Appendix E:
Aquatic and Ecological Resources

Aquatic and Ecological Resources Report

The MDC and USFWS correspondence was removed to avoid duplication. It is included in Appendix E of the EA report.

Aquatic and Ecological Resources Report

St. Louis Lambert International Airport
Consolidated Terminal Program Project
St. Louis, St. Louis County, Missouri

CMT Job Number: 22004919.00

DATE: MARCH 22, 2024

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APPENDICES

1.0 SUMMARY

This report has been prepared at the request of the St. Louis Lambert International Airport (STL). The purpose of this report is to describe the wetlands and other regulated surface water resources located within the study area for the proposed airport improvements at STL in St. Louis, Missouri.

The Clean Water Act defines wetlands as "those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soils." Thus, in accordance with the 1987 Corps of Engineers Wetlands Delineation Manual and the Midwest Regional Supplement, for an area to be considered a wetland, it must meet all of the following criteria, under normal circumstances: wetland hydrology, a dominance of hydrophytic vegetation, and hydric soils.

As summarized in the table below, eight (8) streams and one (1) wetland were identified within the study area. We anticipate that six (6) of these streams are subject to regulation under the Clean Water Act and therefore, impacts to these resources would require 404 authorization from the US Army Corps of Engineers (USACE) and a 401 water quality certification from the Missouri Department of Natural Resources.

Suitable habitat for the federally-listed Indiana bat (*Myotis sodalis*), Northern long-eared bat (*Myotis septentrionalis*), and tricolored bat (*Perimyotis subflavus*) are present within the project area. Any proposed work on-site should avoid impacts to these species or their habitat. The project is anticipated to result in up to 3.9 acres of tree clearing. Consultation with USFWS under Section 7 of the Endangered Species Act will be required if impacts to these species or their habitats occur.

WATER RESOURCES				
RESOURCE	TYPE	EXISTING CONDITION	PRELIMINARY JURISDICTIONAL STATUS*	WITHIN STUDY AREA
UNT 1	Perennial	Functionally Impaired	Federally Jurisdictional (a)(3)(i)	389.1 linear feet, 0.09 acre
UNT 2	Perennial	Functionally Impaired	Federally Jurisdictional (a)(3)(i)	15.9 linear feet, 0.002 acre
UNT 3 – Natural Portion	Perennial	Moderately Functional	Federally Jurisdictional (a)(3)(i)	820.4 linear feet, 0.18 acre
UNT 3 – Concrete Portion	Perennial	Functionally Impaired	Federally Jurisdictional (a)(3)(i)	1,151 linear feet, 0.26 acre
UNT 4	Ephemeral	Functionally Impaired	Non-Jurisdictional	60.7 linear feet, 0.005 acre
UNT 5	Perennial	Functionally Impaired	Federally Jurisdictional (a)(3)(i)	367.9 linear feet, 0.03 acre
UNT 6	Intermittent	Functionally Impaired	Federally Jurisdictional (a)(3)(i)	32.6 linear feet, 0.002 acre
UNT 7	Ephemeral	Functionally Impaired	Non-Jurisdictional	1,694.2 linear feet, 0.14 acre
Coldwater Creek	Perennial	Moderately Functional	Federally Jurisdictional (a)(3)(i)	2,827 linear feet, 2.98 acre
Wetland A	Emergent	Impaired	Possibly exempt	0.01 acre

*based on the revised definition of "Waters of the United States" (40 CFR 230.3(s))

2.0 METHODOLOGY

2.1 STREAMS

The on-site evaluation of the study area was conducted during a site visit on May 23 and 24, 2023, January 31, 2024, and March 20, 2024. Streams were evaluated for their jurisdictional status based on the revised definition of waters of the United States (40 CFR 230.3(s)), which requires the presence of an ordinary high water mark (OHWM) and the stream to be a perennial, intermittent or ephemeral tributary with ultimate connection to downstream Section 10 Traditional Navigable Waters (TNW).

The following USACE definitions for the three stream types were used:

> **Ephemeral streams** have flowing water only during, and for a short duration after, precipitation events in a typical year. Ephemeral stream beds are located above the water table year-round. Groundwater is not a source of water for the stream. Runoff from rainfall is the primary source of water for stream flow.
>
> **Intermittent streams** have flowing water during certain times of the year, when groundwater provides water for stream flow. During dry periods, intermittent streams may not have flowing water. Runoff from rainfall is a supplemental source of water for stream flow.
>
> **Perennial Streams** have flowing water year-round during a typical year. The water table is located above the stream bed for most of the year. Groundwater is the primary source of water for stream flow. Runoff from rainfall is a supplemental source of water for stream flow.

The determination of stream designation is based on an evaluation of the size of the watershed for each stream, the presence of flow during the on-site evaluation and the evidence observed of the frequency of flow, and the presence of aquatic life. In addition to flow regime, streams were also classified according to existing conditions and rated either fully functional, moderately functional, or functionally impaired, based on the definitions in the State of Missouri Stream Mitigation Method (MSMM).

2.2 WETLANDS

When evaluating for the presence of wetlands, CMT personnel used the routine method presented in the 1987 Corps of Engineers Wetlands Delineation Manual and the Midwest Regional Supplement. In order for an area to be classified as a jurisdictional wetland, the area has to have a dominance of hydrophytic vegetation, hydric soils, and wetland hydrology and be an adjacent wetland as defined by the revised definition of waters of the United States (40 CFR 230.3(s)). The specific indicators used for each of the three parameters are noted in the following paragraphs.

2.2.1 HYDROPHYTIC VEGETATION

According to Tiner (2012), a hydrophyte is a vascular plant that grows in water or on a substrate that is saturated at a frequency and duration during the growing period sufficient to affect plant occurrence. Using this definition, the U.S. Fish and Wildlife Service released the National

Wetland Plant List. This list categorizes species according to their probability of occurrence in wetlands based on the ecological region. The list identifies five general plant indicator status categories:

- Obligate (OBL): almost always is a hydrophyte, rarely in uplands
- Facultative Wetland (FACW): Usually is a hydrophyte but occasionally found in uplands
- Facultative (FAC): Commonly occurs as either a hydrophyte or non-hydrophyte
- Facultative Upland (FACU): Occasionally is a hydrophyte but usually occurs in uplands
- Obligate Upland (UPL): Rarely is a hydrophyte, almost always in uplands

In order to satisfy the hydrophytic vegetation criteria required for a jurisdictional wetland, the area had to be dominated (over 50 percent) by obligate wetland plants, facultative wetland plants and facultative plants.

The method used during this survey for determining vegetation dominance was the 50/20 method. Using this method, plant species in each stratum are ranked according to their percent aerial cover and then cumulatively summed until 50 percent of the total dominance measure is exceeded. All species contributing to that cumulative total plus any additional species that have at least 20 percent of the total dominance measure are considered dominants in their respective stratum.

2.2.2 HYDRIC SOIL

Hydric soil is soil formed under conditions of saturation, flooding or ponding long enough during the growing season to develop anaerobic conditions in the upper part. The concept of hydric soils includes soils developed under sufficiently wet conditions to support the growth and regeneration of hydrophytic vegetation. Hydric soil indicators include the presence of histosols, histic epipedons, reducing conditions, gleyed or low chroma soil colors and high organic content or organic streaking in sandy soil. An additional hydric soil indicator was used if the mapped and confirmed soil type appears on the local or national hydric soils list.

2.2.3 WETLAND HYDROLOGY

Wetland hydrology is defined as an area that is inundated or saturated at or near the surface for at least five percent of the growing season in most years. This can include areas that are ponded, flooded or those areas that have a water table at or near the surface. Indications of wetland hydrology included surface water, saturation, evidence of drift deposits, iron deposits or drainage patterns, and inundation. Water-stained leaves, oxidized root channels within 12 inches below ground surface on living plants, the FAC neutral test and local soil survey data were also used to indicate wetland hydrology.

2.2.4 WETLAND LOCATION

The wetland boundaries were surveyed using a handheld GPS device with sub-meter accuracy. The wetland boundaries with the wetland and upland data point locations are found on the Water Resource Maps in Appendix A.

2.2.5 WETLAND QUALITATIVE ASSESSMENT

The wetland plant community was evaluated using the Floristic Quality Index (FQI).

The FQI is an index derived from floristic inventory data and is calculated from the number of species that occur in the plant community, as well as the species coefficient of conservatism (C) values. C-values are assigned to individual plant species. The higher the C-value is, the more likely a plant is from a minimally altered landscape. Low C-values are assigned to weeds, or species that can exist in a wide range of conditions. An area of high natural quality would include conservative native plants that are adapted to a specialized community context and would have a mean C-value of 5 or greater. The aggregate conservatism of all the plants inhabiting a site is used to determine its FQI.

The general classifications of the vegetative communities are made based on the FQI scores.

FQI	Classification
0-5	severely degraded
5-10	degraded
10-20	moderately degraded
20 +	high quality

The wetlands were also classified according to existing conditions and rated either fully functional, functional, moderately functional, or functionally impaired, based on the definitions in the State of Missouri Wetland Mitigation Method (MWMM).

2.3 OTHER SURFACE WATER RESOURCES

Other surface water resources include features such as lakes/ponds, drainage swales, and ditches. Evaluation of other surface water resources was based on the presence of an ordinary high-water mark (OHWM), flow regime, and/or on their jurisdictional status.

2.4 THREATENED AND ENDANGERED SPECIES

The project study area was observed for suitable threatened and endangered species habitat. The habitats present were searched for suitability and the presence of species. The known or historic range of federally endangered or threatened species within the study area was determined by reviewing the United States Fish and Wildlife Service (USFWS) Information for Planning and Consultation (IPaC) species list and the Missouri Department of Conservation (MDC) Natural Heritage Review generated for the project study area.

3.0 BACKGROUND INFORMATION

3.1 PROJECT DESCRIPTION

The Consolidated Terminal Program (CTP) project includes constructing a new consolidated terminal with up to 62 gates in the location of the existing Terminal 1 location at the St. Louis Lambert International Airport (STL). The proposed project involves modifying the core terminal processor, relocating the terminal support facilities, new landslide configuration, new consolidated receiving and distribution facility, new ground transportation center, proposed surface parking, remain overnight parking and parking garage, constructing a new east deicing pad, and the full enclosure of a portion of Coldwater Creek running through the project area.

The project is intended to accommodate the demand for airport traffic to and from a single terminal. The project will provide a new terminal roadway with the optimal length from interstate to terminal while minimizing changes needed to existing interstate facilities. The primary impact of the project is the redistribution of traffic from the Airflight Drive interchange to the Cypress Road interchange. In order to accommodate the redistribution of traffic, a continuous auxiliary lane is proposed in the westbound direction of I-70 from the Airflight Drive entrance ramp to the Cypress Road exit ramp while closing the existing westbound I-70 on ramp from Lambert International Boulevard. Additional changes are proposed at the MO 115 and I-70 westbound intersection to the west of Cypress Road. Two left turns are recommended westbound, extending to the intersection at Cypress Road. Additionally, adding a second lane to the I-70 Cypress Road entrance is recommended. Construction is anticipated to begin in 2025 and be completed by the end of 2027.

FIGURE 1 – STUDY AREA

3.2 PROJECT LOCATION

The proposed project is located approximately 13 miles northwest of downtown St. Louis in unincorporated St. Louis County, Missouri. Per the USGS Saint Charles, Florissant, Creve Coeur, and Clayton Quadrangle Maps, the study area is situated within Sections 5 and 28, Township 46 North, and Range 6 East. Per the Missouri public land survey system, the study area is also situated within Land Grant 1196, Land Grant 2625, Land Grant 1993, Land Grant 2524, and Land Grant 1250 associated with the Marais des Liards Common Field land grant. The land use around the project area is primarily airport facilities and infrastructure, commercial, and residential.

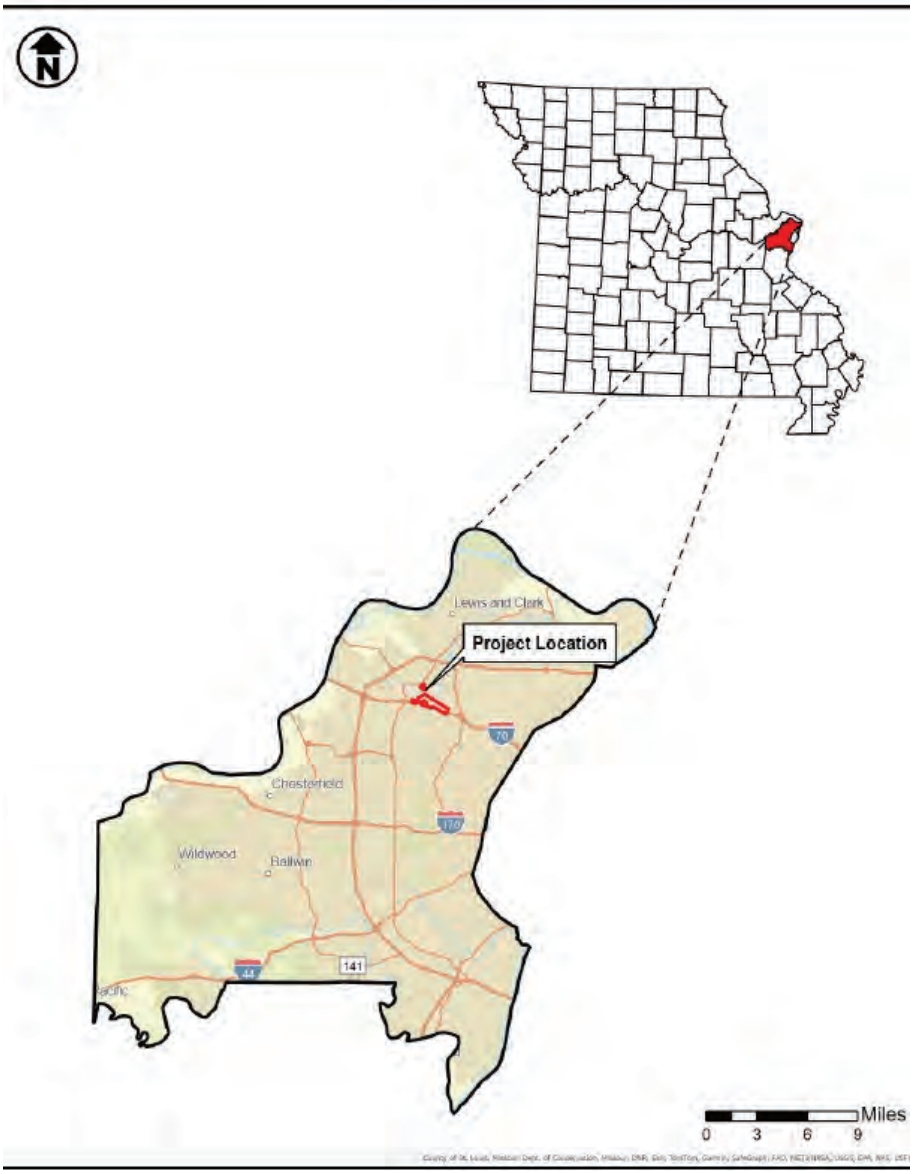

FIGURE 2 – COUNTY LOCATION MAP

3.3 HISTORICAL OR PUBLISHED INFORMATION

The project is located within the Headwaters Coldwater Creek watershed (12-digit hydrologic unit code 103002000802).

According to the National Hydrography Dataset (NHD), National Wetlands Inventory (NWI) map, and USGS topographic maps, three streams are located within the study area. The NWI map indicates three riverine features within the study area.

According to the Missouri Department of Natural Resources 2020 Section 303 (d) Listed Waters, Coldwater Creek has been listed as impaired for chloride from urban runoff and storm sewers. Coldwater Creek is a tributary to the Missouri River, a TNW.

The St. Louis County Soil Survey indicates the following soils are present within the study area.

- 99023 – Urban land, upland, 0 to 5 percent slopes
- 60025 – Urban land-Harvester complex, 2 to 9 percent slopes
- 68001 – Fishpot-Urban land-Freeburg complex, 9 to 20 percent slopes
- 60191 – Menfro-Urban land complex, 9 to 20 percent slopes
- 60223 – Urban land-Harvester complex, 9 to 20 percent slopes

According to the St. Louis County Hydric Soils List, none of these soils are hydric.

According to the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM), most of the study area is located within the FEMA Flood Zone X, which corresponds to areas of minimal flood risk. The southwestern portion of the study area is located within FEMA Flood Zone AE, which corresponds to the 1% annual chance of a flood with base flood elevations. This flood zone is the FEMA designated 100-year floodplain for Coldwater Creek. Additionally, the southwestern portion of the study area is located within the 0.2% annual chance flood hazard zone, which corresponds to areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile.

There is a new Preliminary FEMA FIRM map, which is planned to be published in 2024. These floodplain and floodway limits differ from the existing FEMA FIRM limits. Both maps are included in Appendix A for reference. According to the Preliminary FEMA FIRM, most of the study area is located within the FEMA Flood Zone X, which corresponds to areas of minimal flood risk. The western portion of the study area is located within FEMA Flood Zone AE, which corresponds to the 1% annual chance of a flood with base flood elevations. This flood zone is the FEMA designated 100-year floodplain for Coldwater Creek and is a designated regulatory floodway. Additionally, the western portion of the study area is located within the 0.2% annual chance flood hazard zone, which corresponds to areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile.

Copies of the NWI map, flood zone map, Natural Resources Conservation Service (NRCS) soils map, NHD map, and the relevant portions of the St. Louis County Soil Survey are included in Appendix A.

4.0 RESULTS

Eight (8) streams and one (1) wetland were identified in the study area during the onsite investigation on May 23 and 24, 2023, January 31, 2024, and March 20, 2024. The Ecological Resources Maps, provided in Appendix A, depict the location of the resources on an aerial photograph. Data forms and Floristic Quality Index (FQI) results are provided in Appendix B. Representative photographs are provided in Appendix C.

4.1 STREAMS

A total of eight (8) streams were identified within the study area. A summary of these streams is provided in the table below.

STREAM SUMMARY								
Stream Name	Receiving Waters	Preliminary USACE Jurisdictional Status	Stream Type	Drainage Area[1] (Sq.Mile)	MSMM[2] Assessment		Linear Feet within Study Area	Acres within Study Area
					Priority Waters	Existing Condition		
UNT 1	UNT 1 > Coldwater Creek	Federally Jurisdictional (a)(3)(i)	Perennial	1.1	Tertiary Priority	Functionally Impaired	389.1	0.09
UNT 2	UNT 2> Coldwater Creek	Federally Jurisdictional (a)(3)(i)	Perennial	0.065	Tertiary Priority	Functionally Impaired	15.9	0.002
UNT 3 - Natural Portion	UNT 3> Coldwater Creek	Federally Jurisdictional (a)(3)(i)	Perennial	0.52	Tertiary Priority	Moderately Functional	820.4	0.19
UNT 3 - Concrete Portion	UNT 3> Coldwater Creek	Federally Jurisdictional (a)(3)(i)	Perennial	0.52	Tertiary Priority	Moderately Functional	1151.0	0.26
UNT 4	UNT 4> UNT 3 > Coldwater Creek	Non-Jurisdictional	Ephemeral	<0.01	Tertiary Priority	Functionally Impaired	60.7	0.005
UNT 5	UNT 5> Coldwater Creek	Federally Jurisdictional (a)(3)(i)	Perennial	0.04	Tertiary Priority	Functionally Impaired	367.9	0.03
UNT 6	UNT 6> Coldwater Creek	Federally Jurisdictional (a)(3)(i)	Intermittent	0.06	Tertiary Priority	Functionally Impaired	32.6	0.002
UNT 7	UNT 7> Coldwater Creek	Non-Jurisdictional	Ephemeral	0.04	Tertiary Priority	Functionally Impaired	1694.2	0.14
Coldwater Creek	Coldwater Creek> Missouri River	Federally Jurisdictional (a)(3)(i)	Perennial	8.6	Seconday Priority	Moderately Functional	2827.0	2.98
						Total	7358.8	3.70

[1]As calculated by USGS Stream Stats at most downstream location within the study area.
[2]MSMM - Missouri Stream Mitigation Method

As indicated in the table above, UNT 1 is a perennial tributary, which flows to Coldwater Creek and ultimately the Missouri River, a TNW, and is likely federally jurisdictional as defined by (a)(3)(i) of the 2023 Revised Definition of "Waters of the United States" Rule. Within the study area, UNT 1 has predominantly gravel and sand substrate with flowing water observed during the site visit. The UNT 1 riparian buffer consists of scrub-shrub vegetation on both sides of the stream. Nuisance odors and oil sheens were observed in the stream. Approximately 347.7 linear feet of UNT 1 is captured by culverts through the study area.

UNT 2 is a perennial tributary, which flows to Coldwater Creek and ultimately the Missouri River, a TNW, and is likely federally jurisdictional as defined by (a)(3)(i) of the 2023 Revised Definition of "Waters of the United States" Rule. Within the study area, UNT 2 is predominantly artificial concrete substrate with flowing water observed during the site visit. UNT 2 originates from a concrete culvert and has nuisance algae throughout. There is no riparian buffer on either side of UNT 2.

UNT 3 is a perennial tributary, which flows to Coldwater Creek and ultimately the Missouri River, a TNW, and is likely federally jurisdictional as defined by (a)(3)(i) of the 2023 Revised Definition of "Waters of the United States" Rule. UNT 3 was evaluated in two sections, UNT 3 – Natural Portion and UNT 3 – Channelized Portion, due to differing geomorphology characteristics in these sections. Within the study area, UNT 3 – Natural Portion has predominantly cobble and silt substrate with slow flowing water within the study area. UNT 3 – Concrete Portion has predominately artificial concrete substrate with slow flowing water within the study area. The UNT 3 – Natural Portion and the UNT 3-Concrete Portion riparian buffers consist of scrub-shrub vegetation with scattered immature trees on both sides of the stream. Nuisance odors, nuisance algae, litter, and oil sheens were observed in both sections of the stream. Foam and minnows were observed in the UNT 3 - Natural Portion. Approximately 413.9 linear feet of UNT 3 – Natural Portion are captured by culverts through the study area.

UNT 4 is an ephemeral tributary, which flows through a detention basin into SF 7, into a detention basin inlet, which flows to UNT 3, which flows to Coldwater Creek and ultimately the Missouri River, a TNW. UNT 4 is likely non-jurisdictional based on its ephemeral flow. Within the study area, UNT 4 has predominantly leaf pack and fine detritus substrate with slow flowing water observed during the site visit. UNT 4 is located within a detention basin with a mowed grass vegetation buffer on both sides of the stream. Nuisance algae and litter were observed within the stream.

UNT 5 is a perennial tributary, which flows to Coldwater Creek and ultimately the Missouri River, a TNW, and is likely federally jurisdictional as defined by (a)(3)(i) of the 2023 Revised Definition of "Waters of the United States" Rule. There are narrowleaf cattails in the stream with flowing water observed during the site visit. Within the study area, UNT 5 has predominantly silt and fine detritus substrate. The UNT 5 buffer consists of scrub-shrub vegetation with scattered immature trees within the upstream portion of the stream and a mown grass buffer along both sides of the stream within the downstream portion of the stream. Nuisance algae, oil sheen, and litter were observed in the stream.

UNT 6 is an intermittent tributary, which originates at an existing culvert outlet and flows into two existing culvert inlets, which ultimately flows to Coldwater Creek and ultimately the Missouri River, a TNW, and is likely federally jurisdictional as defined by (a)(3)(i) of the 2023 Revised Definition of "Waters of the United States" Rule. SF 9 drains into UNT 6. There are narrowleaf

cattails in the stream with slow flowing water observed during the site visit. Within the study area, UNT 6 has predominantly gravel substrate. The UNT 6 buffer consists of upland vegetation and mowed grass vegetation on both sides of the stream. Foam and litter were observed in the stream.

UNT 7 is an ephemeral tributary, which flows to Coldwater Creek and ultimately the Missouri River, a TNW. UNT 7 is likely non-jurisdictional based on its ephemeral flow. There are narrowleaf cattails in the stream with standing water with scattered dry spots observed during the site visit. Within the study area, UNT 7 has predominantly silt and fine detritus substrate. The UNT 7 buffer consists of mostly mowed grass vegetation and scrub-shrub vegetation in the upstream area on both sides of the stream. Litter was observed in the stream.

Coldwater Creek is a perennial tributary of the Missouri River, a TNW, and is likely federally jurisdictional as defined by (a)(3)(i) of the 2023 Revised Definition of "Waters of the United States" Rule. Within the study area, Coldwater Creek is predominantly cobble and hardpan substrate. There are narrowleaf cattails in the stream with flowing water observed during the site visit. The riparian buffer is scrub-shrub vegetation with broken concrete on both sides of the stream. The STL airfield is located beyond the riparian buffer on both sides of the stream. Approximately 241.8 linear feet of Coldwater Creek are captured by culverts through the study area. Within the study area, Coldwater Creek flows into existing double culverts of unknown length on the airport property, which then outlet off airport property and outside the study area.

The Water Resources Maps in Appendix A show the location of the streams in the study area. Representative photographs are provided in Appendix C, and the Stream Stats reports for UNT 1, UNT 2, UNT 3, UNT 6, UNT 7, and Coldwater Creek are provided in Appendix B. The remaining streams drainage areas were estimated based on inferred watershed areas using the USGS topographic map.

4.2 WETLANDS

One (1) wetland was identified in the study area. A summary of the wetland data is provided in the table below. Details on the soil, hydrology and dominant vegetation for each wetland are provided on the Routine Wetland Determination Data Forms included in Appendix B, along with the floristic quality assessment data. Representative photographs of the wetland are provided in Appendix C.

Additional areas exhibiting wetland characteristics were identified in the study area, but were completely confined to the limits of the ordinary high water mark of the streams and therefore were not evaluated as wetlands.

WETLAND SUMMARY									
Wetland ID	Location	Connection to Downstream TNW	Preliminary USACE Jurisdictional Status	Wetland Type	MWMM		Floristic Quality Assessment		Acres within Study Area
					Aquatic Resource Type	Existing Condition	FQI / Mean C Value	Functional Classificaiton	
Wetland A	Located in western portion of the study area	Wetland A> Drainage swale> Catch basin> Coldwater Creek	Possibly exempt	Emergent	Type C	Impaired	4/2.3	Severely degraded	0.01
								TOTAL	0.01
MWMM - Missouri Wetland Mitigation Method									

WETLAND A

Wetland A is an incidental emergent wetland feature located within a constructed roadside ditch in the western portion of the study area. The roadside ditch appears to have been constructed in an upland area in non-hydric soils. The wetland boundary is confined to the original constructed ditch configuration. Based on historic aerial imagery and topographic maps, there is no evidence of historic drainage or wetland features at this location. This wetland drained northeast to a swale that drains into a catch basin which eventually drains into Coldwater Creek, indicating the wetland has an ultimate connection to the Missouri River, a TNW. Although Wetland A has an ultimate connection to a TNW, it is possibly exempt from federal regulation because it is an incidental feature in a constructed roadside ditch. The final determination of jurisdictional waters is ultimately made by the USACE.

A Floristic Quality Index (FQI) was completed for Wetland A. The native mean C-value for Wetland A is 2.3, indicating that the plant community is considered severely degraded. The native FQI for Wetland A is 4, indicating that the plant community is severely degraded.

INCIDENTAL WETLAND FEATURES WITHIN CONSTRUCTED STORMWATER BASINS

Two incidental wetland features within constructed stormwater detention basins were identified within the study area.

One basin (photolog #29-30), located in the western portion of the study area, was constructed in the late 1980s-mid 1990s in what appears to have been upland area in non-hydric soils. Based on historic aerial imagery and topographic maps, there is no evidence of historic drainage or wetland features at this location. This feature drained south into a pipe that eventually drains into Coldwater Creek, indicating the feature has an ultimate connection to the Missouri River, a TNW. Although the feature has an ultimate connection to a TNW, it is non-jurisdictional because it is an incidental feature in a constructed stormwater basin.

Another basin (photolog #88-90), located in the eastern portion of the study area, was constructed in the late 1980s-mid 1990s in what appears to have been upland area in non-hydric soils. Based on historic aerial imagery and topographic maps, there is no evidence of

historic drainage or wetland features at this location. This feature drained southwest into a pipe that eventually drains into Coldwater Creek, indicating the feature has an ultimate connection to the Missouri River, a TNW. Although the feature has an ultimate connection to a TNW, it is non-jurisdictional because it is an incidental feature in a constructed stormwater basin.

UPLAND DATA POINT B2

Upland point B2 was taken on a terrace inside of an I-70 ramp near UNT 5, to determine the presence or absence of wetlands. The vegetation was dominated by Johnson grass (*Sorghum halepense*, FAC, 20%) and giant foxtail (*Setaria faberi,* FACW, 60%) in the herbaceous layer. The vegetative community had a dominance test of >50%; therefore, the vegetation is hydrophytic. The soil at this site was loamy/clayey and failed to meet any hydric soil indicators. Wetland hydrology indicators were observed, including surface water, high water table, saturation, saturation visible on aerial imagery, and FAC-Neutral test. Only two of the three wetland criteria were met; therefore, data point B2 is not within a wetland.

4.3 OTHER SURFACE WATER RESOURCES

Sixteen (16) other surface water features (SFs) were identified in the study area. SFs 1-6 and 9-10 are constructed, cement-lined stormwater features, and are likely not federally jurisdictional. SF 7 is a vegetated, ephemeral swale feature located in a detention basin. UNT 4 flows into SF 7. SF 8 is a vegetated, ephemeral swale feature that drains Wetland A. SFs 11-13 are constructed, cement-lined stormwater features that have wetland vegetation within the feature, and are likely not federally jurisdictional. SF 14 is a riprap and gravel-lined stormwater feature and is not likely federally jurisdictional. SFs 15 and 16 are vegetated, ephemeral swale features that drain into UNT 7. All the other surface water features are likely not federally jurisdictional since they did not exhibit a continuous, defined OHWM and only carry or hold water during or for a short duration after storm events or are constructed stormwater features.

SURFACE FEATURES SUMMARY			
Feature Name	Substrate	Preliminary USACE Jurisdictional Status	Linear Feet within Study Area
SF 1	Cement	Likely not jurisdictional	7.6
SF 2	Cement	Likely not jurisdictional	49.6
SF 3	Cement	Likely not jurisdictional	23.2
SF 4	Cement	Likely not jurisdictional	26.9
SF 5	Cement	Likely not jurisdictional	40.7
SF 6	Cement	Likely not jurisdictional	5.2
SF 7	Vegetation	Likely not jurisdictional	48.0
SF 8	Vegetation	Likely not jurisdictional	73.7
SF 9	Cement	Likely not jurisdictional	434.0
SF 10	Cement	Likely not jurisdictional	47.5
SF 11	Cement	Likely not jurisdictional	307.5
SF 12	Cement	Likely not jurisdictional	625.6
SF 13	Cement	Likely not jurisdictional	47.1
SF 14	Riprap and Gravel	Likely not jurisdictional	38.6
SF 15	Vegetation	Likely not jurisdictional	72.2
SF 16	Vegetation	Likely not jurisdictional	789.2
		Total	2636.6

4.4 THREATENED & ENDANGERED SPECIES

The MDC Natural Heritage Review of the project on February 21, 2024 returned a Level Three Report, provided in Appendix D, indicating that there are records of species listed under the Federal Endangered Species Act, and possibly also records for species listed Endangered by the state, or Missouri Species and/or Natural Communities of Conservation Concern within or near the project area. After contacting MDC for additional information, the report indicates there are records of the following federally-listed species near the project site:

- Indiana bat (*Myotis sodalis*), endangered
- Northern long-eared bat (*Myotis septentrionalis*), endangered
- Gray bat (*Myotis grisescens*), endangered
- Decurrent false aster (*Boltonia decurrens*), endangered
- Pallid sturgeon (*Scaphirhynchus albus*), endangered
- Bald eagle (*Haliaeetus leucocephalus*), protected

Up to 3.9 acres of trees may be removed for the project. All of the trees to be removed are located within 100 feet of existing pavement, scattered throughout disturbed areas on airport property and road right-of-way, and the majority of trees are saplings. Sixteen (16) trees were identified as suitable bat roost trees (photolog #83-84) for the Indiana bat and northern long-eared bat. All 16 potential roost trees were river birch (*Betula nigra*) trees exhibiting peeling bark. The project sponsor commits to clear the identified suitable bat roost trees during the non-breeding season, between November 1 and March 31. Therefore, it is expected that this project may affect, but is not likely to adversely affect the Indiana and northern long-eared bats.

No large rivers or suitable habitat for the gray bat, decurrent false aster, pallid sturgeon, or bald eagle are within the project area; therefore, the project is expected to have no impact on these state-listed species near the project site.

According to the USFWS IPaC Official Species list generated February 21, 2024 (Consultation Code: 2023-00826719 Appendix D), the project is located within the known or historic range of the following federally endangered or threatened species:

- Gray bat (*Myotis grisescens*), endangered
- Indiana bat (*Myotis sodalis*), endangered
- Northern long-eared bat (*Myotis septentrionalis*), threatened
- Tricolored bat (*Perimyotis subflavus)*, proposed endangered
- Decurrent false aster (*Boltonia decurrens*), threatened

The project is not located within any designated critical habitat areas.

Gray bat (*Myotis grisescens*): No caves are known to be present in the project area, so suitable habitat is not expected to be available in the project area. Therefore, this project is expected to have no effect on the gray bat.

Indiana bat (*Myotis sodalis*), and Northern long-eared bat (*Myotis septentrionalis*): Suitable habitat for these species was identified as any tree over 3 inches DBH with peeling bark or cavities that would provide shelter and allow the bat to move around the tree for thermoregulation. Up to 3.9 acres of trees may be removed for the project. All of the trees to be removed are located within 100 feet of existing pavement, scattered throughout disturbed areas on airport property and road right-of-way, and the majority of trees are saplings. Sixteen (16) trees were identified as suitable bat roost trees (photolog #83-84). The project sponsor commits to clear the identified suitable bat roost trees during the non-breeding season, between November 1 and March 31. Therefore, it is expected that this project may affect, but is not likely to adversely affect the Indiana and northern long-eared bats.

Tricolored bat (*Perimyotis subflavus)*: Suitable habitat for this species was identified as live and dead leaf clusters of live or recently dead deciduous hardwood trees. Up to 3.9 acres of trees may be removed for the project. All of the trees to be removed are located within 100 feet of existing pavement, scattered throughout disturbed areas on airport property and road right-of-way, and the majority of trees are saplings. Sixteen (16) trees were identified as suitable bat roost trees (photolog #83-84). The project sponsor commits to clear the identified suitable bat roost trees during the non-breeding season, between November 1 and March 31. Therefore, it is expected that this project may affect, but is not likely to adversely affect the tricolored bat.

Decurrent false aster (*Boltonia decurrens*): Suitable habitat for this species was identified as moist, sandy floodplains or prairie wetland areas. The project is within a highly developed area, consisting of upland, mowed lawn, and commercial areas. The identified wetland does not contain the appropriate wet-prairie habitat and are of degraded, poor quality. Therefore, this project is expected to have no effect on decurrent false aster.

Migratory Bird Treaty Act

No bridges will be demolished or impacted during this project; therefore, no swallows or other bird species protected by the Migratory Bird Treaty Act (MBTA) are expected to be impacted by this project.

5.0 CONCLUSIONS

A total of six (6) intermittent and perennial streams were identified within the study area and are likely considered jurisdictional waters of the U.S. due to their hydrologic connectivity to the Missouri River, a TNW. Two (2) ephemeral streams were identified within the study area and are likely non-jurisdictional based on their ephemeral flow. One (1) possibly exempt, severely degraded wetland totaling 0.01 acre was identified within the study area. Four (4) swales totaling 983.1 linear feet, and twelve (12) drainage ditches totaling 1,653.5 linear feet were identified within the study area. The swales and ditches did not exhibit a continuous, defined OHWM and only carry or hold water during or for a short duration after storm events or are constructed stormwater features and are likely not considered jurisdictional waters of the U.S.

Wetlands and other surface water resources that are considered waters of the U.S. are subject to regulation under Section 404 of the Clean Water Act and the jurisdictional regulatory authority lies with the U.S. Army Corps of Engineers.

Suitable habitat for the federally-listed Indiana bat (*Myotis sodalis*), Northern long-eared bat (*Myotis septentrionalis*), and tricolored bat (*Perimyotis subflavus*) are present within the project area. Any proposed work on-site should avoid impacts to these species or their habitat. The project is anticipated to result in up to 3.9 acres of tree clearing. Consultation with USFWS under Section 7 of the Endangered Species Act will be required if impacts to these species or their habitats occur.

6.0 REFERENCES

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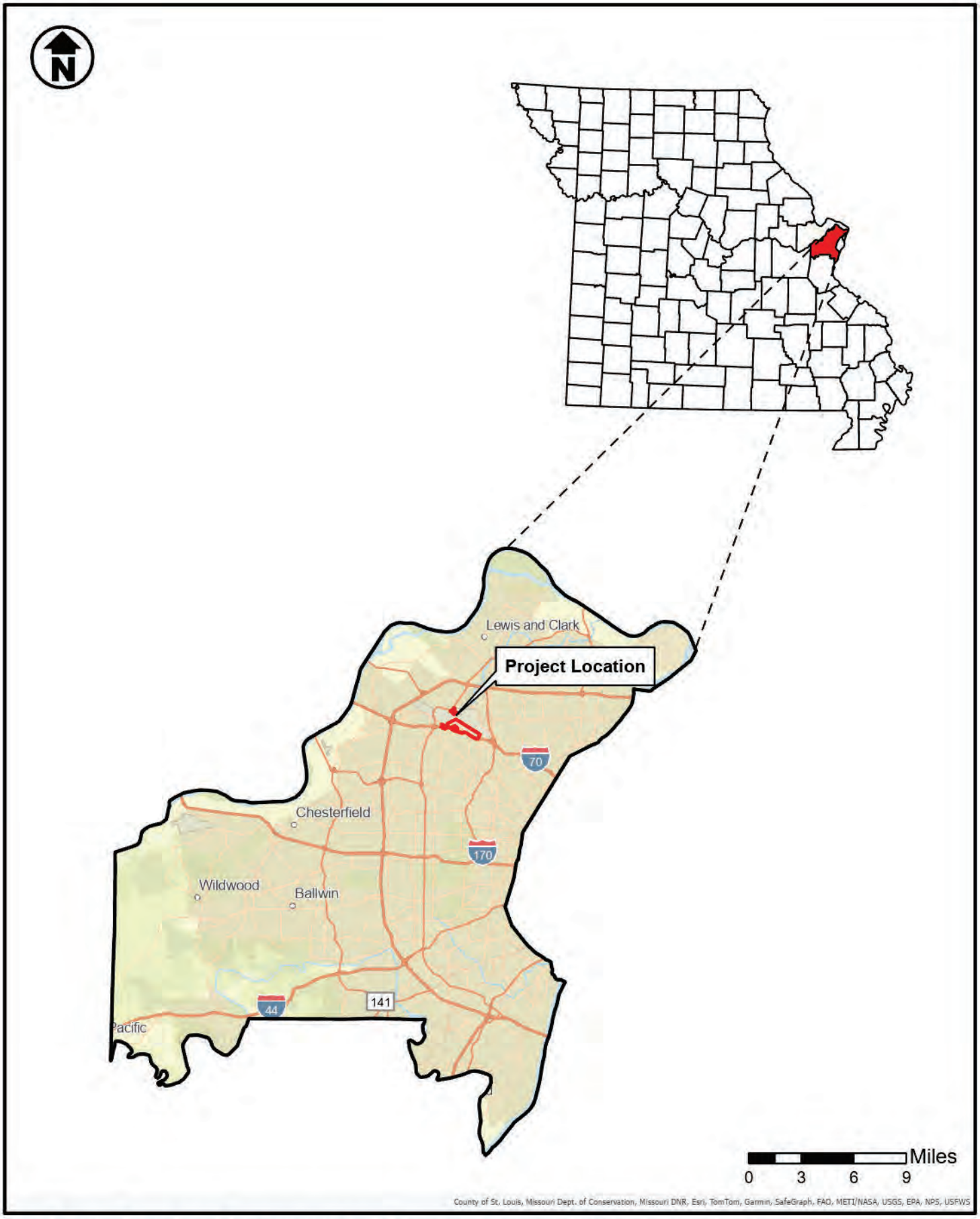
- 10 CSR 20-7.031 Tables D and E: Outstanding State and National Resource Waters
- Priority Watershed Listing at: https://www.nwk.usace.army.mil/Portals/29/docs/regulatory/NWP/2021/MO/MORC4PriorityWaters.pdf

Lambert International Airport – Consolidated Terminal Program

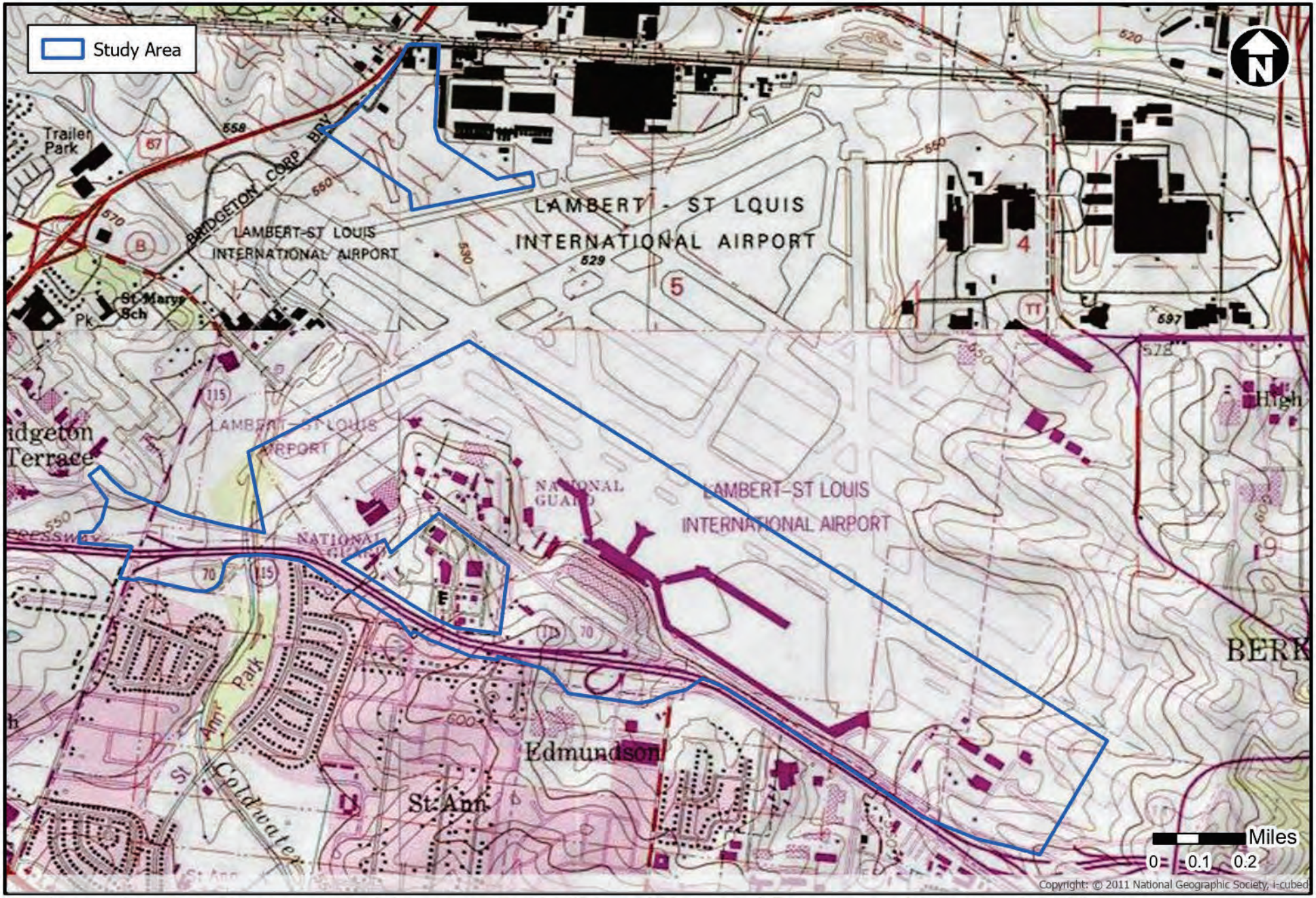
APPENDIX A: PROJECT MAPPING



St. Louis Lambert International Airport - Consolidated Terminal Program - St. Louis Co., Mo

County Location Map

CMT
Crawford, Murphy & Tilly



St. Louis Lambert International Airport - Consolidated Terminal Program - St. Louis Co., Mo

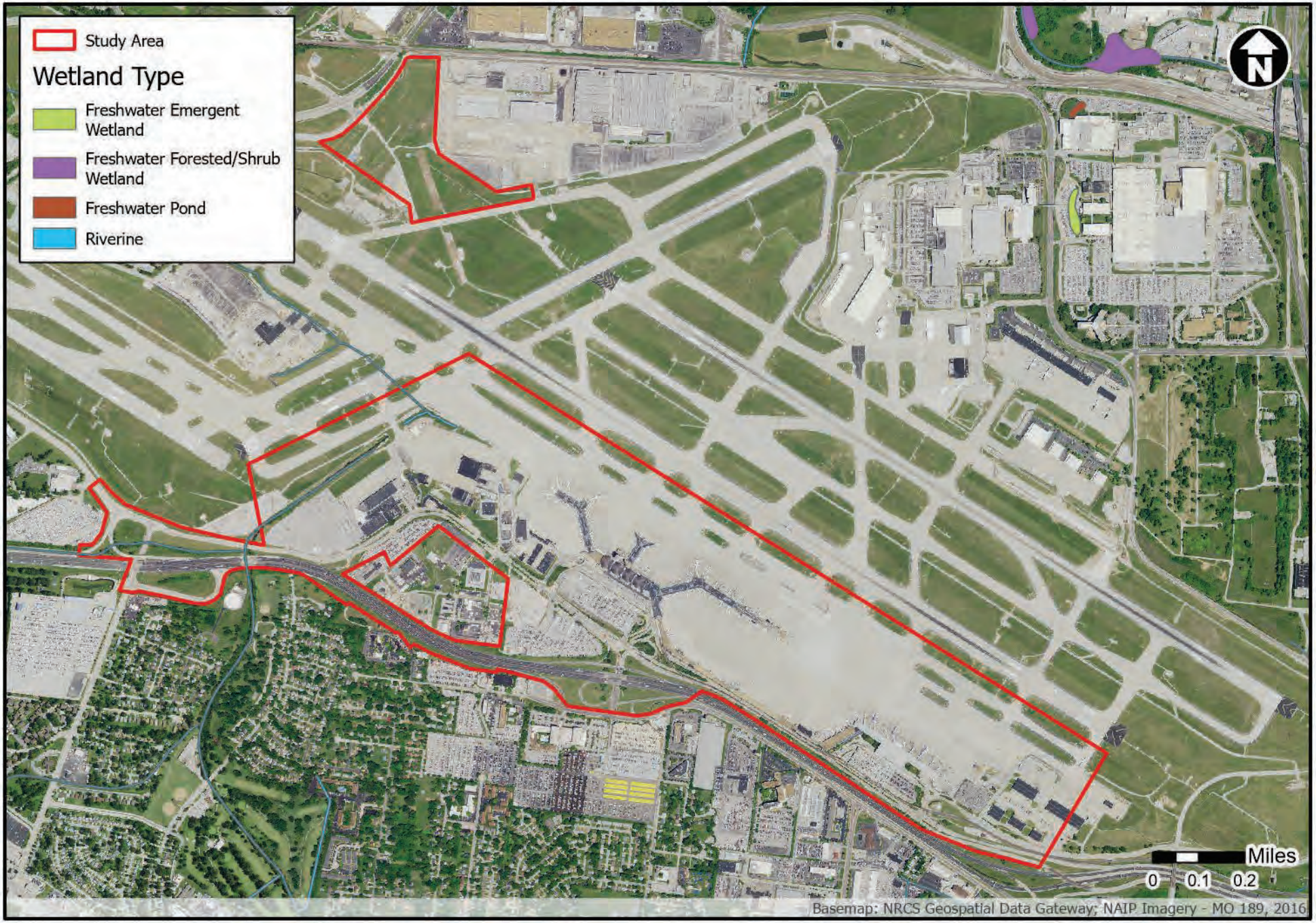
USGS Topographic Map, St. Charles, Creve Coeur, Florissant, and Clayton, Mo., Quadrangles

CMT
Crawford, Murphy & Tilly

St. Louis Lambert International Airport - Consolidated Terminal Program - St. Louis Co., Mo

Aerial Map

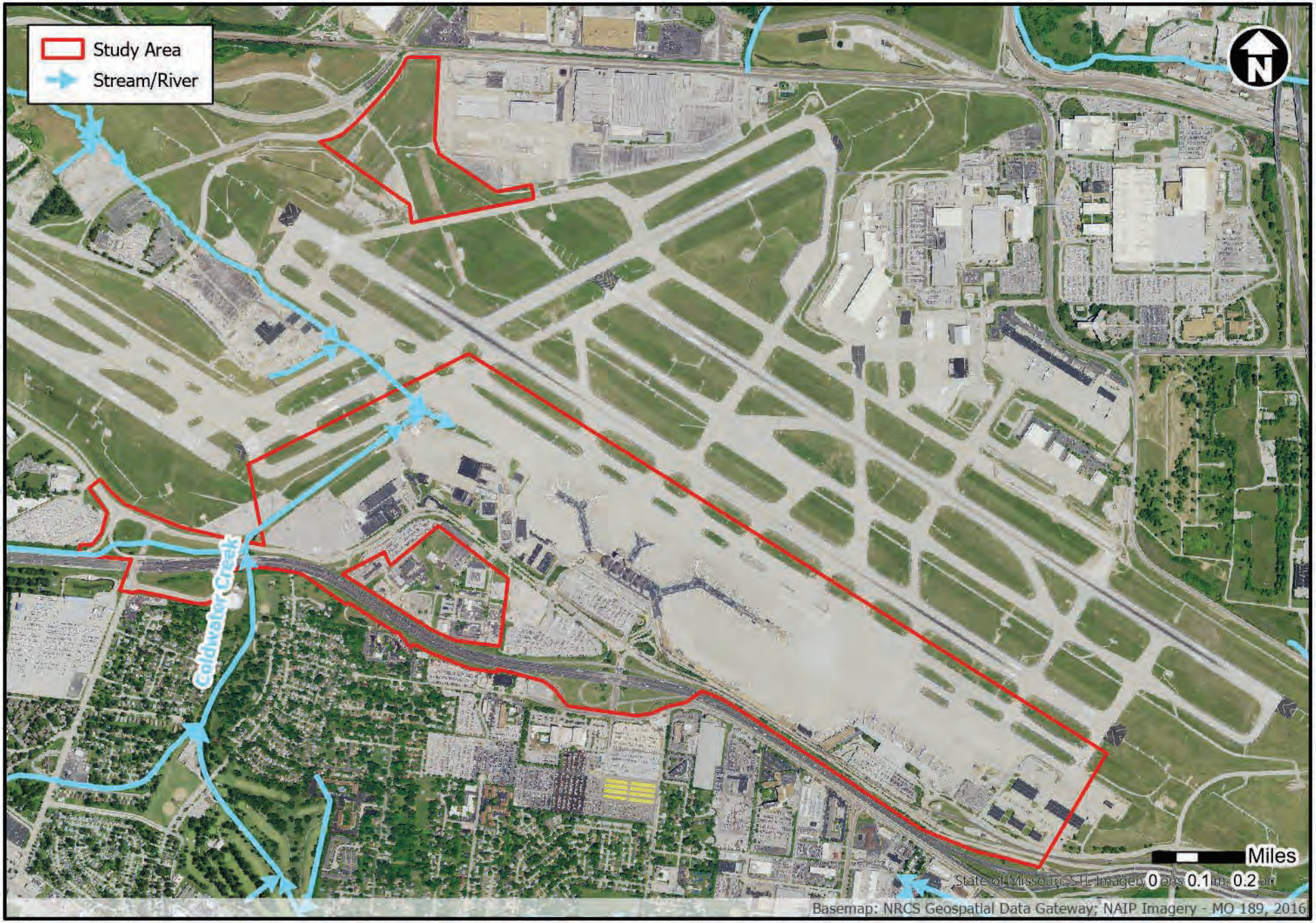
CMT
Crawford, Murphy & Tilly



St. Louis Lambert International Airport - Consolidated Terminal Program - St. Louis Co., Mo

National Wetlands Inventory

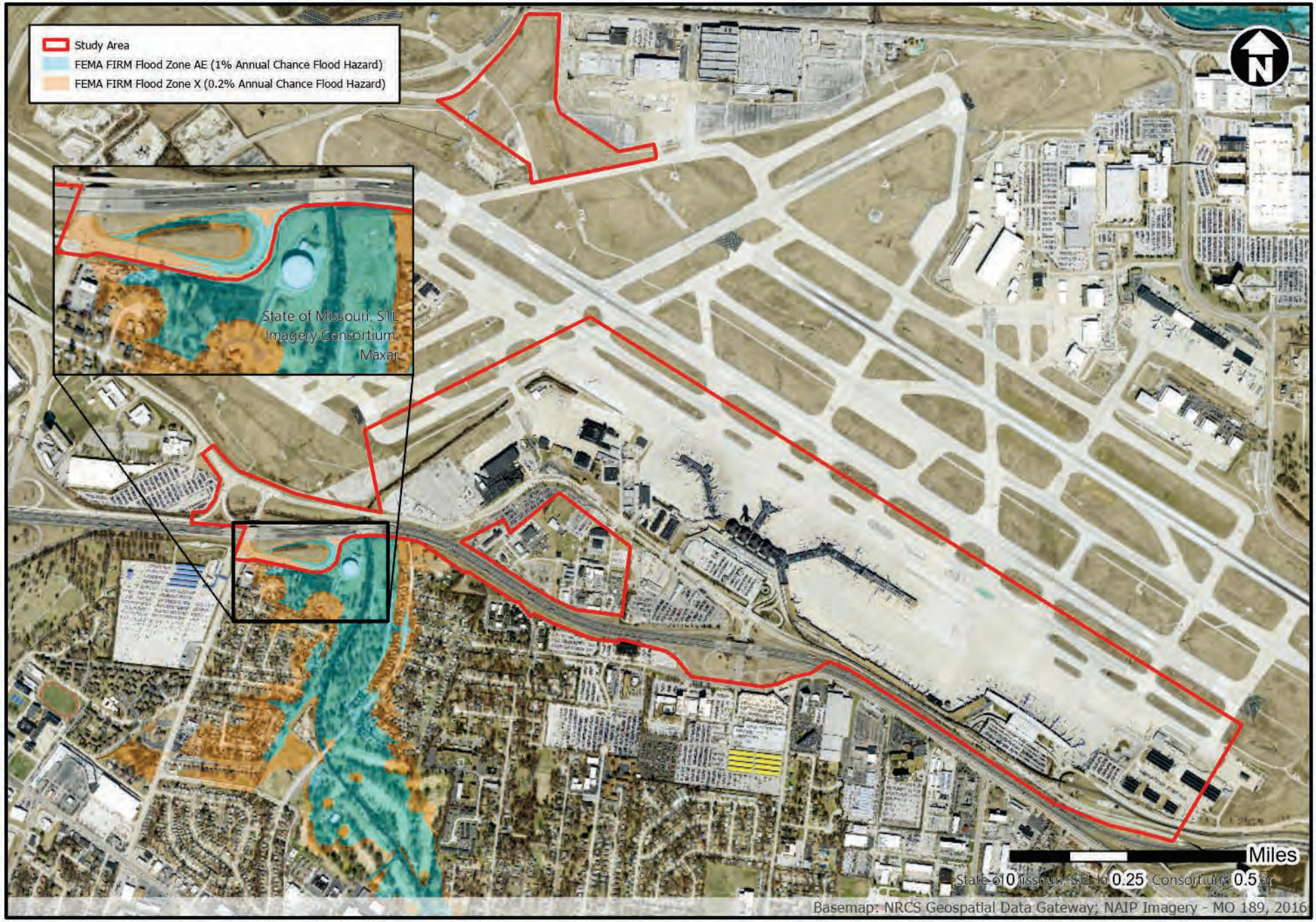
CMT
Crawford, Murphy & Tilly



St. Louis Lambert International Airport - Consolidated Terminal Program - St. Louis Co., Mo

National Hydrography Dataset

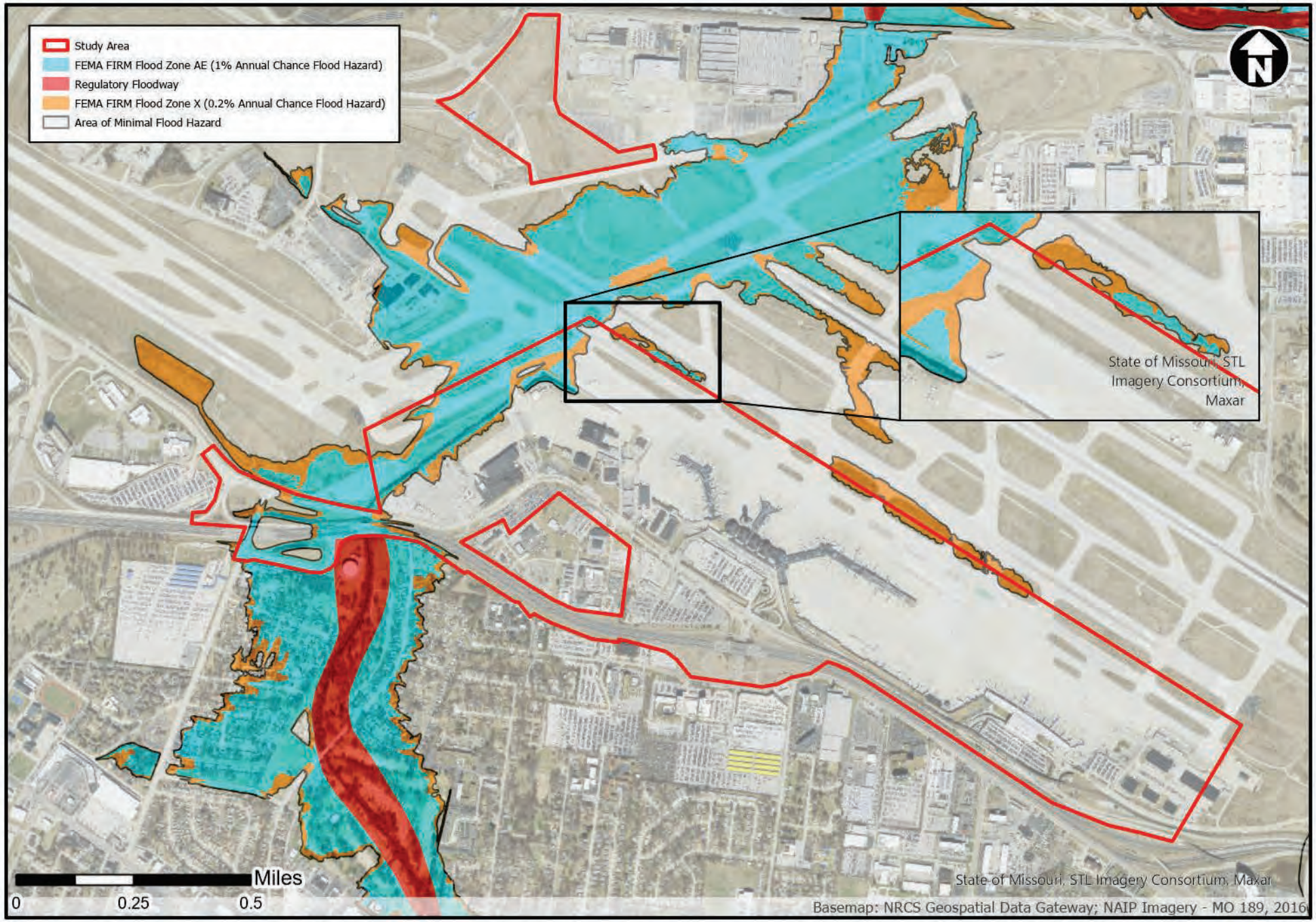
CMT
Crawford, Murphy & Tilly



St. Louis Lambert International Airport - Consolidated Terminal Program - St. Louis Co., Mo

FEMA/FIRM Map

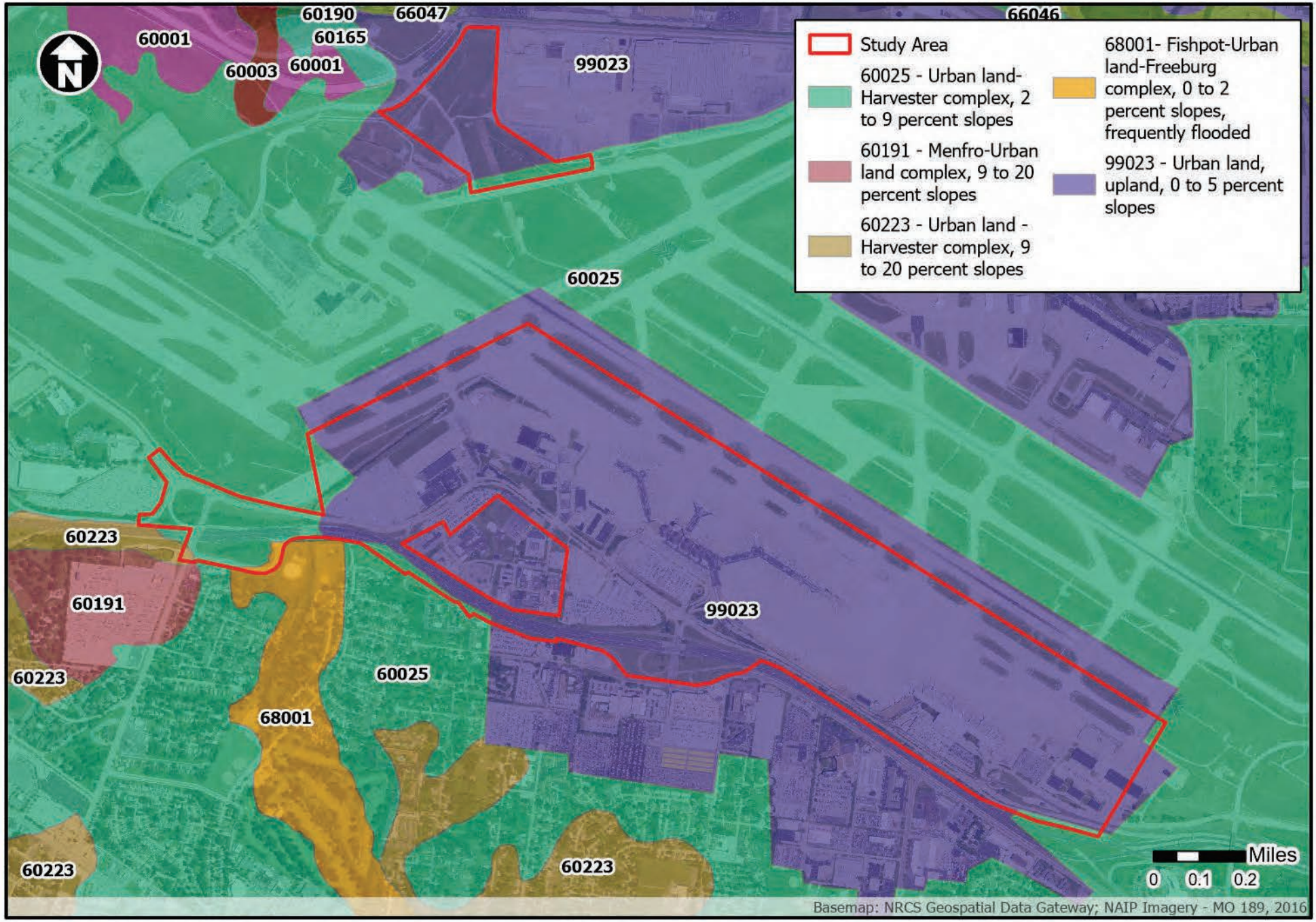
CMT
Crawford, Murphy & Tilly



St. Louis Lambert International Airport - Consolidated Terminal Program - St. Louis Co., Mo

Updated Preliminary Floodplain Map

CMT
Crawford, Murphy & Tilly



St. Louis Lambert International Airport - Consolidated Terminal Program - St. Louis Co., Mo

NRCS Soils Map

CMT
Crawford, Murphy & Tilly

Map Unit Description (Brief, Generated)

St. Louis County and St. Louis City, Missouri

[Minor map unit components are excluded from this report]

Map unit: 60025 - Urban land-Harvester complex, 2 to 9 percent slopes

Component: Urban land (55%)

Generated brief soil descriptions are created for major soil components. The Urban land is a miscellaneous area.

Component: Harvester (40%)

The Harvester component makes up 40 percent of the map unit. Slopes are 2 to 9 percent. This component is on interfluves, hills. The parent material consists of loess. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is moderately well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches (or restricted depth) is moderate. Shrink-swell potential is moderate. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 34 inches during January, February, March, April, May, November, December. Organic matter content in the surface horizon is about 1 percent. This component is in the F115XB061MO Anthropic Deep Loess Upland ecological site. Nonirrigated land capability classification is 3e. This soil does not meet hydric criteria.

Map unit: 60191 - Menfro-Urban land complex, 9 to 20 percent slopes

Component: Menfro (50%)

The Menfro component makes up 50 percent of the map unit. Slopes are 9 to 20 percent. This component is on hillslopes, hills. The parent material consists of loess. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches (or restricted depth) is high. Shrink-swell potential is moderate. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 4 percent. This component is in the F115XB043MO Deep Loess Exposed Backslope Woodland, Deep Loess Protected Backslope Forest ecological site. Nonirrigated land capability classification is 4e. This soil does not meet hydric criteria.

Component: Urban land (40%)

Generated brief soil descriptions are created for major soil components. The Urban land is a miscellaneous area.

Map unit: 60223 - Urban land-Harvester complex, 9 to 20 percent slopes

Component: Urban land (60%)

Generated brief soil descriptions are created for major soil components. The Urban land is a miscellaneous area.

Map Unit Description (Brief, Generated)

St. Louis County and St. Louis City, Missouri

Map unit: 60223 - Urban land-Harvester complex, 9 to 20 percent slopes

Component: Harvester (30%)

The Harvester component makes up 30 percent of the map unit. Slopes are 9 to 20 percent. This component is on hillslopes, hills. The parent material consists of loess. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is moderately well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches (or restricted depth) is moderate. Shrink-swell potential is moderate. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 34 inches during January, February, March, April, May, November, December. Organic matter content in the surface horizon is about 1 percent. This component is in the F115XB061MO Anthropic Deep Loess Upland ecological site. Nonirrigated land capability classification is 6e. This soil does not meet hydric criteria.

Map unit: 68001 - Fishpot-Urban land-Freeburg complex, 0 to 2 percent slopes, frequently flooded

Component: Fishpot (45%)

The Fishpot component makes up 45 percent of the map unit. Slopes are 0 to 2 percent. This component is on leveled land on anthroscape on river valleys, stream terraces on river valleys, flood plains on river valleys. The parent material consists of human-transported material over alluvium. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is somewhat poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches (or restricted depth) is very high. Shrink-swell potential is low. This soil is frequently flooded. It is not ponded. A seasonal zone of water saturation is at 26 inches during January, February, March, April, May, November, December. Organic matter content in the surface horizon is about 2 percent. This component is in the F115XB060MO Anthropic Wet Terrace ecological site. Nonirrigated land capability classification is 2w. This soil does not meet hydric criteria. There are no saline horizons within 30 inches of the soil surface.

Component: Urban land (25%)

Generated brief soil descriptions are created for major soil components. The Urban land is a miscellaneous area.

Component: Freeburg (20%)

The Freeburg component makes up 20 percent of the map unit. Slopes are 0 to 2 percent. This component is on flood-plain steps on river valleys. The parent material consists of alluvium. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is somewhat poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches (or restricted depth) is high. Shrink-swell potential is moderate. This soil is frequently flooded. It is not ponded. A seasonal zone of water saturation is at 17 inches during January, February, March, April, May, November, December. Organic matter content in the surface horizon is about 2 percent. This component is in the F115XB025MO Wet Terrace Forest ecological site. Nonirrigated land capability classification is 2w. This soil does not meet hydric criteria.

Map unit: 99023 - Urban land, upland, 0 to 5 percent slopes

Component: Urban land (100%)

Generated brief soil descriptions are created for major soil components. The Urban land is a miscellaneous area.

Map Unit Description (Brief, Generated)

No soils within the project area are hydric, hence the hydric soil report was blank

uis City, Missouri

xcluded from this report]

Map unit: 60025 - Urban land-Harvester complex, 2 to 9 percent slopes

Component: Urban land (55%)

Generated brief soil descriptions are created for major soil components. The Urban land is a miscellaneous area.

Component: Harvester (40%)

The Harvester component makes up 40 percent of the map unit. Slopes are 2 to 9 percent. This component is on interfluves, hills. The parent material consists of loess. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is moderately well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches (or restricted depth) is moderate. Shrink-swell potential is moderate. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 34 inches during January, February, March, April, May, November, December. Organic matter content in the surface horizon is about 1 percent. This component is in the F115XB061MO Anthropic Deep Loess Upland ecological site. Nonirrigated land capability classification is 3e. This soil does not meet hydric criteria.

Map unit: 60191 - Menfro-Urban land complex, 9 to 20 percent slopes

Component: Menfro (50%)

The Menfro component makes up 50 percent of the map unit. Slopes are 9 to 20 percent. This component is on hillslopes, hills. The parent material consists of loess. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches (or restricted depth) is high. Shrink-swell potential is moderate. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 4 percent. This component is in the F115XB043MO Deep Loess Exposed Backslope Woodland, Deep Loess Protected Backslope Forest ecological site. Nonirrigated land capability classification is 4e. This soil does not meet hydric criteria.

Component: Urban land (40%)

Generated brief soil descriptions are created for major soil components. The Urban land is a miscellaneous area.

Map unit: 60223 - Urban land-Harvester complex, 9 to 20 percent slopes

Component: Urban land (60%)

Generated brief soil descriptions are created for major soil components. The Urban land is a miscellaneous area.

Map Unit Description (Brief, Generated)

St. Louis County and St. Louis City, Missouri

Map unit: 60223 - Urban land-Harvester complex, 9 to 20 percent slopes

Component: Harvester (30%)

The Harvester component makes up 30 percent of the map unit. Slopes are 9 to 20 percent. This component is on hillslopes, hills. The parent material consists of loess. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is moderately well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches (or restricted depth) is moderate. Shrink-swell potential is moderate. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 34 inches during January, February, March, April, May, November, December. Organic matter content in the surface horizon is about 1 percent. This component is in the F115XB061MO Anthropic Deep Loess Upland ecological site. Nonirrigated land capability classification is 6e. This soil does not meet hydric criteria.

Map unit: 68001 - Fishpot-Urban land-Freeburg complex, 0 to 2 percent slopes, frequently flooded

Component: Fishpot (45%)

The Fishpot component makes up 45 percent of the map unit. Slopes are 0 to 2 percent. This component is on leveled land on anthroscape on river valleys, stream terraces on river valleys, flood plains on river valleys. The parent material consists of human-transported material over alluvium. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is somewhat poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches (or restricted depth) is very high. Shrink-swell potential is low. This soil is frequently flooded. It is not ponded. A seasonal zone of water saturation is at 26 inches during January, February, March, April, May, November, December. Organic matter content in the surface horizon is about 2 percent. This component is in the F115XB060MO Anthropic Wet Terrace ecological site. Nonirrigated land capability classification is 2w. This soil does not meet hydric criteria. There are no saline horizons within 30 inches of the soil surface.

Component: Urban land (25%)

Generated brief soil descriptions are created for major soil components. The Urban land is a miscellaneous area.

Component: Freeburg (20%)

The Freeburg component makes up 20 percent of the map unit. Slopes are 0 to 2 percent. This component is on flood-plain steps on river valleys. The parent material consists of alluvium. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is somewhat poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches (or restricted depth) is high. Shrink-swell potential is moderate. This soil is frequently flooded. It is not ponded. A seasonal zone of water saturation is at 17 inches during January, February, March, April, May, November, December. Organic matter content in the surface horizon is about 2 percent. This component is in the F115XB025MO Wet Terrace Forest ecological site. Nonirrigated land capability classification is 2w. This soil does not meet hydric criteria.

Map unit: 99023 - Urban land, upland, 0 to 5 percent slopes

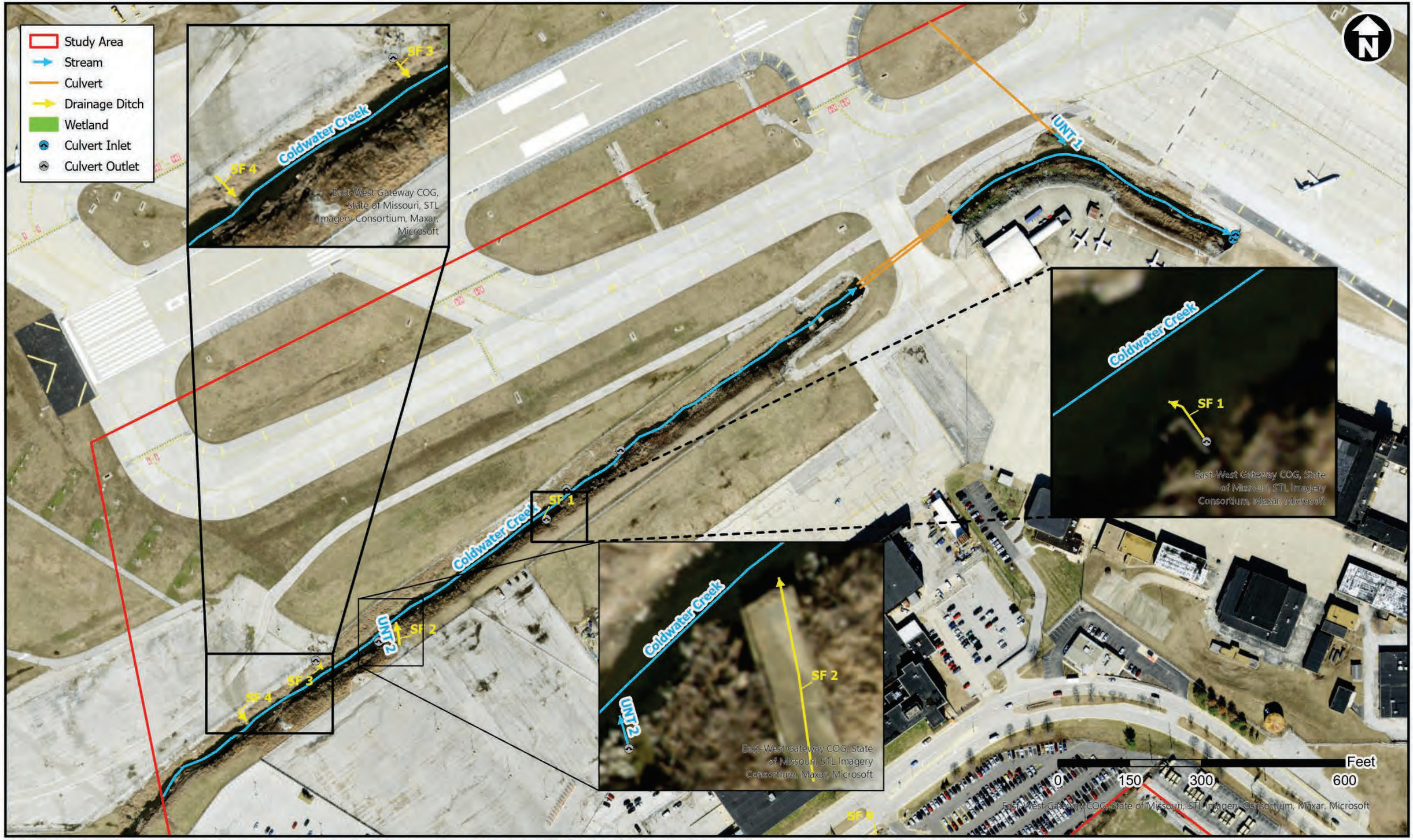
Component: Urban land (100%)

Generated brief soil descriptions are created for major soil components. The Urban land is a miscellaneous area.

St. Louis Lambert International Airport - Consolidated Terminal Program - St. Louis Co., MO

Ecological Resources Overall Map

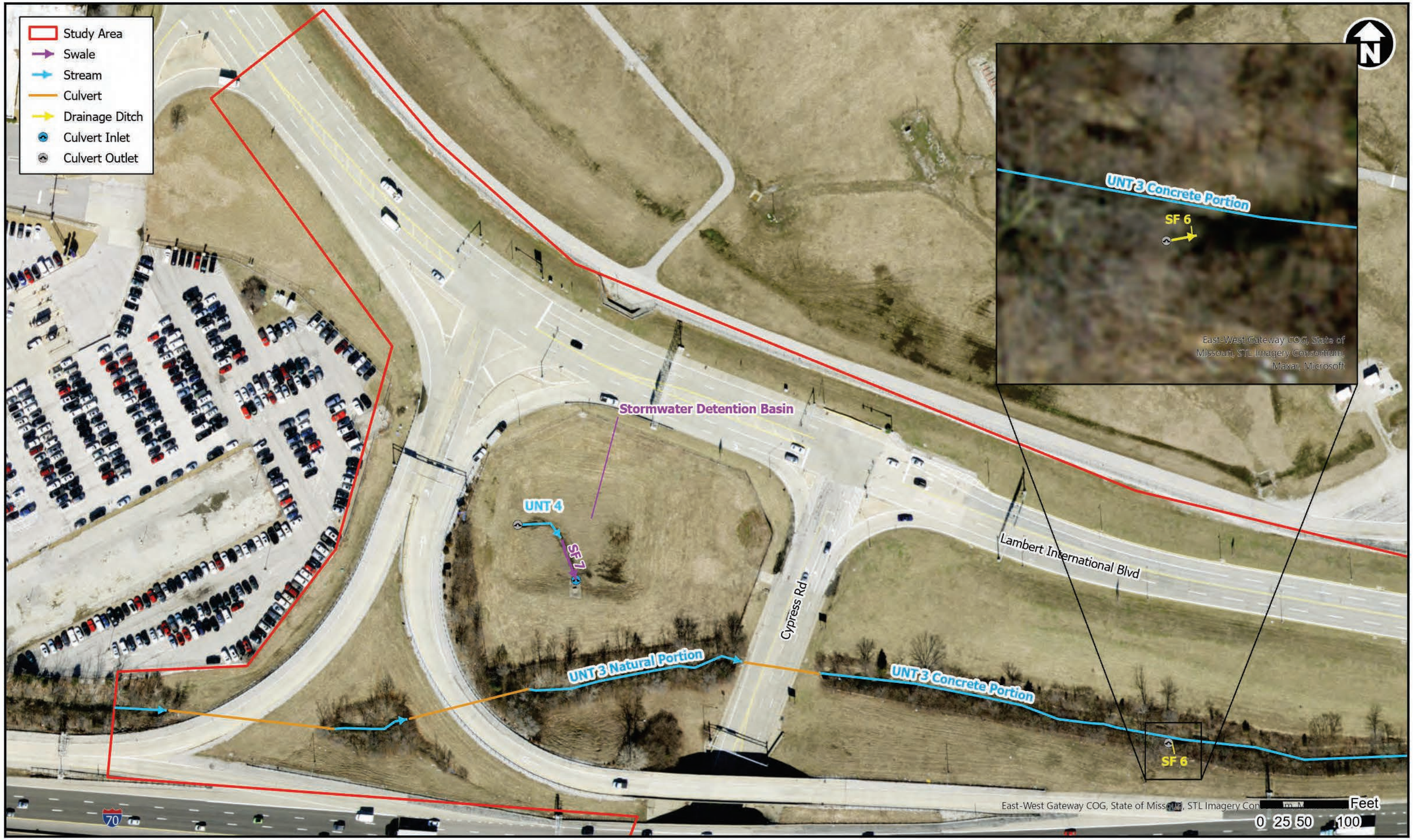
CMT
Crawford, Murphy & Tilly



St. Louis Lambert International Airport - Consolidated Terminal Program - St. Louis Co., MO

Ecological Resources (1 of 7)

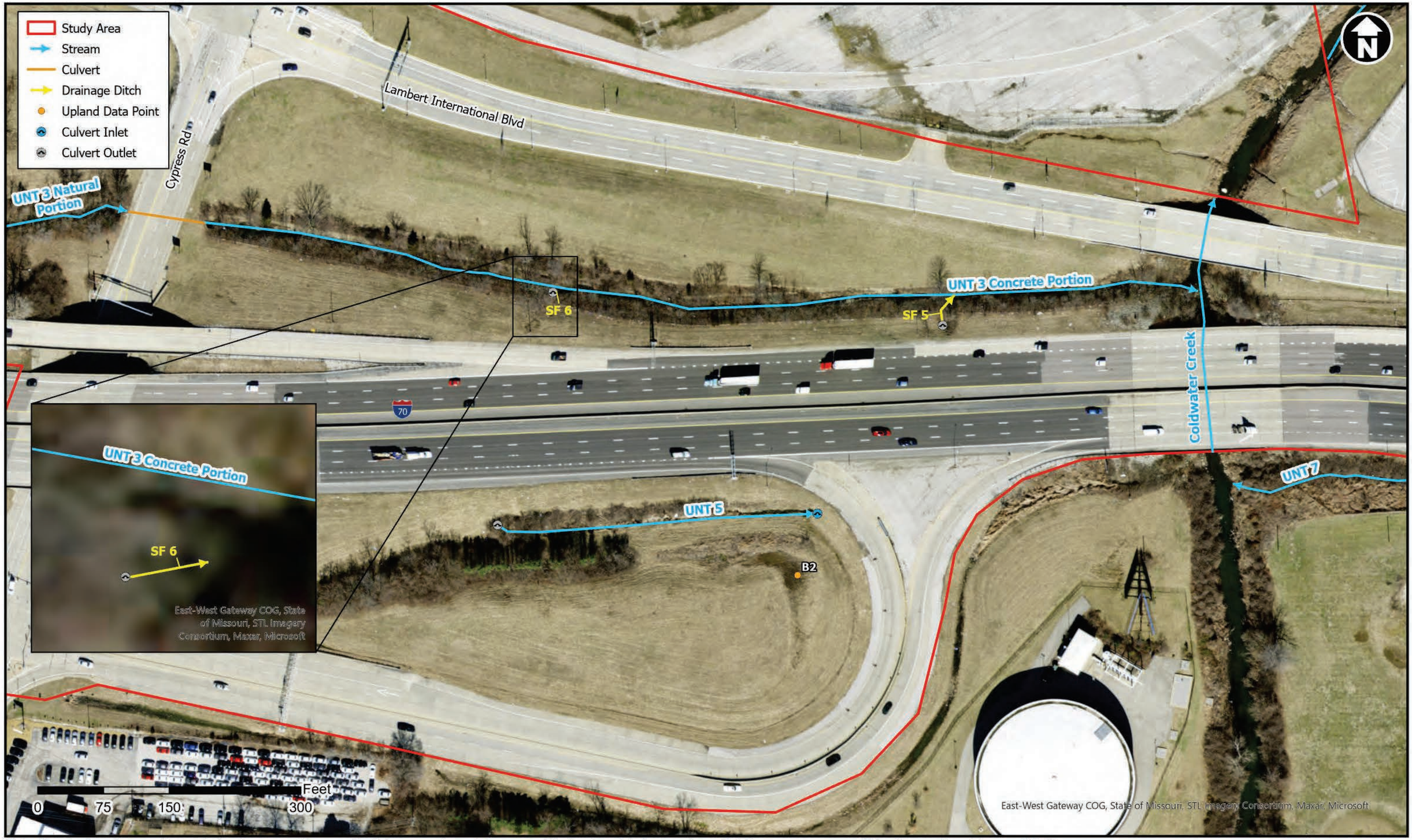
CMT
Crawford, Murphy & Tilly



St. Louis Lambert International Airport - Consolidated Terminal Program - St. Louis Co., MO

Ecological Resources (2 of 7)

CMT
Crawford, Murphy & Tilly



St. Louis Lambert International Airport - Consolidated Terminal Program - St. Louis Co., MO

Ecological Resources (3 of 7)

CMT
Crawford, Murphy & Tilly

St. Louis Lambert International Airport - Consolidated Terminal Program - St. Louis Co., MO

Ecological Resources (4 of 7)

CMT
Crawford, Murphy & Tilly

St. Louis Lambert International Airport - Consolidated Terminal Program - St. Louis Co., MO

Ecological Resources (5 of 7)

CMT
Crawford, Murphy & Tilly

St. Louis Lambert International Airport - Consolidated Terminal Program - St. Louis Co., MO

Ecological Resources (6 of 7)

CMT
Crawford, Murphy & Tilly

St. Louis Lambert International Airport - Consolidated Terminal Program - St. Louis Co., MO

Ecological Resources (7 of 7)

CMT
Crawford, Murphy & Tilly

Lambert International Airport – Consolidated Terminal Program

APPENDIX B: DATA FORMS

CMT

U.S. Army Corps of Engineers
WETLAND DETERMINATION DATA SHEET – Midwest Region
See ERDC/EL TR-10-16; the proponent agency is CECW-CO-R

OMB Control #: 0710-0024, Exp:11/30/2024
Requirement Control Symbol EXEMPT:
(Authority: AR 335-15, paragraph 5-2a)

Project/Site: Consolidated Terminal Program City/County: St. Louis County Sampling Date: 5/23/2023

Applicant/Owner: St. Louis Lambert International Airport State: MO Sampling Point: A1 WET

Investigator(s): Alex Zelles and Meghan Oh, CMT Inc. Section, Township, Range: Land Grant 01196

Landform (hillside, terrace, etc.): Swale Local relief (concave, convex, none): Concave

Slope (%): 5 Lat: 38.736257 Long: -90.35148 Datum: NAD 83

Soil Map Unit Name: 99023 - Urban land, upland, 0 to 5 percent slopes NWI classification: N/A

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

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes X No ____
Hydric Soil Present? Yes X No ____
Wetland Hydrology Present? Yes X No ____

Is the Sampled Area within a Wetland? **Yes** X **No** ____

Remarks:
Swale between highway on ramp.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	=Total Cover		
Sapling/Shrub Stratum (Plot size: 15)			
1.			
2.			
3.			
4.			
5.			
	=Total Cover		
Herb Stratum (Plot size: 5)			
1. *Juncus effusus*	45	Yes	OBL
2. *Carex vulpinoidea*	45	Yes	FACW
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	90 =Total Cover		
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
	=Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	45	x 1 =	45
FACW species	45	x 2 =	90
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	90 (A)		135 (B)

Prevalence Index = B/A = 1.50

Hydrophytic Vegetation Indicators:

____ 1 - Rapid Test for Hydrophytic Vegetation
X 2 - Dominance Test is >50%
X 3 - Prevalence Index is ≤3.0[1]
____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** X **No** ____

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

SOIL

Sampling Point: A1 WET

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 3/1	40	10YR 4/6	10	C	PL/M	Mucky Loam/Clay	
4-8	10YR 3/1	40	10YR 4/6	20	C	M	Mucky Loam/Clay	Prominent redox concentrations
4-8	10YR 4/2	40					Mucky Loam/Clay	
8-12	10YR 4/2	60	10YR 4/6	40	C	M	Mucky Loam/Clay	Prominent redox concentrations

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- X Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- X Iron-Manganese Masses (F12)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Concrete

Depth (inches): 12

Hydric Soil Present? **Yes** X **No** ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- X Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- X Saturation Visible on Aerial Imagery (C9)
- X Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches): ___
Water Table Present?	Yes ___	No X	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes ___	No X	Depth (inches): ___

Wetland Hydrology Present? **Yes** X **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Wetland A drained northeast to a swale that drains into a catch basin which eventually flows into Coldwater Creek

U.S. Army Corps of Engineers
WETLAND DETERMINATION DATA SHEET – Midwest Region
See ERDC/EL TR-10-16; the proponent agency is CECW-CO-R

OMB Control #: 0710-0024, Exp:11/30/2024
Requirement Control Symbol EXEMPT:
(Authority: AR 335-15, paragraph 5-2a)

Project/Site: Consolidated Terminal Program | City/County: St. Louis County | Sampling Date: 5/23/2023
Applicant/Owner: St. Louis Lambert International Airport | State: MO | Sampling Point: A2 UPL
Investigator(s): Alex Zelles and Meghan Oh, CMT Inc. | Section, Township, Range: Land Grant 01196
Landform (hillside, terrace, etc.): Roadside Ditch | Local relief (concave, convex, none): Concave
Slope (%): 5 | Lat: 38.736309 | Long: -90.351585 | Datum: NAD 83
Soil Map Unit Name: 99023 - Urban land, upland, 0 to 5 percent slopes | NWI classification: N/A
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes X No ____
Hydric Soil Present? Yes X No ____
Wetland Hydrology Present? Yes ____ No X

Is the Sampled Area within a Wetland? Yes ____ No X

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	=Total Cover		
Sapling/Shrub Stratum (Plot size: 15)			
1. *Lonicera maackii*	10	Yes	UPL
2.			
3.			
4.			
5.			
	10 =Total Cover		
Herb Stratum (Plot size: 5)			
1. *Carex festucacea*	50	Yes	FACW
2. *Poa pratensis*	50	Yes	FAC
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	100 =Total Cover		
Woody Vine Stratum (Plot size: 30)			
1. *Vitis aestivalis*	5	Yes	FACU
2.			
	5 =Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)
Total Number of Dominant Species Across All Strata: 4 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 50.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	50	x 2 =	100
FAC species	50	x 3 =	150
FACU species	5	x 4 =	20
UPL species	10	x 5 =	50
Column Totals:	115 (A)		320 (B)

Prevalence Index = B/A = 2.78

Hydrophytic Vegetation Indicators:

____ 1 - Rapid Test for Hydrophytic Vegetation
____ 2 - Dominance Test is >50%
____ 3 - Prevalence Index is ≤3.0[1]
____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ____

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

SOIL

Sampling Point: A2 UPL

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 3/1	40	10YR 4/6	10	C	PL/M	Mucky Loam/Clay	
4-8	10YR 3/1	40	10YR 4/6	20	C	M	Mucky Loam/Clay	Prominent redox concentrations
4-8	10YR 4/2	40					Mucky Loam/Clay	
8-12	10YR 4/2	60	10YR 4/6	40	C	M	Mucky Loam/Clay	Prominent redox concentrations

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- X Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- X Iron-Manganese Masses (F12)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Concrete

Depth (inches): 12

Hydric Soil Present? **Yes** X **No** ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches): ___
Water Table Present?	Yes ___	No X	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes ___	No X	Depth (inches): ___

Wetland Hydrology Present? **Yes** ___ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

U.S. Army Corps of Engineers
WETLAND DETERMINATION DATA SHEET – Midwest Region
See ERDC/EL TR-10-16; the proponent agency is CECW-CO-R

OMB Control #: 0710-0024, Exp:11/30/2024
Requirement Control Symbol EXEMPT:
(Authority: AR 335-15, paragraph 5-2a)

Project/Site: Consolidated Terminal Program City/County: St. Louis County Sampling Date: 1/31/2024

Applicant/Owner: St. Louis Lambert International Airport State: MO Sampling Point: B2 UPL

Investigator(s): Meghan Oh, CMT Inc. Section, Township, Range: Land Grant 01196

Landform (hillside, terrace, etc.): Terrace Local relief (concave, convex, none): Concave

Slope (%): 2 Lat: 38.742532 Long: -90.382726 Datum: NAD 83

Soil Map Unit Name: 60223 - Urban land - Harvester complex, 9 to 20 percent slopes NWI classification: N/A

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

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ____ No X

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area within a Wetland?** **Yes** ____ **No** X
Hydric Soil Present?	Yes ____	No X	
Wetland Hydrology Present?	Yes X	No ____	

Remarks:
Mowed, non-growing season

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	____ =Total Cover		
Sapling/Shrub Stratum (Plot size: 15)			
1.			
2.			
3.			
4.			
5.			
	____ =Total Cover		
Herb Stratum (Plot size: 5)			
1. *Setaria faberi*	60	Yes	FACW
2. *Sorghum halepense*	20	Yes	FAC
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	80 =Total Cover		
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
	____ =Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	60	x 2 =	120
FAC species	20	x 3 =	60
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	80 (A)		180 (B)

Prevalence Index = B/A = 2.25

Hydrophytic Vegetation Indicators:

____ 1 - Rapid Test for Hydrophytic Vegetation
X 2 - Dominance Test is >50%
____ 3 - Prevalence Index is ≤3.0[1]
____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** X **No** ____

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

SOIL

Sampling Point: B2 UPL

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR 3/2	100					Loamy/Clayey	Loam and gravel
3-7	10YR 6/1	100					Loamy/Clayey	Gravel

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Iron-Manganese Masses (F12)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Gravel/Concrete

Depth (inches): 7

Hydric Soil Present? **Yes** ___ **No** X

Remarks:

Checked four locations, all the same.

HYDROLOGY

Wetland Hydrology Indicators:

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

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- X Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes X	No ___	Depth (inches): 1		
Water Table Present?	Yes X	No ___	Depth (inches): 0		
Saturation Present? (includes capillary fringe)	Yes X	No ___	Depth (inches): 0	**Wetland Hydrology Present?**	**Yes** X **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Inventory Assessment

Edit This Inventory | Download Report | Done

Wetland A

» Date & Location:

2023-05-23
STL - CTP
St. Louis
Missouri, Missouri, United States

» FQA Database:

Region: **Missouri**
Year Published: **2015**
Description:
Ladd, D. and J.R. Thomas. 2015. Ecological Checklist of the Missouri Flora for Floristic Quality Assessment. Phytoneuron 2015-12: 1-274

» Details:

Practitioner: **AMZ & MKO**
Latitude: 38.736257
Longitude: -90.35148
Weather Notes:
Duration Notes:
Community Type Notes:
Other Notes:
This assessment is **private** (viewable only by you).

» Conservatism-Based Metrics:

Total Mean C: **1.8**
Native Mean C: **2.3**
Total FQI: **3.6**
Native FQI: **4**
Adjusted FQI: **19.9**
% C value 0: **50%**
% C value 1-3: **25%**
% C value 4-6: **25%**
% C value 7-10: **0%**
Native Tree Mean C: **n/a**
Native Shrub Mean C: **n/a**

» Species Richness:

Total Species: **4**
Native Species: **3 (75%)**
Non-native Species: **1 (25%)**

» Species Wetness:

Mean Wetness: **-2**
Native Mean Wetness: **-2.7**

» Physiognomy Metrics:

Tree: **0 (0%)**
Shrub: **0 (0%)**
Vine: **0 (0%)**
Forb: **1 (25%)**
Grass: **2 (50%)**
Sedge: **1 (25%)**
Rush: **0 (0%)**
Fern: **0 (0%)**
Bryophyte: **0 (0%)**

» Duration Metrics:

Annual: **0 (0%)**
Perennial: **4 (100%)**
Biennial: **0 (0%)**

Native Annual: **0 (0%)**
Native Perennial: **3 (75%)**
Native Biennial: **0 (0%)**

Native Herbaceous Mean
C: **2.3**

» Species:

Scientific Name	Family	Acronym	Native?	C	W	Physiognomy	Duration	Common Name
Carex vulpinoidea	Cyperaceae	CXVULP	native	3	-3	sedge	perennial	fox sedge
Festuca arundinacea	Poaceae	FESARU	non-native	0	0	grass	perennial	tall fescue
Hordeum jubatum	Poaceae	HORJUB	native	0	0	grass	perennial	squirrel-tail grass
Juncus effusus subsp. solutus	Juncaceae	JUNEFF	native	4	-5	forb	perennial	common rush

Qualitative Habitat Evaluation Index and Use Assessment Field Sheet

QHEI Score: 43.5

Stream & Location: UNT 1 / St. Louis Lambert International Airport **RM:** _ _ _._ **Date:** 5 / 23 / 23

Scorers Full Name & Affiliation: Alex Zelles, CMT Inc.

River Code: _ _ _ - _ _ _ - _ _ _ **STORET #:** _ _ _ _ _ _ **Lat./ Long.:** (NAD 83 - decimal °) 38 . 74791 / -90 . 37403 Office verified location ☑

1] SUBSTRATE

Check *ONLY* **Two** substrate *TYPE BOXES*; estimate % or note every type present

Check ONE (*Or 2 & average*)

BEST TYPES	POOL	RIFFLE	OTHER TYPES	POOL	RIFFLE
☐ ☐ BLDR /SLABS [10]	0%	0%	☐ ☐ HARDPAN [4]	0%	0%
☐ ☐ BOULDER [9]	0%	5%	☐ ☐ DETRITUS [3]	5%	0%
☐ ☐ COBBLE [8]	0%	0%	☐ ☐ MUCK [2]	0%	0%
☑ ☐ GRAVEL [7]	35%	30%	☐ ☐ SILT [2]	30%	30%
☐ ☑ SAND [6]	30%	35%	☐ ☐ ARTIFICIAL [0]	0%	0%
☐ ☐ BEDROCK [5]	0%	0%			

(Score natural substrates; ignore sludge from point-sources)

NUMBER OF BEST TYPES: ☐ 4 or more [2] ☑ 3 or less [0]

ORIGIN	SILT / EMBEDDEDNESS	QUALITY
■ LIMESTONE [1]		☐ HEAVY [-2]
☐ TILLS [1]		■ MODERATE [-1]
☐ WETLANDS [0]		☐ NORMAL [0]
☐ HARDPAN [0]		☐ FREE [1]
☐ SANDSTONE [0]		☐ EXTENSIVE [-2]
☐ RIP/RAP [0]		☐ MODERATE [-1]
☐ LACUSTURINE [0]		■ NORMAL [0]
☐ SHALE [-1]		☐ NONE [1]
☐ COAL FINES [-2]		

Substrate 13 *Maximum 20*

Comments

2] INSTREAM COVER

Indicate presence 0 to 3: **0**-Absent; **1**-Very small amounts or if more common of marginal quality; **2**-Moderate amounts, but not of highest quality or in small amounts of highest quality; **3**-Highest quality in moderate or greater amounts (e.g., very large boulders in deep or fast water, large diameter log that is stable, well developed rootwad in deep / fast water, or deep, well-defined, functional pools.

1 UNDERCUT BANKS [1]	____ POOLS > 70cm [2]	____ OXBOWS, BACKWATERS [1]	**AMOUNT** (Check ONE (*Or 2 & average*))
1 OVERHANGING VEGETATION [1]	____ ROOTWADS [1]	____ AQUATIC MACROPHYTES [1]	☐ EXTENSIVE >75% [11]
____ SHALLOWS (IN SLOW WATER) [1]	____ BOULDERS [1]	____ LOGS OR WOODY DEBRIS [1]	☐ MODERATE 25-75% [7]
____ ROOTMATS [1]			■ SPARSE 5-<25% [3]
			☐ NEARLY ABSENT <5% [1]

Comments

Cover Maximum 20 5.0

3] CHANNEL MORPHOLOGY

Check ONE in each category (*Or 2 & average*)

SINUOSITY	DEVELOPMENT	CHANNELIZATION	STABILITY
☐ HIGH [4]	☐ EXCELLENT [7]	☐ NONE [6]	☐ HIGH [3]
☐ MODERATE [3]	☐ GOOD [5]	☐ RECOVERED [4]	■ MODERATE [2]
☐ LOW [2]	☐ FAIR [3]	■ RECOVERING [3]	☐ LOW [1]
■ NONE [1]	■ POOR [1]	☐ RECENT OR NO RECOVERY [1]	

Comments

Channel Maximum 20 7.0

4] BANK EROSION AND RIPARIAN ZONE

Check **ONE** in each category for *EACH BANK* (*Or 2 per bank & average*)

River right looking downstream

EROSION (L R)	RIPARIAN WIDTH (L R)	FLOOD PLAIN QUALITY (L R)	(L R)
☐ ☐ NONE / LITTLE [3]	☐ ☐ WIDE > 50m [4]	☐ ☐ FOREST, SWAMP [3]	☐ ☐ CONSERVATION TILLAGE [1]
☑ ■ MODERATE [2]	☐ ☐ MODERATE 10-50m [3]	☐ ☐ SHRUB OR OLD FIELD [2]	☑ ■ URBAN OR INDUSTRIAL [0]
☐ ☐ HEAVY / SEVERE [1]	☐ ■ NARROW 5-10m [2]	☐ ☐ RESIDENTIAL, PARK, NEW FIELD [1]	☐ ☐ MINING / CONSTRUCTION [0]
	■ ☐ VERY NARROW < 5m [1]	☐ ☐ FENCED PASTURE [1]	
	☐ ☐ NONE [0]	☐ ☐ OPEN PASTURE, ROWCROP [0]	

Indicate predominant land use(s) past 100m riparian.

Comments

Riparian Maximum 10 3.5

5] POOL / GLIDE AND RIFFLE / RUN QUALITY

MAXIMUM DEPTH (Check **ONE** (*ONLY!*))	CHANNEL WIDTH (Check ONE (*Or 2 & average*))	CURRENT VELOCITY (Check ALL that apply)	
☐ > 1m [6]	☐ POOL WIDTH > RIFFLE WIDTH [2]	☐ TORRENTIAL [-1]	■ SLOW [1]
■ 0.7-<1m [4]	■ POOL WIDTH = RIFFLE WIDTH [1]	☐ VERY FAST [1]	☐ INTERSTITIAL [-1]
☐ 0.4-<0.7m [2]	☐ POOL WIDTH < RIFFLE WIDTH [0]	☐ FAST [1]	☐ INTERMITTENT [-2]
☐ 0.2-<0.4m [1]		☐ MODERATE [1]	☐ EDDIES [1]
☐ < 0.2m [0]		*Indicate for reach - pools and riffles.*	

Recreation Potential
Primary Contact
Secondary Contact
(circle one and comment on back)

Comments 26" = 0.9144 m

Pool / Current Maximum 12 6.0

Indicate for functional riffles; Best areas must be large enough to support a population of riffle-obligate species: Check ONE (*Or 2 & average*). ☐ NO RIFFLE [metric=0]

RIFFLE DEPTH	RUN DEPTH	RIFFLE / RUN SUBSTRATE	RIFFLE / RUN EMBEDDEDNESS
☐ BEST AREAS > 10cm [2]	☐ MAXIMUM > 50cm [2]	☐ STABLE (e.g., Cobble, Boulder) [2]	☐ NONE [2]
■ BEST AREAS 5-10cm [1]	■ MAXIMUM < 50cm [1]	☐ MOD. STABLE (e.g., Large Gravel) [1]	■ LOW [1]
☐ BEST AREAS < 5cm [metric=0]		■ UNSTABLE (e.g., Fine Gravel, Sand) [0]	☐ MODERATE [0]
			☐ EXTENSIVE [-1]

Comments 2" = 5.08 cm

Riffle / Run Maximum 8 3.0

6] GRADIENT

(10 ft/mi)

DRAINAGE AREA
(1.13 mi²)

☐ VERY LOW - LOW [2-4]
■ MODERATE [6-10]
☐ HIGH - VERY HIGH [10-6]

%POOL: 15% %GLIDE: 10%
%RUN: 60% %RIFFLE: 15%

Gradient Maximum 10 6

A] SAMPLED REACH

Check ALL that apply

METHOD

- ☐ BOAT
- ☒ WADE
- ☐ L. LINE
- ☐ OTHER

STAGE

1st -sample pass-		2nd
☐	HIGH	☐
☐	UP	☐
☒	NORMAL	☐
☐	LOW	☐
☐	DRY	☐

DISTANCE

- ☐ 0.5 Km
- ☐ 0.2 Km
- ☐ 0.15 Km
- ☐ 0.12 Km
- ☐ OTHER

_____ meters

CLARITY

1st --sample pass--		2nd
☒	< 20 cm	☐
☐	20-<40 cm	☐
☐	40-70 cm	☐
☐	> 70 cm/ CTB	☐
☐	SECCHI DEPTH	☐

1st pass _____ cm

2nd _____ cm

CANOPY

- ☒ > 85%- OPEN
- ☐ 55%-<85%
- ☐ 30%-<55%
- ☐ 10%-<30%
- ☐ <10%- CLOSED

Comment RE: Reach consistency/ Is reach typical of steam?, *Recreation/* Observed - Inferred, *Other/* Sampling observations, Concerns, Access directions, etc.

Oil sheen and odor

B] AESTHETICS

- ☐ NUISANCE ALGAE
- ☐ INVASIVE MACROPHYTES
- ☐ EXCESS TURBIDITY
- ☐ DISCOLORATION
- ☐ FOAM / SCUM
- ☒ OIL SHEEN
- ☐ TRASH / LITTER
- ☒ NUISANCE ODOR
- ☐ SLUDGE DEPOSITS
- ☐ CSOs/SSOs/OUTFALLS

C] RECREATION

AREA DEPTH

POOL: ☐ >100ft² ☐ >3ft

D] MAINTENANCE

Circle some & *COMMENT*

PUBLIC (PRIVATE) BOTH / NA
ACTIVE / HISTORIC / BOTH / NA
YOUNG-SUCCESSION-OLD
SPRAY / SNAG / REMOVED
MODIFIED / DIPPED OUT / NA
LEVEED / ONE SIDED
RELOCATED / CUTOFFS
MOVING-BEDLOAD-STABLE
ARMOURED / SLUMPS
ISLANDS / SCOURED
IMPOUNDED / DESICCATED
FLOOD CONTROL / DRAINAGE

E] ISSUES

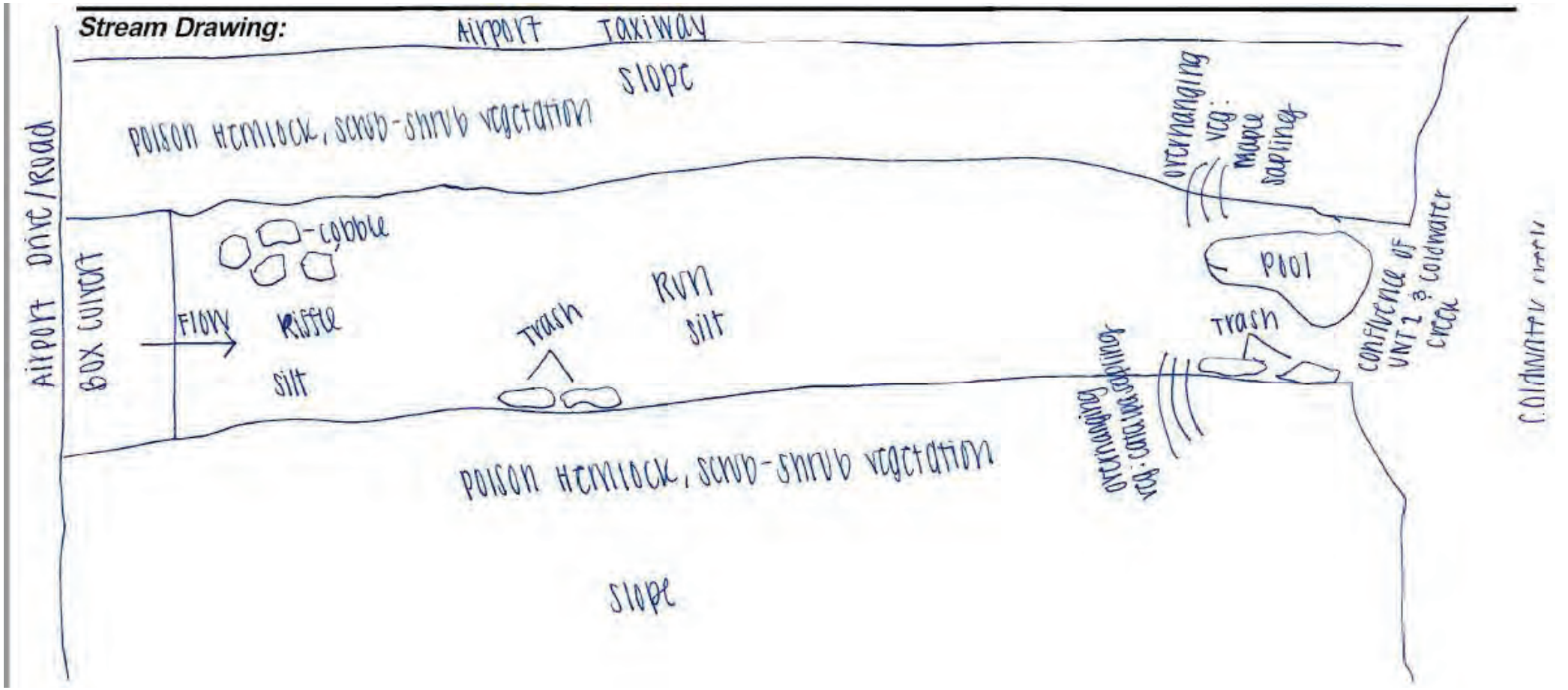
WWTP / CSO / NPDES / INDUSTRY
HARDENED / URBAN / DIRT&GRIME
CONTAMINATED / LANDFILL
BMPs-CONSTRUCTION-SEDIMENT
LOGGING / IRRIGATION / COOLING
BANK / EROSION / SURFACE
FALSE BANK / MANURE / LAGOON
WASH H_20 / TILE / H_20 TABLE
ACID / MINE / QUARRY / FLOW
NATURAL / WETLAND / STAGNANT
PARK / GOLF / LAWN / HOME
ATMOSPHERE / DATA PAUCITY

F] MEASUREMENTS

- $\bar{x}$ width
- $\bar{x}$ depth
- max. depth
- $\bar{x}$ bankfull width
- bankfull $\bar{x}$ depth
- W/D ratio
- bankfull max. depth
- floodprone x^2 width
- entrench. ratio

Legacy Tree:

Stream Drawing:



Primary Headwater Habitat Field Evaluation Form

HHEI Score (sum of metrics 1+2+3) 17

SITE NAME/LOCATION: St. Louis Lambert International Airport

SITE NUMBER: UNT 2 | RIVER BASIN: Missouri River | RIVER CODE: | DRAINAGE AREA (mi²): 0.065

LENGTH OF STREAM REACH (ft): 17.24 | LAT: 38.745033 | LONG: 38.745033 | RIVER MILE: N/A

DATE: 5/24/2023 | SCORER: Stephanie Spence | COMMENTS:

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☑ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type present). Check *ONLY* two predominant substrate *TYPE* boxes. (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B

TYPE		PERCENT	TYPE		PERCENT
☐☐	BLDR SLABS [16 pts]		☐☐	SILT [3 pt]	
☐☐	BOULDER (>256 mm) [16 pts]		☐☐	LEAF PACK/WOODY DEBRIS [3 pts]	
☐☐	BEDROCK [16 pts]		☐☐	FINE DETRITUS [3 pts]	
☐☐	COBBLE (65-256 mm) [12 pts]		☐☐	CLAY or HARDPAN [0 pt]	
☐☐	GRAVEL (2-64 mm) [9 pts]		☐☐	MUCK [0 pts]	
☐☐	SAND (<2 mm) [6 pts]		☑☑	ARTIFICIAL [3 pts]	100

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock: 0 (A)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: 6

TOTAL NUMBER OF SUBSTRATE TYPES: 1 (B)

HHEI Metric Points

Substrate Max = 40: 7

A + B

2. Maximum Pool Depth (*Measure the maximum pool depth within the 61 meter (200 feet)* evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☐ > 30 centimeters [20 pts]
- ☐ > 22.5 - 30 cm [30 pts]
- ☐ > 10 - 22.5 cm [25 pts]
- ☐ 5 cm - 10 cm [15 pts]
- ☑ < 5 cm [5pts]
- ☐ NO WATER OR MOIST CHANNEL [0pts]

COMMENTS: 1/4" = 0.635 cm

MAXIMUM POOL DEPTH (centimeters): 0.6

Pool Depth Max = 30: 5

3. BANK FULL WIDTH (Measured as the average of 3 - 4 measurements) (Check *ONLY* one box):

- ☐ > 4.0 meters (> 13') [30 pts]
- ☐ > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]
- ☐ > 1.5 m - 3.0 m (> 4' 8" - 9' 7") [20 pts]
- ☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
- ☑ ≤ 1.0 m (≤ 3' 3") [5 pts]

COMMENTS: 16" = 0.4064 m

AVERAGE BANKFULL WIDTH (meters): 0.4

Bankfull Width Max=30: 5

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY * NOTE: River Left (L) and Right (R) as looking downstream *

RIPARIAN WIDTH (Per Bank) L	R		FLOODPLAIN QUALITY (Most Predominant per Bank) L	R		L	R	
☐	☐	Wide >10m	☐	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☐	☐	Immature Forest, Shrub or Old Field	☑	☑	Urban or Industrial
☐	☐	Narrow <5m	☐	☐	Residential, Park, New Field	☐	☐	Open Pasture, Row Crop
☑	☑	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS: Surrounded by airport

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

- ☑ Stream Flowing
- ☐ Subsurface flow with isolated pools (interstitial)
- ☐ Moist Channel, isolated pools, no flow (intermittent)
- ☐ Dry channel, no water (ephemeral)

COMMENTS: Flows west into coldwater creek, OHWM = 7 "

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box):

- ☑ None
- ☐ 0.5
- ☐ 1.0
- ☐ 1.5
- ☐ 2.0
- ☐ 2.5
- ☐ 3.0
- ☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☑ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? ☐ Yes ☑ No QHEI Score _____ (If Yes, Attach Completed QHEI form)

DOWNSTREAM DESIGNATED USE(S)

☑ WWH Name: Coldwater Creek Distance from Evaluated Stream 0

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION.

USGS Quadrangle Name: Creve Coeur NRCS Soil Map Page: _____ NRCS Soil Map Stream Order: _____

County: St. Louis Township/City: St. Louis

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: 5/17/2023 Quantity: 0.03 in

Photo-documentation Notes: _____

Elevated Turbidity? (Y/N): N Canopy (% open): 100

Were samples collected for water chemistry? (Y/N): _____ Lab Sample # or ID (attach results): _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (umhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, explain: _____

Additional comments/description of pollution impacts: Oil sheen, nuisance algae,

BIOLOGICAL OBSERVATIONS

(Record all observations below)

Fish Observed? (Y/N) N Species observed (if known): _____

Frogs or Tadpoles Observed? (Y/N) N Species observed (if known): _____

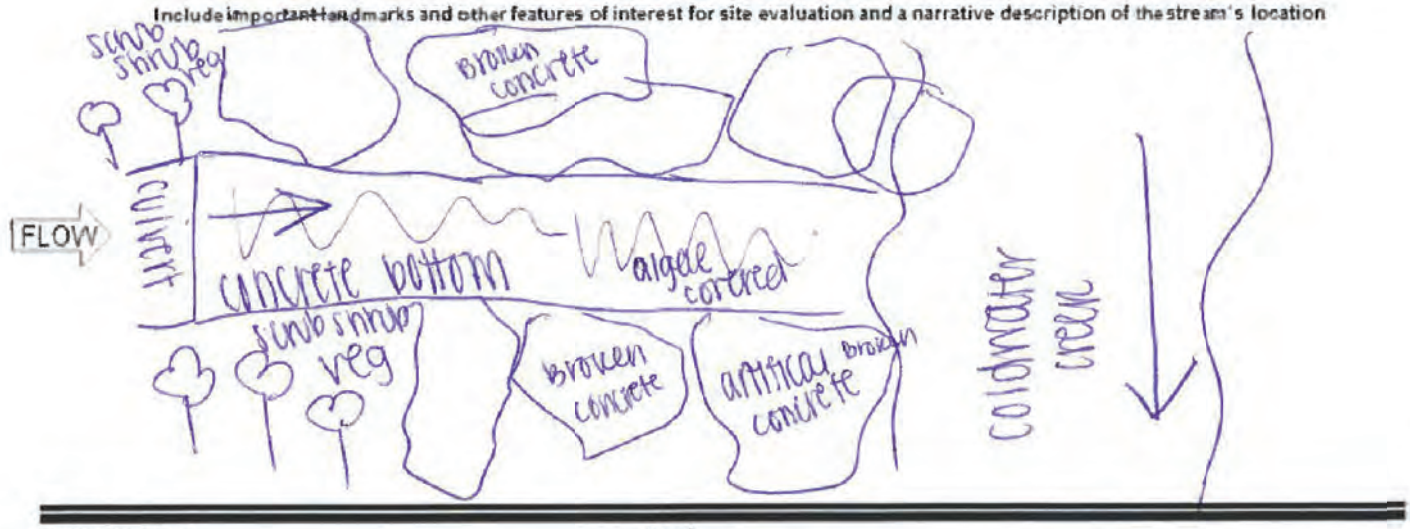
Salamanders Observed? (Y/N) N Species observed (if known): _____

Aquatic Macroinvertebrates Observed? (Y/N) N Species observed (if known): _____

Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed)

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location



Primary Headwater Habitat Field Evaluation Form

HHEI Score (sum of metrics 1+2+3) 43

SITE NAME/LOCATION: St. Louis Lambert International Airport - UNT 3 Concrete Portion

SITE NUMBER: UNT 3 Concrete | RIVER BASIN: Missouri River | RIVER CODE: | DRAINAGE AREA (mi²): 0.52

LENGTH OF STREAM REACH (ft): 200 | LAT: 38.743416 | LONG: 90.381985 | RIVER MILE: N/A

DATE: 1/31/2024 | SCORER: Stephanie Spence - CMT | COMMENTS:

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☑ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type present). Check *ONLY* two predominant substrate *TYPE* boxes. (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B

TYPE		PERCENT	TYPE		PERCENT
☐☐	BLDR SLABS [16 pts]	0	☐☐	SILT [3 pt]	20
☐☐	BOULDER (>256 mm) [16 pts]	0	☐☐	LEAF PACK/WOODY DEBRIS [3 pts]	0
☐☐	BEDROCK [16 pts]	0	☐☐	FINE DETRITUS [3 pts]	0
☐☐	COBBLE (65-256 mm) [12 pts]	0	☐☐	CLAY or HARDPAN [0 pt]	0
☐☐	GRAVEL (2-64 mm) [9 pts]	0	☐☐	MUCK [0 pts]	0
☐☐	SAND (<2 mm) [6 pts]	0	☑☑	ARTIFICIAL [3 pts]	80

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock: 0

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: (A) 6 | TOTAL NUMBER OF SUBSTRATE TYPES: (B) 2

HHEI Metric Points
Substrate Max = 40: 8
A + B

2. Maximum Pool Depth (*Measure the maximum pool depth within the 61 meter (200 feet)* evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☐ > 30 centimeters [20 pts]
- ☑ > 22.5 - 30 cm [30 pts]
- ☐ > 10 - 22.5 cm [25 pts]
- ☐ 5 cm - 10 cm [15 pts]
- ☐ < 5 cm [5pts]
- ☐ NO WATER OR MOIST CHANNEL [0pts]

COMMENTS: | MAXIMUM POOL DEPTH (centimeters): 28

Pool Depth Max = 30: 30

3. BANK FULL WIDTH (Measured as the average of 3 - 4 measurements) (Check *ONLY* one box):

- ☐ > 4.0 meters (> 13') [30 pts]
- ☐ > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]
- ☐ > 1.5 m - 3.0 m (> 4' 8" - 9' 7") [20 pts]
- ☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
- ☑ ≤ 1.0 m (≤ 3' 3") [5 pts]

COMMENTS: 30" | AVERAGE BANKFULL WIDTH (meters): 0.

Bankfull Width Max=30: 5

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY * NOTE: River Left (L) and Right (R) as looking downstream *

RIPARIAN WIDTH (Per Bank) L	R		FLOODPLAIN QUALITY (Most Predominant per Bank) L	R		L	R	
☐	☐	Wide >10m	☐	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☑	☑	Moderate 5-10m	☐	☐	Immature Forest, Shrub or Old Field	☑	☑	Urban or Industrial
☐	☐	Narrow <5m	☐	☐	Residential, Park, New Field	☐	☐	Open Pasture, Row Crop
☐	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS: Surrounded by detention basin and I-70

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

- ☑ Stream Flowing
- ☐ Subsurface flow with isolated pools (interstitial)
- ☐ Moist Channel, isolated pools, no flow (intermittent)
- ☐ Dry channel, no water (ephemeral)

COMMENTS: Flow into coldwater creek.

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box):

- ☐ None
- ☑ 0.5
- ☐ 1.0
- ☐ 1.5
- ☐ 2.0
- ☐ 2.5
- ☐ 3.0
- ☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☑ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? ☑ Yes ☐ No QHEI Score 25 (If Yes, Attach Completed QHEI form)

DOWNSTREAM DESIGNATED USE(S)

☑ WWH Name: Coldwater Creek Distance from Evaluated Stream 0 ft.

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION.

USGS Quadrangle Name: Creve Coeur NRCS Soil Map Page: _____ NRCS Soil Map Stream Order: _____

County: St. Louis Township/City: St. Louis

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: 1/28/2023 Quantity: 0.24 in

Photo-documentation Notes: _____

Elevated Turbidity? (Y/N): N Canopy (% open): 85

Were samples collected for water chemistry? (Y/N): _____ Lab Sample # or ID (attach results): _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (umhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, explain: _____

Additional comments/description of pollution impacts: Oil sheen, nuisance algae, odor, filled with trash from highway. Overhanging honeysuckle and tree branches. 1/3 of stream had concrete bottom, 2/3rds was natural.

BIOLOGICAL OBSERVATIONS

(Record all observations below)

Fish Observed? (Y/N) N Species observed (if known): _____

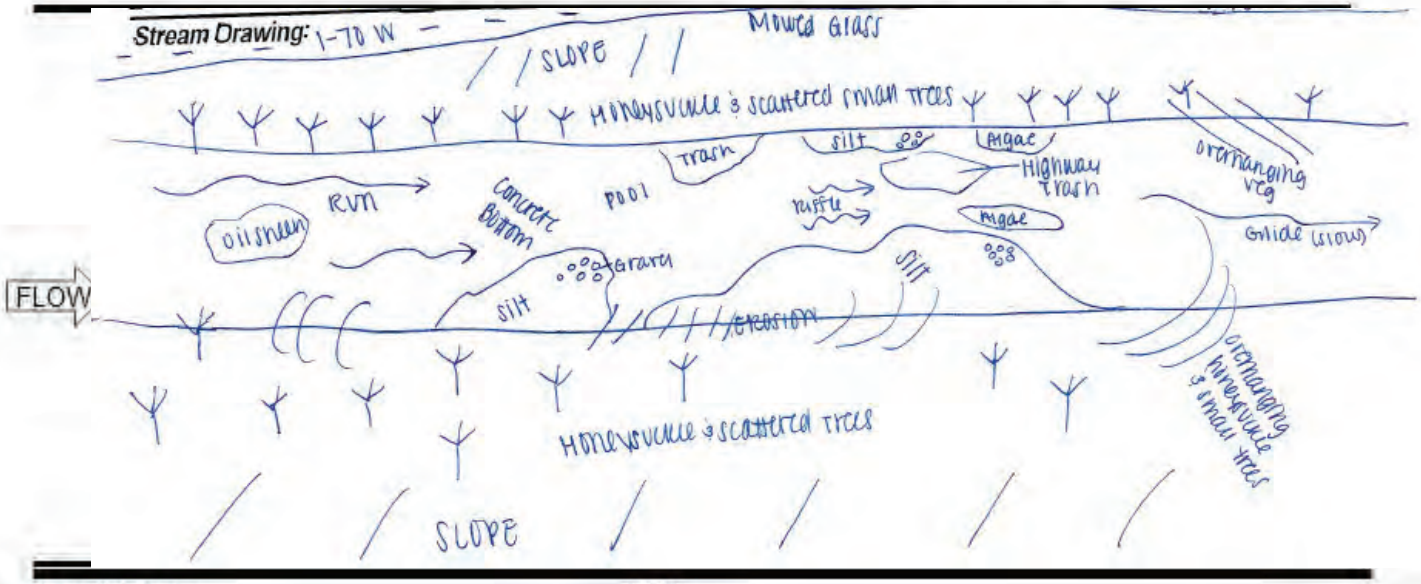
Frogs or Tadpoles Observed? (Y/N) N Species observed (if known): _____

Salamanders Observed? (Y/N) N Species observed (if known): _____

Aquatic Macroinvertebrates Observed? (Y/N) N Species observed (if known): _____

Comments Regarding Biology: _____

Stream Drawing: I-70 W



Primary Headwater Habitat Field Evaluation Form

HHEI Score (sum of metrics 1+2+3) 54

SITE NAME/LOCATION: St. Louis Lambert International Airport - UNT 3 Natural Portion

SITE NUMBER: UNT 3 Natural | RIVER BASIN: Missouri River | RIVER CODE: | DRAINAGE AREA (mi²): 0.52

LENGTH OF STREAM REACH (ft): 200 | LAT: 38.743536 | LONG: 90.384289 | RIVER MILE: N/A

DATE: 1/31/2024 | SCORER: Stephanie Spence - CMT | COMMENTS:

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☑ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type present). Check *ONLY* two predominant substrate *TYPE* boxes. (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS [16 pts]	0	☑ ☐	SILT [3 pt]	30
☐ ☐	BOULDER (>256 mm) [16 pts]	0	☐ ☐	LEAF PACK/WOODY DEBRIS [3 pts]	0
☐ ☐	BEDROCK [16 pts]	0	☐ ☐	FINE DETRITUS [3 pts]	0
☐ ☑	COBBLE (65-256 mm) [12 pts]	40	☐ ☐	CLAY or HARDPAN [0 pt]	0
☐ ☐	GRAVEL (2-64 mm) [9 pts]	15	☐ ☐	MUCK [0 pts]	0
☐ ☐	SAND (<2 mm) [6 pts]	15	☐ ☐	ARTIFICIAL [3 pts]	0

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock: 40

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: (A) 15 | TOTAL NUMBER OF SUBSTRATE TYPES: (B) 4

HHEI Metric Points
Substrate Max = 40: 19
A + B

2. Maximum Pool Depth (*Measure the maximum pool depth within the 61 meter (200 feet)* evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☐ > 30 centimeters [20 pts]
- ☑ > 22.5 - 30 cm [30 pts]
- ☐ > 10 - 22.5 cm [25 pts]
- ☐ 5 cm - 10 cm [15 pts]
- ☐ < 5 cm [5pts]
- ☐ NO WATER OR MOIST CHANNEL [0pts]

COMMENTS: 11 1/4 " | MAXIMUM POOL DEPTH (centimeters): 28

Pool Depth Max = 30: 30

3. BANK FULL WIDTH (Measured as the average of 3 - 4 measurements) (Check *ONLY* one box):

- ☐ > 4.0 meters (> 13') [30 pts]
- ☐ > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]
- ☐ > 1.5 m - 3.0 m (> 4' 8" - 9' 7") [20 pts]
- ☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
- ☑ ≤ 1.0 m (≤ 3' 3") [5 pts]

COMMENTS: 30" | AVERAGE BANKFULL WIDTH (meters): 0.

Bankfull Width Max=30: 5

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY * NOTE: River Left (L) and Right (R) as looking downstream *

RIPARIAN WIDTH (Per Bank) L	R		FLOODPLAIN QUALITY (Most Predominant per Bank) L	R		L	R	
☐	☐	Wide >10m	☐	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☑	☑	Moderate 5-10m	☐	☐	Immature Forest, Shrub or Old Field	☑	☑	Urban or Industrial
☐	☐	Narrow <5m	☐	☐	Residential, Park, New Field	☐	☐	Open Pasture, Row Crop
☐	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS: Surrounded by detention basin and I-70

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

- ☑ Stream Flowing
- ☐ Subsurface flow with isolated pools (interstitial)
- ☐ Moist Channel, isolated pools, no flow (intermittent)
- ☐ Dry channel, no water (ephemeral)

COMMENTS: Flow into coldwater creek.

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box):

☐ None	☑ 1.0	☐ 2.0	☐ 3.0
☐ 0.5	☐ 1.5	☐ 2.5	☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☑ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? ☑ Yes ☐ No QHEI Score 42 (If Yes, Attach Completed QHEI form)

DOWNSTREAM DESIGNATED USE(S)

☑ WWH Name: Coldwater Creek Distance from Evaluated Stream 1,139.7 ft.

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION.

USGS Quadrangle Name: Creve Coeur NRCS Soil Map Page: _____ NRCS Soil Map Stream Order: _____

County: St. Louis Township/City: St. Louis

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: 1/28/2023 Quantity: 0.24 in

Photo-documentation Notes: _____

Elevated Turbidity? (Y/N): N Canopy (% open): 85

Were samples collected for water chemistry? (Y/N): _____ Lab Sample # or ID (attach results): _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (umhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, explain: _____

Additional comments/description of pollution impacts: Oil sheen, nuisance algae, odor, filled with trash from highway, brown foam. Overhanging honeysuckle and tree branches. 1/3 of stream had concrete bottom, 2/3rds was natural.

BIOLOGICAL OBSERVATIONS

(Record all observations below)

Fish Observed? (Y/N) Y Species observed (if known): Minnows

Frogs or Tadpoles Observed? (Y/N) N Species observed (if known): _____

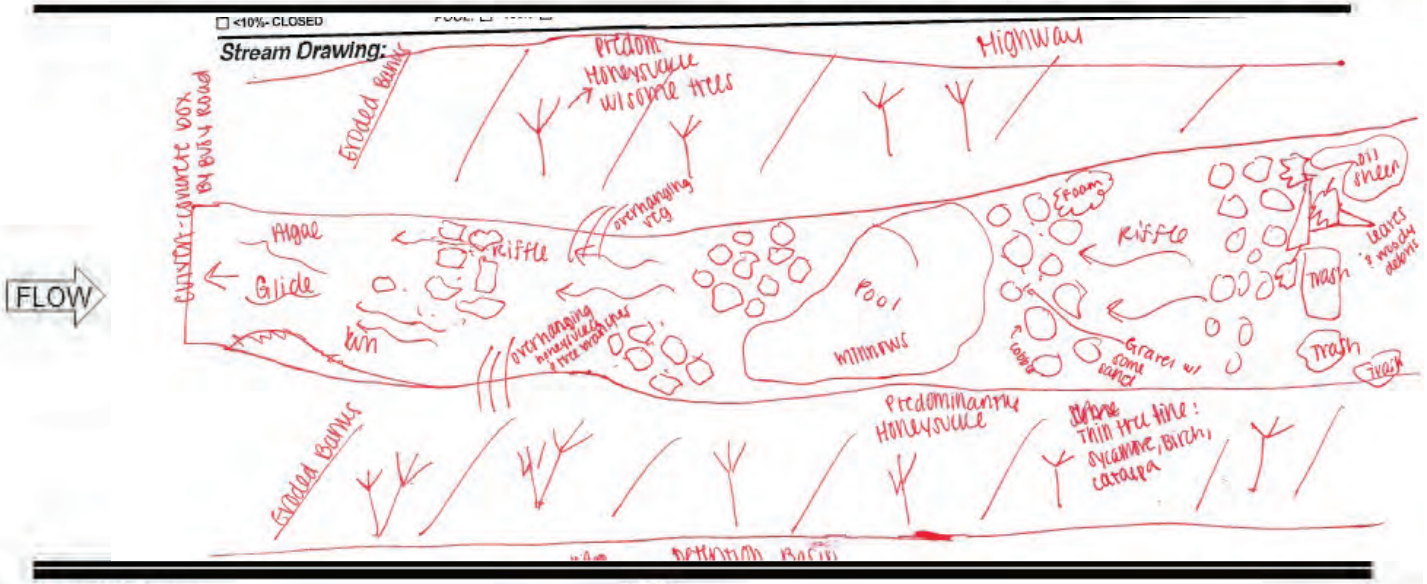
Salamanders Observed? (Y/N) N Species observed (if known): _____

Aquatic Macroinvertebrates Observed? (Y/N) N Species observed (if known): _____

Comments Regarding Biology: Minnows present in one pool.

☐ <10%- CLOSED

Stream Drawing:



Primary Headwater Habitat Field Evaluation Form

HHEI Score (sum of metrics 1+2+3) 33

SITE NAME/LOCATION: UNT 4 - St. Louis Lambert International Airport

SITE NUMBER: UNT 4 | RIVER BASIN: Missouri River | RIVER CODE: | DRAINAGE AREA (mi²): <0.01

LENGTH OF STREAM REACH (ft): 23.5 | LAT: 38.74411 | LONG: -90.386173 | RIVER MILE: N/A

DATE: 1/31/2024 | SCORER: SKS/MKO | COMMENTS: Stream within stormwater detention basin, flows into grass-lined swale

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☑ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type present). Check *ONLY* two predominant substrate *TYPE* boxes. (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B

TYPE		PERCENT	TYPE		PERCENT
☐	BLDR SLABS [16 pts]	0	☐	SILT [3 pt]	0
☐	BOULDER (>256 mm) [16 pts]	0	☑	LEAF PACK/WOODY DEBRIS [3 pts]	70
☐	BEDROCK [16 pts]	0	☑	FINE DETRITUS [3 pts]	30
☐	COBBLE (65-256 mm) [12 pts]	0	☐	CLAY or HARDPAN [0 pt]	0
☐	GRAVEL (2-64 mm) [9 pts]	0	☐	MUCK [0 pts]	0
☐	SAND (<2 mm) [6 pts]	0	☐	ARTIFICIAL [3 pts]	0

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock: 0

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: (A) 6 | TOTAL NUMBER OF SUBSTRATE TYPES: (B) 2

HHEI Metric Points
Substrate Max = 40: 8
A + B

2. Maximum Pool Depth (*Measure the maximum pool depth within the 61 meter (200 feet)* evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☑ ≥ 30 centimeters [20 pts]
- ☐ ≥ 22.5 - 30 cm [30 pts]
- ☐ ≥ 10 - 22.5 cm [25 pts]
- ☐ 5 cm - 10 cm [15 pts]
- ☐ < 5 cm [5pts]
- ☐ NO WATER OR MOIST CHANNEL [0pts]

COMMENTS: | MAXIMUM POOL DEPTH (centimeters): 38

Pool Depth Max = 30: 20

3. BANK FULL WIDTH (Measured as the average of 3 - 4 measurements) (Check *ONLY* one box):

- ☐ ≥ 4.0 meters (> 13') [30 pts]
- ☐ ≥ 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]
- ☐ ≥ 1.5 m - 3.0 m (> 4' 8" - 9' 7") [20 pts]
- ☐ ≥ 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
- ☑ ≤ 1.0 m (≤ 3' 3") [5 pts]

COMMENTS: | AVERAGE BANKFULL WIDTH (meters): 1.6

Bankfull Width Max=30: 5

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY * NOTE: River Left (L) and Right (R) as looking downstream *

RIPARIAN WIDTH (Per Bank) L	R	FLOODPLAIN QUALITY (Most Predominant per Bank) L	R	L	R
☐	☐ Wide >10m	☐	☐ Mature Forest, Wetland	☐	☐ Conservation Tillage
☐	☐ Moderate 5-10m	☐	☐ Immature Forest, Shrub or Old Field	☑	☑ Urban or Industrial
☐	☐ Narrow <5m	☐	☐ Residential, Park, New Field	☐	☐ Open Pasture, Row Crop
☑	☑ None	☐	☐ Fenced Pasture	☐	☐ Mining or Construction

COMMENTS: Surrounded by roads on both sides, within stormwater detention basin, grass surrounding stream

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

- ☑ Stream Flowing
- ☐ Subsurface flow with isolated pools (interstitial)
- ☐ Moist Channel, isolated pools, no flow (intermittent)
- ☐ Dry channel, no water (ephemeral)

COMMENTS: Slow flow

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box):

☐ None	☑ 1.0	☐ 2.0	☐ 3.0
☐ 0.5	☐ 1.5	☐ 2.5	☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☑ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? ☐ Yes ☑ No QHEI Score _____ (If Yes, Attach Completed QHEI form)

DOWNSTREAM DESIGNATED USE(S)

☑ WWH Name: Coldwater Creek Distance from Evaluated Stream 151 feet

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION.

USGS Quadrangle Name: Creve Coeur NRCS Soil Map Page: _____ NRCS Soil Map Stream Order: _____

County: St. Louis Township/City: St. Louis

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: 1/28/2024 Quantity: 0.01 inches

Photo-documentation Notes: Rained 1/22-1/25, 1/27-1/28

Elevated Turbidity? (Y/N): N Canopy (% open): 100

Were samples collected for water chemistry? (Y/N): _____ Lab Sample # or ID (attach results): _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (umhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, explain: _____

Additional comments/description of pollution impacts: Trash and litter from highway surrounding stream

Stream within stormwater detention basin, flows into grass-lined swale

BIOLOGICAL OBSERVATIONS

(Record all observations below)

Fish Observed? (Y/N) N Species observed (if known): _____

Frogs or Tadpoles Observed? (Y/N) N Species observed (if known): _____

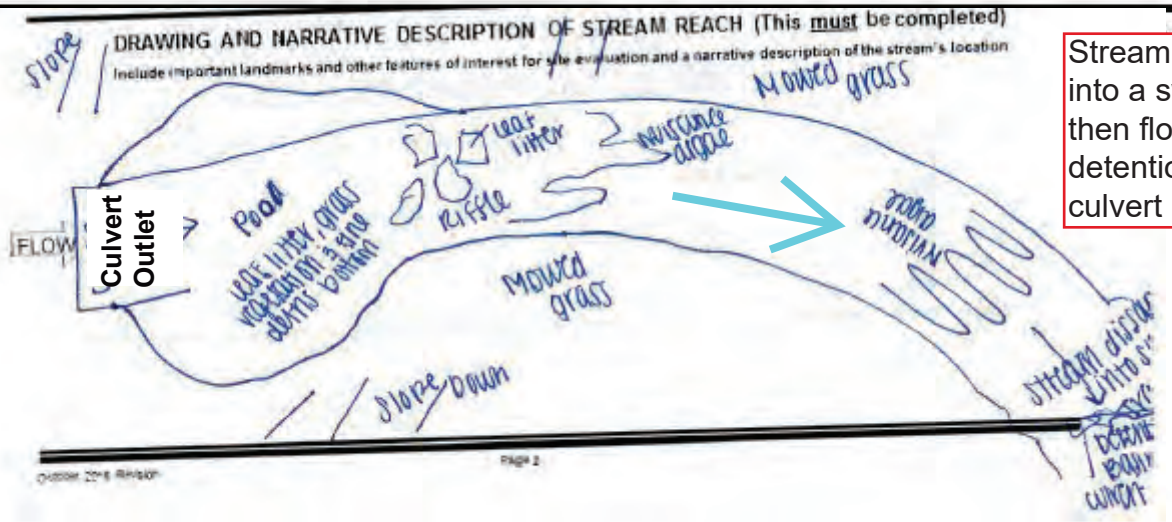
Salamanders Observed? (Y/N) N Species observed (if known): _____

Aquatic Macroinvertebrates Observed? (Y/N) N Species observed (if known): _____

Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed)

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location



Stream dissipates into a swale, which then flows into the detention basin culvert inlet

Primary Headwater Habitat Field Evaluation Form

HHEI Score (sum of metrics 1+2+3) 28

SITE NAME/LOCATION: UNT 5 - St. Louis Lambert International Airport

SITE NUMBER: UNT 5 | RIVER BASIN: Missouri River | RIVER CODE: | DRAINAGE AREA (mi²): 0.04

LENGTH OF STREAM REACH (ft): 200 | LAT: 38.742691 | LONG: -90.383383 | RIVER MILE: N/A

DATE: 1/31/2024 | SCORER: SKS/MKO | COMMENTS: In concave area long I-70 west

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☑ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type present). Check *ONLY* two predominant substrate *TYPE* boxes. (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B

TYPE		PERCENT	TYPE		PERCENT
☐☐	BLDR SLABS [16 pts]	0	☐☑	SILT [3 pt]	80
☐☐	BOULDER (>256 mm) [16 pts]	0	☐☐	LEAF PACK/WOODY DEBRIS [3 pts]	0
☐☐	BEDROCK [16 pts]	0	☑☐	FINE DETRITUS [3 pts]	20
☐☐	COBBLE (65-256 mm) [12 pts]	0	☐☐	CLAY or HARDPAN [0 pt]	0
☐☐	GRAVEL (2-64 mm) [9 pts]	0	☐☐	MUCK [0 pts]	0
☐☐	SAND (<2 mm) [6 pts]	0	☐☐	ARTIFICIAL [3 pts]	0

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock: 0

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: (A) 6 | TOTAL NUMBER OF SUBSTRATE TYPES: (B) 2

HHEI Metric Points

Substrate Max = 40: 8

A + B

2. Maximum Pool Depth (*Measure the maximum pool depth within the 61 meter (200 feet)* evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☐ > 30 centimeters [20 pts]
- ☐ > 22.5 - 30 cm [30 pts]
- ☐ > 10 - 22.5 cm [25 pts]
- ☑ 5 cm - 10 cm [15 pts]
- ☐ < 5 cm [5pts]
- ☐ NO WATER OR MOIST CHANNEL [0pts]

COMMENTS: 4 inches | MAXIMUM POOL DEPTH (centimeters): 10

Pool Depth Max = 30: 15

3. BANK FULL WIDTH (Measured as the average of 3 - 4 measurements) (Check *ONLY* one box):

- ☐ > 4.0 meters (> 13') [30 pts]
- ☐ > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]
- ☐ > 1.5 m - 3.0 m (> 4' 8" - 9' 7") [20 pts]
- ☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
- ☑ ≤ 1.0 m (≤ 3' 3") [5 pts]

COMMENTS: 36 inches | AVERAGE BANKFULL WIDTH (meters): 0.6

Bankfull Width Max=30: 5

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY * NOTE: River Left (L) and Right (R) as looking downstream *

RIPARIAN WIDTH (Per Bank) L	R		FLOODPLAIN QUALITY (Most Predominant per Bank) L	R		L	R	
☐	☐	Wide >10m	☐	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☐	☐	Immature Forest, Shrub or Old Field	☑	☑	Urban or Industrial
☐	☐	Narrow <5m	☐	☐	Residential, Park, New Field	☐	☐	Open Pasture, Row Crop
☑	☑	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS: Within concave area along I-70 west.

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

- ☑ Stream Flowing
- ☐ Subsurface flow with isolated pools (interstitial)
- ☐ Moist Channel, isolated pools, no flow (intermittent)
- ☐ Dry channel, no water (ephemeral)

COMMENTS: Slow flow

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box):

☐ None	☐ 1.0	☐ 2.0	☐ 3.0
☑ 0.5	☐ 1.5	☐ 2.5	☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☑ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? ☐ Yes ☑ No QHEI Score _____ (If Yes, Attach Completed QHEI form)

DOWNSTREAM DESIGNATED USE(S)

☑ WWH Name: Coldwater Creek Distance from Evaluated Stream 474 feet

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION.

USGS Quadrangle Name: Creve Coeur NRCS Soil Map Page: _____ NRCS Soil Map Stream Order: _____

County: St. Louis Township/City: St. Louis

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: 1/28/2024 Quantity: 0.01

Photo-documentation Notes: _____

Elevated Turbidity? (Y/N): N Canopy (% open): 90

Were samples collected for water chemistry? (Y/N): _____ Lab Sample # or ID (attach results): _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (umhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, explain: _____

Additional comments/description of pollution impacts: Trash and litter from highway, oil sheen, wetland vegetation within OHWM, whole stream flows slowly/glides. Stream is within a concave area along I-70 west.

BIOLOGICAL OBSERVATIONS

(Record all observations below)

Fish Observed? (Y/N) N Species observed (if known): _____

Frogs or Tadpoles Observed? (Y/N) N Species observed (if known): _____

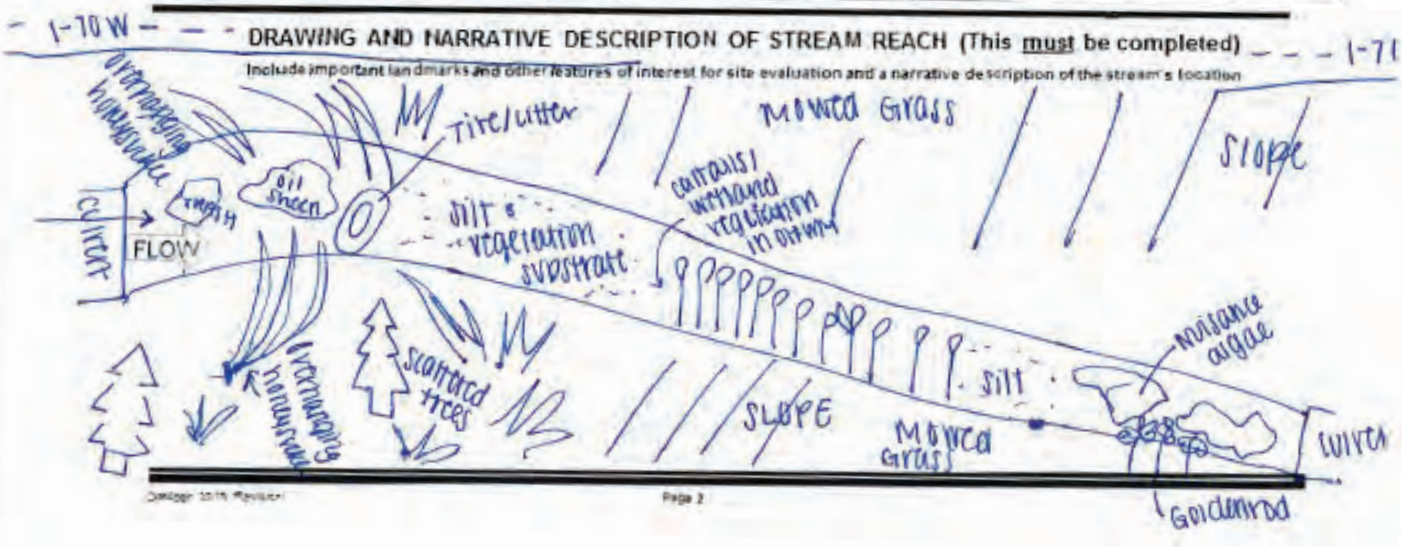
Salamanders Observed? (Y/N) N Species observed (if known): _____

Aquatic Macroinvertebrates Observed? (Y/N) N Species observed (if known): _____

Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed)

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location



Headwater Habitat Evaluation Index Field Form

HHEI Score (sum of metrics 1+2+3) 34

SITE NAME/LOCATION: UNT 6 - St. Louis Lambert International Airport

SITE NUMBER: UNT 6 | RIVER BASIN: Missouri River | RIVER CODE: | DRAINAGE AREA (mi²): 0.06

LENGTH OF STREAM REACH (ft): 39.83 | LAT: 38.743065 | LONG: 90.376617 | RIVER MILE: N/A

DATE: 1/31/2024 | SCORER: Stephanie Spence, CMT Inc. | COMMENTS:

NOTE: Complete All Items On This Form - Refer to "Headwater Habitat Evaluation Index Field Manual" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☒ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type present). Check *ONLY* two predominant substrate *TYPE* boxes. (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS **[16 pts]**	0	☐ ☒	SILT **[3 pt]**	30
☐ ☐	BOULDER (>256 mm) **[16 pts]**	0	☐ ☐	LEAF PACK/WOODY DEBRIS **[3 pts]**	0
☐ ☐	BEDROCK **[16 pts]**	0	☐ ☐	FINE DETRITUS **[3 pts]**	0
☐ ☐	COBBLE (65-256 mm) **[12 pts]**	0	☐ ☐	CLAY or HARDPAN **[0 pt]**	0
☒ ☐	GRAVEL (2-64 mm) **[9 pts]**	70	☐ ☐	MUCK **[0 pts]**	0
☐ ☐	SAND (<2 mm) **[6 pts]**	0	☐ ☐	ARTIFICIAL **[3 pts]**	0

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock: 0

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: (A) 12 | **TOTAL NUMBER OF SUBSTRATE TYPES:** (B) 2

HHEI Metric Points

Substrate Max = 40: 14

A + B

2. Maximum Pool Depth (*Measure the maximum pool depth within the 61 meter (200 feet)* evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☐ > 30 centimeters **[20 pts]**
- ☐ > 22.5 - 30 cm **[30 pts]**
- ☐ > 10 - 22.5 cm **[25 pts]**
- ☒ 5 cm - 10 cm **[15 pts]**
- ☐ < 5 cm **[5pts]**
- ☐ NO WATER OR MOIST CHANNEL **[0pts]**

COMMENTS: 3 inches | **MAXIMUM POOL DEPTH (centimeters):** 7.62

Pool Depth Max = 30: 15

3. BANK FULL WIDTH (Measured as the average of 3 - 4 measurements) (Check *ONLY* one box):

- ☐ > 4.0 meters (> 13') **[30 pts]**
- ☐ > 3.0 m - 4.0 m (> 9' 7"- 13') **[25 pts]**
- ☐ > 1.5 m - 3.0 m (> 4' 8" - 9' 7") **[20 pts]**
- ☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
- ☒ ≤ 1.0 m (≤ 3' 3") **[5 pts]**

COMMENTS: 30 inches | **AVERAGE BANKFULL WIDTH (meters):** 0.7

Bankfull Width Max=30: 5

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ★NOTE: River Left (L) and Right (R) as looking downstream★

RIPARIAN WIDTH (Per Bank) L	R	FLOODPLAIN QUALITY (Most Predominant per Bank) L	R	L	R
☐	☐ Wide >10m	☐	☐ Mature Forest, Wetland	☐	☐ Conservation Tillage
☐	☐ Moderate 5-10m	☐	☐ Immature Forest, Shrub or Old Field	☒	☒ Urban or Industrial
☐	☐ Narrow <5m	☐	☐ Residential, Park, New Field	☐	☐ Open Pasture, Row Crop
☒	☒ None	☐	☐ Fenced Pasture	☐	☐ Mining or Construction

COMMENTS: Stream surrounded by Department of Defense Area and Airport.

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

- ☒ Stream Flowing
- ☐ Subsurface flow with isolated pools (interstitial)
- ☐ Moist Channel, isolated pools, no flow (intermittent)
- ☐ Dry channel, no water (ephemeral)

COMMENTS: Slow flow

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box):

☐ None	☐ 1.0	☐ 2.0	☐ 3.0
☒ 0.5	☐ 1.5	☐ 2.5	☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☒ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? ☒ Yes ☐ No QHEI Score 41.5 (If Yes, Attach Completed QHEI form)

DOWNSTREAM DESIGNATED USE(S)

☒ WWH Name: Coldwater Creek Distance from Evaluated Stream 1,277 feet

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION.

USGS Quadrangle Name: Creve Coeur NRCS Soil Map Page: _____ NRCS Soil Map Stream Order: _____

County: St. Louis Township/City: St. Louis

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: 1/28/2024 Quantity: 0.01

Photo-documentation Notes: _____

Elevated Turbidity? (Y/N): N Canopy (% open): 95

Were samples collected for water chemistry? (Y/N): _____ Lab Sample # or ID (attach results): _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (umhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, explain: _____

Additional comments/description of pollution impacts: Trash and litter present, brown foam, Wetland vegetation within OHWM

BIOLOGICAL OBSERVATIONS

(Record all observations below)

Fish Observed? (Y/N) N Species observed (if known): _____

Frogs or Tadpoles Observed? (Y/N) N Species observed (if known): _____

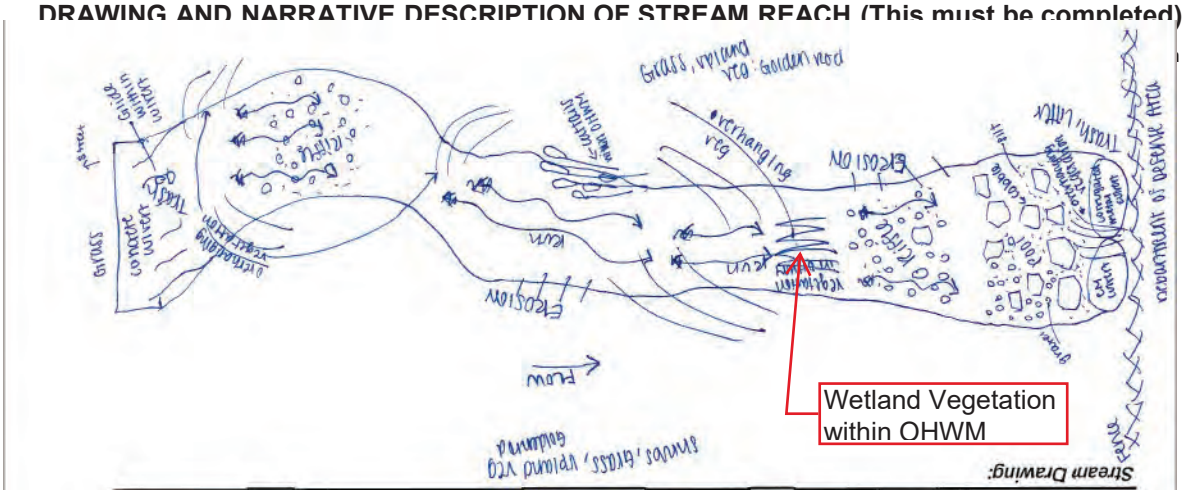
Salamanders Observed? (Y/N) N Species observed (if known): _____

Aquatic Macroinvertebrates Observed? (Y/N) N Species observed (if known): _____

Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed)

FLOW



Primary Headwater Habitat Field Evaluation Form

HHEI Score (sum of metrics 1+2+3) 38

SITE NAME/LOCATION: UNT 7 - St. Louis Lambert International Airport

SITE NUMBER: UNT 7 | RIVER BASIN: Missouri River | RIVER CODE: | DRAINAGE AREA (mi²): 0.04

LENGTH OF STREAM REACH (ft): 200 | LAT: 38.741862 | LONG: -90.376818 | RIVER MILE: N/A

DATE: 1/31/2024 | SCORER: SKS/MKO | COMMENTS:

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☑ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type present). Check *ONLY* two predominant substrate *TYPE* boxes. (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B

TYPE		PERCENT	TYPE		PERCENT
☐☐	BLDR SLABS [16 pts]	0	☑☐	SILT [3 pt]	60
☐☐	BOULDER (>256 mm) [16 pts]	0	☐☐	LEAF PACK/WOODY DEBRIS [3 pts]	0
☐☐	BEDROCK [16 pts]	0	☐☑	FINE DETRITUS [3 pts]	40
☐☐	COBBLE (65-256 mm) [12 pts]	0	☐☐	CLAY or HARDPAN [0 pt]	0
☐☐	GRAVEL (2-64 mm) [9 pts]	0	☐☐	MUCK [0 pts]	0
☐☐	SAND (<2 mm) [6 pts]	0	☐☐	ARTIFICIAL [3 pts]	0

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock: 0

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: (A) 6 | TOTAL NUMBER OF SUBSTRATE TYPES: (B) 2

HHEI Metric Points
Substrate Max = 40: 8
A + B

2. Maximum Pool Depth (*Measure the maximum pool depth within the 61 meter (200 feet)* evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☐ > 30 centimeters [20 pts]
- ☐ > 22.5 - 30 cm [30 pts]
- ☑ > 10 - 22.5 cm [25 pts]
- ☐ 5 cm - 10 cm [15 pts]
- ☐ < 5 cm [5pts]
- ☐ NO WATER OR MOIST CHANNEL [0pts]

COMMENTS: | MAXIMUM POOL DEPTH (centimeters): 20

Pool Depth Max = 30: 25

3. BANK FULL WIDTH (Measured as the average of 3 - 4 measurements) (Check *ONLY* one box):

- ☐ > 4.0 meters (> 13') [30 pts]
- ☐ > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]
- ☐ > 1.5 m - 3.0 m (> 4' 8" - 9' 7") [20 pts]
- ☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
- ☑ ≤ 1.0 m (≤ 3' 3") [5 pts]

COMMENTS: | AVERAGE BANKFULL WIDTH (meters): 1.6

Bankfull Width Max=30: 5

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY * NOTE: River Left (L) and Right (R) as looking downstream *

RIPARIAN WIDTH (Per Bank) L	R		FLOODPLAIN QUALITY (Most Predominant per Bank) L	R		L	R	
☐	☐	Wide >10m	☐	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☐	☐	Immature Forest, Shrub or Old Field	☑	☑	Urban or Industrial
☐	☐	Narrow <5m	☐	☐	Residential, Park, New Field	☐	☐	Open Pasture, Row Crop
☑	☑	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS: Along airport parking lot

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

- ☐ Stream Flowing
- ☐ Subsurface flow with isolated pools (interstitial)
- ☑ Moist Channel, isolated pools, no flow (intermittent)
- ☐ Dry channel, no water (ephemeral)

COMMENTS: Scattered pools

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box):

☐ None	☐ 1.0	☐ 2.0	☐ 3.0
☑ 0.5	☐ 1.5	☐ 2.5	☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☑ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? ☐ Yes ☑ No QHEI Score _____ (If Yes, Attach Completed QHEI form)

DOWNSTREAM DESIGNATED USE(S)

☑ WWH Name: Coldwater Creek Distance from Evaluated Stream 764 feet

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION.

USGS Quadrangle Name: Clayton, Creve Coeur NRCS Soil Map Page: _____ NRCS Soil Map Stream Order: _____

County: St. Louis Township/City: St. Louis

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: 1/28/2024 Quantity: 0.01

Photo-documentation Notes: _____

Elevated Turbidity? (Y/N): N Canopy (% open): 100

Were samples collected for water chemistry? (Y/N): _____ Lab Sample # or ID (attach results): _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (umhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, explain: _____

Additional comments/description of pollution impacts: Trash and litter from highway, Wetland vegetation within OHWM

BIOLOGICAL OBSERVATIONS

(Record all observations below)

Fish Observed? (Y/N) N Species observed (if known): _____

Frogs or Tadpoles Observed? (Y/N) N Species observed (if known): _____

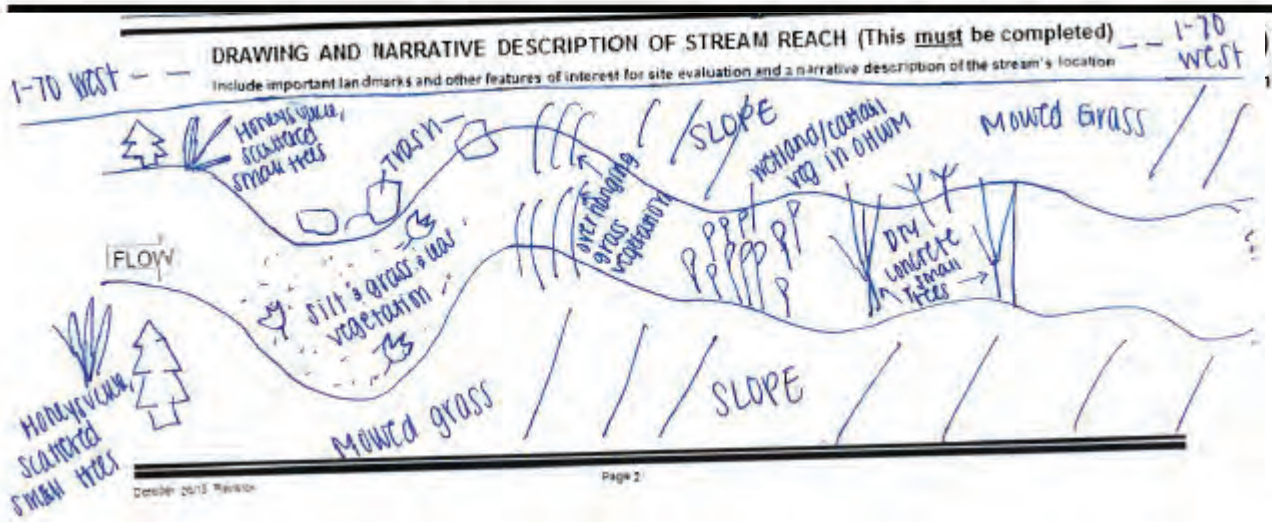
Salamanders Observed? (Y/N) N Species observed (if known): _____

Aquatic Macroinvertebrates Observed? (Y/N) N Species observed (if known): _____

Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed)

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location



Qualitative Habitat Evaluation Index and Use Assessment Field Sheet

QHEI Score: 38

Stream & Location: Cold Water Creek - St. Louis Lambert International Airport **RM:** _ _ _._ **Date:** 5 / 23 / 23

Scorers Full Name & Affiliation: Marion Wells & Stephanie Spence, CMT In

River Code: _ _ _ - _ _ _ - _ _ _ **STORET #:** _ _ _ _ _ _ **Lat./ Long.:** (NAD 83 - decimal °) 38 . 747734 / -90 . 37366 ☐ Office verified location

1] SUBSTRATE

Check ***ONLY Two*** substrate *TYPE BOXES*; estimate % or note every type present

BEST TYPES	POOL	RIFFLE	OTHER TYPES	POOL	RIFFLE
☐ ☐ BLDR /SLABS [10]	0%	0%	☐ ☒ HARDPAN [4]	15%	40%
☐ ☐ BOULDER [9]	0%	5%	☐ ☐ DETRITUS [3]	0%	0%
☑ ☐ COBBLE [8]	45%	10%	☐ ☐ MUCK [2]	0%	0%
☐ ☐ GRAVEL [7]	20%	10%	☐ ☐ SILT [2]	0%	0%
☐ ☐ SAND [6]	10%	10%	☐ ☐ ARTIFICIAL [0]	10%	25%
☐ ☐ BEDROCK [5]	0%	0%			

(Score natural substrates; ignore sludge from point-sources)

NUMBER OF BEST TYPES: ☐ 4 or more [2] ☒ 3 or less [0]

Check ONE (*Or 2 & average*)

ORIGIN
- ☒ LIMESTONE [1]
- ☐ TILLS [1]
- ☐ WETLANDS [0]
- ☐ HARDPAN [0]
- ☐ SANDSTONE [0]
- ☐ RIP/RAP [0]
- ☐ LACUSTURINE [0]
- ☐ SHALE [-1]
- ☐ COAL FINES [-2]

QUALITY

SILT
- ☐ HEAVY [-2]
- ☒ MODERATE [-1]
- ☐ NORMAL [0]
- ☐ FREE [1]

EMBEDDEDNESS
- ☐ EXTENSIVE [-2]
- ☒ MODERATE [-1]
- ☐ NORMAL [0]
- ☐ NONE [1]

Substrate 11 *Maximum 20*

Comments

2] INSTREAM COVER

Indicate presence 0 to 3: **0**-Absent; **1**-Very small amounts or if more common of marginal quality; **2**-Moderate amounts, but not of highest quality or in small amounts of highest quality; **3**-Highest quality in moderate or greater amounts (e.g., very large boulders in deep or fast water, large diameter log that is stable, well developed rootwad in deep / fast water, or deep, well-defined, functional pools.

1	UNDERCUT BANKS [1]	____	POOLS > 70cm [2]	____	OXBOWS, BACKWATERS [1]
____	OVERHANGING VEGETATION [1]	____	ROOTWADS [1]	1	AQUATIC MACROPHYTES [1]
____	SHALLOWS (IN SLOW WATER) [1]	____	BOULDERS [1]	1	LOGS OR WOODY DEBRIS [1]
1	ROOTMATS [1]				

AMOUNT

Check ONE (*Or 2 & average*)
- ☐ EXTENSIVE >75% [11]
- ☐ MODERATE 25-75% [7]
- ☒ SPARSE 5-<25% [3]
- ☐ NEARLY ABSENT <5% [1]

Comments

Cover *Maximum 20* 7.0

3] CHANNEL MORPHOLOGY

Check ONE in each category (*Or 2 & average*)

SINUOSITY
- ☐ HIGH [4]
- ☐ MODERATE [3]
- ☒ LOW [2]
- ☐ NONE [1]

DEVELOPMENT
- ☐ EXCELLENT [7]
- ☐ GOOD [5]
- ☐ FAIR [3]
- ☒ POOR [1]

CHANNELIZATION
- ☐ NONE [6]
- ☐ RECOVERED [4]
- ☒ RECOVERING [3]
- ☐ RECENT OR NO RECOVERY [1]

STABILITY
- ☐ HIGH [3]
- ☒ MODERATE [2]
- ☐ LOW [1]

Comments

Channel *Maximum 20* 8.0

4] BANK EROSION AND RIPARIAN ZONE

Check **ONE** in each category for ***EACH BANK*** (*Or 2 per bank & average*)

River right looking downstream

L	R	EROSION
☐	☐	NONE / LITTLE [3]
☑	☒	MODERATE [2]
☐	☐	HEAVY / SEVERE [1]

L	R	RIPARIAN WIDTH
☐	☐	WIDE > 50m [4]
☐	☐	MODERATE 10-50m [3]
☐	☐	NARROW 5-10m [2]
☐	☐	VERY NARROW < 5m [1]
☑	☒	NONE [0]

L	R	FLOOD PLAIN QUALITY
☐	☐	FOREST, SWAMP [3]
☐	☐	SHRUB OR OLD FIELD [2]
☐	☐	RESIDENTIAL, PARK, NEW FIELD [1]
☐	☐	FENCED PASTURE [1]
☐	☐	OPEN PASTURE, ROWCROP [0]

L	R	
☐	☐	CONSERVATION TILLAGE [1]
☑	☒	URBAN OR INDUSTRIAL [0]
☐	☐	MINING / CONSTRUCTION [0]

Indicate predominant land use(s) past 100m riparian.

Comments

Riparian *Maximum 10* 2.0

5] POOL / GLIDE AND RIFFLE / RUN QUALITY

MAXIMUM DEPTH

Check **ONE** (*ONLY!*)
- ☐ > 1m [6]
- ☐ 0.7-<1m [4]
- ☐ 0.4-<0.7m [2]
- ☒ 0.2-<0.4m [1]
- ☐ < 0.2m [0]

CHANNEL WIDTH

Check ONE (*Or 2 & average*)
- ☒ POOL WIDTH > RIFFLE WIDTH [2]
- ☐ POOL WIDTH = RIFFLE WIDTH [1]
- ☐ POOL WIDTH < RIFFLE WIDTH [0]

CURRENT VELOCITY

Check ALL that apply
- ☐ TORRENTIAL [-1]
- ☐ VERY FAST [1]
- ☐ FAST [1]
- ☐ MODERATE [1]
- ☒ SLOW [1]
- ☐ INTERSTITIAL [-1]
- ☐ INTERMITTENT [-2]
- ☐ EDDIES [1]

Indicate for reach - pools and riffles.

Recreation Potential
Primary Contact
Secondary Contact
(circle one and comment on back)

Comments 15" = 0.381 meters

Pool / Current *Maximum 12* 4.0

Indicate for functional riffles; Best areas must be large enough to support a population of riffle-obligate species: Check ONE (*Or 2 & average*). ☐ NO RIFFLE [metric=0]

RIFFLE DEPTH
- ☒ BEST AREAS > 10cm [2]
- ☐ BEST AREAS 5-10cm [1]
- ☐ BEST AREAS < 5cm [metric=0]

RUN DEPTH
- ☐ MAXIMUM > 50cm [2]
- ☒ MAXIMUM < 50cm [1]

RIFFLE / RUN SUBSTRATE
- ☐ STABLE (e.g., Cobble, Boulder) [2]
- ☒ MOD. STABLE (e.g., Large Gravel) [1]
- ☐ UNSTABLE (e.g., Fine Gravel, Sand) [0]

RIFFLE / RUN EMBEDDEDNESS
- ☐ NONE [2]
- ☐ LOW [1]
- ☒ MODERATE [0]
- ☐ EXTENSIVE [-1]

Comments 8" = 20.32 centimeters, 9" = 22.86

Riffle / Run *Maximum 8* 4.0

6] GRADIENT

(0 ft/mi)
- ☒ VERY LOW - LOW [2-4]
- ☐ MODERATE [6-10]
- ☐ HIGH - VERY HIGH [10-6]

DRAINAGE AREA (8.6 mi²)

%POOL: 20% **%GLIDE:** 30% **%RUN:** 30% **%RIFFLE:** 20%

Gradient *Maximum 10* 2

A] SAMPLED REACH

Check ALL that apply

METHOD

- ☐ BOAT
- ☒ WADE
- ☐ L. LINE
- ☐ OTHER

DISTANCE

- ☐ 0.5 Km
- ☐ 0.2 Km
- ☐ 0.15 Km
- ☐ 0.12 Km
- ☐ OTHER

_____ meters

STAGE

1st -sample pass-	2nd
☐ HIGH	☐
☐ UP	☐
☒ NORMAL	☐
☐ LOW	☐
☐ DRY	☐

CLARITY

1st --sample pass--	2nd
☐ < 20 cm	☐
☒ 20-<40 cm	☐
☐ 40-70 cm	☐
☐ > 70 cm/ CTB	☐
☐ SECCHI DEPTH	☐

1st pass _____ cm

2nd _____ cm

CANOPY

- ☒ > 85%- OPEN
- ☐ 55%-<85%
- ☐ 30%-<55%
- ☐ 10%-<30%
- ☐ <10%- CLOSED

C] RECREATION AREA DEPTH

POOL: ☐ >100ft² ☐ >3ft

Comment RE: Reach consistency/ Is reach typical of steam?, *Recreation/* Observed - Inferred, *Other/* Sampling observations, Concerns, Access directions, etc.

Crayfish, Minnows, and frogs were observed

Artificial = Broken concrete

B] AESTHETICS

- ☒ NUISANCE ALGAE
- ☐ INVASIVE MACROPHYTES
- ☐ EXCESS TURBIDITY
- ☐ DISCOLORATION
- ☐ FOAM / SCUM
- ☐ OIL SHEEN
- ☒ TRASH / LITTER
- ☒ NUISANCE ODOR
- ☐ SLUDGE DEPOSITS
- ☐ CSOs/SSOs/OUTFALLS

D] MAINTENANCE

Circle some & *COMMENT*

PUBLIC / PRIVATE / BOTH / NA
ACTIVE / HISTORIC / BOTH / NA
YOUNG-SUCCESSION-OLD
SPRAY / SNAG / REMOVED
MODIFIED / DIPPED OUT / NA
LEVEED / ONE SIDED
RELOCATED / CUTOFFS
MOVING-BEDLOAD-STABLE
ARMOURED / SLUMPS
ISLANDS / SCOURED
IMPOUNDED / DESICCATED
FLOOD CONTROL / DRAINAGE

E] ISSUES

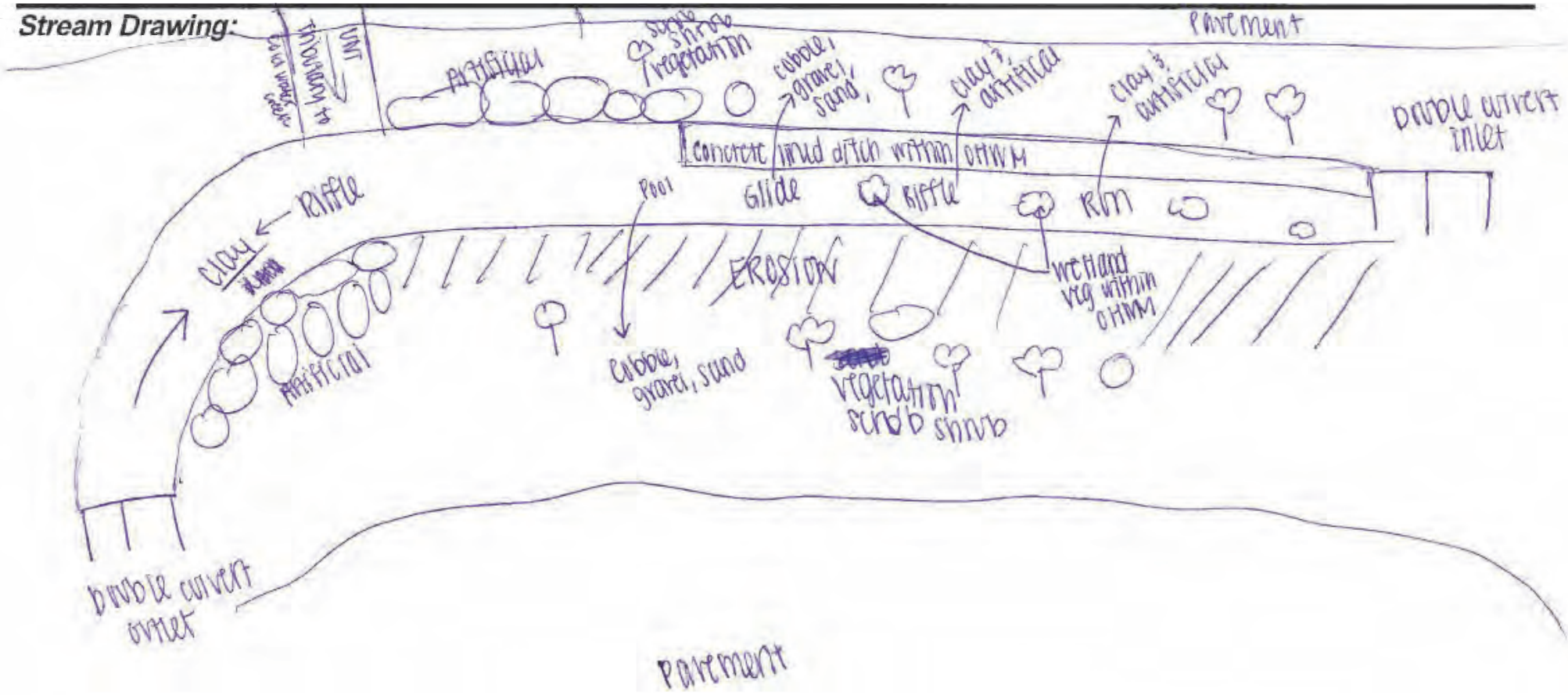
WWTP / CSO / NPDES / INDUSTRY
HARDENED / URBAN / DIRT&GRIME
CONTAMINATED / LANDFILL
BMPs-CONSTRUCTION-SEDIMENT
LOGGING / IRRIGATION / COOLING
BANK / EROSION / SURFACE
FALSE BANK / MANURE / LAGOON
WASH H_20 / TILE / H_20 TABLE
ACID / MINE / QUARRY / FLOW
NATURAL / WETLAND / STAGNANT
PARK / GOLF / LAWN / HOME
ATMOSPHERE / DATA PAUCITY

F] MEASUREMENTS

- $\bar{x}$ width
- $\bar{x}$ depth
- max. depth
- $\bar{x}$ bankfull width
- bankfull $\bar{x}$ depth
- W/D ratio
- bankfull max. depth
- floodprone x^2 width
- entrench. ratio

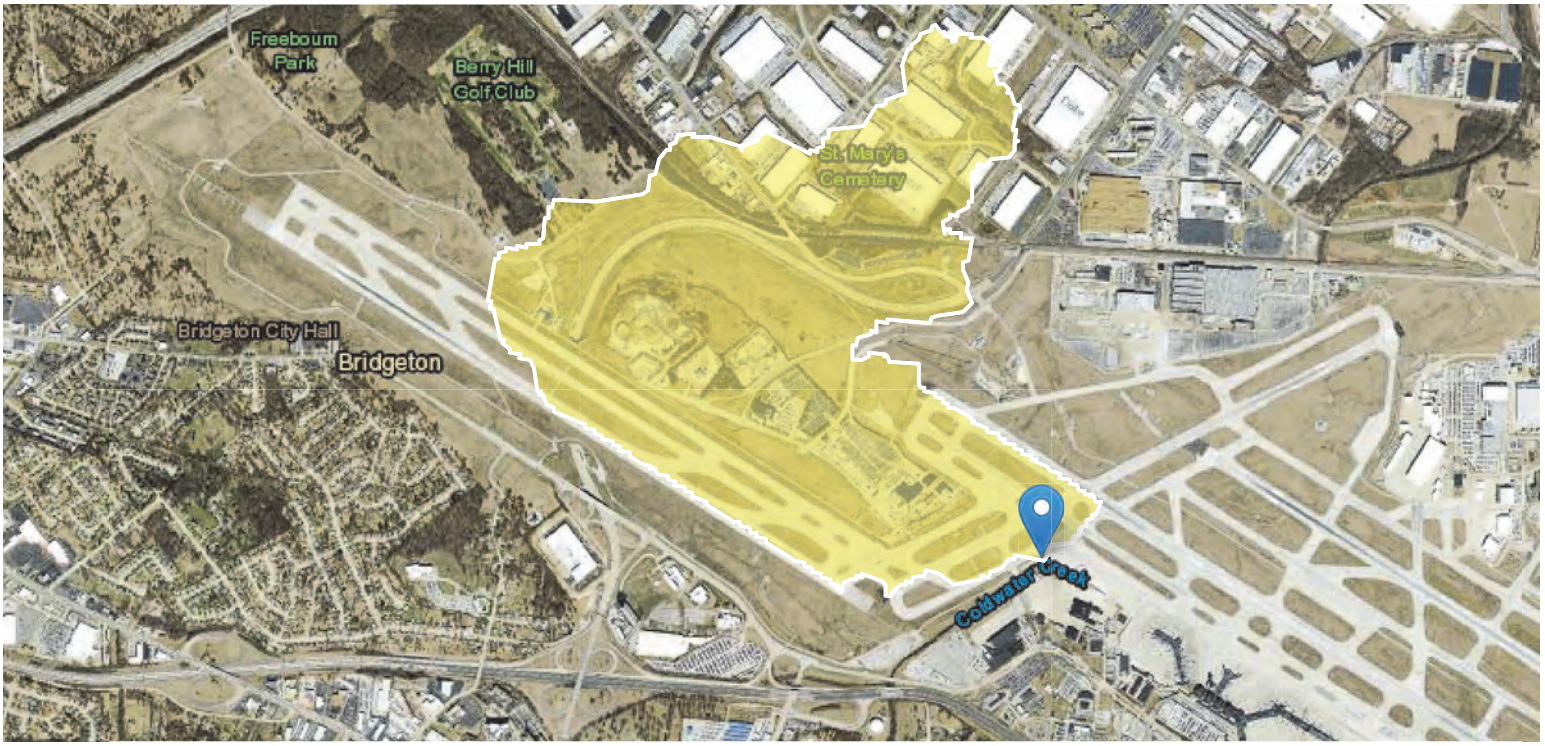
Legacy Tree:

Stream Drawing:



StreamStats Report - St. Louis Lambert International Airport - UNT 1

Region ID: MO
Workspace ID: MO20230612194423614000
Clicked Point (Latitude, Longitude): 38.74793, -90.37401
Time: 2023-06-12 15:45:00 -0400



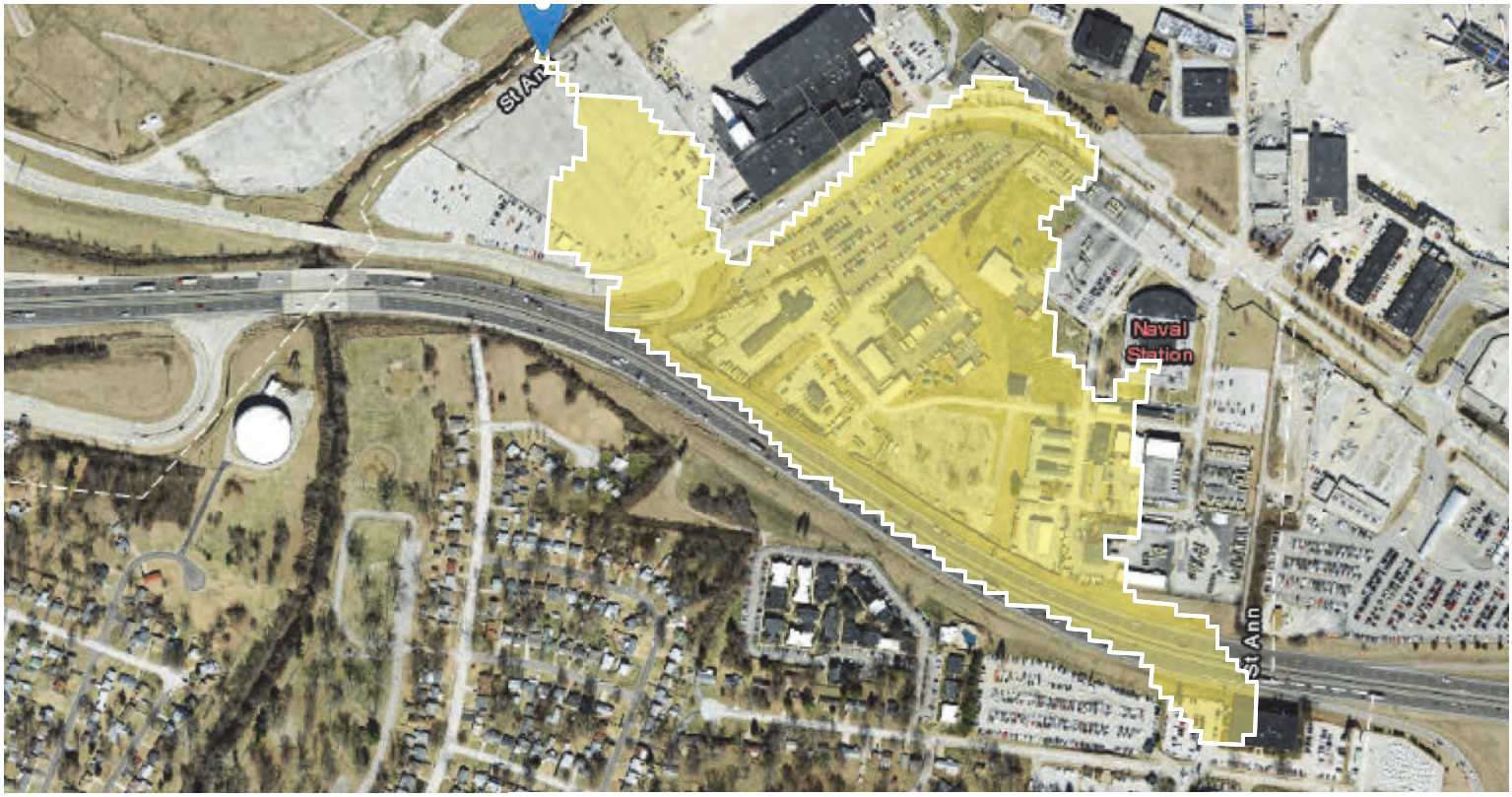
Collapse All

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	1.13	square miles

StreamStats Report - St. Louis Lambert International Airport - UNT 2

Region ID: MO
Workspace ID: MO20230622194331209000
Clicked Point (Latitude, Longitude): 38.74512, -90.37867
Time: 2023-06-22 15:43:59 -0400



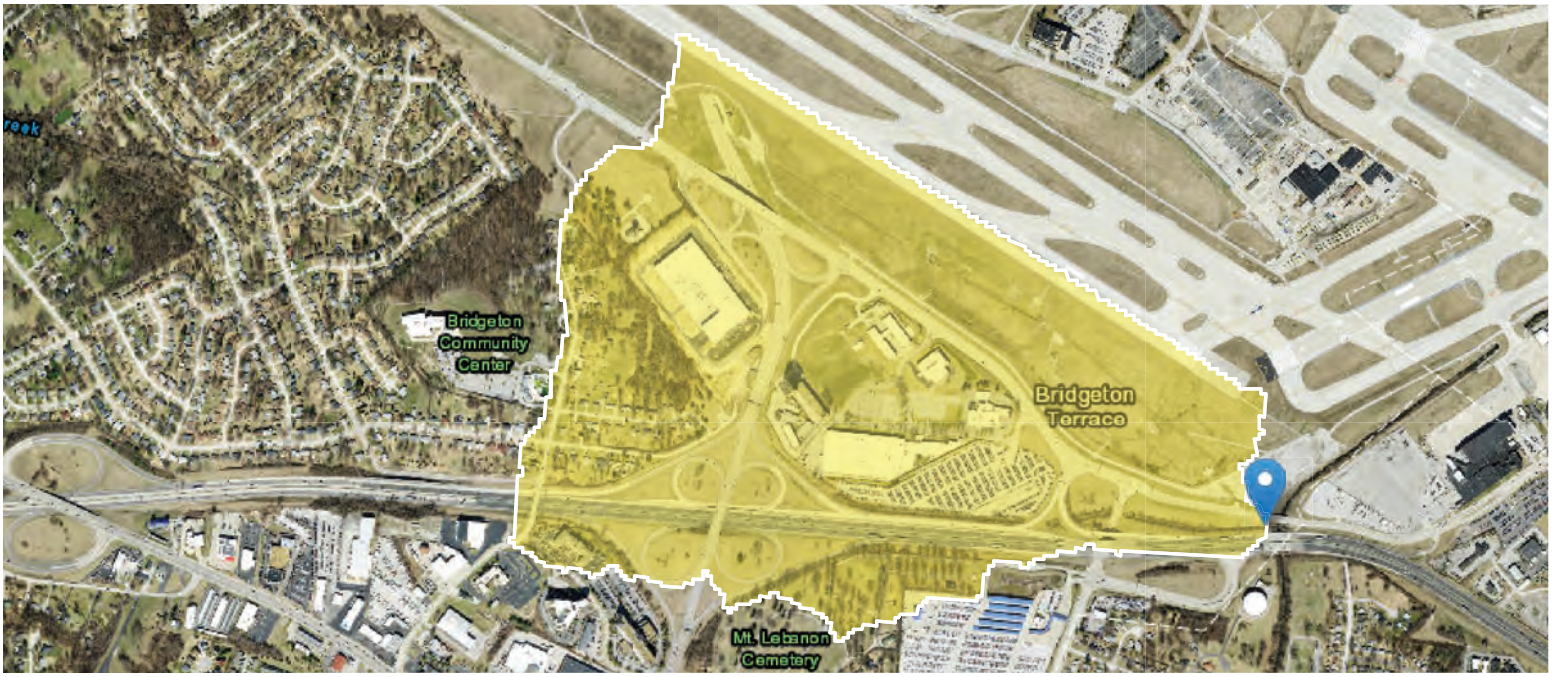
Collapse All

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	0.0654	square miles

StreamStats Report - St. Louis Lambert International Airport - UNT 3

Region ID: MO
Workspace ID: MO20240228193555045000
Clicked Point (Latitude, Longitude): 38.74345, -90.38146
Time: 2024-02-28 14:36:21 -0500



Collapse All

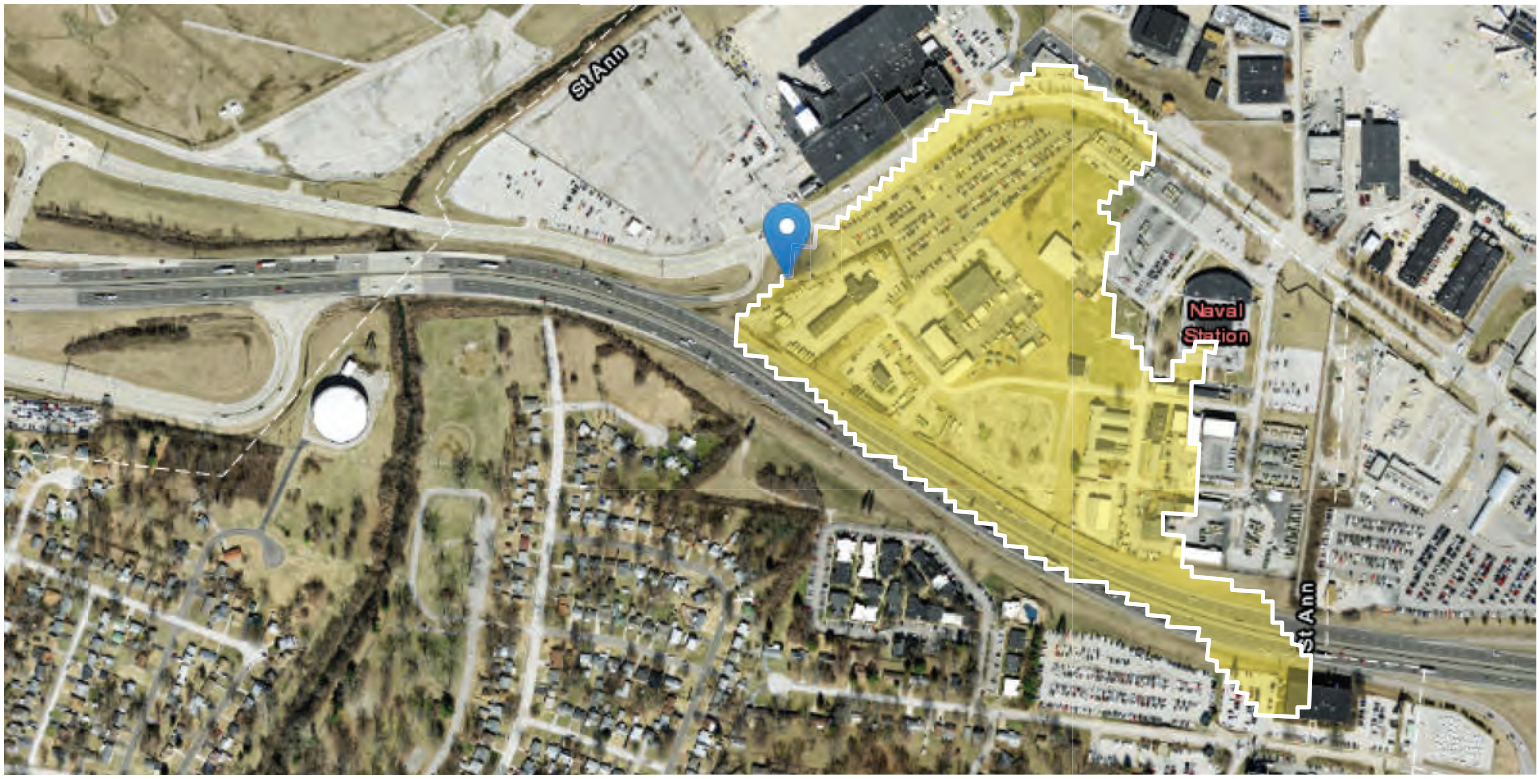
Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	0.52	square miles

Application Version: 4.19.4
StreamStats Services Version: 1.2.22
NSS Services Version: 2.2.1

StreamStats Report - St. Louis Lambert International Airport - UNT 6

Region ID: MO
Workspace ID: MO20240228203918014000
Clicked Point (Latitude, Longitude): 38.74303, -90.37671
Time: 2024-02-28 15:39:48 -0500



Collapse All

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	0.0551	square miles

StreamStats Report - St. Louis Lambert International Airport - UNT 7

Region ID: MO
Workspace ID: MO20240322161142285000
Clicked Point (Latitude, Longitude): 38.74260, -90.37885
Time: 2024-03-22 12:12:07 -0400

Collapse All

Basin Characteristics

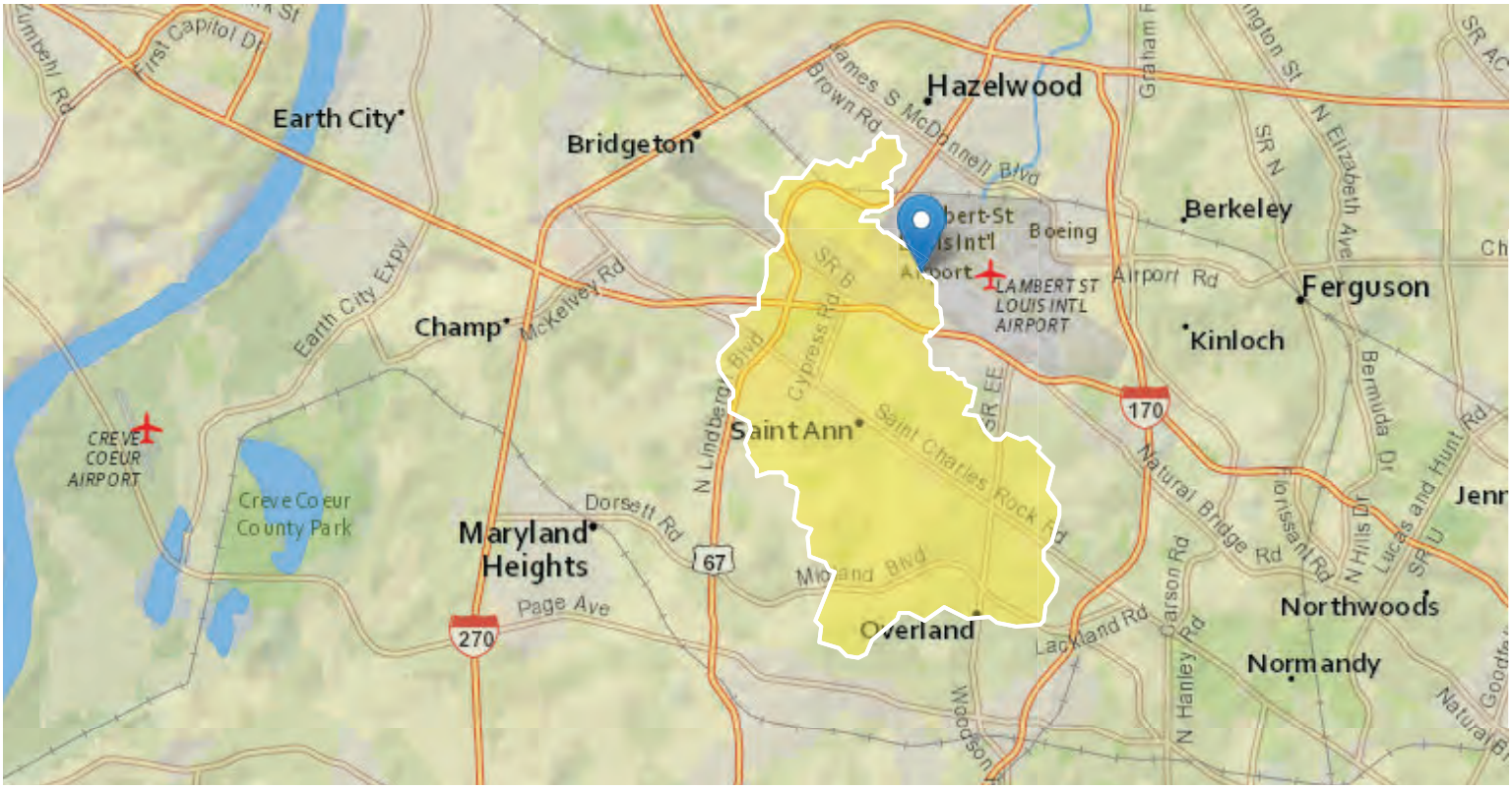
Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	0.0356	square miles

Application Version: 4.19.4
StreamStats Services Version: 1.2.22
NSS Services Version: 2.2.1

StreamStats Report - St. Louis Lambert International Airport - Coldwater Creek

Region ID: MO

Workspace ID: MO20230517134709689000
Clicked Point (Latitude, Longitude): 38.74803, -90.37214
Time: 2023-05-17 09:47:34 -0400



Collapse All

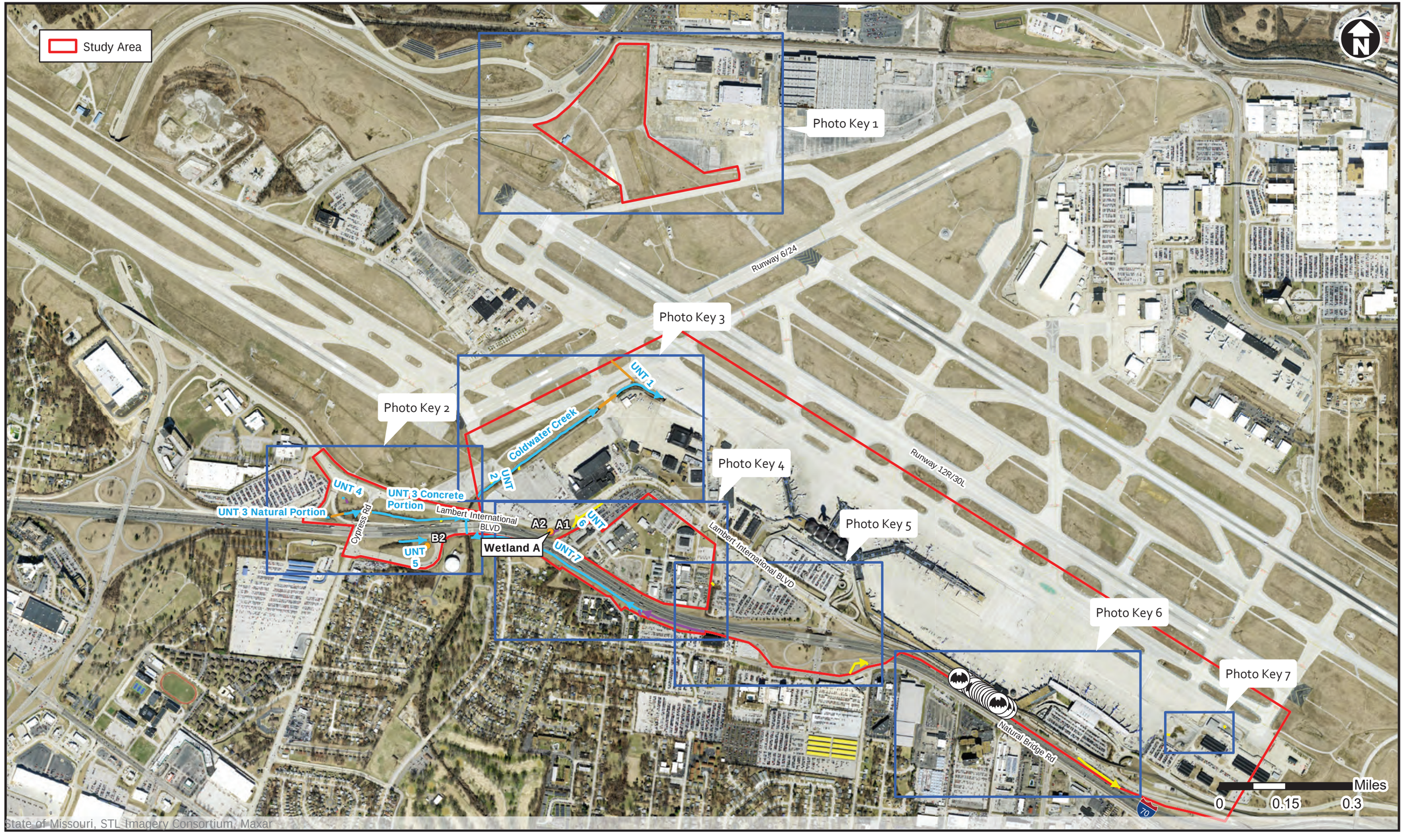
Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	8.64	square miles

Lambert International Airport – Consolidated Terminal Program

APPENDIX C: PHOTOGRAPHS

CMT



St. Louis Lambert International Airport - Consolidated Terminal Program - St. Louis Co., MO

Overall Photo Key

CMT
Crawford, Murphy & Tilly

St. Louis Lambert International Airport - Consolidated Terminal Program - St. Louis Co., MO

Photo Key Map (1 of 7)

CMT
Crawford, Murphy & Tilly

Study Area
Photo Location and Direction
Stream
Drainage Ditch
Swale
Upland Data Point
Culvert
Culvert Inlet
Culvert Outlet

N

UNT 3 Concrete Portion
SF 6
19

UNT 3 Concrete Portion
20
21
22
SF 5

Stormwater Detention Basin
UNT 4
27
28
29
30
SF 7

UNT 3 Natural Portion
7
8
9
10
11
12
13
14
15
16
17
18
SF 6
19
UNT 3 Concrete Portion
20
21
22
23
24
25
26
SF 5

Lambert International BLVD
Cypress Rd
70

UNT 5
31
32
33
34
35
B2
36
37

Stormwater Detention Basin
UNT 4
27
28
29
30
SF 7

Miles
0
0.03
0.05

State of Missouri, STL Imagery Consortium, Maxar, Microsoft, East-West Gateway COG, State of Missouri, STL Imagery Consortium, Maxar, Microsoft

St. Louis Lambert International Airport - Consolidated Terminal Program - St. Louis Co., MO

Photo Key Map (2 of 7)

CMT
Crawford, Murphy & Tilly

Study Area
Photo Location and Direction
Stream
Drainage Ditch
Culvert
Culvert Inlet
Culvert Outlet

Coldwater Creek
SF 1
SF 2
SF 3
SF 4
UNT 1
UNT 2
Miles
0
0.03
0.05
N
State of Missouri, STL Imagery Consortium, Maxar, Microsoft, East-West Gateway COG, State of Missouri, STL Imagery Consortium, Maxar, Microsoft

St. Louis Lambert International Airport - Consolidated Terminal Program - St. Louis Co., MO

Photo Key Map (3 of 7)

CMT
Crawford, Murphy & Tilly

St. Louis Lambert International Airport - Consolidated Terminal Program - St. Louis Co., MO

Photo Key Map (4 of 7)

CMT
Crawford, Murphy & Tilly

Study Area
Photo Location and Direction
Drainage Ditch
Swale
Culvert Inlet
Culvert Outlet

SF 10
SF 16
SF 11
75
76
77
74
78
79
80
81
82
70
Lambert International BLVD
Natural Bridge Rd
N
0 0.03 0.05 Miles

State of Missouri, STL Imagery Consortium, Maxar, Microsoft, East-West Gateway COG, State of Missouri, STL Imagery Consortium, Maxar, Microsoft

St. Louis Lambert International Airport - Consolidated Terminal Program - St. Louis Co., MO

Photo Key Map (5 of 7)

CMT
Crawford, Murphy & Tilly

Study Area
Photo Location and Direction
Drainage Ditch
Culvert Outlet
Potential IN/NLEB Roost Tree

N

83
84
85
86
87
SF 1.2
70
Natural Bridge Rd

0 0.03 0.05 Miles

State of Missouri, STL Imagery Consortium, Maxar, Microsoft, East-West Gateway COG, State of Missouri, STL Imagery Consortium, Maxar, Microsoft

St. Louis Lambert International Airport - Consolidated Terminal Program - St. Louis Co., MO

Photo Key Map (6 of 7)

CMT
Crawford, Murphy & Tilly

St. Louis Lambert International Airport - Consolidated Terminal Program - St. Louis Co., MO

Photo Key Map (7 of 7)

CMT
Crawford, Murphy & Tilly

1. View of upland vegetation/mowed grass, facing south. 5/24/2023

2. View of upland vegetation/mowed grass, facing north. 5/24/2023

3. View of upland vegetation/mowed grass, facing southwest. 5/24/2023

4. View of upland vegetation/mowed grass, facing south. 5/24/2023

5. View of upland vegetation/mowed grass, facing north. 5/24/2023

6. View of upland vegetation/mowed grass, facing east. 5/24/2023

7. View of UNT 3 - Natural Portion, facing upstream west. 1/31/2024

8. View of UNT 3 at existing box culvert inlet, facing downstream east. 1/31/2024

9. View of UNT 3 at existing box culvert outlet, facing upstream west. 1/31/2024

11. View of UNT 3 at existing box culvert outlet, facing upstream west. 1/31/2024

10. View of UNT 3 - Natural Portion at existing box culvert inlet, facing downstream east. 1/31/2024

12. View of UNT 3 - Natural Portion, facing downstream east. 1/31/2024

13. View of upland riparian vegetation surrounding UNT 3 – Natural Portion, facing north. 1/31/2024

14. View of UNT 3 - Natural Portion, facing upstream west. 1/31/2024

15. View of UNT 3 at existing box culvert inlet underneath Cypress Road, facing downstream east. 1/31/2024

16. View of UNT 3 - Natural Portion at existing box culvert outlet underneath Cypress Road, facing upstream west. 1/31/2024

17. View of UNT 3 – Concrete Portion, facing downstream east. 1/31/2024

19. View of SF 6 and culvert outlet draining into UNT 3 – Concrete Portion, facing southwest. 1/31/2024

18. View of upland riparian vegetation surrounding UNT 3 – Concrete Portion, facing north. 1/31/2024

20. View of UNT 3 – Concrete Portion, facing upstream west. 1/31/2024

21. View of SF 5 and culvert outlet draining into UNT 3 – Concrete Portion, facing south. 1/31/2024

22. View of UNT 3 – Concrete Portion, facing downstream east. 1/31/2024

23. View of UNT 3 – Concrete Portion, facing upstream west. 1/31/2024

24. View of confluence of UNT 3 – Concrete Portion flowing into Coldwater Creek, facing west. 1/31/2024

25. View of Coldwater Creek flowing underneath Lambert International Blvd bridge, facing downstream north. 1/31/2024

27. View of UNT 4 at existing culvert outlet, facing upstream west. 1/31/2024

26. View of Coldwater Creek flowing underneath I-70 bridge, facing upstream south. 1/31/2024

28. View of SF 7 draining from UNT 4 to detention basin inlet, facing south. 1/31/2024

29. View of existing stormwater detention basin, facing northeast. 1/31/2024

30. View of existing stormwater detention basin, facing southwest. 1/31/2024

31. View of upland vegetation, facing west. 1/31/2024

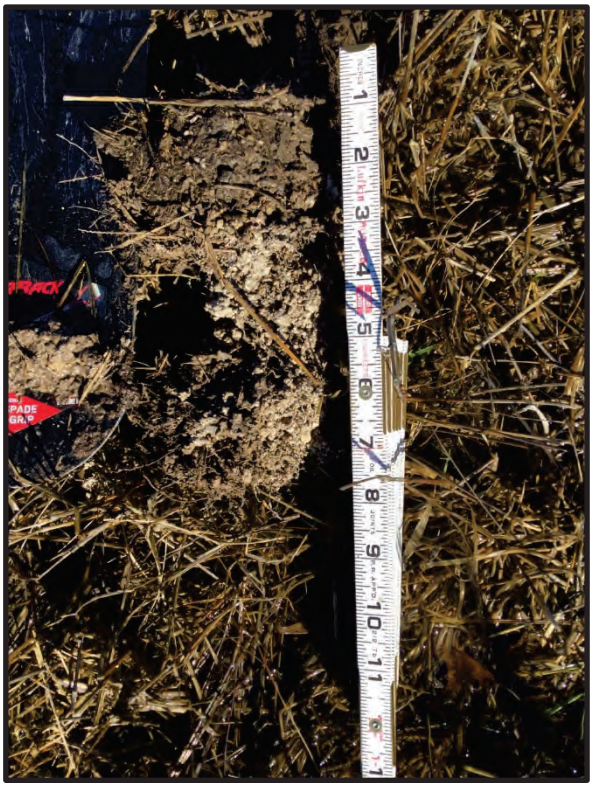
32. View of UNT 5 at existing culvert outlet, facing upstream west. 1/31/2024

33. View of UNT 5, facing downstream east. 1/31/2024

35. View of culvert inlet and UNT 5, facing downstream east. 1/31/2024

34. View of UNT 5, facing upstream west. 1/31/2024

36. View of upland data point C2, facing west. 1/31/2024



37. View of upland data point C2 soil profile. 5/24/2023

39. View of SF 3 draining into Coldwater Creek, facing south. 5/24/2023

38. View of SF 4 draining into Coldwater Creek, facing south. 5/24/2023

40. View of UNT 2 and culvert outlet draining into Coldwater Creek, facing upstream south. 5/24/2023

41. View of SF 2 draining into Coldwater Creek, facing north. 5/24/2023

43. View of Coldwater Creek, facing downstream northeast. 5/24/2023

42. View of Coldwater Creek, facing upstream southwest. 5/24/2023

44. View of SF 1 outlet into Coldwater Creek, facing southeast. 5/24/2023

45. View of Coldwater Creek, facing upstream southwest. 5/24/2023

47. View of Coldwater Creek bridge, facing upstream southwest. 5/24/2023

46. View of Coldwater Creek bridge, facing downstream northeast. 5/24/2023

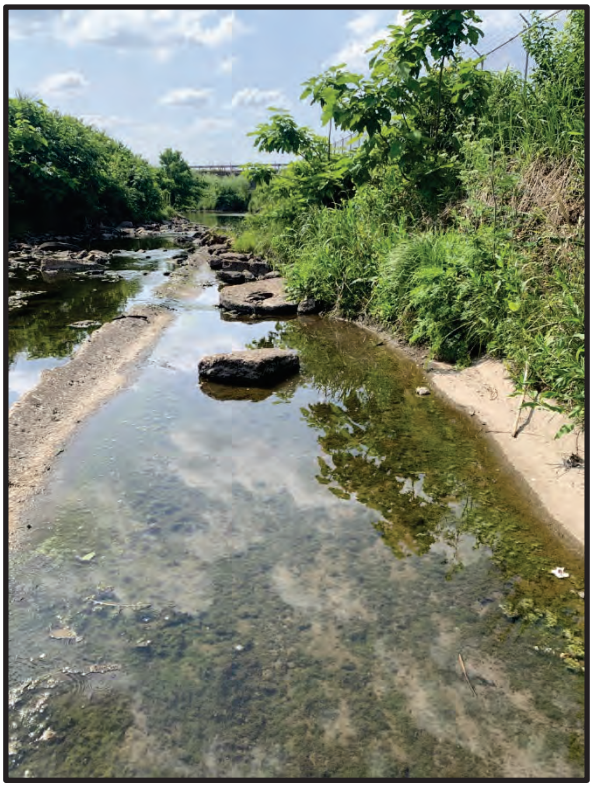
48. View of Coldwater Creek, facing downstream northeast. 5/23/2023.

49. View of Coldwater Creek, facing upstream southwest. 5/23/2023

50. View of UNT 1 underneath existing box culvert, facing upstream northwest. 5/23/2023 5/24/2023

51. View of UNT 1, facing downstream southeast. 5/23/2023

52. View of Coldwater Creek, facing downstream east. 5/23/2023



53. View of Coldwater Creek, facing upstream northwest. 5/23/2023

54. View of Coldwater Creek at existing box culvert inlets, facing downstream southeast. 5/23/2023

55. View of SF 9, facing southwest. 5/23/2023

56. View of SF 9, facing northeast. 5/23/2023

57. View of SF 9, facing southwest. 5/23/2023

59. View of UNT 6, facing downstream southeast. 5/23/2023

58. View of UNT 6 at existing culvert outlet, facing upstream northwest. 5/23/2023

60. View of UNT 6 at existing culvert inlets, facing downstream southeast. 5/23/2023

61. View of SF 8, facing northeast. 5/24/2023

63. View of Wetland A, facing east. 5/24/2023

62. View of Wetland A, facing west. 5/24/2023

64. View of Wetland data point A1 soil profile and redox features. 5/24/2023

65. View of UNT 7, facing downstream northwest. 1/31/2024

67. View of UNT 7, facing upstream southeast. 1/31/2024

66. View of UNT 7, facing upstream southeast. 1/31/2024

68. View of UNT 7, facing upstream southeast. 1/31/2024

69. View of UNT 7, facing downstream northwest. 3/20/2024

70. View of SF 15, facing northwest. 3/20/2024

71. View of SF 15 draining into UNT 7, facing northwest. 3/20/2023

72. View of SF 16, facing southeast. 3/20/2023

73. View of existing ground culvert inlet collecting water from SF 16. 3/20/2023

75. View of SF 10, facing northwest. 1/31/2024

74. View of SF 16, facing west. 3/20/2023

76. View of upland vegetation, facing southeast. 1/31/2024

77. View of upland vegetation, facing northwest. 1/31/2024

79. View of upland vegetation, facing northeast. 5/24/2023

78. View of upland vegetation, facing west. 1/31/2024

80. View of SF 11 at existing culvert outlet, facing southwest. 1/31/2024

81. View of SF 11, facing east. 1/31/2024

83. View of row of 16 *Betula nigra* (river birch) potential bat roost trees. 5/24/2023

82. View of SF 11 at existing culvert inlet, facing southeast. 1/31/2024

84. Representative photo of potential *Betula nigra* (river birch) roost tree, exhibiting peeling bark, that will likely be removed by project. 5/24/2023

85. View of SF 12 at existing culvert outlet, facing west. 1/31/2024

87. View of SF 12, facing southeast. 1/31/2024

86. View of SF 12, facing northwest. 1/31/2024

88. View of SF 13, facing west. 5/24/2023

89. View of stormwater detention basin, facing north. 5/24/2023

90. View of stormwater detention basin, facing south. 5/24/2023

91. View of stormwater detention basin, facing north. 5/24/2023

92. View of SF 14, facing southeast. 5/24/2023

93. View of SF 14 at existing culvert outlet, facing south. 5/24/2023

MDOC Natural Heritage Review

Missouri Department of Conservation

Missouri Department of Conservation's Mission is to
protect and manage the forest, fish, and
wildlife resources of the state and to
facilitate and provide opportunities for all citizens to
use, enjoy and learn about these resources.

Natural Heritage Review Level Three Report: Species Listed Under the Federal Endangered Species Act

There are records of species listed under the Federal Endangered Species Act, and possibly also records for species listed Endangered by the state, or Missouri Species and/or Natural Communities of Conservation Concern within or near the the defined Project Area. Please contact the U.S. Fish and Wildlife Service and the Missouri Department of Conservation for further coordination.

Foreword: Thank you for accessing the Missouri Natural Heritage Review Website developed by the Missouri Department of Conservation with assistance from the U.S. Fish and Wildlife Service, the U.S. Army Corps of Engineers, Missouri Department of Transportation and NatureServe. The purpose of this report is to provide information to federal, state and local agencies, organizations, municipalities, corporations, and consultants regarding sensitive fish, wildlife, plants, natural communities, and habitats to assist in planning, designing, and permitting stages of projects.

PROJECT INFORMATION

Project Name and ID Number: St. Louis Lambert International Airport – Consolidated Terminal Program #12779
Project Description: This project is located at the St. Louis Lambert International Airport (STL) in St. Louis County, Missouri at 38.7362840 latitude -90.3860201 longitude. The proposed work is 0.1 mile east of Pear Tree Lane, 0.78 mile north of State Road 180 and 0.01 mile east of Hunter Drive. This project is located in Section 5, Township 46 North, and Range 6 East on the Saint Charles, Florissant, Creve Coeur, and Clayton, MO USGS Quadrangles. Construction is anticipated to begin in 2025 and be completed by the end of 2031. Land use in the vicinity of the project is predominantly developed commercial and residential areas, with some sparse wooded areas. Coldwater Creek runs through the western terminus of the project area. Bridgeton Parks and Recreation, Washington Park cemetery, Berry hill golf course, Edmundson Park, John L. Brown Park, and St. Ann Park are all near the project area. The current Terminals 1 and 2 have limited capacity, and are unable to handle future growth of the airport. Portions of Terminal 1 are in poor condition and both Terminals 1 and 2 have areas that are functionally obsolete, providing a sub-optimum level of passenger service. Additionally, the landside roadway geometry, intersections, and curbsides have existing safety deficiencies, and some on-airport parking facilities are operating over capacity. The proposed project consists of constructing a new sixty-two gate consolidated terminal in the location of the existing Terminal 1 location at the St. Louis Lambert International Airport (STL). The proposed project involves modifying the core terminal processor, relocating the terminal support facilities, new landslide configuration, new consolidated receiving and distribution facility, new ground transportation center, proposed surface parking, remain overnight parking and parking garage, constructing a new east deicing pad, and the full enclosure of a portion of Coldwater Creek running through the project area The project will also provide a new terminal roadway with the optimal length from interstate to terminal while minimizing changes needed to existing interstate facilities. The primary impact of the project is the redistribution of traffic from the Airflight Drive interchange to the Cypress Road interchange. In order to accommodate the redistribution of traffic, a continuous auxiliary lane is proposed in the westbound direction of I-70 from the Airflight Drive entrance ramp to the Cypress Road exit ramp while closing the existing westbound I-70 on ramp from Lambert International Boulevard. Additional changes are proposed at the MO 115 and I-70 westbound intersection to the west of Cypress Road. Two left turns are recommended westbound, extending to the intersection at Cypress Road. Additionally, adding a second lane to the I-70 entrance is recommended. The total project area is 593 acres.

Project Type: Transportation, Airports (runways, taxiways, terminals, control towers, beacons, fuel depots), Construction of new runways, terminals/concourses, other facilities
Contact Person: Stephanie Spence
Contact Information: sspence@cmtengr.com or 5134278169

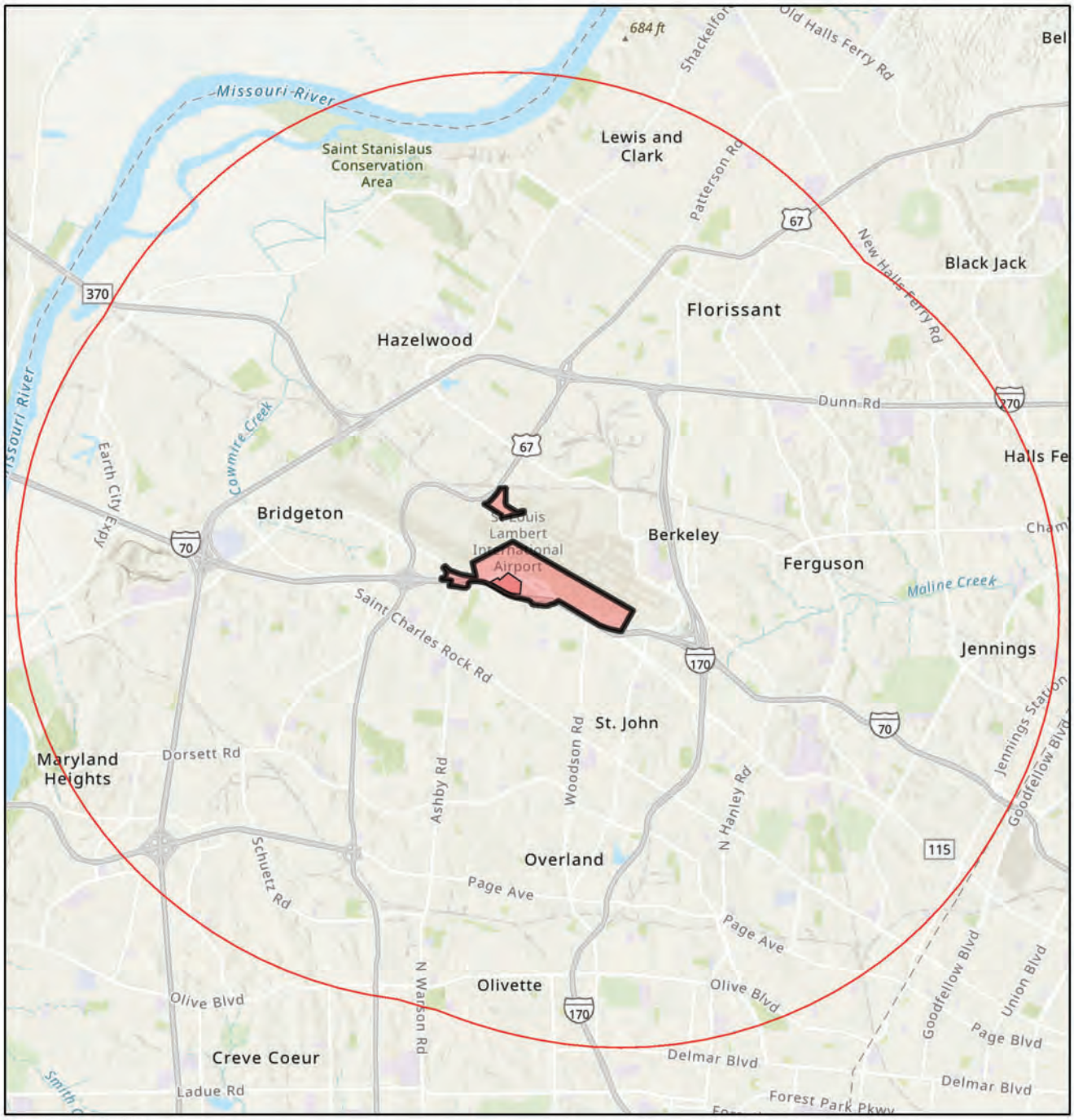
Disclaimer: This NATURAL HERITAGE REVIEW REPORT identifies if a species or natural community tracked by the Natural Heritage Program is known to occur within or near the project area submitted, and shares recommendations to avoid or minimize project impacts to sensitive species or natural habitats. Incorporating information from the Natural Heritage Program into project plans is an important step in reducing impacts to Missouri's sensitive natural resources. If an occurrence record is present, or the proposed project might affect federally listed species, the user must contact the Department of Conservation or U.S. Fish and Wildlife Service for more information.

This Natural Heritage Review Report is not a site clearance letter for the project. Rather, it identifies public lands and records of sensitive resources located close to and/or potentially affected by the proposed project. If project plans or location change, this report may no longer be valid. Because land use conditions change and animals move, the existence of an occurrence record does not mean the species/habitat is still present. Therefore, reports include information about records near but not necessarily on the project site. Lack of an occurrence record does not mean that a sensitive species or natural community is not present on or near the project area. On-site verification is the responsibility of the project. However, the Natural Heritage Program is only one reference that should be used to evaluate potential adverse project impacts and additional information (e.g. wetland or soils maps, on-site inspections or surveys) should be considered. Reviewing current landscape and habitat information, and species' biological characteristics would additionally ensure that Missouri Species of Conservation Concern are appropriately identified and addressed in planning efforts.

U.S. Fish and Wildlife Service – Endangered Species Act (ESA) Coordination: Lack of a Natural Heritage Program occurrence record for federally listed species in your project area does not mean the species is not present, as the area may never have been surveyed. Presence of a Natural Heritage Program occurrence record does not mean the project will result in negative impacts. This report does not fulfill Endangered Species Act consultation with the U.S. Fish and Wildlife Service (USFWS) for listed species. Direct contact with the USFWS may be necessary to complete consultation and it is required for actions with a federal connection, such as federal funding or a federal permit; direct contact is also required if ESA concurrence is necessary. Visit IPaC: Home (fws.gov) to initiate USFWS Information for Planning and Conservation (IPaC) consultation. Contact the Columbia Missouri Ecological Field Services Office (573-234-2132, or by mail at 101 Park Deville Drive, Suite A, Columbia, MO 65203) for more information.

Transportation Projects: If the project involves the use of Federal Highway Administration transportation funds, these recommendations may not fulfill all contract requirements. Please contact the Missouri Department of Transportation at 573-526-4778 or visit Home Page | Missouri Department of Transportation (modot.org) for additional information on recommendations.

St. Louis Lambert International Airport – Consolidated Terminal Program



February 21, 2024

1:105,570

0 0.75 1.5 3 mi

0 1.25 2.5 5 km

Buffered Project Boundary

Project Boundary

Species or Communities of Conservation Concern within the Area:

There are records of species listed under the Federal Endangered Species Act, and possibly also records for species listed Endangered by the state, or Missouri Species and/or Natural Communities of Conservation Concern within or near the defined Project Area. Please contact the U.S. Fish and Wildlife Service and the Missouri Department of Conservation for further coordination.

Email (preferred): NaturalHeritageReview@mdc.mo.gov
MDC Natural Heritage Review
Science Branch
P.O. Box 180
Jefferson City, MO
65102-0180
Phone: 573-522-4115 ext. 3182

U.S. Fish and Wildlife Service
Ecological Service
101 Park Deville Drive
Suite A
Columbia, MO
65203-0007
Phone: 573-234-2132

Other Special Search Results:

The project occurs on or near public land, Bridgeton Armory, Bryan Island, Ferguson (January-Wabash Park Lake), Hickory Woods CA, Jennings (Koeneman Park Lake), Overland (Wild Acres Park Lake), STL Lambert, Saint Stanislaus CA, please contact MOARNG, COE, MDC.

Project Type Recommendations:

Transportation -Airports: New and Maintenance should be managed to minimize erosion and sedimentation/runoff to nearby streams and lakes, including adherence to any Clean Water Act permit conditions. Project design should include stormwater management elements that assure storm discharge rates to streams for heavy rain events will not increase from present levels. Revegetate disturbed areas to minimize erosion using native plant species compatible with the local landscape and wildlife needs. Annual ryegrass may be combined with native perennials for quicker green-up. Avoid aggressive exotic perennials such as crownvetch and sericea lespedeza. Please see Best Management Practices for Construction and Development Projects Affecting Missouri Rivers and Streams (mo.gov).

Project Location and/or Species Recommendations:

Endangered Species Act Coordination - If this project has the potential to alter habitat (e.g. tree removal, projects in karst habitat) or cause direct mortality of bats, please coordinate directly with U.S. Fish and Wildlife Service (Ecological Services, 101 Park Deville Drive, Suite A, Columbia, Missouri 65203-0007; Phone 573-234-2132 Ext. 100 for Ecological Services) for further coordination under the Endangered Species Act. Indiana bats *(Myotis sodalis*, federal- and state-listed endangered) and **Northern long-eared bats** (*Myotis septentrionalis,* federal-listed threatened) may occur near the project area. Both of these species of bats hibernate during winter months in caves and mines. During the summer months, they roost and raise young under the bark of trees in wooded areas, often riparian forests and upland forests near perennial streams. During project activities, avoid degrading stream quality and where possible leave snags standing and preserve mature forest canopy. Do not enter caves known to harbor Indiana bats or Northern long-eared bats, especially from September to April.

Bald Eagle: The project location submitted and evaluated is within the geographic range of nesting Bald Eagles in Missouri. Bald Eagles (*Haliaeetus leucocephalus*) may nest near streams or water bodies in the project area. Nests are large and fairly easy to identify. Adults begin nesting activity in late December and January and young birds leave the nest in late spring to early summer. 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: Do I need an eagle take permit? | U.S. Fish & Wildlife Service (fws.gov) if eagle nests are seen.

Decurrent False Aster (Boltonia decurrens, federal-listed threatened and state-listed endangered) may occur in this area. Decurrent False Aster is a head floodplain species that grows in wetlands and on the borders of marshes, lakes, oxbows, and sloughs. It also may be found in old fields, roadsides, agricultural fields, and on levees. It favors sites characterized by moist soil and regular disturbance, preferably periodic flooding, which maintains open areas with high light levels. Today it is found in areas where succession is prevented, and sunlight is allowed to reach the seedlings. It is a perennial plant that blooms from August through October. Please see Best Management Practices for Construction and Development Projects Decurrent False Aster (mo.gov).

Gray Bat: The submitted project location is within the range of the Gray Myotis (i.e., Gray Bat) in Missouri. Depending on habitat conditions of your project's location, Gray Myotis (*Myotis grisescens*, federal and state-listed endangered) could occur within the project area, as they forage over streams, rivers, lakes, and reservoirs. Avoid entry or disturbance of any cave inhabited by Gray Myotis and when possible retain forest vegetation along the stream and from the cave opening to the stream. Please see Best Management Practices for Construction and Development Projects Gray bat (mo.gov).

Karst: This county has known karst geologic features (e.g., caves, springs, and sinkholes, all characterized by subterranean water movement). Few karst features are recorded in Natural 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; please check your project site for any karst features and make every effort to protect groundwater in the project area. Additional information and specific recommendations are available at Management Recommendations for Construction and Development Projects Affecting Missouri Karst Habitat (mo.gov).

Pallid Sturgeon: The project location submitted and evaluated is located within or adjacent to the Mississippi or Missouri rivers. Pallid Sturgeons (*Scaphirhynchus albus*, federal- and state-listed endangered) are big river fish that range widely in the Mississippi and Missouri River system (including parts of some major tributaries). Any project that modifies big river habitat or impacts water quality should consider the possible impact to pallid sturgeon populations. See Pallid Sturgeon Best Management Practices (mo.gov) for Best Management Practices. Additional coordination with the U.S. Fish and Wildlife Service under the Endangered Species Act may be necessary (U.S. Fish and Wildlife Service, Ecological Services, 101 Park DeVille Drive, Suite A, Columbia, Missouri 65203-0007; phone 573-234-2132.)

Invasive exotic species are a significant issue for fish, wildlife and agriculture in Missouri. Seeds, eggs, and larvae may be moved to new sites on boats or construction equipment. Please inspect and clean equipment thoroughly before moving between project sites. See Managing Invasive Species in Your Community | Missouri Department of Conservation (mo.gov) for more information.

- Remove any mud, soil, trash, plants or animals from equipment before leaving any water body or work area.
- Drain water from boats and machinery that have operated in water, checking motor cavities, live-well, bilge and transom wells, tracks, buckets, and any other water reservoirs.
- When possible, wash and rinse equipment thoroughly with hard spray or HOT water (>140° F, typically available at do-it-yourself car wash sites), and dry in the hot sun before using again.

Streams and Wetlands – Clean Water Act Permits: Streams and wetlands in the project area should be protected from activities that degrade habitat conditions. For example, soil erosion, water pollution, placement of fill, dredging, in-stream activities, and riparian corridor removal, can modify or diminish aquatic habitats. Streams and wetlands may be protected under the Clean Water Act and require a permit for any activities that result in fill or other modifications to the site. Conditions provided within the U.S. Army Corps of Engineers (USACE) Clean Water Act Section 404 permit (Kansas City District Regulatory Branch (army.mil)) and the Missouri Department of Natural Resources (DNR) issued Clean Water Act Section 401 Water Quality Certification (Section 401 Water Quality Certification | Missouri Department of Natural Resources (mo.gov)), if required, should help minimize impacts to the aquatic organisms and aquatic habitat within the area. Depending on your project type, additional permits may be required by the Missouri Department of Natural Resources, such as permits for stormwater, wastewater treatment facilities, and confined animal feeding operations. Visit Wastewater Permits | Missouri Department of Natural Resources (mo.gov) for more information on DNR permits. Visit both the USACE and DNR for more information on Clean Water Act permitting.

For further coordination with the Missouri Department of Conservation and the U.S. Fish and Wildlife Services, please see the contact information below:

Email (preferred): NaturalHeritageReview@mdc.mo.gov
MDC Natural Heritage Review
Science Branch
P.O. Box 180
Jefferson City, MO
65102-0180
Phone: 573-522-4115 ext. 3182

U.S. Fish and Wildlife Service
Ecological Service
101 Park Deville Drive
Suite A
Columbia, MO
65203-0007
Phone: 573-234-2132

Miscellaneous Information

FEDERAL Concerns are species/habitats protected under the Federal Endangered Species Act and that have been known near enough to the project site to warrant consideration. For these, project managers must contact the U.S. Fish and Wildlife Service Ecological Services (101 Park Deville Drive Suite A, Columbia, Missouri 65203-0007; Phone 573-234-2132; Fax 573-234-2181) for consultation.

STATE Concerns are species/habitats known to exist near enough to the project site to warrant concern and that are protected under the Wildlife Code of Missouri (RSMo 3 CSR 1 0). "State Endangered Status" is determined by the Missouri Conservation Commission under constitutional authority, with requirements expressed in the Missouri Wildlife Code, rule 3CSR 1 0-4.111. Species tracked by the Natural Heritage Program have a "State Rank" which is a numeric rank of relative rarity. Species tracked by this program and all native Missouri wildlife are protected under rule 3CSR 10-4.110 General Provisions of the Wildlife Code.

See Missouri Species and Communities of Conservation Concern Checklist (mo.gov) for a complete list of species and communities of conservation concern. Detailed information about the animals and some plants mentioned may be accessed at Mofwis Search Results. Please contact the Missouri Department of Conservation to request printed copies of any materials linked in this document.

USFWS Official Species List Letter

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Missouri Ecological Services Field Office
101 Park Deville Drive
Suite A
Columbia, MO 65203-0057
Phone: (573) 234-2132 Fax: (573) 234-2181

In Reply Refer To: February 21, 2024
Project Code: 2023-0082619
Project Name: St. Louis Lambert International Airport – Consolidated Terminal Program

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

Threatened and Endangered Species

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and may be affected by your proposed project. The species list fulfills the requirement for obtaining a Technical Assistance Letter from the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).
New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. **Note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days.** The Service recommends that verification be completed by visiting the IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the IPaC system by completing the same process used to receive the enclosed list.

Consultation Technical Assistance

Refer to the Midwest Region S7 Technical Assistance website for step-by-step instructions for making species determinations and for specific guidance on the following types of projects:

projects in developed areas, HUD, pipelines, buried utilities, telecommunications, and requests for a Conditional Letter of Map Revision (CLOMR) from FEMA.

Federally Listed Bat Species

Indiana bats, gray bats, and northern long-eared bats occur throughout Missouri and the information below may help in determining if your project may affect these species.

Gray bats - Gray bats roost in caves or mines year-round and use water features and forested riparian corridors for foraging and travel. If your project will impact caves, mines, associated riparian areas, or will involve tree removal around these features – particularly within stream corridors, riparian areas, or associated upland woodlots –gray bats could be affected.
Indiana and northern long-eared bats - These species hibernate in caves or mines only during the winter. In Missouri the hibernation season is considered to be November 1 to March 31. During the active season in Missouri (April 1 to October 31) they roost in forest and woodland habitats. Suitable summer habitat for Indiana bats and northern long-eared bats consists of a wide variety of forested/wooded habitats where they roost, forage, and travel and may also include some adjacent and interspersed non-forested habitats such as emergent wetlands and adjacent edges of agricultural fields, old fields and pastures. This includes forests and woodlots containing potential roosts (i.e., live trees and/or snags ≥5 inches diameter at breast height (dbh) for Indiana bat, and ≥3 inches dbh for northern long-eared bat, that have exfoliating bark, cracks, crevices, and/or hollows), as well as linear features such as fencerows, riparian forests, and other wooded corridors. These wooded areas may be dense or loose aggregates of trees with variable amounts of canopy closure. Tree species often include, but are not limited to, shellbark or shagbark hickory, white oak, cottonwood, and maple. Individual trees may be considered suitable habitat when they exhibit the characteristics of a potential roost tree and are located within 1,000 feet (305 meters) of other forested/wooded habitat. Northern long-eared bats have also been observed roosting in human-made structures, such as buildings, barns, bridges, and bat houses; therefore, these structures should also be considered potential summer habitat and evaluated for use by bats. If your project will impact caves or mines or will involve clearing forest or woodland habitat containing suitable roosting habitat, Indiana bats or northern long-eared bats could be affected.
Examples of unsuitable habitat include:

- Individual trees that are greater than 1,000 feet from forested or wooded areas;
- Trees found in highly-developed urban areas (e.g., street trees, downtown areas);
- A pure stand of less than 3-inch dbh trees that are not mixed with larger trees; and
- A stand of eastern red cedar shrubby vegetation with no potential roost trees.

Using the IPaC Official Species List to Make No Effect and May Affect Determinations for Listed Species

1. If IPaC returns a result of “There are no listed species found within the vicinity of the project,” then project proponents can conclude the proposed activities will have **no effect** on any federally listed species under Service jurisdiction. Concurrence from the Service is not required for **No Effect** determinations. No further consultation or coordination is required. Attach this letter to the dated IPaC species list report for your records. An example "No Effect" document also can be found on the S7 Technical Assistance website.

2. If IPaC returns one or more federally listed, proposed, or candidate species as potentially present in the action area of the proposed project – other than bats (see #3 below) – then project proponents can conclude the proposed activities **may affect** those species. For assistance in determining if suitable habitat for listed, candidate, or proposed species occurs within your project area or if species may be affected by project activities, you can obtain Life History Information for Listed and Candidate Species through the Species website.
3. If IPac returns a result that one or more federally listed bat species (Indiana bat, northern long-eared bat, or gray bat) are potentially present in the action area of the proposed project, project proponents can conclude the proposed activities **may affect** these bat species **IF** one or more of the following activities are proposed:
    a. Clearing or disturbing suitable roosting habitat, as defined above, at any time of year;
    b. Any activity in or near the entrance to a cave or mine;
    c. Mining, deep excavation, or underground work within 0.25 miles of a cave or mine;
    d. Construction of one or more wind turbines; or
    e. Demolition or reconstruction of human-made structures that are known to be used by bats based on observations of roosting bats, bats emerging at dusk, or guano deposits or stains.

If none of the above activities are proposed, project proponents can conclude the proposed activities will have **no effect** on listed bat species. Concurrence from the Service is not required for **No Effect** determinations. No further consultation or coordination is required. Attach this letter to the dated IPaC species list report for your records. An example "No Effect" document also can be found on the S7 Technical Assistance website.
If any of the above activities are proposed in areas where one or more bat species may be present, project proponents can conclude the proposed activities **may affect** one or more bat species. We recommend coordinating with the Service as early as possible during project planning. If your project will involve removal of over 5 acres of suitable forest or woodland habitat, we recommend you complete a Summer Habitat Assessment prior to contacting our office to expedite the consultation process. The Summer Habitat Assessment Form is available in Appendix A of the most recent version of the Range-wide Indiana Bat Summer Survey Guidelines.

Other Trust Resources and Activities

Bald and Golden Eagles - Although the bald eagle has been removed from the endangered species list, this species and the golden eagle are protected by the Bald and Golden Eagle Act and the Migratory Bird Treaty Act. Should bald or golden eagles occur within or near the project area please contact our office for further coordination. For communication and wind energy projects, please refer to additional guidelines below.

Migratory Birds - The Migratory Bird Treaty Act (MBTA) prohibits the taking, killing, possession, transportation, and importation of migratory birds, their eggs, parts, and nests, except when specifically authorized by the Service. The Service has the responsibility under the MBTA

to proactively prevent the mortality of migratory birds whenever possible and we encourage implementation of recommendations that minimize potential impacts to migratory birds. Such measures include clearing forested habitat outside the nesting season (generally March 1 to August 31) or conducting nest surveys prior to clearing to avoid injury to eggs or nestlings.

Communication Towers - Construction of new communications towers (including radio, television, cellular, and microwave) creates a potentially significant impact on migratory birds, especially some 350 species of night-migrating birds. However, the Service has developed voluntary guidelines for minimizing impacts.

Transmission Lines - Migratory birds, especially large species with long wingspans, heavy bodies, and poor maneuverability can also collide with power lines. In addition, mortality can occur when birds, particularly hawks, eagles, kites, falcons, and owls, attempt to perch on uninsulated or unguarded power poles. To minimize these risks, please refer to guidelines developed by the Avian Power Line Interaction Committee and the Service. Implementation of these measures is especially important along sections of lines adjacent to wetlands or other areas that support large numbers of raptors and migratory birds.

Wind Energy - To minimize impacts to migratory birds and bats, wind energy projects should follow the Service's Wind Energy Guidelines. In addition, please refer to the Service's Eagle Conservation Plan Guidance, which provides guidance for conserving bald and golden eagles in the course of siting, constructing, and operating wind energy facilities.

Next Steps

Should you determine that project activities **may affect** any federally listed species or trust resources described herein, please contact our office for further coordination. Letters with requests for consultation or correspondence about your project should include the Consultation Tracking Number in the header. Electronic submission is preferred.

If you have not already done so, please contact the Missouri Department of Conservation (Policy Coordination, P. O. Box 180, Jefferson City, MO 65102) for information concerning Missouri Natural Communities and Species of Conservation Concern.
We appreciate your concern for threatened and endangered species. Please feel free to contact our office with questions or for additional information.

John Weber

Attachment(s):

- Official Species List

OFFICIAL SPECIES LIST

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether

any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Missouri Ecological Services Field Office
101 Park Deville Drive
Suite A
Columbia, MO 65203-0057
(573) 234-2132

PROJECT SUMMARY

Project Code: 2023-0082619
Project Name: St. Louis Lambert International Airport – Consolidated Terminal Program
Project Type: Airport - New Construction
Project Description: This project is located at the St. Louis Lambert International Airport (STL) in St. Louis County, Missouri. This project is located in Section 5, Township 46 North, and Range 6 East on the Saint Charles, Florissant, Creve Coeur, and Clayton, MO USGS Quadrangles.
The proposed project consists of constructing a new sixty-two gate consolidated terminal in the location of the existing Terminal 1 location at the St. Louis Lambert International Airport (STL). The proposed project involves modifying the core terminal processor, relocating the terminal support facilities, new landslide configuration, new consolidated receiving and distribution facility, new ground transportation center, proposed surface parking, remain overnight parking and parking garage, constructing a new east deicing pad, and the full enclosure of a portion of Coldwater Creek running through the project area. The proposed improvements also include an auxiliary lane and shoulder improvements along I-70 westbound from the Airflight Drive entrance ramp to the Cypress Road exit ramp and adjustments to the Cypress Road interchange. It also removes direct access to the new consolidated terminal from Airflight Road to the south. Additional changes are proposed at the MO 115 and I-70 westbound intersection to the west of Cypress Road. Two left turns are recommended westbound, extending to the intersection at Cypress Road. Additionally, adding a second lane to the I-70 entrance is recommended. Construction is anticipated to begin in 2025 and be completed by the end of 2031.

Land use in the vicinity of the project is commercial and residential. Coldwater Creek runs through the project area. Bridgeton Parks and Recreation, Washington Park cemetery, Berry hill golf course, Edmundson Park, John L. Brown Park, and St. Ann Park are all near the project area.
Suitable summer habitat is located within and adjacent to the project area. Suitable summer habitat will be impacted for the construction of the project. No more than 6.7 acre of tree removal, all within 100 feet of existing roadway, will be required for the project. One (1) tree was identified as suitable bat roost trees. The project sponsor commits to clear the identified suitable bat roost trees during the bat inactive season, between November 1 and March 31. The project activities will not include the use of percussives. The project does include installing new permanent lighting. Although temporary lighting is not expected to be required for the construction of the project, it is possible some night work will be performed. Mitigation is not anticipated.

Project Location:

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@38.74154435,-90.36614188618142,14z

Counties: St. Louis County, Missouri

ENDANGERED SPECIES ACT SPECIES

There is a total of 6 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

MAMMALS

NAME	STATUS
Gray Bat *Myotis grisescens* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/6329	Endangered
Indiana Bat *Myotis sodalis* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/5949 General project design guidelines: https://ipac.ecosphere.fws.gov/project/Z6DI3ZCPARBXZMZZPXBZMYWGXM/documents/generated/6868.pdf	Endangered
Northern Long-eared Bat *Myotis septentrionalis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9045 General project design guidelines: https://ipac.ecosphere.fws.gov/project/Z6DI3ZCPARBXZMZZPXBZMYWGXM/documents/generated/6868.pdf	Endangered
Tricolored Bat *Perimyotis subflavus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/10515	Proposed Endangered

INSECTS

NAME	STATUS
Monarch Butterfly *Danaus plexippus*	Candidate

No critical habitat has been designated for this species.
Species profile: https://ecos.fws.gov/ecp/species/9743

FLOWERING PLANTS

NAME	STATUS
Decurrent False Aster *Boltonia decurrens*	Threatened

No critical habitat has been designated for this species.
Species profile: https://ecos.fws.gov/ecp/species/7705

CRITICAL HABITATS

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

YOU ARE STILL REQUIRED TO DETERMINE IF YOUR PROJECT(S) MAY HAVE EFFECTS ON ALL ABOVE LISTED SPECIES.

IPAC USER CONTACT INFORMATION

Agency: Crawford, Murphy and Tilly Inc.
Name: Stephanie Spence
Address: 1 Memorial Dr
Address Line 2: Suite 500
City: St. Louis
State: MO
Zip: 63102
Email sspence@cmtengr.com
Phone: 5134278169

LEAD AGENCY CONTACT INFORMATION

Lead Agency: Federal Aviation Administration

Revised Definition of Waters of the United States

Fact Sheet for the Final Rule: Amendments to the Revised Definition of "Waters of the United States"

August 2023

Overview

On August 29, 2023, the U.S. Environmental Protection Agency (EPA) and Department of the Army (the agencies) announced a final rule amending the 2023 definition of "waters of the United States."[1] The amendments conform with the U.S. Supreme Court's May 25, 2023, decision in the case of *Sackett v. Environmental Protection Agency.* While EPA's and Army's 2023 rule defining "waters of the United States" was not directly before the Supreme Court, the decision in *Sackett* made clear that certain aspects of the 2023 rule are invalid. Therefore, the agencies have amended key components of the regulatory text to conform it to the Supreme Court decision. The final rule provides clarity for protecting our nation's waters consistent with the Supreme Court's decision while advancing infrastructure projects, economic opportunities, and agricultural activities.

Changes to the "Waters of the United States" Categories and Definitions [2]

The agencies' amendments change the parts of the 2023 definition of "waters of the United States" that are invalid under the *Sackett* decision. For example, the rule removes the significant nexus test from consideration when identifying tributaries and other waters as federally protected. It also revises the adjacency test when identifying federally jurisdictional wetlands, clarifies that interstate wetlands do not fall within the interstate waters category, and clarifies the types of features that can be considered under the "additional waters" category.

Changes that the agencies have made to the January 2023 Rule categories:

Jurisdictional Category	Key Changes to the January 2023 Rule Regulation Text	Regulatory Text Paragraph
Traditional Navigable Waters	No changes	(a)(1)
Territorial Seas	No changes	(a)(1)
Interstate Waters	Removing interstate wetlands from the text of the interstate waters provision	(a)(1)
Impoundments	No changes	(a)(2)
Tributaries	Removing the significant nexus standard	(a)(3)
Adjacent Wetlands	Removing the significant nexus standard	(a)(4)
Additional Waters	Removing the significant nexus standard; removing wetlands and streams from the text of the provision	(a)(5)

[1] The "Revised Definition of 'Waters of the United States'" rule published in the Federal Register on January 18, 2023.

[2] These tables are provided for informational purposes; the rule establishes the requirements defining "waters of the United States."

Changes that the agencies have made to the January 2023 Rule definitions:

Definition	Key Changes to the January 2023 Rule Regulation Text	Regulatory Text Paragraph
Wetlands	No changes	(c)(1)
Adjacent	Revised definition to mean "having a continuous surface connection."	(c)(2)
High tide line	No changes	(c)(3)
Ordinary high water mark	No changes	(c)(4)
Tidal waters	No changes	(c)(5)
Significantly affect	Deleted definition	(c)(6)

No Changes to the Exclusions from "Waters of the United States"

The amendments to the January 2023 Rule do not change the eight exclusions from the definition of "waters of the United States" that provide clarity, consistency, and certainty. **The exclusions are:**

- **Prior converted cropland**, adopting USDA's definition and generally excluding wetlands that were converted to cropland prior to December 23, 1985.
- **Waste treatment systems**, including treatment ponds or lagoons that are designed to meet the requirements of the Clean Water Act.
- **Ditches** (including roadside ditches), excavated wholly in and draining only dry land, and that do not carry a relatively permanent flow of water.
- **Artificially irrigated areas,** that would revert to dry land if the irrigation ceased.
- **Artificial lakes or ponds,** created by excavating or diking dry land that are used exclusively for such purposes as stock watering, irrigation, settling basins, or rice growing.
- **Artificial reflecting pools or swimming pools,** and other small ornamental bodies of water created by excavating or diking dry land.
- **Waterfilled depressions,** created in dry land incidental to construction activity and pits excavated in dry land for the purpose of obtaining fill, sand, or gravel unless and until the construction operation is abandoned and the resulting body of water meets the definition of "waters of the United States."
- **Swales and erosional features** (*e.g.*, gullies, small washes), that are characterized by low volume, infrequent, or short duration flow.

Additionally, the agencies' amended definition of "waters of the United States" does not affect the longstanding activity-based permitting exemptions provided to the agricultural community by the Clean Water Act.

For More Information

Additional information is available on EPA's Waters of the United States website.

USACE Approved Jurisdictional Determination Request

From:	Heather Lacey
To:	mvs-regulatory@usace.army.mil
Cc:	Tener, Scott (FAA); Beckmann, Gerald A.; Kuchinski, Jennifer; Douglas Gregory; Marion Wells; Laura Sakach
Subject:	St. Louis Lambert International Airport Consolidated Terminal Program AJD
Date:	Thursday, April 11, 2024 9:50:00 AM
Attachments:	AJD.pdf image001.png

Regulatory Branch Chief,

The St. Louis Airport Authority, as the Sponsor of the St. Louis Lambert International Airport (STL), is proposing to move forward with the Consolidated Terminal Program. The Proposed Action requires approval from the Federal Aviation Administration (FAA) of the changes to the STL Airport Layout Plan (ALP) and for Federal financial assistance under the Airport Improvement Program and is therefore subject to the requirements of the National Environmental Policy Act (NEPA). CMT and WSP are currently preparing the NEPA documentation for the Proposed Action for FAA and STL. A copy of the Approved Jurisdictional Determination (AJD) Request is attached.

A full copy of the delineation report with all data forms and background information can be downloaded at this link: STL CTP

Please let us know if you have any questions or if you need any additional information.

Thank you!

HEATHER LACEY | Environmental Group Manager

Crawford, Murphy & Tilly | **Engineers & Consultants**
One Memorial Drive, Suite 500 | St. Louis, MO 63102
w 314.436.5500 | m 937.307.0744 | hlacey@cmtengr.com

Centered in Value

USACE Approved Jurisdictional Determination Response

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, ST. LOUIS DISTRICT
1222 SPRUCE STREET
ST. LOUIS, MISSOURI 63103

7 May 2024

Regulatory Branch
File Number: MVS-2024-216

Crawford, Murphy, & Tilly
c/o Heather Lacey
One Memorial Drive, Suite 500
St. Louis, Missouri 63102

Dear Ms. Lacey:

This letter is regarding an approved jurisdictional determination for the project known as Lambert International Airport Consolidated Terminal Program. The Consolidated Terminal Program (CTP) project includes constructing a new consolidated terminal with up to 62 gates in the location of the existing Terminal 1 location at the St. Louis Lambert International Airport (STL). The proposed project involves modifying the core terminal processor, relocating the terminal support facilities, new landslide configuration, new consolidated receiving and distribution facility, new ground transportation center, proposed surface parking, remain overnight parking and parking garage, constructing a new east deicing pad, and the full enclosure of a portion of Coldwater Creek running through the project area. The project is located in Section 22, Township 46 North, Range 6 East, in St. Louis County, Missouri. Approximate geographic coordinates for the site are 38.7426°, -90.3661°.

The features addressed in this AJD were evaluated consistent with the definition of “waters of the United States” found in the pre-2015 regulatory regime and consistent with the Supreme Court's decision in Sackett on 25 May 2023. This AJD did not rely on the 2023 “Revised Definition of ‘Waters of the United States,’” as amended on 8 September 2023 (Amended 2023 Rule) because, as of the date of this decision, the Amended 2023 Rule is not applicable in Missouri due to litigation. Enclosed you will find a Notification of Appeal Process (NAP) fact sheet and Request for Appeal (RFA) form. If you request to appeal this determination, you must submit a completed RFA form to the Mississippi Valley Division Office at the address shown on the form.

The features included in this approved jurisdictional determination are:

- UNT 1, jurisdictional – Section 404
- UNT 2, jurisdictional – Section 404
- UNT 3, jurisdictional – Section 404
- UNT 4, non-jurisdictional
- UNT 5, jurisdictional – Section 404
- UNT 6, non-jurisdictional
- UNT 7, non-jurisdictional
- Coldwater Creek, jurisdictional – Section 404
- Wetland A, non-jurisdictional
- SF 1, non-jurisdictional
- SF 2, non-jurisdictional

- SF 3, non-jurisdictional
- SF 4, non-jurisdictional
- SF 5, non-jurisdictional
- SF 6, non-jurisdictional
- SF 7, non-jurisdictional
- SF 8, non-jurisdictional
- SF 9, non-jurisdictional
- SF 10, non-jurisdictional
- SF 11, non-jurisdictional
- SF 12, non-jurisdictional
- SF 13, non-jurisdictional
- SF 14, non-jurisdictional
- SF 15, non-jurisdictional
- SF 16, non-jurisdictional

In order for an RFA to be accepted by the Corps, the Corps must determine that it is complete, that it meets the criteria for appeal under 33 CFR 331.5, and that it has been received by the Division Office within 60 days of the date of the enclosed NAP. It is not necessary to submit an RFA form to the division office if you do not object to the determination in this letter

This approved jurisdictional determination may be relied upon for five years from the date of this letter. However, the Corps reserves the right to review and revise the boundary in response to changing site conditions, information that was not considered during our initial review, or off-site activities that could indirectly alter the extent of wetlands and other resources on-site. This determination may be renewed at the end of the five-year period provided you submit a written request, and our staff are able to verify that the limits established during the original determination are still accurate.

The delineation included herein has been conducted to identify the location and extent of the aquatic resource boundaries and/or the jurisdictional status of aquatic resources for purposes of the Clean Water Act for the site identified in this request. This delineation and/or jurisdictional determination may not be valid for the Wetland Conservation Provisions of the Food Security Act of 1985, as amended. If you or your tenant are USDA program participants, or anticipate participation in USDA programs, you should discuss the applicability of a certified wetland determination with the local USDA service center, prior to starting work.

This review is applicable only to the permit program administered by the Corps of Engineers. It does not eliminate the need to obtain other Federal, state, or local approvals before beginning work and any modification that includes impacts to potential waters may require subsequent review and authorization from this office.

If you have any questions, please contact me in our office at (314) 331-8044 or Chad.M.LaMontagne@usace.army.mil. In any correspondence or inquiries, please refer to the File Number **MVS-2024-216**. The St. Louis District Regulatory Branch is committed to providing quality and timely service to our customers. In an effort to improve customer service, please take a moment to go to our Customer Service Survey found on our web site at https://regulatory.ops.usace.army.mil/customer-service-survey/.

Sincerely,

Chad LaMontagne

Chad LaMontagne
Missouri Project Manager
Regulatory Branch

Enclosures

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, ST. LOUIS DISTRICT
1222 SPRUCE STREET
ST. LOUIS, MISSOURI 63103

CEMVS-OD-F May 7, 2024

MEMORANDUM FOR RECORD

SUBJECT: US Army Corps of Engineers (Corps) Pre-2015 Regulatory Regime Approved Jurisdictional Determination in Light of *Sackett v. EPA*, 143 S. Ct. 1322 (2023) ,[1] MVS-2024-216

BACKGROUND. An Approved Jurisdictional Determination (AJD) is a Corps document stating the presence or absence of waters of the United States on a parcel or a written statement and map identifying the limits of waters of the United States on a parcel. AJDs are clearly designated appealable actions and will include a basis of JD with the document.[2] AJDs are case-specific and are typically made in response to a request. AJDs are valid for a period of five years unless new information warrants revision of the determination before the expiration date or a District Engineer has identified, after public notice and comment, that specific geographic areas with rapidly changing environmental conditions merit re-verification on a more frequent basis.[3] For the purposes of this AJD, we have relied on section 10 of the Rivers and Harbors Act of 1899 (RHA),[4] the Clean Water Act (CWA) implementing regulations published by the Department of the Army in 1986 and amended in 1993 (references 2.a. and 2.b. respectively), the 2008 *Rapanos-Carabell* guidance (reference 2.c.), and other applicable guidance, relevant case law and longstanding practice, (collectively the pre-2015 regulatory regime), and the *Sackett* decision (reference 2.d.) in evaluating jurisdiction.

This Memorandum for Record (MFR) constitutes the basis of jurisdiction for a Corps AJD as defined in 33 CFR §331.2. The features addressed in this AJD were evaluated consistent with the definition of “waters of the United States” found in the pre-2015 regulatory regime and consistent with the Supreme Court's decision in *Sackett*. This AJD did not rely on the 2023 “Revised Definition of ‘Waters of the United States,’” as amended on 8 September 2023 (Amended 2023 Rule) because, as of the date of this decision, the Amended 2023 Rule is not applicable in Missouri due to litigation.

1. SUMMARY OF CONCLUSIONS.

[1] While the Supreme Court’s decision in *Sackett* had no effect on some categories of waters covered under the CWA, and no effect on any waters covered under RHA, all categories are included in this Memorandum for Record for efficiency.
[2] 33 CFR 331.2.
[3] Regulatory Guidance Letter 05-02.
[4] USACE has authority under both Section 9 and Section 10 of the Rivers and Harbors Act of 1899 but for convenience, in this MFR, jurisdiction under RHA will be referred to as Section 10.

a. Provide a list of each individual feature within the review area and the jurisdictional status of each one (i.e., identify whether each feature is/is not a water of the United States and/or a navigable water of the United States).

i. UNT 1, jurisdictional – Section 404
ii. UNT 2, jurisdictional – Section 404
iii. UNT 3, jurisdictional – Section 404
iv. UNT 4, non-jurisdictional
v. UNT 5, jurisdictional – Section 404
vi. UNT 6, non-jurisdictional
vii. UNT 7, non-jurisdictional
viii. Coldwater Creek, jurisdictional – Section 404
ix. Wetland A, non-jurisdictional
x. SF 1, non-jurisdictional
xi. SF 2, non-jurisdictional
xii. SF 3, non-jurisdictional
xiii. SF 4, non-jurisdictional
xiv. SF 5, non-jurisdictional
xv. SF 6, non-jurisdictional
xvi. SF 7, non-jurisdictional
xvii. SF 8, non-jurisdictional
xviii. SF 9, non-jurisdictional
xix. SF 10, non-jurisdictional
xx. SF 11, non-jurisdictional
xxi. SF 12, non-jurisdictional
xxii. SF 13, non-jurisdictional
xxiii. SF 14, non-jurisdictional
xxiv. SF 15, non-jurisdictional
xxv. SF 16, non-jurisdictional

2. REFERENCES.

a. Final Rule for Regulatory Programs of the Corps of Engineers, 51 FR 41206 (November 13, 1986).

b. Clean Water Act Regulatory Programs, 58 FR 45008 (August 25, 1993).

c. U.S. EPA & U.S. Army Corps of Engineers, Clean Water Act Jurisdiction Following the U.S. Supreme Court's Decision in *Rapanos v. United States & Carabell v. United States* (December 2, 2008)

d. *Sackett v. EPA*, 598 U.S. _, 143 S. Ct. 1322 (2023)

3. REVIEW AREA. Review area includes areas to the north and south of Lambert International Airport in St. Louis, Missouri. 38.7426, -90.3661.

4. NEAREST TRADITIONAL NAVIGABLE WATER (TNW), INTERSTATE WATER, OR THE TERRITORIAL SEAS TO WHICH THE AQUATIC RESOURCE IS CONNECTED. Missouri River.

5. FLOWPATH FROM THE SUBJECT AQUATIC RESOURCES TO A TNW, INTERSTATE WATER, OR THE TERRITORIAL SEAS. Resources flow into the 3rd order, perennial Coldwater Creek which then flows into the Missouri River – a TNW.

6. SECTION 10 JURISDICTIONAL WATERS[5]: Describe aquatic resources or other features within the review area determined to be jurisdictional in accordance with Section 10 of the Rivers and Harbors Act of 1899. Include the size of each aquatic

[5] 33 CFR 329.9(a) A waterbody which was navigable in its natural or improved state, or which was susceptible of reasonable improvement (as discussed in § 329.8(b) of this part) retains its character as "navigable in law" even though it is not presently used for commerce, or is presently incapable of such use because of changed conditions or the presence of obstructions.

resource or other feature within the review area and how it was determined to be jurisdictional in accordance with Section 10.[6] N/A

7. SECTION 404 JURISDICTIONAL WATERS: Describe the aquatic resources within the review area that were found to meet the definition of waters of the United States in accordance with the pre-2015 regulatory regime and consistent with the Supreme Court's decision in *Sackett*. List each aquatic resource separately, by name, consistent with the naming convention used in section 1, above. Include a rationale for each aquatic resource, supporting that the aquatic resource meets the relevant category of "waters of the United States" in the pre-2015 regulatory regime. The rationale should also include a written description of, or reference to a map in the administrative record that shows, the lateral limits of jurisdiction for each aquatic resource, including how that limit was determined, and incorporate relevant references used. Include the size of each aquatic resource in acres or linear feet and attach and reference related figures as needed.

   a. TNWs (a)(1): N/A

   b. Interstate Waters (a)(2): N/A

   c. Other Waters (a)(3): N/A

   d. Impoundments (a)(4): N/A

   e. Tributaries (a)(5): Flow regime determined by observing flow at lowest downstream extent of defined stream order. Flow was consistent throughout length of feature.

      UNT 1 (389.1 linear feet, 1st order perennial)
      UNT 2 (15.9 linear feet, 1st order perennial)
      UNT 3 (1971.4 linear feet, 1st order perennial)
      UNT 5 (367.9 linear feet, 1st order perennial)
      Coldwater Creek (2827 linear feet, 3rd order perennial)

      UNT 1-3, 5 & **Coldwater Creek** flow continuously at least seasonally. Stream orders were determined by analyzing the flow regime at the furthest downstream end of the order and were the predominate flow regime of the reach.

[6] This MFR is not to be used to make a report of findings to support a determination that the water is a navigable water of the United States. The district must follow the procedures outlined in 33 CFR part 329.14 to make a determination that water is a navigable water of the United States subject to Section 10 of the RHA.

f. The territorial seas (a)(6): N/A

g. Adjacent wetlands (a)(7): N/A

8. NON-JURISDICTIONAL AQUATIC RESOURCES AND FEATURES

a. Describe aquatic resources and other features within the review area identified as "generally non-jurisdictional" in the preamble to the 1986 regulations (referred to as "preamble waters").[7] Include size of the aquatic resource or feature within the review area and describe how it was determined to be non-jurisdictional under the CWA as a preamble water.

Wetland A (0.01-acre) – incidental wetland features that formed in a ditch that is non-relatively permanent, excavated in uplands, and drains only uplands.

SF 1 (7.6'), **SF 2 (49.6')**, **SF 3 (23.2')**, **SF 4 (26.9')**, **SF 5 (40.7')**, **SF 6 (5.2')**: concrete lined drainage ditches that are not relatively permanent waters, excavated in uplands, and drain only uplands.

SF 7: this feature is considered part of UNT 4 (see below).

SF 8 (73.7'): this feature is a vegetated swale that is part of a drainage ditch that was excavated in uplands and is a non-relatively permanent water. Wetland 1 is drained by SF 8, but as that Wetland 1 only exists incidental to SF 8, it is not considered to drain a wetland.

SF 9 (434.0'), **SF 10 (47.5')**, **SF 11 (307.5')**, **SF 12 (625.6')**, **SF 13 (47.1')**: concrete lined drainage ditches that are not relatively permanent waters, excavated in uplands, and drain only uplands.

SF 14 (38.6'): a rock riprap and gravel-lined drainage ditch that does not convey relatively permanent flow, was created in uplands, and drains only uplands.

SF 15 (72.2') and **SF 16 (789.2')**: vegetated swales that do not convey relatively permanent flow, were excavated in uplands, and drain only uplands.

[7] 51 FR 41217, November 13, 1986.

b. Describe aquatic resources and features within the review area identified as "generally not jurisdictional" in the *Rapanos* guidance. Include size of the aquatic resource or feature within the review area and describe how it was determined to be non-jurisdictional under the CWA based on the criteria listed in the guidance. N/A

c. Describe aquatic resources and features identified within the review area as waste treatment systems, including treatment ponds or lagoons designed to meet the requirements of CWA. Include the size of the waste treatment system within the review area and describe how it was determined to be a waste treatment system. N/A

d. Describe aquatic resources and features within the review area determined to be prior converted cropland in accordance with the 1993 regulations (reference 2.b.). Include the size of the aquatic resource or feature within the review area and describe how it was determined to be prior converted cropland. N/A

e. Describe aquatic resources (i.e. lakes and ponds) within the review area, which do not have a nexus to interstate or foreign commerce, and prior to the January 2001 Supreme Court decision in "*SWANCC*," would have been jurisdictional based solely on the "Migratory Bird Rule." Include the size of the aquatic resource or feature, and how it was determined to be an "isolated water" in accordance with *SWANCC*. N/A

f. Describe aquatic resources and features within the review area that were determined to be non-jurisdictional because they do not meet one or more categories of waters of the United States under the pre-2015 regulatory regime consistent with the Supreme Court's decision in *Sackett* (e.g., tributaries that are non-relatively permanent waters; non-tidal wetlands that do not have a continuous surface connection to a jurisdictional water).

UNT 4 (108.7 linear feet, 1st order ephemeral)
UNT 6 (32.6 linear feet, 1st order ephemeral)
UNT 7 (1694.2 linear feet, 1st order ephemeral)

UNT 4, 6, & 7 do not exhibit continuous flow at least seasonally, flowing only in response to precipitation events. Stream orders were determined by analyzing the flow regime at the furthest downstream end of the order and were the predominate flow regime of the reach.

9. DATA SOURCES. List sources of data/information used in making determination. Include titles and dates of sources used and ensure that information referenced is available in the administrative record.

   a. Aquatic and Ecological Resources Report: March 22, 2024

   b. Regulatory Viewer – accessed 6 May 2024

10. OTHER SUPPORTING INFORMATION. Lambert International Airport Master Plan – Stormwater Planning.

11. NOTE: The structure and format of this MFR were developed in coordination with the EPA and Department of the Army. The MFR's structure and format may be subject to future modification or may be rescinded as needed to implement additional guidance from the agencies; however, the approved jurisdictional determination described herein is a final agency action.

Study Area
Wetland
Swale
Stream
Culvert
Drainage Ditch
Upland Data Point
Wetland Data Point
Culvert Inlet
Culvert Outlet
Potential IN/NLEB Roost Tree

Wetlands
Wetland

Swales
Swale

Ecological Resources Map 1
Ecological Resources Map 2
Ecological Resources Map 3
Ecological Resources Map 4
Ecological Resources Map 5
Ecological Resources Map 6
Ecological Resources Map 7

Runway 6/24
Runway 12R/30L
Coldwater Creek
UNT 1
2 UNT
UNT 4
Cypress Rd
Lambert-International Blvd
SF 8
A2
A1
UNT 6
Wetland A
UNT 5
B2
UNT 7
SF 15
SF 16
Stormwater Detention Basin
Natural Bridge Rd
70

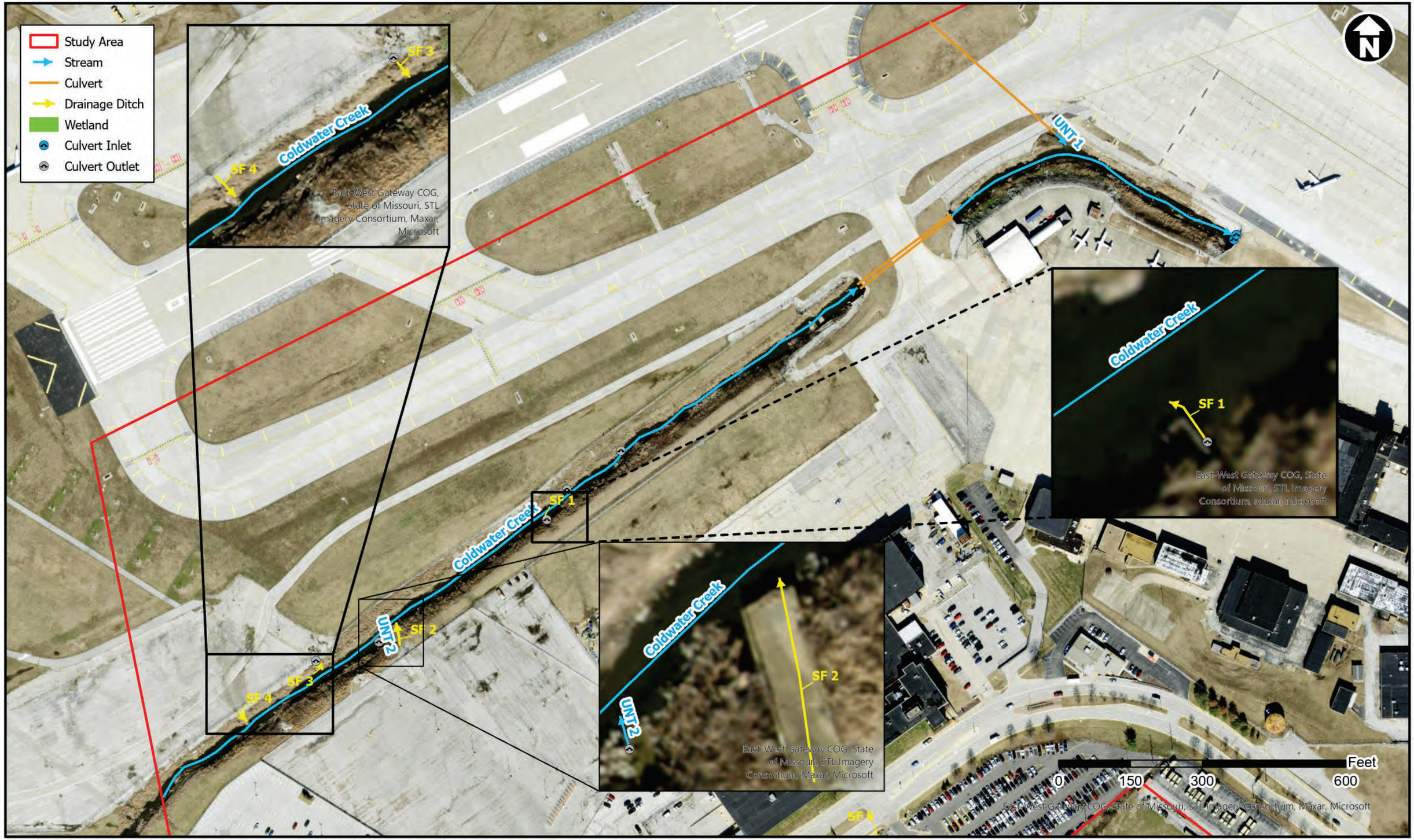
0 0.13 0.25 0.5 Miles

State of Missouri, STL Imagery Consortium, Maxar

St. Louis Lambert International Airport - Consolidated Terminal Program - St. Louis Co., MO

Ecological Resources Overall Map

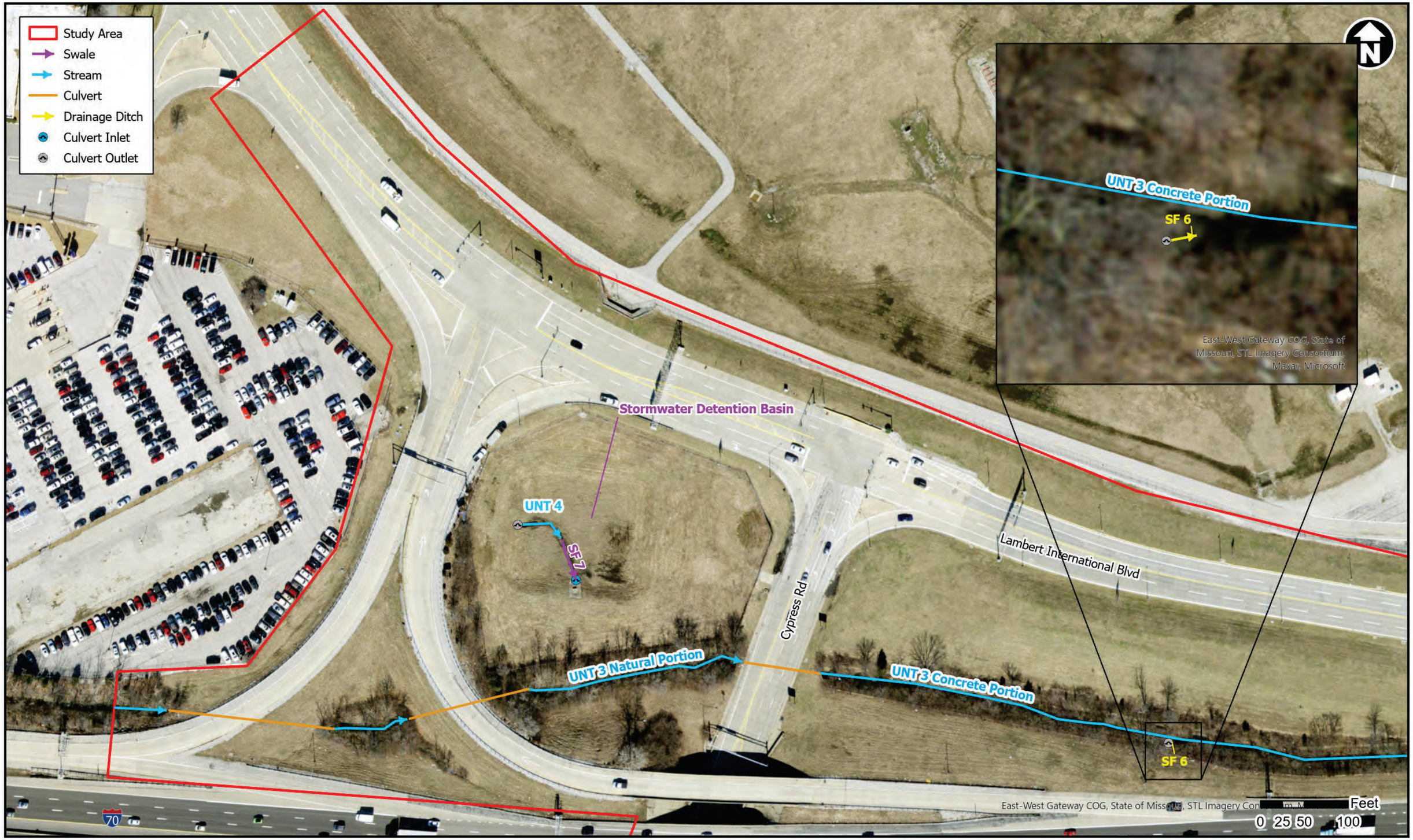
CMT
Crawford, Murphy & Tilly



St. Louis Lambert International Airport - Consolidated Terminal Program - St. Louis Co., MO

Ecological Resources (1 of 7)

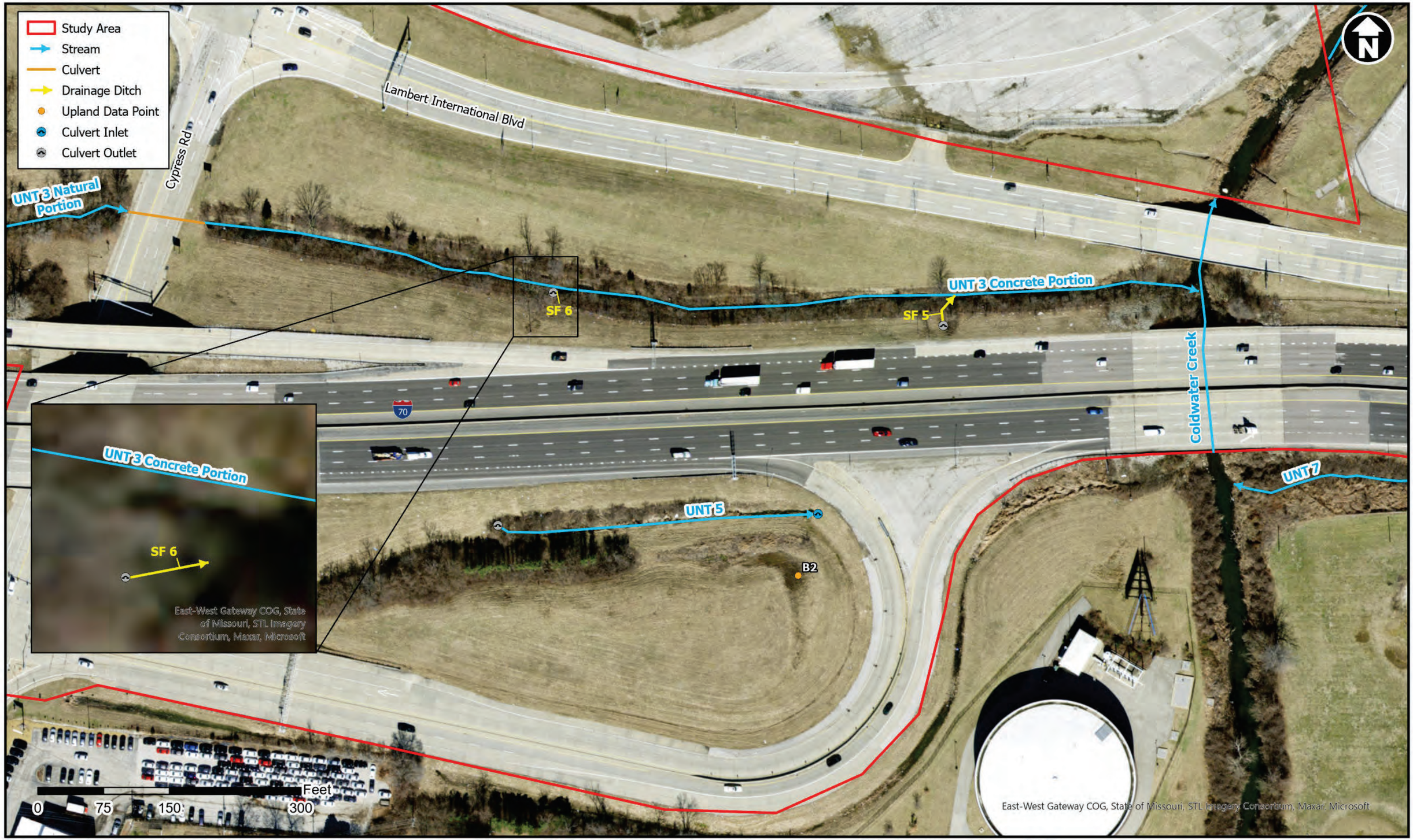
CMT
Crawford, Murphy & Tilly



St. Louis Lambert International Airport - Consolidated Terminal Program - St. Louis Co., MO

Ecological Resources (2 of 7)

CMT
Crawford, Murphy & Tilly



St. Louis Lambert International Airport - Consolidated Terminal Program - St. Louis Co., MO

Ecological Resources (3 of 7)

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St. Louis Lambert International Airport - Consolidated Terminal Program - St. Louis Co., MO

Ecological Resources (4 of 7)

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St. Louis Lambert International Airport - Consolidated Terminal Program - St. Louis Co., MO

Ecological Resources (5 of 7)

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St. Louis Lambert International Airport - Consolidated Terminal Program - St. Louis Co., MO

Ecological Resources (6 of 7)

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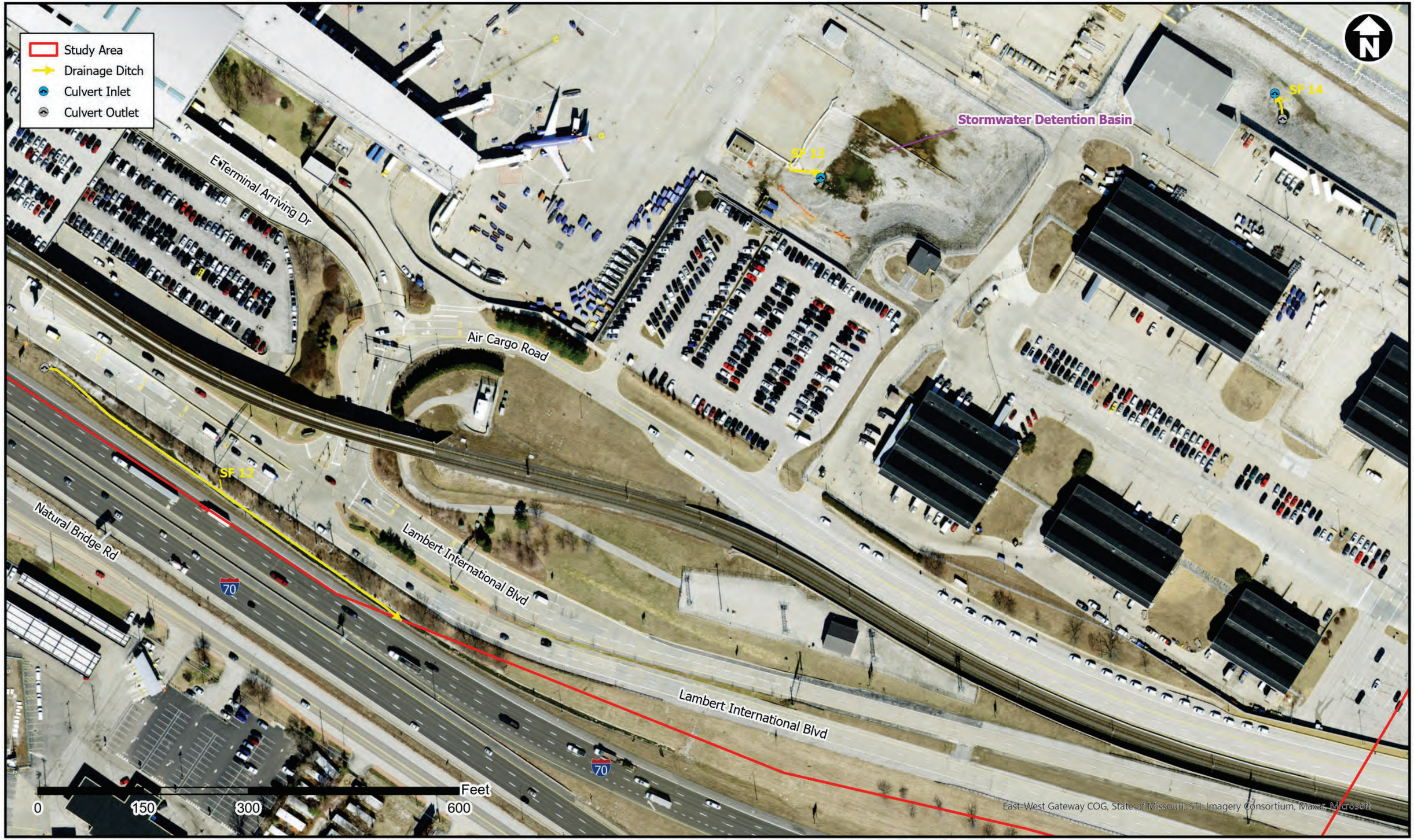

St. Louis Lambert International Airport - Consolidated Terminal Program - St. Louis Co., MO

Ecological Resources (7 of 7)

CMT
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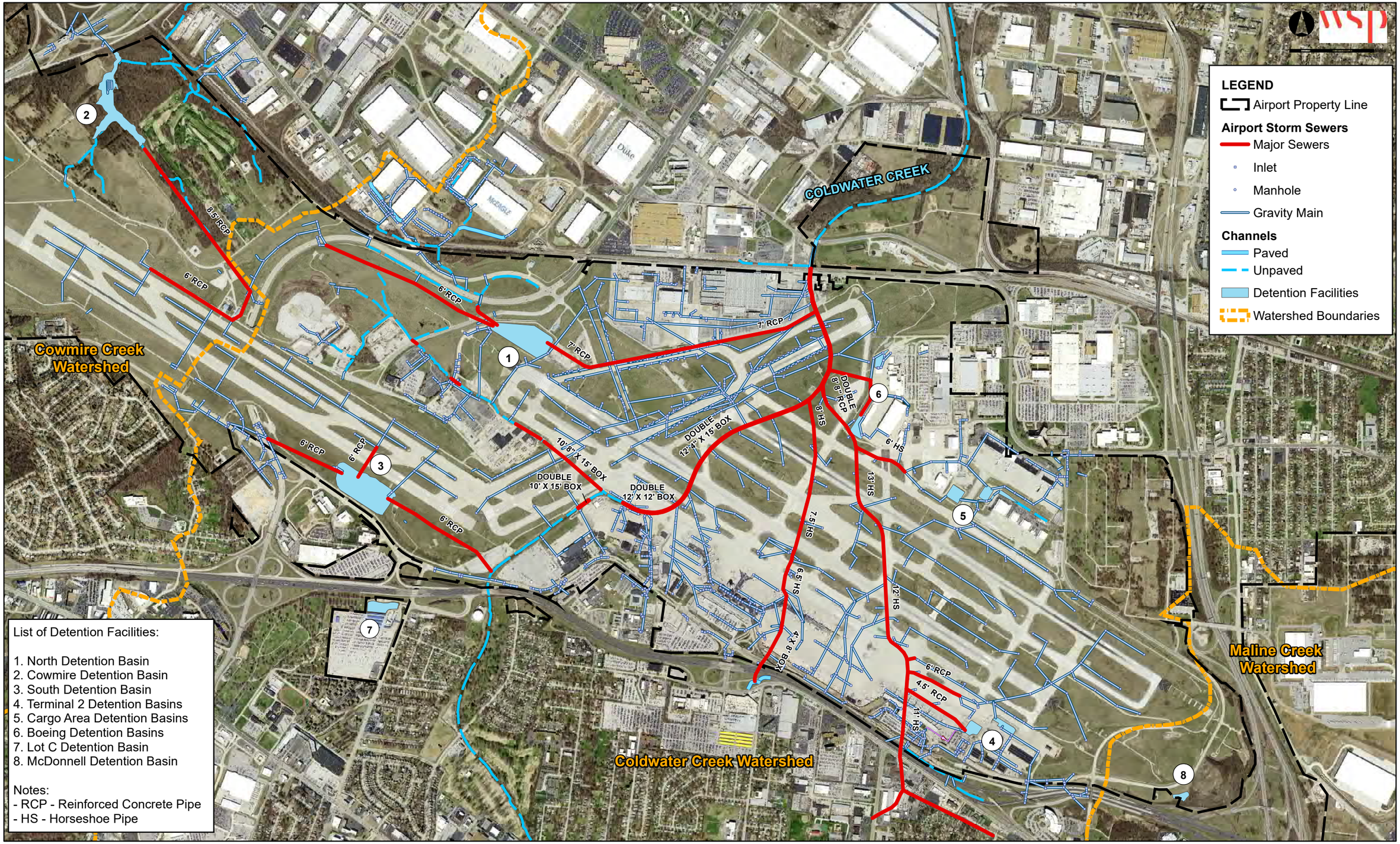
ST LOUIS LAMBERT INTERNATIONAL AIRPORT
Airport Master Plan
Stormwater Planning
February 2023

Figure 9.3-1
Stormwater Data Collection
Existing Airport Stormwater System Map



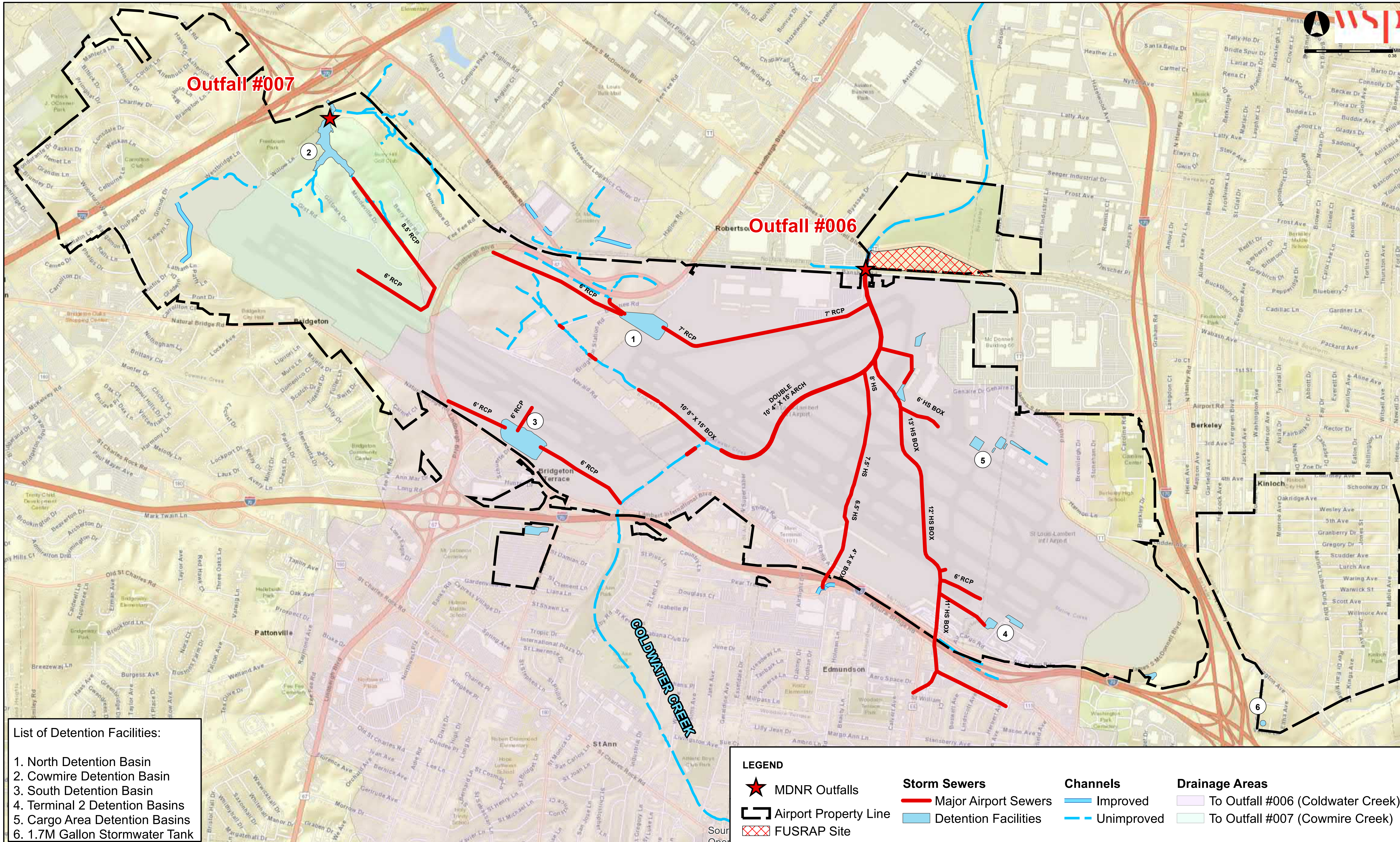
List of Detention Facilities:

1. North Detention Basin
2. Cowmire Detention Basin
3. South Detention Basin
4. Terminal 2 Detention Basins
5. Cargo Area Detention Basins
6. Boeing Detention Basins
7. Lot C Detention Basin
8. McDonnell Detention Basin

Notes:
- RCP - Reinforced Concrete Pipe
- HS - Horseshoe Pipe

SOURCE: M3 Engineering, 2021.

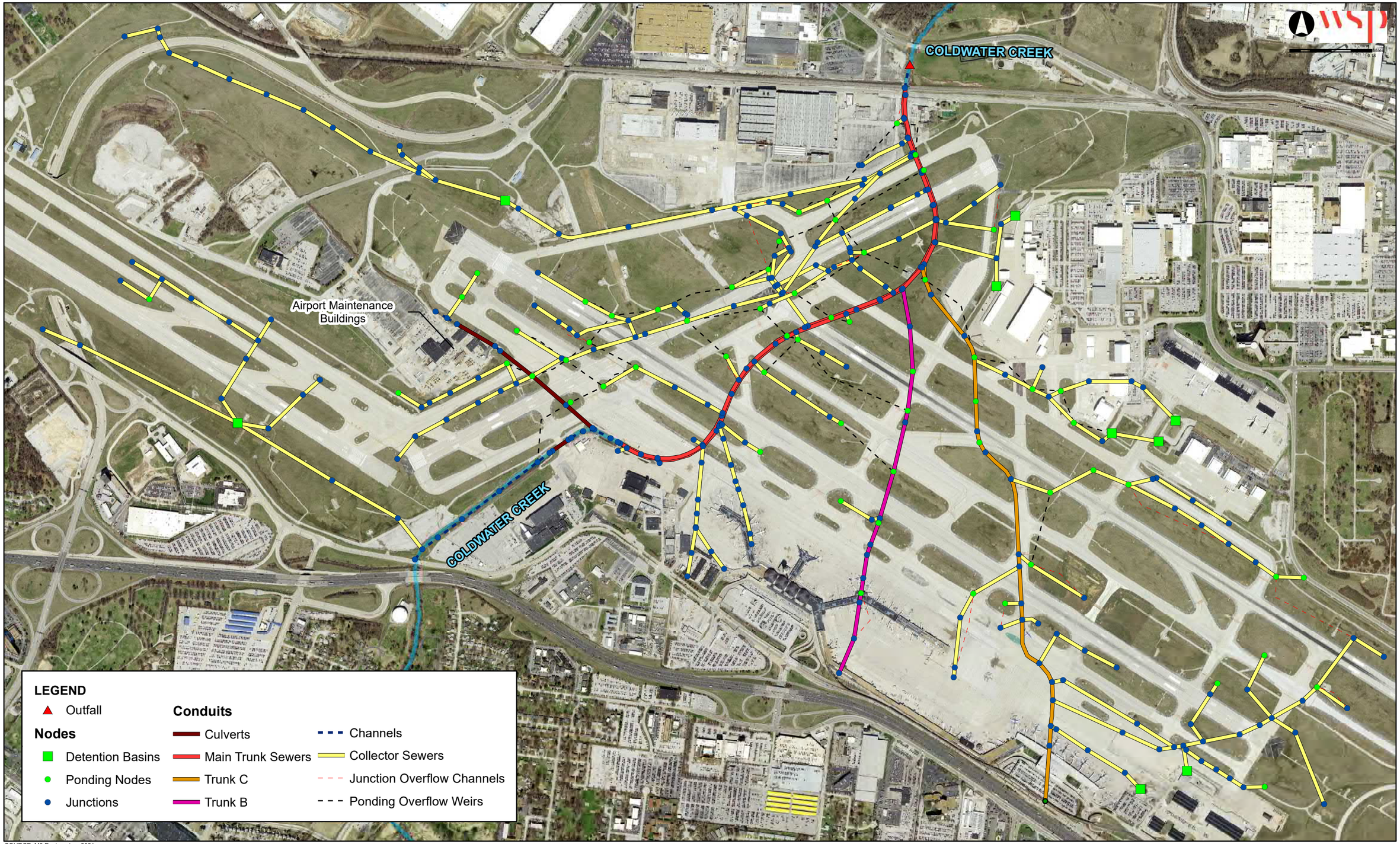
Figure 9.4-1
Stormwater Rules and Regulations
Outfall Locations and Major Sewers Map



SOURCE: M3 Engineering, 2021.

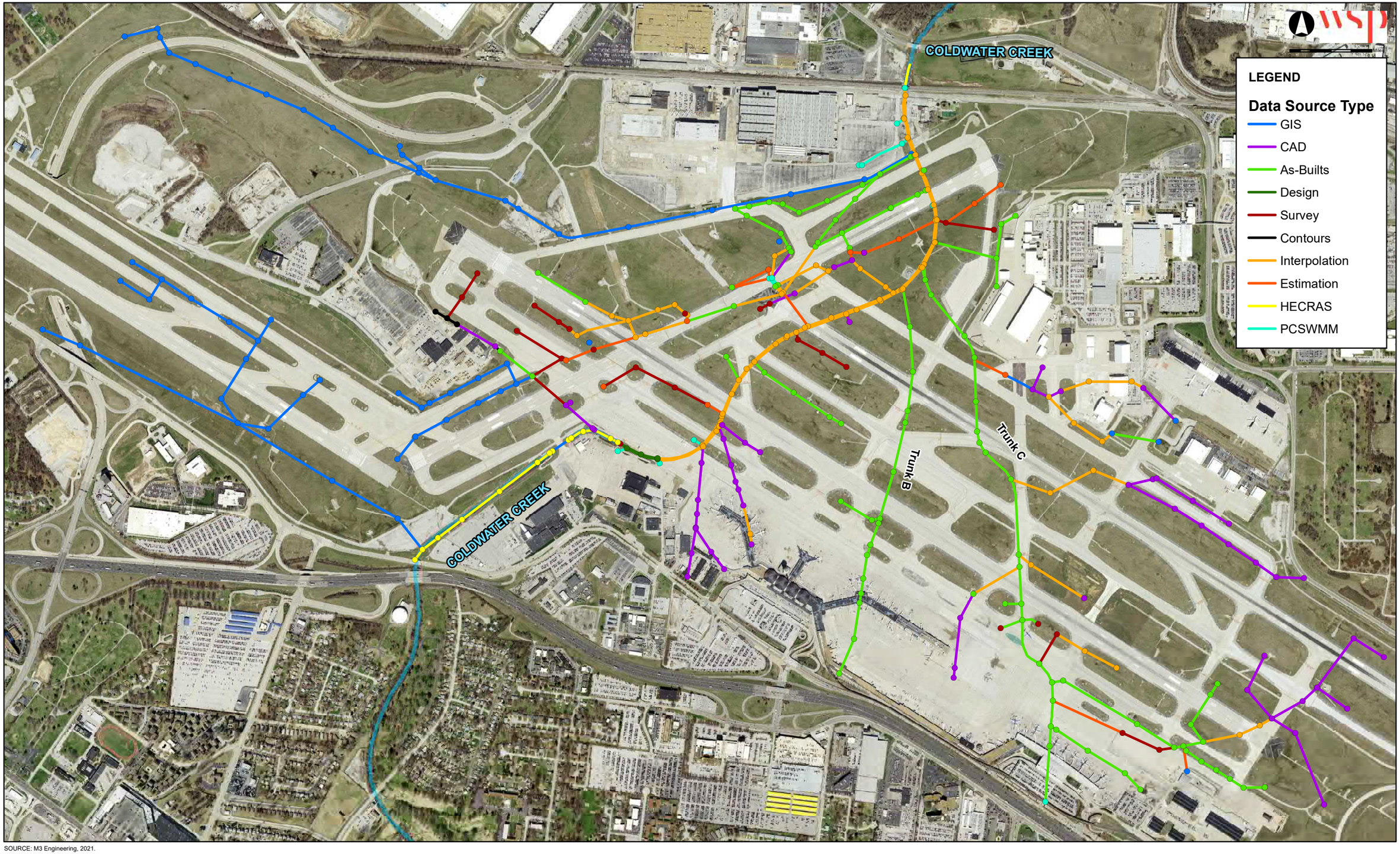
ST LOUIS LAMBERT INTERNATIONAL AIRPORT
Airport Master Plan
Stormwater Planning
February 2023

Figure 9.5-1
Coldwater Creek Airport Stormwater Model
Model Overview Map



SOURCE: M3 Engineering, 2021.

Figure 9.5-11
Coldwater Creek Airport Stormwater Model
Model Data Source Types



SOURCE: M3 Engineering, 2021.

NOTIFICATION OF ADMINISTRATIVE APPEAL OPTIONS AND PROCESS AND REQUEST FOR APPEAL

Applicant: St. Louis Lambert Intern. Airport	File Number: MVS-2024-216	Date: 7 May 2024
Attached is:		See Section below
	INITIAL PROFFERED PERMIT (Standard Permit or Letter of permission)	A
	PROFFERED PERMIT (Standard Permit or Letter of permission)	B
	PERMIT DENIAL WITHOUT PREJUDICE	C
	PERMIT DENIAL WITH PREJUDICE	D
X	APPROVED JURISDICTIONAL DETERMINATION	E
	PRELIMINARY JURISDICTIONAL DETERMINATION	F

SECTION I

The following identifies your rights and options regarding an administrative appeal of the above decision. Additional information may be found at https://www.usace.army.mil/Missions/Civil-Works/Regulatory-Program-and-Permits/appeals/ or Corps regulations at 33 CFR Part 331.

A: INITIAL PROFFERED PERMIT: You may accept or object to the permit

- ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.

- OBJECT: If you object to the permit (Standard or LOP) because of certain terms and conditions therein, you may request that the permit be modified accordingly. You must complete Section II of this form and return the form to the district engineer. Upon receipt of your letter, the district engineer will evaluate your objections and may: (a) modify the permit to address all of your concerns, (b) modify the permit to address some of your objections, or (c) not modify the permit having determined that the permit should be issued as previously written. After evaluating your objections, the district engineer will send you a proffered permit for your reconsideration, as indicated in Section B below.

B: PROFFERED PERMIT: You may accept or appeal the permit

- ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.

- APPEAL: If you choose to decline the proffered permit (Standard or LOP) because of certain terms and conditions therein, you may appeal the declined permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

C. PERMIT DENIAL WITHOUT PREJUDICE: Not appealable
You received a permit denial without prejudice because a required Federal, state, and/or local authorization and/or certification has been denied for activities which also require a Department of the Army permit before final action has been taken on the Army permit application. The permit denial without prejudice is not appealable. There is no prejudice to the right of the applicant to reinstate processing of the Army permit application if subsequent approval is received from the appropriate Federal, state, and/or local agency on a previously denied authorization and/or certification.

D: PERMIT DENIAL WITH PREJUDICE: You may appeal the permit denial
You may appeal the denial of a permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

E: APPROVED JURISDICTIONAL DETERMINATION: You may accept or appeal the approved JD or provide new information for reconsideration

- ACCEPT: You do not need to notify the Corps to accept an approved JD. Failure to notify the Corps within 60 days of the date of this notice means that you accept the approved JD in its entirety and waive all rights to appeal the approved JD.

- APPEAL: If you disagree with the approved JD, you may appeal the approved JD under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

- RECONSIDERATION: You may request that the district engineer reconsider the approved JD by submitting new information or data to the district engineer within 60 days of the date of this notice. The district will determine whether the information submitted qualifies as new information or data that justifies reconsideration of the approved JD. A reconsideration request does not initiate the appeal process. You may submit a request for appeal to the division engineer to preserve your appeal rights while the district is determining whether the submitted information qualifies for a reconsideration.

F: PRELIMINARY JURISDICTIONAL DETERMINATION: Not appealable
You do not need to respond to the Corps regarding the preliminary JD. The Preliminary JD is not appealable. If you wish, you may request an approved JD (which may be appealed), by contacting the Corps district for further instruction. Also, you may provide new information for further consideration by the Corps to reevaluate the JD.

POINT OF CONTACT FOR QUESTIONS OR INFORMATION:

If you have questions regarding this decision you may contact:	If you have questions regarding the appeal process, or to submit your request for appeal, you may contact:
U.S. Army Corps of Engineers St. Louis District Regulatory Branch 1222 Spruce St. St. Louis, MO. 63103 314-331-8575	Administrative Appeals Review Officer Mississippi Valley Division U.S. Army Corps of Engineers 1400 Walnut Street Vicksburg, MS 39181-0080 601-634-5820

SECTION II – REQUEST FOR APPEAL or OBJECTIONS TO AN INITIAL PROFFERED PERMIT	
REASONS FOR APPEAL OR OBJECTIONS: (Describe your reasons for appealing the decision or your objections to an initial proffered permit in clear concise statements. Use additional pages as necessary. You may attach additional information to this form to clarify where your reasons or objections are addressed in the administrative record.)	
ADDITIONAL INFORMATION: The appeal is limited to a review of the administrative record, the Corps memorandum for the record of the appeal conference or meeting, and any supplemental information that the review officer has determined is needed to clarify the administrative record. Neither the appellant nor the Corps may add new information or analyses to the record. However, you may provide additional information to clarify the location of information that is already in the administrative record.	
RIGHT OF ENTRY: Your signature below grants the right of entry to Corps of Engineers personnel, and any government consultants, to conduct investigations of the project site during the course of the appeal process. You will be provided a 15-day notice of any site investigation and will have the opportunity to participate in all site investigations.	
_____ Signature of appellant or agent.	Date:
Email address of appellant and/or agent:	Telephone number:

USFWS Concurrence Request Letter

April 19, 2024

John Weber, Field Supervisor
U.S. Fish & Wildlife Service
Ecological Services
101 Park Deville Drive
Columbia, Missouri 65203-0057
Sent via email: John_S_Weber@fws.gov

RE: ST. LOUIS LAMBERT INTERNATIONAL AIRPORT – CONSOLIDATED TERMINAL PROGRAM
ST. LOUIS, ST. LOUIS COUNTY, MISSOURI
SECTION 7 INFORMAL CONSULTATION
IPAC PROJECT CODE: 2023-0082619

Dear Mr. Weber:

The Federal Aviation Administration (FAA) is considering a proposal by St. Louis Lambert International Airport (STL), referred to as the Consolidated Terminal Program, to construct a new consolidated terminal and roadway improvements (Project). As the designated federal representative in making Section 7 determinations, FAA has determined that this project may affect, but is not likely to adversely affect (NLAA) the Indiana, Northern long-eared and tricolored bats and will have no effect on the gray bat, decurrent false aster, pallid sturgeon and bald eagle. We are requesting that the Service review the proposed activities, as described below, for concurrence with these NLAA determinations.

Location

The proposed project is located approximately 13 miles northwest of downtown St. Louis in unincorporated St. Louis County, Missouri. Per the USGS Saint Charles, Florissant, Creve Coeur, and Clayton, MO Quadrangle Maps, the study area is situated within Sections 5 and 28, Township 46 North, and Range 6 East. See Attachment 1: Project Location Map.

Project Description

Consistent with the Airport Layout Plan Update and Master Plan, STL proposes to construct a new consolidated terminal, with up to sixty-two gates, in the location of the existing Terminal 1 location at STL. Nearly all the passenger processing areas of Terminals 1 and 2 are undersized and congested. In addition, mechanical systems, holdrooms, restrooms and concession space in Terminal 1 are in poor condition and functionally obsolete. Additional gates are required in Terminal 2, and while there are unused gates in the adjacent Concourse D, they are undersized, functionally obsolete, and would result in unacceptably long walks for passengers. Post-security concessions are undersized in both terminals, restricting both passenger choices and Airport revenue. Therefore, both terminals provide a sub-optimum level of passenger service. The proposed project involves modifying the core terminal processor, relocating the terminal support facilities, new landslide configuration, new consolidated receiving and distribution facility, new ground

transportation center, proposed surface parking, remain overnight parking and parking garage, constructing a new east deicing pad, and the full enclosure of a portion of Coldwater Creek running through the project area.

The roadway geometry, intersections, and curbsides have several existing safety deficiencies and inefficiencies that would be made worse with the forecast increase in passengers. The project is intended to accommodate the demand for airport traffic to and from a single terminal. The project will provide a new terminal roadway with the optimal length from interstate to terminal while minimizing changes needed to existing interstate facilities. The primary impact of the project is the redistribution of traffic from the Airflight Drive interchange to the Cypress Road interchange. In order to accommodate the redistribution of traffic, a continuous auxiliary lane is proposed in the westbound direction of I-70 from the Airflight Drive entrance ramp to the Cypress Road exit ramp while closing the existing westbound I-70 on ramp from Lambert International Boulevard. Additional changes are proposed at the MO 115 and I-70 westbound intersection to the west of Cypress Road. Two left turns are recommended westbound, extending to the intersection at Cypress Road. Additionally, adding a second lane to the I-70 Cypress Road entrance is recommended. A conceptual plan of the proposed Project is included as **Attachment 2: Project Layout.**

Effects on Threatened & Endangered Species

The project study area was observed for suitable threatened and endangered species habitat during on-site evaluations conducted on May 23 and 24, 2023, January 31, 2024, and March 20, 2024. See **Attachment 3: Ecological Overview Map** *and* **Attachment 4: Site Visit Photos**.

*According to the United States Fish and Wildlife Service (USFWS) Information for Planning and Consultation (IPaC) species list (***Attachment 5***) and the Missouri Department of Conservation (MDC) Natural Heritage Review (***Attachment 6***), the project is within the known or historic range of the following protected species:*

- *Gray bat (Myotis grisescens), federally endangered*
- *Indiana bat (Myotis sodalis), federally and state endangered*
- *Northern long-eared bat (Myotis septentrionalis), federally endangered*
- *Tricolored bat (Perimyotis subflavu), proposed federally endangered*
- *Decurrent false aster (Boltonia decurrens), federally threatened, state endangered*
- *Pallid sturgeon (Scaphirhynchus albus), federally and state endangered*
- *Bald eagle (Haliaeetus leucocephalus), protected*

Gray bat (Myotis grisescens): No caves are known to be present in the project area, so suitable habitat is not expected to be available in the project area. **Therefore, this project is expected to have no effect on the gray bat.**

Indiana bat (Myotis sodalis), and Northern long-eared bat (Myotis septentrionalis): Suitable habitat for these species was identified as any tree over 3 inches DBH with peeling bark or cavities that would provide shelter and allow the bat to move around the tree for thermoregulation. Up to 3.9 acres of trees may be removed for the project. All of the trees to be removed are located within 100 feet of existing pavement, scattered throughout disturbed areas on airport property and road right-of-way, and the majority of trees are saplings. One (1) tree was identified as a suitable bat roost tree. The project sponsor commits to clear the identified suitable bat roost tree during the bat inactive season, between November 1 and March 31. Some structure demolition will be necessary for the project. Any structures that are open (such as the parking garage) or in poor condition and may allow for bat roosting, will be inspected prior to demolition to evaluate for the signs

of bat presence. ***Therefore, this project may affect, but is not likely to adversely affect the Indiana and Northern long-eared bats.***

Tricolored bat (Perimyotis subflavus): Suitable habitat for this species was identified as live and dead leaf clusters of live or recently dead deciduous hardwood trees. Up to 3.9 acres of trees may be removed for the project. All of the trees to be removed are located within 100 feet of existing pavement, scattered throughout disturbed areas on airport property and road right-of-way, and the majority of trees are saplings. One (1) tree was identified as a suitable bat roost tree. The project sponsor commits to clear the identified suitable bat roost tree during the bat inactive season, between November 1 and March 31. Some structure demolition will be necessary for the project. Any structures that are open (such as the parking garage) or in poor condition and may allow for bat roosting, will be inspected prior to demolition to evaluate for the signs of bat presence. ***Therefore, this project may affect, but is not likely to adversely affect the tricolored bat.***

Decurrent false aster (Boltonia decurrens): Suitable habitat for this species was identified as moist, sandy floodplains or prairie wetland areas. The project is within a highly developed area, consisting of upland, mowed lawn, and commercial areas. The identified wetland does not contain the appropriate wet-prairie habitat and are of degraded, poor quality. ***Therefore, this project is expected to have no effect on decurrent false aster.***

Pallid sturgeon (Scaphirhynchus albus): No rivers large enough to support the pallid sturgeon are located on the project site. ***Therefore, this project is expected to have no effect on the pallid sturgeon.***

Bald eagle (Haliaeetus leucocephalus): No bald eagle nests were reported by MDC or observed during the on-site investigations on May 23 and 24, 2023, January 31, 2024, and March 20, 2024. ***Therefore, this project is expected to have no effect on the bald eagle.***

The project is not located within any designated critical habitat areas.

Following your review of this information, ***FAA is requesting concurrence on the NLAA determinations for the Indiana, Northern long-eared, and tricolored bats.***

We look forward to your review of this request. If there are questions or if any additional information is needed, please contact me at hlacey@cmtengr.com or (937) 701-6578 or Scott Tener at scott.tener@faa.gov or (816) 329-2639.

Sincerely,
CRAWFORD, MURPHY & TILLY, INC.

Heather Lacey

Heather Lacey
Senior Environmental Scientist

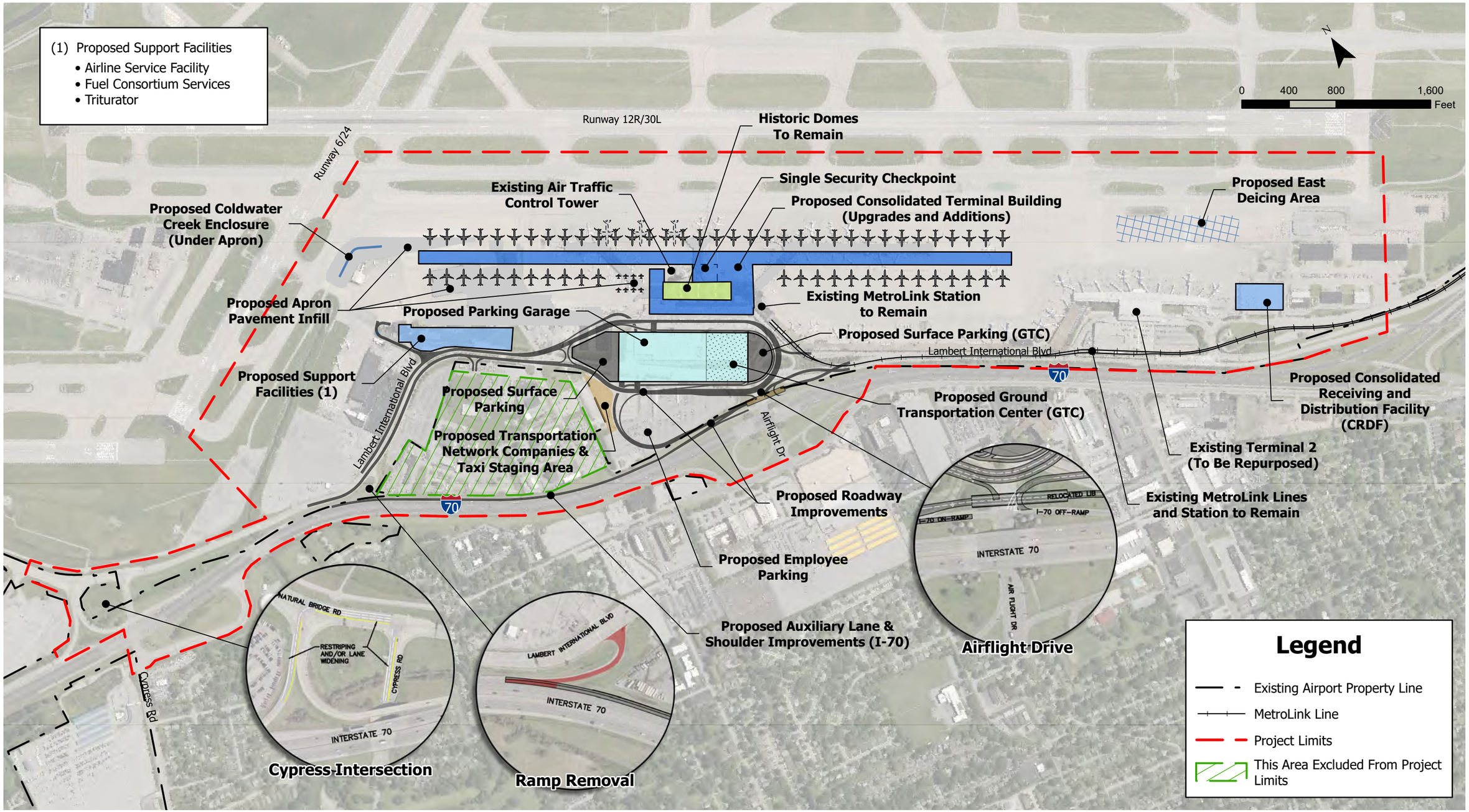
Enc: ***Attachment 1: Project Location Map***
Attachment 2: Project Layout
Attachment 3: Ecological Resources Overall Map
Attachment 4: Site Visit Photographs (#83-84)
Attachment 5: IPaC Official Species List
Attachment 6: MDC Natural Heritage Review

Cc: *Scott Tener, Federal Aviation Administration*
Jerry Beckmann, St. Louis Airport Authority
Jennifer Kuchinski, WSP
Laura Sakach, CMT

Attachment 1: Project Location Map

Sources: Background Map, ESRI World Street Map, CMT, 2023.

Attachment 2: Project Layout

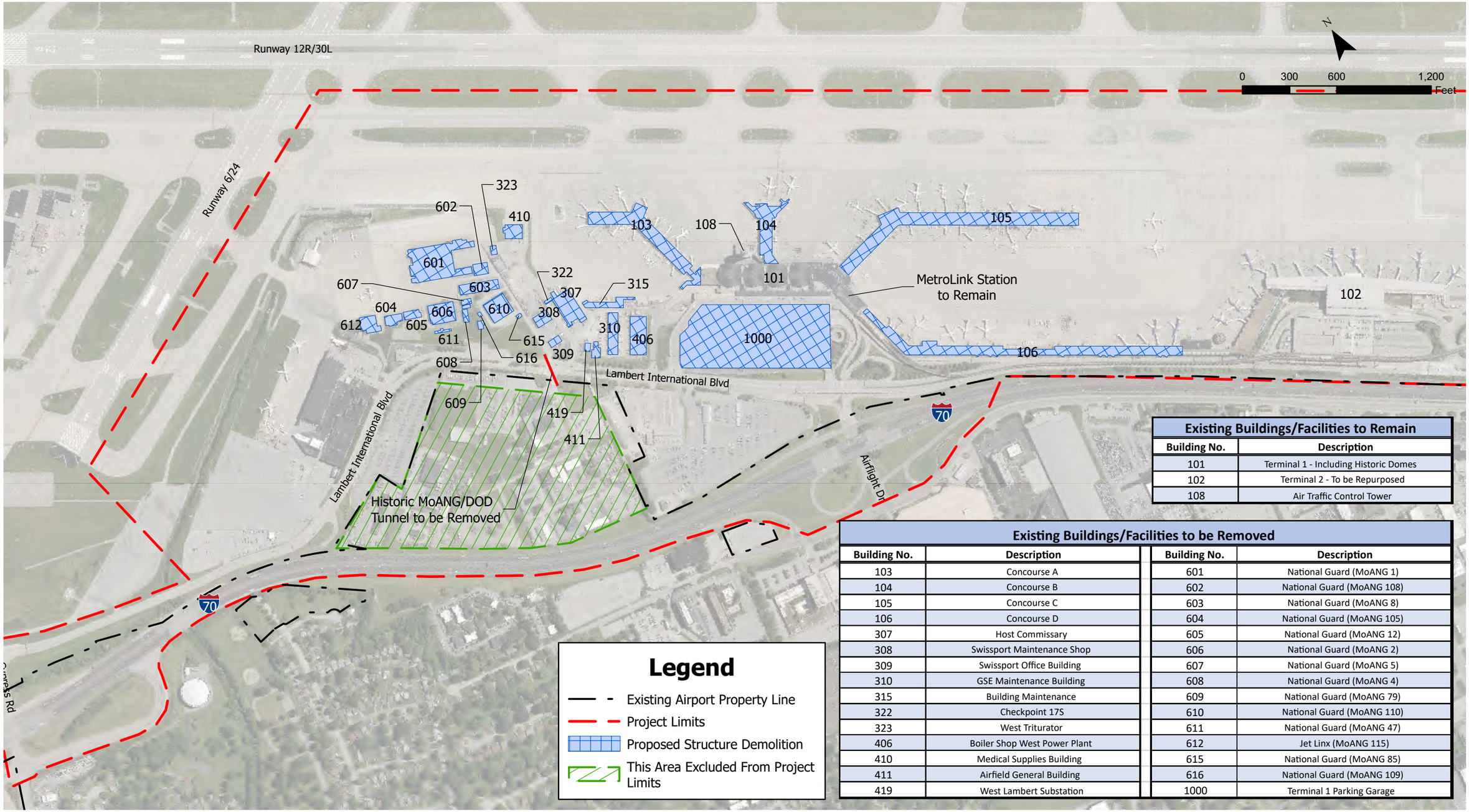


Source: [22004919] Aerial Image - ESRI World Imagery

ST. LOUIS LAMBERT INTERNATIONAL AIRPORT

Sponsor's Proposed Action

Exhibit x-x



Existing Buildings/Facilities to Remain

Building No.	Description
101	Terminal 1 - Including Historic Domes
102	Terminal 2 - To be Repurposed
108	Air Traffic Control Tower

Existing Buildings/Facilities to be Removed

Building No.	Description	Building No.	Description
103	Concourse A	601	National Guard (MoANG 1)
104	Concourse B	602	National Guard (MoANG 108)
105	Concourse C	603	National Guard (MoANG 8)
106	Concourse D	604	National Guard (MoANG 105)
307	Host Commissary	605	National Guard (MoANG 12)
308	Swissport Maintenance Shop	606	National Guard (MoANG 2)
309	Swissport Office Building	607	National Guard (MoANG 5)
310	GSE Maintenance Building	608	National Guard (MoANG 4)
315	Building Maintenance	609	National Guard (MoANG 79)
322	Checkpoint 17S	610	National Guard (MoANG 110)
323	West Triturator	611	National Guard (MoANG 47)
406	Boiler Shop West Power Plant	612	Jet Linx (MoANG 115)
410	Medical Supplies Building	615	National Guard (MoANG 85)
411	Airfield General Building	616	National Guard (MoANG 109)
419	West Lambert Substation	1000	Terminal 1 Parking Garage

Source: [22004919] Aerial Image - ESRI World Imagery

ST. LOUIS LAMBERT INTERNATIONAL AIRPORT

Sponsor's Proposed Action Removals

Exhibit x-x

Attachment 3: Ecological Resources Overall Map

St. Louis Lambert International Airport - Consolidated Terminal Program - St. Louis Co., MO

Ecological Resources Overall Map

CMT
Crawford, Murphy & Tilly

Attachment 4: Site Visit Photographs #83-84
(Additional photos available in the Aquatic and Ecological Resources Report – to be provided upon request)

83. View of row of 16 *Betula nigra* (river birch) potential bat roost trees. 1/31/2024

84. Representative photo of potential *Betula nigra* (river birch) roost tree, exhibiting peeling bark, that will likely be removed by project. 5/24/2023

Attachment 5: IPaC Official Species List

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Missouri Ecological Services Field Office
101 Park Deville Drive
Suite A
Columbia, MO 65203-0057
Phone: (573) 234-2132 Fax: (573) 234-2181

In Reply Refer To: February 21, 2024
Project Code: 2023-0082619
Project Name: St. Louis Lambert International Airport – Consolidated Terminal Program

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

Threatened and Endangered Species

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and may be affected by your proposed project. The species list fulfills the requirement for obtaining a Technical Assistance Letter from the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).
New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. **Note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days.** The Service recommends that verification be completed by visiting the IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the IPaC system by completing the same process used to receive the enclosed list.

Consultation Technical Assistance

Refer to the Midwest Region S7 Technical Assistance website for step-by-step instructions for making species determinations and for specific guidance on the following types of projects:

projects in developed areas, HUD, pipelines, buried utilities, telecommunications, and requests for a Conditional Letter of Map Revision (CLOMR) from FEMA.

Federally Listed Bat Species

Indiana bats, gray bats, and northern long-eared bats occur throughout Missouri and the information below may help in determining if your project may affect these species.

Gray bats - Gray bats roost in caves or mines year-round and use water features and forested riparian corridors for foraging and travel. If your project will impact caves, mines, associated riparian areas, or will involve tree removal around these features – particularly within stream corridors, riparian areas, or associated upland woodlots –gray bats could be affected.
Indiana and northern long-eared bats - These species hibernate in caves or mines only during the winter. In Missouri the hibernation season is considered to be November 1 to March 31. During the active season in Missouri (April 1 to October 31) they roost in forest and woodland habitats. Suitable summer habitat for Indiana bats and northern long-eared bats consists of a wide variety of forested/wooded habitats where they roost, forage, and travel and may also include some adjacent and interspersed non-forested habitats such as emergent wetlands and adjacent edges of agricultural fields, old fields and pastures. This includes forests and woodlots containing potential roosts (i.e., live trees and/or snags ≥5 inches diameter at breast height (dbh) for Indiana bat, and ≥3 inches dbh for northern long-eared bat, that have exfoliating bark, cracks, crevices, and/or hollows), as well as linear features such as fencerows, riparian forests, and other wooded corridors. These wooded areas may be dense or loose aggregates of trees with variable amounts of canopy closure. Tree species often include, but are not limited to, shellbark or shagbark hickory, white oak, cottonwood, and maple. Individual trees may be considered suitable habitat when they exhibit the characteristics of a potential roost tree and are located within 1,000 feet (305 meters) of other forested/wooded habitat. Northern long-eared bats have also been observed roosting in human-made structures, such as buildings, barns, bridges, and bat houses; therefore, these structures should also be considered potential summer habitat and evaluated for use by bats. If your project will impact caves or mines or will involve clearing forest or woodland habitat containing suitable roosting habitat, Indiana bats or northern long-eared bats could be affected.
Examples of unsuitable habitat include:

- Individual trees that are greater than 1,000 feet from forested or wooded areas;
- Trees found in highly-developed urban areas (e.g., street trees, downtown areas);
- A pure stand of less than 3-inch dbh trees that are not mixed with larger trees; and
- A stand of eastern red cedar shrubby vegetation with no potential roost trees.

Using the IPaC Official Species List to Make No Effect and May Affect Determinations for Listed Species

1. If IPaC returns a result of “There are no listed species found within the vicinity of the project,” then project proponents can conclude the proposed activities will have **no effect** on any federally listed species under Service jurisdiction. Concurrence from the Service is not required for **No Effect** determinations. No further consultation or coordination is required. Attach this letter to the dated IPaC species list report for your records. An example "No Effect" document also can be found on the S7 Technical Assistance website.

2. If IPaC returns one or more federally listed, proposed, or candidate species as potentially present in the action area of the proposed project – other than bats (see #3 below) – then project proponents can conclude the proposed activities **may affect** those species. For assistance in determining if suitable habitat for listed, candidate, or proposed species occurs within your project area or if species may be affected by project activities, you can obtain Life History Information for Listed and Candidate Species through the Species website.
3. If IPac returns a result that one or more federally listed bat species (Indiana bat, northern long-eared bat, or gray bat) are potentially present in the action area of the proposed project, project proponents can conclude the proposed activities **may affect** these bat species **IF** one or more of the following activities are proposed:
    a. Clearing or disturbing suitable roosting habitat, as defined above, at any time of year;
    b. Any activity in or near the entrance to a cave or mine;
    c. Mining, deep excavation, or underground work within 0.25 miles of a cave or mine;
    d. Construction of one or more wind turbines; or
    e. Demolition or reconstruction of human-made structures that are known to be used by bats based on observations of roosting bats, bats emerging at dusk, or guano deposits or stains.

If none of the above activities are proposed, project proponents can conclude the proposed activities will have **no effect** on listed bat species. Concurrence from the Service is not required for **No Effect** determinations. No further consultation or coordination is required. Attach this letter to the dated IPaC species list report for your records. An example "No Effect" document also can be found on the S7 Technical Assistance website.
If any of the above activities are proposed in areas where one or more bat species may be present, project proponents can conclude the proposed activities **may affect** one or more bat species. We recommend coordinating with the Service as early as possible during project planning. If your project will involve removal of over 5 acres of suitable forest or woodland habitat, we recommend you complete a Summer Habitat Assessment prior to contacting our office to expedite the consultation process. The Summer Habitat Assessment Form is available in Appendix A of the most recent version of the Range-wide Indiana Bat Summer Survey Guidelines.

Other Trust Resources and Activities

Bald and Golden Eagles - Although the bald eagle has been removed from the endangered species list, this species and the golden eagle are protected by the Bald and Golden Eagle Act and the Migratory Bird Treaty Act. Should bald or golden eagles occur within or near the project area please contact our office for further coordination. For communication and wind energy projects, please refer to additional guidelines below.

Migratory Birds - The Migratory Bird Treaty Act (MBTA) prohibits the taking, killing, possession, transportation, and importation of migratory birds, their eggs, parts, and nests, except when specifically authorized by the Service. The Service has the responsibility under the MBTA

to proactively prevent the mortality of migratory birds whenever possible and we encourage implementation of recommendations that minimize potential impacts to migratory birds. Such measures include clearing forested habitat outside the nesting season (generally March 1 to August 31) or conducting nest surveys prior to clearing to avoid injury to eggs or nestlings.

Communication Towers - Construction of new communications towers (including radio, television, cellular, and microwave) creates a potentially significant impact on migratory birds, especially some 350 species of night-migrating birds. However, the Service has developed voluntary guidelines for minimizing impacts.

Transmission Lines - Migratory birds, especially large species with long wingspans, heavy bodies, and poor maneuverability can also collide with power lines. In addition, mortality can occur when birds, particularly hawks, eagles, kites, falcons, and owls, attempt to perch on uninsulated or unguarded power poles. To minimize these risks, please refer to guidelines developed by the Avian Power Line Interaction Committee and the Service. Implementation of these measures is especially important along sections of lines adjacent to wetlands or other areas that support large numbers of raptors and migratory birds.

Wind Energy - To minimize impacts to migratory birds and bats, wind energy projects should follow the Service's Wind Energy Guidelines. In addition, please refer to the Service's Eagle Conservation Plan Guidance, which provides guidance for conserving bald and golden eagles in the course of siting, constructing, and operating wind energy facilities.

Next Steps

Should you determine that project activities **may affect** any federally listed species or trust resources described herein, please contact our office for further coordination. Letters with requests for consultation or correspondence about your project should include the Consultation Tracking Number in the header. Electronic submission is preferred.

If you have not already done so, please contact the Missouri Department of Conservation (Policy Coordination, P. O. Box 180, Jefferson City, MO 65102) for information concerning Missouri Natural Communities and Species of Conservation Concern.
We appreciate your concern for threatened and endangered species. Please feel free to contact our office with questions or for additional information.

John Weber

Attachment(s):

- Official Species List

OFFICIAL SPECIES LIST

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether

any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Missouri Ecological Services Field Office
101 Park Deville Drive
Suite A
Columbia, MO 65203-0057
(573) 234-2132

PROJECT SUMMARY

Project Code: 2023-0082619
Project Name: St. Louis Lambert International Airport – Consolidated Terminal Program
Project Type: Airport - New Construction
Project Description: This project is located at the St. Louis Lambert International Airport (STL) in St. Louis County, Missouri. This project is located in Section 5, Township 46 North, and Range 6 East on the Saint Charles, Florissant, Creve Coeur, and Clayton, MO USGS Quadrangles.
The proposed project consists of constructing a new sixty-two gate consolidated terminal in the location of the existing Terminal 1 location at the St. Louis Lambert International Airport (STL). The proposed project involves modifying the core terminal processor, relocating the terminal support facilities, new landslide configuration, new consolidated receiving and distribution facility, new ground transportation center, proposed surface parking, remain overnight parking and parking garage, constructing a new east deicing pad, and the full enclosure of a portion of Coldwater Creek running through the project area. The proposed improvements also include an auxiliary lane and shoulder improvements along I-70 westbound from the Airflight Drive entrance ramp to the Cypress Road exit ramp and adjustments to the Cypress Road interchange. It also removes direct access to the new consolidated terminal from Airflight Road to the south. Additional changes are proposed at the MO 115 and I-70 westbound intersection to the west of Cypress Road. Two left turns are recommended westbound, extending to the intersection at Cypress Road. Additionally, adding a second lane to the I-70 entrance is recommended. Construction is anticipated to begin in 2025 and be completed by the end of 2031.

Land use in the vicinity of the project is commercial and residential. Coldwater Creek runs through the project area. Bridgeton Parks and Recreation, Washington Park cemetery, Berry hill golf course, Edmundson Park, John L. Brown Park, and St. Ann Park are all near the project area.
Suitable summer habitat is located within and adjacent to the project area. Suitable summer habitat will be impacted for the construction of the project. No more than 6.7 acre of tree removal, all within 100 feet of existing roadway, will be required for the project. One (1) tree was identified as suitable bat roost trees. The project sponsor commits to clear the identified suitable bat roost trees during the bat inactive season, between November 1 and March 31. The project activities will not include the use of percussives. The project does include installing new permanent lighting. Although temporary lighting is not expected to be required for the construction of the project, it is possible some night work will be performed. Mitigation is not anticipated.

Project Location:

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@38.74154435,-90.36614188618142,14z

Counties: St. Louis County, Missouri

ENDANGERED SPECIES ACT SPECIES

There is a total of 6 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

MAMMALS

NAME	STATUS
Gray Bat *Myotis grisescens* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/6329	Endangered
Indiana Bat *Myotis sodalis* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/5949 General project design guidelines: https://ipac.ecosphere.fws.gov/project/Z6DI3ZCPARBXZMZZPXBZMYWGXM/documents/generated/6868.pdf	Endangered
Northern Long-eared Bat *Myotis septentrionalis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9045 General project design guidelines: https://ipac.ecosphere.fws.gov/project/Z6DI3ZCPARBXZMZZPXBZMYWGXM/documents/generated/6868.pdf	Endangered
Tricolored Bat *Perimyotis subflavus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/10515	Proposed Endangered

INSECTS

NAME	STATUS
Monarch Butterfly *Danaus plexippus*	Candidate

No critical habitat has been designated for this species.
Species profile: https://ecos.fws.gov/ecp/species/9743

FLOWERING PLANTS

NAME	STATUS
Decurrent False Aster *Boltonia decurrens*	Threatened

No critical habitat has been designated for this species.
Species profile: https://ecos.fws.gov/ecp/species/7705

CRITICAL HABITATS

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

YOU ARE STILL REQUIRED TO DETERMINE IF YOUR PROJECT(S) MAY HAVE EFFECTS ON ALL ABOVE LISTED SPECIES.

IPAC USER CONTACT INFORMATION

Agency: Crawford, Murphy and Tilly Inc.
Name: Stephanie Spence
Address: 1 Memorial Dr
Address Line 2: Suite 500
City: St. Louis
State: MO
Zip: 63102
Email sspence@cmtengr.com
Phone: 5134278169

LEAD AGENCY CONTACT INFORMATION

Lead Agency: Federal Aviation Administration

Attachment 6: MDC Natural Heritage Review

Missouri Department of Conservation

Missouri Department of Conservation's Mission is to
protect and manage the forest, fish, and
wildlife resources of the state and to
facilitate and provide opportunities for all citizens to
use, enjoy and learn about these resources.

Natural Heritage Review Level Three Report: Species Listed Under the Federal Endangered Species Act

There are records of species listed under the Federal Endangered Species Act, and possibly also records for species listed Endangered by the state, or Missouri Species and/or Natural Communities of Conservation Concern within or near the the defined Project Area. Please contact the U.S. Fish and Wildlife Service and the Missouri Department of Conservation for further coordination.

Foreword: Thank you for accessing the Missouri Natural Heritage Review Website developed by the Missouri Department of Conservation with assistance from the U.S. Fish and Wildlife Service, the U.S. Army Corps of Engineers, Missouri Department of Transportation and NatureServe. The purpose of this report is to provide information to federal, state and local agencies, organizations, municipalities, corporations, and consultants regarding sensitive fish, wildlife, plants, natural communities, and habitats to assist in planning, designing, and permitting stages of projects.

PROJECT INFORMATION

Project Name and ID Number: St. Louis Lambert International Airport – Consolidated Terminal Program #12779
Project Description: This project is located at the St. Louis Lambert International Airport (STL) in St. Louis County, Missouri at 38.7362840 latitude -90.3860201 longitude. The proposed work is 0.1 mile east of Pear Tree Lane, 0.78 mile north of State Road 180 and 0.01 mile east of Hunter Drive. This project is located in Section 5, Township 46 North, and Range 6 East on the Saint Charles, Florissant, Creve Coeur, and Clayton, MO USGS Quadrangles. Construction is anticipated to begin in 2025 and be completed by the end of 2031. Land use in the vicinity of the project is predominantly developed commercial and residential areas, with some sparse wooded areas. Coldwater Creek runs through the western terminus of the project area. Bridgeton Parks and Recreation, Washington Park cemetery, Berry hill golf course, Edmundson Park, John L. Brown Park, and St. Ann Park are all near the project area. The current Terminals 1 and 2 have limited capacity, and are unable to handle future growth of the airport. Portions of Terminal 1 are in poor condition and both Terminals 1 and 2 have areas that are functionally obsolete, providing a sub-optimum level of passenger service. Additionally, the landside roadway geometry, intersections, and curbsides have existing safety deficiencies, and some on-airport parking facilities are operating over capacity. The proposed project consists of constructing a new sixty-two gate consolidated terminal in the location of the existing Terminal 1 location at the St. Louis Lambert International Airport (STL). The proposed project involves modifying the core terminal processor, relocating the terminal support facilities, new landslide configuration, new consolidated receiving and distribution facility, new ground transportation center, proposed surface parking, remain overnight parking and parking garage, constructing a new east deicing pad, and the full enclosure of a portion of Coldwater Creek running through the project area The project will also provide a new terminal roadway with the optimal length from interstate to terminal while minimizing changes needed to existing interstate facilities. The primary impact of the project is the redistribution of traffic from the Airflight Drive interchange to the Cypress Road interchange. In order to accommodate the redistribution of traffic, a continuous auxiliary lane is proposed in the westbound direction of I-70 from the Airflight Drive entrance ramp to the Cypress Road exit ramp while closing the existing westbound I-70 on ramp from Lambert International Boulevard. Additional changes are proposed at the MO 115 and I-70 westbound intersection to the west of Cypress Road. Two left turns are recommended westbound, extending to the intersection at Cypress Road. Additionally, adding a second lane to the I-70 entrance is recommended. The total project area is 593 acres.

Project Type: Transportation, Airports (runways, taxiways, terminals, control towers, beacons, fuel depots), Construction of new runways, terminals/concourses, other facilities
Contact Person: Stephanie Spence
Contact Information: sspence@cmtengr.com or 5134278169

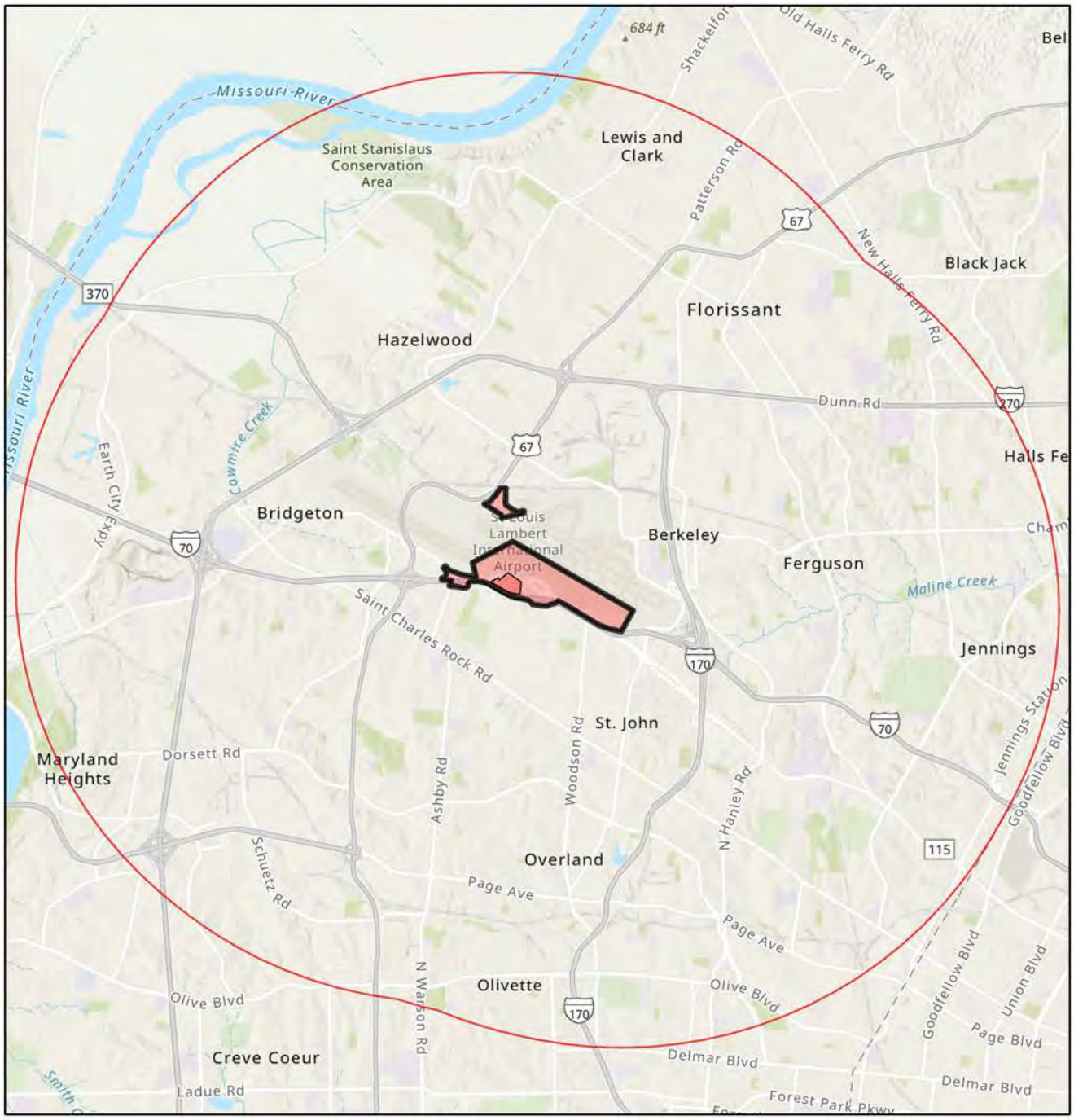
Disclaimer: This NATURAL HERITAGE REVIEW REPORT identifies if a species or natural community tracked by the Natural Heritage Program is known to occur within or near the project area submitted, and shares recommendations to avoid or minimize project impacts to sensitive species or natural habitats. Incorporating information from the Natural Heritage Program into project plans is an important step in reducing impacts to Missouri's sensitive natural resources. If an occurrence record is present, or the proposed project might affect federally listed species, the user must contact the Department of Conservation or U.S. Fish and Wildlife Service for more information.

This Natural Heritage Review Report is not a site clearance letter for the project. Rather, it identifies public lands and records of sensitive resources located close to and/or potentially affected by the proposed project. If project plans or location change, this report may no longer be valid. Because land use conditions change and animals move, the existence of an occurrence record does not mean the species/habitat is still present. Therefore, reports include information about records near but not necessarily on the project site. Lack of an occurrence record does not mean that a sensitive species or natural community is not present on or near the project area. On-site verification is the responsibility of the project. However, the Natural Heritage Program is only one reference that should be used to evaluate potential adverse project impacts and additional information (e.g. wetland or soils maps, on-site inspections or surveys) should be considered. Reviewing current landscape and habitat information, and species' biological characteristics would additionally ensure that Missouri Species of Conservation Concern are appropriately identified and addressed in planning efforts.

U.S. Fish and Wildlife Service – Endangered Species Act (ESA) Coordination: Lack of a Natural Heritage Program occurrence record for federally listed species in your project area does not mean the species is not present, as the area may never have been surveyed. Presence of a Natural Heritage Program occurrence record does not mean the project will result in negative impacts. This report does not fulfill Endangered Species Act consultation with the U.S. Fish and Wildlife Service (USFWS) for listed species. Direct contact with the USFWS may be necessary to complete consultation and it is required for actions with a federal connection, such as federal funding or a federal permit; direct contact is also required if ESA concurrence is necessary. Visit IPaC: Home (fws.gov) to initiate USFWS Information for Planning and Conservation (IPaC) consultation. Contact the Columbia Missouri Ecological Field Services Office (573-234-2132, or by mail at 101 Park Deville Drive, Suite A, Columbia, MO 65203) for more information.

Transportation Projects: If the project involves the use of Federal Highway Administration transportation funds, these recommendations may not fulfill all contract requirements. Please contact the Missouri Department of Transportation at 573-526-4778 or visit Home Page | Missouri Department of Transportation (modot.org) for additional information on recommendations.

St. Louis Lambert International Airport – Consolidated Terminal Program



February 21, 2024

1:105,570

0 0.75 1.5 3 mi

0 1.25 2.5 5 km

Buffered Project Boundary

Project Boundary

County of St. Louis, Missouri Dept. of Conservation, Missouri DNR, Esri, TomTom, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, USDA, USFWS, Esri, NASA, NGA, USGS

Species or Communities of Conservation Concern within the Area:

There are records of species listed under the Federal Endangered Species Act, and possibly also records for species listed Endangered by the state, or Missouri Species and/or Natural Communities of Conservation Concern within or near the defined Project Area. Please contact the U.S. Fish and Wildlife Service and the Missouri Department of Conservation for further coordination.

Email (preferred): NaturalHeritageReview@mdc.mo.gov
MDC Natural Heritage Review
Science Branch
P.O. Box 180
Jefferson City, MO
65102-0180
Phone: 573-522-4115 ext. 3182

U.S. Fish and Wildlife Service
Ecological Service
101 Park Deville Drive
Suite A
Columbia, MO
65203-0007
Phone: 573-234-2132

Other Special Search Results:

The project occurs on or near public land, Bridgeton Armory, Bryan Island, Ferguson (January-Wabash Park Lake), Hickory Woods CA, Jennings (Koeneman Park Lake), Overland (Wild Acres Park Lake), STL Lambert, Saint Stanislaus CA, please contact MOARNG, COE, MDC.

Project Type Recommendations:

Transportation -Airports: New and Maintenance should be managed to minimize erosion and sedimentation/runoff to nearby streams and lakes, including adherence to any Clean Water Act permit conditions. Project design should include stormwater management elements that assure storm discharge rates to streams for heavy rain events will not increase from present levels. Revegetate disturbed areas to minimize erosion using native plant species compatible with the local landscape and wildlife needs. Annual ryegrass may be combined with native perennials for quicker green-up. Avoid aggressive exotic perennials such as crownvetch and sericea lespedeza. Please see Best Management Practices for Construction and Development Projects Affecting Missouri Rivers and Streams (mo.gov).

Project Location and/or Species Recommendations:

Endangered Species Act Coordination - If this project has the potential to alter habitat (e.g. tree removal, projects in karst habitat) or cause direct mortality of bats, please coordinate directly with U.S. Fish and Wildlife Service (Ecological Services, 101 Park Deville Drive, Suite A, Columbia, Missouri 65203-0007; Phone 573-234-2132 Ext. 100 for Ecological Services) for further coordination under the Endangered Species Act. Indiana bats *(Myotis sodalis*, federal- and state-listed endangered) and **Northern long-eared bats** (*Myotis septentrionalis,* federal-listed threatened) may occur near the project area. Both of these species of bats hibernate during winter months in caves and mines. During the summer months, they roost and raise young under the bark of trees in wooded areas, often riparian forests and upland forests near perennial streams. During project activities, avoid degrading stream quality and where possible leave snags standing and preserve mature forest canopy. Do not enter caves known to harbor Indiana bats or Northern long-eared bats, especially from September to April.

Bald Eagle: The project location submitted and evaluated is within the geographic range of nesting Bald Eagles in Missouri. Bald Eagles (*Haliaeetus leucocephalus*) may nest near streams or water bodies in the project area. Nests are large and fairly easy to identify. Adults begin nesting activity in late December and January and young birds leave the nest in late spring to early summer. 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: Do I need an eagle take permit? | U.S. Fish & Wildlife Service (fws.gov) if eagle nests are seen.

Decurrent False Aster (Boltonia decurrens, federal-listed threatened and state-listed endangered) may occur in this area. Decurrent False Aster is a head floodplain species that grows in wetlands and on the borders of marshes, lakes, oxbows, and sloughs. It also may be found in old fields, roadsides, agricultural fields, and on levees. It favors sites characterized by moist soil and regular disturbance, preferably periodic flooding, which maintains open areas with high light levels. Today it is found in areas where succession is prevented, and sunlight is allowed to reach the seedlings. It is a perennial plant that blooms from August through October. Please see Best Management Practices for Construction and Development Projects Decurrent False Aster (mo.gov).

Gray Bat: The submitted project location is within the range of the Gray Myotis (i.e., Gray Bat) in Missouri. Depending on habitat conditions of your project's location, Gray Myotis (*Myotis grisescens*, federal and state-listed endangered) could occur within the project area, as they forage over streams, rivers, lakes, and reservoirs. Avoid entry or disturbance of any cave inhabited by Gray Myotis and when possible retain forest vegetation along the stream and from the cave opening to the stream. Please see Best Management Practices for Construction and Development Projects Gray bat (mo.gov).

Karst: This county has known karst geologic features (e.g., caves, springs, and sinkholes, all characterized by subterranean water movement). Few karst features are recorded in Natural 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; please check your project site for any karst features and make every effort to protect groundwater in the project area. Additional information and specific recommendations are available at Management Recommendations for Construction and Development Projects Affecting Missouri Karst Habitat (mo.gov).

Pallid Sturgeon: The project location submitted and evaluated is located within or adjacent to the Mississippi or Missouri rivers. Pallid Sturgeons (*Scaphirhynchus albus*, federal- and state-listed endangered) are big river fish that range widely in the Mississippi and Missouri River system (including parts of some major tributaries). Any project that modifies big river habitat or impacts water quality should consider the possible impact to pallid sturgeon populations. See Pallid Sturgeon Best Management Practices (mo.gov) for Best Management Practices. Additional coordination with the U.S. Fish and Wildlife Service under the Endangered Species Act may be necessary (U.S. Fish and Wildlife Service, Ecological Services, 101 Park DeVille Drive, Suite A, Columbia, Missouri 65203-0007; phone 573-234-2132.)

Invasive exotic species are a significant issue for fish, wildlife and agriculture in Missouri. Seeds, eggs, and larvae may be moved to new sites on boats or construction equipment. Please inspect and clean equipment thoroughly before moving between project sites. See Managing Invasive Species in Your Community | Missouri Department of Conservation (mo.gov) for more information.

- Remove any mud, soil, trash, plants or animals from equipment before leaving any water body or work area.
- Drain water from boats and machinery that have operated in water, checking motor cavities, live-well, bilge and transom wells, tracks, buckets, and any other water reservoirs.
- When possible, wash and rinse equipment thoroughly with hard spray or HOT water (>140° F, typically available at do-it-yourself car wash sites), and dry in the hot sun before using again.

Streams and Wetlands – Clean Water Act Permits: Streams and wetlands in the project area should be protected from activities that degrade habitat conditions. For example, soil erosion, water pollution, placement of fill, dredging, in-stream activities, and riparian corridor removal, can modify or diminish aquatic habitats. Streams and wetlands may be protected under the Clean Water Act and require a permit for any activities that result in fill or other modifications to the site. Conditions provided within the U.S. Army Corps of Engineers (USACE) Clean Water Act Section 404 permit (Kansas City District Regulatory Branch (army.mil)) and the Missouri Department of Natural Resources (DNR) issued Clean Water Act Section 401 Water Quality Certification (Section 401 Water Quality Certification | Missouri Department of Natural Resources (mo.gov)), if required, should help minimize impacts to the aquatic organisms and aquatic habitat within the area. Depending on your project type, additional permits may be required by the Missouri Department of Natural Resources, such as permits for stormwater, wastewater treatment facilities, and confined animal feeding operations. Visit Wastewater Permits | Missouri Department of Natural Resources (mo.gov) for more information on DNR permits. Visit both the USACE and DNR for more information on Clean Water Act permitting.

For further coordination with the Missouri Department of Conservation and the U.S. Fish and Wildlife Services, please see the contact information below:

Email (preferred): NaturalHeritageReview@mdc.mo.gov
MDC Natural Heritage Review
Science Branch
P.O. Box 180
Jefferson City, MO
65102-0180
Phone: 573-522-4115 ext. 3182

U.S. Fish and Wildlife Service
Ecological Service
101 Park Deville Drive
Suite A
Columbia, MO
65203-0007
Phone: 573-234-2132

Miscellaneous Information

FEDERAL Concerns are species/habitats protected under the Federal Endangered Species Act and that have been known near enough to the project site to warrant consideration. For these, project managers must contact the U.S. Fish and Wildlife Service Ecological Services (101 Park Deville Drive Suite A, Columbia, Missouri 65203-0007; Phone 573-234-2132; Fax 573-234-2181) for consultation.

STATE Concerns are species/habitats known to exist near enough to the project site to warrant concern and that are protected under the Wildlife Code of Missouri (RSMo 3 CSR 1 0). "State Endangered Status" is determined by the Missouri Conservation Commission under constitutional authority, with requirements expressed in the Missouri Wildlife Code, rule 3CSR 1 0-4.111. Species tracked by the Natural Heritage Program have a "State Rank" which is a numeric rank of relative rarity. Species tracked by this program and all native Missouri wildlife are protected under rule 3CSR 10-4.110 General Provisions of the Wildlife Code.

See Missouri Species and Communities of Conservation Concern Checklist (mo.gov) for a complete list of species and communities of conservation concern. Detailed information about the animals and some plants mentioned may be accessed at Mofwis Search Results. Please contact the Missouri Department of Conservation to request printed copies of any materials linked in this document.

USFWS Concurrence E-mail

From:	Weber, John S
To:	Heather Lacey
Cc:	Tener, Scott (FAA); Beckmann, Gerald A.; Kuchinski, Jennifer; Douglas Gregory; Neidel II, James R.; Marion Wells; Stephanie Spence
Subject:	Re: [EXTERNAL] St. Louis Lambert International Airport Consolidated Terminal Program
Date:	Friday, April 19, 2024 5:06:42 PM

Dear Ms. Lacey,

The U.S. Fish and Wildlife Service has reviewed your April 19, 2024, email and enclosures requesting consultation on the proposed St. Louis Lambert International Project in St. Louis County, Missouri and submits these comments pursuant to the Endangered Species Act of 1973, as amended (16 U.S.C. 1531-1544).

Based on the information provided, the Service concurs with your determination that the proposed project is not likely to adversely affect federally listed species and is not likely to jeopardize the continued existence of the tricolored bat or the monarch butterfly. Should the scope, timing, or manner of activity change, please contact this office.

Thank you for the opportunity to review the proposed project.

Sincerely,

John Weber
Field Supervisor
Missouri Field Office
U.S. Fish & Wildlife Service
Cell: 573-825-6048

From: Heather Lacey <hlacey@cmtengr.com>
Sent: Friday, April 19, 2024 9:44 AM
To: Weber, John S <John_S_Weber@fws.gov>
Cc: Tener, Scott (FAA) <scott.tener@faa.gov>; Beckmann, Gerald A. <GABeckmann@flystl.com>; Kuchinski, Jennifer <Jennifer.Kuchinski@wsp.com>; Douglas Gregory <dgregory@cmtengr.com>; Neidel II, James R. <jrneidel@flystl.com>; Marion Wells <mwells@cmtengr.com>; Stephanie Spence <sspence@cmtengr.com>
Subject: RE: [EXTERNAL] St. Louis Lambert International Airport Consolidated Terminal Program

Hi John,
I've revised the effect determination letter to include the requirement to inspect structures for presence of bats prior to demolition. We will incorporate this along with the time of year tree removal commitments into the EA.

Please let us know if you need anything else to concur with the determinations.

Thank you!

HEATHER LACEY | **Crawford, Murphy & Tilly** | w 314.436.5500 | m 937.307.0744
Environmental Group Manager

From: Weber, John S <John_S_Weber@fws.gov>
Sent: Wednesday, April 17, 2024 1:01 PM
To: Heather Lacey <hlacey@cmtengr.com>
Cc: Tener, Scott (FAA) <scott.tener@faa.gov>; Beckmann, Gerald A. <GABeckmann@flystl.com>; Kuchinski, Jennifer <Jennifer.Kuchinski@wsp.com>; Douglas Gregory <dgregory@cmtengr.com>; Neidel II, James R. <jrneidel@flystl.com>
Subject: Re: [EXTERNAL] St. Louis Lambert International Airport Consolidated Terminal Program

Hi Heather,

Yes—please update the EA to include an inspection for bats prior to demolition. Once I receive your updated EA, I am happy to concur with a not likely to adversely affect determination.

Best regards,

John Weber
Field Supervisor
Missouri Field Office
U.S. Fish & Wildlife Service
Cell: 573-825-6048

From: Heather Lacey <hlacey@cmtengr.com>
Sent: Wednesday, April 17, 2024 7:56 AM
To: Weber, John S <John_S_Weber@fws.gov>
Cc: Tener, Scott (FAA) <scott.tener@faa.gov>; Beckmann, Gerald A. <GABeckmann@flystl.com>; Kuchinski, Jennifer <Jennifer.Kuchinski@wsp.com>; Douglas Gregory <dgregory@cmtengr.com>; Neidel II, James R. <jrneidel@flystl.com>
Subject: RE: [EXTERNAL] St. Louis Lambert International Airport Consolidated Terminal Program

Good morning John,
Thank you for the prompt response to our concurrence request. All of the buildings planned to be demolished are in good condition and in most cases, occupied so we didn't see any need to do a detailed inspection of those. All culverts/bridges within the project area were inspected

for any signs of bat occupation with none identified.

If necessary for a no adverse effect determination, we can include a commitment to check structures for the presence of bats prior to demo in the EA. Let us know your thoughts. If you would like to discuss further, I'd be happy to set up a conference call. We are aiming to have the EA in for FAA and MoDOT review by the end of April so it would be ideal to have something set up soon if needed.

Thanks,

HEATHER LACEY | Crawford, Murphy & Tilly | w 314.436.5500 | m 937.307.0744
Environmental Group Manager

From: Weber, John S <John_S_Weber@fws.gov>
Sent: Tuesday, April 16, 2024 8:07 AM
To: Heather Lacey <hlacey@cmtengr.com>
Cc: Tener, Scott (FAA) <scott.tener@faa.gov>; Beckmann, Gerald A. <GABeckmann@flystl.com>; Kuchinski, Jennifer <Jennifer.Kuchinski@wsp.com>; Douglas Gregory <dgregory@cmtengr.com>
Subject: Re: [EXTERNAL] St. Louis Lambert International Airport Consolidated Terminal Program

Heather,

Thank you kindly for sending this in. We reviewed a similar request from Boeing this year at STL Lambert. As you correctly identified in your request, our main concern for this project is listed bat species. In this case, your tree removal request is minimal and not a large concern, especially if performed in the winter. We are more concerned about bats using the structures to be demolished and the timing of the demolition. Abandoned buildings in poor condition are often home to bats, and sometimes federally protected bats.

If your group can commit to removing any structures in poor condition that may facilitate bat habitation during the bat inactive season from October 15-April 1, then we would be able to concur with a "Not-Likely to Adversely Affect" determination.

I'm happy to get on the phone to discuss sometime soon as well.

Best,

John Weber
Field Supervisor
Missouri Field Office
U.S. Fish & Wildlife Service

Cell: 573-825-6048

From: Heather Lacey <hlacey@cmtengr.com>
Sent: Thursday, April 11, 2024 8:42 AM
To: Weber, John S <John_S_Weber@fws.gov>
Cc: Tener, Scott (FAA) <scott.tener@faa.gov>; Beckmann, Gerald A. <GABeckmann@flystl.com>; Kuchinski, Jennifer <Jennifer.Kuchinski@wsp.com>; Douglas Gregory <dgregory@cmtengr.com>
Subject: [EXTERNAL] St. Louis Lambert International Airport Consolidated Terminal Program

Good afternoon Mr. Weber,
On behalf of the Federal Aviation Administration (FAA), attached is an informal Section 7 consultation and request for concurrence for the referenced project at St. Louis Lambert International Airport. FAA is requesting concurrence on the NLAA determinations for the Indiana, Northern long-eared, and tricolored bats.

If there are questions or if any additional information is needed, please let me know.

Thank you,
HEATHER LACEY | Environmental Group Manager

Crawford, Murphy & Tilly | **Engineers & Consultants**
One Memorial Drive, Suite 500 | St. Louis, MO 63102
w 314.436.5500 | m 937.307.0744 | hlacey@cmtengr.com

Centered in Value

APPENDIX E

All Vissim Results

AM Travel Time

AM Travel Time (I-70) - All Vehicles										
Segment ID	**Corridor**	**Section**	**VISSIM Distance (mi)**	**EXISTING VISSIM Travel Time (min)**	**2032 No Build VISSIM Travel Time (min)**	**2032 Alt 1 VISSIM Travel Time (min)**	**2032 Alt 2 VISSIM Travel Time (min)**	**2037 No Build VISSIM Travel Time (min)**	**2037 Alt 1 VISSIM Travel Time (min)**	**2037 Alt 2 VISSIM Travel Time (min)**
119+04295	I-70 Westbound	I170 - STL Airport	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
119+04296		STL Airport - Airflight Dr	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
119+04297		Airflight Dr - LIB	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
119+04298		LIB - Cyprus Rd	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
119+04299		Cyprus Rd - US 67	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
119+04300		US 67 - MO 180	0.6	0.6	0.6	0.5	0.5	0.6	0.5	0.5
Total			**4.2**	**4.0**	**4.0**	**4.0**	**4.0**	**4.0**	**4.0**	**4.0**
119-04299	I-70 Eastbound	MO 180 - Us 67	1.2	1.1	1.1	1.1	1.1	1.1	1.1	1.1
119-04298		US 67 - Cypress Rd	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
119-04297[1]		Cypress Rd - Airflight Dr	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
119-04295		Airflight Dr - MO 115	1.2	1.1	1.1	1.1	1.1	1.1	1.1	1.1
119-04294		MO 115 - I170	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
Total			**5.9**	**5.7**	**5.7**	**5.8**	**5.8**	**5.7**	**5.8**	**5.8**

[1]RITIS Segments 119-04297 and 119-04296 were combined due to the short length of 119-04296

All Vissim Results

PM Travel Time

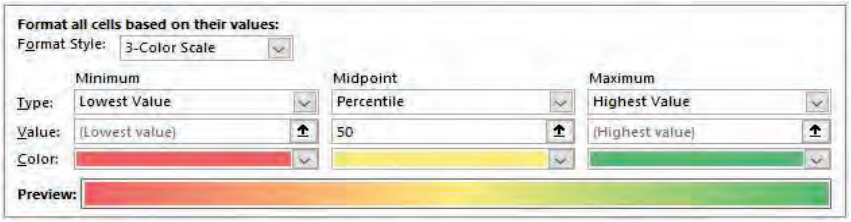
AM Travel Time (I-70) - All Vehicles										
Segment ID	**Corridor**	**Section**	**VISSIM Distance (mi)**	**EXISTING VISSIM Travel Time (min)**	**2032 No Build VISSIM Travel Time (min)**	**2032 Alt 1 VISSIM Travel Time (min)**	**2032 Alt 2 VISSIM Travel Time (min)**	**2037 No Build VISSIM Travel Time (min)**	**2037 Alt 1 VISSIM Travel Time (min)**	**2037 Alt 2 VISSIM Travel Time (min)**
119+04295	I-70 Westbound	I170 - STL Airport	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
119+04296		STL Airport - Airflight Dr	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
119+04297		Airflight Dr - LIB	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
119+04298		LIB - Cyprus Rd	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
119+04299		Cyprus Rd - US 67	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
119+04300		US 67 - MO 180	0.6	0.6	0.6	0.5	0.5	0.6	0.5	0.5
Total			**4.2**	**4.1**	**4.1**	**4.0**	**4.0**	**4.1**	**4.1**	**4.0**
119-04299	I-70 Eastbound	MO 180 - Us 67	1.2	1.1	1.1	1.1	1.1	1.1	1.1	1.1
119-04298		US 67 - Cypress Rd	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
119-04297[1]		Cypress Rd - Airflight Dr	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
119-04295		Airflight Dr - MO 115	1.2	1.1	1.1	1.2	1.2	1.1	1.2	1.2
119-04294		MO 115 - I170	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
Total			**5.9**	**5.7**	**5.7**	**5.8**	**5.8**	**5.7**	**5.8**	**5.8**

[1]RITIS Segments 119-04297 and 119-04296 were combined due to the short length of 119-04296

All Vissim Results

Speeds

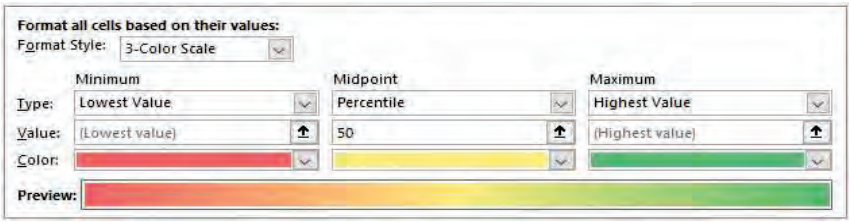
Existing VISSIM Westbound I-70															
Segment ID	**Corridor**	**Section**	**Length**	**4:30 PM**	**4:35 PM**	**4:40 PM**	**4:45 PM**	**4:50 PM**	**4:55 PM**	**5:00 PM**	**5:05 PM**	**5:10 PM**	**5:15 PM**	**5:20 PM**	**5:25 PM**	**AVG**
119+04295	I-70 Mainline Westbound	I170 - STL Airport	0.7	63.2	63.3	63.4	62.7	62.5	62.8	63.3	63.3	63.5	63.0	62.7	62.6	63.0
119+04296		STL Airport - Airflight Dr	1.1	62.2	62.6	62.9	62.2	61.5	61.3	62.0	62.5	62.6	61.9	61.6	61.0	62.0
119+04297		Airflight Dr - LIB	0.5	61.9	62.4	62.4	62.1	61.4	60.8	61.3	61.9	62.5	61.9	61.0	60.8	61.7
119+04298		LIB - Cyprus Rd	0.4	61.3	61.9	61.8	61.1	60.4	58.0	59.3	61.2	61.9	61.5	59.9	56.3	60.4
119+04299		Cyprus Rd - US 67	0.8	62.0	62.7	62.6	62.4	61.7	61.4	62.0	62.5	62.7	62.6	61.7	61.5	62.2
119+04300		US 67 - MO 180	0.6	62.3	62.9	62.6	62.6	62.2	62.0	61.5	62.6	62.9	62.9	62.1	62.1	62.4
2032 No Build VISSIM Westbound I-70																
Segment ID	**Corridor**	**Section**	**Length**	**4:30 PM**	**4:35 PM**	**4:40 PM**	**4:45 PM**	**4:50 PM**	**4:55 PM**	**5:00 PM**	**5:05 PM**	**5:10 PM**	**5:15 PM**	**5:20 PM**	**5:25 PM**	**AVG**
119+04295	I-70 Mainline Westbound	I170 - STL Airport	0.7	63.0	63.3	63.4	62.9	61.8	62.7	62.8	63.3	63.3	62.9	62.2	62.8	62.9
119+04296		STL Airport - Airflight Dr	1.1	62.3	62.6	62.7	61.9	61.1	61.2	61.7	62.4	62.5	62.1	61.3	61.4	61.9
119+04297		Airflight Dr - LIB	0.5	62.0	62.0	62.3	61.9	60.9	60.8	61.0	62.2	62.4	61.8	61.2	60.6	61.6
119+04298		LIB - Cyprus Rd	0.4	61.1	61.2	61.9	61.2	60.0	60.2	59.5	61.8	61.6	60.1	58.7	58.5	60.5
119+04299		Cyprus Rd - US 67	0.8	62.1	62.4	62.7	62.5	61.7	61.8	62.0	62.5	62.7	62.0	61.4	60.5	62.0
119+04300		US 67 - MO 180	0.6	62.5	62.6	62.8	62.6	62.2	62.0	62.1	62.7	62.7	62.7	62.0	61.5	62.4
2032 Alternative 1 VISSIM Westbound I-70																
Segment ID	**Corridor**	**Section**	**Length**	**4:30 PM**	**4:35 PM**	**4:40 PM**	**4:45 PM**	**4:50 PM**	**4:55 PM**	**5:00 PM**	**5:05 PM**	**5:10 PM**	**5:15 PM**	**5:20 PM**	**5:25 PM**	**AVG**
119+04295	I-70 Mainline Westbound	I170 - STL Airport	0.7	62.8	63.0	63.0	62.6	62.1	62.2	62.8	63.0	63.0	62.0	61.8	62.3	62.5
119+04296		STL Airport - Airflight Dr	1.1	62.3	62.6	62.6	61.7	61.6	61.2	60.2	62.2	62.6	61.9	61.2	61.4	61.8
119+04297		Airflight Dr - LIB	0.5	61.5	61.9	61.6	60.1	59.6	58.2	57.7	59.7	61.8	60.9	57.8	57.6	59.9
119+04298		LIB - Cyprus Rd	0.4	61.9	62.3	61.6	61.9	61.4	58.6	61.6	62.2	62.5	62.1	60.8	61.2	61.5
119+04299		Cyprus Rd - US 67	0.8	61.3	62.5	62.5	62.3	60.6	60.5	60.4	62.4	62.5	61.6	60.7	59.9	61.4
119+04300		US 67 - MO 180	0.6	61.7	62.8	62.9	62.6	61.6	61.4	61.5	62.1	62.8	62.1	61.6	60.9	62.0
2032 Alternative 2 VISSIM Westbound I-70																
Segment ID	**Corridor**	**Section**	**Length**	**4:30 PM**	**4:35 PM**	**4:40 PM**	**4:45 PM**	**4:50 PM**	**4:55 PM**	**5:00 PM**	**5:05 PM**	**5:10 PM**	**5:15 PM**	**5:20 PM**	**5:25 PM**	**AVG**
119+04295	I-70 Mainline Westbound	I170 - STL Airport	0.7	62.8	63.0	63.0	62.6	62.1	62.2	62.8	63.0	63.0	62.0	61.8	62.3	62.5
119+04296		STL Airport - Airflight Dr	1.1	62.4	62.6	62.6	61.8	61.4	60.2	60.3	62.7	62.7	61.8	61.0	61.2	61.7
119+04297		Airflight Dr - LIB	0.5	62.5	62.5	62.4	62.3	61.8	61.7	62.0	62.6	62.7	62.2	61.9	61.9	62.2
119+04298		LIB - Cyprus Rd	0.4	62.4	62.4	62.6	61.9	61.7	59.1	60.5	62.5	62.6	61.6	60.1	57.6	61.2
119+04299		Cyprus Rd - US 67	0.8	61.9	62.4	62.6	61.7	61.0	59.8	59.0	62.5	62.3	61.7	60.9	59.6	61.3
119+04300		US 67 - MO 180	0.6	62.1	62.5	62.6	62.4	61.4	61.5	60.0	62.5	62.6	62.3	61.5	60.8	61.8
2037 No Build VISSIM Westbound I-70																
Segment ID	**Corridor**	**Section**	**Length**	**4:30 PM**	**4:35 PM**	**4:40 PM**	**4:45 PM**	**4:50 PM**	**4:55 PM**	**5:00 PM**	**5:05 PM**	**5:10 PM**	**5:15 PM**	**5:20 PM**	**5:25 PM**	**AVG**
119+04295	I-70 Mainline Westbound	I170 - STL Airport	0.7	63.0	63.4	63.3	61.4	62.4	62.2	62.8	63.2	63.3	62.2	62.7	61.9	62.7
119+04296		STL Airport - Airflight Dr	1.1	62.0	62.6	62.6	61.9	60.6	61.3	61.5	62.5	62.5	61.2	59.9	61.4	61.7
119+04297		Airflight Dr - LIB	0.5	61.7	62.0	62.3	61.8	60.9	61.0	60.9	62.2	62.4	61.8	59.9	60.9	61.5
119+04298		LIB - Cyprus Rd	0.4	61.2	61.4	61.1	58.8	57.9	58.2	56.2	61.1	62.1	60.6	59.5	58.7	59.7
119+04299		Cyprus Rd - US 67	0.8	62.1	62.6	62.8	62.1	61.6	61.4	60.4	62.5	63.0	62.4	61.5	61.4	62.0
119+04300		US 67 - MO 180	0.6	62.4	62.7	62.9	62.7	62.1	61.4	62.0	62.6	63.0	62.6	61.9	61.7	62.3
2037 Alternative 1 VISSIM Westbound I-70																
Segment ID	**Corridor**	**Section**	**Length**	**4:30 PM**	**4:35 PM**	**4:40 PM**	**4:45 PM**	**4:50 PM**	**4:55 PM**	**5:00 PM**	**5:05 PM**	**5:10 PM**	**5:15 PM**	**5:20 PM**	**5:25 PM**	**AVG**
119+04295	I-70 Mainline Westbound	I170 - STL Airport	0.7	62.7	63.1	63.0	61.5	62.1	62.4	62.6	62.9	62.9	62.2	62.4	62.1	62.5
119+04296		STL Airport - Airflight Dr	1.1	61.6	62.7	62.6	61.6	60.4	60.5	60.1	62.1	62.5	61.8	60.7	59.8	61.4
119+04297		Airflight Dr - LIB	0.5	60.9	61.3	61.4	60.7	59.0	55.9	55.7	59.5	61.8	60.4	56.7	54.7	59.0
119+04298		LIB - Cyprus Rd	0.4	62.7	62.4	62.8	62.2	61.1	60.3	61.1	62.3	62.7	62.2	61.2	60.0	61.7
119+04299		Cyprus Rd - US 67	0.8	61.6	62.1	62.2	61.9	60.6	60.9	60.5	62.2	62.3	61.8	61.1	59.2	61.4
119+04300		US 67 - MO 180	0.6	62.1	62.2	62.4	62.6	61.2	61.4	61.2	62.2	62.5	62.2	62.0	61.2	61.9
2037 Alternative 2 VISSIM Westbound I-70																
Segment ID	**Corridor**	**Section**	**Length**	**4:30 PM**	**4:35 PM**	**4:40 PM**	**4:45 PM**	**4:50 PM**	**4:55 PM**	**5:00 PM**	**5:05 PM**	**5:10 PM**	**5:15 PM**	**5:20 PM**	**5:25 PM**	**AVG**
119+04295	I-70 Mainline Westbound	I170 - STL Airport	0.7	62.7	63.1	63.0	61.5	62.1	62.4	62.6	62.9	62.9	62.2	62.4	62.1	62.5
119+04296		STL Airport - Airflight Dr	1.1	62.2	62.6	62.6	61.4	60.7	61.4	61.9	62.6	62.6	61.8	61.7	60.0	61.8
119+04297		Airflight Dr - LIB	0.5	62.1	62.5	62.4	62.3	61.6	61.5	61.7	62.5	62.6	62.3	61.8	61.5	62.1
119+04298		LIB - Cyprus Rd	0.4	61.4	62.1	62.6	62.2	60.5	61.2	57.0	62.2	62.3	61.8	59.8	61.0	61.2
119+04299		Cyprus Rd - US 67	0.8	61.3	62.2	62.5	61.8	61.0	60.2	60.9	62.1	62.3	61.6	60.2	60.3	61.4
119+04300		US 67 - MO 180	0.6	62.0	62.5	62.6	62.2	61.7	61.2	61.0	62.4	62.7	62.4	61.1	59.3	61.8



All Vissim Results

Speeds

Existing VISSIM - Eastbound I-70															
Segment ID	**Corridor**	**Section**	**Length**	**4:30 PM**	**4:35 PM**	**4:40 PM**	**4:45 PM**	**4:50 PM**	**4:55 PM**	**5:00 PM**	**5:05 PM**	**5:10 PM**	**5:15 PM**	**5:20 PM**	**5:25 PM**	**AVG**
119-04299	I-70 Mainline Eastbound	MO 180 - Us 67	1.2	62.6	62.7	62.5	61.9	62.0	62.2	62.4	62.7	62.7	62.1	61.4	62.0	62.3
119-04298		US 67 - Cypress Rd	0.5	62.0	62.0	62.0	61.6	61.6	61.6	61.9	62.2	62.2	60.3	61.1	61.4	61.7
119-04297[1]		Cypress Rd - Airflight Dr	1.0	62.5	62.5	62.5	62.2	61.7	61.6	62.0	62.5	62.6	62.4	61.5	61.2	62.1
119-04295		Airflight Dr - MO 115	1.2	62.0	62.0	61.4	61.4	61.1	61.2	61.6	62.1	62.2	61.8	61.5	61.4	61.6
119-04294		MO 115 - I170	0.9	63.0	62.9	62.9	62.7	62.5	62.5	62.5	63.2	63.1	63.0	62.7	62.6	62.8
2032 No Build VISSIM - Eastbound I-70																
Segment ID	**Corridor**	**Section**	**Length**	**4:30 PM**	**4:35 PM**	**4:40 PM**	**4:45 PM**	**4:50 PM**	**4:55 PM**	**5:00 PM**	**5:05 PM**	**5:10 PM**	**5:15 PM**	**5:20 PM**	**5:25 PM**	**AVG**
119-04299	I-70 Mainline Eastbound	MO 180 - Us 67	1.2	62.4	62.8	62.2	62.0	62.0	61.7	62.3	62.6	62.5	61.9	61.9	62.1	62.2
119-04298		US 67 - Cypress Rd	0.5	61.8	62.1	62.0	61.6	61.3	61.3	61.8	62.2	62.2	61.5	61.6	61.3	61.7
119-04297[1]		Cypress Rd - Airflight Dr	1.0	62.1	62.4	62.5	61.8	61.9	60.8	61.8	62.4	62.5	62.0	61.6	61.5	61.9
119-04295		Airflight Dr - MO 115	1.2	61.7	62.2	62.2	61.7	61.2	61.0	61.4	61.9	62.1	61.8	61.2	61.1	61.6
119-04294		MO 115 - I170	0.9	62.5	62.9	63.0	63.0	62.0	61.9	61.9	62.7	63.1	63.1	62.4	61.9	62.6
2032 Alternative 1 VISSIM - Eastbound I-70																
Segment ID	**Corridor**	**Section**	**Length**	**4:30 PM**	**4:35 PM**	**4:40 PM**	**4:45 PM**	**4:50 PM**	**4:55 PM**	**5:00 PM**	**5:05 PM**	**5:10 PM**	**5:15 PM**	**5:20 PM**	**5:25 PM**	**AVG**
119-04299	I-70 Mainline Eastbound	MO 180 - Us 67	1.2	62.4	62.8	62.3	62.0	62.0	61.7	62.2	62.6	62.5	61.9	61.8	62.1	62.2
119-04298		US 67 - Cypress Rd	0.5	61.8	62.1	61.8	61.6	61.6	61.4	61.9	62.2	62.1	61.5	61.3	61.4	61.7
119-04297[1]		Cypress Rd - Airflight Dr	1.0	61.7	61.5	61.3	61.1	60.7	59.6	60.8	61.1	61.4	60.9	60.8	59.1	60.8
119-04295		Airflight Dr - MO 115	1.2	61.5	61.8	61.7	61.2	61.2	60.5	60.8	61.6	61.8	61.6	60.9	60.9	61.3
119-04294		MO 115 - I170	0.9	63.0	63.0	63.3	63.1	62.4	62.5	62.6	62.9	62.9	62.9	62.7	62.7	62.8
2032 Alternative 2 VISSIM - Eastbound I-70																
Segment ID	**Corridor**	**Section**	**Length**	**4:30 PM**	**4:35 PM**	**4:40 PM**	**4:45 PM**	**4:50 PM**	**4:55 PM**	**5:00 PM**	**5:05 PM**	**5:10 PM**	**5:15 PM**	**5:20 PM**	**5:25 PM**	**AVG**
119-04299	I-70 Mainline Eastbound	MO 180 - Us 67	1.2	62.4	62.8	62.3	62.0	62.0	61.7	62.2	62.6	62.5	61.9	61.8	62.1	62.2
119-04298		US 67 - Cypress Rd	0.5	61.8	62.1	61.8	61.6	61.6	61.4	61.9	62.2	62.1	61.5	61.3	61.4	61.7
119-04297[1]		Cypress Rd - Airflight Dr	1.0	61.6	61.2	61.2	61.0	60.4	59.7	61.0	61.2	61.4	60.9	60.7	60.4	60.9
119-04295		Airflight Dr - MO 115	1.2	61.3	61.4	61.9	61.4	60.9	60.7	61.2	61.7	61.8	61.5	60.8	60.7	61.3
119-04294		MO 115 - I170	0.9	62.8	63.0	63.4	63.2	62.7	62.1	62.5	63.2	63.2	63.2	62.5	62.8	62.9
2037 No Build VISSIM - Eastbound I-70																
Segment ID	**Corridor**	**Section**	**Length**	**4:30 PM**	**4:35 PM**	**4:40 PM**	**4:45 PM**	**4:50 PM**	**4:55 PM**	**5:00 PM**	**5:05 PM**	**5:10 PM**	**5:15 PM**	**5:20 PM**	**5:25 PM**	**AVG**
119-04299	I-70 Mainline Eastbound	MO 180 - Us 67	1.2	62.3	62.8	62.2	62.0	62.0	62.0	62.3	62.6	62.7	62.0	61.6	61.7	62.2
119-04298		US 67 - Cypress Rd	0.5	61.6	62.1	62.0	61.5	61.6	61.2	61.8	62.1	62.2	61.5	61.4	61.2	61.7
119-04297[1]		Cypress Rd - Airflight Dr	1.0	62.4	62.9	63.0	62.3	61.7	61.8	62.3	62.7	62.8	62.3	61.3	61.2	62.2
119-04295		Airflight Dr - MO 115	1.2	61.8	62.1	62.0	61.5	60.5	60.8	61.6	61.9	62.1	61.6	61.1	60.9	61.5
119-04294		MO 115 - I170	0.9	62.8	63.2	63.2	62.9	62.7	61.9	62.6	63.0	62.8	62.8	62.1	62.2	62.7
2037 Alternative 1 VISSIM - Eastbound I-70																
Segment ID	**Corridor**	**Section**	**Length**	**4:30 PM**	**4:35 PM**	**4:40 PM**	**4:45 PM**	**4:50 PM**	**4:55 PM**	**5:00 PM**	**5:05 PM**	**5:10 PM**	**5:15 PM**	**5:20 PM**	**5:25 PM**	**AVG**
119-04299	I-70 Mainline Eastbound	MO 180 - Us 67	1.2	62.3	62.8	62.2	61.9	62.0	62.1	62.3	62.6	62.7	62.0	61.6	61.7	62.2
119-04298		US 67 - Cypress Rd	0.5	61.6	62.1	62.0	61.6	61.4	61.3	61.9	62.1	62.2	61.5	61.3	61.3	61.7
119-04297[1]		Cypress Rd - Airflight Dr	1.0	61.6	61.0	61.3	60.5	60.2	59.7	60.4	61.1	61.1	60.2	60.1	60.2	60.6
119-04295		Airflight Dr - MO 115	1.2	61.2	61.1	61.6	60.9	60.2	59.6	60.3	61.6	61.9	61.3	60.6	60.9	60.9
119-04294		MO 115 - I170	0.9	62.9	63.0	62.9	63.0	62.2	62.2	62.3	63.0	63.2	63.0	62.3	62.6	62.7
2037 Alternative 2 VISSIM - Eastbound I-70																
Segment ID	**Corridor**	**Section**	**Length**	**4:30 PM**	**4:35 PM**	**4:40 PM**	**4:45 PM**	**4:50 PM**	**4:55 PM**	**5:00 PM**	**5:05 PM**	**5:10 PM**	**5:15 PM**	**5:20 PM**	**5:25 PM**	**AVG**
119-04299	I-70 Mainline Eastbound	MO 180 - Us 67	1.2	62.3	62.8	62.2	62.0	62.0	62.0	62.3	62.6	62.7	62.0	61.6	61.7	62.2
119-04298		US 67 - Cypress Rd	0.5	61.6	62.1	62.0	61.5	61.6	61.2	61.8	62.1	62.2	61.5	61.4	61.2	61.7
119-04297[1]		Cypress Rd - Airflight Dr	1.0	62.4	62.9	63.0	62.3	61.7	61.8	62.3	62.7	62.8	62.3	61.3	61.2	62.2
119-04295		Airflight Dr - MO 115	1.2	61.8	62.1	62.0	61.5	60.5	60.8	61.6	61.9	62.1	61.6	61.1	60.9	61.5
119-04294		MO 115 - I170	0.9	62.8	63.2	63.2	62.9	62.7	61.9	62.6	63.0	62.8	62.8	62.1	62.2	62.7



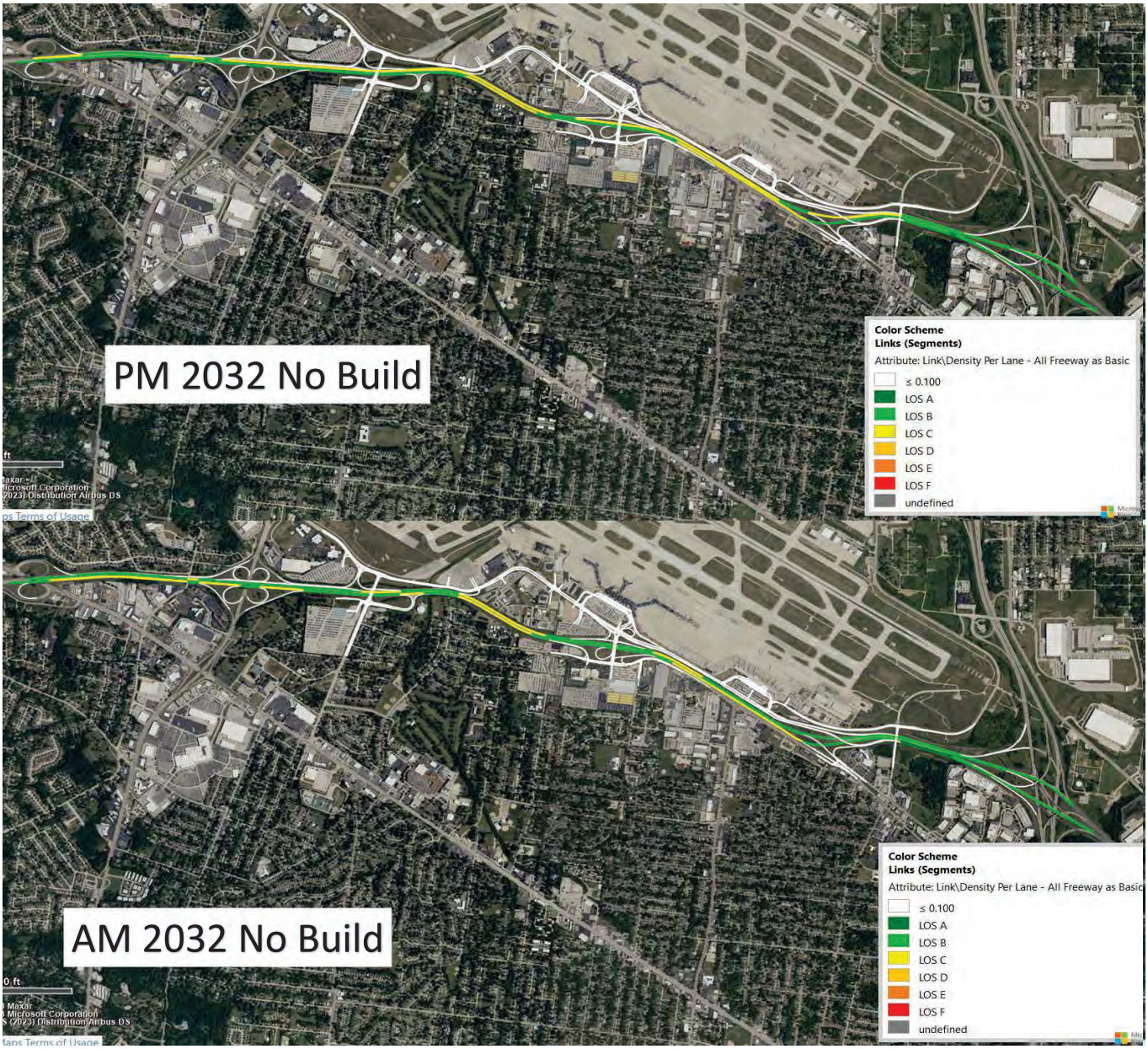
All Vissim Results

Network Performance Results

Metric	Average Vehicular Delay	Average Number of Stops	Average Speed	Average Stopped Delay	Total Distance Traveled (VMT)	Total Travel Time (VHT)	Total Delay	Total Number of Stops	Total Stopped Delay	Vehicles Arrived	Latent Total Delay	Latent Demand
Unit	**seconds/ vehicle**	**stops/ vehicle**	**miles/ hour**	**seconds/ vehicle**	**miles**	**Seconds**	**Seconds**	**stops**	**Seconds**	**vehicles**	**Seconds**	**vehicles**
AM Existing VISSIM	24	0.84	48.34	12	37,838	2,817,735	266,880	9,118	128,142	10,102	464	0.2
AM 2032 No Build VISSIM	27	0.97	47.22	13	38,804	2,958,163	308,105	10,928	148,172	10,465	514	0.3
AM 2032 Alt 1 VISSIM	21	0.45	50.00	8	41,055	2,955,881	234,297	5,083	93,327	10,450	513	0.3
AM 2032 Alt 2 VISSIM	22	0.49	49.84	9	41,061	2,965,721	243,830	5,473	101,688	10,450	514	0.3
AM 2037 No Build VISSIM	29	1.02	46.75	14	39,307	3,026,768	328,393	11,699	158,839	10,656	541	0.2
AM 2037 Alt 1 VISSIM	22	0.49	49.51	9	41,602	3,025,119	252,232	5,608	102,038	10,596	537	0.2
AM 2037 Alt 2 VISSIM	22	0.53	49.48	8	41,736	3,036,568	248,908	6,100	94,597	10,659	539	0.2
	Averaged Performance MOE Statistics				Aggregated Performance MOE Statistics					Throughput MOE Statistics		

Metric	Average Vehicular Delay	Average Number of Stops	Average Speed	Average Stopped Delay	Total Distance Traveled (VMT)	Total Travel Time (VHT)	Total Delay	Total Number of Stops	Total Stopped Delay	Vehicles Arrived	Latent Total Delay	Latent Demand
Unit	**seconds/ vehicle**	**stops/ vehicle**	**miles/ hour**	**seconds/ vehicle**	**miles**	**Seconds**	**Seconds**	**stops**	**Seconds**	**vehicles**	**Seconds**	**vehicles**
PM Existing VISSIM	29	1.05	46.52	14	41,400	3,203,686	374,283	13,459	176,416	11,789	883	0.4
PM 2032 No Build VISSIM	32	1.22	45.43	15	42,572	3,373,847	433,222	16,306	204,691	12,262	964	0.2
PM 2032 Alt 1 VISSIM	28	0.64	47.22	12	44,903	3,423,614	375,834	8,527	160,576	12,190	966	0.2
PM 2032 Alt 2 VISSIM	28	0.59	47.33	12	44,915	3,416,122	367,439	7,894	160,134	12,200	965	0.2
PM 2037 No Build VISSIM	34	1.31	44.92	16	43,195	3,462,020	463,813	17,742	215,615	12,506	1,002	0.3
PM 2037 Alt 1 VISSIM	31	0.73	46.48	13	45,718	3,541,401	419,733	9,938	176,785	12,428	1,009	0.3
PM 2037 Build VISSIM	30	0.69	46.63	13	45,731	3,530,747	404,403	9,380	175,523	12,437	1,006	0.3
	Averaged Performance MOE Statistics				Aggregated Performance MOE Statistics					Throughput MOE Statistics		

*Due to the limitations in Vissim, all segment LOS color coding is based on basic freeway segment thresholds as found in the Highway Capacity Manual.



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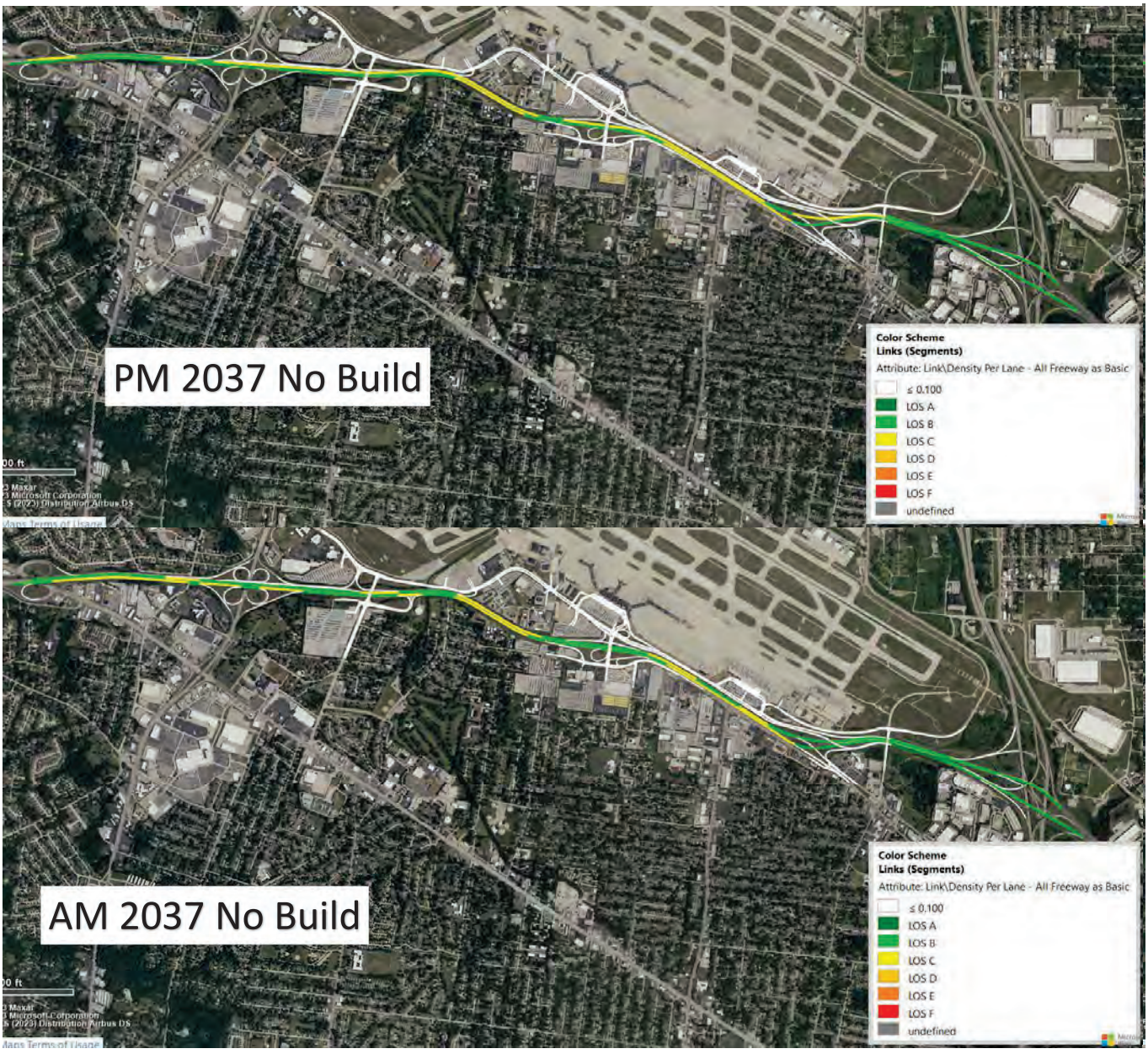

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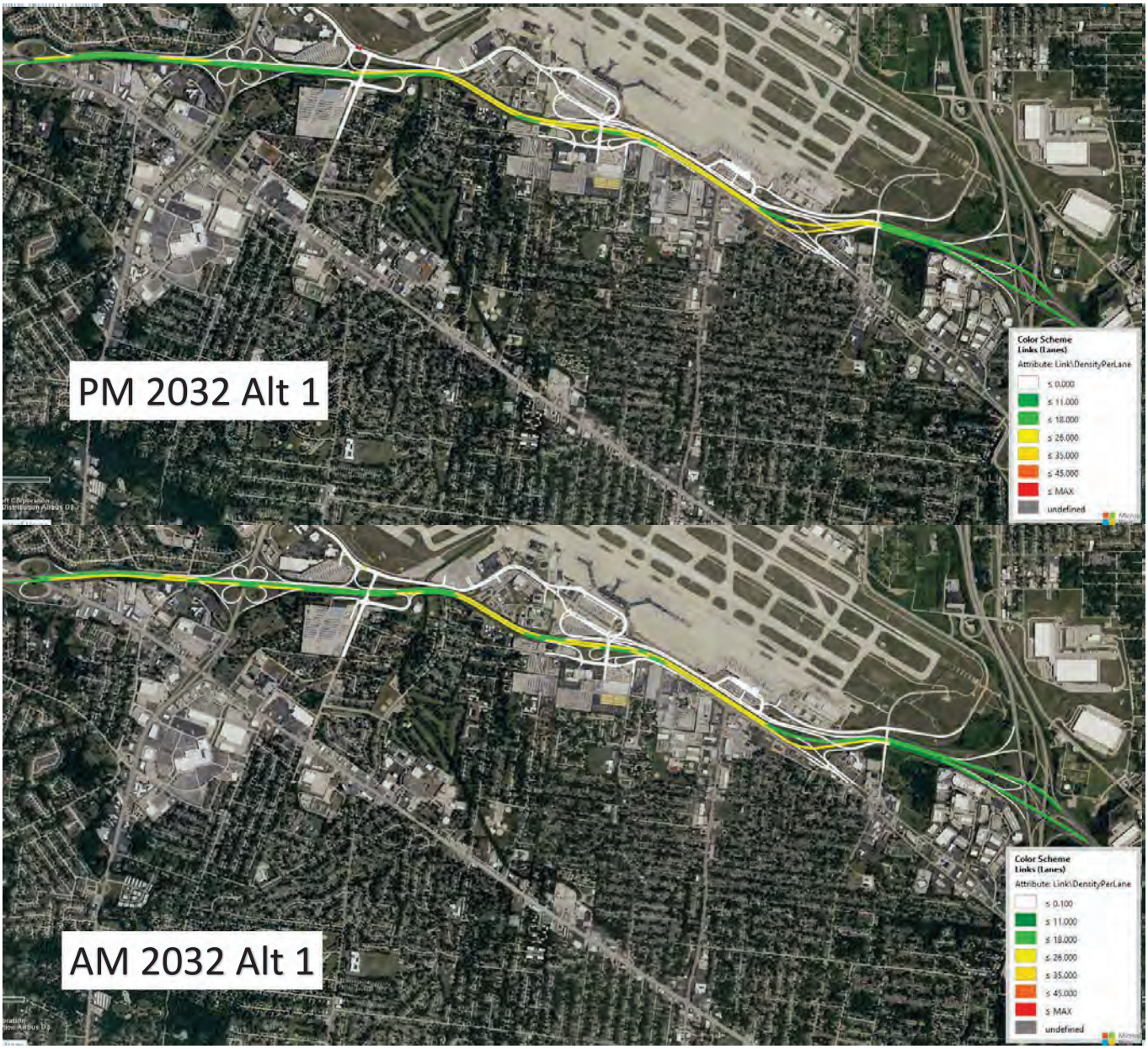

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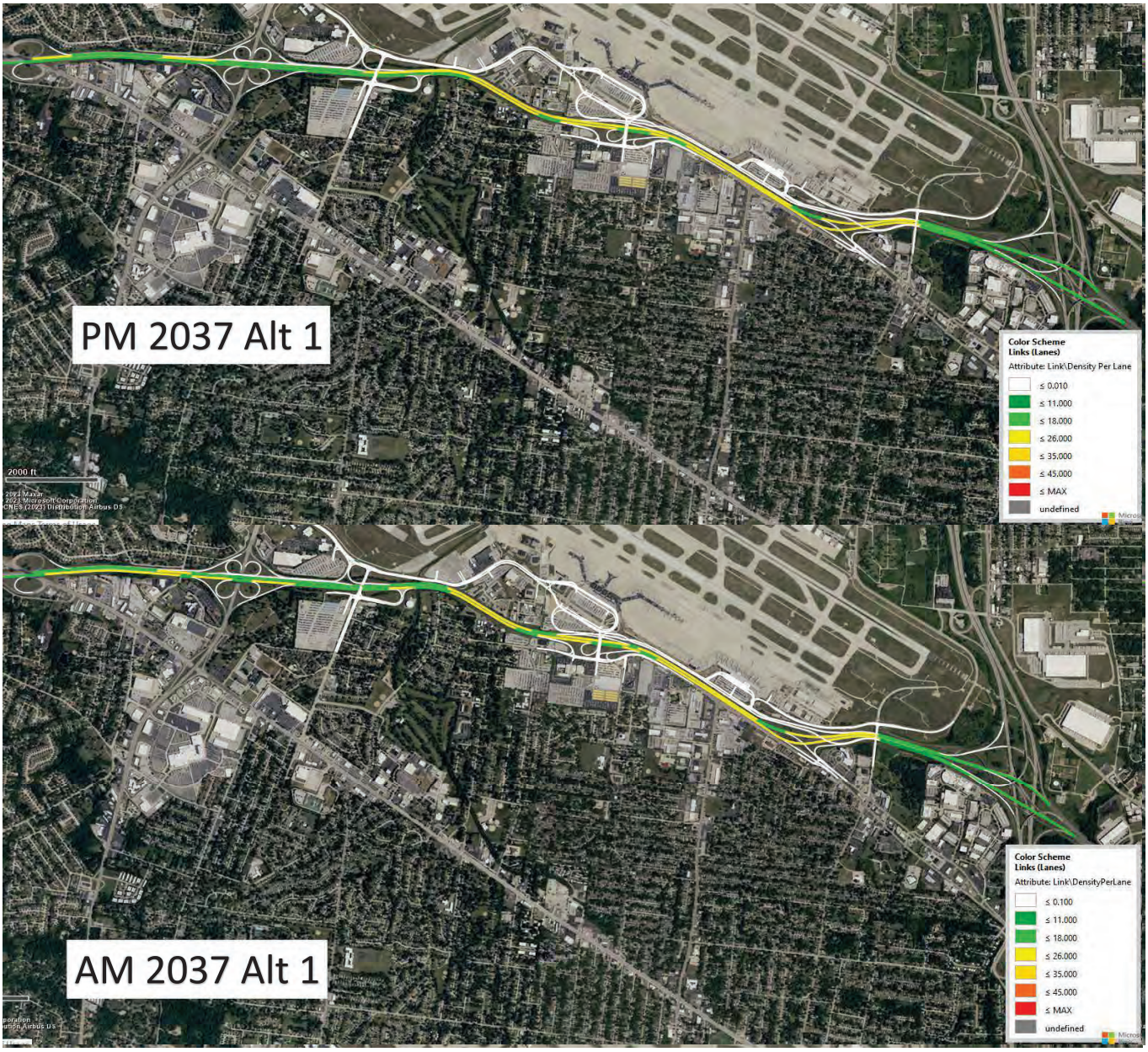

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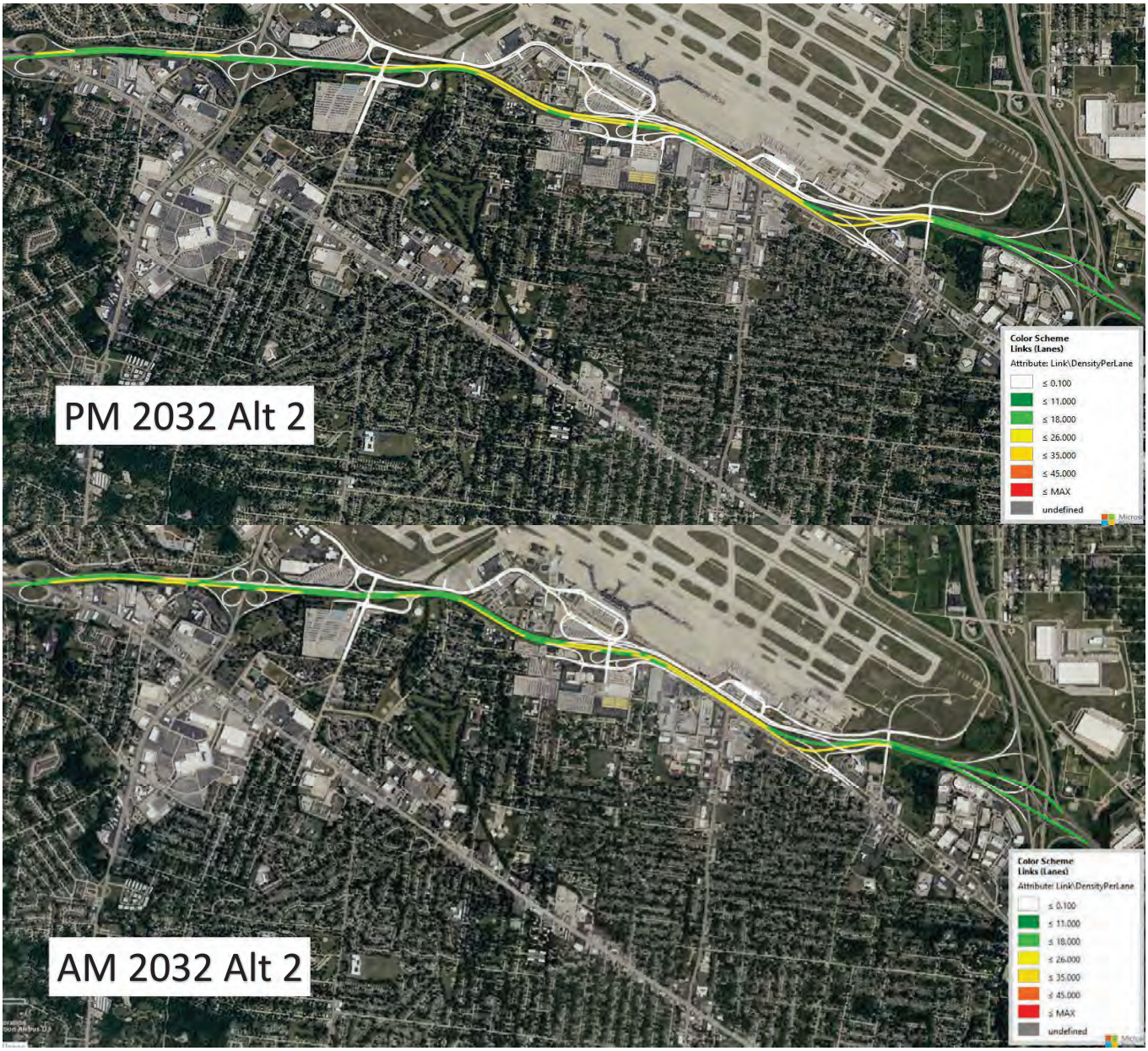

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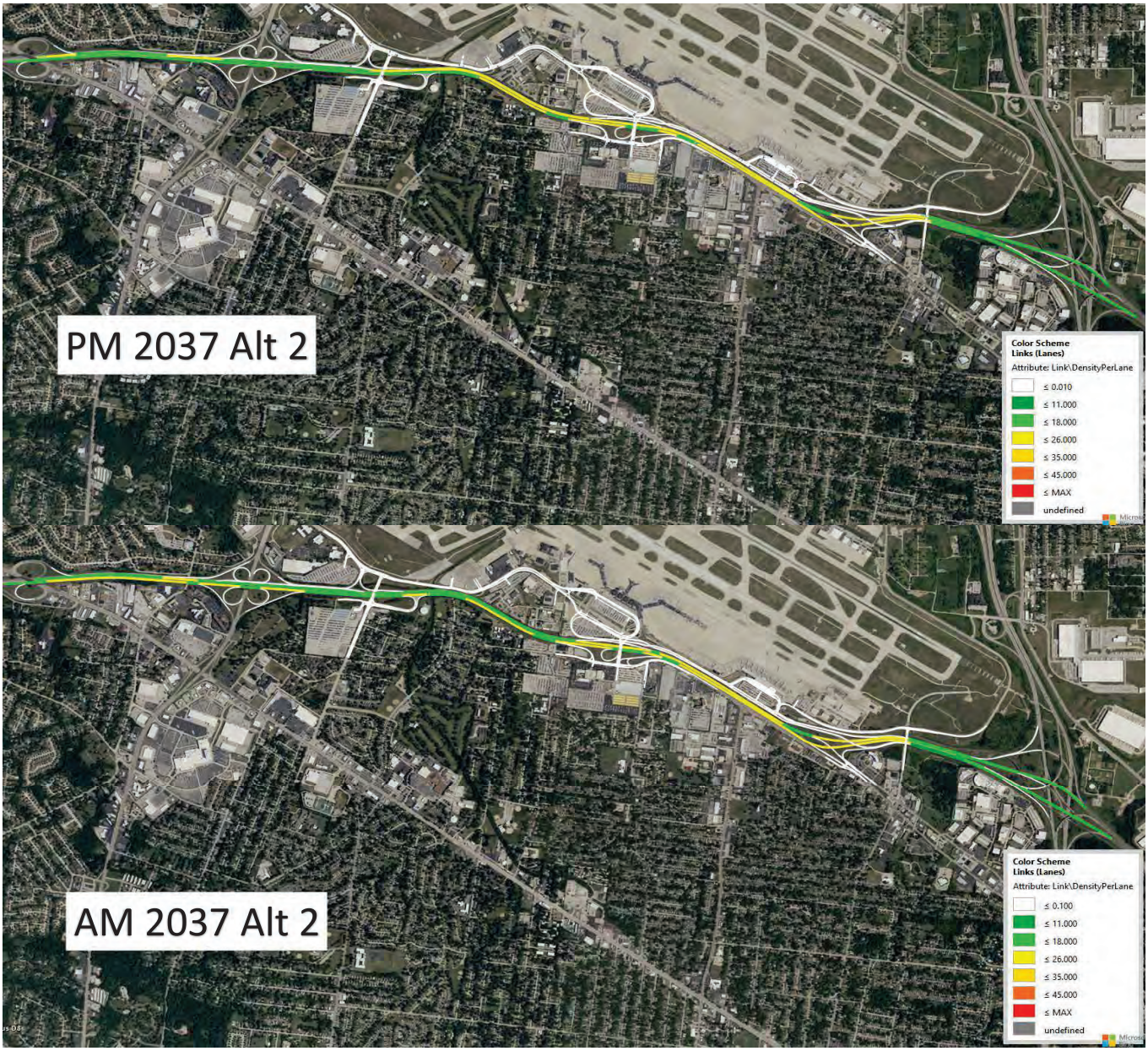


*Due to the limitations in Vissim, all segment LOS color coding is based on basic freeway segment thresholds as found in the Highway Capacity Manual.

All Vissim Results

Intersection Ops Existing

			Existing AM						Existing PM					
Intersection	Approach	Movement	Volume	Delay (sec)	Delay Stopped (sec)	Queue Length Max (ft)	Queue Length Average (ft)	LOS	Volume	Delay (sec)	Delay Stopped (sec)	Queue Length Max (ft)	Queue Length Average (ft)	LOS
1: Natural Bridge Rd @ Lot D*	NB	Left	0	0.0	0.0	0.0	0.0	A	0	0.0	0.0	0.0	0.0	A
1: Natural Bridge Rd @ Lot D*	NB	Right	12	5.5	0.2	61	1	A	14	6.0	0.3	62	1	A
1: Natural Bridge Rd @ Lot D*	EB	Through	171	0.1	0.0	0	0	N/A	489	0.2	0.0	0	0	N/A
1: Natural Bridge Rd @ Lot D*	EB	Right	16	0.6	0.0	0	0	N/A	14	0.5	0.0	0	0	N/A
1: Natural Bridge Rd @ Lot D*	WB	Left	0	0.0	0.0	0	0	A	0	0.0	0.0	0	0	A
1: Natural Bridge Rd @ Lot D*	WB	Through	211	0.0	0.0	0	0	N/A	264	0.1	0.0	0	0	N/A
1: Natural Bridge Rd @ Lot D*	Total	Total	410	5.5	0.2	61	0	A	781	6.0	0.3	62	0	A
2: I-70 WB @ Natural Bridge Rd	NB	Left	111	14.7	7.8	128	8	B	114	16.5	9.5	149	10	B
2: I-70 WB @ Natural Bridge Rd	NB	Right	140	3.4	0.1	89	1	A	161	4.5	0.4	87	1	A
2: I-70 WB @ Natural Bridge Rd	EB	Through	173	9.9	3.8	103	6	A	446	11.7	4.6	157	16	B
2: I-70 WB @ Natural Bridge Rd	EB	Right	11	1.1	0.0	10	0	A	57	1.7	0.1	41	0	A
2: I-70 WB @ Natural Bridge Rd	WB	Left	82	5.1	2.4	87	2	A	96	4.8	2.2	90	2	A
2: I-70 WB @ Natural Bridge Rd	WB	Through	100	5.3	1.8	66	1	A	150	5.0	1.8	79	2	A
2: I-70 WB @ Natural Bridge Rd	Total	Total	617	7.8	3.1	133	3	A	1,024	8.9	3.6	177	5	A
3: Natrual Bridge Rd @ Cypress Rd	NB	Left	124	12.5	7.0	92	7	B	168	12.3	6.9	110	9	B
3: Natrual Bridge Rd @ Cypress Rd	NB	Right	96	1.0	0.0	0	0	A	154	1.4	0.0	0	0	A
3: Natrual Bridge Rd @ Cypress Rd	EB	Through	82	6.5	2.5	109	2	A	138	7.3	2.8	196	10	A
3: Natrual Bridge Rd @ Cypress Rd	EB	Right	231	1.6	0.1	93	1	A	468	4.1	0.7	195	6	A
3: Natrual Bridge Rd @ Cypress Rd	WB	Left	57	5.1	1.9	61	1	A	73	5.4	1.8	79	1	A
3: Natrual Bridge Rd @ Cypress Rd	WB	Through	58	4.3	1.3	51	1	A	77	4.7	1.4	65	1	A
3: Natrual Bridge Rd @ Cypress Rd	Total	Total	648	4.8	2.0	119	2	A	1,078	5.5	2.0	206	5	A
4: I-70 EB @ Cypress Rd	NB	Left	10	5.9	3.4	25	0	A	10	7.4	4.4	27	0	A
4: I-70 EB @ Cypress Rd	NB	Through	143	7.8	4.3	107	4	A	183	14.0	8.8	185	11	B
4: I-70 EB @ Cypress Rd	NB	Right	139	1.6	0.2	27	0	A	252	3.7	1.0	55	0	A
4: I-70 EB @ Cypress Rd	EB	Left	18	20.3	15.1	61	3	C	54	26.7	21.5	88	9	C
4: I-70 EB @ Cypress Rd	EB	Through	12	20.6	14.3	61	3	C	11	24.5	18.4	88	9	C
4: I-70 EB @ Cypress Rd	EB	Right	10	0.9	0.1	11	0	A	14	1.0	0.1	14	0	A
4: I-70 EB @ Cypress Rd	SB	Left	68	5.0	2.2	63	1	A	153	8.2	4.2	125	6	A
4: I-70 EB @ Cypress Rd	SB	Through	181	5.2	2.5	88	4	A	324	7.8	4.2	129	9	A
4: I-70 EB @ Cypress Rd	SB	Right	40	0.8	0.0	0	0	A	62	1.4	0.2	0	0	A
4: I-70 EB @ Cypress Rd	WB	Left	36	20.7	14.7	95	6	C	63	29.2	22.9	130	13	C
4: I-70 EB @ Cypress Rd	WB	Through	15	26.3	17.5	95	6	C	9	26.2	18.3	130	13	C
4: I-70 EB @ Cypress Rd	WB	Right	58	1.5	0.0	58	0	A	85	2.0	0.1	69	0	A
4: I-70 EB @ Cypress Rd	Total	Total	730	6.2	3.4	123	1	A	1,220	9.4	5.6	359	4	A
5: LIB @ T1 Cell Phone Lot*	EB	Left	30	0.8	0.0	19	0	A	35	0.9	0.0	23	0	A
5: LIB @ T1 Cell Phone Lot*	EB	Through	148	0.0	0.0	0	0	N/A	257	0.1	0.0	0	0	N/A
5: LIB @ T1 Cell Phone Lot*	SB	Left	0	0.0	0.0	0	0	A	0	0.0	0.0	0	0	A
5: LIB @ T1 Cell Phone Lot*	SB	Right	0	0.0	0.0	0	0	A	0	0.0	0.0	0	0	A
5: LIB @ T1 Cell Phone Lot*	WB	Through	115	0.0	0.0	0	0	N/A	150	0.0	0.0	0	0	N/A
5: LIB @ T1 Cell Phone Lot*	WB	Right	0	0.0	0.0	0	0	N/A	0	0.0	0.0	0	0	N/A
5: LIB @ T1 Cell Phone Lot*	Total	Total	293	0.8	0.0	19	0	A	442	0.9	0.0	23	0	A
6: I-70 WB @ LIB (E of Cypress)	EB	Left	0	0.0	0.0	0	0	A	0	0.0	0.0	0	0	A
6: I-70 WB @ LIB (E of Cypress)	EB	Through	147	2.0	0.6	49	1	A	253	2.6	0.9	73	2	A
6: I-70 WB @ LIB (E of Cypress)	EB	Right	0	0	0	86	0	A	4	2	0	110	1	A
6: I-70 WB @ LIB (E of Cypress)	SB	Left	0	0.0	0.0	0	0	A	4	61.0	54.2	44	2	E
6: I-70 WB @ LIB (E of Cypress)	SB	Through	0	0.0	0.0	0	0	A	0	0.0	0.0	44	2	A
6: I-70 WB @ LIB (E of Cypress)	SB	Right	0	0.0	0.0	0	0	A	4	6.4	0.3	34	0	A
6: I-70 WB @ LIB (E of Cypress)	WB	Left	239	2.1	0.1	78	0	A	341	3.8	0.5	175	2	A
6: I-70 WB @ LIB (E of Cypress)	WB	Through	116	0.1	0.0	0	0	A	147	0.3	0.1	24	0	A
6: I-70 WB @ LIB (E of Cypress)	WB	Right	0	0.0	0.0	0	0	A	5	0.7	0.0	22	0	A
6: I-70 WB @ LIB (E of Cypress)	Total	Total	502	1.6	0.2	94	0	A	758	3.0	0.8	175	1	A
7: LIB @ Lot B*	NB	Left	5	1.6	0.2	16	0	A	0	0.0	0.0	0	0	A
7: LIB @ Lot B*	NB	Right	35	1.0	0.0	30	0	A	28	1.0	0.1	23	0	A
7: LIB @ Lot B*	EB	Through	147	0.0	0.0	0	0	N/A	257	0.1	0.0	0	0	N/A
7: LIB @ Lot B*	EB	Right	0	0.0	0.0	0	0	N/A	0	0.0	0.0	0	0	N/A
7: LIB @ Lot B*	WB	Left	20	1.0	0.0	17	0	A	0	0.0	0.0	0	0	A
7: LIB @ Lot B*	WB	Through	350	0.4	0.0	0	0	N/A	494	0.6	0.0	0	0	N/A
7: LIB @ Lot B*	Total	Total	557	1.1	0.0	35	0	A	779	1.0	0.1	23	0	A
8: LIB @ Lambert Field Dr	NB	Left	0	0.0	0.0	30	1	A	0	0.0	0.0	39	2	A
8: LIB @ Lambert Field Dr	NB	Through	0	0.0	0.0	30	1	A	0	0.0	0.0	39	2	A
8: LIB @ Lambert Field Dr	NB	Right	4	58.7	52.9	30	1	E	8	54.7	48.9	39	2	D
8: LIB @ Lambert Field Dr	EB	Left 1	0	0.0	0.0	0	0	A	0	0.0	0.0	0	0	A
8: LIB @ Lambert Field Dr	EB	Left 2	33	3.4	1.1	54	1	A	24	4.9	2.0	93	2	A
8: LIB @ Lambert Field Dr	EB	Through	129	1.5	0.6	54	1	A	264	2.5	1.1	93	2	A
8: LIB @ Lambert Field Dr	EB	Right	21	1.9	0.9	24	0	A	0	0.0	0.0	0	0	A
8: LIB @ Lambert Field Dr	SEB	Left	12	62.3	49.2	44	4	E	8	0.0	0.0	37	2	A
8: LIB @ Lambert Field Dr	SEB	Right	0	0.0	0.0	44	4	A	0	0.0	0.0	37	2	A
8: LIB @ Lambert Field Dr	SEB	Through	0	0.0	0.0	44	4	A	0	0.0	0.0	37	2	A
8: LIB @ Lambert Field Dr	SWB	Left	8	46.8	38.8	42	2	D	22	45.2	37.3	113	9	D
8: LIB @ Lambert Field Dr	SWB	Right	0	0.0	0.0	42	2	A	10	50.4	43.5	113	9	D
8: LIB @ Lambert Field Dr	SWB	Through	0	0.0	0.0	42	2	A	0	0.0	0.0	113	9	A
8: LIB @ Lambert Field Dr	WB	Left	6	2.0	0.6	59	1	A	0	0.0	0.0	110	3	A
8: LIB @ Lambert Field Dr	WB	Through	370	1.0	0.2	59	1	A	483	2.3	0.7	110	3	A
8: LIB @ Lambert Field Dr	WB	Right 2	0	0.0	0.0	59	1	A	0	0.0	0.0	110	3	A
8: LIB @ Lambert Field Dr	WB	Right 1	20	1.4	0.4	59	1	A	18	2.5	0.9	110	3	A
8: LIB @ Lambert Field Dr	Total	Total	603	3.5	2.2	66	1	A	837	4.6	2.8	125	3	A
9: Air Cargo Dr @ Terminal 1 Entrance	NB	Left	330	3.2	1.7	298	38	A	234	3.7	2.2	288	25	A
9: Air Cargo Dr @ Terminal 1 Entrance	NB	Through	253	2.7	1.6	299	40	A	211	3.0	1.8	287	25	A
9: Air Cargo Dr @ Terminal 1 Entrance	NB	Right	138	0.4	0.0	257	35	A	147	0.4	0.0	247	23	A
9: Air Cargo Dr @ Terminal 1 Entrance	WB	Left	44	41.6	34.2	174	21	D	79	42.1	34.7	181	30	D
9: Air Cargo Dr @ Terminal 1 Entrance	WB	Right	38	40.5	35.3	88	9	D	28	41.2	36.3	75	6	D
9: Air Cargo Dr @ Terminal 1 Entrance	Total	Total	803	6.4	4.8	300	29	A	699	8.6	6.7	289	22	A

All Vissim Results

Intersection Ops Existing

10: LIB @ Terminal 1 Exit	NB 1	Left	0	0	0	0	0	A	0	0	0	0	0	A
10: LIB @ Terminal 1 Exit	NB 1	Through	0	0	0	0	0	A	0	0	0	0	0	A
10: LIB @ Terminal 1 Exit	NB 1	Right	0	0	0	0	0	A	0	0	0	0	0	A
10: LIB @ Terminal 1 Exit	NB 2	Right	48	7.6	1.2	44	2	A	128	8.7	1.9	62	5	A
10: LIB @ Terminal 1 Exit	EB	Through	146	18.0	12.4	96	11	B	293	20.3	14.0	166	22	C
10: LIB @ Terminal 1 Exit	EB	Right 2	8	17.7	12.2	96	11	B	10	23.2	16.5	166	22	C
10: LIB @ Terminal 1 Exit	EB	Right 1	0	0.0	0.0	96	11	A	0	0.0	0.0	166	22	A
10: LIB @ Terminal 1 Exit	WB	Left 1	94	8.8	5.2	99	4	A	55	8.5	4.8	90	2	A
10: LIB @ Terminal 1 Exit	WB	Left 2	0	0.0	0.0	139	18	A	0	0.0	0.0	160	23	A
10: LIB @ Terminal 1 Exit	WB	Through	254	19.6	13.6	139	18	B	305	21.0	15.0	160	23	C
10: LIB @ Terminal 1 Exit	SB - A	Left	184	47.5	39.5	179	40	D	380	41.8	33.4	247	67	D
10: LIB @ Terminal 1 Exit	SB - A	Through	9	51.6	43.1	179	40	D	9	44.4	35.9	247	67	D
10: LIB @ Terminal 1 Exit	SB - A	Right	43	39.9	33.9	179	40	D	118	37.0	29.8	247	67	D
10: LIB @ Terminal 1 Exit	SB - D	Left	239	38.8	31.6	209	49	D	207	40.6	33.3	181	43	D
10: LIB @ Terminal 1 Exit	SB - D	Through	0	0.0	0.0	209	49	A	0	0.0	0.0	181	43	A
10: LIB @ Terminal 1 Exit	SB - D	Right	99	40.8	33.7	209	49	D	78	43.0	36.4	181	43	D
10: LIB @ Terminal 1 Exit	Total	Total	1,124	29.5	23.0	216	18	C	1,583	29.4	22.5	247	23	C
11: I-70 WB @ Airflight Dr	NB	Left	290	7.3	3.1	175	9	A	306	8.6	2.6	227	10	A
11: I-70 WB @ Airflight Dr	NB	Through	415	3.3	1.4	123	5	A	345	4.9	1.4	206	6	A
11: I-70 WB @ Airflight Dr	SB	Through	221	10.1	6.0	115	8	B	297	16.7	10.5	206	19	B
11: I-70 WB @ Airflight Dr	WB	Left	213	39.8	30.4	244	45	D	280	39.7	29.9	275	55	D
11: I-70 WB @ Airflight Dr	WB	Right	78	27.9	18.8	9	0	C	66	31.4	22.0	30	0	C
11: I-70 WB @ Airflight Dr	Total	Total	1,217	13.4	8.8	253	10	B	1,294	17.4	11.0	286	13	B
12: I-70 EB @ Pear Tree Ln	NEB	Right	32	7.2	0.6	71	1	A	58	7.3	0.8	89	2	A
12: I-70 EB @ Pear Tree Ln	EB	Through	126	40.0	31.5	113	21	D	221	41.1	31.9	181	37	D
12: I-70 EB @ Pear Tree Ln	EB	Right	5	40.5	35.2	113	21	D	10	35.8	29.9	181	37	D
12: I-70 EB @ Pear Tree Ln	SB	Left	531	7.7	3.5	259	18	A	409	8.5	4.4	216	15	A
12: I-70 EB @ Pear Tree Ln	SB	Through	25	7.6	3.7	259	18	A	22	7.2	3.7	216	15	A
12: I-70 EB @ Pear Tree Ln	SB	Right	44	2.3	0.4	56	0	A	64	2.4	0.5	49	0	A
12: I-70 EB @ Pear Tree Ln	WB	Through	48	34.6	29.0	98	10	C	50	26.1	20.3	120	7	C
12: I-70 EB @ Pear Tree Ln	WB	Right	85	37.9	30.2	155	19	D	154	26.3	18.8	255	25	C
12: I-70 EB @ Pear Tree Ln	Total	Total	896	16.5	11.2	259	11	B	988	19.2	13.4	267	14	B
13: Airflight Dr @ Pear Tree Ln	NB	Left	5	47.5	40.3	109	14	D	0	0.0	0.0	124	20	A
13: Airflight Dr @ Pear Tree Ln	NB	Through	38	47.4	39.0	109	14	D	58	47.8	39.5	124	20	D
13: Airflight Dr @ Pear Tree Ln	NB	Right	5	45.2	38.8	109	14	D	9	49.4	42.3	124	20	D
13: Airflight Dr @ Pear Tree Ln	EB	Left	430	20.8	15.5	202	37	C	412	18.0	12.8	210	30	B
13: Airflight Dr @ Pear Tree Ln	EB	Through	210	16.3	10.1	252	24	B	255	14.9	9.1	289	24	B
13: Airflight Dr @ Pear Tree Ln	EB	Right	50	16.0	11.4	252	24	B	22	12.8	8.6	289	24	B
13: Airflight Dr @ Pear Tree Ln	SB	Left	192	20.7	15.1	235	32	C	266	39.0	29.3	398	77	D
13: Airflight Dr @ Pear Tree Ln	SB	Through	73	21.4	14.5	235	32	C	34	39.1	28.1	398	77	D
13: Airflight Dr @ Pear Tree Ln	SB	Right	108	2.4	0.5	235	32	A	156	4.8	1.9	398	77	A
13: Airflight Dr @ Pear Tree Ln	WB	Left	11	48.5	41.8	47	3	D	11	44.3	37.6	43	3	D
13: Airflight Dr @ Pear Tree Ln	WB	Through	19	47.1	37.2	62	5	D	49	43.4	33.0	130	11	D
13: Airflight Dr @ Pear Tree Ln	WB	Right	251	3.2	0.6	121	2	A	196	4.1	1.2	132	3	A
13: Airflight Dr @ Pear Tree Ln	Total	Total	1,392	16.8	11.9	264	17	B	1,468	20.8	14.8	398	24	C
14: Pear Tree Ln @ Edmundson Rd	NB	Left	113	31.7	25.9	166	22	C	47	6.9	1.2	74	2	A
14: Pear Tree Ln @ Edmundson Rd	NB	Right	46	5.8	0.7	64	2	A	129	43.5	36.9	249	37	D
14: Pear Tree Ln @ Edmundson Rd	EB	Through	307	7.2	3.1	228	10	A	406	5.1	1.0	229	7	A
14: Pear Tree Ln @ Edmundson Rd	EB	Right	100	1.6	0.1	74	0	A	126	1.6	0.0	20	0	A
14: Pear Tree Ln @ Edmundson Rd	WB	Left	29	9.3	4.9	41	1	A	277	4.6	1.6	148	5	A
14: Pear Tree Ln @ Edmundson Rd	WB	Through	239	7.0	3.2	129	7	A	29	10.3	5.2	40	0	B
14: Pear Tree Ln @ Edmundson Rd	Total	Total	834	9.8	5.8	232	7	A	1,014	9.6	5.7	270	9	A
15: LIB @ Terminal 2 Exit	EB	Through	409	9.8	6.1	163	15	A	523	12.0	7.1	202	22	B
15: LIB @ Terminal 2 Exit	SB - A	Left	128	28.2	22.4	178	22	C	88	30.8	25.1	133	16	C
15: LIB @ Terminal 2 Exit	SB - A	Right	160	29.1	23.1	253	33	C	147	30.8	25.2	194	22	C
15: LIB @ Terminal 2 Exit	SB - D	Left	172	29.1	23.1	253	33	C	112	30.8	25.2	194	22	C
15: LIB @ Terminal 2 Exit	SB - D	Right	191	32.7	25.1	267	41	C	151	33.6	26.4	224	34	C
15: LIB @ Terminal 2 Exit	WB	Through	276	2.0	1.0	60	2	A	454	2.0	1.3	72	3	A
15: LIB @ Terminal 2 Exit	Total	Total	1,336	18.0	13.6	273	24	B	1,475	15.6	11.5	235	21	B
16: LIB @ Terminal 2 Parking*	EB	Through	712	2.9	0.6	174	3	N/A	723	3.6	1.0	155	5	N/A
16: LIB @ Terminal 2 Parking*	SB	Left	0	0.0	0.0	0	0	A	34	38.0	30.9	77	7	E
16: LIB @ Terminal 2 Parking*	SB	Right	28	44.5	38.1	65	7	E	29	36.9	31.0	59	5	E
16: LIB @ Terminal 2 Parking*	WB	Through	247	0.0	0.0	0	0	N/A	424	0.1	0.0	0	0	N/A
16: LIB @ Terminal 2 Parking*	Total	Total	987	44.5	38.1	174	3	E	1,210	37.5	30.9	155	5	E
17: LIB @ Terminal 2 Entrance	EB	Left	475	33.0	18.5	357	44	C	401	30.8	17.7	307	37	C
17: LIB @ Terminal 2 Entrance	EB	Through	235	1.6	0.2	27	0	A	351	1.4	0.2	31	0	A
17: LIB @ Terminal 2 Entrance	SB	Left	5	76.3	70.6	39	2	E	5	71.9	66.2	36	2	E
17: LIB @ Terminal 2 Entrance	SB	Right	39	6.9	0.3	85	2	A	74	8.9	0.4	116	5	A
17: LIB @ Terminal 2 Entrance	WB	Through	209	16.2	11.2	136	14	B	351	14.8	9.6	161	19	B
17: LIB @ Terminal 2 Entrance	WB	Right	247	20.4	13.3	146	18	C	193	16.1	10.9	123	12	B
17: LIB @ Terminal 2 Entrance	Total	Total	1,210	20.8	12.3	357	13	C	1,375	16.1	9.5	307	12	B
18: Air Cargo Rd @ Lot E*	EB	Through	138	0.0	0.0	0	0	N/A	148	0.0	0.0	0	0	N/A
18: Air Cargo Rd @ Lot E*	SB	Left	0	0.0	0.0	0	0	A	0	0.0	0.0	0	0	A
18: Air Cargo Rd @ Lot E*	SB	Right	8	1.4	0.0	11	0	A	8	1.7	0.1	17	0	A
18: Air Cargo Rd @ Lot E*	WB	Through	113	0.3	0.0	0	0	N/A	133	0.3	0.0	0	0	N/A
18: Air Cargo Rd @ Lot E*	Total	Total	259	1.4	0.0	11	0	A	289	1.7	0.1	17	0	A
19: Air Cargo Rd @ James S McDonnell*	NB	Left	70	0.6	0.0	0	0	A	84	0.7	0.0	0	0	A
19: Air Cargo Rd @ James S McDonnell*	NB	Right	50	0.7	0.0	0	0	N/A	60	0.8	0.0	0	0	N/A
19: Air Cargo Rd @ James S McDonnell*	EB	Through	68	10.9	0.2	2	0	B	75	11.3	0.2	4	0	B
19: Air Cargo Rd @ James S McDonnell*	EB	Right	70	5.7	0.2	2	0	A	73	5.7	0.2	4	0	A
19: Air Cargo Rd @ James S McDonnell*	WB	Left	29	6.2	0.2	0	0	A	44	6.1	0.2	0	0	A
19: Air Cargo Rd @ James S McDonnell*	WB	Through	44	10.2	0.2	0	0	B	49	10.3	0.2	0	0	B
19: Air Cargo Rd @ James S McDonnell*	Total	Total	331	6.5	0.1	2	0	A	385	6.4	0.1	4	0	A
20: I-70 SOR @ Natural Bridge Rd	NB	Left	66	27.4	21.1	188	18	C	62	33.7	25.7	368	44	C
20: I-70 SOR @ Natural Bridge Rd	NB	Through	44	28.1	21.5	188	18	C	94	35.7	27.2	368	44	D
20: I-70 SOR @ Natural Bridge Rd	NB	Right	110	5.7	2.3	26	0	A	177	13.9	7.6	47	0	B
20: I-70 SOR @ Natural Bridge Rd	EB	Through	308	11.9	6.7	158	17	B	375	13.4	7.7	175	22	B
20: I-70 SOR @ Natural Bridge Rd	EB	Right	22	12.2	7.9	158	17	B	32	13.0	8.6	175	22	B
20: I-70 SOR @ Natural Bridge Rd	WB	Left	126	28.1	22.2	167	20	C	177	33.5	26.9	217	35	C
20: I-70 SOR @ Natural Bridge Rd	WB	Through	172	4.7	2.0	87	3	A	338	5.7	2.3	151	7	A
20: I-70 SOR @ Natural Bridge Rd	WB	Right	108	5.0	2.2	74	2	A	181	5.3	2.1	107	3	A
20: I-70 SOR @ Natural Bridge Rd	Total	Total	956	13.1	8.6	196	10	B	1,436	15.4	10.2	368	19	B

All Vissim Results

Intersection Ops No Build

			2032 AM No Build						2032 PM No Build						2037 AM No Build						2037 PM No Build					
Intersection	Approach	Movement	Volume	Delay (sec)	Delay Stopped (sec)	Queue Length Max (ft)	Queue Length Average (ft)	LOS	Volume	Delay (sec)	Delay Stopped (sec)	Queue Length Max (ft)	Queue Length Average (ft)	LOS	Volume	Delay (sec)	Delay Stopped (sec)	Queue Length Max (ft)	Queue Length Average (ft)	LOS	Volume	Delay (sec)	Delay Stopped (sec)	Queue Length Max (ft)	Queue Length Average (ft)	LOS
1: Natural Bridge Rd @ Lot D*	NB	Left	0	0.0	0.0	0.0	0.0	A	0	0.0	0.0	0.0	0.0	A	0	0.0	0.0	0.0	0.0	A	0	0.0	0.0	0.0	0.0	A
1: Natural Bridge Rd @ Lot D*	NB	Right	16	5.4	0.2	59	1	A	14	6.3	0.3	61	1	A	16	5.5	0.2	63	1	A	18	6.3	0.5	61	1	A
1: Natural Bridge Rd @ Lot D*	EB	Through	177	0.1	0.0	0	0	N/A	501	0.2	0.0	0	0	N/A	180	0.1	0.0	0	0	N/A	506	0.2	0.0	0	0	N/A
1: Natural Bridge Rd @ Lot D*	EB	Right	18	0.6	0.0	0	0	N/A	16	0.6	0.0	0	0	N/A	19	0.6	0.0	0	0	N/A	17	0.6	0.0	0	0	N/A
1: Natural Bridge Rd @ Lot D*	WB	Left	0	0.0	0.0	0	0	A	0	0.0	0.0	0	0	A	0	0.0	0.0	0	0	A	0	0.0	0.0	0	0	A
1: Natural Bridge Rd @ Lot D*	WB	Through	219	0.1	0.0	0	0	N/A	268	0.1	0.0	0	0	N/A	223	0.0	0.0	0	0	N/A	273	0.1	0.0	0	0	N/A
1: Natural Bridge Rd @ Lot D*	Total	Total	430	5.4	0.2	59	0	A	799	6.3	0.3	61	0	A	438	5.5	0.2	63	0	A	814	6.3	0.5	61	0	A
2: I-70 WB @ Natural Bridge Rd	NB	Left	114	15.3	8.4	128	9	B	117	16.8	9.8	125	10	B	115	15.5	8.6	130	9	B	119	17.3	10.3	135	11	B
2: I-70 WB @ Natural Bridge Rd	NB	Right	145	3.4	0.1	76	1	A	164	4.7	0.5	99	1	A	146	3.3	0.1	79	1	A	165	4.8	0.6	87	1	A
2: I-70 WB @ Natural Bridge Rd	EB	Through	183	10.0	3.9	100	6	A	458	12.4	4.9	165	18	B	186	10.5	4.3	103	6	B	467	12.2	4.8	158	18	B
2: I-70 WB @ Natural Bridge Rd	EB	Right	10	1.1	0.0	7	0	A	57	1.7	0.1	33	0	A	10	1.0	0.0	4	0	A	57	1.7	0.1	24	0	A
2: I-70 WB @ Natural Bridge Rd	WB	Left	85	5.1	2.3	86	2	A	98	5.5	2.5	96	2	A	87	5.4	2.5	91	2	A	100	5.0	2.2	93	2	A
2: I-70 WB @ Natural Bridge Rd	WB	Through	105	5.3	1.8	71	2	A	151	5.3	1.8	73	2	A	107	5.0	1.7	63	1	A	154	5.5	2.0	73	2	A
2: I-70 WB @ Natural Bridge Rd	Total	Total	642	7.9	3.2	129	3	A	1,045	9.4	3.8	166	5	A	651	8.0	3.4	136	3	A	1,062	9.4	3.8	161	5	A
3: Natrual Bridge Rd @ Cypress Rd	NB	Left	127	12.0	6.6	85	6	B	173	13.0	7.4	113	9	B	129	12.4	6.9	91	7	B	176	12.7	7.1	112	9	B
3: Natrual Bridge Rd @ Cypress Rd	NB	Right	102	1.1	0.0	0	0	A	164	1.4	0.0	0	0	A	102	1.0	0.0	0	0	A	168	1.4	0.0	0	0	A
3: Natrual Bridge Rd @ Cypress Rd	EB	Through	84	6.5	2.6	102	2	A	141	8.1	3.2	203	12	A	85	6.4	2.4	116	2	A	143	9.4	3.9	192	13	A
3: Natrual Bridge Rd @ Cypress Rd	EB	Right	243	1.5	0.1	107	1	A	478	4.4	0.8	207	7	A	247	1.6	0.2	86	1	A	487	4.7	0.9	214	9	A
3: Natrual Bridge Rd @ Cypress Rd	WB	Left	60	4.7	1.5	80	1	A	76	5.4	1.9	76	1	A	60	4.8	1.5	98	1	A	79	5.3	1.8	74	1	A
3: Natrual Bridge Rd @ Cypress Rd	WB	Through	63	4.1	1.2	64	1	A	75	4.7	1.4	55	1	A	63	4.2	1.2	55	1	A	79	5.1	1.5	57	1	A
3: Natrual Bridge Rd @ Cypress Rd	Total	Total	679	4.6	1.8	125	2	A	1,107	5.9	2.1	219	5	A	686	4.7	1.9	131	2	A	1,132	6.1	2.2	215	6	A
4: I-70 EB @ Cypress Rd	NB	Left	10	5.2	2.9	25	0	A	11	7.8	4.5	32	0	A	11	6.1	3.4	29	0	A	12	8.5	5.2	34	0	A
4: I-70 EB @ Cypress Rd	NB	Through	149	8.5	4.7	110	5	A	191	15.3	9.7	185	13	B	150	8.9	5.0	110	5	A	192	15.1	9.6	195	13	B
4: I-70 EB @ Cypress Rd	NB	Right	145	1.8	0.3	29	0	A	267	4.0	1.1	74	0	A	145	1.8	0.3	25	0	A	269	4.1	1.2	65	0	A
4: I-70 EB @ Cypress Rd	EB	Left	20	22.0	16.7	62	4	C	61	25.4	20.2	87	10	C	23	20.5	15.4	73	4	C	64	25.3	20.1	93	11	C
4: I-70 EB @ Cypress Rd	EB	Through	13	22.3	16.2	62	4	C	11	23.5	18.0	87	10	C	14	24.2	17.6	73	4	C	12	24.7	18.7	93	11	C
4: I-70 EB @ Cypress Rd	EB	Right	11	0.7	0.0	3	0	A	16	0.9	0.1	16	0	A	12	0.7	0.0	8	0	A	18	1.2	0.1	23	0	A
4: I-70 EB @ Cypress Rd	SB	Left	69	4.9	2.3	72	1	A	159	8.9	4.6	141	6	A	70	5.5	2.7	73	2	A	162	8.8	4.5	130	7	A
4: I-70 EB @ Cypress Rd	SB	Through	187	5.2	2.4	86	4	A	328	8.5	4.5	129	10	A	189	5.8	2.9	82	4	A	333	8.5	4.5	141	10	A
4: I-70 EB @ Cypress Rd	SB	Right	46	0.8	0.0	0	0	A	67	1.6	0.4	0	0	A	48	0.9	0.0	0	0	A	70	1.6	0.3	0	0	A
4: I-70 EB @ Cypress Rd	WB	Left	37	22.1	16.3	84	6	C	65	28.2	22.0	130	13	C	38	22.2	16.0	108	7	C	65	28.4	22.3	118	13	C
4: I-70 EB @ Cypress Rd	WB	Through	16	23.9	15.2	84	6	C	10	29.9	21.8	130	13	C	17	24.4	16.1	108	7	C	11	29.1	21.6	118	13	C
4: I-70 EB @ Cypress Rd	WB	Right	61	1.6	0.0	48	0	A	87	2.1	0.1	69	0	A	61	1.5	0.0	49	0	A	88	2.0	0.1	74	0	A
4: I-70 EB @ Cypress Rd	Total	Total	764	6.5	3.6	121	2	A	1,273	9.8	5.9	213	4	A	778	6.9	3.9	122	2	A	1,296	9.8	5.9	290	4	A
5: LIB @ T1 Cell Phone Lot*	EB	Left	34	0.9	0.0	19	0	A	38	1.1	0.0	30	0	A	33	0.9	0.0	17	0	A	41	1.2	0.1	35	0	A
5: LIB @ T1 Cell Phone Lot*	EB	Through	153	0.0	0.0	0	0	N/A	267	0.1	0.0	0	0	N/A	154	0.0	0.0	0	0	N/A	269	0.1	0.0	0	0	N/A
5: LIB @ T1 Cell Phone Lot*	SB	Left	4	0.0	0.0	45	0	A	8	0.0	0.0	48	0	A	8	0.0	0.0	48	0	A	16	0.0	0.0	56	1	A
5: LIB @ T1 Cell Phone Lot*	SB	Right	0	0.0	0.0	0	0	A	0	0.0	0.0	0	0	A	0	0.0	0.0	0	0	A	6	0.0	0.0	47	0	A
5: LIB @ T1 Cell Phone Lot*	WB	Through	121	0.0	0.0	0	0	N/A	150	0.0	0.0	0	0	N/A	122	0.0	0.0	0	0	N/A	151	0.1	0.0	0	0	N/A
5: LIB @ T1 Cell Phone Lot*	WB	Right	10	0.0	0.0	0	0	N/A	17	0.0	0.0	0	0	N/A	17	0.0	0.0	0	0	N/A	37	0.0	0.0	0	0	N/A
5: LIB @ T1 Cell Phone Lot*	Total	Total	322	0.8	0.0	45	0	A	480	0.9	0.0	55	0	A	334	0.7	0.0	48	0	A	520	0.8	0.0	60	0	A
6: I-70 WB @ LIB (E of Cypress)	EB	Left	0	0.0	0.0	0	0	A	0	0.0	0.0	0	0	A	0	0.0	0.0	0	0	A	0	0.0	0.0	0	0	A
6: I-70 WB @ LIB (E of Cypress)	EB	Through	156	2.0	0.6	47	1	A	270	2.7	0.9	89	2	A	163	1.7	0.4	55	1	A	280	2.6	0.9	75	2	A
6: I-70 WB @ LIB (E of Cypress)	EB	Right	0	0	0	82	0	A	4	3	0	126	1	A	0	0	0	92	0	A	5	1	0	112	1	A
6: I-70 WB @ LIB (E of Cypress)	SB	Left	4	0.0	0.0	40	2	A	5	55.7	49.0	47	2	E	0	0.0	0.0	0	0	A	5	55.7	49.0	47	2	E
6: I-70 WB @ LIB (E of Cypress)	SB	Through	0	0.0	0.0	40	2	A	0	0.0	0.0	47	2	A	0	0.0	0.0	0	0	A	0	0.0	0.0	47	2	A
6: I-70 WB @ LIB (E of Cypress)	SB	Right	0	0.0	0.0	0	0	A	5	6.4	0.2	49	0	A	0	0.0	0.0	0	0	A	5	6.4	0.3	49	0	A
6: I-70 WB @ LIB (E of Cypress)	WB	Left	244	2.5	0.2	108	1	A	325	3.7	0.5	128	2	A	247	2.3	0.1	94	0	A	337	4.1	0.6	177	2	A
6: I-70 WB @ LIB (E of Cypress)	WB	Through	132	0.3	0.1	24	0	A	162	0.5	0.1	40	0	A	139	0.1	0.0	0	0	A	184	0.6	0.1	43	0	A
6: I-70 WB @ LIB (E of Cypress)	WB	Right	8	0.0	0.0	21	0	A	14	0.8	0.1	37	0	A	14	0.0	0.0	0	0	A	27	0.9	0.0	40	0	A
6: I-70 WB @ LIB (E of Cypress)	Total	Total	544	1.8	0.3	110	0	A	785	3.0	0.9	144	1	A	563	1.5	0.2	120	0	A	843	3.0	0.8	180	1	A
7: LIB @ Lot B*	NB	Left	6	1.5	0.0	11	0	A	0	0.0	0.0	0	0	A	5	2.1	0.1	22	0	A	0	0.0	0.0	0	0	A
7: LIB @ Lot B*	NB	Right	39	0.9	0.0	22	0	A	32	1.1	0.1	27	0	A	39	1.0	0.0	35	0	A	32	1.1	0.1	26	0	A
7: LIB @ Lot B*	EB	Through	160	0.0	0.0	0	0	N/A	276	0.1	0.0	0	0	N/A	164	0.0	0.0	0	0	N/A	285	0.1	0.0	0	0	N/A
7: LIB @ Lot B*	EB	Right	0	0.0	0.0	0	0	N/A	0	0.0	0.0	0	0	N/A	0	0.0	0.0	0	0	N/A	0	0.0	0.0	0	0	N/A
7: LIB @ Lot B*	WB	Left	22	1.2	0.0	24	0	A	0	0.0	0.0	0	0	A	24	1.3	0.0	34	0	A	0	0.0	0.0	0	0	A
7: LIB @ Lot B*	WB	Through	380	0.4	0.0	0	0	N/A	503	0.5	0.0	0	0	N/A	395	0.4	0.0	0	0	N/A	553	0.6	0.0	0	0	N/A
7: LIB @ Lot B*	Total	Total	607	1.1	0.0	31	0	A	811	1.1	0.1	27	0	A	627	1.2	0.0	46	0	A	870	1.1	0.1	26	0	A
8: LIB @ Lambert Field Dr	NB	Left	0	0.0	0.0	30	1	A	0	0.0	0.0	48	3	A	0	0.0	0.0	30	1	A	0	0.0	0.0	52	3	A
8: LIB @ Lambert Field Dr	NB	Through	0	0.0	0.0	30	1	A	0	0.0	0.0	48	3	A	0	0.0	0.0	30	1	A	0	0.0	0.0	52	3	A
8: LIB @ Lambert Field Dr	NB	Right	4	45.3	39.4	30	1	D	10	53.8	47.9	48	3	D	4	45.3	39.5	30	1	D	10	56.7	50.6	52	3	E
8: LIB @ Lambert Field Dr	EB	Left 1	0	0.0	0.0	0	0	A	0	0.0	0.0	0	0	A	0	0.0	0.0	0	0	A	0	0.0	0.0	0	0	A
8: LIB @ Lambert Field Dr	EB	Left 2	36	3.7	1.3	51	1	A	26	7.0	3.1	90	3	A	37	4.6	1.8	61	1	A	27	7.7	3.8	82	3	A
8: LIB @ Lambert Field Dr	EB	Through	141	2.0	0.9	51	1	A	282	3.4	1.7	90	3	A	143	1.9	0.9	61	1	A	291	3.3	1.6	82	3	A
8: LIB @ Lambert Field Dr	EB	Right	23	2.3	1.3	22	0	A	0	0.0	0.0	0	0	A	23	2.0	0.8	26	0	A	0	0.0	0.0	0	0	A
8: LIB @ Lambert Field Dr	SEB	Left	16	62.5	49.5	55	5	E	10	0.0	0.0	41	3	A	16	59.7	46.8	50	4	E	10	0.0	0.0	41	3	A
8: LIB @ Lambert Field Dr	SEB	Right	0	0.0	0.0	55	5	A	0	0.0	0.0	41	3	A	0	0.0	0.0	50	4	A	0	0.0	0.0	41	3	A
8: LIB @ Lambert Field Dr	SEB	Through	0	0.0	0.0	55	5	A	0	0.0	0.0	41	3	A	0	0.0	0.0	50	4	A	0	0.0	0.0	41	3	A
8: LIB @ Lambert Field Dr	SWB	Left	8	47.9	39.9	40	2	D	26	48.9	40.9	124	11	D	12	49.5	41.4	57	3	D	28	47.7	39.6	124	11	D
8: LIB @ Lambert Field Dr	SWB	Right	0	0.0	0.0	40	2	A	12	45.6	38.8	124	11	D	0	0.0	0.0	57	3	A	12	45.7	38.9	124	11	D
8: LIB @ Lambert Field Dr	SWB	Through	0	0.0	0.0	40	2	A	0	0.0	0.0	124	11	A	0	0.0	0.0	57	3	A	0	0.0	0.0	124	11	A
8: LIB @ Lambert Field Dr	WB	Left	7	2.3	0.4	79	1	A	14	0.0	0.0	108	5	A	7	3.0	0.9	71	2	A	0	0.0	0.0	127	5	A
8: LIB @ Lambert Field Dr	WB	Through	402	1.2	0.3	79	1	A	491	2.8	1.0	108	5	A	419	1.3	0.4	71	2	A	540	3.0	1.1	127	5	A
8: LIB @ Lambert Field Dr	WB	Right 2	12	0.0	0.0	79	1	A	21	0.0	0.0	108	5	A	16	0.0	0.0	71	2	A	35	0.0	0.0	127	5	A
8: LIB @ Lambert Field Dr	WB	Right 1	20	1.5	0.2	79	1	A	37	2.6	1.1	108	5	A	23	1.8	0.6	71	2	A	22	3.2	1.5	127	5	A
8: LIB @ Lambert Field Dr	Total	Total	669	3.8	2.4	83	1	A	929	5.4	3.3	133	4	A	700	4.0	2.5	84	2	A	975	5.4	3.4	138	4	A
9: Air Cargo Dr @ Terminal 1 Entrance	NB	Left	372	3.8	2.3	319	61	A	267	3.8	2.3	298	34	A	391	4.1	2.5	322	67	A	280	4.2	2.6	303	41	A
9: Air Cargo Dr @ Terminal 1 Entrance	NB	Through	287	3.0	1.8	321	63	A	235	3.8	2.4	302	37	A	302	3.2	2.0	326	71	A	249	3.6	2.3	307	42	A
9: Air Cargo Dr @ Terminal 1 Entrance	NB	Right	157	0.4	0.0	276	56	A	164	0.5	0.0	256	33	A	163	0.5	0.0	282	61	A	173	0.5	0.0	264	38	A
9: Air Cargo Dr @ Terminal 1 Entrance	WB	Left	48	43.6	36.2	172	24	D	88	42.2	34.6	197	33	D	50	42.8	35.3	173	25	D	92	40.9	33.2	203	34	D
9: Air Cargo Dr @ Terminal 1 Entrance	WB	Right	42	38.8	33.6	82	9	D	33	36.2	30.9	83	6	D	46	38.8	33.6	116	10	D	34	36.5	31.1	96	7	D
9: Air Cargo Dr @ Terminal 1 Entrance	Total	Total	906	6.7	5.0	321	43	A	787	8.8	6.7	304	29	A	952	6.9	5.1	326	47	A	828	8.6	6.6	310	32	A
10: LIB @ Terminal 1 Exit	NB 1	Left	0	0	0	0	0	A	0	0	0	0	0	A	0	0	0	0	0	A	0	0	0	0	0	A
10: LIB @ Terminal 1 Exit	NB 1	Through	0	0	0	0	0	A	0	0	0	0	0	A	0	0	0	0	0	A	0	0	0	0	0	A
10: LIB @ Terminal 1 Exit	NB 1	Right	0	0	0	0	0	A	0	0	0	0	0	A	0	0	0	0	0	A	0	0	0	0	0	A
10: LIB @ Terminal 1 Exit	NB 2	Right	56	8.3	1.9	44	2	A	146	9.0	2.1	74	5	A	56	8.2	1.7	48	2	A	150	9.3	2.2	67	6	A
10: LIB @ Terminal 1 Exit	EB	Through	162	19.3	13.5	108	12	B	319	22.6	16.0	178	27	C	166	19.6	13.7	107	14	B	329	23.8	16.8	200	29	C
10: LIB @ Terminal 1 Exit	EB	Right 2	9	21.8	15.5	108	12	C	10	22.8	16.2	178	27	C	10	20.8	14.5	107	14	C	10	24.4	17.7	200	29	C

All Vissim Results

Intersection Ops No Build

10: LIB @ Terminal 1 Exit	EB	Right 1	0	0.0	0.0	108	12	A	0	0.0	0.0	178	27	A	0	0.0	0.0	107	14	A	0	0.0	0.0	200	29	A
10: LIB @ Terminal 1 Exit	WB	Left 1	101	8.9	5.3	100	4	A	61	9.7	5.7	80	2	A	107	8.9	5.2	114	4	A	65	9.9	5.9	82	2	A
10: LIB @ Terminal 1 Exit	WB	Left 2	0	0.0	0.0	163	23	A	1	0.0	0.0	189	30	A	0	0.0	0.0	167	25	A	0	0.0	0.0	190	32	A
10: LIB @ Terminal 1 Exit	WB	Through	285	21.8	15.6	163	23	C	342	23.9	17.4	189	30	C	299	22.4	16.0	167	25	C	367	24.1	17.7	190	32	C
10: LIB @ Terminal 1 Exit	SB - A	Left	208	46.1	38.1	184	43	D	424	40.2	31.9	259	71	D	218	46.2	38.3	171	45	D	441	39.7	31.4	261	72	D
10: LIB @ Terminal 1 Exit	SB - A	Through	11	53.5	45.6	184	43	D	9	40.8	32.7	259	71	D	11	50.1	41.5	171	45	D	11	39.3	30.6	261	72	D
10: LIB @ Terminal 1 Exit	SB - A	Right	47	38.8	32.8	184	43	D	131	36.2	29.1	259	71	D	50	40.0	33.9	171	45	D	139	36.7	29.5	261	72	D
10: LIB @ Terminal 1 Exit	SB - D	Left	271	38.4	31.1	189	51	D	233	39.8	32.6	198	47	D	285	38.5	31.1	223	56	D	250	39.3	32.0	186	48	D
10: LIB @ Terminal 1 Exit	SB - D	Through	0	0.0	0.0	189	51	A	3	0.0	0.0	198	47	A	0	0.0	0.0	223	56	A	0	0.0	0.0	186	48	A
10: LIB @ Terminal 1 Exit	SB - D	Right	109	38.4	31.6	189	51	D	90	40.7	34.0	198	47	D	113	39.0	31.9	223	56	D	92	40.3	33.5	186	48	D
10: LIB @ Terminal 1 Exit	Total	Total	1,259	29.8	23.2	200	19	C	1,769	29.7	22.7	267	26	C	1,315	30.1	23.4	229	21	C	1,854	30.0	22.8	261	27	C
11: I-70 WB @ Airflight Dr	NB	Left	326	9.0	4.1	202	14	A	348	9.3	3.0	283	13	A	346	9.5	4.4	239	15	A	365	10.2	3.4	313	16	B
11: I-70 WB @ Airflight Dr	NB	Through	465	3.7	1.7	135	6	A	388	5.1	1.5	220	7	A	487	4.2	1.9	148	8	A	410	5.0	1.4	215	7	A
11: I-70 WB @ Airflight Dr	SB	Through	247	11.2	6.9	145	10	B	330	17.7	11.4	211	21	B	260	11.7	7.2	155	11	B	338	17.9	11.5	229	23	B
11: I-70 WB @ Airflight Dr	WB	Left	235	38.4	29.0	250	49	D	315	40.3	30.0	332	64	D	248	37.4	28.0	238	50	D	329	40.3	30.0	356	67	D
11: I-70 WB @ Airflight Dr	WB	Right	86	27.7	18.6	12	0	C	75	31.5	21.3	61	0	C	90	29.3	19.9	0	0	C	82	33.0	23.1	88	1	C
11: I-70 WB @ Airflight Dr	Total	Total	1,359	13.9	9.0	266	11	B	1,456	17.9	11.3	345	15	B	1,431	14.2	9.1	258	12	B	1,524	18.2	11.4	391	16	B
12: I-70 EB @ Pear Tree Ln	NEB	Right	36	7.6	0.9	50	1	A	64	8.2	1.3	86	2	A	40	7.9	1.0	76	1	A	71	8.5	1.5	84	2	A
12: I-70 EB @ Pear Tree Ln	EB	Through	146	39.5	30.8	123	24	D	248	39.6	30.3	174	39	D	151	40.0	31.1	129	25	D	263	40.5	30.9	178	42	D
12: I-70 EB @ Pear Tree Ln	EB	Right	6	43.5	38.1	123	24	D	12	37.0	31.4	174	39	D	6	37.0	32.1	129	25	D	12	33.6	28.1	178	42	C
12: I-70 EB @ Pear Tree Ln	SB	Left	594	8.7	3.9	265	21	A	460	9.3	4.8	224	18	A	626	9.1	4.0	264	23	A	481	10.2	5.5	242	21	B
12: I-70 EB @ Pear Tree Ln	SB	Through	28	6.7	2.9	265	21	A	25	7.1	3.4	224	18	A	31	8.7	4.4	264	23	A	28	9.7	5.7	242	21	A
12: I-70 EB @ Pear Tree Ln	SB	Right	50	2.6	0.5	64	0	A	71	2.8	0.7	61	0	A	52	2.6	0.6	27	0	A	77	3.1	0.8	77	0	A
12: I-70 EB @ Pear Tree Ln	WB	Through	54	32.3	26.6	149	11	C	56	25.9	20.2	149	8	C	57	32.3	26.5	117	11	C	59	25.3	19.2	161	8	C
12: I-70 EB @ Pear Tree Ln	WB	Right	95	36.0	28.4	199	22	D	176	26.3	18.8	283	29	C	100	34.2	26.7	196	21	C	182	25.9	18.6	282	30	C
12: I-70 EB @ Pear Tree Ln	Total	Total	1,009	16.8	11.2	265	13	B	1,112	19.3	13.3	286	16	B	1,063	16.9	11.1	265	14	B	1,173	19.8	13.6	285	17	B
13: Airflight Dr @ Pear Tree Ln	NB	Left	6	44.9	37.6	121	16	D	0	0.0	0.0	159	22	A	6	47.1	39.4	118	16	D	0	0.0	0.0	158	25	A
13: Airflight Dr @ Pear Tree Ln	NB	Through	44	46.8	38.6	121	16	D	66	47.7	39.2	159	22	D	44	46.7	38.4	118	16	D	70	49.2	40.6	158	25	D
13: Airflight Dr @ Pear Tree Ln	NB	Right	6	42.9	36.0	121	16	D	10	53.0	45.8	159	22	D	5	52.5	45.8	118	16	D	11	49.2	41.9	158	25	D
13: Airflight Dr @ Pear Tree Ln	EB	Left	488	22.4	16.7	327	46	C	466	19.6	14.0	263	38	B	512	22.9	17.1	331	48	C	490	20.5	14.6	262	41	C
13: Airflight Dr @ Pear Tree Ln	EB	Through	236	16.6	10.2	282	27	B	283	15.9	9.9	365	29	B	251	17.0	10.6	314	31	B	302	15.8	9.7	338	31	B
13: Airflight Dr @ Pear Tree Ln	EB	Right	56	14.7	10.3	282	27	B	22	14.6	10.1	365	29	B	55	16.9	12.1	314	31	B	24	15.4	10.5	338	31	B
13: Airflight Dr @ Pear Tree Ln	SB	Left	215	21.7	15.6	323	39	C	297	41.8	31.7	429	93	D	225	22.3	16.0	328	43	C	308	41.8	31.7	444	97	D
13: Airflight Dr @ Pear Tree Ln	SB	Through	79	23.5	16.0	323	39	C	37	42.5	31.6	429	93	D	84	24.0	16.4	328	43	C	39	44.3	33.3	444	97	D
13: Airflight Dr @ Pear Tree Ln	SB	Right	122	2.8	0.8	323	39	A	174	4.4	1.5	429	93	A	128	2.8	0.8	328	43	A	180	4.2	1.3	444	97	A
13: Airflight Dr @ Pear Tree Ln	WB	Left	12	56.2	49.5	53	4	E	12	46.5	40.1	51	3	D	13	51.9	45.3	51	4	D	12	46.4	40.0	49	3	D
13: Airflight Dr @ Pear Tree Ln	WB	Through	21	45.0	35.0	64	5	D	58	44.2	33.5	118	14	D	22	46.3	36.4	73	6	D	63	44.2	33.1	133	15	D
13: Airflight Dr @ Pear Tree Ln	WB	Right	276	3.8	0.9	133	3	A	221	5.1	1.7	149	5	A	294	4.2	1.0	139	4	A	232	5.7	2.1	176	6	A
13: Airflight Dr @ Pear Tree Ln	Total	Total	1,561	17.8	12.5	381	20	B	1,646	22.2	15.9	441	29	C	1,639	18.2	12.8	398	22	B	1,731	22.6	16.2	470	31	C
14: Pear Tree Ln @ Edmundson Rd	NB	Left	52	6.4	1.1	72	2	A	51	6.8	1.1	73	2	A	54	5.8	0.8	66	2	A	54	7.9	1.7	74	3	A
14: Pear Tree Ln @ Edmundson Rd	NB	Right	122	32.7	26.8	187	25	C	147	43.3	36.7	227	41	D	132	33.2	27.2	192	28	C	153	42.8	36.2	229	43	D
14: Pear Tree Ln @ Edmundson Rd	EB	Through	345	8.0	3.5	263	14	A	454	5.7	1.3	306	10	A	367	7.7	3.3	264	14	A	477	5.7	1.3	332	11	A
14: Pear Tree Ln @ Edmundson Rd	EB	Right	111	2.0	0.2	81	0	A	136	1.9	0.0	48	0	A	115	1.9	0.1	85	0	A	144	1.9	0.1	19	0	A
14: Pear Tree Ln @ Edmundson Rd	WB	Left	267	6.9	3.1	164	8	A	311	4.8	1.7	162	6	A	284	7.4	3.4	165	9	A	330	5.0	1.8	211	7	A
14: Pear Tree Ln @ Edmundson Rd	WB	Through	32	10.8	5.7	60	1	B	33	12.0	6.0	53	1	B	33	10.4	5.4	55	1	B	34	11.7	6.1	42	1	B
14: Pear Tree Ln @ Edmundson Rd	Total	Total	929	10.2	6.0	271	8	B	1,132	10.1	6.0	323	10	B	985	10.3	6.1	267	9	B	1,192	10.1	5.9	355	11	B
15: LIB @ Terminal 2 Exit	EB	Through	463	10.4	6.5	172	17	B	583	11.8	6.7	225	24	B	482	10.9	6.8	173	19	B	616	12.0	6.8	237	25	B
15: LIB @ Terminal 2 Exit	SB - A	Left	148	28.6	22.2	203	27	C	100	31.4	25.3	171	19	C	155	28.4	22.0	199	28	C	106	31.2	25.0	182	21	C
15: LIB @ Terminal 2 Exit	SB - A	Right	179	28.9	22.6	259	37	C	163	30.1	24.3	206	26	C	189	29.2	22.7	278	41	C	171	30.6	24.7	202	27	C
15: LIB @ Terminal 2 Exit	SB - D	Left	193	28.9	22.6	259	37	C	128	30.1	24.3	206	26	C	202	29.2	22.7	278	41	C	136	30.6	24.7	202	27	C
15: LIB @ Terminal 2 Exit	SB - D	Right	214	32.3	24.5	268	45	C	170	34.1	26.7	224	38	C	225	33.5	25.1	279	49	C	179	34.1	26.7	234	39	C
15: LIB @ Terminal 2 Exit	WB	Through	306	1.9	1.0	61	2	A	510	2.3	1.5	82	4	A	325	1.9	0.9	53	2	A	536	2.1	1.3	79	4	A
15: LIB @ Terminal 2 Exit	Total	Total	1,503	18.2	13.5	300	27	B	1,654	15.6	11.4	253	25	B	1,578	18.5	13.6	293	29	B	1,744	15.7	11.4	267	26	B
16: LIB @ Terminal 2 Parking*	EB	Through	807	3.1	0.5	166	3	N/A	813	4.0	1.1	183	6	N/A	843	3.4	0.5	180	4	N/A	861	4.2	1.1	170	7	N/A
16: LIB @ Terminal 2 Parking*	SB	Left	0	0.0	0.0	0	0	A	36	38.3	30.9	81	8	E	0	0.0	0.0	0	0	A	39	37.4	30.4	81	8	E
16: LIB @ Terminal 2 Parking*	SB	Right	31	41.1	34.9	63	7	E	33	34.2	28.5	53	6	D	35	40.3	34.0	73	8	E	36	35.8	30.1	66	7	E
16: LIB @ Terminal 2 Parking*	WB	Through	274	0.1	0.0	0	0	N/A	477	0.1	0.0	0	0	N/A	290	0.1	0.0	0	0	N/A	501	0.1	0.0	0	0	N/A
16: LIB @ Terminal 2 Parking*	Total	Total	1,112	41.1	34.9	166	3	E	1,359	36.3	29.8	183	5	E	1,168	40.3	34.0	180	3	E	1,437	36.6	30.2	170	5	E
17: LIB @ Terminal 2 Entrance	EB	Left	538	37.8	20.4	390	56	D	452	33.3	18.4	355	43	C	562	37.7	19.7	385	56	D	477	33.6	18.0	371	44	C
17: LIB @ Terminal 2 Entrance	EB	Through	264	2.0	0.3	26	0	A	393	1.9	0.3	37	0	A	277	2.1	0.3	28	0	A	416	2.0	0.3	39	0	A
17: LIB @ Terminal 2 Entrance	SB	Left	6	75.1	69.3	43	2	E	6	71.0	65.5	38	2	E	6	76.3	70.7	42	3	E	5	71.9	66.2	40	2	E
17: LIB @ Terminal 2 Entrance	SB	Right	42	7.1	0.3	93	2	A	83	9.6	0.4	132	6	A	44	7.3	0.4	96	2	A	86	9.7	0.4	127	6	A
17: LIB @ Terminal 2 Entrance	WB	Through	232	16.5	11.4	142	15	B	395	14.9	9.7	185	21	B	246	15.8	10.9	139	15	B	414	15.5	10.1	182	23	B
17: LIB @ Terminal 2 Entrance	WB	Right	279	25.3	16.2	161	23	C	216	18.5	12.2	134	14	B	293	26.4	16.7	160	24	C	225	20.2	13.3	136	16	C
17: LIB @ Terminal 2 Entrance	Total	Total	1,361	23.9	13.7	390	16	C	1,545	17.4	9.9	355	15	B	1,428	23.9	13.4	385	17	C	1,623	17.9	10.0	371	15	B
18: Air Cargo Rd @ Lot E*	EB	Through	157	0.1	0.0	0	0	N/A	165	0.1	0.0	0	0	N/A	163	0.1	0.0	0	0	N/A	173	0.1	0.0	0	0	N/A
18: Air Cargo Rd @ Lot E*	SB	Left	0	0.0	0.0	0	0	A	0	0.0	0.0	0	0	A	0	0.0	0.0	0	0	A	0	0.0	0.0	0	0	A
18: Air Cargo Rd @ Lot E*	SB	Right	8	1.4	0.0	10	0	A	10	1.6	0.2	13	0	A	12	1.4	0.0	17	0	A	10	1.8	0.1	19	0	A
18: Air Cargo Rd @ Lot E*	WB	Through	125	0.3	0.0	0	0	N/A	149	0.4	0.0	0	0	N/A	129	0.3	0.0	0	0	N/A	157	0.5	0.0	0	0	N/A
18: Air Cargo Rd @ Lot E*	Total	Total	290	1.4	0.0	10	0	A	324	1.6	0.2	13	0	A	304	1.4	0.0	17	0	A	340	1.8	0.1	19	0	A
19: Air Cargo Rd @ James S McDonnell'	NB	Left	77	0.6	0.0	0	0	A	94	0.7	0.0	0	0	A	78	0.6	0.0	0	0	A	100	0.7	0.0	0	0	A
19: Air Cargo Rd @ James S McDonnell'	NB	Right	56	0.8	0.0	0	0	N/A	66	0.8	0.0	0	0	N/A	54	0.8	0.0	0	0	N/A	71	0.8	0.0	0	0	N/A
19: Air Cargo Rd @ James S McDonnell'	EB	Through	0	0.0	0.0	20	0	A	0	0.0	0.0	47	0	A	0	0.0	0.0	34	0	A	0	0.0	0.0	45	0	A
19: Air Cargo Rd @ James S McDonnell'	EB	Right	157	7.0	0.3	20	0	A	165	7.4	0.3	47	0	A	165	7.2	0.3	34	0	A	172	7.8	0.3	45	0	A
19: Air Cargo Rd @ James S McDonnell'	WB	Left	34	6.3	0.2	0	0	A	51	6.6	0.2	0	0	A	31	6.3	0.2	0	0	A	52	6.5	0.2	0	0	A
19: Air Cargo Rd @ James S McDonnell'	WB	Through	50	10.2	0.2	0	0	B	55	10.4	0.2	0	0	B	52	10.3	0.2	0	0	B	58	10.5	0.2	0	0	B
19: Air Cargo Rd @ James S McDonnell'	Total	Total	374	5.9	0.2	20	0	A	431	6.0	0.2	47	0	A	380	6.0	0.2	34	0	A	453	6.2	0.2	45	0	A
20: I-70 SOR @ Natural Bridge Rd	NB	Left	68	27.2	20.9	185	19	C	64	33.5	25.7	343	47	C	68	28.5	22.1	177	20	C	63	35.3	27.2	345	49	D
20: I-70 SOR @ Natural Bridge Rd	NB	Through	45	28.7	22.0	185	19	C	97	37.3	28.5	343	47	D	46	27.7	21.1	177	20	C	98	37.8	29.0	345	49	D
20: I-70 SOR @ Natural Bridge Rd	NB	Right	112	6.3	2.8	23	0	A	182	14.8	8.3	38	0	B	115	6.0	2.5	32	0	A	184	15.5	8.8	55	0	B
20: I-70 SOR @ Natural Bridge Rd	EB	Through	316	12.3	7.0	167	17	B	385	13.5	7.8	202	23	B	319	12.4	7.1	171	18	B	389	13.4	7.8	198	23	B
20: I-70 SOR @ Natural Bridge Rd	EB	Right	23	12.8	8.5	167	17	B	32	15.3	10.1	202	23	B	23	13.9	9.0	171	18	B	32	13.9	9.3	198	23	B
20: I-70 SOR @ Natural Bridge Rd	WB	Left	127	28.5	22.6	163	21	C	181	33.2	26.5	192	35	C	131	28.4	22.3	149	21	C	183	33.4	26.5	233	36	C
20: I-70 SOR @ Natural Bridge Rd	WB	Through	175	5.3	2.3	111	4	A	345	6.0	2.4	160	8	A	178	4.8	2.0	106	3	A	349	5.7	2.3	152	7	A
20: I-70 SOR @ Natural Bridge Rd	WB	Right	111	4.8	2.0	74	2	A	186	5.0	2.0	100	3	A	113	4.7	2.0	75	2	A	188	5.2	2.1	103	3	A
20: I-70 SOR @ Natural Bridge Rd	Total	Total	977	13.4	8.8	200	11	B	1,472	15.7	10.4	343	20	B	993	13.4	8.8	193	11	B	1,486	15.8	10.5	349	20	B

All Vissim Results

Intersection Ops Alt 1

			2032 Alt 1 AM						2032 Alt 1 PM						2037 Alt 1 AM						2037 Alt 1 PM					
Intersection	Approach	Movement	Volume	Delay (sec)	Delay Stopped (sec)	Queue Length Max (ft)	Queue Length Average (ft)	LOS	Volume	Delay (sec)	Delay Stopped (sec)	Queue Length Max (ft)	Queue Length Average (ft)	LOS	Volume	Delay (sec)	Delay Stopped (sec)	Queue Length Max (ft)	Queue Length Average (ft)	LOS	Volume	Delay (sec)	Delay Stopped (sec)	Queue Length Max (ft)	Queue Length Average (ft)	LOS
1: Natural Bridge Rd @ Lot D*	NB	Left	0	0.0	0.0	0.0	0.0	A	0	0.0	0.0	0.0	0.0	A	0	0.0	0.0	0.0	0.0	A	0	0.0	0.0	0.0	0.0	A
1: Natural Bridge Rd @ Lot D*	NB	Right	16	5.4	0.2	59	1	A	14	6.9	0.6	61	1	A	16	5.5	0.2	63	1	A	18	6.9	0.9	61	1	A
1: Natural Bridge Rd @ Lot D*	EB	Through	177	0.1	0.0	0	0	N/A	501	0.5	0.0	0	0	N/A	180	0.1	0.0	0	0	N/A	506	0.7	0.1	0	0	N/A
1: Natural Bridge Rd @ Lot D*	EB	Right	18	0.6	0.0	0	0	N/A	16	0.6	0.0	0	0	N/A	19	0.6	0.0	0	0	N/A	17	0.6	0.0	0	0	N/A
1: Natural Bridge Rd @ Lot D*	WB	Left	0	0.0	0.0	0	0	A	0	0.0	0.0	0	0	A	0	0.0	0.0	0	0	A	0	0.0	0.0	0	0	A
1: Natural Bridge Rd @ Lot D*	WB	Through	225	0.1	0.0	0	0	N/A	262	0.1	0.0	0	0	N/A	221	0.1	0.0	0	0	N/A	266	0.1	0.0	0	0	N/A
1: Natural Bridge Rd @ Lot D*	Total	Total	436	0.0	0.0	59	0	A	793	6.9	0.6	61	0	A	436	5.5	0.2	63	0	A	807	6.9	0.9	61	0	A
2: I-70 WB @ Natural Bridge Rd	NB	Left	116	31.7	24.6	225	23	C	114	32.7	25.1	210	23	C	117	30.3	23.3	179	22	C	115	36.2	28.0	258	25	D
2: I-70 WB @ Natural Bridge Rd	NB	Right	721	6.1	0.5	186	5	A	643	10.6	2.8	317	6	B	752	6.2	0.5	190	5	A	674	14.6	4.8	469	14	B
2: I-70 WB @ Natural Bridge Rd	EB	Through	183	37.7	26.5	141	26	D	457	43.8	30.8	270	71	D	187	38.6	27.1	127	27	D	465	45.8	31.8	291	74	D
2: I-70 WB @ Natural Bridge Rd	EB	Right	10	5.8	3.0	26	0	A	57	14.8	8.8	71	2	B	10	4.8	1.9	28	0	A	57	14.2	8.7	65	1	B
2: I-70 WB @ Natural Bridge Rd	WB	Left	382	4.4	0.5	204	5	A	510	28.3	18.3	373	66	C	374	14.6	8.4	284	31	B	535	24.4	15.0	474	95	C
2: I-70 WB @ Natural Bridge Rd	WB	Through	108	6.0	3.2	79	3	A	147	8.1	4.6	373	66	A	104	5.8	3.2	70	2	A	150	7.1	4.0	85	4	A
2: I-70 WB @ Natural Bridge Rd	Total	Total	1,520	11.4	5.7	280	9	B	1,928	24.4	15.2	456	29	C	1,544	14.0	7.6	309	13	B	1,996	25.2	15.2	628	32	C
3: Natrual Bridge Rd @ Cypress Rd	NB	Left	140	39.0	32.5	187	33	D	172	39.0	32.7	143	31	D	137	40.1	33.4	187	32	D	173	39.6	32.7	207	39	D
3: Natrual Bridge Rd @ Cypress Rd	NB	Right	303	2.5	0.0	4	0	A	314	2.8	0.0	4	0	A	355	2.9	0.0	9	0	A	327	3.0	0.0	8	0	A
3: Natrual Bridge Rd @ Cypress Rd	EB	Through	661	16.7	11.1	356	46	B	629	14.9	9.7	563	81	B	692	16.7	11.0	298	47	B	659	16.1	10.5	615	110	B
3: Natrual Bridge Rd @ Cypress Rd	EB	Right	242	5.2	1.7	230	9	A	464	16.2	7.8	606	86	B	246	6.3	2.5	242	14	A	476	18.5	9.6	657	120	B
3: Natrual Bridge Rd @ Cypress Rd	WB	Left	351	15.9	7.1	292	21	B	458	19.7	8.6	398	43	B	351	16.4	7.6	305	23	B	491	21.6	9.4	452	58	C
3: Natrual Bridge Rd @ Cypress Rd	WB	Through	352	4.7	1.4	175	4	A	486	6.4	1.8	268	9	A	341	4.6	1.3	159	4	A	515	11.4	3.9	388	17	B
3: Natrual Bridge Rd @ Cypress Rd	Total	Total	2,049	12.6	7.5	379	19	B	2,523	14.5	8.0	608	42	B	2,122	12.7	7.5	332	20	B	2,641	16.6	9.0	664	57	B
4: I-70 EB @ Cypress Rd	NB	Left	10	6.2	3.7	21	0	A	11	7.6	4.6	28	0	A	11	4.8	2.7	20	0	A	12	6.6	3.8	26	0	A
4: I-70 EB @ Cypress Rd	NB	Through	150	32.3	25.0	187	23	C	191	32.5	24.7	272	36	C	149	31.6	24.3	191	22	C	192	32.5	24.5	279	36	C
4: I-70 EB @ Cypress Rd	NB	Right	145	8.0	4.7	38	0	A	267	11.9	6.2	78	0	B	145	7.5	4.4	36	0	A	269	11.4	5.9	100	0	B
4: I-70 EB @ Cypress Rd	NB	Left	20	44.9	39.3	89	9	D	61	41.9	36.1	113	18	D	22	43.1	37.4	77	9	D	64	42.2	36.3	128	19	D
4: I-70 EB @ Cypress Rd	NB	Through	13	43.7	37.0	89	9	D	11	45.2	38.9	113	18	D	14	44.5	38.0	77	9	D	12	37.8	31.5	128	19	D
4: I-70 EB @ Cypress Rd	NB	Right	11	0.8	0.0	4	0	A	16	1.1	0.1	15	0	A	12	0.7	0.0	8	0	A	18	1.1	0.1	20	0	A
4: I-70 EB @ Cypress Rd	SB	Left	359	6.5	2.9	210	10	A	534	11.4	5.6	396	31	B	367	6.9	3.1	190	10	A	566	12.8	6.5	462	39	B
4: I-70 EB @ Cypress Rd	SB	Through	189	3.9	2.1	81	3	A	323	6.6	3.9	122	8	A	185	4.0	2.3	88	3	A	329	6.8	3.9	121	8	A
4: I-70 EB @ Cypress Rd	SB	Right	45	0.9	0.0	13	0	A	64	1.6	0.3	139	1	A	46	0.9	0.0	2	0	A	68	1.5	0.3	203	2	A
4: I-70 EB @ Cypress Rd	WB	Left	51	45.3	38.8	148	20	D	69	45.7	38.9	164	22	D	45	44.4	37.9	137	18	D	69	46.0	39.1	183	23	D
4: I-70 EB @ Cypress Rd	WB	Through	21	47.6	39.0	148	20	D	10	39.3	31.1	164	22	D	20	49.9	41.2	137	18	D	11	48.8	40.1	183	23	D
4: I-70 EB @ Cypress Rd	WB	Right	271	3.2	0.1	118	1	A	235	3.5	0.3	136	2	A	318	3.7	0.2	145	2	A	246	3.5	0.3	145	2	A
4: I-70 EB @ Cypress Rd	Total	Total	1,285	11.5	7.8	232	5	B	1,792	14.1	9.2	398	9	B	1,334	11.2	7.3	210	5	B	1,856	14.4	9.3	462	10	B
5: LIB @ T1 Cell Phone Lot*	EB	Left	30	4.0	1.0	141	1	A	37	4.7	1.3	142	1	A	31	3.5	0.7	120	1	A	40	5.2	1.6	178	2	A
5: LIB @ T1 Cell Phone Lot*	EB	Through	929	0.6	0.0	44	0	N/A	901	0.7	0.0	45	0	N/A	1,010	0.5	0.0	25	0	N/A	941	0.8	0.0	70	0	N/A
5: LIB @ T1 Cell Phone Lot*	SB	Left	4	0.0	0.0	45	0	A	8	0.0	0.0	48	1	A	8	0.0	0.0	48	1	A	14	0.0	0.0	56	1	A
5: LIB @ T1 Cell Phone Lot*	SB	Right	0	0.0	0.0	0	0	A	0	0.0	0.0	0	0	A	0	0.0	0.0	0	0	A	8	0.0	0.0	49	0	A
5: LIB @ T1 Cell Phone Lot*	WB	Through	704	0.2	0.0	0	0	N/A	951	0.3	0.0	15	0	N/A	693	0.2	0.0	3	0	N/A	1,002	0.4	0.0	18	0	N/A
5: LIB @ T1 Cell Phone Lot*	WB	Right	33	0.0	0.0	0	0	N/A	38	0.0	0.0	15	0	N/A	42	0.0	0.0	3	0	N/A	38	0.0	0.0	18	0	N/A
5: LIB @ T1 Cell Phone Lot*	Total	Total	1,700	0.0	0.0	143	0	A	1,935	3.9	0.0	142	0	A	1,784	2.8	0.0	120	0	A	2,043	3.3	0.0	178	1	A
6: I-70 WB @ LIB (E of Cypress)	EB	Left	0	0.0	0.0	0	0	A	0	0.0	0.0	0	0	A	0	0.0	0.0	0	0	A	0	0.0	0.0	0	0	A
6: I-70 WB @ LIB (E of Cypress)	EB	Through	938	0.5	0.0	52	0	A	916	0.8	0.1	82	1	A	1,023	0.7	0.1	78	1	A	961	0.9	0.2	86	1	A
6: I-70 WB @ LIB (E of Cypress)	EB	Right																								
6: I-70 WB @ LIB (E of Cypress)	SB	Left	4	62.3	55.4	40	2	E	14	50.9	44.3	59	4	D	8	57.1	50.2	54	3	E	22	51.1	44.5	83	7	D
6: I-70 WB @ LIB (E of Cypress)	SB	Through																								
6: I-70 WB @ LIB (E of Cypress)	SB	Right	0	0.0	0.0	0	0	A	6	8.4	1.4	61	1	A	0	0.0	0.0	32	0	A	6	9.8	3.3	85	2	A
6: I-70 WB @ LIB (E of Cypress)	WB	Left																								
6: I-70 WB @ LIB (E of Cypress)	WB	Through	739	0.6	0.1	102	1	A	985	1.6	0.4	171	4	A	734	0.9	0.3	116	1	A	1,035	1.8	0.5	206	5	A
6: I-70 WB @ LIB (E of Cypress)	WB	Right	27	1.2	0.1	99	1	A	28	1.7	0.3	168	3	A	31	1.2	0.1	113	1	A	31	2.0	0.4	203	4	A
6: I-70 WB @ LIB (E of Cypress)	Total	Total	1,708	0.7	0.2	106	1	A	1,949	1.6	0.6	171	2	A	1,796	1.0	0.4	124	1	A	2,055	1.9	0.8	206	3	A
7: LIB @ Lot B*	NB	Left	6	0.0	0.0	32	0	A	0	0.0	0.0	16	0	A	5	0.0	0.0	34	0	A	0	0.0	0.0	21	0	A
7: LIB @ Lot B*	NB	Right	15	3.2	1.4	31	0	A	32	2.8	1.1	37	0	A	15	3.2	1.2	34	0	A	32	3.0	1.1	39	0	A
7: LIB @ Lot B*	EB	Through	944	0.5	0.0	0	0	N/A	924	0.5	0.0	8	0	N/A	1,033	0.5	0.0	0	0	N/A	979	0.5	0.0	4	0	N/A
7: LIB @ Lot B*	EB	Right	0	0.0	0.0	0	0	N/A	6	0.0	0.0	8	0	N/A	0	0.0	0.0	0	0	N/A	6	0.0	0.0	4	0	N/A
7: LIB @ Lot B*	WB	Left	38	0.0	0.0	79	1	A	0	0.0	0.0	0	0	A	38	0.0	0.0	76	1	A	0	0.0	0.0	0	0	A
7: LIB @ Lot B*	WB	Through	760	0.1	0.0	0	0	N/A	1,014	0.2	0.0	0	0	N/A	762	0.2	0.0	0	0	N/A	1,066	0.2	0.0	0	0	N/A
7: LIB @ Lot B*	Total	Total	1,763	41.9	0.1	79	0	C	1,976	2.8	1.1	42	0	A	1,853	0.8	0.3	77	0	A	2,083	3.0	1.1	39	0	A
8: LIB @ Lambert Field Dr	NB	Left																								
8: LIB @ Lambert Field Dr	NB	Through																								
8: LIB @ Lambert Field Dr	NB	Right																								
8: LIB @ Lambert Field Dr	EB	Left 1																								
8: LIB @ Lambert Field Dr	EB	Left 2																								
8: LIB @ Lambert Field Dr	EB	Through																								
8: LIB @ Lambert Field Dr	EB	Right																								
8: LIB @ Lambert Field Dr	SEB	Left																								
8: LIB @ Lambert Field Dr	SEB	Right																								
8: LIB @ Lambert Field Dr	SEB	Through																								
8: LIB @ Lambert Field Dr	SWB	Left																								
8: LIB @ Lambert Field Dr	SWB	Right																								
8: LIB @ Lambert Field Dr	SWB	Through																								
8: LIB @ Lambert Field Dr	WB	Left																								
8: LIB @ Lambert Field Dr	WB	Through																								
8: LIB @ Lambert Field Dr	WB	Right 2																								
8: LIB @ Lambert Field Dr	WB	Right 1																								
8: LIB @ Lambert Field Dr	Total	Total																								
9: Air Cargo Dr @ Terminal 1 Entrance		Left	0	0.0	0.0	123	0	A	0	0.0	0.0	152	1	A	0	0.0	0.0	114	0	A	0	0.0	0.0	156	1	A
9: Air Cargo Dr @ Terminal 1 Entrance	NB	Through	0	0.0	0.0	123	0	A	0	0.0	0.0	152	1	A	0	0.0	0.0	116	0	A	0	0.0	0.0	156	1	A
9: Air Cargo Dr @ Terminal 1 Entrance	NB	Right	115	0.4	0.0	90	0	A	147	0.6	0.0	119	1	A	120	0.5	0.0	93	0	A	164	0.7	0.0	118	2	A
9: Air Cargo Dr @ Terminal 1 Entrance	WB	Left	134	41.5	34.5	186	34	D	165	40.7	33.2	226	41	D	142	41.4	34.2	196	36	D	169	40.5	33.0	228	42	D
9: Air Cargo Dr @ Terminal 1 Entrance	WB	Right	0	0.0	0.0	0	0	A	0	0.0	0.0	0	0	A	0	0.0	0.0	0	0	A	0	0.0	0.0	0	0	A
9: Air Cargo Dr @ Terminal 1 Entrance	Total	Total	249	22.6	18.5	187	7	C	312	21.8	17.6	226	9	C	262	22.7	18.5	196	7	C	333	20.9	16.8	229	9	C
10: LIB @ Terminal 1 Exit	NB 1	Left																								
10: LIB @ Terminal 1 Exit	NB 1	Through																								
10: LIB @ Terminal 1 Exit	NB 1	Right																								
10: LIB @ Terminal 1 Exit	NB 2	Right																								
10: LIB @ Terminal 1 Exit	EB	Through																								

All Vissim Results

Intersection Ops Alt 1

10: LIB @ Terminal 1 Exit	EB	Right 2																						
10: LIB @ Terminal 1 Exit	EB	Right 1																						
10: LIB @ Terminal 1 Exit	WB	Left 1																						
10: LIB @ Terminal 1 Exit	WB	Left 2																						
10: LIB @ Terminal 1 Exit	WB	Through																						
10: LIB @ Terminal 1 Exit	SB - A	Left																						
10: LIB @ Terminal 1 Exit	SB - A	Through																						
10: LIB @ Terminal 1 Exit	SB - A	Right																						
10: LIB @ Terminal 1 Exit	SB - D	Left																						
10: LIB @ Terminal 1 Exit	SB - D	Through																						
10: LIB @ Terminal 1 Exit	SB - D	Right																						
10: LIB @ Terminal 1 Exit	Total	Total																						
11: I-70 WB @ Airflight Dr	NB	Left	532	13.1	5.0	383	37	B	469	14.2	5.3	394	33	B	570	15.1	6.0	402	48	B	537	16.8	6.8	461	52	B
11: I-70 WB @ Airflight Dr	NB	Through	83	1.7	0.6	40	0	A	120	2.7	0.9	52	1	A	87	2.2	0.9	50	1	A	139	3.0	1.0	71	1	A
11: I-70 WB @ Airflight Dr	SEB	Right	233	15.4	9.6	246	17	B	313	20.3	13.1	415	37	C	256	16.1	10.2	266	20	B	339	27.8	18.8	561	71	C
11: I-70 WB @ Airflight Dr	SEB	Right	46	9.1	4.5	249	18	A	96	13.8	7.8	417	38	B	49	10.5	5.5	269	21	B	101	20.9	13.2	564	72	C
11: I-70 WB @ Airflight Dr	WB	Left	178	41.5	32.7	164	33	D	251	43.5	34.0	199	49	D	190	41.4	32.5	194	35	D	261	42.6	33.0	277	52	D
11: I-70 WB @ Airflight Dr	WB	Right	14	27.3	19.4	176	18	C	20	32.9	23.4	210	38	C	15	30.1	21.2	199	22	C	27	33.8	24.0	289	42	C
11: I-70 WB @ Airflight Dr	Total	Total	1,086	17.4	10.4	383	14	B	1,269	20.7	12.9	445	22	C	1,167	18.6	11.1	403	16	B	1,404	23.5	14.8	593	32	C
12: I-70 EB @ Pear Tree Ln	SEB	Left	374	7.5	3.7	199	12	A	279	7.0	3.8	170	9	A	395	8.1	4.0	206	14	A	323	8.4	4.6	197	13	A
12: I-70 EB @ Pear Tree Ln	EB	Through	146	39.8	31.1	127	25	D	247	41.0	31.7	191	41	D	150	39.0	30.3	130	24	D	263	39.8	30.3	193	41	D
12: I-70 EB @ Pear Tree Ln	SEB	Right	26	7.0	3.7	199	12	A	26	7.5	3.9	170	9	A	26	6.6	3.2	206	14	A	32	7.5	4.1	197	13	A
12: I-70 EB @ Pear Tree Ln	EB	Right	6	39.6	34.5	127	25	D	12	39.2	33.1	191	41	D	6	35.4	30.7	130	24	D	12	31.4	25.7	193	41	C
12: I-70 EB @ Pear Tree Ln	SEB	Right	48	1.9	0.3	34	0	A	60	2.0	0.4	52	0	A	44	1.9	0.5	28	0	A	72	2.4	0.6	79	0	A
12: I-70 EB @ Pear Tree Ln	WB	Left	54	32.6	27.0	132	11	C	51	28.8	22.6	135	8	C	57	29.8	24.1	122	10	C	60	28.7	22.4	157	10	C
12: I-70 EB @ Pear Tree Ln	WB	Through	93	31.2	23.9	175	17	C	159	30.0	22.3	248	30	C	100	32.0	24.6	187	19	C	184	30.2	22.6	270	36	C
12: I-70 EB @ Pear Tree Ln	NEB	Right	36	7.1	0.8	55	1	A	64	7.5	0.9	93	2	A	40	6.9	0.7	65	1	A	70	7.5	1.0	97	2	A
12: I-70 EB @ Pear Tree Ln	Total	Total	783	17.9	12.7	204	11	B	898	21.8	15.8	252	15	C	818	17.9	12.6	229	11	B	1,016	21.4	15.3	276	17	C
13: Airflight Dr @ Pear Tree Ln	NB	Left	6	0.0	0.0	121	16	A	0	0.0	0.0	143	22	A	7	0.0	0.0	127	18	A	0	0.0	0.0	157	23	A
13: Airflight Dr @ Pear Tree Ln	NB	Through	44	46.9	38.6	121	16	D	68	46.2	37.8	143	22	D	52	48.2	39.8	127	18	D	71	46.8	38.4	157	23	D
13: Airflight Dr @ Pear Tree Ln	NB	Right	6	42.8	36.0	121	16	D	10	49.5	42.3	143	22	D	5	35.3	28.4	127	18	D	11	46.2	39.2	157	23	D
13: Airflight Dr @ Pear Tree Ln	EB	Left	312	19.6	14.1	206	32	B	315	18.0	12.5	190	27	B	329	20.8	15.2	184	35	C	391	17.8	12.2	213	32	B
13: Airflight Dr @ Pear Tree Ln	EB	Through	197	15.8	9.6	226	22	B	256	15.6	9.6	283	24	B	208	17.2	10.7	253	25	B	244	14.8	9.0	285	22	B
13: Airflight Dr @ Pear Tree Ln	EB	Right	47	14.4	10.1	226	22	B	21	15.7	11.1	283	24	B	48	14.5	9.9	253	25	B	21	13.7	9.7	285	22	B
13: Airflight Dr @ Pear Tree Ln	SB	Left	165	19.2	13.7	213	26	B	260	44.6	35.1	363	86	D	178	20.2	14.1	264	31	C	248	46.8	37.4	390	85	D
13: Airflight Dr @ Pear Tree Ln	SB	Through	62	20.9	13.8	213	26	C	33	45.7	35.2	363	86	D	83	20.7	13.6	264	31	C	31	47.0	36.6	390	85	D
13: Airflight Dr @ Pear Tree Ln	SB	Right	120	1.9	0.2	213	26	A	153	3.9	1.4	363	86	A	128	2.7	0.6	264	31	A	181	4.2	1.6	390	85	A
13: Airflight Dr @ Pear Tree Ln	WB	Left	12	56.2	49.5	54	4	E	12	49.1	42.7	49	3	D	13	51.9	45.3	51	4	D	12	55.2	48.7	51	4	E
13: Airflight Dr @ Pear Tree Ln	WB	Through	21	44.5	34.6	64	5	D	58	44.0	33.3	118	14	D	22	46.3	36.4	73	6	D	63	44.2	33.0	133	15	D
13: Airflight Dr @ Pear Tree Ln	WB	Right	276	2.2	0.2	93	1	A	221	2.9	0.6	123	2	A	294	2.3	0.2	92	1	A	232	3.8	0.9	168	3	A
13: Airflight Dr @ Pear Tree Ln	Total	Total	1,268	15.1	10.4	248	15	B	1,407	22.1	16.1	374	25	C	1,367	16.0	11.0	289	17	B	1,505	21.8	15.9	393	26	C
14: Pear Tree Ln @ Edmundson Rd	NB	Left	122	32.7	26.8	187	25	C	147	43.3	36.7	227	41	D	132	33.2	27.2	192	28	C	153	42.8	36.2	229	43	D
14: Pear Tree Ln @ Edmundson Rd	NB	Right	52	5.5	0.5	73	2	A	51	6.8	1.1	74	2	A	54	5.3	0.5	67	2	A	54	7.0	1.2	74	3	A
14: Pear Tree Ln @ Edmundson Rd	EB	Through	260	7.4	3.2	219	9	A	401	6.3	1.8	251	11	A	277	6.5	2.5	224	8	A	360	6.3	1.9	256	9	A
14: Pear Tree Ln @ Edmundson Rd	WB	Through	267	6.9	3.1	164	8	A	311	4.8	1.7	162	6	A	284	7.3	3.4	165	9	A	330	5.0	1.8	211	7	A
14: Pear Tree Ln @ Edmundson Rd	Total	Total	701	11.5	7.1	239	11	B	910	11.8	7.4	258	15	B	747	11.5	7.0	235	12	B	897	12.1	7.7	283	15	B
15: LIB @ Terminal 2 Exit	EB	Through	97	2.1	1.1	56	1	A	142	5.5	3.2	80	3	A	103	2.6	1.5	54	1	A	165	6.3	3.7	98	4	A
15: LIB @ Terminal 2 Exit	SB	Left	0	0.0	0.0	0	0	A	0	0.0	0.0	0	0	A	0	0.0	0.0	0	0	A	0	0.0	0.0	0	0	A
15: LIB @ Terminal 2 Exit	SB	Left	0	0.0	0.0	0	0	A	0	0.0	0.0	0	0	A	0	0.0	0.0	0	0	A	0	0.0	0.0	0	0	A
15: LIB @ Terminal 2 Exit	SB	Right	0	0.0	0.0	0	0	A	0	0.0	0.0	0	0	A	0	0.0	0.0	0	0	A	0	0.0	0.0	0	0	A
15: LIB @ Terminal 2 Exit	SB	Right	0	0.0	0.0	0	0	A	0	0.0	0.0	0	0	A	0	0.0	0.0	0	0	A	0	0.0	0.0	0	0	A
15: LIB @ Terminal 2 Exit	WB	Through	357	1.7	0.9	85	2	A	533	2.4	1.3	97	4	A	384	1.7	0.9	83	2	A	551	2.4	1.3	96	4	A
15: LIB @ Terminal 2 Exit	Total	Total	454	1.8	1.0	89	0	A	675	3.1	1.7	101	1	A	487	1.9	1.0	85	1	A	716	3.3	1.9	108	1	A
16: LIB @ Terminal 2 Parking*	EB	Through	98	1.0	0.5	30	0	A	143	2.8	1.5	66	2	A	103	0.9	0.4	41	0	A	164	2.7	1.5	69	2	A
16: LIB @ Terminal 2 Parking*	SB	Left	0	0.0	0.0	0	0	A	37	36.6	29.3	83	8	D	0	0.0	0.0	0	0	A	39	38.2	31.1	80	8	D
16: LIB @ Terminal 2 Parking*	SB	Right	31	41.7	35.3	62	7	D	36	35.8	30.2	64	6	D	35	40.3	34.1	73	8	D	36	36.8	31.0	60	7	D
16: LIB @ Terminal 2 Parking*	WB	Through	325	0.3	0.1	51	0	A	497	0.5	0.2	72	1	A	349	0.3	0.1	49	0	A	517	0.5	0.2	69	1	A
16: LIB @ Terminal 2 Parking*	Total	Total	454	41.7	35.3	74	2	D	713	36.2	29.7	91	4	D	487	40.3	34.1	77	2	D	756	37.5	31.1	92	4	D
17: LIB @ Terminal 2 Entrance	EB	Left	63	19.7	13.9	81	6	B	99	30.9	24.0	118	15	C	66	19.4	13.6	91	6	B	114	29.0	22.0	117	15	C
17: LIB @ Terminal 2 Entrance	EB	Through	36	0.1	0.0	8	0	A	80	0.4	0.1	20	0	A	37	0.1	0.0	7	0	A	88	0.5	0.1	24	0	A
17: LIB @ Terminal 2 Entrance	SB	Left	6	74.9	68.9	38	3	E	6	70.7	65.2	30	2	E	5	74.6	68.8	37	2	E	6	70.5	64.7	37	3	E
17: LIB @ Terminal 2 Entrance	SB	Right	128	12.9	0.6	184	14	B	159	15.6	0.6	208	21	B	137	13.5	0.6	196	15	B	162	15.5	0.7	213	21	B
17: LIB @ Terminal 2 Entrance	WB	Through	197	10.6	7.2	116	8	B	337	12.3	8.1	173	15	B	212	11.5	7.8	125	10	B	355	12.8	8.4	162	17	B
17: LIB @ Terminal 2 Entrance	WB	Right	53	10.8	8.2	82	3	B	49	11.8	8.9	72	3	B	54	10.5	8.0	74	3	B	51	11.9	9.0	73	3	B
17: LIB @ Terminal 2 Entrance	Total	Total	483	12.4	6.7	184	6	B	730	14.7	8.3	211	9	B	511	12.7	6.7	196	6	B	776	14.8	8.3	213	10	B
18: Air Cargo Rd @ Lot E*	EB	Through	114	0.0	0.0	0	0	A	147	0.1	0.0	0	0	A	120	0.0	0.0	0	0	A	164	0.1	0.0	0	0	A
18: Air Cargo Rd @ Lot E*	SB	Right	8	1.7	0.1	13	0	A	10	1.6	0.1	15	0	A	12	1.5	0.1	15	0	A	10	1.8	0.1	21	0	A
18: Air Cargo Rd @ Lot E*	WB	Through	125	0.3	0.0	0	0	A	153	0.5	0.0	0	0	A	129	0.4	0.0	0	0	A	158	0.6	0.1	0	0	A
18: Air Cargo Rd @ Lot E*	WB	Right	0	0.0	0.0	0	0	A	0	0.0	0.0	0	0	A	0	0.0	0.0	0	0	A	0	0.0	0.0	0	0	A
18: Air Cargo Rd @ Lot E*	Total	Total	247	15.2	0.0	13	0	B	310	0.6	0.0	15	0	A	261	0.5	0.0	15	0	A	332	0.6	0.1	21	0	A
19: Air Cargo Rd @ James S McDonnell'	NB	Left	77	0.6	0.0	0	0	A	94	0.7	0.0	0	0	A	78	0.6	0.0	0	0	A	100	0.7	0.0	0	0	A
19: Air Cargo Rd @ James S McDonnell'	NB	Right	56	0.8	0.0	0	0	A	66	0.8	0.0	0	0	A	54	0.8	0.0	0	0	A	71	0.8	0.0	0	0	A
19: Air Cargo Rd @ James S McDonnell'	EB	Through	115	0.1	0.0	0	0	A	147	0.2	0.0	0	0	A	121	0.1	0.0	0	0	A	165	0.2	0.0	0	0	A
19: Air Cargo Rd @ James S McDonnell'	EB	Right	0	0.0	0.0	0	0	A	0	0.0	0.0	0	0	A	0	0.0	0.0	0	0	A	0	0.0	0.0	0	0	A
19: Air Cargo Rd @ James S McDonnell'	WB	Left	34	0.6	0.0	0	0	A	47	0.6	0.0	0	0	A	31	0.6	0.0	0	0	A	52	0.6	0.0	0	0	A
19: Air Cargo Rd @ James S McDonnell'	WB	Through	50	0.1	0.0	0	0	A	59	0.1	0.0	0	0	A	52	0.1	0.0	0	0	A	58	0.2	0.0	0	0	A
19: Air Cargo Rd @ James S McDonnell'	Total	Total	332	0.0	0.0	0	0	A	413	0.4	0.0	0	0	A	336	0.3	0.0	0	0	A	446	0.4	0.0	0	0	A
20: I-70 SOR @ Natural Bridge Rd	NB	Through	45	29.4	22.7	200	20	C	96	36.7	28.1	344	47	D	46	28.9	22.2	202	21	C	98	37.8	29.0	356	49	D
20: I-70 SOR @ Natural Bridge Rd	NB	Left	67	27.8	21.4	200	20	C	63	35.8	27.8	344	47	D	68	28.6	22.1	202	21	C	63	35.8	27.6	356	49	D
20: I-70 SOR @ Natural Bridge Rd	NB	Right	112	6.5	2.9	25	0	A	181	14.4	8.1	48	0	B	115	6.8	3.1	29	0	A	184	14.7	8.0	38	0	B
20: I-70 SOR @ Natural Bridge Rd	EB	Through	318	12.1	6.8	156	17	B	383	13.9	8.1	198	23	B	319	12.1	6.8	150	17	B	389	13.6	7.9	189	23	B
20: I-70 SOR @ Natural Bridge Rd	EB	Right	22	13.1	8.8	156	17	B	32	14.3	9.4	198	23	B	22	11.8	7.7	150	17	B	31	15.1	10.1	189	23	B
20: I-70 SOR @ Natural Bridge Rd	WB	Left	127	28.6	22.7	151	21	C	180	33.6	26.9	206	36	C	131	29.1	23.0	159	22	C	182	33.4	26.6	221	37	C
20: I-70 SOR @ Natural Bridge Rd	WB	Through	175	5.0	2.1	100	3	A	345	5.8	2.4	152	8	A	178	5.0	2.2	102	3	A	349	6.0	2.5	149	8	A
20: I-70 SOR @ Natural Bridge Rd	WB	Right	110	5.3	2.3	86	2	A	185	5.5	2.3	112	4	A	113	4.5	1.9	72	2	A	187	5.3	2.2	104	4	A
20: I-70 SOR @ Natural Bridge Rd	Total	Total	976	13.5	8.9	203	11	B	1,465	15.9	10.5	344	20	B	992	13.5	8.9	202	11	B	1,483	15.9	10.5	356	20	B

All Vissim Results

Intersection Ops Alt 2

			2032 Alt 2 AM						2032 Alt 2 PM						2037 Alt 2 AM						2037 Alt 2 PM					
Intersection	Approach	Movement	Volume	Delay (sec)	Delay Stopped (sec)	Queue Length Max (ft)	Queue Length Average (ft)	LOS	Volume	Delay (sec)	Delay Stopped (sec)	Queue Length Max (ft)	Queue Length Average (ft)	LOS	Volume	Delay (sec)	Delay Stopped (sec)	Queue Length Max (ft)	Queue Length Average (ft)	LOS	Volume	Delay (sec)	Delay Stopped (sec)	Queue Length Max (ft)	Queue Length Average (ft)	LOS
1: Natural Bridge Rd @ Lot D*	NB	Left	0	0.0	0.0	0.0	0.0	A	0	0.0	0.0	0.0	0.0	A	0	0.0	0.0	0.0	0.0	A	0	0.0	0.0	0.0	0.0	A
1: Natural Bridge Rd @ Lot D*	NB	Right	16	5.4	0.2	59	1	A	14	6.9	0.6	61	1	A	16	5.5	0.2	63	1	A	18	6.8	0.7	61	1	A
1: Natural Bridge Rd @ Lot D*	EB	Through	177	0.1	0.0	0	0	N/A	501	0.5	0.0	0	0	N/A	180	0.1	0.0	0	0	N/A	506	0.7	0.2	0	0	N/A
1: Natural Bridge Rd @ Lot D*	EB	Right	18	0.6	0.0	0	0	N/A	16	0.6	0.0	0	0	N/A	19	0.6	0.0	0	0	N/A	17	0.6	0.0	0	0	N/A
1: Natural Bridge Rd @ Lot D*	WB	Left	0	0.0	0.0	0	0	A	0	0.0	0.0	0	0	A	0	0.0	0.0	0	0	A	0	0.0	0.0	0	0	A
1: Natural Bridge Rd @ Lot D*	WB	Through	225	0.1	0.0	0	0	N/A	262	0.1	0.0	0	0	N/A	228	0.1	0.0	0	0	N/A	268	0.1	0.0	0	0	N/A
1: Natural Bridge Rd @ Lot D*	Total	Total	436	5.4	0.2	59	0	A	793	6.9	0.6	61	0	A	443	5.5	0.2	63	0	A	809	6.8	0.7	61	0	A
2: I-70 WB @ Natural Bridge Rd	NB	Left	117	31.9	24.8	256	24	C	114	33.0	25.7	233	24	C	118	28.3	20.4	206	20	C	116	35.1	27.4	384	28	D
2: I-70 WB @ Natural Bridge Rd	NB	Right	721	6.3	0.6	208	5	A	645	7.4	1.1	186	4	A	753	6.4	0.4	153	5	A	679	8.3	1.4	300	8	A
2: I-70 WB @ Natural Bridge Rd	EB	Through	183	37.3	26.5	137	26	D	457	42.9	30.4	273	71	D	186	15.7	8.0	96	9	B	57	13.1	7.4	39	0	B
2: I-70 WB @ Natural Bridge Rd	EB	Right	10	4.9	2.3	14	0	A	57	13.0	7.0	51	1	B	10	3.1	0.6	21	0	A	467	44.2	31.1	302	74	D
2: I-70 WB @ Natural Bridge Rd	WB	Left	384	32.5	23.4	241	46	C	511	32.3	22.4	247	56	C	394	26.2	17.2	222	37	C	152	7.9	4.8	284	60	A
2: I-70 WB @ Natural Bridge Rd	WB	Through	108	6.8	3.8	241	46	A	147	7.6	4.7	247	56	A	110	4.9	1.8	222	37	A	542	33.9	22.4	284	60	C
2: I-70 WB @ Natural Bridge Rd	Total	Total	1,523	18.6	11.5	323	18	B	1,931	24.1	15.6	316	26	C	1,571	14.0	7.1	261	13	B	2,013	25.2	15.9	480	30	C
3: Natrual Bridge Rd @ Cypress Rd	NB	Left	140	38.5	32.4	142	27	D	172	38.8	32.5	139	30	D	138	23.3	17.0	114	15	C	178	38.4	31.9	150	32	D
3: Natrual Bridge Rd @ Cypress Rd	NB	Right	303	2.6	0.0	5	0	A	314	2.8	0.0	13	0	A	360	2.6	0.0	0	0	A	337	3.0	0.0	10	0	A
3: Natrual Bridge Rd @ Cypress Rd	EB	Through	661	15.9	10.5	299	43	B	632	14.4	9.3	444	49	B	695	16.6	9.3	285	43	B	663	15.5	10.1	330	53	B
3: Natrual Bridge Rd @ Cypress Rd	EB	Right	242	1.4	0.2	205	6	A	465	3.9	0.6	350	13	A	247	1.7	0.3	192	6	A	477	4.0	0.6	270	16	A
3: Natrual Bridge Rd @ Cypress Rd	WB	Left	349	17.8	8.5	329	32	B	458	22.7	10.9	441	61	C	376	14.3	6.6	338	26	B	493	25.4	12.1	524	79	C
3: Natrual Bridge Rd @ Cypress Rd	WB	Through	353	3.9	1.1	132	3	A	486	7.1	2.2	323	11	A	365	5.4	1.6	212	5	A	520	9.0	3.0	471	20	A
3: Natrual Bridge Rd @ Cypress Rd	Total	Total	2,048	12.0	7.2	348	18	B	2,527	12.8	7.1	476	27	B	2,181	10.8	5.5	344	16	B	2,668	14.0	7.6	524	33	B
4: I-70 EB @ Cypress Rd	NB	Left	10	5.8	3.6	21	0	A	11	7.6	4.7	28	0	A	11	6.1	3.8	24	0	A	12	6.2	3.4	26	0	A
4: I-70 EB @ Cypress Rd	NB	Through	150	32.2	25.0	187	23	C	191	32.7	24.8	274	37	C	150	15.2	9.8	137	9	B	192	32.7	24.6	287	37	C
4: I-70 EB @ Cypress Rd	NB	Right	145	8.0	4.6	38	0	A	267	11.9	6.2	80	0	B	145	3.0	0.9	36	0	A	269	11.9	6.3	91	0	B
4: I-70 EB @ Cypress Rd	NB	Left	20	44.9	39.3	89	9	D	61	41.9	36.1	113	18	D	22	28.4	22.9	72	6	C	64	41.9	36.0	131	18	D
4: I-70 EB @ Cypress Rd	NB	Through	13	43.7	37.0	89	9	D	11	45.2	38.9	113	18	D	14	28.0	21.7	72	6	C	12	37.6	31.3	131	18	D
4: I-70 EB @ Cypress Rd	NB	Right	11	0.9	0.0	6	0	A	16	1.2	0.1	29	0	A	12	1.0	0.1	12	0	A	18	1.3	0.1	26	0	A
4: I-70 EB @ Cypress Rd	SB	Left	359	7.3	3.2	206	10	A	534	12.1	5.8	330	32	B	384	9.2	4.0	271	16	A	567	13.5	6.7	421	41	B
4: I-70 EB @ Cypress Rd	SB	Through	188	3.5	2.1	70	3	A	324	4.6	2.8	107	6	A	193	6.1	3.2	105	4	A	333	5.5	3.3	109	7	A
4: I-70 EB @ Cypress Rd	SB	Right	45	0.9	0.1	0	0	A	63	1.4	0.3	116	1	A	47	1.3	0.2	35	0	A	69	2.0	0.7	191	3	A
4: I-70 EB @ Cypress Rd	WB	Left	51	45.3	38.8	148	20	D	69	45.7	38.9	164	22	D	45	30.2	23.9	119	12	C	72	44.3	37.4	175	24	D
4: I-70 EB @ Cypress Rd	WB	Through	21	47.6	38.9	148	20	D	10	39.3	31.1	164	22	D	20	31.9	23.5	119	12	C	11	43.3	34.7	175	24	D
4: I-70 EB @ Cypress Rd	WB	Right	271	3.2	0.1	121	1	A	235	3.5	0.3	141	2	A	327	3.6	0.1	158	2	A	259	3.7	0.4	182	2	A
4: I-70 EB @ Cypress Rd	Total	Total	1,284	11.7	7.9	226	5	B	1,792	14.0	9.0	378	9	B	1,370	8.6	4.5	271	4	A	1,878	14.4	9.2	433	10	B
5: LIB @ T1 Cell Phone Lot*	EB	Left	30	3.4	0.7	127	1	A	37	5.1	1.5	135	1	A	32	3.4	0.8	154	1	A	40	5.5	1.7	173	2	A
5: LIB @ T1 Cell Phone Lot*	EB	Through	928	0.5	0.0	19	0	N/A	902	0.6	0.0	34	0	N/A	1,021	0.5	0.0	55	0	N/A	953	0.7	0.0	76	0	N/A
5: LIB @ T1 Cell Phone Lot*	SB	Left	4	0.0	0.0	45	0	A	8	0.0	0.0	49	1	A	8	0.0	0.0	48	0	A	14	0.0	0.0	57	1	A
5: LIB @ T1 Cell Phone Lot*	SB	Right	0	0.0	0.0	0	0	A	0	0.0	0.0	0	0	A	0	0.0	0.0	0	0	A	8	0.0	0.0	50	0	A
5: LIB @ T1 Cell Phone Lot*	WB	Through	705	0.2	0.0	0	0	N/A	952	0.3	0.0	5	0	N/A	744	0.2	0.0	0	0	N/A	1,007	0.3	0.0	8	0	N/A
5: LIB @ T1 Cell Phone Lot*	WB	Right	33	0.0	0.0	0	0	N/A	38	0.0	0.0	5	0	N/A	45	0.0	0.0	0	0	N/A	38	0.0	0.0	8	0	N/A
5: LIB @ T1 Cell Phone Lot*	Total	Total	1,700	3.0	0.0	127	0	A	1,937	4.2	0.0	135	0	A	1,850	2.7	0.0	154	0	A	2,060	3.6	0.0	173	1	A
6: I-70 WB @ LIB (E of Cypress)	EB	Left	0	0.0	0.0	0	0	A	0	0.0	0.0	0	0	A	0	0.0	0.0	0	0	A	0	0.0	0.0	0	0	A
6: I-70 WB @ LIB (E of Cypress)	EB	Through	938	0.6	0.1	53	0	A	915	0.8	0.1	79	1	A	1,029	1.2	0.3	210	2	A	973	0.9	0.2	84	1	A
6: I-70 WB @ LIB (E of Cypress)	EB	Right																								
6: I-70 WB @ LIB (E of Cypress)	SB	Left	4	60.0	52.9	40	2	E	14	50.9	44.3	57	4	D	8	56.0	49.1	51	3	E	22	50.6	44.1	83	6	D
6: I-70 WB @ LIB (E of Cypress)	SB	Through																								
6: I-70 WB @ LIB (E of Cypress)	SB	Right	0	0.0	0.0	0	0	A	6	8.2	1.5	59	1	A	0	0.0	0.0	25	0	A	6	9.6	3.1	85	1	A
6: I-70 WB @ LIB (E of Cypress)	WB	Left																								
6: I-70 WB @ LIB (E of Cypress)	WB	Through	739	0.7	0.2	136	1	A	985	1.6	0.5	184	4	A	790	0.9	0.2	127	1	A	1,041	1.9	0.5	240	5	A
6: I-70 WB @ LIB (E of Cypress)	WB	Right	27	1.2	0.1	133	1	A	28	1.7	0.2	181	4	A	34	1.1	0.0	124	1	A	32	1.7	0.2	237	5	A
6: I-70 WB @ LIB (E of Cypress)	Total	Total	1,708	0.8	0.2	136	1	A	1,948	1.6	0.6	184	2	A	1,861	1.3	0.5	227	1	A	2,074	2.0	0.8	240	3	A
7: LIB @ Lot B*	NB	Left	6	0.0	0.0	31	0	A	0	0.0	0.0	13	0	A	5	0.0	0.0	22	0	A	0	0.0	0.0	24	0	A
7: LIB @ Lot B*	NB	Right	15	3.2	1.4	32	0	A	32	2.8	1.1	36	0	A	15	2.8	1.0	33	0	A	32	3.4	1.3	39	0	A
7: LIB @ Lot B*	EB	Through	944	0.5	0.0	0	0	N/A	926	0.5	0.0	7	0	N/A	1,039	0.4	0.0	0	0	N/A	991	0.6	0.0	21	0	N/A
7: LIB @ Lot B*	EB	Right	0	0.0	0.0	0	0	N/A	5	0.0	0.0	7	0	N/A	0	0.0	0.0	0	0	N/A	6	0.0	0.0	21	0	N/A
7: LIB @ Lot B*	WB	Left	38	0.0	0.0	54	1	A	0	0.0	0.0	0	0	A	42	0.0	0.0	64	1	A	0	0.0	0.0	0	0	A
7: LIB @ Lot B*	WB	Through	760	0.2	0.0	0	0	N/A	1,013	0.2	0.0	0	0	N/A	820	0.2	0.0	0	0	N/A	1,073	0.2	0.0	0	0	N/A
7: LIB @ Lot B*	Total	Total	1,763	0.8	0.4	55	0	A	1,976	2.8	1.1	40	0	A	1,921	0.7	0.2	65	0	A	2,102	3.4	1.3	53	0	A
8: LIB @ Lambert Field Dr	NB	Left																								
8: LIB @ Lambert Field Dr	NB	Through																								
8: LIB @ Lambert Field Dr	NB	Right																								
8: LIB @ Lambert Field Dr	EB	Left 1																								
8: LIB @ Lambert Field Dr	EB	Left 2																								
8: LIB @ Lambert Field Dr	EB	Through																								
8: LIB @ Lambert Field Dr	EB	Right																								
8: LIB @ Lambert Field Dr	SEB	Left																								
8: LIB @ Lambert Field Dr	SEB	Right																								
8: LIB @ Lambert Field Dr	SEB	Through																								
8: LIB @ Lambert Field Dr	SWB	Left																								
8: LIB @ Lambert Field Dr	SWB	Right																								
8: LIB @ Lambert Field Dr	SWB	Through																								
8: LIB @ Lambert Field Dr	WB	Left																								
8: LIB @ Lambert Field Dr	WB	Through																								
8: LIB @ Lambert Field Dr	WB	Right 2																								
8: LIB @ Lambert Field Dr	WB	Right 1																								
8: LIB @ Lambert Field Dr	Total	Total																								
9: Air Cargo Dr @ Terminal 1 Entrance		Left	0	0.0	0.0	120	0	A	0	0.0	0.0	144	1	A	0	0.0	0.0	132	0	A	0	0.0	0.0	141	1	A
9: Air Cargo Dr @ Terminal 1 Entrance	NB	Through	0	0.0	0.0	122	0	A	0	0.0	0.0	143	1	A	0	0.0	0.0	134	0	A	0	0.0	0.0	141	1	A
9: Air Cargo Dr @ Terminal 1 Entrance	NB	Right	115	0.4	0.0	85	0	A	147	0.6	0.0	116	1	A	120	0.4	0.0	89	0	A	164	0.7	0.0	101	1	A
9: Air Cargo Dr @ Terminal 1 Entrance	WB	Left	134	40.9	33.8	187	33	D	165	40.7	33.2	226	41	D	142	41.7	34.2	203	36	D	169	40.1	32.5	220	42	D
9: Air Cargo Dr @ Terminal 1 Entrance	WB	Right	0	0.0	0.0	0	0	A	0	0.0	0.0	0	0	A	0	0.0	0.0	0	0	A	0	0.0	0.0	0	0	A
9: Air Cargo Dr @ Terminal 1 Entrance	Total	Total	249	22.2	18.2	187	7	C	312	21.8	17.6	226	9	C	262	22.8	18.6	211	7	C	333	20.7	16.5	220	9	C
10: LIB @ Terminal 1 Exit	NB 1	Left																								
10: LIB @ Terminal 1 Exit	NB 1	Through																								
10: LIB @ Terminal 1 Exit	NB 1	Right																								
10: LIB @ Terminal 1 Exit	NB 2	Right																								
10: LIB @ Terminal 1 Exit	EB	Through																								

All Vissim Results

Intersection Ops Alt 2

10: LIB @ Terminal 1 Exit	EB	Right 2																						
10: LIB @ Terminal 1 Exit	EB	Right 1																						
10: LIB @ Terminal 1 Exit	WB	Left 1																						
10: LIB @ Terminal 1 Exit	WB	Left 2																						
10: LIB @ Terminal 1 Exit	WB	Through																						
10: LIB @ Terminal 1 Exit	SB - A	Left																						
10: LIB @ Terminal 1 Exit	SB - A	Through																						
10: LIB @ Terminal 1 Exit	SB - A	Right																						
10: LIB @ Terminal 1 Exit	SB - D	Left																						
10: LIB @ Terminal 1 Exit	SB - D	Through																						
10: LIB @ Terminal 1 Exit	SB - D	Right																						
10: LIB @ Terminal 1 Exit	Total	Total																						
11: I-70 WB @ Airflight Dr	NB	Left	532	12.8	4.8	374	36	B	469	14.4	5.6	421	35	B	570	15.3	6.1	378	49	B	537	17.4	7.3	471	53	B
11: I-70 WB @ Airflight Dr	NB	Through	83	1.8	0.6	41	0	A	121	2.4	0.8	52	1	A	87	1.9	0.7	38	0	A	139	2.6	0.9	59	1	A
11: I-70 WB @ Airflight Dr	SEB	Right	234	14.6	9.0	235	16	B	312	21.6	13.9	501	42	C	258	16.6	10.6	291	21	B	340	29.8	20.2	550	79	C
11: I-70 WB @ Airflight Dr	SEB	Right	46	9.1	4.6	237	17	A	96	15.3	8.8	503	43	B	49	10.9	5.8	293	23	B	101	22.9	14.4	553	81	C
11: I-70 WB @ Airflight Dr	WB	Left	178	41.6	32.8	167	32	D	252	43.7	34.2	208	50	D	190	41.5	32.6	182	35	D	260	42.3	32.8	231	52	D
11: I-70 WB @ Airflight Dr	WB	Right	14	25.8	18.0	175	17	C	20	34.0	24.3	221	40	C	15	32.1	22.9	194	22	C	26	35.2	25.1	242	42	D
11: I-70 WB @ Airflight Dr	Total	Total	1,087	17.1	10.2	376	13	B	1,270	21.2	13.4	522	23	C	1,169	18.9	11.2	385	17	B	1,403	24.3	15.3	596	34	C
12: I-70 EB @ Pear Tree Ln	SEB	Left	374	7.5	3.7	176	12	A	280	7.2	3.9	163	9	A	396	7.7	3.9	209	13	A	322	8.1	4.5	187	12	A
12: I-70 EB @ Pear Tree Ln	EB	Through	146	39.2	30.6	122	24	D	247	41.0	31.7	184	41	D	150	39.5	30.8	126	25	D	263	39.1	29.8	180	41	D
12: I-70 EB @ Pear Tree Ln	SEB	Right	27	6.9	3.7	176	12	A	26	6.4	3.2	163	9	A	26	5.9	2.9	209	13	A	32	6.6	3.6	187	12	A
12: I-70 EB @ Pear Tree Ln	EB	Right	6	39.0	33.8	122	24	D	12	38.5	32.6	184	41	D	6	37.0	32.4	126	25	D	12	35.0	29.1	180	41	C
12: I-70 EB @ Pear Tree Ln	SEB	Right	48	1.7	0.1	35	0	A	61	2.2	0.5	67	0	A	44	2.2	0.5	45	0	A	72	2.4	0.5	59	0	A
12: I-70 EB @ Pear Tree Ln	WB	Left	54	32.2	26.8	107	10	C	51	28.9	22.7	119	8	C	57	31.3	25.7	141	11	C	59	30.7	24.6	155	10	C
12: I-70 EB @ Pear Tree Ln	WB	Through	93	33.5	26.0	172	19	C	159	29.5	21.7	259	30	C	99	30.7	23.4	199	19	C	184	30.6	23.1	340	38	C
12: I-70 EB @ Pear Tree Ln	NEB	Right	36	7.1	0.8	65	1	A	64	7.4	0.9	83	2	A	40	6.7	0.5	67	1	A	70	7.5	1.0	93	2	A
12: I-70 EB @ Pear Tree Ln	Total	Total	784	18.0	12.8	189	11	B	900	21.7	15.7	269	15	C	818	17.8	12.5	241	12	B	1,014	21.4	15.3	342	17	C
13: Airflight Dr @ Pear Tree Ln	NB	Left	6	0.0	0.0	121	16	A	0	0.0	0.0	147	23	A	7	0.0	0.0	127	18	A	0	0.0	0.0	161	24	A
13: Airflight Dr @ Pear Tree Ln	NB	Through	44	47.1	38.8	121	16	D	67	47.9	39.5	147	23	D	52	48.4	40.0	127	18	D	70	47.1	38.7	161	24	D
13: Airflight Dr @ Pear Tree Ln	NB	Right	6	42.8	36.0	121	16	D	10	49.9	42.6	147	23	D	5	35.3	28.4	127	18	D	11	46.3	39.3	161	24	D
13: Airflight Dr @ Pear Tree Ln	EB	Left	312	19.7	14.2	178	31	B	316	18.7	13.1	202	27	B	330	20.0	14.6	203	32	C	391	18.2	12.5	200	32	B
13: Airflight Dr @ Pear Tree Ln	EB	Through	197	16.1	9.8	229	22	B	256	15.8	9.6	279	26	B	209	17.0	10.4	286	25	B	244	15.3	9.3	291	23	B
13: Airflight Dr @ Pear Tree Ln	EB	Right	47	14.2	9.7	229	22	B	20	15.5	10.7	279	26	B	48	15.1	10.6	286	25	B	21	13.6	9.1	291	23	B
13: Airflight Dr @ Pear Tree Ln	SB	Left	165	19.6	14.1	231	26	B	260	44.5	34.8	418	87	D	180	20.6	14.4	262	32	C	248	46.2	36.9	406	84	D
13: Airflight Dr @ Pear Tree Ln	SB	Through	62	21.2	14.2	231	26	C	33	46.7	36.1	418	87	D	84	20.7	13.6	262	32	C	31	46.0	35.5	406	84	D
13: Airflight Dr @ Pear Tree Ln	SB	Right	120	2.0	0.2	231	26	A	151	5.1	2.4	418	87	A	128	2.5	0.5	262	32	A	180	4.4	1.7	406	84	A
13: Airflight Dr @ Pear Tree Ln	WB	Left	12	56.2	49.5	54	4	E	12	52.9	46.5	50	3	D	13	51.9	45.3	51	4	D	12	48.1	41.6	48	3	D
13: Airflight Dr @ Pear Tree Ln	WB	Through	21	44.5	34.6	64	5	D	58	44.1	33.4	118	14	D	22	46.4	36.4	73	6	D	63	45.1	33.6	133	15	D
13: Airflight Dr @ Pear Tree Ln	WB	Right	276	2.2	0.2	91	1	A	221	3.0	0.6	132	2	A	294	2.3	0.2	94	1	A	232	3.7	0.9	175	3	A
13: Airflight Dr @ Pear Tree Ln	Total	Total	1,268	15.2	10.5	247	15	B	1,404	22.6	16.5	420	26	C	1,372	15.8	10.9	313	17	B	1,503	21.9	15.9	406	26	C
14: Pear Tree Ln @ Edmundson Rd	NB	Left	122	32.7	26.8	187	25	C	147	43.3	36.7	227	41	D	132	33.1	27.1	192	28	C	153	42.8	36.2	229	43	D
14: Pear Tree Ln @ Edmundson Rd	NB	Right	52	5.7	0.7	71	2	A	51	6.8	1.1	74	2	A	54	5.4	0.5	67	2	A	54	6.9	1.2	75	3	A
14: Pear Tree Ln @ Edmundson Rd	EB	Through	260	7.1	3.0	210	8	A	402	6.3	1.8	248	11	A	290	6.6	2.6	223	8	A	356	6.5	2.1	244	10	A
14: Pear Tree Ln @ Edmundson Rd	WB	Through	267	6.9	3.1	164	8	A	311	4.8	1.7	162	6	A	284	7.3	3.4	165	9	A	330	5.0	1.8	211	7	A
14: Pear Tree Ln @ Edmundson Rd	Total	Total	701	11.4	7.0	239	11	B	911	11.8	7.4	254	15	B	760	11.4	7.0	237	8	B	893	12.2	7.8	281	10	B
15: LIB @ Terminal 2 Exit	EB	Through	98	2.0	1.0	52	1	A	142	5.8	3.4	90	3	A	103	2.5	1.4	51	1	A	164	6.1	3.5	92	4	A
15: LIB @ Terminal 2 Exit	SB	Left	0	0.0	0.0	0	0	A	0	0.0	0.0	0	0	A	0	0.0	0.0	0	0	A	0	0.0	0.0	0	0	A
15: LIB @ Terminal 2 Exit	SB	Left	0	0.0	0.0	0	0	A	0	0.0	0.0	0	0	A	0	0.0	0.0	0	0	A	0	0.0	0.0	0	0	A
15: LIB @ Terminal 2 Exit	SB	Right	0	0.0	0.0	0	0	A	0	0.0	0.0	0	0	A	0	0.0	0.0	0	0	A	0	0.0	0.0	0	0	A
15: LIB @ Terminal 2 Exit	SB	Right	0	0.0	0.0	0	0	A	0	0.0	0.0	0	0	A	0	0.0	0.0	0	0	A	0	0.0	0.0	0	0	A
15: LIB @ Terminal 2 Exit	WB	Through	357	1.6	0.8	81	2	A	533	2.5	1.4	95	4	A	384	1.8	0.9	82	2	A	552	2.4	1.3	104	4	A
15: LIB @ Terminal 2 Exit	Total	Total	455	1.7	0.9	83	0	A	675	3.2	1.8	109	1	A	487	1.9	1.0	83	1	A	716	3.2	1.8	113	1	A
16: LIB @ Terminal 2 Parking*	EB	Through	98	1.1	0.6	31	0	A	142	2.8	1.6	68	2	A	103	0.9	0.4	32	0	A	164	2.7	1.4	69	2	A
16: LIB @ Terminal 2 Parking*	SB	Left	0	0.0	0.0	0	0	A	37	37.1	29.8	83	8	D	0	0.0	0.0	0	0	A	39	39.1	31.9	80	8	D
16: LIB @ Terminal 2 Parking*	SB	Right	31	41.7	35.3	63	7	D	36	36.3	30.6	64	7	D	35	41.5	35.2	73	8	D	36	37.8	31.9	63	7	D
16: LIB @ Terminal 2 Parking*	WB	Through	325	0.3	0.1	49	0	A	498	0.5	0.2	72	1	A	349	0.3	0.1	51	0	A	517	0.4	0.2	71	1	A
16: LIB @ Terminal 2 Parking*	Total	Total	454	41.7	35.3	73	2	D	713	36.7	30.2	95	4	D	487	41.5	35.2	76	2	D	756	38.5	31.9	91	4	D
17: LIB @ Terminal 2 Entrance	EB	Left	63	20.9	15.1	84	6	C	99	30.5	23.7	122	14	C	66	20.0	14.2	84	6	B	114	29.8	22.9	110	16	C
17: LIB @ Terminal 2 Entrance	EB	Through	36	0.2	0.1	4	0	A	80	0.5	0.1	28	0	A	37	0.1	0.1	9	0	A	88	0.6	0.2	26	0	A
17: LIB @ Terminal 2 Entrance	SB	Left	6	74.8	68.7	38	3	E	6	70.6	65.2	30	2	E	5	75.7	70.1	38	2	E	6	71.1	65.4	38	3	E
17: LIB @ Terminal 2 Entrance	SB	Right	128	12.8	0.5	188	14	B	159	15.6	0.7	208	21	B	137	13.6	0.6	201	16	B	162	15.3	0.7	212	21	B
17: LIB @ Terminal 2 Entrance	WB	Through	197	11.2	7.6	116	9	B	339	12.3	8.1	177	15	B	212	11.2	7.6	125	9	B	355	12.9	8.5	158	17	B
17: LIB @ Terminal 2 Entrance	WB	Right	53	11.6	8.9	85	3	B	49	11.7	8.8	71	3	B	55	9.4	7.0	68	3	A	51	12.1	9.2	75	4	B
17: LIB @ Terminal 2 Entrance	Total	Total	483	12.9	7.0	188	6	B	732	14.6	8.2	211	9	B	512	12.6	6.6	201	6	B	776	14.9	8.5	212	10	B
18: Air Cargo Rd @ Lot E*	EB	Through	115	0.0	0.0	0	0	A	147	0.0	0.0	0	0	A	120	0.1	0.0	0	0	A	163	0.0	0.0	0	0	A
18: Air Cargo Rd @ Lot E*	SB	Right	8	1.3	0.0	7	0	A	10	1.6	0.1	15	0	A	12	1.5	0.1	13	0	A	10	2.1	0.2	20	0	A
18: Air Cargo Rd @ Lot E*	WB	Through	125	0.3	0.0	0	0	A	153	0.5	0.0	0	0	A	129	0.4	0.0	0	0	A	158	0.5	0.0	0	0	A
18: Air Cargo Rd @ Lot E*	WB	Right	0	0.0	0.0	0	0	A	0	0.0	0.0	0	0	A	0	0.0	0.0	0	0	A	0	0.0	0.0	0	0	A
18: Air Cargo Rd @ Lot E*	Total	Total	248	0.4	0.0	7	0	A	310	0.6	0.0	15	0	A	261	0.5	0.0	13	0	A	331	0.6	0.1	20	0	A
19: Air Cargo Rd @ James S McDonnell'	NB	Left	77	0.9	0.0	30	0	A	94	0.7	0.0	0	0	A	78	6.8	0.2	0	0	A	99	7.0	0.2	0	0	A
19: Air Cargo Rd @ James S McDonnell'	NB	Right	56	0.8	0.0	0	0	A	66	0.8	0.0	0	0	A	54	0.8	0.0	0	0	A	71	0.9	0.0	0	0	A
19: Air Cargo Rd @ James S McDonnell'	EB	Through	116	11.7	0.3	8	0	B	147	0.2	0.0	0	0	A	121	11.9	0.3	7	0	B	165	13.3	0.3	40	0	B
19: Air Cargo Rd @ James S McDonnell'	EB	Right	0	0.0	0.0	8	0	A	0	0.0	0.0	0	0	A	0	0.0	0.0	7	0	A	0	0.0	0.0	40	0	A
19: Air Cargo Rd @ James S McDonnell'	WB	Left	34	6.3	0.2	96	3	A	47	0.6	0.0	0	0	A	31	6.2	0.2	0	0	A	52	6.2	0.2	0	0	A
19: Air Cargo Rd @ James S McDonnell'	WB	Through	50	10.1	0.2	0	0	B	59	0.1	0.0	0	0	A	52	10.2	0.2	0	0	B	58	10.5	0.2	0	0	B
19: Air Cargo Rd @ James S McDonnell'	Total	Total	333	7.7	0.2	96	1	A	413	0.4	0.0	0	0	A	336	9.5	0.2	7	0	A	445	10.2	0.3	40	0	B
20: I-70 SOR @ Natural Bridge Rd	NB	Through	45	27.9	21.3	210	19	C	96	37.5	28.7	334	48	D	46	28.5	21.8	200	20	C	98	37.6	28.8	354	50	D
20: I-70 SOR @ Natural Bridge Rd	NB	Left	67	26.5	20.3	210	19	C	63	36.4	28.3	334	48	D	68	27.7	21.3	200	20	C	63	36.7	28.5	354	50	D
20: I-70 SOR @ Natural Bridge Rd	NB	Right	112	6.1	2.5	26	0	A	182	14.6	8.0	40	0	B	115	6.5	2.7	29	0	A	183	15.0	8.3	45	0	B
20: I-70 SOR @ Natural Bridge Rd	EB	Through	319	12.3	6.9	182	18	B	384	13.7	7.9	187	23	B	319	12.3	7.0	174	17	B	387	13.6	7.9	198	23	B
20: I-70 SOR @ Natural Bridge Rd	EB	Right	22	13.2	8.6	182	18	B	32	15.2	10.0	187	23	B	22	12.4	8.2	174	17	B	31	13.9	9.2	198	23	B
20: I-70 SOR @ Natural Bridge Rd	WB	Left	127	28.5	22.6	165	21	C	180	33.3	26.5	215	35	C	130	29.8	23.7	157	22	C	183	34.2	27.3	213	37	C
20: I-70 SOR @ Natural Bridge Rd	WB	Through	175	4.6	1.9	99	3	A	345	5.8	2.3	158	8	A	178	5.3	2.3	100	3	A	348	5.8	2.4	158	8	A
20: I-70 SOR @ Natural Bridge Rd	WB	Right	111	4.5	1.9	86	2	A	185	5.5	2.3	107	4	A	113	4.5	1.8	73	2	A	188	5.5	2.3	108	4	A
20: I-70 SOR @ Natural Bridge Rd	Total	Total	978	13.2	8.6	221	10	B	1,467	15.9	10.5	334	20	B	991	13.6	9.0	210	11	B	1,481	16.0	10.6	354	20	B

All Vissim Results

Intersection Ops Summary

Intersection	Existing				2032 No Build				2032 Alt 1				2032 Alt 2				2037 No Build				2037 Alt 1				2037 Alt 2			
	LOS		Delay		LOS		Delay		LOS		Delay		LOS		Delay		LOS		Delay		LOS		Delay		LOS		Delay	
Natural Bridge Rd @ Lot D*	A	(A)	5.5	(6.1)	A	(A)	5.4	(6.3)	A	(A)	5.4	(6.9)	A	(A)	5.4	(6.9)	A	(A)	5.5	(6.3)	A	(A)	5.5	(6.9)	A	(A)	5.5	(6.8)
I-70 WB @ Natural Bridge Rd	A	(A)	7.8	(8.9)	A	(A)	7.9	(9.4)	B	(C)	11.4	(24.4)	B	(C)	18.6	(24.1)	A	(A)	8.0	(9.4)	B	(C)	14.0	(25.2)	B	(C)	14.0	(25.2)
Cypress Rd & Natural Bridge Rd	A	(A)	4.8	(5.5)	A	(A)	4.6	(5.9)	B	(B)	12.6	(14.5)	B	(B)	12.0	(12.8)	A	(A)	4.7	(6.1)	B	(B)	12.7	(16.6)	B	(B)	10.8	(14)
I-70 EB @ Cypress Rd	A	(A)	6.2	(9.4)	A	(A)	6.5	(9.8)	B	(B)	11.5	(14.1)	B	(B)	11.7	(14)	A	(A)	6.9	(9.8)	B	(B)	11.2	(14.4)	A	(B)	8.6	(14.4)
LIB @ T1 Cell Phone Lot*	A	(A)	0.8	(0.9)	A	(A)	0.8	(0.9)	A	(A)	3.5	(3.9)	A	(A)	3.0	(4.2)	A	(A)	0.7	(0.8)	A	(A)	2.8	(3.3)	A	(A)	2.7	(3.6)
I-70 WB @ LIB (E of Cypress)	A	(A)	1.6	(3.1)	A	(A)	1.8	(3.1)	A	(A)	0.7	(1.6)	A	(A)	0.8	(1.6)	A	(A)	1.5	(3.1)	A	(A)	1.0	(1.9)	A	(A)	1.3	(2)
LIB @ Lot B*	A	(A)	1.1	(1.1)	A	(A)	1.1	(1.1)	A	(A)	0.8	(2.8)	A	(A)	0.8	(2.8)	A	(A)	1.2	(1.1)	A	(A)	0.8	(3)	A	(A)	0.7	(3.4)
LIB @ Lambert Field Dr	A	(A)	3.5	(4.6)	A	(A)	3.8	(5.4)	N/A	(N/A)	N/A	(N/A)	N/A	(N/A)	N/A	(N/A)	A	(A)	4.0	(5.4)	N/A	(N/A)	N/A	(N/A)	N/A	(N/A)	N/A	(N/A)
Air Cargo Rd @ Terminal 2 Entrance	A	(A)	6.4	(8.6)	A	(A)	6.7	(8.8)	C	(C)	22.6	(21.8)	C	(C)	22.2	(21.8)	A	(A)	6.9	(8.6)	C	(C)	22.7	(20.9)	C	(C)	22.8	(20.7)
LIB @ Terminal 1 Exit	C	(C)	29.5	(29.4)	C	(C)	29.8	(29.7)	N/A	(N/A)	N/A	(N/A)	N/A	(N/A)	N/A	(N/A)	C	(C)	30.1	(30.1)	N/A	(N/A)	N/A	(N/A)	N/A	(N/A)	N/A	(N/A)
I-70 WB @ Airlfight Dr	B	(B)	13.4	(17.4)	B	(B)	13.9	(17.9)	B	(C)	17.4	(20.7)	B	(C)	17.1	(21.2)	B	(B)	14.2	(18.2)	B	(C)	18.6	(23.5)	B	(C)	18.9	(24.3)
I-70 EB @ Pear Tree Ln	B	(B)	16.5	(19.2)	B	(B)	16.8	(19.3)	B	(C)	17.9	(21.8)	B	(C)	18.0	(21.7)	B	(B)	16.9	(19.8)	B	(C)	17.9	(21.4)	B	(C)	17.8	(21.4)
Airflight Dr @ Pear Tree Ln	B	(C)	16.8	(20.8)	B	(C)	17.8	(22.2)	B	(C)	15.1	(22.1)	B	(C)	15.2	(22.6)	B	(C)	18.2	(22.6)	B	(C)	16.0	(21.8)	B	(C)	15.8	(21.9)
Pear Tree Ln @ Edmunson Rd	A	(A)	9.8	(9.6)	B	(B)	10.2	(10.1)	B	(B)	11.5	(11.8)	B	(B)	11.4	(11.8)	B	(B)	10.3	(10.1)	B	(B)	11.5	(12.1)	B	(B)	11.4	(12.2)
LIB @ Terminal 2 Exit	B	(B)	18.0	(15.6)	B	(B)	18.2	(15.6)	A	(A)	1.8	(3.1)	A	(A)	1.7	(3.2)	B	(B)	18.5	(15.7)	A	(A)	1.9	(3.3)	A	(A)	1.9	(3.2)
LIB @ Terminal 2 Parking *	E	(E)	44.5	(37.5)	E	(E)	41.1	(36.3)	D	(D)	41.7	(36.2)	D	(D)	41.7	(36.7)	E	(E)	40.3	(36.6)	D	(D)	40.3	(37.5)	D	(D)	41.5	(38.5)
LIB @ Terminal 2 Entrance	C	(B)	20.8	(16.1)	C	(B)	23.9	(17.4)	B	(B)	12.4	(14.7)	B	(B)	12.9	(14.6)	C	(B)	23.9	(17.9)	B	(B)	12.7	(14.8)	B	(B)	12.6	(14.9)
Air Cargo Rd @ Lot E*	A	(A)	1.4	(1.7)	A	(A)	1.4	(1.6)	A	(A)	0.4	(0.6)	A	(A)	0.4	(0.6)	A	(A)	1.4	(1.8)	A	(A)	0.5	(0.6)	A	(A)	0.5	(0.6)
Air Cargo Rd @ James S McDonnell*	A	(A)	6.5	(6.4)	A	(A)	5.9	(5.9)	A	(A)	0.3	(0.4)	A	(A)	7.7	(0.4)	A	(A)	6.0	(6.2)	A	(A)	0.3	(0.4)	A	(B)	9.5	(10.2)
I-70 SOR @ Natural Bridge Rd	B	(B)	13.1	(15.4)	B	(B)	13.4	(15.7)	B	(B)	13.5	(15.9)	B	(B)	13.2	(15.9)	B	(B)	13.4	(15.8)	B	(B)	13.5	(15.9)	B	(B)	13.6	(16)

*Stop controlled intersection level of service follows methodlogies described in Chapter 20 & Chapter 21 of the 6th Edition HCM

Red intersections are owned by the Missouri Department of Transportation

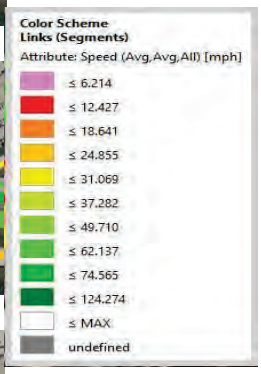
All Vissim Results

C-D AM Speeds

Existing AM

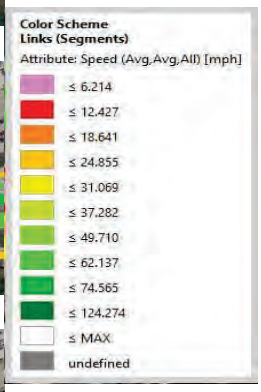
2032 No Build AM

2037 No Build AM



2032 Alternative 1 AM

2037 Alternative 1 AM



2032 Alternative 2 AM

2037 Alternative 2 AM

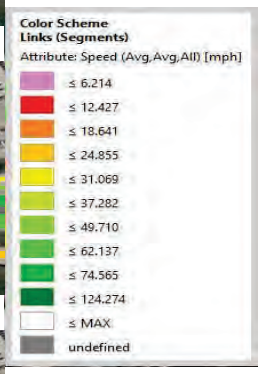
All Vissim Results

C-D PM Speeds

Existing AM

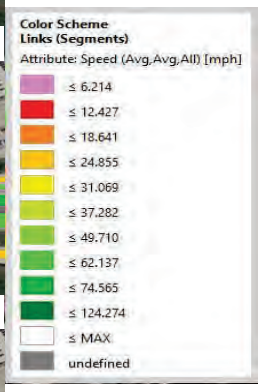
2032 No Build AM

2037 No Build AM



2032 Alternative 1 AM

2037 Alternative 1 AM



2032 Alternative 2 AM

2037 Alternative 2 AM