meeting (SEIS)	Project team met with NRCS and EPA to discuss their comments on the SEIS.

The agencies have reviewed portions of the DSEIS during development and at completion and have provided written comments and/or oral comments during formal meetings. Formal meetings began in 2015, and they included discussions on the DSEIS document, wetland delineation methodology, and endangered species.

7.2 Public Involvement

The 2006 FEIS included a public planning process, which involved public meetings, scoping meetings, formation of a steering committee comprised of local residents, print media coverage of project activities, and coordination with relevant agencies and groups. No significant unresolved issues or controversies from the public remain following this public planning process. Copies of the DSEIS are provided to federal, state, and local government agencies, environmental and

public interest groups, potentially affected landowners, other interested individuals and nongovernmental organizations, and to libraries in the project area. In addition, the DSEIS is available for public viewing on the NCMRWC website (NCMRWC 2017) and the Missouri NRCS website (NRCS 2020).

7.3 Comments on the Notice of Intent

The 2014 NOI states that "the NRCS invites full public participation to promote open communication and better decision-making. All persons and organizations with an interest in the [project] are urged to comment. Public comments are welcomed and opportunities for public participation include submitting comments to NRCS (1) during the development of the DSEIS; (2) during the review and comment period upon publishing the DSEIS; and (3) for 30 days after publication of the Final SEIS. Distribution of the comments received would be included in the Administrative Record without change and may include any personal information provided, unless the commenter indicates that the comment includes information claimed to be confidential business information.

7.4 Public Review and Comments on the Draft Supplemental Environmental Impact Statement (DSEIS)

This DSEIS is planned to be available for public review in 2020. The DSEIS will be available online and hard copies will be available in county offices and local libraries.

7.5 Intended Uses of the Draft Supplemental Environmental Impact Statement (DSEIS)

The purpose of the DSEIS is to address changes that have occurred since the NRCS prepared the East Locust Creek Watershed Revised Plan and Environmental Impact Statement in 2006 and to specifically address requirements of the CWA Section 404(b)(1) guidelines.

7.6 Document Recipients

See section 10.0 – Distribution List

7.7 Elected Officials and Representatives

U. S. Senator Roy Blunt
260 Russell Senate Office Building
Washington, D.C. 20510

U. S. Senator Josh Hawley
212 Russell Senate Office Building
Washington, D.C. 20510

U. S. Representative Sam Graves, Sixth Congressional District
1415 Longworth HOB
Washington, D.C. 20515

Missouri Senator Dan Hegeman, 12th District
201 W. Capitol Avenue, Room 332
Jefferson City, Missouri 65101

Missouri Senator Cindy O'Laughlin, 18th District
201 W. Capitol Avenue, Room 226
Jefferson City, Missouri 65101

Missouri Senator Denny Hoskins, 21st District
201 W. Capitol Avenue, Room 323
Jefferson City, Missouri 65101

Missouri Representative Danny Busick, Third District
201 W. Capitol Avenue, Room 115-B
Jefferson City, Missouri 65101

Missouri Representative Greg Sharpe, Fourth District
201 W. Capitol Avenue, Room 203-C
Jefferson City, Missouri 65101

Missouri Representative Tim Remole, Sixth District
201 W. Capitol Avenue, Room 408A
Jefferson City, Missouri 65101

Missouri Representative Rusty Black, Seventh District
201 W. Capitol Avenue, Room 114-B
Jefferson City, Missouri 65101

Missouri Representative Peggy McGaugh, 39th District
201 W. Capitol Avenue, Room 409B
Jefferson City, Missouri 65101

Missouri Representative Dave Muntzel, 48th District
201 W. Capitol Avenue, Room 317B
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8.0 References

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1.0 Introduction and Purpose and Need

2.0 Alternatives Analysis

3.0 Affected Environment and Predicted Environmental Consequences

4.0 Cumulative and Growth-Inducing Effects

5.0 Comparison of Alternatives and Mitigation

6.0 Compliance and Consultation with Applicable Laws, Policies, and Plans

7.0 Public Involvement

8.0 References

9.0 List of Preparers

10.0 Distribution List

9.0 List of Preparers

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Olsson

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Joan Darling	Technical Leader	PhD Biology, 1976
Marshall Davis	Assistant Engineer	BS Environmental Engineering, 2014
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1.0 Introduction and Purpose and Need

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7.0 Public Involvement

8.0 References

9.0 List of Preparers

10.0 Distribution List

10.0 Distribution List

10.1 Federal Agencies

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Federal Highway Administration-Missouri Division
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Jefferson City, Missouri 65109

Environmental Protection Agency, Region 7
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Lenexa, Kansas 66219

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Jefferson City, Missouri 65101

Missouri Department of Conservation
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Jefferson City, Missouri 65109

Missouri Department of Economic Development
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Jefferson City, MO 65101

Missouri State Historic Preservation Office
P.O. Box 176
Jefferson City, Missouri 65102

Missouri Department of Transportation
P.O. Box 270
Jefferson City, MO 65101

10.3 Local Units of Government

Adair County Circuit Clerk
106 W. Washington Street, No. 2
Kirksville, Missouri 63501

Chariton County Courthouse
306 S. Cherry Street
Keytesville, Missouri 65261

Grundy County Courthouse
700 Main Street
Trenton, Missouri 64683

Linn County Clerk
108 S. High Street
Linneus, Missouri 64653

Livingston County Courthouse
700 Webster Street
Chillicothe, Missouri 64601

Macon County Clerk
101 E. Washington Street, No.1
Macon, Missouri 63552

Mercer County Circuit Clerk
802 E. Main Street
Princeton, Missouri 64673

Putnam County Circuit Court
1601 Main Street, No.101
Unionville, Missouri 63565

Schuyler County Circuit Clerk
1 Courthouse Square
Lancaster, Missouri 63548

Sullivan County
County Clerk's Office
109 N. Main Street, No. 20
Milan, Missouri 63556

10.4 Local Libraries

Sullivan County Public Library
109 E. Second Street
Milan, Missouri 63556

10.5 Elected Officials

U.S. Senator Roy Blunt
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