DRAFT
HAM-LMST to Ranchvale
Little Miami Scenic Trail Extension
PID 113602/115291

Feasibility Study

August 2, 2021

Prepared for:

Ohio Department of Transportation
District 8
505 South SR 741
Lebanon, Ohio 45036

Prepared by:

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Table of Contents

1.0 INTRODUCTION 3
1.1 PROJECT HISTORY 3

2.0 PURPOSE AND NEED 6
2.1 PROJECT PURPOSE 6
2.2 NEED ELEMENTS 6
2.2.1 Pedestrian and Bicycle Connectivity 6

3.0 ALTERNATIVES 7
3.1 NO BUILD ALTERNATIVE 7
3.2 BUILD ALTERNATIVES 7

4.0 KEY ISSUES 10
4.1 SAFETY ANALYSIS 10
4.1.1 No Build Alternative 10
4.1.2 Build Alternatives 11
4.2 SHARED-USE PATH DESIGN ISSUES 11
4.3 MAINTENANCE OF TRAFFIC (MOT) 12
4.3.1 No Build Alternative 12
4.3.2 Build Alternatives 13
4.4 RIGHT-OF-WAY REQUIREMENTS 13
4.4.1 No Build Alternative 13
4.4.2 Build Alternatives 13
4.5 UTILITY ISSUES 13
4.5.1 No Build Alternative 14
4.5.2 Build Alternatives 14
4.6 ENVIRONMENTAL ANALYSIS 14
4.6.1 No Build Alternatives 15
4.6.1 Build Alternatives 15
4.7 COST ESTIMATE 20

5.0 COMPARISON OF ALTERNATIVES 20

6.0 PREFERRED ALTERNATIVE 25

7.0 REFERENCES 26

LIST OF TABLES

Table 1. Preliminary Alternatives Comparison Matrix

Table 2. Percent Underserved Population by Block Group in the HAM- LMST Extension to Ranchvale Project Area

Table 3. Evaluation Matrix Elstun Connection

Table 4. Evaluation Matrix Ranchvale Connection

LIST OF FIGURES

Figure 1. Project Location Map

LIST OF ATTACHMENTS

Attachment A. Excerpts from the *Transportation Needs Analysis*

Attachment B. Excerpts from the *Conceptual Alternatives Implementation Plan*

Attachment C. Build Alternative Plans

Attachment D. Environmental Mapping

Attachment E. Ecological Resources Technical Memorandum

Attachment F. Virtual Public Open House Summary Report

Attachment G. Preliminary Cost Estimates

1.0 INTRODUCTION

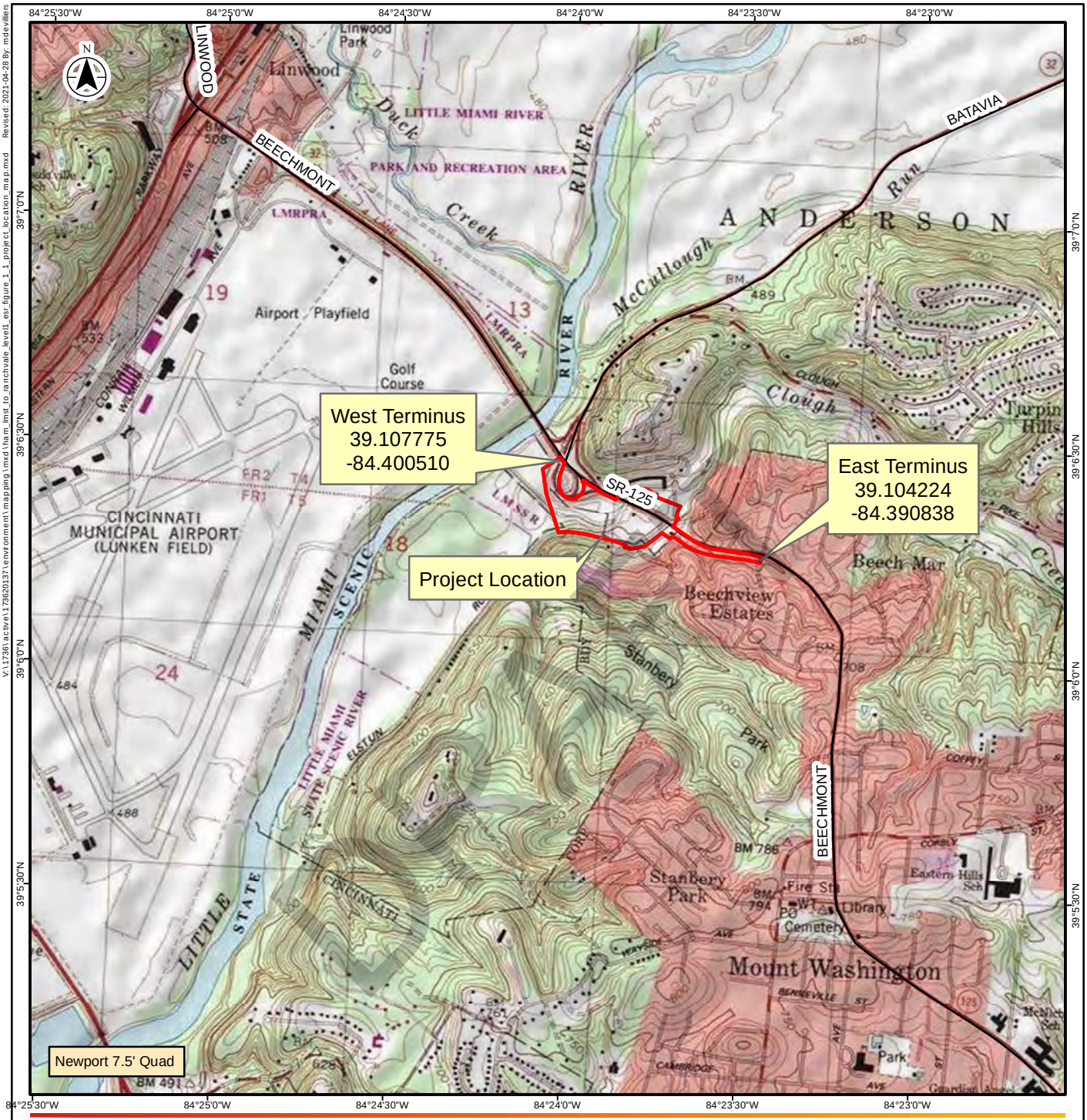
Anderson Township and the City of Cincinnati, in cooperation with the Ohio Department of Transportation (ODOT), are proposing a new shared-use path connection to the Little Miami Scenic Trail (LMST) at the northwest quadrant of the SR 32/SR 125 interchange to Elstun Road and a separated sidepath along SR 125 between Elstun Road and Ranchvale Drive. The proposed project, HAM-LMST Ext to Ranchvale, is located in Anderson Township and the City of Cincinnati in southeast Hamilton County (See **Figure 1**, Project Location Map). Because this project extends between two separate jurisdictions, it is divided into two separate contiguous sections for funding purposes. However, these sections will be evaluated as one project in engineering and environmental studies following ODOT's Project Development Process (PDP). These sections are, from west to east: a new shared-use path extension from the SR 32/SR125 interchange to Elstun Road and to the bus stop along SR 125 (PID 113602), which is sponsored by Anderson Township; and a separated sidepath along the south side of SR 125 between Elstun Road and Ranchvale Drive (PID 115291), which is sponsored by the City of Cincinnati. This project includes four of 68 concepts within the Eastern Corridor Segments II and III study area which were identified in the *Conceptual Alternatives Implementation Plan for Segment II/III of the Eastern Corridor Study (PID 86462)*. These improvements address pedestrian and bicyclist safety and connectivity along SR 125. This Feasibility Study was prepared as part of ODOT's PDP to document the process used to select the preferred alternative for the HAM LMST Ext to Ranchvale project.

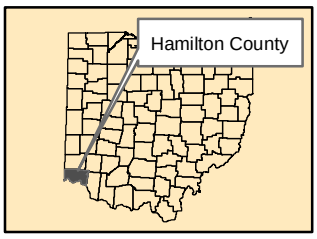
1.1 PROJECT HISTORY

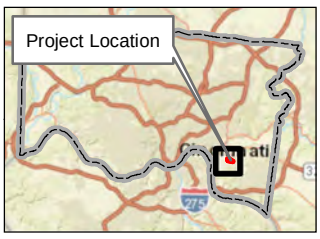
In 2017 ODOT prepared a *Transportation Needs Analysis* for Segments II and III (PID 86462) of the Eastern Corridor Program, a multi-modal transportation improvement program extending from downtown Cincinnati and communities through eastern Hamilton County and into western Clermont County, Ohio. The Eastern Corridor Program is a coordinated series of regional transportation improvement studies and projects in varying stages of planning, construction, and completion. The Segments II and III study area extends between the Red Bank Corridor (Segment I) and the I-275/SR 32 interchange in the Eastgate Area of Clermont County (Segment IV) encompassing key routes through this area including SR 125 (Beechmont Avenue) in Anderson Township. Transportation needs in the Segments II and III study area were identified through technical studies and confirmed and refined through community and stakeholder input. The project team conducted extensive public and stakeholder outreach to learn how communities prioritized transportation needs with respect to community goals, objectives, and ongoing planning. The need for pedestrian and bicycle connectivity from Elstun Road to the LMST and the need for pedestrian connectivity between rental properties on Elstun Road and bus stops along SR 125 were identified as secondary needs. Excerpts from the Transportation Needs Analysis relevant to this project can be found in **Attachment A**.

ODOT began to develop solutions for the transportation needs identified in the Needs Analysis in the Fall of 2017. Solutions were developed through extensive input from five Advisory Committees comprised of stakeholders from six focus areas identified within the Segments II and III study area. Advisory Committee

Figure 1







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Stantec

Project Location
Anderson Township,
Hamilton County, Ohio

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Prepared by MDV on 2021-03-19

Client/Project
HAM-LMST Extension to Ranchvale
PID 113602/115291
Feasibilility Study

Figure No.
1

Title
Project Location Map

Notes
1. Coordinate System: NAD 1983 StatePlane Ohio South FIPS 3402 Feet
2. Base features produced from project design elements.
3. Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS

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members included elected officials, transportation planning professionals, and community and interest group representatives. Advisory Committee members assisted with identifying, evaluating, and prioritizing recommended solutions for transportation needs within their assigned focus area, as well as developing strategies for implementation. Each Advisory Committee convened for four work sessions throughout this process for a combined total of 20 meetings. Two public meetings were also held throughout the development and refinement of the transportation concepts. Through this process, 68 transportation concepts were recommended for the Segments II and III study area and are identified in the *Conceptual Alternatives Implementation Plan* dated June 21, 2019. Excerpts from the *Conceptual Implementation Plan* relevant to this project can be found in **Attachment B**. The Implementation Plan identified four concepts to improve pedestrian and bicycle connectivity along SR 125. These concepts included:

- Add a sidewalk along Elstun Road to connect the Metro bus stop on SR 125 with rental properties on Spindlehill Drive and Reserve Circle (Concept A3)
- Add a shared-use path along SR 125 Between Elstun and Ranchvale (Concept A4)
- Connect the SR 125 walk at Elstun Road to the LMST with a shared- use path along SR 125, utilizing a new bridge over Clough Creek and passing behind United Dairy Farmers (UDF) (Concept A5)
- Connect the SR 125 walk at Elstun Road to the LMST with a shared-use path on new alignment south from SR 32 ramps, on a new bridge over Clough Creek, and tying into Elstun Road. Pedestrians and cyclists would share the vehicular traveled way along Elstun Road from the tie- in location to SR 125. (Concept A6)

In addition to the planning efforts that have occurred as part of the Eastern Corridor Program, this project is consistent with local planning efforts including Anderson Township's 2016 Comprehensive Plan (adopted 2017), Anderson Trails 2018 Update (adopted June 2018) and the City of Cincinnati's Bicycle Transportation Plan (adopted June 2010).

In 2020, Anderson Township prepared a Transportation Alternatives (TA) Grant Application for federal aid funding to construct a multi-use trail to extend between the SR 125 Bridge, which is currently under construction to include a shared-use path to connect to the LMST, and Elstun Road. As part of the TA, this project received the support of the City of Cincinnati, Mt. Washington Community Council, Great Parks of Hamilton County, and Tri-State Trails.

At this time, the construction of the shared-use path between Elstun Road and Ranchvale is in the City of Cincinnati's long-term plans, however, the City has not yet pursued funding for this project.

This Feasibility Study provides a more detailed evaluation of the trail alternatives identified in the Implementation Plan, as well as other trail concepts that were identified through discussions with Anderson Township, the City of Cincinnati, and other project stakeholders. The Feasibility Study summarizes the results of the engineering and environmental studies conducted to date based on engineering and environmental criteria. This information will be shared with the public in a Virtual Public Involvement Open

House to be held in August 2021. Based on public input received on the alternatives, a Preferred Alternative will be selected.

2.0 PURPOSE AND NEED

2.1 PROJECT PURPOSE

The purpose of the proposed project is to address pedestrian and bicycle connectivity issues along SR 125 between the terminus at the SR 32/SR 125 Interechange and Ranchvale Drive.

2.2 NEED ELEMENTS

2.2.1 Pedestrian and Bicycle Connectivity

Connectivity Between Residential Areas and the LMST and Regional Trail System

There is a need to improve pedestrian and bicycle connectivity between neighborhoods in Anderson Township and the Mt. Washington community in the City of Cincinnati and the LMST. This link is needed to provide a vital connection from residential areas to several regional trails, including the LMST, the Lunken Airport Trail, the Otto Armleder Memorial Park Trail and the Ohio River Trail, in addition to destinations associated with those trails.

There are several existing and proposed residential areas in Anderson Township that currently do not have connectivity to the regional trail system. These include the existing greyfield site known as the Skytop Shopping Center, which is being redeveloped into approximately 246 apartments. In addition, there are approximately 425 households within ¾ of a mile of SR 125 and in the surrounding neighborhoods and several condominium/apartment complexes. The surrounding neighborhoods include Beechview Estates, Wasigo Trails, and Wayside Village (Anderson Township, 2020).

Currently, the LMST/SR 125 Bridge widening project (PID 107295) is underway, which will provide a new designated lane on the south side of the SR 125 Bridge that separates pedestrians and cyclists from traffic by a concrete barrier. This bridge provides a link between the LMST and the Lunken Airport trail across the Little Miami Scenic River and the Ohio River Trail to downtown Cincinnati. However, after completion of the LMST SR 125 Bridge project, there will be no logical way for cyclysts or pedestrians in Mt. Washington, or at the Skytop site in Anderson Township, to access any of the regional trails' network, other than travel along SR 125 and through the SR 125/SR 32 interchange, which would be a safety concern.

Connectivity Along SR 125 From Elstun Road to Mt. Washington

There is also a need to improve connectivity along SR 125 for bicyclists and pedestrians who are traveling between apartments along Elstun Road east to Mt. Washington. Currently there is a sidewalk on the northside of SR 125 between Elstun and Ranchvale but there is not a separated bicycle/pedestrian path on

the south side of the road. Having a dedicated bike/pedestrian path would improve safety for bicyclists and pedestrians traveling east up the SR 125 hill towards Mt. Washington.

Connectivity From Apartments Along Elstun to Bus Stops on SR 125

In addition, there is a need to improve pedestrian access from the apartments along Spindlehill Drive and Reserve Drive to bus stops along SR 125. Currently, there is not a sidewalk along Elstun Avenue for residents of Deer Hill and Copper Hill Apartments along Elstun Road to use when walking to the Metro bus stops at the Elstun Road/SR 125 intersection. Individuals currently walking to the bus stops from the apartments must walk along Elstun Road, a narrow two-lane road without shoulders. A sidewalk or shared-use path is needed in this area to improve safety for pedestrians.

3.0 ALTERNATIVES

3.1 NO BUILD ALTERNATIVE

Under the No Build Alternative, there would be no improvement in pedestrian and bicycle connectivity along SR 125 between the LMST and Ranchvale Drive. Bicyclists and pedestrians traveling to the LMST from the surrounding neighborhoods in Anderson would have to travel along SR 125 and through the SR 125/SR 32 interchange area, which would be a safety concern. In addition, bicyclists and pedestrians traveling along the south side of SR 125 east towards Mt. Washington would continue to use the existing designated bike lane up the SR 125 hill to Ranchvale instead of having a safer shared-use path which would be separated from traffic. Also, under the No Build Alternative, there would be no sidewalk or shared-use path for residents of the apartments along Elstun Road to use to access the Metro bus stops at the intersection of Elstun Road/SR 125. They would continue to walk along Elstun Road, which is a safety concern.

3.2 BUILD ALTERNATIVES

As mentioned in the introduction, this project is divided into two contiguous sections for funding purposes. The western section is the Elstun Connection (PID 113602) between the SR 32/SR 125 Interchange and Elstun Road, which is within Anderson Township. To the east is the Ranchvale Connection (PID 115291) between Elstun Road and Ranchvale Drive, which is within the City of Cincinnati. These sections will be discussed separately throughout the remainder of the Feasibility Study Report.

Elstun Connection (PID 113602), Anderson Township

The Elstun Connection includes a pedestrian connection along Elstun Road to connect the Metro bus stop on SR 125 with rental properties on Spindlehill Drive and Reserve Circle, as well as a pedestrian/bicycle connection between the LMST at the SR 32/SR 125 interchange and Elstun Road. Several alternatives were developed for these connections to address the needs previously identified by the 2017 Needs Analysis and discussed in Section 2.2. The alternatives considered for these connections are discussed below.

Pedestrian Connection Along Elstun Road Between Spindlehill Drive and SR 125: One alternative was identified in the 2019 *Conceptual Alternatives Implementation Plan* to provide pedestrian connectivity along Elstun Road between the apartments on Spindlehill Drive and Reserve Circle and the Metro bus stops on SR 125. This alternative was:

1. Alternative A3: Add a sidewalk/shared-use path along the east side of Elstun Road to connect rental properties on Spindlehill Drive and Reserve Circle with the Metro bus stop on SR 125

During the Feasibility Study, the Project Team (ODOT, Anderson Township, and Stantec) decided not to advance a sidewalk/shared-use path on the east side of Elstun Road due to the high cost associated with the retaining wall that would be required for this alternative. Instead, a separated shared-use path along the west side of Elstun Road would be incorporated into Alternatives 3 and 4A developed for the connection between the SR32/SR 125 interchange and Elstun Road, which are discussed below.

Bicycle/Pedestrian Connection Between SR 32/SR 125 Interchange and Elstun Road: Three alternatives were investigated to address pedestrian and bicycle connectivity between the SR 32/SR 125 interchange and Elstun Road as part of the *Conceptual Alternatives Implementation Plan.* These alternatives, which were developed to address the needs previously identified by the 2017 Needs Analysis and discussed in Section 2.2, include:

1. Alternative A5: Connection of the LMST to the SR 125 sidewalk with a shared-use path utilizing a new bridge over Clough Creek.

2. Alternative A6: Connection of the LMST to the SR 125 sidewalk at Elstun Road with a new shared-use path on new alignment south from SR 32 ramps, on new bridge over Clough Creek, and tying to Elstun Road.

3. Alternative 125-4: Connection of the SR 125 sidewalk at Elstun Road to the LMST with a shared-use path utilizing the existing bridges over Clough Creek by modifying the ramp from SR 32 to eastbound SR 125.

Of the three alternatives investigated, Alternatives A5 and A6 were recommended for further study in the *Conceptual Alternatives Implementation Plan*. Alternative 125-4 was dropped from further consideration because Anderson Township felt it was preferable to redirect bikes and pedestrians away from SR 125 traffic for safety and keep the path behind the UDF fueling station. **Table 1** provides a decision matrix that shows the decision criteria used to evaluate each of the preliminary alternatives and No Build Alternative. Further information about all four preliminary alternatives is provided in **Attachment B**.

Table 1: Preliminary Alternatives Comparison Matrix

	Safety	Traffic Operations	Constructability Issues	Construction Cost	R/W Impacts	Environmental/ Community Impacts	Supports and/or Facilitates Multi-Modal	Improve Regional Connectivity	Improve Local Access	Recommendation
1. No Build Alternative	Neutral	Neutral	N/A	$0	None	None	Neutral	Neutral	Neutral	Not Recommended
3. Alternative A5: Shared-Use Path Along SR125 from LMST to Elstun	Improves	Neutral	Minimal	$770,000 to $1.2M	Property Takes	Moderate	Improves	Improves	Improves	Advance/ High Priority
3. Alternative A6: Shared-Use Path Along SR125 from LMST to Elstun, Tying to Elstun Rd	Improves	Neutral	Minimal	$360,000 to $550,000	Property Takes	Moderate	Improves	Improves	Improves	Advance/ High Priority
4. Alternative 125-4: Shared-Use Path Along SR125 Utilitizing Existing SR125 Bridge Over Clough Creek	Improves	Degrades	Minimal	$4400,000 to $590,000	Property Takes	Moderate	Improves	Improves	Improves	No Further Study

At the initiation of the Feasibility Study several additional alternatives were conceptualized by the project team (ODOT, Anderson Township, and Stantec) to anticipate various concerns of project stakeholders with the preliminary alternatives developed in the *Conceptual Alternatives Implementation Plan*. These alternatives included:

- Alternative 1: A new alternative developed by Anderson Township to eliminate the need to construct a new bridge over Clough Creek by constructing the shared-use path under the SR 125 bridge, providing direct access to the Skytop multi-use development. As part of the development at Skytop, a new “trailhead” will be installed by the developer along Skytop’s eastern driveway to connect the shared-use path to SR 125.
- Alternative 2: A new alternative developed by the project team to avoid a Metropolitan Sewer District of Greater Cincinnati (MSD) combined sewer overflow outlet location.
    - Alternatives 2A and 2B provide different options for crossing property held by UDF.
- Alternative 3: Same as A6 in the Conceptual Alternatives Implementation Plan
- Alternative 4: Same as A5 in the Conceptual Alternatives Implementation Plan
    - Alternatives 4A and 4B provide different options for crossing property held by UDF.

Figure C-1 in **Attachment C** identifies all concepts that were developed.

After the full list of alternatives was developed, six project stakeholder meetings were conducted between May 20, 2021 and July 12, 2021 to discuss the feasibility of each of the alternatives. ODOT, Anderson Township, and Stantec participated in each of the stakeholder meetings. The Hamilton County Engineer’s Office (HCEO) and UDF each participated in at least one of the meetings. Based on these meetings, it was decided that Alternatives 1, 3, and 4A would be fully developed and evaluated in the Feasibility Study. Additionally, Alternative 3 would be modified to include a dedicated shared-use path along the west side of Elstun Road from Alternative 3 to SR 125. Alternatives 2A and 2B were eliminated from further

consideration based on right-of-way impacts and Alternative 4B was eliminated based on safety concerns of having the shared-use path too close to SR 125.

Ranchvale Connection (PID 115291), City of Cincinnati

At the initiation of the Feasibility Study, the project team (ODOT, City of Cincinnati, and Stantec) discussed two build alternatives for the Ranchvale Connection. These were:

- Alternative 1: Retain the existing bike lane on eastbound SR 125 and construct a shared-use path outside the existing curb line.
- Alternative 2: Eliminate the existing bike lane on eastbound SR 125 and replace the existing curb line closer to the centerline in order to reduce impacts of the shared-use path.

Figure C-2 in **Attachment C** displays both concepts that were developed.

The City of Cincinnati decided to pursue Alternative 2. To improve safety of this alternative, it was modified to include a five-foot buffer between the roadway and the shared-use path throughout the length of the project.

4.0 KEY ISSUES

This section summarizes the technical studies and information that were considered as part of the evaluation and selection of a preferred alternative.

4.1 SAFETY ANALYSIS

4.1.1 No Build Alternative

Without construction of the proposed project, there would be no improvement in bicycle and pedestrian facilities between the LMST and Ranchvale Drive. After the construction of the SR 125 bridge widening project, the LMST will terminate in the northwest quadrant of the SR 32/SR 125 interchange. No bicycle or pedestrian facilities exist to connect the LMST to the residential and retail land uses along SR 125 between the SR 32 interchange and Elstun Road. East of Elstun Road, eastbound bicyclists on SR 125 have an on-street bicycle lane and westbound bicyclists share the outside lane of SR 125. There is a sidewalk on the north side of SR 125 connecting the Elstun Road intersection to the Ranchvale Drive intersection.

Five years of bicycle and pedestrian crash data were compiled from January 1, 2016 through December 31, 2020 using ODOT's GIS Crash Analysis Tool (GCAT). The area from the project terminus at the SR 32/SR 125 interchange to Ranchvale Drive was reviewed. No bicycle or pedestrian crashes were reported. Evaluating safety from a qualitative standpoint, bicycles and pedestrians must use the shoulder of the ramps and road to go between the LMST and the SR 125/Elstun Road intersection. This results in bicycles/pedestrians crossing or traveling next to vehicular traffic, creating conflicts with vehicular traffic

and putting bicycles and pedestrians at greater risk compared to dedicated bicycle and pedestrian facilities which are physically separated from roadways. Requiring westbound bicycles to share the outside lane on SR 125 between Ranchvale Drive and Elstun Road also creates potential safety issues with bicycles and vehicles sharing the same space due to their significantly different speeds. This stretch of SR 125 has a high Average Daily Traffic, ranging between 23,183 and 42,182 daily trips, with a posted speed speed limit of 45 MPH, creating a dangerous environment for pedestrians and bicyclists. (Anderson Township, 2020)

4.1.2 Build Alternatives

Each of the Build Alternatives include the construction of a shared-use path which is physically separated from vehicular traffic. These alternatives provide a safer alternative for bicycles and pedestrians compared to travelling next to or as part of the vehicular traffic flow. The Build Alternatives evaluated for the Elstun Connection (PID 113602) include Alternatives 1, 3, and 4A, which are identified on **Figure C.3**. The only Build Alternative being evaluated for the Ranchvale Connection (PID 115291) is Alternative 2, which is shown on **Figure C.4**.

4.2 SHARED-USE PATH DESIGN ISSUES

This section discusses design issues which were important considerations in the evaluation of the shared-use path alternatives that were carried forward for evaluation in the Feasibility Study.

Elstun Connection (PID 113602)

Alternative 1: Of all the build alternatives for the Elstun Connection, Alternative 1 is anticipated to be the most difficult to construct. Though Alternative 1 does not require a new bridge over Clough Creek, it does require five retaining walls due to significant changes in grade and steep side slopes over the course of the alignment. As Alternative 1 rounds the SR 32 ramps towards SR 125, a cast-in-place retaining wall would be required to protect the path's sideslope from erosion by Clough Creek. A soil nail wall would be required at the west abutment of the SR 125 bridge over Clough Creek to fit the shared-use path between the west abutment and the west bridge pier. Immediately north of the SR 125 bridge the profile grade of the shared-use path increases to 5% for a length of 300 ft. In order to comply with American Disabilities Act (ADA) guidelines, which is required in order to receive federal funding, trails must not exceed a 5% slope (AASHTO, 2012). Retaining walls would be required on both sides of the shared-use path along portions of this steep grade. A drilled shaft retaining wall on the north side would be necessary to prevent the shared-use path from undermining the existing Skytop detention basin, as the path is located several feet lower than the bottom elevation of the existing basin. A drilled shaft retaining wall would be required on the south side of the shared-use path to minimize impacts to Clough Creek and to protect the path from erosion. The existing retaining wall on the south side of the shared-use path would need to be modified to match the profile of the new path. The significant length of walls on this alternative could create personal security issues. ODOT's *Location & Design (L&D) Volume 1* states in Section 702.2.1 "It is not desirable to place the pathway in a narrow corridor between two fences for long distances, as this creates personal security issues, prevents users who need help from being seen, prevents path users from leaving the path in an

emergency, and impedes emergency response." Horizontal curves and vertical grades would limit the stopping sight distance to a design speed of 16 mph near the SR 125 bridge over Clough Creek. The width of Alternative 1 is 12 ft from the beginning of the project to the SR 125 bridge at which point the width is reduced to 10 ft for the remaining length to Elstun Road.

Alternative 3: This alternative requires the construction of a new bridge over Clough Creek. The length of the bridge would be determined by beginning the fill embankment at the limits of the 100-year floodplain and extending 2:1 slopes up to the abutments. The profile of the bridge would be set such that the bridge superstructure would clear the 100-year flood elevation. Based on these concepts, this bridge would likely be a three-span bridge that is approximately 210 ft long. Curves in the trail alignment would fall on each end of the structure and preclude the use of a single span pre-fabricated bridge. Approximately 150 ft, of the shared-use path on the west side of the proposed bridge would have a maximum grade of 5%. As noted with Alternative 1, 5% is the maximum allowable slope to meet ADA guidelines.

Alternative 4A: This alternative also requires the construction of a new bridge over Clough Creek. The length of the bridge would be determined by beginning the fill embankment at the limits of the 100-year floodplain and extending 2:1 slopes up to the abutments. The profile of the bridge would be set such that the bridge superstructure would clear the 100-year flood elevation. Based on these concepts, this bridge would likely be a three-span bridge that is approximately 150 ft long. A single-span pre-fabricated bridge was considered, but was determined to be more expensive than a conventional three-span bridge. To minimize private property impacts to UDF property, two horizontal curves with a design speed of 13 mph would be constructed to wrap around UDF's proposed fueling station redevelopment. This design speed would be lower than either of the other two build alternatives being considered. Since the proposed shared-use path would likely be constructed before both the fueling station redevelopment and any other developments on UDF property, additional coordination with UDF would be required to determine the appropriate elevation of the shared-use path on UDF property to minimize temporary and permanent grading impacts.

Ranchvale Connection (PID 115291)

Alternative 2: There are no significant design issues with the shared-use path designed for Alternative 2. A 100' long drilled shaft retaining wall would be required to prevent significant grading and property impacts near the west end of the project. Although the grade of the shared-use path would exceed 5%, this would be allowed as an exception to the ADA because the alignment is adjacent to a roadway, which also exceeds 5%, and is not in independent right-of-way (2021, ODOT).

4.3 MAINTENANCE OF TRAFFIC (MOT)

4.3.1 No Build Alternative

There would be no MOT impacts under the No Build Alternative.

4.3.2 Build Alternatives

It is not anticipated that maintenance of traffic (MOT), would be a differentiator between the various build alternatives for the Elstun connections. It is anticipated that all of the build alternatives for the Elstun Connection and Alternative 2 for the Ranchvale Connection could be constructed with minimal MOT impacts. It is anticipated that single lane closures on SR 125 and/or Elstun Road would be required for all alternatives except for Alternative 1 of the Elstun Connection. It is not anticipated that any road or ramp closures would be required for any of the build alternatives.

4.4 RIGHT-OF-WAY REQUIREMENTS

4.4.1 No Build Alternative

There would be no right-of-way impacts under the No Build Alternative.

4.4.2 Build Alternatives

Elstun Connection (PID 113602)

While the exact amount of right-of-way required for each build alternative has not been determined at this time, estimations of new permanent and/or temporary right-of-way for the build alternatives have been determined as follows:

Alternative 1: Approximately 0.7 acre of new permanent right-of-way would be required from the Skytop property.

Alternative 3: Approximately 0.5 acre of new permanent and/or temporary right-of-way would be required from the UDF property.

Alternative 4A: Approximately 1.3 acres of new permanent and/or temporary right-of-way would be required from the UDF property.

Ranchvale Connection (PID 115291)

Alternative 2: While the exact amount of right-of-way required for the build alternative has not been determined at this time, it is anticipated that some new permanent and/or temporary right-of-way would be required from approximately 3 parcels.

4.5 UTILITY ISSUES

Preliminary utility coordination has been conducted as a part of this Feasibility Study. This coordination has included: placing a design request with OHIO811, reaching out to the Metropolitan Sewer District of Greater Cincinnati (MSD) for combined sewer overflow facility information, and creating a utility basemap to locate known utilities and evaluate impacts to known utilities. Based on utility coordination through OHIO811, Duke

Energy has aerial electric lines and underground gas lines in the project area. There are also aerial communication lines in the project area owned by Cincinnati Bell and Charter Communications. Greater Cincinnati Water Works owns water distribution lines in the area. MSD owns sanitary and combined sewer facilities in the project area. The Cincinnati Stormwater Management Utility owns storm sewers in the project area. ODOT owns storm sewers along with underground and overhead traffic signal equipment in the project area and HCEO owns storm sewers along Elstun Road. Further coordination with the utility providers will occur throughout project development.

4.5.1 No Build Alternative

There would be no impacts to utilities as a result of the No Build Alternative.

4.5.2 Build Alternatives

Elstun Connection (PID 113602)

Alternatives 1, 3, & 4A: Embankment would be necessary to construct the shared-use path around the SR 32/ SR 125 interchange ramp which would add significant fill to the existing electric transmission poles located within this area. It is anticipated that these poles would need to be replaced along with approximately 600 ft of electric transmission lines.

Alternatives 1 & 4A: Several MSD manholes and appurtenances associated with the combined sewer overflow (CSO) 476, near the SR 125 bridge over Clough Creek, would need to be adjusted to grade. It is not anticipated that either of these alternatives would require relocation or modification of the CSO.

Ranchvale Connection (PID 115291)

Alternative 2: The alternative would relocate the existing eastbound curb line towards the centerline of SR 125, requiring that several storm sewer catch basins and manholes along the length of the alternative be replaced. It is not anticipated that there would be any additional utility impacts with this alternative. Electric, communication, gas, and water utilities are located on the north side of SR 125 in this area and would not be impacted.

4.6 ENVIRONMENTAL ANALYSIS

The following is a summary of the environmental resources within the project area and the anticipated involvement with those resources with the implementation of the alternatives for the Elstun Connection segment (PID 113602) and the Ranchvale Connection segment (PID 115291). Information for environmental features in the study area was obtained from secondary sources as well as a field survey of the project area conducted by Stantec, which is documented in the Environmental Resources Technical Memorandum (See **Attachment E**). Environmental maps and other information referenced in this section are included in **Attachment D**.

4.6.1 No Build Alternatives

There would be no impacts to ecological features (rivers, streams, wetlands, and habitat), Section 4(f)/6(f) resources, cultural resources, regulated materials, or underserved populations as a result of the No Build Alternative.

4.6.1 Build Alternatives

The potential impacts of each Build Alternative are described below by resource category.

***Rivers, Streams, and Wetlands*:** The proposed project is located within the Clough Creek-Little Miami River watershed (HUC-12 050902021406) and within an Ohio Environmental Protection Agency (OEPA) Nationwide Permit "Possibly Eligible" area. The project area contains seven (7) potentially jurisdictional streams – Stream 1 (Clough Creek), Stream 2, Stream 3, Stream 4, Stream 5, Stream 6, and Stream 7 (See **Attachment D.1**). In addition, eight (8) wetlands were delineated within the project area – Wetland A (forested), Wetland B (forested), Wetland C (emergent), Wetland D (emergent), Wetland E (emergent), Wetland F (emergent), Wetland G (emergent), and Wetland H (scrub-shrub). Wetlands D, F, and G are potentially isolated. Based on National Wetland Inventory mapping, Stream 1 (Clough Creek) is a riverine habitat classified as a R2UBH wetland (See **Attachment D.2**). Clough Creek is also designated by OEPA as a warmwater habitat (WWH). The project area in total contains 4,220 linear feet (lf) of streams and 1.016 acres (ac) of wetlands (0.87 ac forested, 0.002 ac scrub-shrub, 0.144 ac emergent). Additional information regarding the ecological features in the study area and photographs of these features are provided in the Ecological Resources Technical Memorandum included in **Attachment E**. The potential impacts under each alternative are described below:

Elstun Connection (PID 113602)

Alternative 1: The construction limits for Alternative 1 are expected to impact approximately 301 lf of streams (288 lf of Stream 1 and 13 lf of Stream 2) and 0.014 ac of wetlands (0.01 ac of Wetland D and 0.004 ac of Wetland E).

Alternative 3: The construction limits for Alternative 3 are expected to impact approximately 273 lf of streams (66 lf of Stream 1, 83 lf of Stream 2, 28 lf of Stream 3, 75 lf of Stream 4, and 21 lf of Stream 5) and 0.398 ac of wetlands (0.004 ac of Wetland A, 0.37 ac of Wetland B, and 0.024 ac of Wetland C).

Alternative 4A: The construction limits for Alternative 4A are expected to impact approximately 75 lf of streams (62 lf of Stream 1 and 13 lf of Stream 2) and 0.021 ac of wetlands (0.011 ac of Wetland D and 0.01 ac of Wetland F).

Ranchvale Connection (PID 115291)

Alternative 2: The construction limits for Alternative 2 are expected to impact approximately 329 lf of Stream 6. There would be no wetlands impacts.

***Floodplain*:** The western portion of the project area falls within the 100-year floodplain of Clough Creek. (See **Attachment D.3**). The potential impacts under each alternative are described below:

Elstun Connection (PID 113602)

Alternative 1: This alternative would result in an expected 2.53 ac of encroachment of the 100-year floodplain of Clough Creek and an additional 0.18 acre of encroachment to the 100-year floodway of Clough Creek.

Alternative 3: There is an expected 2.41 ac of encroachment of the 100-year floodplain of Clough Creek and an additional 0.215 acre of encroachment to the 100-year floodway of Clough Creek under this alternative.

Alternative 4A: There is an expected 3.1 ac of encroachment of the 100-year floodplain of Clough Creek and an additional 0.32 acre of encroachment to the 100-year floodway of Clough Creek under this alternative.

Ranchvale Connection (PID 115291)

Alternative 2: Alternative 2 is not expected to impact the 100-year floodplain of Clough Creek.

Threatened and Endangered Species: The project is located within Hamilton County, Ohio. Hamilton County is within the known habitat ranges of the Indiana bat and northern long-eared bat, running buffalo clover, the bald eagle, and fanshell, rayed bean, sheepnose, snuffbox, and pink mucket pearly mussels. Suitable habitat for running buffalo clover and the federally listed mussel species was found within the project area. There is approximately 7.25 acres of suitable wooded habitat (SWH) for the federal endangered Indiana bat (*Myotis sodalis*) and federal threatened northern long-eared bat (*Myotis septentrionalis*), in the form of scrubby Upland Forest (UF), Floodplain Forest (FF) adjacent to Clough Creek, and Forested Wetland (FW), located within the project survey area (See **Attachment D.4**). Approximately 4.65 acres of SWH occurs within 100 feet of existing edge of pavement, encompassing habitat from all three types mentioned above. No records of Indiana bat or northern long-eared bat captures or hibernacula were found within a 1-mile radius of the project area and a field survey found no potential maternity roost trees beyond 100 feet of existing edge of pavement or suitable winter habitat within the project area. While running buffalo clover had been found adjacent to the project area (See **Attachment D.4**), a field survey found no individuals or populations within the project area. No bald eagle nests were observed within the project area. A mussel reconnaissance survey found no evidence of mussels within the project area (no living or freshly dead shells).

A species records check found four state-listed species within a 1-mile buffer of the project area: loggerhead shrike (*Lanius ludovicianus*), mountain madtom (*Noturus eleutherus*), blue sucker (*Cycleptus elongatus*), and wartyback (*Cyclonaias nodulata*) (See **Attachment D.4**). Suitable habitat for the loggerhead shrike (in semi-open scrub/shrub habitat) and the mountain madtom (Stream 1) is found within the project area. There is no suitable habitat for the blue sucker and wartyback within the project area. Additional information

regarding potential impacts to threatened and endangered species is included in the Tech Memo included in **Attachment E**. The potential impacts under each alternative are described below:

Elstun Connection (PID 113602)

Alternative 1: The construction limits for Alternative 1 are expected to impact approximately 0.21 ac of suitable wooded habitat as well as suitable habitat for the loggerhead shrike and limited suitable habitat for the mountain madtom.

Alternative 3: The construction limits for Alternative 3 are expected to impact approximately 1.0 ac of suitable wooded habitat as well as suitable habitat for the loggerhead shrike and the mountain madtom.

Alternative 4A: The construction limits for Alternative 4A are expected to impact approximately 1.45 ac of suitable wooded habitat as well as suitable habitat for the loggerhead shrike and the mountain madtom.

Ranchvale Connection (PID 115291)

Alternative 2: The construction limits for Alternative 2 are expected to impact approximately 0.37 ac of suitable wooded habitat as well as limited suitable habitat for the loggerhead shrike.

Cultural Resources: A Section 106 Scoping Request Form was completed for this Feasibility Study. Based on a review of the State Historic Preservation Office's online mapping, the western portion of the project area is located within the Clough Creek and Sand Ridge Archaeological District, which is listed on the National Register of Historic Places (NRHP). No other cultural resources were found within the project area (See **Attachment D.5**). The potential impacts under each alternative are described below:

Elstun Connection (PID 113602)

Alternative 1: The construction limits for Alternative 1 fall within the boundary of the Clough Creek and Sand Ridge Archaeological District.

Alternative 3: The construction limits for Alternative 3 fall within the boundary of the Clough Creek and Sand Ridge Archaeological District.

Alternative 4A: The construction limits for Alternative 4A fall within the boundary of the Clough Creek and Sand Ridge Archaeological District.

Ranchvale Connection (PID 115291)

Alternative 2: The construction limits for Alternative 2 are not expected to impact any cultural resources.

Section 4(f)/6(f): Section 4(f)/6(f) properties include publicly owned parks, recreational areas, wildlife and waterfowl refuges, or public and private historical sites. The only Section 4(f) property within the study area is the LMST, which is located at the western terminus of the study area. There are no Section 6(f) properties in the project area. The potential 4(f) impacts are described below:

Elstun Connection (PID 113602)

Each of the Build Alternatives of the Elstun Connection (PID 113602) would connect to the LMST at the SR 125/SR 32 interchange where a shared-use path is being constructed on the SR 125 bridge over the Little Miami River to connect to the Lunken Trail and subsequently the Ohio River Trail. Section 4(f) coordination would be required for this project.

Ranchvale Connection (PID 115291)

There are no Section 4(f)/6(f) properties (publicly owned parks, recreational areas, wildlife and waterfowl refuges, or public and private historical sites) that would be impacted by the Ranchvale Connection (PID 115291).

Air and Noise Quality: There would be no adverse air and noise quality impacts associated with this project. The project would have an overall positive impact on air and noise quality as a result of individuals biking and walking instead of driving. Overall emissions would decrease and traffic noise would be reduced.

Drinking Water Resources: The Elstun Connection (PID 113602) project is partially located within the boundaries of a designated sole source aquifer and a water well is located within the Elstun Connection project area (See **Attachment D.6**). The proximity of the project to a sole source aquifer would require a plan note to be included in the project's construction plans in accordance with ODOT's *Standard Operating Procedure for Drinking Water Resources.* The plan note would include an environmental commitment to ensure that contractors employ basic protective measures, such as avoiding refueling and maintenance activities in environmentally sensitive areas to minimize the potential for contamination (ODOT, 2005).

The Ranchvale Connection is not located within the boundaries of the sole source aquifer so there would be no impacts to drinking water resources from this project.

Farmland: The project is located entirely within an urbanized area and would not require coordination under the Farmland Protection Policy Act (See **Attachment D.7**).

Regulated Materials: A Regulated Materials Review (RMR) Screening was conducted as part of the Feasibility Study. Based on this screening, there are a total of 36 regulated material (RM) sites within the project area as mapped by the Ohio Regulated Properties Search (ORPS) Tool (See **Attachment D.8**). These include two Resource Conservation and Recovery Act (RCRA) sites, 27 underground storage tank (UST) locations, 6 leaking underground storage tank (LUST) locations, and one spill site. Based on coordination of the RMR with ODOT, there would be no additional regulated materials investigations required for this project unless additional right-of-way and/or deep excavation is required (ODOT, 2021a).

Underserved Populations: U.S. Census data provided on ODOT's TIMS mapping and USEPA EJSCREENER was used to identify underserved populations in the project area. This data is summarized in **Table 2**. The proposed project would not result in residential or business displacements and there would be no adverse impacts to underserved populations as a result of the proposed project (See **Attachment D.9-D.11**). The project would provide benefits for low-income and elderly residents by providing pedestrian

and bicycle access to the Mt. Washington Business District, the LMST and other regional trails, as well as other recreational amenities accessed by the LMST including Stanberry Park, the Otto Armleder Park, Lunken Airport Playfield and Recplex, Clear Creek Park and Soccer Complex, Robert Short Park, and the Main Street Business District in the Village of Newtown (Anderson Township, 2020)

Table 2: Percent Underserved Population
HAM-LMST Extension to Ranchvale Project Area

	Minority	Low-Income	Limited English Proficiency	Elderly	Disabled
Hamilton County	34.5	32.5	1.4	14.7	12.4
Block Group 390610046042	30.5	17.6	0.0	7.5	13.8
Block Group 390610046051	29.3	27.6	1.7	10.2	10.5

Source: ODOT Transportation Information Mapping System (TIMS) and US Environmental Protection Agency (USEPA) EJSCREENER, accessed June 30, 2021.

Public Involvement: As discussed in Section 1.1, Project History, the need for improvements to pedestrian and bicycle connectivity between the LMST and Ranchvale Drive was identified in the *Eastern Corridor Segments II and III (PID 86462) Transportation Needs Analysis*, which was prepared in July 2017. This study was followed by the *Conceptual Alternatives Implementation Plan for Eastern Corridor Segments II and III (PID 86462)*, prepared in 2019, which identified the proposed pedestrian improvements along Elstun Road and the proposed shared-use path between the SR 125 walk at Elstun to the Little Miami Scenic Trail as four of 68 projects that should be prioritized for implementation. The public involvement process for each of these studies is detailed in the reports cited above and summarized briefly as follows.

Transportation Needs Analysis: During the Needs Analysis study, stakeholder input was gathered through an Eastern Corridor Development Team (ECDT) meeting, which included Eastern Corridor Partners, community representatives, and leadership of the Eastern Corridor communities, business associations, and other stakeholder groups that have an interest in the Eastern Corridor Program. In addition, a series of Focus Area Workshops were held for smaller geographic areas within the Eastern Corridor area to gather public input regarding community values and priorities and the transportation needs of the focus areas. To reach all residents within the Eastern Corridor area, an online interactive survey was conducted which solicited information from residents and commuters about transportation issues in Segments II and III of

the Eastern Corridor. ODOT also held a Public Open House to update the public on the Eastern Corridor Segments II and III Transportation Needs Analysis Study and provide an opportunity for the public to provide comments on the needs identified for the six focus areas.

Conceptual Alternatives Implementation Plan: As part of the development of the Implementation Plan, Advisory Committees were established for the six Focus Areas within Segments II and III. These committees included elected officials, transportation planning professionals, and community and interest group representatives, including representatives of the Sierra Club, Tri-State Trails/Green Umbrella, and the Ohio-Kentucky-Indiana (OKI) Regional Council of Governments. Each Focus Group held four meetings with ODOT over the course of the study to further refine transportation needs in the Focus Areas and assist with developing solution concepts. Two Public Open House Meetings also were held throughout the development and refinement of the transportation concepts to ensure that the public had an opportunity to provide input at key decision points.

HAM-LMST to Ranchvale Feasibility Study: As part of the Feasibility Study, the study team held several meetings with stakeholders to discuss possible shared-use path alignments between LMST and Elstun. A Virtual Public Open House will be held in August 2021 to provide the public with the opportunity to comment on the alternative alignments for both the Elstun Connection (PID 113602) and Ranchvale Connection (PID 115291). Comments received from the public will be included in a Public Involvement Summary, which will be an attachment to this report (**Attachment F**). Public sentiment about the proposed alternatives will be an important component in the selection of the Preferred Alternative.

4.7 COST ESTIMATE

A preliminary construction cost estimate for each Build Alternative has been developed as a part of this study. The preliminary cost estimates are provided in **Attachment G**. More detailed construction costs, including right-of-way cost estimates will be developed during development of the Preferred Alternative.

5.0 COMPARISON OF ALTERNATIVES

Detailed evaluation matrices, which summarize purpose and need, environmental, engineering, traffic, and public input evaluation criteria for the Elstun Connection (PID 113602) and Ranchvale Connection (PID 115291) alternatives are provided as **Tables 3** and **4**.

Table 3: Evaluation Matrix Elstun Connection				
Feature/Consideration	**Preliminary Alternatives**			
	No Build Alternative	**Alternative 1**	**Alternative 3**	**Alternative 4A**
Purpose and Need				
Improve pedestrian and bicycle connectivity along SR 125 between the Little Miami Scenic Trail and Ranchvale Dr.	No	Yes	Yes	Yes
Cultural Resources				
NRHP-Listed Sites	No impact	Expected impact to Clough Creek and Sand Ridge Archaeological District	Expected impact to Clough Creek and Sand Ridge Archaeological District	Expected impact to Clough Creek and Sand Ridge Archaeological District
Section 4(f)/6(f) Sites	No impact	Minimal impact	Minimal impact	Minimal impact
Ecological Resources				
Streams	No impact	Expected impact of 301 lf to potentially jurisdictional streams	Expected impact of 271 lf to potentially jurisdictional streams	Expected impact of 75 lf to potentially jurisdictional streams
Wetlands	No impact	Expected impact of 0.011 acre to Wetland D (potentially isolated) and 0.004 acre to Wetland E	Expected impact of 0.374 acre to Wetland A and Wetland B (Palustrine Forested) and 0.024 acre to Wetland C (potentially isolated)	Expected impact of 0.011 acre to Wetland D (potentially isolated) and 0.01 acre to Wetland F (potentially isolated)
Jurisdictional Ditches	No impact	None	None	None
Threatened & Endangered Species	No impact.	Potential bat habitat	Potential bat habitat	Potential bat habitat
100-Year Floodplain				
100-Year Floodplain Encroachment	No impact	Expected 2.53 acres encroachment	Expected 2.41 acres encroachment	Expected 3.1 acres encroachment
100-Year Floodway Encroachment	No impact	Expected 0.18 acre encroachment	Expected 0.215 acre encroachment	Expected 0.32 acre encroachment
Frequency of Flooding on Shared-Use Path	N/A	Flooding on the proposed trail is largely controlled by backwater flooding from the Ohio River. A 3 year recurrance backwater elevation from the Ohio River will overtop the proposed Trail. The trail will flood at the same time the LMST floods.	Flooding on the proposed trail is largely controlled by backwater flooding from the Ohio River. A 3 year recurrance backwater elevation from the Ohio River will overtop the proposed Trail. The trail will flood at the same time the LMST floods.	Flooding on the proposed trail is largely controlled by backwater flooding from the Ohio River. A 3 year recurrance backwater elevation from the Ohio River will overtop the proposed Trail. The trail will flood at the same time the LMST floods.
Hazardous Materials				
Regulated Materials Review	No impact	No impact	No impact	No impact
Drinking Water Resources				
Sole-Source Aquifer	No impact	No impact and minimal encroachment	No impact and minimal encroachment	No impact and minimal encroachment
Source Water Protection Area	No impact	No impact	No impact	No impact
Air Quality and Noise				
Air Quality	No impact	Slight Improvement in Air Quality due to Reduced Emissons	Slight Improvement in Air Quality due to Reduced Emissons	Slight Improvement in Air Quality due to Reduced Emissons
Noise	No impact	No Impact to Slight Improvement due to Reduced Traffic	No Impact to Slight Improvement due to Reduced Traffic	No Impact to Slight Improvement due to Reduced Traffic
Community and Land Use				
Relocations	None	None	None	None
Right-of-Way	No impact	0.7 acres of new permanent and/or temporary ROW required from 1 owner.	0.5 acres of new permanent and/or temporary ROW required from 1 owner.	1.3 acres of new permanent and/or temporary ROW required from 1 owner.
Traditionally Underserved Populations (TUP)	No impact	Improves Bike/Pedestrian Connectivity for Low Income/Elderly Residents	Improves Bike/Pedestrian Connectivity for Low Income/Elderly Residents	Improves Bike/Pedestrian Connectivity for Low Income/Elderly Residents

Table 3: Evaluation Matrix Elstun Connection				
Feature/Consideration	**Preliminary Alternatives**			
	No Build Alternative	**Alternative 1**	**Alternative 3**	**Alternative 4A**
Engineering Considerations				
Length of Shared Use Path	N/A	2400'	2400'	2400'
Width of Shared Used Path	N/A	10' and 12'	12'	12'
Design Speed	N/A	16 mph	20 mph	13 mph
Safety Analysis	Bicycle and pedestrians must use the shoulder of the ramps and road to go between the Little Miami Scenic Trail and the Beechmont/Elstun intersection. This results in bicycle/pedestrians crossing or traveling next to vehicular traffic.	Two bicycle/pedestrian conflicts with vehicular traffic. The alignment is separated from the roadway, but has a mid-block crossing on the Skytop Shopping Center Driveway. The mid-block crossing crosses a low volume, low speed roadway. The second crossing is at the signalized intersection of SR 125 and Elstun Rd.	One bicycle/pedestrian conflict with vehicular traffic at the signalized intersection of SR 125 and Elstun Road. The entire alignment is separated from the roadway.	One bicycle/pedestrian conflict with vehicular traffic at signalized intersection at the intersection of SR 125 and Elsturn Road. The entire alignment is separated from the roadway.
Roadway Design Issues	No impact None	Maximum grade of 5% for 300'. Path is in a narrow corridor between retaining walls and steep slopes for a length of 600'. This can create personal security issues. Limited stopping sight distance near the SR 125 bridge has lowered the design speed to 16 mph.	Maximum grade of 5% for 150'	Tight curves have been designed to minimize priveate property impacts. The design speed is listed as 13 mph as a result of these tight curves.
Structural Design Issues	Existing concrete bank stabilization is deteriorating along Clough Creek just north of SR 125	Requires 5 separate retaining walls. The total length of retaining walls is 650'	Requires a 210', 3 span bridge over Clough Creek	Requires a 150', 3 span bridge over Clough Creek. Requres 50' long retaining wall
Utility Relocations and/or Issues	No impact	Some electric line relocations may be required	Some electric line relocations may be required	Some electric line relocations may be required
Preliminary Cost Estimates				
Preliminary Construction Costs[1]	$0.00	$3,165,795.42	$1,721,810.20	$2,076,778.96
Conclusion				
Recommended as Preferred Alternative?				

1) Estimates do not include costs for design or right-of-way

Table 4: Evaluation Matrix Ranchvale Connection		
Feature/Consideration	**Preliminary Alternatives**	
	No Build Alternative	**Alternative 2**
Purpose and Need		
Improve pedestrian and bicycle connectivity along SR 125 between the Little Miami Scenic Trail and Ranchvale Dr.	No	Yes
Cultural Resources		
NRHP-Listed Sites	No impact	No impact or minimal impact
Section 4(f)/6(f) Sites	No impact	No impact
Ecological Resources		
Streams	No impact	Expected impact of 329 feet to potentially jurisdictional streams
Wetlands	No impact	No impact or minimal impact
Jurisdictional Ditches	No impact	No impact or minimal impact
Threatened & Endangered Species	No impact	Potential bat habitat
100-Year Floodplain		
100-Year Floodplain Encroachment	No impact	No impact or minimal impact
100-Year Floodway Encroachment	No impact	No impact or minimal impact
Frequency of Flooding on Shared-Use Path	N/A	N/A
Hazardous Materials		
Regulated Materials Review	No impact	No impact
Drinking Water Resources		
Sole-Source Aquifer	No impact	No impact
Source Water Protection Area	No impact	No impact
Air Quality and Noise		
Air Quality	No impact	Slight Improvement in Air Quality due to Reduced Emissons
Traffic Noise	No impact	Slight Improvement in Traffic Noise due to Reduced Autos
Community and Land Use		
Relocations	None	None
Right-of-Way	No impact	New permanent and/or temporary ROW required from 3 parcels
Traditionally Underserved Populations (TUP)	No impact	Improves Bike/Pedestrian Connectivity

Engineering Considerations		
Length of Shared Use Path	N/A	1400'
Width of Shared Use Path	N/A	12'
Safety Analysis	Eastbound bicyclists have an on-street bicycle lane and westbound bicyclists share the outside lane of SR 125. This results in bicycles traveling next to or as part of vehicular traffic. Pedestrians must cross SR 125 at the signalized Elstun Road and Ranchvale Drive intersections to use the sidewalk on the north side of SR 125 or walk in the bicycle lane/grass on the south side of SR 125 to avoid crossing SR 125.	No bicycle/pedestrian conflicts with vehicular traffic. The shared use path is separated from the roadway.
Roadway Design Issues	No roadway design issues	No roadway design issues
Structural Design Issues	No structural deficiency issues	Requires 100' drilled shaft retaining wall
Utilities	No impact	No impact or minimal impact
Preliminary Cost Estimates		
Preliminary Construction Costs[1]	$0.00	$580,466.16
Conclusion		
Recommended as Preferred Alternative?	**No**	**Yes**

1) Estimates do not include costs for design or right-of-way. Inflation contingency is based on construction during 2024/2025

6.0 PREFERRED ALTERNATIVE

A Preferred Alternative for the Elstun Connection (PID 113602) will be selected after public comments are received on the proposed alternatives at the Public Open House. Alternative 2 is the Preferred Alternative for the Ranchvale Connection (PID 115291).

7.0 REFERENCES

Anderson Township. 2017. *Anderson Township 2016 Comprehensive Plan,* Cincinnati, Ohio.

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Ohio Department of Transportation (ODOT). 2021a. ODOT Decision Document on RMR Screening, July 7, 2021

Stantec Consulting Services Inc., 2019. *Conceptual Alternatives Implementation Plan for Segment II/III of the Eastern Corridor Study (PID 86462)*. Lebanon, Ohio

Stantec Consulting Services Inc. 2017. *Transportation Needs Analysis prepared for Eastern Corridor Segments II and III (PID 86462).* Lebanon, Ohio

ATTACHMENT A

Excerpts from *Transportation Needs Analysis*

Primary Needs	Secondary Needs
Address capacity issues and long queues on SR 32 and Round Bottom Road approaches	Address deficient sight distance at intersection
SR 32: Round Bottom Road to Little Dry Run Road	
• Address westbound AM peak-hour and eastbound PM peak-hour delays • Address pedestrian connectivity to east corporation limit	• Address bicycle connectivity • Support access to future transit connections
Round Bottom Road: SR 32 to Valley Avenue	
Address congestion	Enhance bicycle connectivity
Round Bottom Road/Valley Avenue Intersection	
Address capacity issues with northbound left-turn movement and eastbound approach	None
Round Bottom Road: Valley Avenue to Broadwell Road	
None	• Correct deficient roadway curve near Natorp's Nursery • Enhance bicycle connectivity
Valley Avenue	
None	None
Church Street: SR 32 to Valley Avenue	
Address northbound AM and southbound PM peak-hour delays	• Address roadway grades at railroad crossing • Enhance bicycle connectivity • Support access to future transit connections
Church Street/Valley Avenue Intersection	
Address capacity issues for southbound left-turn movement	None
Newtown Road (Church Street): Valley Avenue to US 50	
Address northbound AM and southbound PM peak-hour dealys	None

2.3 SR 125/SR 32 AREA FOCUS AREA

The SR 125/SR 32 Focus Area, which is within Anderson Township, includes segments of SR 125 just west and east of its interchange with SR 32, and the segment of SR 32 extending from its interchange with SR 125 to the west corp. limits of the Village of Newtown. This Focus Area includes the SR 125 crossing of the Little Miami River. A detailed roadway map of the SR 125/SR 32 Focus Area is provided in **Appendix 3**.

2.3.1 Study Area Characteristics

The SR 125/32 interchange and SR 32 in this area are within a floodplain for the Little Miami River, which is largely undeveloped on the north side of the roadway and is used for agriculture, greenspace, and recreation. The Clear Creek Soccer Complex and a multi-use trail are located in this area. The area south of SR 32 is largely undeveloped as well, with the exception of several suburban-style single-family housing subdivisions. There are no planned transportation improvements for this focus area listed on ODOT's Statewide Transportation Improvement Program (STIP) for FY 2016-2019, dated July 29, 2016.

2.3.2 Community Attributes Identified in the Focus Area Workshop

Fifteen participants from the area and surrounding communities attended the SR125/SR 32 Focus Area Workshop. Workshop participants identified which community attributes are important to the SR 125/SR 32 area and should be considered throughout the transportation planning process. These features include:

- presence of attractive parks and natural features (hills, greenspaces, Little Miami River)
- strong sense of community (farms, churches, schools)
- strong sense of history
- measured pace and balanced lifestyles and attitudes
- diverse housing market
- accessibility to airports, downtown Cincinnati, Kenwood, and the Red Bank corridor

2.3.3 Transportation Needs

Stakeholder Input: Transportation needs within the SR 125/SR 32 Focus Area were identified during the Focus Area Workshop and the online interactive survey. These comments, which focus on safety, congestion, mobility, and access issues are included in the Needs Analysis Table, which is included in **Appendix 3**, and summarized in the following sections.

Technical Studies: Technical data was collected for the roadway network within the SR 125/SR 32 Focus Area to identify areas of high crash rates, congestion, geometric deficiencies, and pedestrian usage. This information is provided in the Needs Analysis Table (**Appendix 3**) and summarized in the following sections.

2.3.3.1 SR 125: Beechmont Circle to SR 32

The segment of SR 125 between Beechmont Circle and SR 32 is a four-lane undivided limited-access roadway approximately one mile in length with a posted speed of 45 mph.

Stakeholder Input: Ten comments identify safety and congestion issues on SR 125 from the Beechmont Circle to SR 32. Representative comments include:

- The merge onto the levee from SR 32 is too short and dangerous (7 comments)
- Another lane should be added on the ramp from SR 32 to the levee (3 comments)
- Speeding is an issue on the levee (1 comment)

Twenty-six comments concern bicycle issues. These comments identify the following needs:

- A bikeway bridge over the Little Miami River due to safety concerns of bikes crossing the Beechmont Levee (7 comments)
- Bike lanes and traffic calming across the levee (2 comments)
- A connection between Lunken and Loveland Bike Trails (1 comment)
- A connection between Armleder and Lunken bike trails (2 comments)
- A connection between Little Miami Trail and Ohio River Trail (1 comment)
- A connection between existing bike trails and Downtown Cincinnati (1 comment)
- A bike path along Beechmont levee and Mt. Lookout Square (1 comment)

Eight comments address pedestrian issues. Representative comments include the following:

- There are a number of pedestrians who cross the levee even though there is a "Pedestrians Prohibited" sign (1 comment)
- Bike/pedestrian access is needed across the Little Miami River (4 comments)
- A connection between the sidewalk coming down Beechmont hill to the hike/bike trail is needed (1 comment)

Two comments identify the following public transit needs:

- Light transit (1 comment)
- Better transit (bus or rail) to move the region forward and attract people to the area (1 comment)

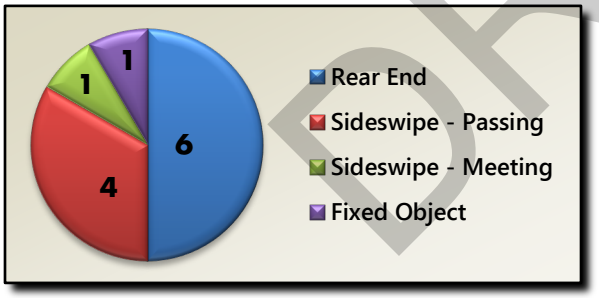


Figure 25: Frequency of Crashes by Crash Type SR 125: Beechmont Circle to SR 32

Crash Data: An ODOT crash screening identified an approximate 0.15-mile stretch of SR 125 adjacent to the Reeves Golf Course Tennis Courts as a high hazard location. As a result, the entire segment of SR 125 from Beechmont Circle to SR 32 was further analyzed. As illustrated in **Figure 25**, there were 12 total crashes on this segment during a three-year period (2013-2015). Rear-end collisions represent 50% of the total crashes. Of the 12 total crashes on the segment, five (40%) occurred in the high hazard segment. Within the high hazard segment, 60% of the crashes were rear-end crashes. See **Attachment A-2** for a plot of all 12 crashes.

LOS Analysis: A freeway analysis was performed using the HCS. During the AM peak-hour the eastbound direction operates at LOS A in 2015 and LOS B for the No Build opening year (2022) and No Build design year (2042) conditions while the westbound direction operates at LOS D in 2015 and LOS E for the No Build opening year and No Build design year conditions. During the PM peak-hour the eastbound direction operates at LOS D in 2015, the No Build opening year, and No Build design year conditions while the westbound direction operates at LOS B in 2015, the No Build opening year, and No Build design year conditions. No improvements are required for the existing, No Build opening year and No Build design year conditions. These results are supported by the

travel time data which shows no significant increase in travel time during the peak hours compared to off-peak hours.

Geometric Data: No geometric deficiencies were identified along this segment.

Pedestrian Data: No pedestrian data is available for this segment.

2.3.3.2 SR 125/SR 32 Interchange

The SR 125/SR 32 interchange is a trumpet interchange which features a loop ramp to serve traffic traveling from eastbound SR 125 to SR 32, and slip ramps for traffic traveling to and from westbound SR 125 and SR 32. A partial loop ramp carries traffic from SR 32 to eastbound SR 32:

Figure 26. SR 125/SR 32 Interchange

Stakeholder Input: Forty-five comments address roadway issues at the SR 125/SR 32 intersection. Representative comments include:

- Dangerous interchange due to the short merge on ramp to westbound SR 125 from SR 32 and the tight loop on the ramp from eastbound SR 125 to SR 32 (32 comments)
- Congestion is a problem (1 comment)
- Visibility on the ramps at SR 125 and SR 32 should be improved (2 comments)
- There are frequent accidents at this interchange (1 comment)
- The ramp from eastbound SR 125 to SR 32 occasionally floods, which cuts off access to SR 32 under SR 125 (2 comments)
- A second exit lane should be added from eastbound SR 125 to SR 32 (1 comment)

Thirty-four (34) comments were provided regarding bicycle concerns and needs in this area. Representative comments include the following:

- A connection between the Little Miami Scenic Bike Trail and the Lunken/Amleder Bike Trail is needed (9 comments)
- A connecting bike path is needed (9 comments)

- It is unsafe for bicycles to cross the Beechmont Levee (8 comments)

Nine public transit comments identify the following needs:

- Public transit (3 comments)
- Transit, in combination with park and ride (1 comment)
- Smaller shuttles to provide point-to-point service (1 comment)
- Bus Rapid Transit (BRT) routes (1comment)
- Transit to link smaller business districts together (1 comment)

Crash Data: Over a three-year period 2013-2015), a total of 27 crashes occurred at this interchange. Fixed object and rear-end crashes represented about 75% of the overall crashes, with a majority (17 crashes) occurring in wet conditions. The frequency of crashes by crash type is shown in **Figure 27**.

Data indicates that many of the crashes at this interchange occurred in two distinct clusters. One cluster of nine (9) crashes occurred at the curve/merge on the ramp from southbound SR 32 to westbound SR 125. A majority of these crashes (6) occurred in wet conditions between the hours of 11:00 a.m. and 2:00 p.m. Fixed object crash type was the most prevalent at this cluster (4 crashes), all in wet conditions.

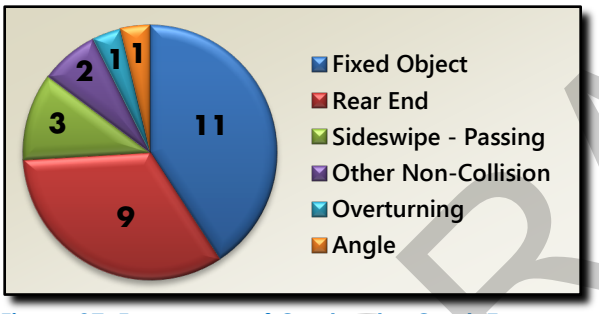


Figure 27. Frequency of Crashes by Crash Type SR 125/SR 32 Interchange

Another cluster of eleven (11) crashes occurred along the curve on the ramp from eastbound SR 125 to northbound SR 32. Ten (10) of these crashes occurred in the daylight, and eight (8) occurred in wet conditions. Fixed-object crash type was the most prevalent (6 crashes), all in wet conditions.

Potential causal factors for crashes at this interchange include excessive speed, slippery pavement, inadequate geometry, and inadequate delineation. See **Attachment A-2** for a plot of all 27 crashes.

LOS Analysis: An analysis of the merge/diverge operations of the ramps was performed using the HCS. All ramps are operating at LOS D or better during both the AM and PM peak hours in 2015 and for the No Build opening year (2022) and No Build design year (2042) conditions. No improvements are required for the existing, No Build opening year and No Build design year conditions.

Geometric Data: One sag vertical curve is deficient at this interchange and the superelevation rate on all ramps does not meet current standards. The deficient sag vertical curve has a k-value of 43 and the minimum value for a design speed of 35 mph is 49. The superelevation on all four interchange ramps is based on an 0.083 ft/ft maximum superelevation. The current standard for maximum superelevation on urban ramps is 0.06 ft/ft.

Pedestrian Data: No pedestrian data is available for this segment.

2.3.3.3 SR 125: SR 32 to Elstun Road

The section of SR 125 between SR 32 and Elstun Road is a four-lane undivided highway approximately 0.2 miles in length with a posted speed of 45 mph.

Stakeholder Input: Seventeen comments were provided for this area, which included concerns regarding congestion and safety on SR 125. Representative comments include:

- Speeding and congestion on SR 125 and through Mt. Washington has devastated Mt. Washington as the business district effectively has a highway through the middle of "town", which is unsafe for pedestrians, cyclists, and parked cars (7 comments)
- Congestion is bad on the ramp from the Beechmont levee and SR 32; second would allow a continuous turn without merging (1 comment)
- There should be a left turn lane at Beacon and Beechmont (1 comment)
- There should be consistency in the number of lanes going up or down the hill on Beechmont Avenue (1 comment)
- The bike lane going up the hill on Beechmont makes it impossible to put in a complete turn lane and compromises traffic safety (1 comment)
- Standing water is present on the eastbound lanes during rain events, causing a safety concern (1 comment)

Nine comments were provided regarding bicycle access issues. Representative comments include:

- A bike connection over the Little Miami River and a connection to the trail along Beechmont Avenue into Mt. Washington is needed (3 comments)
- Bike trail connection to Downtown Cincinnati is needed (1 comment)
- A connection of Little Miami Trail with Armleder and Lunken Trail is needed (1 comment)
- Metro buses should be used to transport bicyclists up the hill on Beechwood Avenue to Mt. Washington allowing the removal of the bike lane on Beechwood Avenue (1 comment)

The pedestrian comments include:

- Sidewalks are needed on Beechmont Avenue and Elston since many people walk from the apartment complexes to buses (1 comment)
- The lack of sidewalks in certain areas along Beechmont Avenue is unsafe (1 comment)
- There are no sidewalks on SR 125 between SR 32 and Ranchvale (1 comment)

Crash Data: ODOT's crash screening did not identify this segment as an area of high hazard. Crash data indicates that three crashes occurred over the three-year period (2013 – 2015).

LOS Analysis: No level of service analysis was conducted for this segment.

Geometric Data: At the west approach to the bridge over Clough Creek, an abrupt grade change exceeds the maximum allowable grade break for a design speed of 45 mph. The existing grade break is 1.00%; the allowable grade break is 0.55% (*L&D Vol. 1, Figure 203-2)*.

Pedestrian Data: No pedestrian data is available for this segment.

2.3.3.4 SR 125/Elstun Road Intersection

The SR 125/Elstun Road intersection is a signalized four-leg intersection:

Figure 28. SR 125/Elstun Road Intersection

Stakeholder Input: One public comment identifies congestion as an issue at this intersection.

Crash Data: ODOT's crash screening did not identify this intersection as an area of high hazard. Crash data indicates that 14 crashes occurred over the three-year period (2013 – 2015).

LOS Analysis: The HCS analysis indicates that during the AM peak-hour the 95th percentile queue length for the northbound left turn movement is more than twice the storage length for the existing, No Build opening year (2022), and No Build design year (2042) conditions. By the design year, the westbound movement is failing with a v/c ratio of 1.0. It is anticipated that operational or minor intersection improvements are required for the existing, No Build opening year and No Build design year conditions.

Geometric Data: One sag vertical curve is deficient on SR 125 through this intersection. The deficient sag vertical curve has a k-value of 38 and the minimum value for a design speed of 45 mph is 79.

Pedestrian Data: Sixty-six (66) pedestrians were observed at the intersection during a 24-hour period recorded on November 17, 2015.

2.3.3.5 SR 32: SR 125 to Clough Pike

The segment of SR 32 from the SR 125 interchange to Clough Pike is a two-lane undivided roadway which measures approximately 0.46 miles in length. The segment includes ODNR driveway access to the Great Miami River, driveway access to one commercial property, and two roadway access

points to the Estates of Signal Hill subdivision. This roadway section has no sidewalks and two-foot, paved roadway shoulders. The speed limit through this section is 45 mph.

Stakeholder Input: Two roadway comments indicate that traffic congestion is a concern on SR 32 between SR 125 and Clough Pike.

Three bike comments include:

- A connection between the Little Miami Scenic Trail, Lunken Trail, and the Ohio River Trail is needed (1 comment)
- The Anderson Township Bike Path to Newtown should be finished (2 comments)
- Hike/bike trails should be linked with existing trails (1 comment)

Two public transit comments were provided which identify the need for light rail transit.

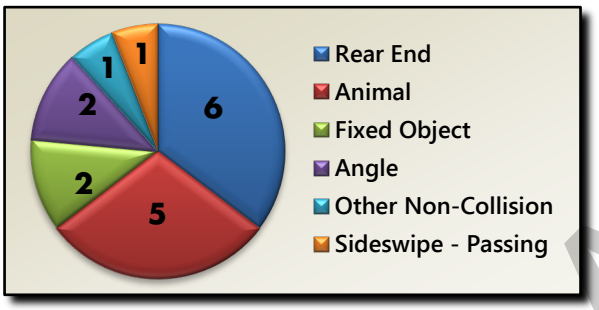


Figure 29. Frequency of Crashes by Crash Type SR 32: SR 125 to Clough Pike

Crash Data: An ODOT crash screening identified an approximate 0.15-mile sub-segment east of the Beechmont Avenue interchange as a high-hazard location. Therefore, a detailed crash analysis of the entire segment was completed.

As illustrated in **Figure 29**, there were 17 total crashes in this roadway section during a three-year period (2013-2015). Rear-end and animal crashes represent 65% of the total crashes. Of the 17 total crashes on the segment, 12 (70%) occurred in the high-hazard section. Within the high hazard segment, half of the crashes were rear-end crashes. All six of the rear-end crashes occurred in dry conditions. Five of the rear-end crashes occurred in clear daylight conditions, five occurred from 4:00 PM to 6:00 PM, and four occurred in the northbound direction. See **Attachment A-2** for a plot of all 17 crashes.

LOS Analysis: No level of service analysis was conducted for this segment; however, the travel time data indicates a 40% increase in the westbound travel time during the AM peak-hour compared to the off-peak travel time indicating congestion during the AM peak-hour.

Geometric Data: No geometric deficiencies were identified along this segment.

Pedestrian Data: No pedestrian data is available for this segment.

2.3.3.6 SR 32/Clough Pike Intersection

The SR 32/Clough Pike intersection is a three-leg, signalized intersection:

Figure 30. SR 32/Clough Pike Intersection

Stakeholder Input: Thirteen roadway comments address roadway issues at the SR 32/Clough Pike Intersection. Representative comments include:

- The roadway should be widened to 4 lanes (1 comment)
- A new intersection should be created (3 comments)
- Due to congestion on Clough and SR 32 in the morning it is difficult to turn left from westbound SR 32 (3 comments)
- The right turn-only lane is not marked well or with enough advance notice, so drivers unfamiliar with the area try to merge left, causing a safety issue (1 comment)
- There are frequent accidents here (1 comment)

Two bike comments were provided:

- A bike/pedestrian facility is needed along Clough Pike into Anderson Township (1 comment)
- A bike path connection is needed from Saddleback to SR 32 and Clough Pike to SR 125 (1 comment)

Crash Data: An ODOT crash screening did not identify this intersection as an area of high-hazard. Crash data indicates that eight crashes occurred over a three-year period (2013-2015).

LOS Analysis: The HCS analysis indicates that the westbound movement will fail during the AM peak-hour and have a v/c ratio greater than one during the No Build opening year (2022) and No Build design year (2042) conditions. No intersection improvements are required for the exiting

Westbound Clough Pike AM Peak Period Queue at SR 32

conditions, but it is anticipated that operational or minor intersection improvements are required for the No Build opening year and No Build design year conditions.

To supplement the HCS analysis a queue study was conducted for the westbound approach during the AM peak period. The number of cars in the queue was recorded at the end of green for 15 minutes prior to the peak hour to 15 minutes after the peak-hour ended. The number of cars was translated to a length by assuming a queue length of 25 feet per vehicle. During the AM peak period the maximum westbound queue extended 1,025 feet. The recorded queues during the AM peak period are shown in **Figure 31**:

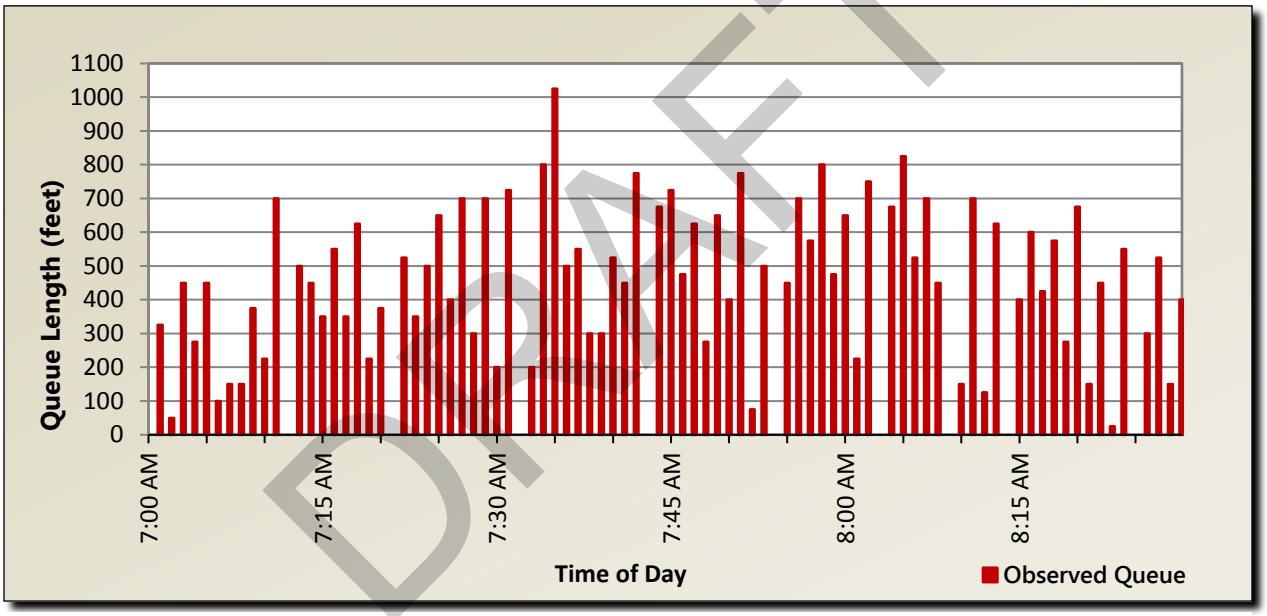


Figure 31. Westbound Clough Pike AM Peak Period Queue at SR 32

Geometric Data: No geometric deficiencies were identified at this intersection.

Pedestrian Data: No pedestrians were observed at the intersection during a 24-hour period recorded on November 17, 2015.

2.3.3.7 SR 32: Clough Pike to Village of Newtown Corporation Limit

The segment of SR 32 between Clough Pike and the west corporation limit of Newtown is a two-lane, undivided roadway with unpaved shoulders and guardrail along portions of the segment This segment of SR 32 measures 1.55 miles in length. The only access points along this stretch of SR 32 are at Turpin Lake Place, Clear Creek Park, and Anderson Driving Range, and the posted speed limit is 55 mph.

Stakeholder Input: Twenty-nine roadway comments address concerns in the section of SR 32 between Clough Pike and the West Newtown corporation limit. Of these comments, twenty-two identify congestion as a predominant concern on SR 32, especially during evening rush hour. Representative comments include:

- The road should be widened and light rail service provided in the center of a divided highway (5 comments)
- The road should be four lanes (1 comment)
- Additional lanes should be provided (3 comments)
- A bypass should be built around Newtown (1 comment)
- A new bridge is needed to connect SR 32 to the Red Bank Expressway (1 comment)
- The road needs to be repaired (1 comment)
- The roadway occasionally floods (1 comment)
- The "S" curves on SR 32 by the sod farms are an issue (1 comment)

Twelve bike comments identify the following needs:

- A new bike bridge to connect the future Five Mile Trail with the Little Miami Trail (2 comments)
- A bike path into Anderson Township (1 comment)
- The extension of the bike path to Downtown (3 comments)
- A connection between the Lunken and Loveland Trails (1 comment)
- Marked bike lanes (1 comment)

Six comments address pedestrian access needs/concerns including:

- The need for a sidewalk along SR 32 in the vicinity of the park (3 comments)
- Safe pedestrian access to Clear Creek Park (3 comments)

Public transit comments include:

- Expand bus service (1 comment)
- There is the need for public transportation in this area (1 comment)
- Expand public transportation other than bus (1 comment)
- Construct light rail along SR 32 right of way (1 comment)
- There is a need for a park and ride and public transit from Newtown to Downtown (3 comments)

Crash Data: ODOT's crash screening identified two locations (the curve west of McCullough Run and along the entrance to Clear Creek Park) as high hazard locations. Because two subsections of the segment of SR 32 from Clough Pike to the Newtown corporation limit were identified, a detailed crash analysis of the entire segment was completed.

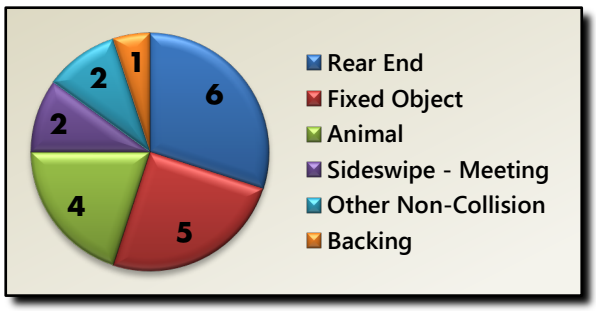


Figure 32: Frequency of Crashes by Crash Type
SR 32: Clough Pike to Newtown Corp. Limit

As illustrated in **Figure 32**, there were 20 total crashes in this roadway section during a three-year period (2013-2015). Rear-end and fixed object crashes represent 55% of the total crashes. Of the 20 total crashes on the segment, four (20%) occurred in the high hazard section west of McCullough Run and two (10%) occurred in the high hazard segment at Clear Creek Park.

There were two clusters of crashes along the segment; the four that occurred in the high hazard section west of McCullough Run and four that occurred at Turpin Lake Place. Excluding the animal crash at both clusters, there is no correlation between the crash data and a specific contributing cause for the crashes at either location. See **Attachment A-2** for a plot of all 20 crashes.

LOS Analysis: No level of service analysis was conducted for this segment; however, the travel time data indicates a 55% increase in the eastbound travel time during the PM peak-hour compared to the off-peak travel time indicating congestion during the PM peak-hour.

Geometric Data: There are three deficient horizontal curves in this segment, one of which has a deficient superelevation. There is also one deficient vertical curve in this segment. The first deficient horizontal curve, crossing McCullough Run, has a curvature of 9˚45', and a maximum superelevation of 0.08. The maximum degree of curvature for a design speed of 60 mph is 4˚15', with a maximum superelevation of 0.06. The second deficient horizontal curve (just north of the first) has a curvature of 5˚0'. A third deficient horizontal curve (at the Newtown corporation limit) has a curvature of 10˚45'. The deficient crest vertical curve is located just south of the McCullough Run crossing. This curve has a k-value of 108 (the minimum design k-value for 60 mph is 151).

Pedestrian Data: No pedestrian data is available for this segment.

2.3.4 SR 125/SR 32 Focus Area Needs Analysis

Based on the results of the technical studies, as well as the extensive public input received from the Focus Area Workshops, online interactive survey, and other public outreach efforts, the primary and secondary needs of the transportation network within the SR 125/SR 32 Focus Area were identified (primary needs are needs that *will* be addressed by this project; secondary needs are needs that *may* be addressed by this project). The input used in the needs analysis is included in the Needs Analysis Table in **Appendix 3**. The primary and secondary needs are presented in **Table 11**:

Table 11: SR 125/SR 32 Focus Area Needs Analysis

Primary Needs	Secondary Needs
SR 125: Beechmont Circle to SR 32	
None	None
SR 125/SR 32 Interchange	
• Address fixed-object crashes on the ramps from SR 32 to westbound SR 125 and eastbound SR 125 to SR 32 • Address merging traffic deficiencies on the ramp from SR 32 to westbound SR 125 • Connect Little Miami Trial to Lunken Trail	• Address ramp flooding issues • Address deficient vertical grade under the SR 125 overpass and at the SR 125 ramps
SR 125: SR 32 to Elstun Road	
None	• Address deficient roadway grade at strip mall • Address pedestrian and bicycle connectivity from Elstun Road to Little Miami Trail
SR 125/Elstun Road Intersection	
Address capacity issues for northbound left-turn movement and westbound approach	• Address deficient roadway grade • Address pedestrian connectivity between rental properties on Elstun Road and bus stops along Beechmont Avenue.
SR 32: SR 125 to Clough Pike	
• Address westbound AM peak-hour delays • Address rear-end crashes	none
SR 32/Clough Pike Intersection	
Address capacity issues and long queue on Clough Pike approach	None
SR 32: Clough Pike to Newtown Corporation Limits	
• Address eastbound PM peak-hour delays • Address deficiencies at the 'S'-curve • Address pedestrian and bicycle connectivity from the Turpin Lake subdivision to the Little Miami Trail	• Address deficient roadway grade east of Turpin Lake Place • Correct deficient roadway curve at Newtown corporation limit • Address pedestrian and bicycle connectivity from Newtown to Clear Creek Park • Address roadway flooding issues

2.4 LINWOOD/EASTERN AVENUE INTERCHANGE FOCUS AREA

The Linwood/Eastern Interchange Focus Area extends from the Linwood Avenue/Herschel Avenue Intersection to the Beechmont Circle Interchange. This focus area also includes the area

ATTACHMENT B

Excerpts from *Conceptual Alternative Implementation Plan*

Concept drawings are presented on the following pages.

DESCRIPTION

- Add a sidewalk on the east side of Elstun to connect bus stops on SR 125 with rental properties on Spindlehill Drive and Reserve Drive.
  - Sidewalk would extend between Spindlehill and SR 125

NEEDS ADDRESSED

S9) Address pedestrian connectivity between rental properties on Elstun Road and bus stops along SR 125.

5/24 MEETING DISCUSSION AND COMMENTS

- Anderson Township may also want to consider adding a sidewalk along the access road from SR 125 to the Skytop Pavilion.
- No additional comments were received following the 5/24 meeting.

8/20 MEETING DISCUSSION AND COMMENTS

- A committee member suggested taking the path to the next major drive along Elstun to connect with the apartment complex too; committee members and ODOT agreed that this option has merit.
- No additional comments were received following the 8/20 meeting.

12/11 MEETING DISCUSSION AND COMMENTS

This concept was presented as A3 at the October Open House meetings.

•Estimated project costs are currently for sidewalk installation only. Need to determine if a shared-use path is needed.

NEXT STEPS/RECOMMENDATION

- Include concept in the Implementation Plan as a high priority.
- Determine if a shared-use path is needed. If so, combine efforts with concept 125-3b (A6).

Safety ECAT Benefit/Cost Ratio	Traffic Operations							Construction Cost	R/W Impacts		Environmental Impacts		Support and/or Facilitate Multi-Modal	Improve Regional Connectivity	Improve Local Access
	Time Period	HCS Results			TransModeler Results				Number of Relocations	R/W Cost	Anticipated Environmental Document	Red Flag Triggers			
		2042 Delay (seconds)	2042 LOS	% Reduction from No Build	2042 Delay (seconds)	2042 LOS	% Reduction from No Build								
								$50K	0	$15K to $30K	C2	R/W, ESA Issues	Improves	Neutral	Improves

PRIORITY: HIGH

Concept drawing was presented at the 8/20 meeting.

0 50 100 FEET 200

August 2018

N

Stantec

Concept Drawing

Eastern Corridor Projects
Segment II-III (SR 32 Corridor)
HAM-32F-0.00; PID 86462

Figure Elstun-1

SIDEWALK CONNECTION FROM S.R. 125 TO RENTAL PROPERTIES

Concept drawing was presented at the October 24 & 25 Open House meetings.

New Sidewalk from SR 125 to Reserve Circle

- $50,000 construction cost
- New R/W needed from 2 parcels; no buildings impacted
- Sidewalk to connect residential properties to Metro bus stop

PUBLIC FEEDBACK RATINGS SUMMARY

Strongly Oppose	Dislike	Neutral	Like	Strongly Support
6%	6%	31%	28%	31%

(percentages have been rounded)

Concept drawings are presented on the following pages.

DESCRIPTION

- Add a shared-use path along the south side of SR 125 between Elstun Road and Ranchvale Drive.

NEEDS ADDRESSED

None identified. This concept was requested at the previous Advisory Committee meeting to improve bike/pedestrian access to the Little Miami Trail.

5/24 MEETING DISCUSSION AND COMMENTS

- None discussed.
- No additional comments were received following the 5/24 meeting.

8/20 MEETING DISCUSSION AND COMMENTS

- Concept provides a pedestrian/bike connection between Elstun and Ranchvale. It would also eventually connect with the Lunken and Armleder park areas.
- There is a sidewalk on the northside of Beechmont along this stretch of road, but no bicycle/pedestrian access on the south side.
- Having a separate bike path may help bicyclists get up the hill. Using the road can be treacherous as cars move fast.
- Some of the land in this area is currently being marketed for sale.
- No additional comments were received following the 8/20 meeting.

12/11 MEETING DISCUSSION AND COMMENTS

This concept was presented as A4 at the October Open House meetings.

- The City of Cincinnati would consider moving the shared-use path to be adjacent to the street, per a suggestion received from the public. This suggestion will need to undergo further discussion.
- Mt. Washington would like to have a consistent center turn lane.
- The hillside property located on the south side of the road will soon be for sale.

NEXT STEPS/RECOMMENDATION

- Include in the Implementation Plan as a medium priority, but do not implement until either 125-3 (A5) or 125-3b (A6) has been completed.
- Consider locating the shared-use path adjacent to the street.

Safety ECAT Benefit/Cost Ratio	Traffic Operations							Construction Cost	R/W Impacts		Environmental Impacts		Support and/or Facilitate Multi-Modal	Improve Regional Connectivity	Improve Local Access
	Time Period	HCS Results			TransModeler Results				Number of Relocations	R/W Cost	Anticipated Environmental Document	Red Flag Triggers			
		2042 Delay (seconds)	2042 LOS	% Reduction from No Build	2042 Delay (seconds)	2042 LOS	% Reduction from No Build								
								$140K to $200K	0	$200K to 400K	C2	R/W, Potential T&E, ESA Issues	Improves	Improves	Improves

PRIORITY: MEDIUM

Concept drawing was presented at the 5/24 meeting.

0 150 300 FEET 600

May 2018

N

Stantec

Concept Drawing

Eastern Corridor Projects
Segment II-III (SR 32 Corridor)
HAM-32F-0.00; PID 86462

Figure 125-3, 125-4 and 125-5

SHARED USE PATH AND WALK

Concept drawing was presented at the 8/20 meeting.

0 100 200 FEET 400

August 2018

N

Stantec

Concept Drawing

Eastern Corridor Projects
Segment II-III (SR 32 Corridor)
HAM-32F-0.00; PID 86462

Figure 125-5

SIDEPATH ALONG SOUTH SIDE OF SR 125 BETWEEN ELSTUN RD. AND RANCHVALE DR.

Concept drawing was presented at the October 24 & 25 Open House meetings.

Shared-Use Path Along SR 125 Between Elstun and Ranchvale

- $140,000 to $200,000 construction cost
- New R/W needed from 15 parcels; no buildings impacted
- Improve safety for bicyclists riding up the SR 125 hill

Concept drawings are presented on the following pages.

DESCRIPTION

- Connect the SR 125 sidewalk to the Little Miami Trail with a shared-use path utilizing a new bridge over Clough Creek.

NEEDS ADDRESSED

S8) Address pedestrian and bicycle connectivity from Elstun Road to the Little Miami Trail.

5/24 MEETING DISCUSSION AND COMMENTS

- This concept adds a bike path/sidewalk connection across the existing Clough Creek bridge.
- The area around the Clough Creek bridge is culturally sensitive. Keeping bike/pedestrian options on existing infrastructure areas would lessen concerns.
- No additional comments were received following the 5/24 meeting.

8/20 MEETING DISCUSSION AND COMMENTS

- The primary difference between concepts 125-3 and 125-4 is how to get across Clough Creek.
  - 125-3: A new shared-use path would follow the southwest curve of the SR 32 access ramp, then extend through open land to a new bike/pedestrian bridge located approximately 25 feet south of SR 125. The path would rejoin SR 125 approximately 200 feet west of UDF.
  - 125-4: A new shared-use path would follow curve of SR 32 access ramp, join up with SR 125 approximately 100 feet west of the Clough Creek, then travel alongside SR 125 and crossing the creek using the existing roadway bridge.
- The shared-use path could be separated from traffic using barriers.
- The shared-used path would be approximately 10 feet wide with a buffer.
- Committee members expressed a preference to redirect the bike/pedestrian path behind UDF to avoid vehicles entering and exiting UDF.
- Committee members proposed an alternate concept, 125-3b:
  - Starting from the Little Miami Trail connector, curve around the southwest portion of the SR 32 access ramp, then turn directly south to cross Clough Creek and connect with Elstun Road. Follow the east side of Elstun to SR 125.
  - This alternative avoids directing pedestrians and bicyclists into UDF traffic.
- No additional comments were received following the 8/20 meeting.

12/11 MEETING DISCUSSION AND COMMENTS

This concept was presented as A5 at the October Open House meetings.

Concepts 125-3 (A5) and 123-3b (A6) were discussed together. Notes for the discussion are recorded on both project pages.

- Anderson Township is currently uncertain as to which option to choose, but wants to make sure that the option chosen offers the most benefit for the investment made.
- There are many buried utilities located on the south side of the ramp which could make construction challenging. Widening the SR 125 bridge over the creek will also be complicated due to buried utilities.
- In concept 125-3 (A5), the path will affect trucks serving UDF.
- In concept 125-3b (A6), it would be preferable to place the path on the south side of Elstun.
- The committee discussed that the estimated cost of concept 125-3b (A6) would increase if the path is extended to SR 125, due to clearing requirements, right-of-way acquisition and the steep hillside. With these costs in mind, the committee proposed eliminating the concept. However, it was determined that more information is needed. Both options will be retained for now.
- The committee noted that the following additional information is needed:
  - Concepts 125-3 (A5): evaluate slope stability
  - Concept 125-3b (A6): evaluate space and hillside issues; update the cost for constructing a shared-use path.
- The City of Cincinnati, Anderson Township and Great Parks of Hamilton County need to coordinate to make this connection happen. They can also apply for grants together.

NEXT STEPS/RECOMMENDATION

- Include in the Implementation Plan as a high priority.
- Evaluate slope stability issues further.

Safety ECAT Benefit/Cost Ratio	Traffic Operations							Construction Cost	R/W Impacts		Environmental Impacts		Support and/or Facilitate Multi-Modal	Improve Regional Connectivity	Improve Local Access
	Time Period	HCS Results			TransModeler Results				Number of Relocations	R/W Cost	Anticipated Environmental Document	Red Flag Triggers			
		2042 Delay (seconds)	2042 LOS	% Reduction from No Build	2042 Delay (seconds)	2042 LOS	% Reduction from No Build								
								$770K to $1.2M	0	$50K to $100K	D1	Section 4(f)	Improves	Improves	Improves

PRIORITY: HIGH

Concept drawing was presented at the 5/24 meeting.

0 150 300 FEET 600

May 2018

N

Stantec

Concept Drawing

Eastern Corridor Projects
Segment II-III (SR 32 Corridor)
HAM-32F-0.00; PID 86462

Figure 125-3, 125-4 and 125-5

SHARED USE PATH AND WALK

Concept drawing was presented at the 8/20 meeting.

0 100 200 FEET 400

August 2018

N

Stantec

Concept Drawing

Eastern Corridor Projects
Segment II-III (SR 32 Corridor)
HAM-32F-0.00; PID 86462

Figure 125-3

SHARED US PATH BETWEEN SR 125 AND LITTLE MIAMI TRAIL

Concept drawing was presented at the October 24 & 25 Open House meetings.

Shared-Use Path Along SR 125

- $770,000 to $1.2M construction cost
- New R/W needed from 3 parcels; no buildings impacted
- New bridge over Clough Creek

PUBLIC FEEDBACK RATINGS SUMMARY

Strongly Oppose	Dislike	Neutral	Like	Strongly Support
6%	6%	31%	28%	31%

(percentages have been rounded)

Theme: BICYCLE AND PEDESTRIAN, ELSTUN CONNECTOR ALTERNATIVES
Identifier: 125-3b (A6)

Concept drawing is presented on the following page.

DESCRIPTION

- Connect SR 125 sidewalk at Elstun Road to the Little Miami Trail with a shared-use path on new alignment south from SR 32 ramps, on new bridge over Clough Creek, and tying to Elstun Road. Path then utilizes Elstun Road alignment to SR 125.

NEEDS ADDRESSED

S8) Address pedestrian and bicycle connectivity from Elstun Road to the Little Miami Trail.

8/20 MEETING DISCUSSION AND COMMENTS

- This was a new alternative requested at the 8/20/2018 Advisory Committee meeting:
- Starting from the Little Miami Trail connector, curve around the southwest portion of the SR 32 access ramp, then turn directly south to cross Clough Creek and connect with Elstun Road. Follow the east side of Elstun to SR 125.
  - This alternative keeps pedestrians and bicyclists away from UDF traffic.
- No additional comments were received following the 8/20 meeting.

12/11 MEETING DISCUSSION AND COMMENTS

This concept was presented as A6 at the October Open House meetings.

Concepts 125-3 (A5) and 123-3b (A6) were discussed together. Notes for the discussion are recorded on both project pages.

- Anderson Township is currently uncertain as to which option to choose; but wants to make sure that the option chosen offers the most benefit for the investment made.
- There are many buried utilities located on the south side of the ramp which could make construction challenging. Widening the SR 125 bridge over the creek also will be complicated due to buried utilities.
- In concept 125-3 (A5), the path will affect trucks serving UDF.
- In concept 125-3b (A6), it would be preferable to place the path on the south side of Elstun.
- The committee discussed that the estimated cost of concept 125-3b (A6) would increase if the path is extended to SR 125, due to clearing requirements, right-of-way acquisition and the steep hillside. With these costs in mind, the committee proposed eliminating the concept. However, it was determined that more information is needed. Both options will be retained for now.
- The committee noted that the following additional information is needed:
  - Concepts 125-3 (A5): evaluate slope stability
  - Concept 125-3b (A6): evaluate space and hillside issues; update the cost for constructing a shared-use path.
- The City of Cincinnati, Anderson Township and Great Parks of Hamilton County need to coordinate to make this connection happen. They can also apply for grants together.

NEXT STEPS/RECOMMENDATION

- Include in the Implementation Plan as a high priority.
- Evaluate space and hillside issues further, then add separate shared-use path along Elstun to avoid sharing pavement; update cost estimate.

Safety ECAT Benefit/Cost Ratio	Traffic Operations							Construction Cost	R/W Impacts		Environmental Impacts		Support and/or Facilitate Multi-Modal	Improve Regional Connectivity	Improve Local Access
	Time Period	HCS Results			TransModeler Results				Number of Relocations	R/W Cost	Anticipated Environmental Document	Red Flag Triggers			
		2042 Delay (seconds)	2042 LOS	% Reduction from No Build	2042 Delay (seconds)	2042 LOS	% Reduction from No Build								
								$360K to $550K	0	$25K to $50K	D1	Section 4(f)	Improves	Improves	Improves

PRIORITY: HIGH

Concept drawing was presented at the October 24 & 25 Open House meetings.

Shared-Use Path Using Elstun

- $360,000 to $550,000 construction cost
- New R/W needed from 2 parcels; no buildings impacted
- Sensitive archaeological area
- New bridge over Clough Creek
- Path shares existing Elstun Road pavment with traffic

PUBLIC FEEDBACK RATINGS SUMMARY

Strongly Oppose	Dislike	Neutral	Like	Strongly Support
6%	6%	31%	28%	31%

(percentages have been rounded)

Concept drawings are presented on the following pages.

DESCRIPTION

5/24:

- Adjust lane widths on SR 125 to obtain the space needed to establish a shared-use path across the existing bridge over Clough Creek.
  - Work would be done in conjunction with creating the signalized intersection noted in concepts X-1f.

8/20:

- Connect SR 125 sidewalk at Elstun Rd to the Little Miami Trail with a shared-use path utilizing the existing bridges over Clough Creek by modifying the ramp from SR 32 to eastbound SR 125.

NEEDS ADDRESSED

S8) Address pedestrian and bicycle connectivity from Elstun Road to the Little Miami Trail.

5/24 MEETING DISCUSSION AND COMMENTS

- Anderson Township has a concept similar to 125-4; however, the shared-use path would turn and go behind the UDF.
  - A route behind UDF would redirect bikes and pedestrians away from the SR 125/Elstun intersection.
- The area around the Clough Creek bridge is culturally sensitive. Keeping bike/pedestrian options on the existing roadway would lessen concerns.
- No additional comments were received following the 5/24 meeting.

8/20 MEETING DISCUSSION AND COMMENTS

- The primary difference between concepts 125-3 and 125-4 is how to get across Clough Creek.
  - 125-3: A new shared-use path would follow the southwest curve of the SR 32 access ramp then extend through open land to a new bike/pedestrian bridge located approximately 25 feet south of SR 125. The path would rejoin SR 125 approximately 200 feet west of UDF.
  - 125-4: A new shared-use path would follow curve of SR 32 access ramp, join up with SR 125 approximately 100 feet west of Clough Creek, then travel alongside SR 125 crossing the creek using the existing roadway bridge.
- The shared-use path could be separated from traffic using barriers.
- The shared-used path would be approximately 10 feet wide with a buffer.
- No additional comments were received following the 8/20 meeting.

NEXT STEPS/RECOMMENDATION

- No further study. Prefer to redirect path behind UDF and away from SR 125 traffic.

Safety ECAT Benefit/Cost Ratio	Traffic Operations							Construction Cost	R/W Impacts		Environmental Impacts		Support and/or Facilitate Multi-Modal	Improve Regional Connectivity	Improve Local Access
	Time Period	HCS Results			TransModeler Results				Number of Relocations	R/W Cost	Anticipated Environmental Document	Red Flag Triggers			
		2042 Delay (seconds)	2042 LOS	% Reduction from No Build	2042 Delay (seconds)	2042 LOS	% Reduction from No Build								
	AM	11.0 (Stop Control Approach)	B	--				$400K to $590K	0	$25K to $50K	D1	Section 4(f)	Improves	Improves	Improves
	PM	38.8 (Stop Control Approach)	E	--											

RECOMMENDATION: NO FURTHER STUDY

Concept drawing was presented at the 5/24 meeting.

0 150 300 FEET 600

May 2018

N

Stantec

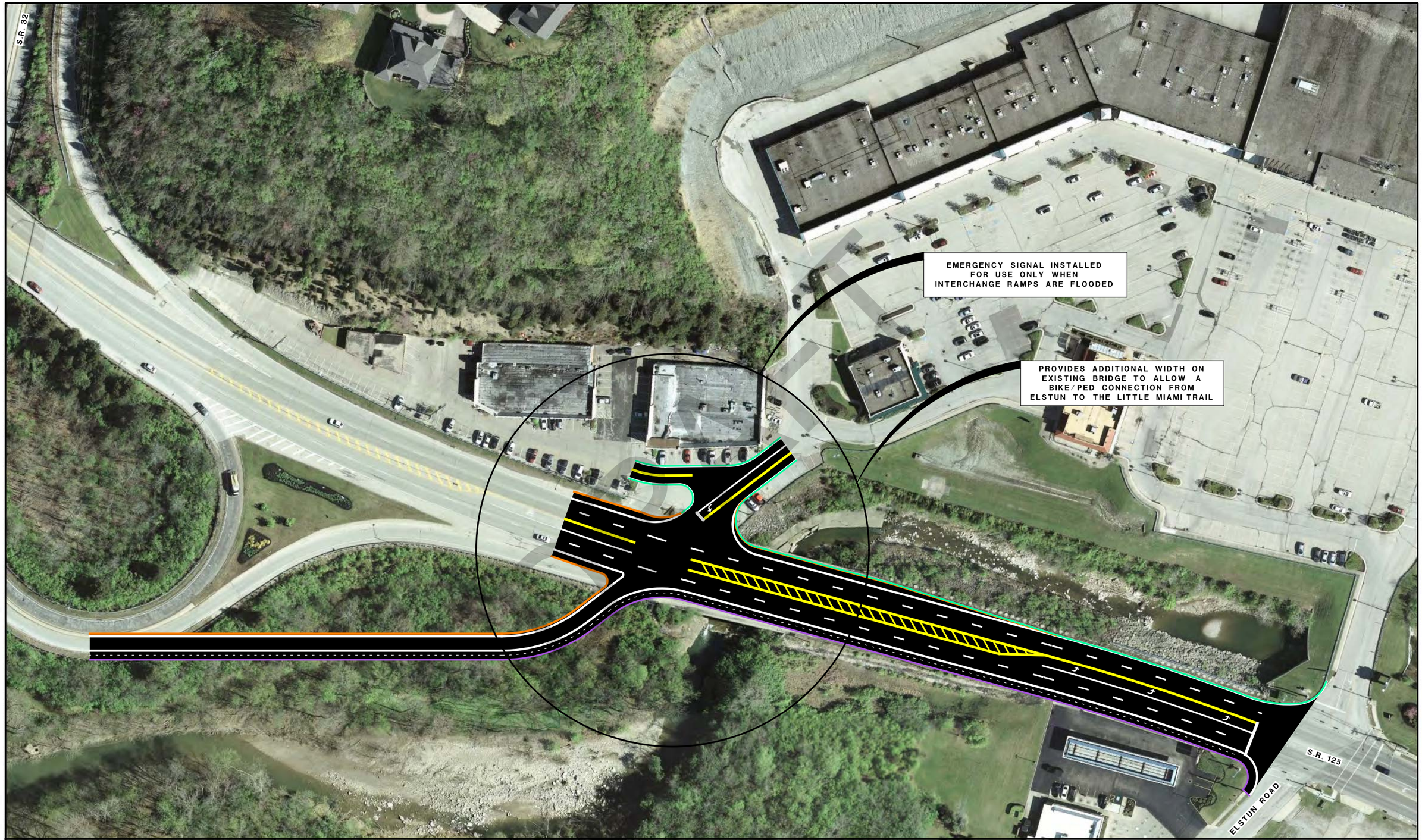
Concept Drawing

Eastern Corridor Projects
Segment II-III (SR 32 Corridor)
HAM-32F-0.00; PID 86462

Figure 125-3, 125-4 and 125-5

SHARED USE PATH AND WALK

Concept drawing was presented at the 5/24 meeting.



0 50 100 FEET 200

N

May 2018

Stantec

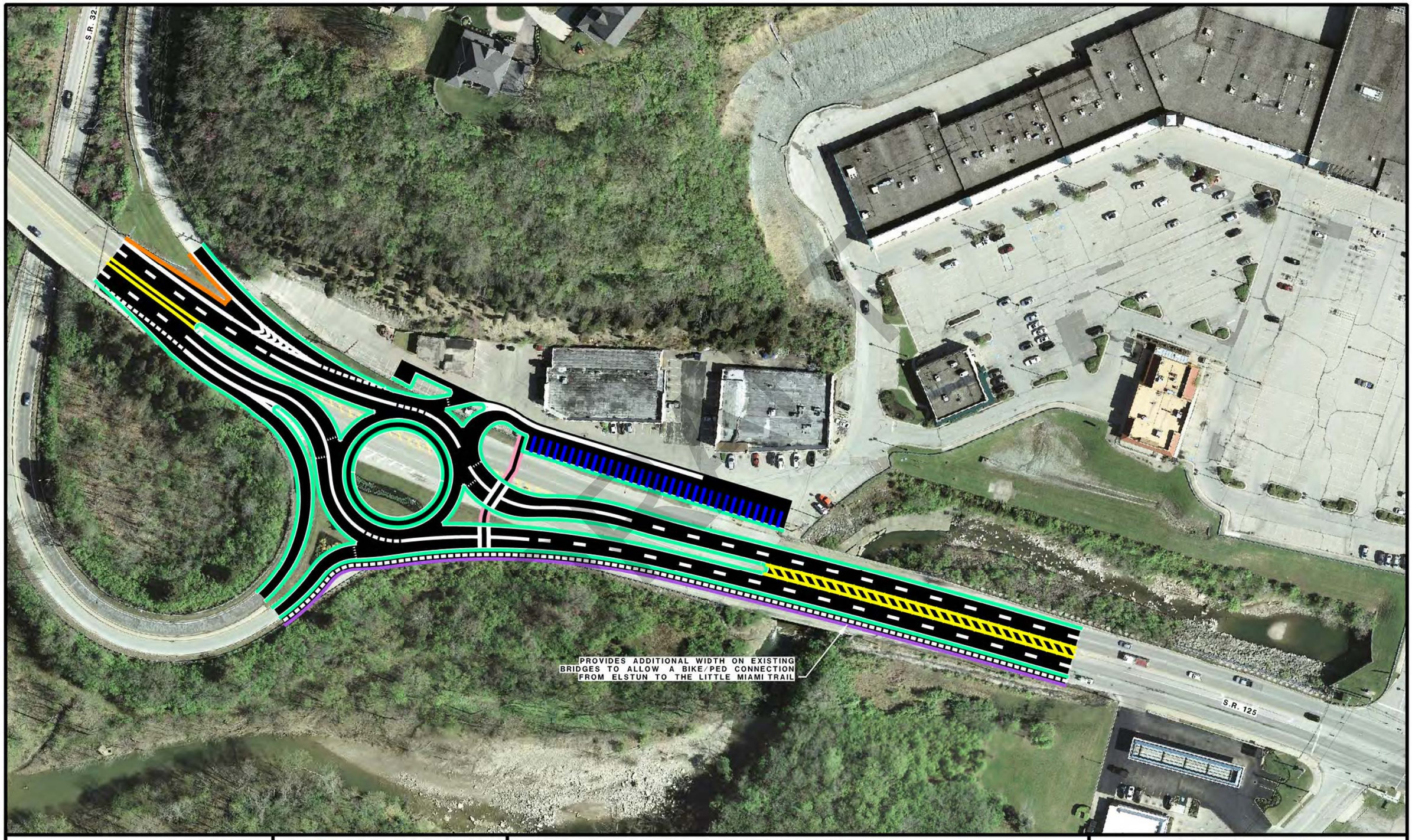
Concept Drawing

Eastern Corridor Projects
Segment II-III (SR 32 Corridor)
HAM-32F-0.00; PID 86462

Figure X-1F and 125-4

MODIFY RAMP CONNECTION FROM S.R. 32 TO S.R. 125 TO SIGNALIZED INTERSECTION

Concept drawing was presented at the 5/24 meeting.



0 50 100 FEET 200

May 2018

N

Stantec

Concept Drawing

Eastern Corridor Projects
Segment II-III (SR 32 Corridor)
HAM-32F-0.00; PID 86462

Figure X-1G and 125-4

MODIFY RAMP CONNECTION FROM S.R. 32 TO S.R. 125 TO ROUNDABOUT

Concept drawing was presented at the 8/20 meeting.

0 100 200 FEET 400

August 2018

N

Stantec

Concept Drawing

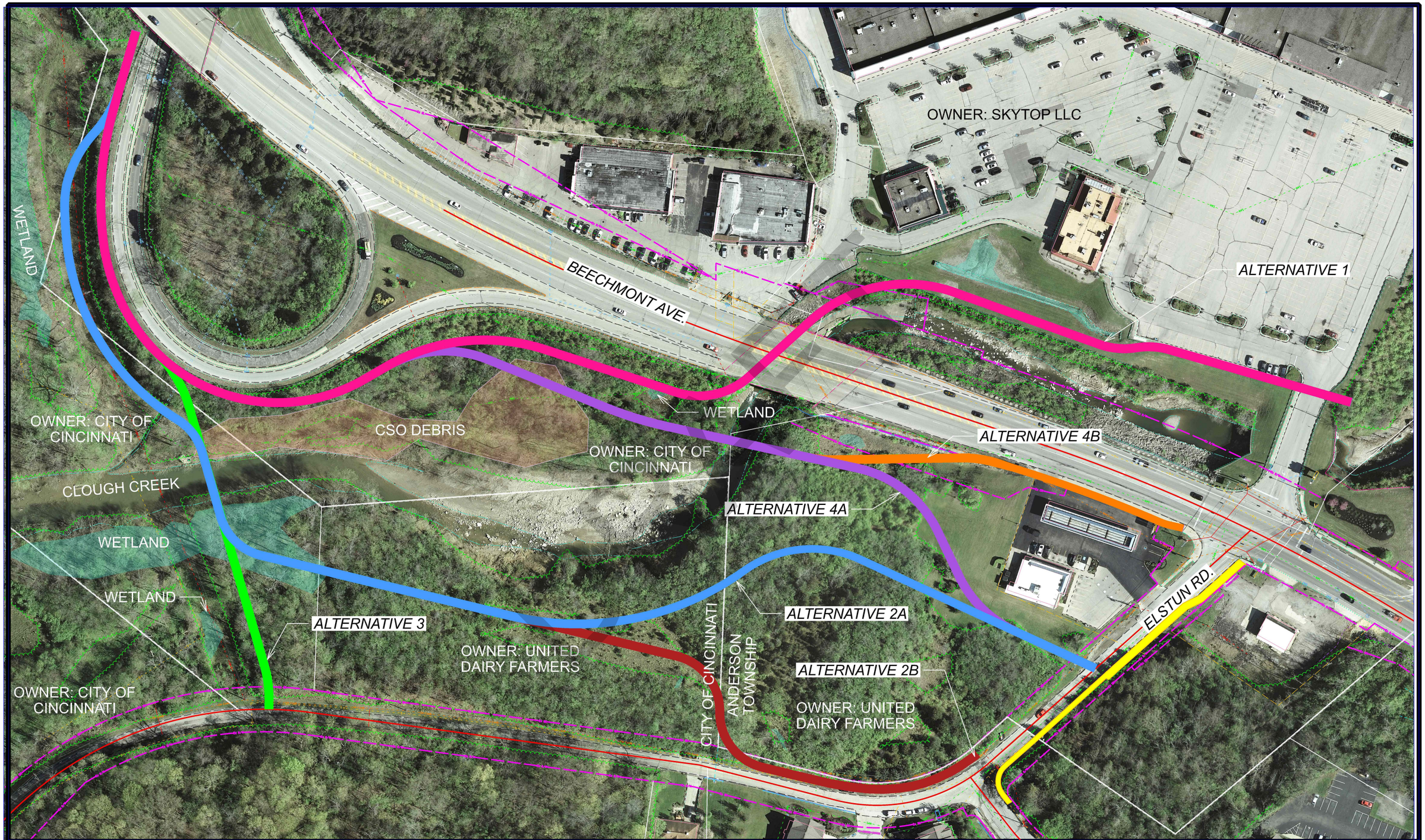
Eastern Corridor Projects
Segment II-III (SR 32 Corridor)
HAM-32F-0.00; PID 86462

Figure 125-4

SHARED USE PATH OVER EXISTING BRIDGE

ATTACHMENT C

Build Alternative Plans



0 60 120 FEET 240

MAY 2021

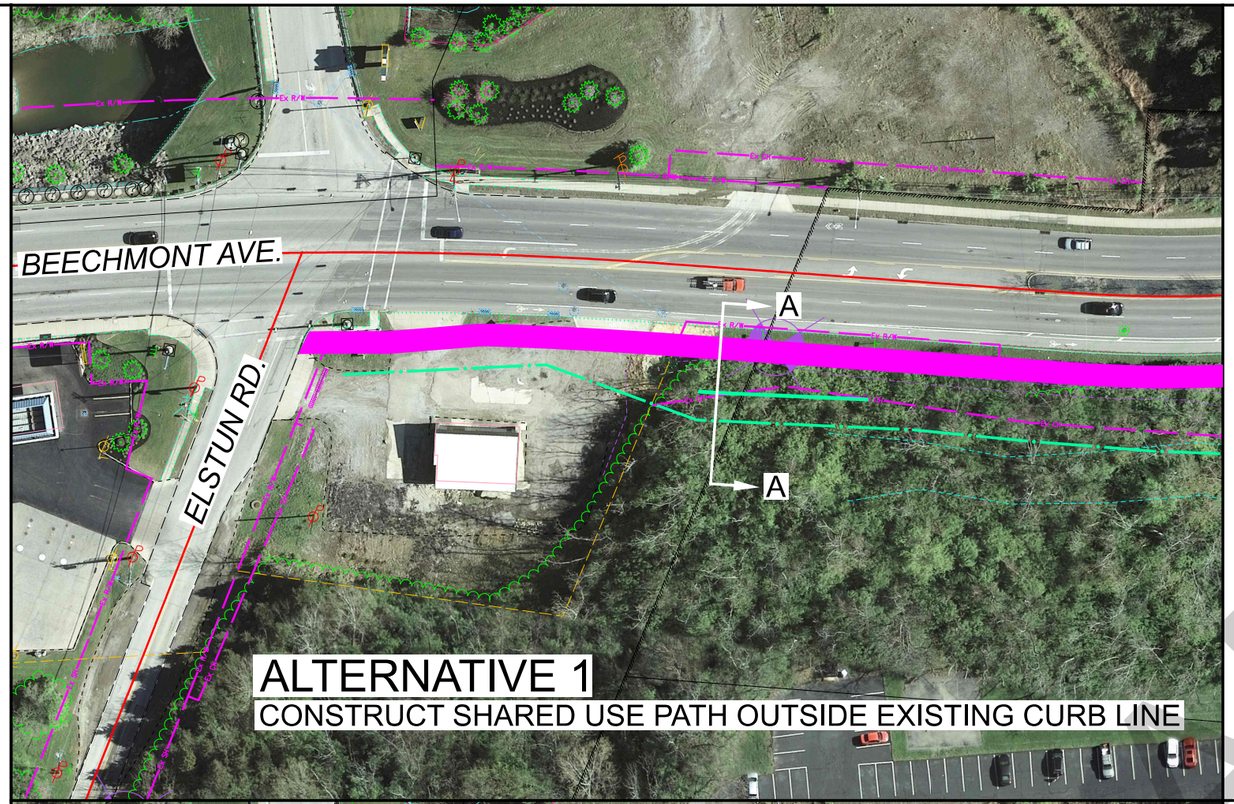
N

Stantec

Concept Drawing

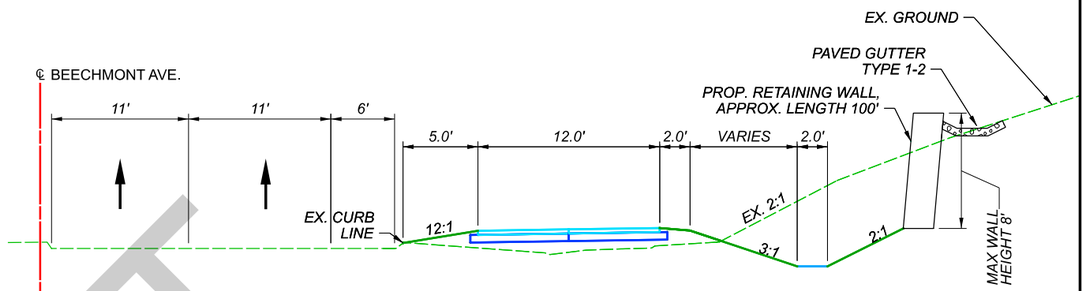
HAM-LMST EXT TO
RANCHVALE ALTERNATIVES
PID 113602

Figure C-I



ALTERNATIVE 1

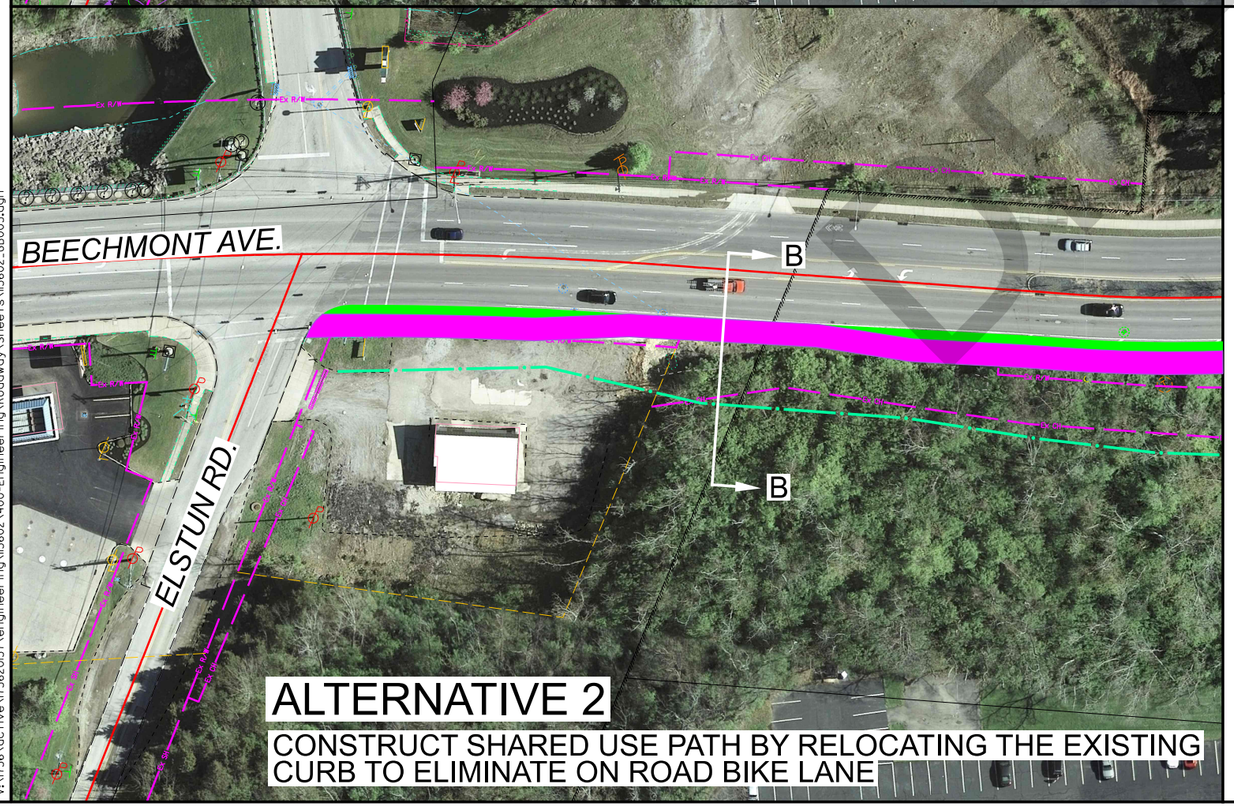
CONSTRUCT SHARED USE PATH OUTSIDE EXISTING CURB LINE



ALTERNATIVE 1

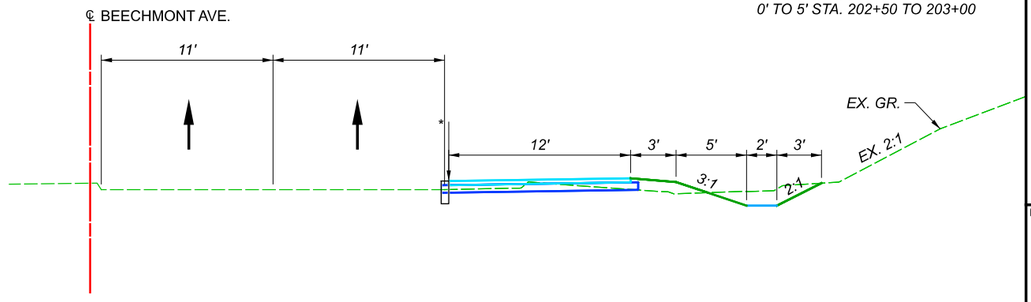
CROSS SECTION

A-A



ALTERNATIVE 2

CONSTRUCT SHARED USE PATH BY RELOCATING THE EXISTING CURB TO ELIMINATE ON ROAD BIKE LANE



ALTERNATIVE 2

CROSS SECTION

B-B

Figure C-2

HORIZONTAL SCALE IN FEET

0 20 40 80

RANCHVALE CONNECTION CONCEPTS
HAM-LMST EXT TO RANCHVALE
PID 113602

DESIGN AGENCY

Stantec
11687 Lebanon Road
Cincinnati OH 45241
(513) 842-8200

DESIGNER XXX

REVIEWER XXX MM-DD-YY

PROJECT ID 0

SHEET P.0 TOTAL 0

HAM-LMST EXT TO RANCHVALE

MODEL: Sheet PAPERSIZE: 17x11 (in.) DATE: 6/1/2021 TIME: 10:55:49 PM USER: pdurham
V:\1736\active\173620137\engineering\11360\400-Engineering\Roadway\Sheets\11360_GB003.dgn

Shared-Use Path Alternatives

Little Miami Scenic Trail Connection to Elstun Road | PID 113602

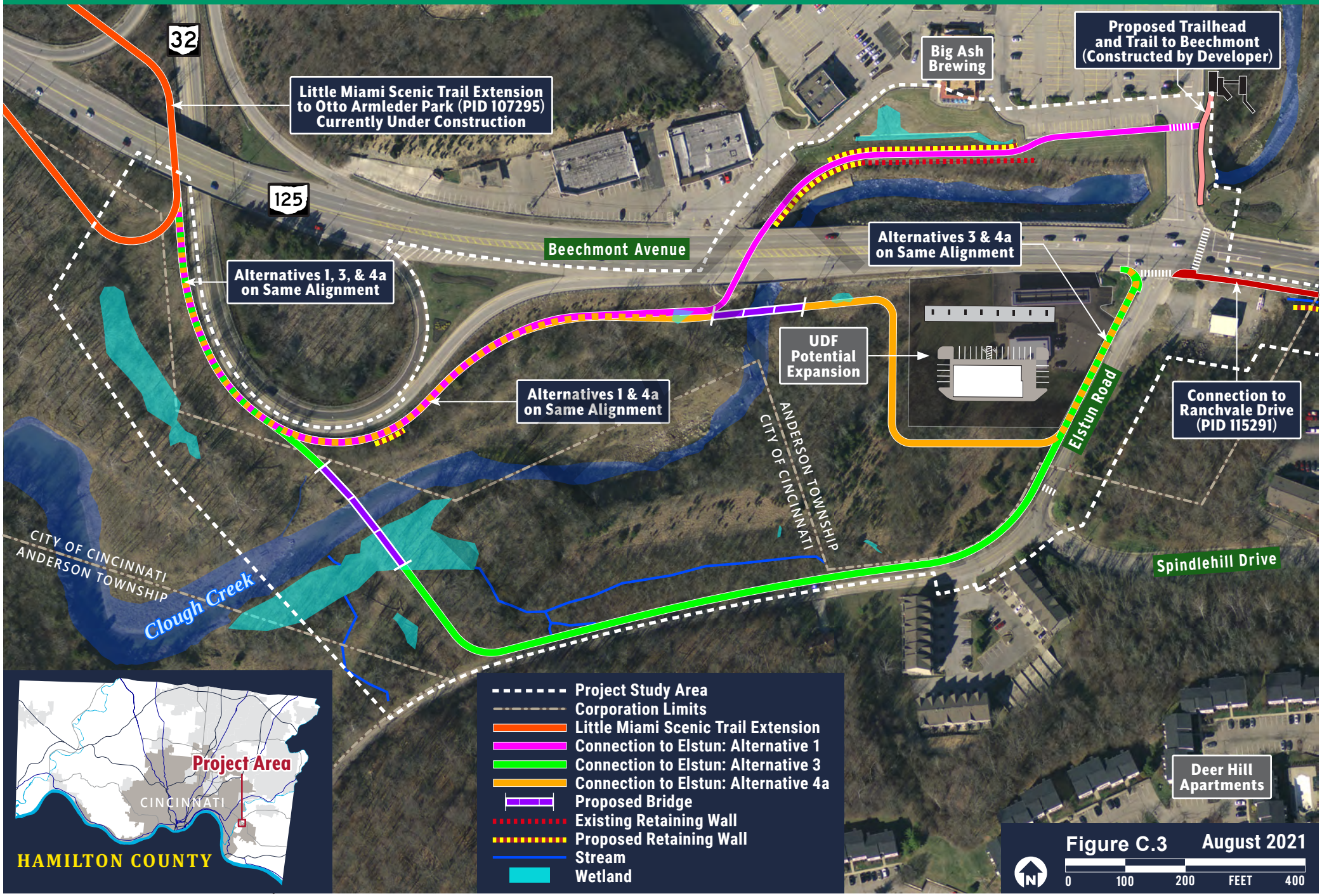


Figure C.3 August 2021

Shared-Use Path Connection

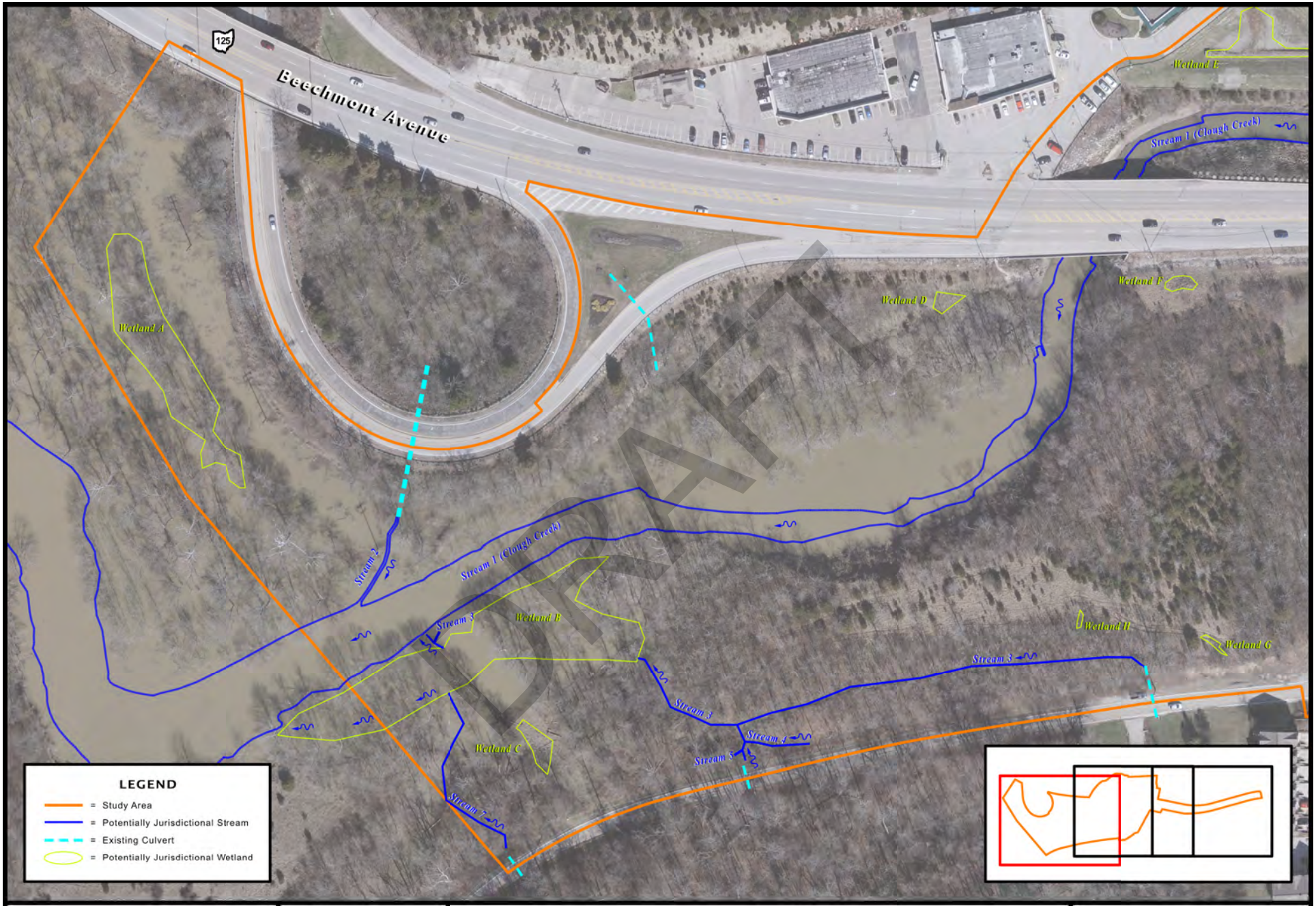
Elstun Road to Ranchvale Drive | PID 115291

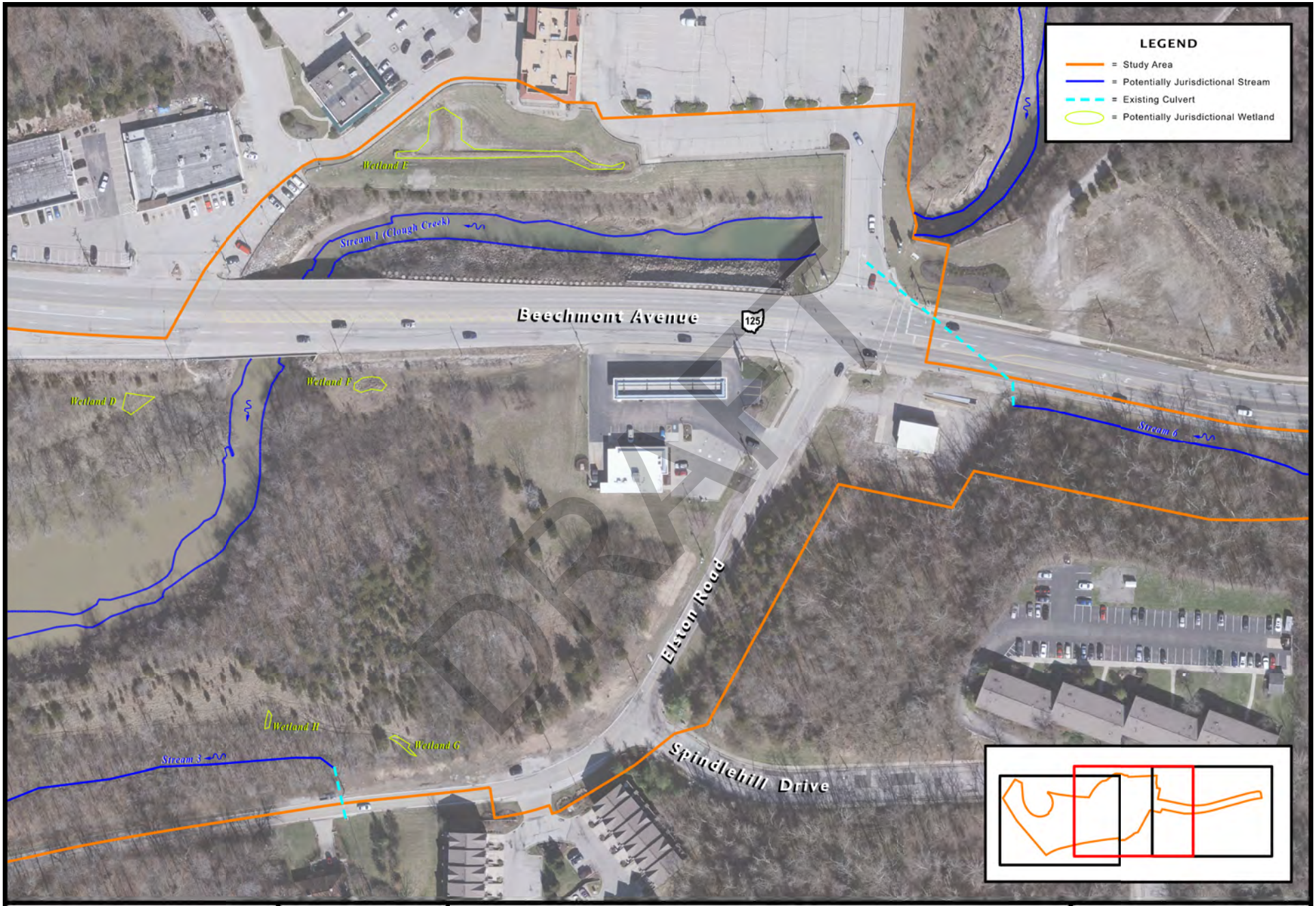
Figure C.4

August 2021

ATTACHMENT D

Environmental Mapping


Beechmont Avenue
125
Wetland A
Wetland B
Wetland C
Wetland D
Wetland E
Wetland F
Wetland G
Wetland H
Stream 1 (Clough Creek)
Stream 2
Stream 3
Stream 4
Stream 5
Stream 7
DRAFT
LEGEND
= Study Area
= Potentially Jurisdictional Stream
= Existing Culvert
= Potentially Jurisdictional Wetland
0 50 100 150 FEET
July 2021
NORTH
Stantec
Feasibility Study
EC Segment II/III - LMST to Ranchvale Feasibility Study, Hamilton County, Ohio
HAM-LMST to Ranchvale; PID 113602/115291
Figure D.1a
Ecological Resources
(Streams and Wetlands)



0 100 200 300 FEET

July 2021

NORTH

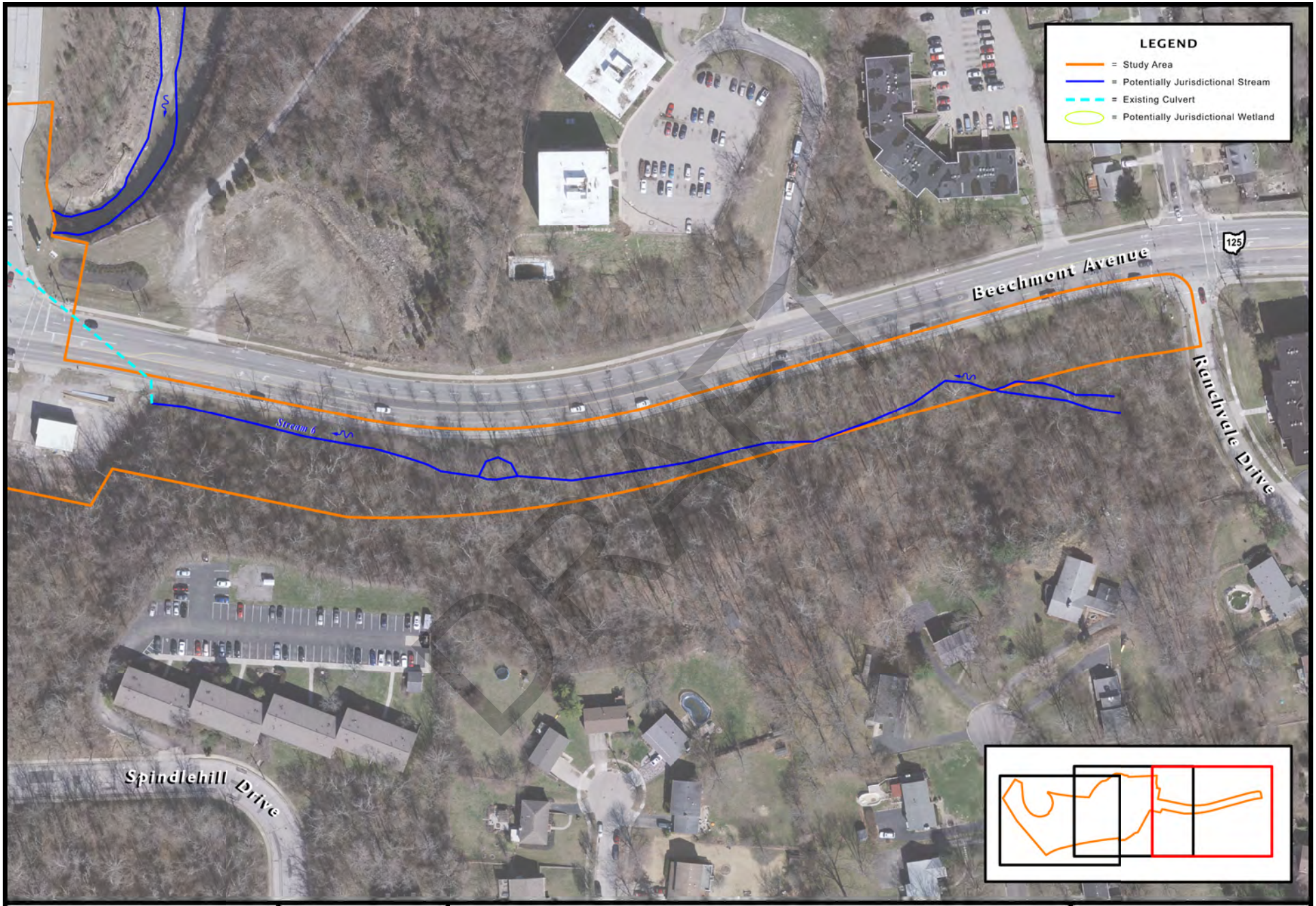
Stantec

Feasibility Study

EC Segment II/III - LMST to Ranchvale Feasibility Study, Hamilton County, Ohio
HAM-LMST to Ranchvale; PID 113602/115291

Figure D.1b

Ecological Resources (Streams and Wetlands)



0 100 200 300 FEET

July 2021

NORTH

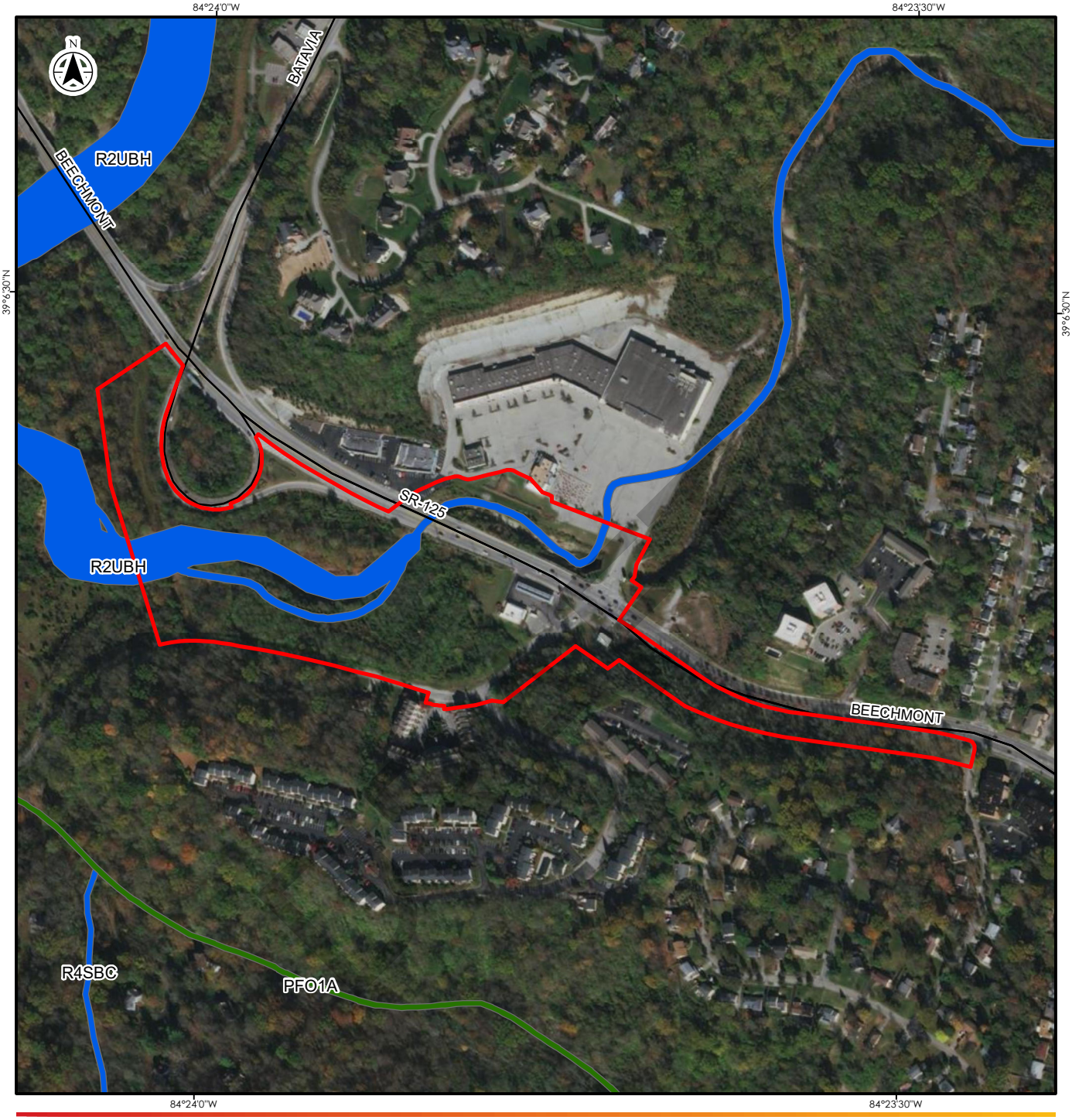
Stantec

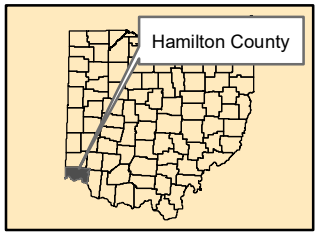
Feasibility Study

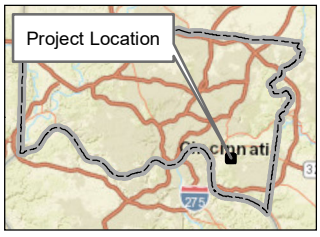
EC Segment II/III - LMST to Ranchvale Feasibility Study, Hamilton County, Ohio
HAM-LMST to Ranchvale; PID 113602/115291

Figure D.1c

Ecological Resources (Streams and Wetlands)







Legend

- Study Area
- State Routes

National Wetland Inventory

Wetland Type

- Freshwater Forested/Shrub Wetland
- Riverine

0 425 850 Feet

1:6,000 (at original document size of 8.5x11)

Stantec

Project Location
Anderson Township,
Hamilton County, Ohio

173620137
Prepared by RV on 2021-04-30

Client/Project
HAM-LMST Extension to Ranchvale
PID 113602/115291
Feasibility Study

Figure No.
D.2

Title
National Wetland Inventory Map

Notes
1. Coordinate System: NAD 1983 StatePlane Ohio South FIPS 3402 Feet
2. Base features produced from project design elements.
3. Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

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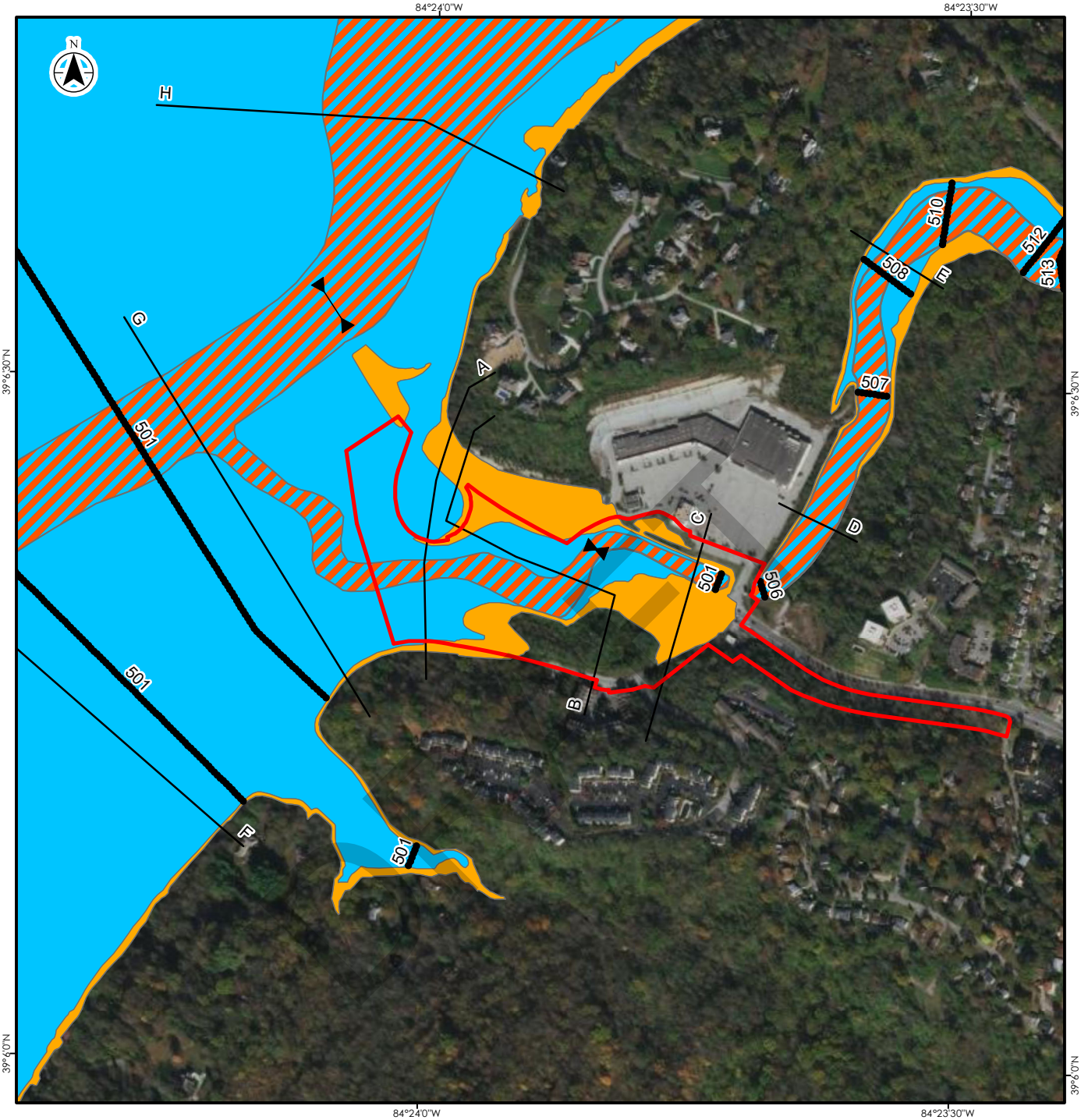
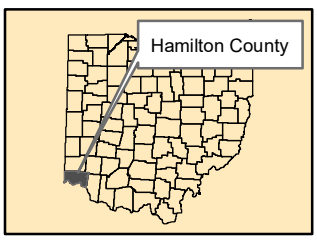
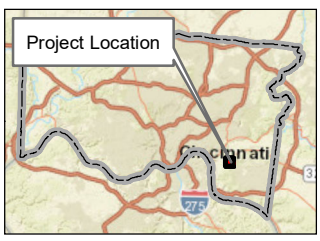






Legend

- Study Area
- Cross Sections
- Base Flood Elevation
- Bridge

Flood Hazard Zones

- 1% Annual Chance Flood Hazard
- 0.2% Annual Chance Flood Hazard
- Area of Minimal Flood Hazard
- Regulatory Floodway

0 570 1,140 Feet

1:8,000 (at original document size of 8.5x11)

Stantec

Project Location
Anderson Township,
Hamilton County, Ohio

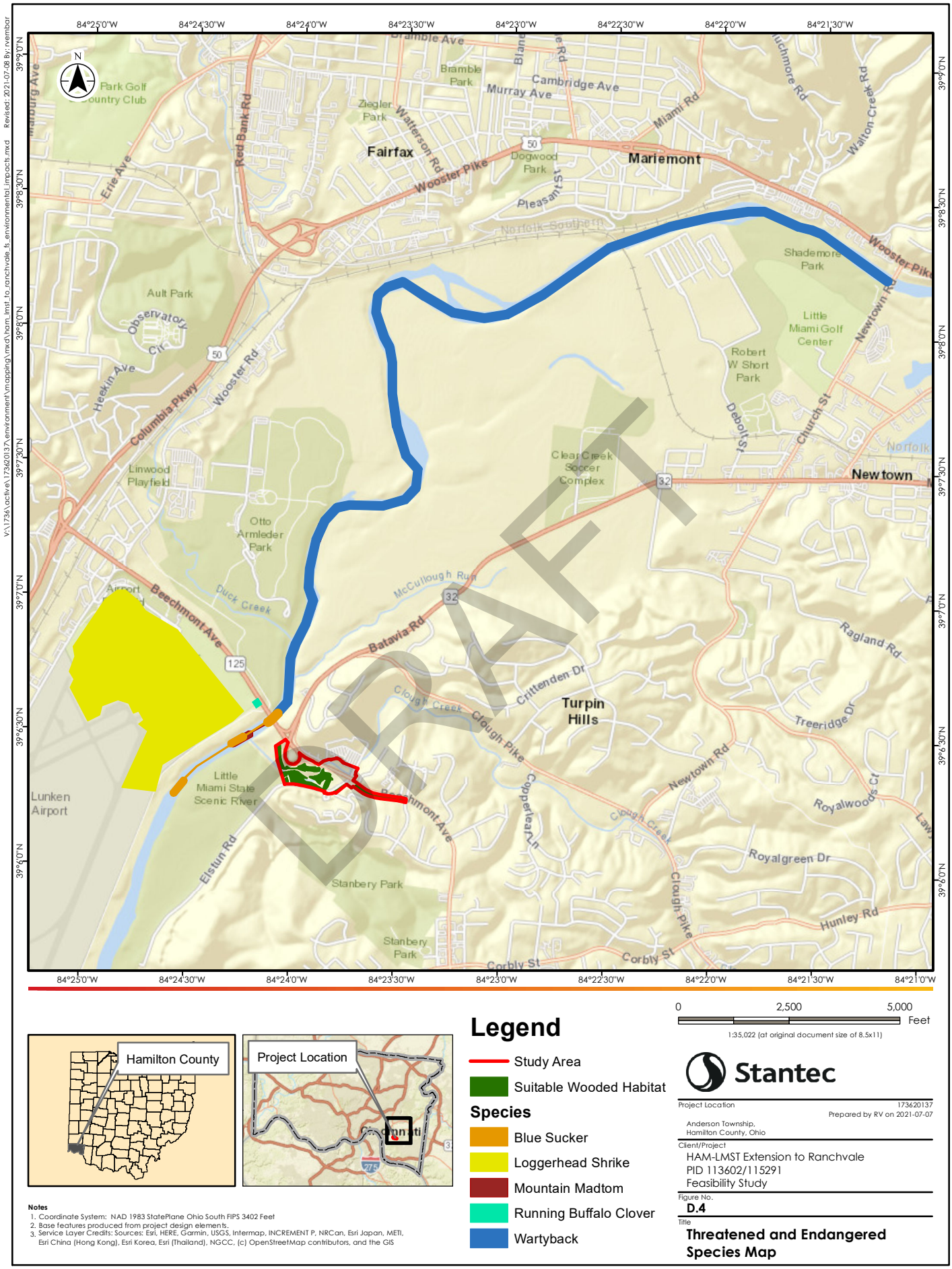
173620137
Prepared by RV on 2021-04-30

Client/Project
HAM-LMST Extension to Ranchvale
PID 113602/115291
Feasibility Study

Figure No.
D.3

Title
FEMA NFHL Map

Notes
1. Coordinate System: NAD 1983 StatePlane Ohio South FIPS 3402 Feet
2. Base features produced from project design elements.
3. Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



Legend

- Study Area
- Suitable Wooded Habitat

Species

- Blue Sucker
- Loggerhead Shrike
- Mountain Madtom
- Running Buffalo Clover
- Wartyback

0 2,500 5,000 Feet

1:35,022 (at original document size of 8.5x11)

Stantec

Project Location
Anderson Township, Hamilton County, Ohio

173620137
Prepared by RV on 2021-07-07

Client/Project
HAM-LMST Extension to Ranchvale
PID 113602/115291
Feasibility Study

Figure No.
D.4

Title
Threatened and Endangered Species Map

Notes
1. Coordinate System: NAD 1983 StatePlane Ohio South FIPS 3402 Feet
2. Base features produced from project design elements.
3. Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS

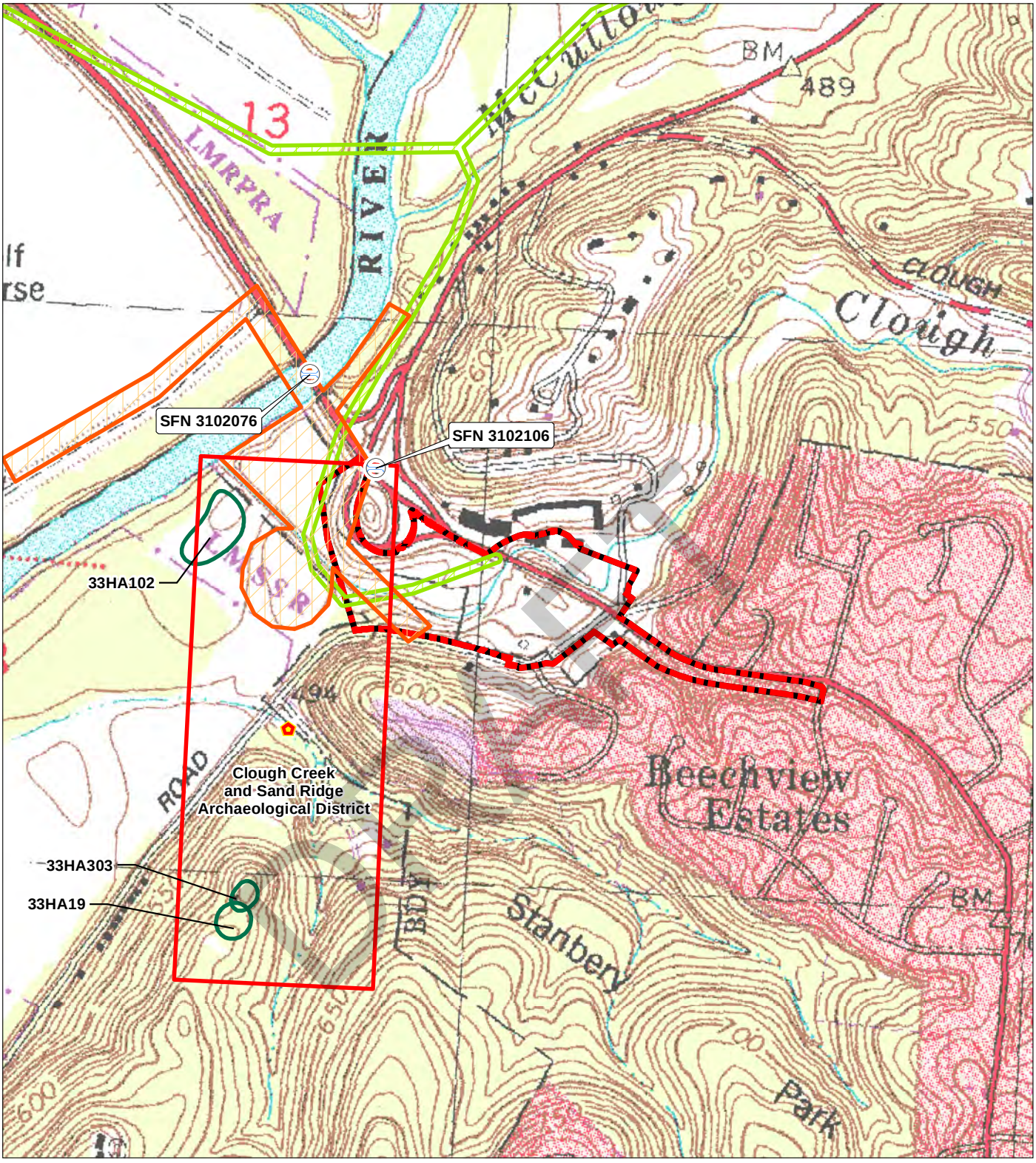


Figure D.5

Portions of 1981 Cincinnati East and 1988 Madeira, Ohio and 1987 Newport and 1992 Withamsville, Kentucky-Ohio quadrangles (USGS 7.5' topographic maps) showing the project area and results of the records check obtained from the SHPO OMS.

Base: USGS Cincinnati East and Madeira, Ohio and Newport and Withamsville, Ky-Ohio, 7.5' series quadrangles

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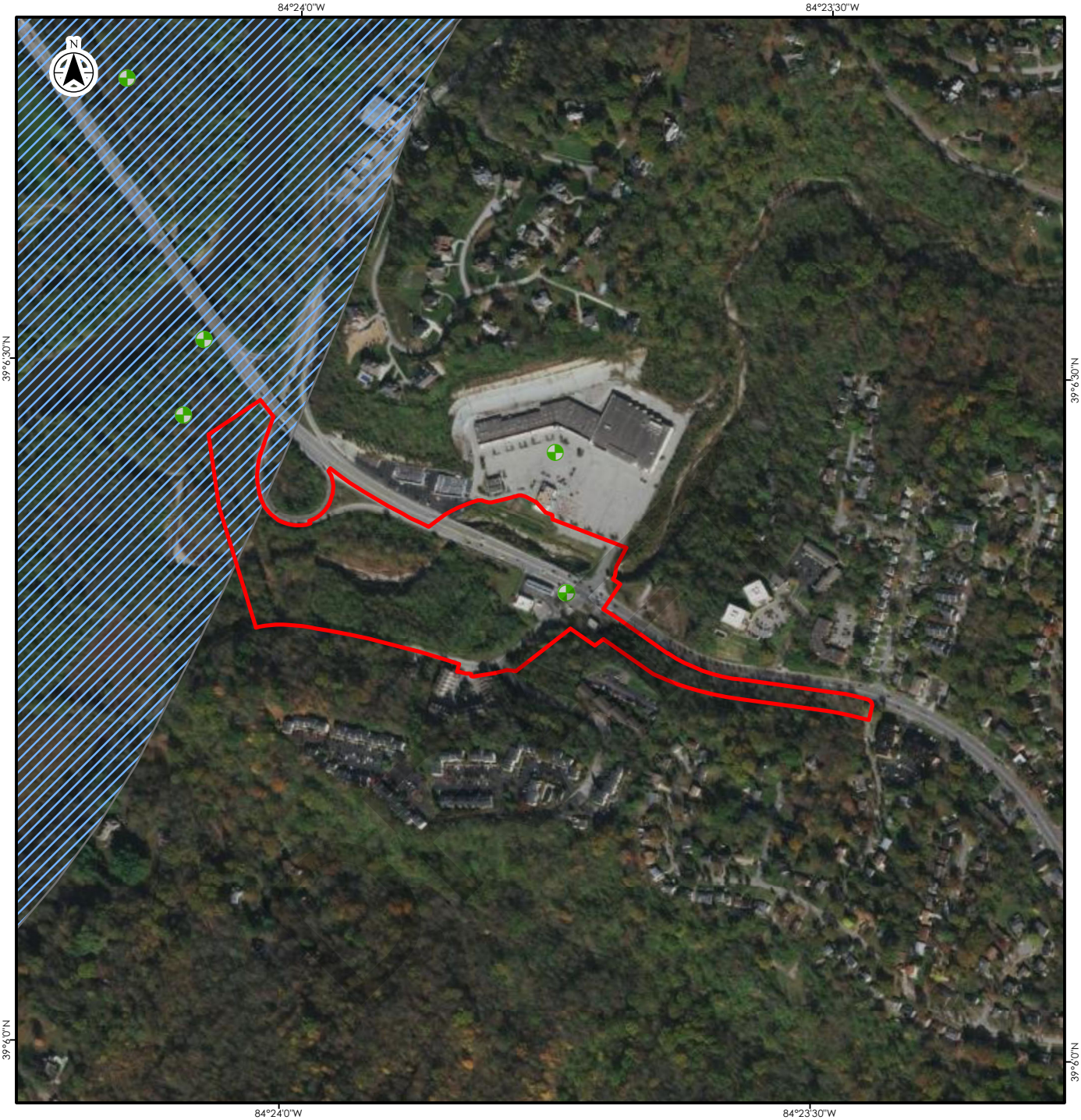

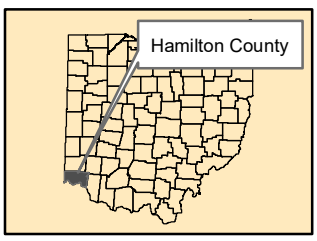

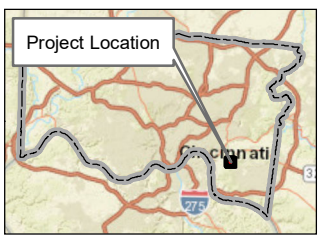

Legend

- Study Area
- ODNR Water Wells
- Sole Source Aquifer

0 570 1,140 Feet

1:8,000 (at original document size of 8.5x11)

Stantec

Project Location
Anderson Township,
Hamilton County, Ohio

173620137
Prepared by RV on 2021-07-07

Client/Project
HAM-LMST Extension to Ranchvale
PID 113602/115291
Feasibility Study

Figure No.
D.6

Title
Drinking Water Resources Map

Notes
1. Coordinate System: NAD 1983 StatePlane Ohio South FIPS 3402 Feet
2. Base features produced from project design elements.
3. Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

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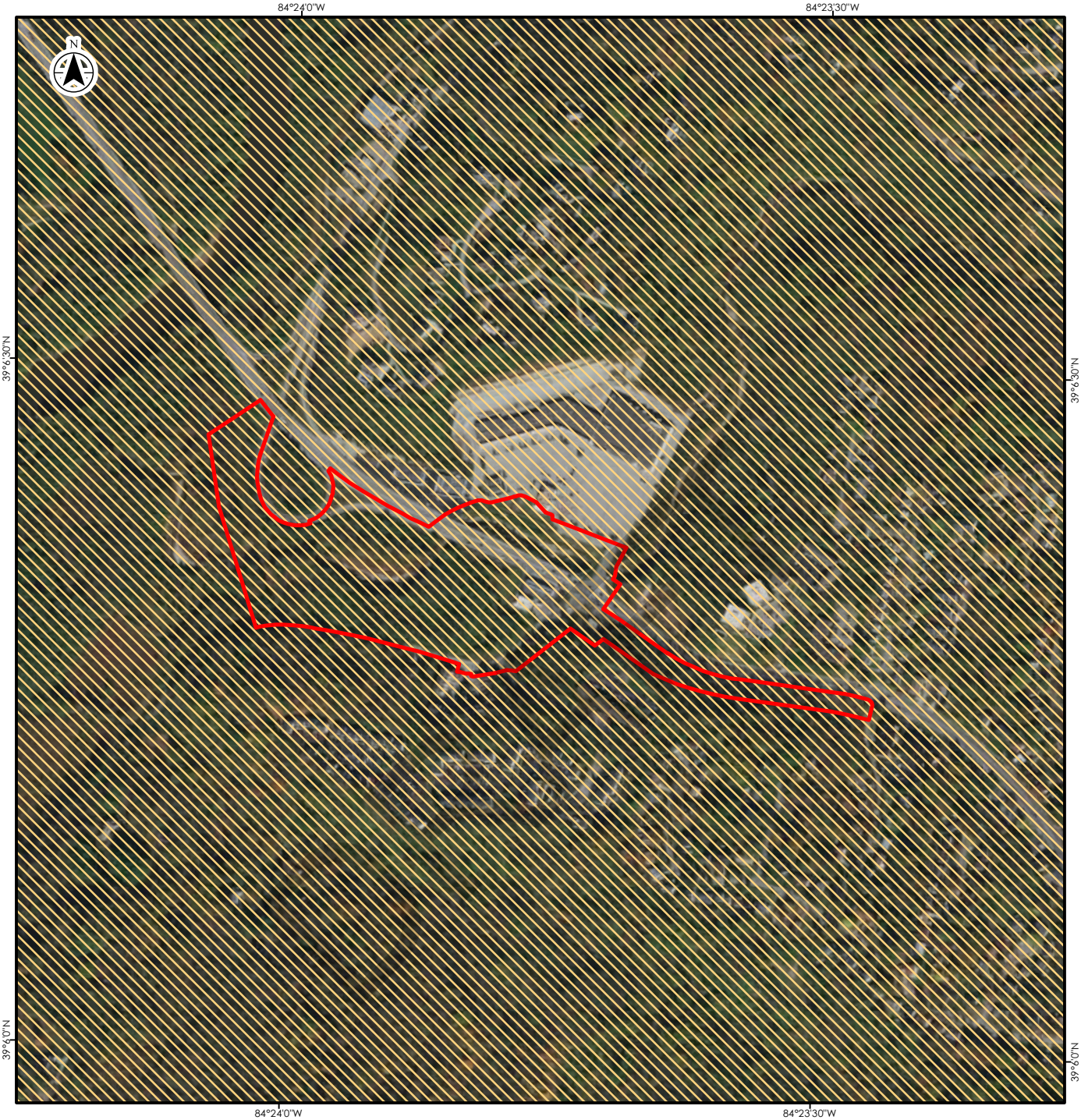
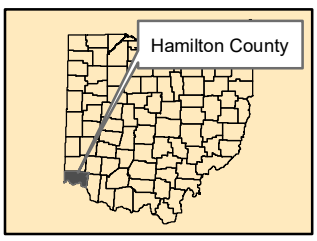
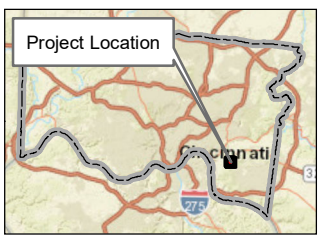






Legend

- Study Area
- Census Urban Areas

0 570 1,140 Feet

1:8,000 (at original document size of 8.5x11)

Stantec

Project Location
Anderson Township,
Hamilton County, Ohio

173620137
Prepared by RV on 2021-07-02

Client/Project
HAM-LMST Extension to Ranchvale
PID 113602/115291
Feasibility Study

Figure No.
D.7

Title
Census Urban Areas Map

Notes
1. Coordinate System: NAD 1983 StatePlane Ohio South FIPS 3402 Feet
2. Base features produced from project design elements.
3. Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

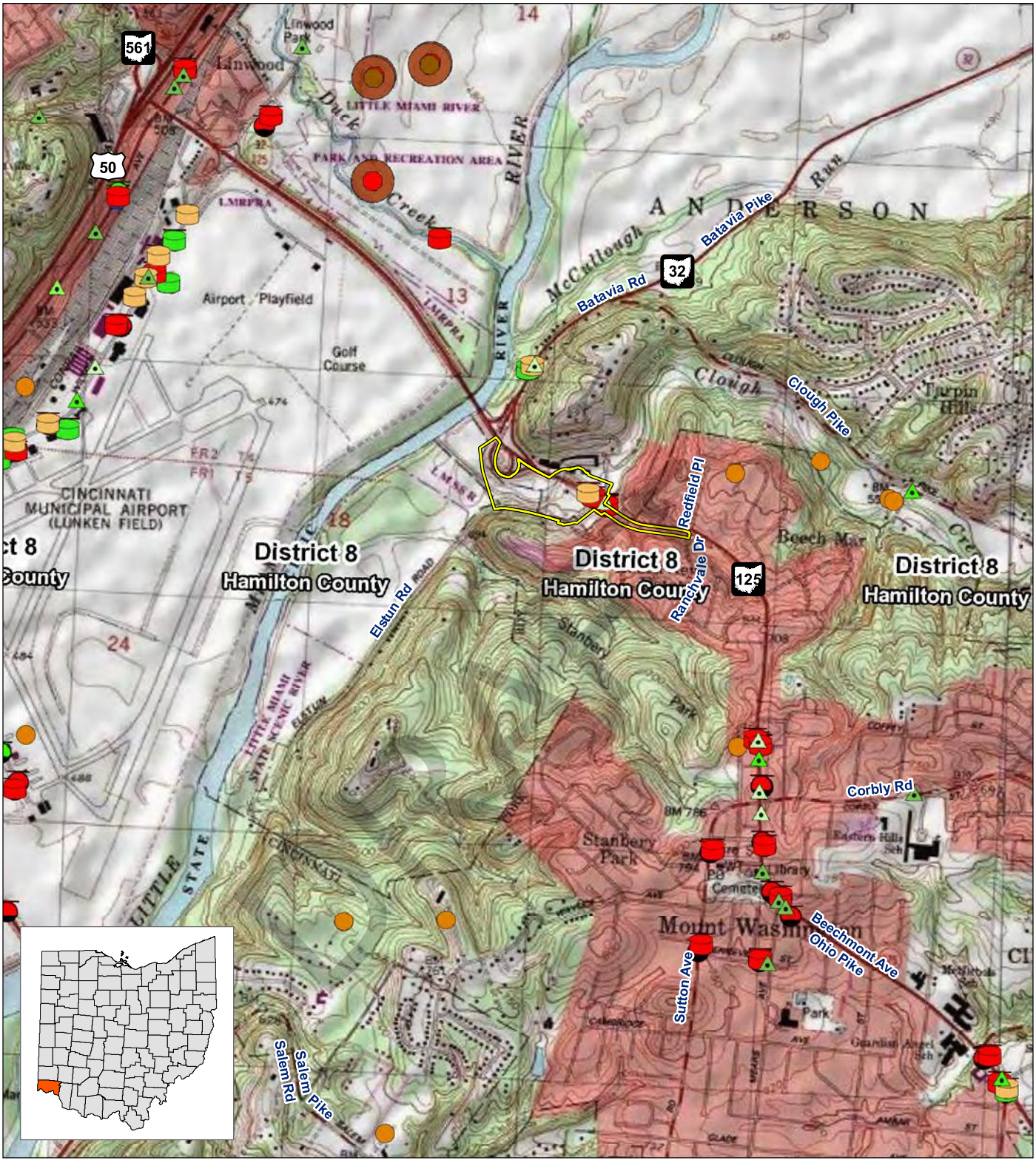


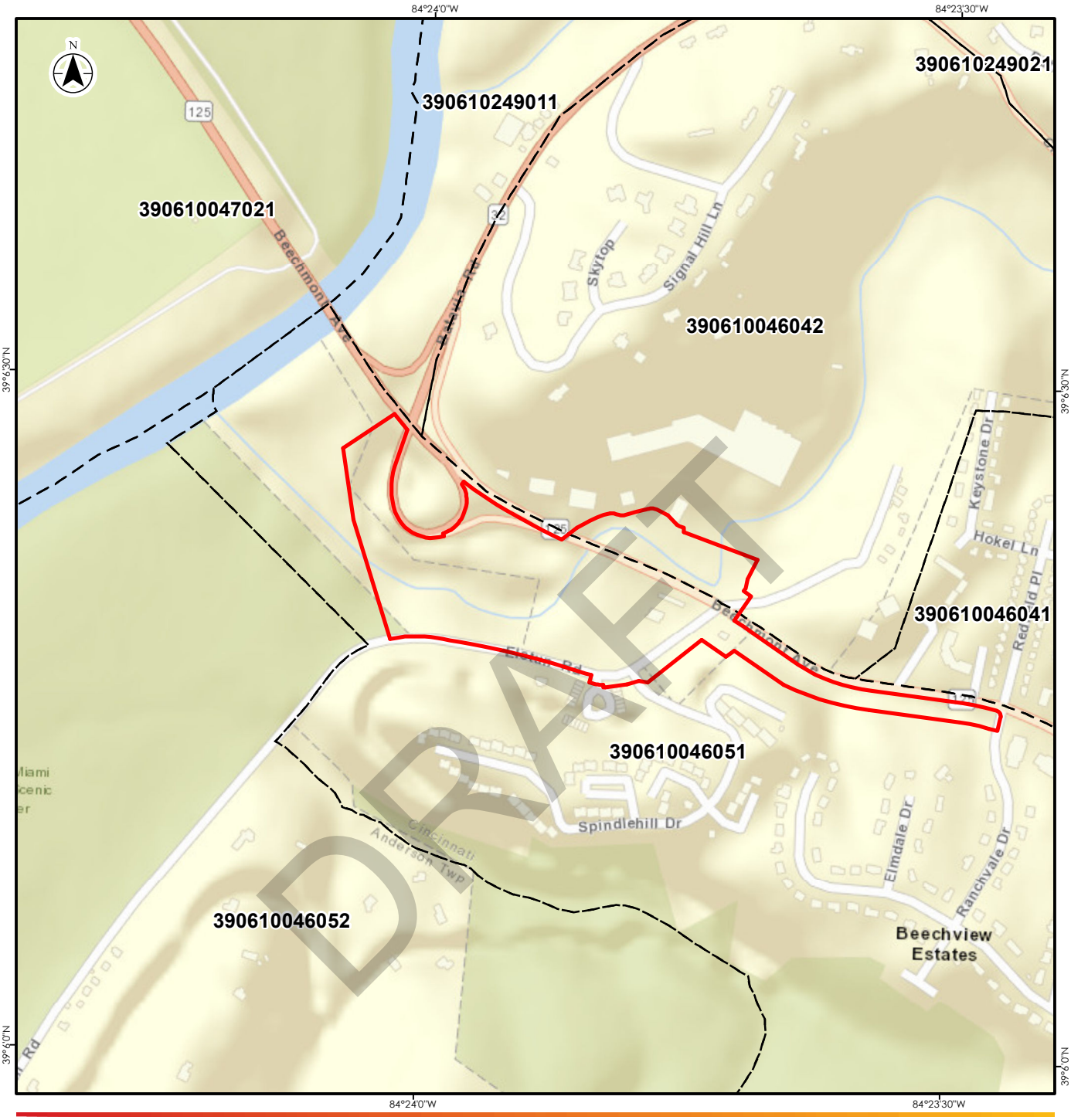
Figure 1

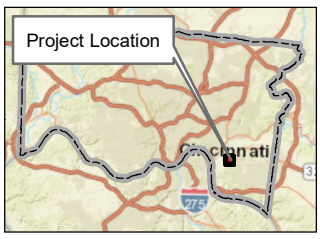
ORPS Summary Report

Figure D.8

Base: Ohio Regulated Properties Search (ORPS) Tool 4/26/2021;
USGS Newport, Kentucky-Ohio, 7.5' series quadrangle

Created by JVT; last saved: 4/26/2021 9:44:14 AM





Legend

- Study Area
- Census Blocks

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1:8,000 (at original document size of 8.5x11)

Stantec

Project Location
Anderson Township,
Hamilton County, Ohio

173620137
Prepared by RV on 2021-04-30

Client/Project
HAM-LMST Extension to Ranchvale
PID 113602/115291
Feasibility Study

Figure No.
D.9

Title
Census Block Map

Notes
1. Coordinate System: NAD 1983 StatePlane Ohio South FIPS 3402 Feet
2. Base features produced from project design elements.
3. Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS

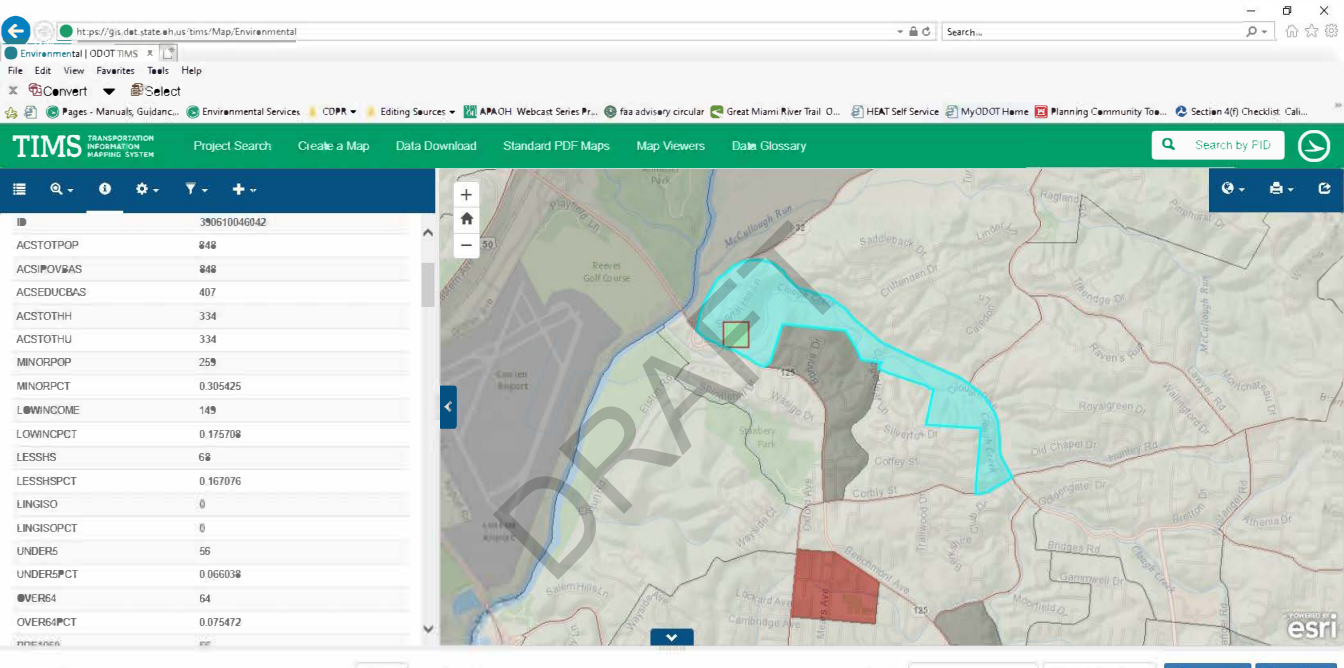
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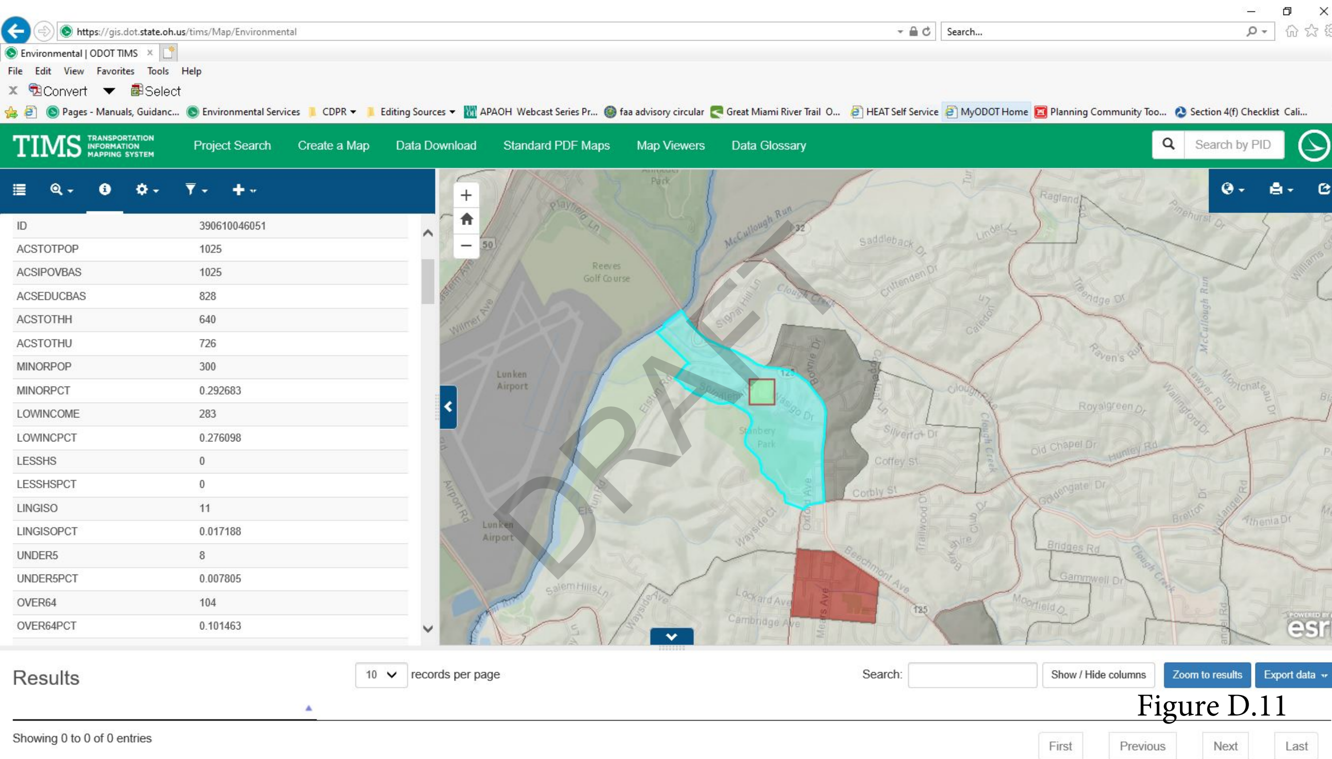
Figure D.10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TIMS TRANSPORTATION INFORMATION MAPPING SYSTEM
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Lunken Airport
Stanbery Park
Beechmont Ave
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Showing 0 to 0 of 0 entries
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Figure D.11

ATTACHMENT E

Ecological Resources Technical Memorandum

Stantec

Memo

To:	Paul Durham Stantec Consulting Services Inc.	From:	Michael de Villiers, Rohini Vembar Stantec Consulting Services Inc.
File:	173620137	Date:	June 21, 2021

Reference: HAM-LMST Ext. to Ranchvale – Trail Extension
Ecological Resources

Introduction

The proposed trail extension project is located in Anderson Township, Hamilton County, Ohio (See **Figures 1.1** and **1.2**). The Ohio Department of Transportation (ODOT) District 8 is proposing improvements to connect the Little Miami Scenic Trail (LMST) to Elstun Road and to the bus stop along SR 125. The project is located in southeast Hamilton County and is one of 68 projects within the Eastern Corridor Segments II and III study area which were identified in the Conceptual Alternatives Implementation Plan for Segments II/III of the Eastern Corridor Study (PID 86462) as a secondary need. This project is split into two contiguous sections: the western section includes a shared-use path from the LMST at SR 32 to Elstun Road (PID 113602); and the eastern section extends the path from Elstun Road to Ranchvale Road (PID 115291). The project is needed to address safety for bicyclists riding up the SR 125 hill and to address pedestrian and bicycle connectivity from Elstun Road and the LMST. The project area is approximately 27.8 acres.

Ecological field surveys for the proposed project were conducted on April 20, April 23, and May 7, 2021. These surveys included wetland and stream delineations, a freshwater mussel reconnaissance survey, and a running buffalo clover survey. A total of seven (7) streams and eight (8) wetlands were found within the project area (See **Figure 2**). Ecological resources found within the project area are described below.

Streams

Seven (7) streams were found within the project area including two perennial streams, two intermittent streams, and three ephemeral streams. All seven streams are located in an area mapped by the Ohio Environmental Protection Agency (OEPA) as “Possibly Eligible” for Nationwide permitting. Table 1 below summarizes streams within the project area:

Table 1. Summary of Streams

Stream ID	Drainage Area (mi^2)	Stream Hydrology Type	Habitat Assessment	OEPA Aquatic Life Use Designation	Length in Study Area (LF)
Stream 1 (Clough Creek)	8.04	Perennial	QHEI 60.0	WWH	1,780
Stream 2	<0.01	Perennial	HHEI 50.0	Modified Small Drainage Warmwater Stream	85
Stream 3	0.01	Intermittent	HHEI 62.0	Small Drainage Warmwater Stream	877
Stream 4	<0.01	Ephemeral	HHEI 14.0	Ephemeral Stream	92
Stream 5	<0.01	Ephemeral	HHEI 22.0	Ephemeral Stream	22
Stream 6	0.13	Intermittent	HHEI 64.0	Small Drainage Warmwater Stream	1,150
Stream 7	<0.01	Ephemeral	HHEI 15.0	Ephemeral Stream	214

Reference: **HAM-LMST Ext. to Ranchvale – Trail Extension**
Ecological Resources

Wetlands

Eight (8) wetlands were found within the project area including two palustrine forested wetlands, one palustrine scrub/shrub wetland, and five palustrine emergent wetlands. Three of these wetlands are potentially isolated wetlands. Table 2 summarizes wetlands within the project area:

Table 2. Summary of wetlands.

Wetland ID	Hydrologic Connection	ORAM Score (Category)	Wetland Type (Cowardin)	Estimated Total Size (Acre)	Estimated Size in Study Area (Acre)
Wetland A	Adjacent	47 (Category 2)	Palustrine – Forested	0.28	0.28
Wetland B	Adjacent	48 (Category 2)	Palustrine – Forested	0.59	0.50
Wetland C	Adjacent	27 (Category 1)	Palustrine – Emergent	0.03	0.03
Wetland D	Isolated	27 (Category 1)	Palustrine – Emergent	0.01	0.01
Wetland E	Adjacent	12 (Category 1)	Palustrine – Emergent	0.09	0.09
Wetland F	Isolated	20 (Category 1)	Palustrine – Emergent	0.01	0.01
Wetland G	Isolated	28 (Category 1)	Palustrine – Emergent	0.004	0.004
Wetland H	Adjacent	29 (Category 1)	Palustrine – Scrub-Shrub	0.002	0.002

Threatened and Endangered Species

Federally Listed Species

The Ohio Department of Natural Resources, Division of Wildlife (ODNR-DOW) conducted a Natural Heritage Database (NHDB) records check on March 23, 2021. This check found no records of Indiana bat (*Myotis sodalis*) or Northern long-eared bat (*Myotis septentrionalis*) captures or hibernacula within a 1-mile radius of the project area. No potential maternity roost trees were identified 100 ft past edge of pavement. No portals, openings, cracks, or crevices in rock outcrops that may be an entrance to a cave or mine that would be considered suitable winter hibernacula for Indiana bat or northern long-eared bat were found within the project area. Approximately 7.25 ac of suitable wooded habitat is found within the project area.

The ODNR-DOW NHDB records check found no records of bald eagle (*Haliaeetus leucocephalus*) nests within a 1-mile radius of the project area and no nests were observed within the project area. Running buffalo clover (*Trifolium stoloniferum*) has been found within Hamilton County and adjacent to the project area. A field survey conducted on May 7, 2021 found no running buffalo clover within the project area. Five mussel species have been found within Hamilton County: fanshell (*Cyprogenia stegaria*), pink mucket pearly mussel (*Lampsilis orbiculata*), rayed bean (*Villosa fabalis*), sheepnose (*Plethobasus cyphyus*), and snuffbox (*Epioblasma triquetra*). A mussel reconnaissance survey conducted on May 7, 2021 in Stream 1 (Clough Creek) found no mussel shells.

Reference: **HAM-LMST Ext. to Ranchvale – Trail Extension**
Ecological Resources

State Listed Species

The ODNR-DOW NHDB records check found four additional records of state-listed species within a 1-mile radius of the project area: loggerhead shrike (*Lanius ludovicianus*), mountain madtom (*Noturus eleutherus*), blue sucker (*Cycleptus elongatus*), and wartyback (*Cyclonaias nodulata*). The loggerhead shrike is found in semi-open grasslands, shrublands, grazed pastures, and agricultural areas with scrubby vegetation and lookout posts or perches. Their diet includes bugs, small animals, and other small birds, which they store on barbs, thorns, or forks between branches. The mountain madtom is found in the deep, rocky riffles of fast-flowing streams with gravel or cobble substrate and is very sensitive to pollution and siltation. The blue sucker is found in deep, swift, large rivers with cobble substrate and are bottom feeders. The wartyback mussel is found in large rivers where it buries itself in sand or fine gravel. Suitable habitat for the loggerhead shrike (in semi-open scrub/shrub habitat) and the mountain madtom (Stream 1) is found within the project area. There is no suitable habitat for the blue sucker and wartyback within the project area.

Mussels

A mussel reconnaissance survey was conducted on May 7, 2021 in Stream 1 (Clough Creek). Clough Creek is an unlisted stream as indicated by ODNR-DOW's *Ohio Mussel Surveyor Protocol* (not listed in Appendix A with watersheds >5 mi^2 with the potential for mussels but federally listed mussel species not expected). Although suitable habitat for mussels was observed in Stream 1, no mussel shells, including living mussels or dead mussel shells, were observed. An Ohio Mussel Habitat Assessment Form was completed for Stream 1 (Clough Creek).

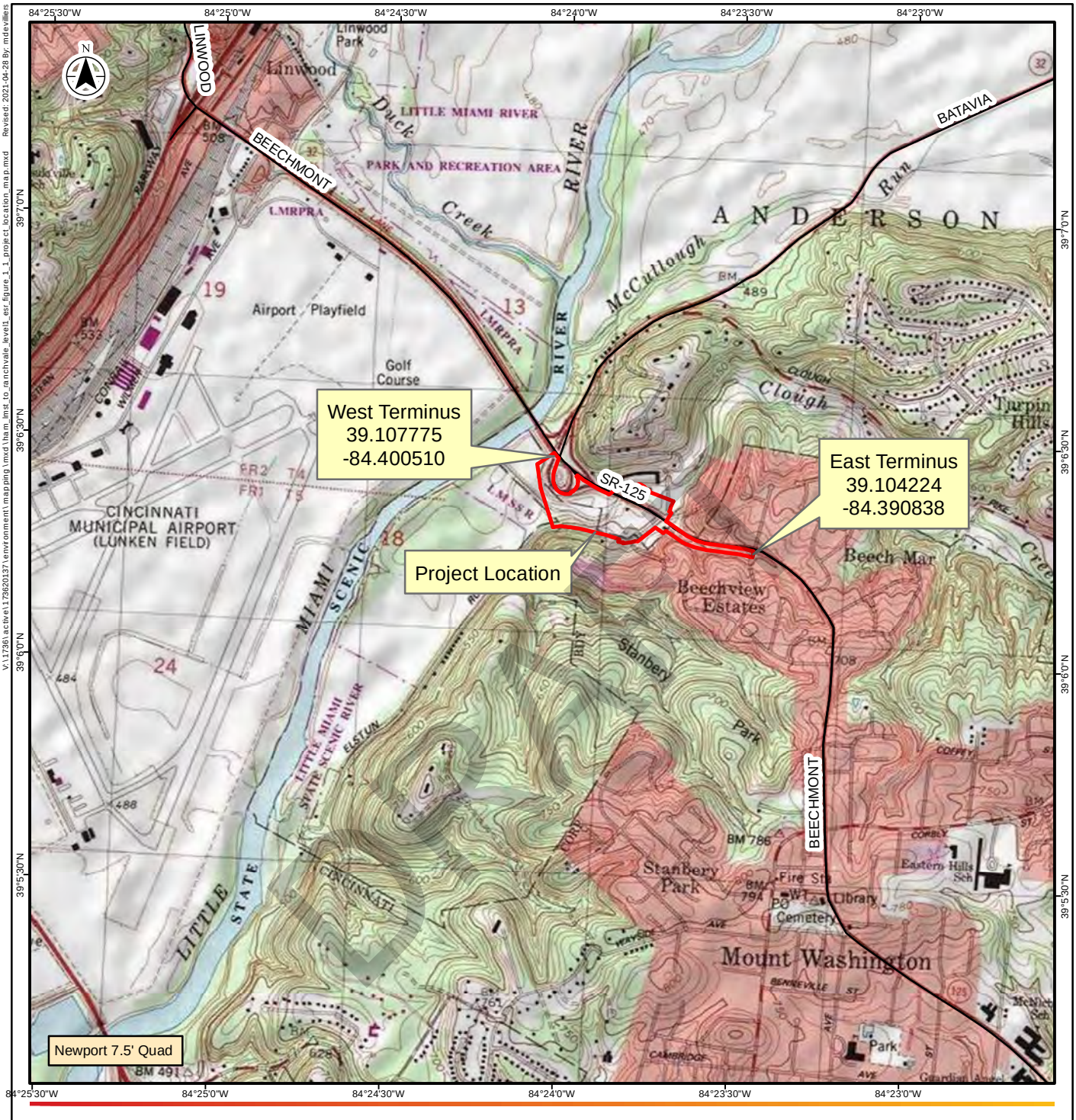
Land Cover

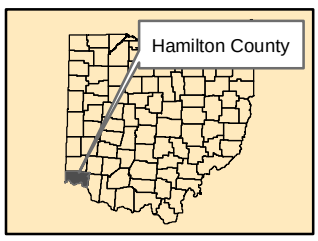
The project area was surveyed for vegetative communities on April 20 and April 23, 2021 (See **Figure 3**). Developed High Intensity (DH) and Developed Open Space (DS) vegetative communities account for approximately 18 percent and 14 percent of land cover within the project study area. Approximately 26 percent of the land cover within the project area is Upland Forest (UF), which consists primarily of boxelder (*Acer negundo*), American elm (*Ulmus americana*), redbud (*Cercis canadensis*), and Amur honeysuckle (*Lonicera maackii*). Approximately 10 percent of the land cover within the project area is Floodplain Forest (FF), which consists primarily of boxelder, silver maple (*Acer saccharinum*), cottonwood (*Populus deltoides*), sycamore (*Platanus occidentalis*), and sandbar willow (*Salix interior*). Approximately 17 percent of the land cover within the project area is Scrub/Shrub (SS), which consists of Amur honeysuckle, eastern red cedar (*Juniperus virginiana*), Callery pear (*Pyrus calleryana*), flowering dogwood (*Cornus florida*), and multiflora rose (*Rosa multiflora*). Approximately 4 percent of the land cover within the project area is Grassland/Herbaceous (GH) and 3 percent is Barren Land (BL). The remaining 8 percent of land cover within the project area is made up of streams and wetlands, of which approximately 5 percent is Open Water (OW), approximately 2.5 percent is Forested Wetland (FW), and approximately 0.5 percent is Marsh (MA) and Shrub Wetland (SW).

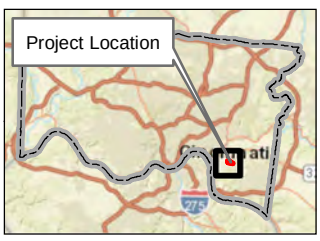
Attachments: Figures 1.1, 1.2, 2, and 3; Attachment A Ecological Resources Photolog

c.

Figures







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Stantec

Project Location
Anderson Township,
Hamilton County, Ohio

173620137
Prepared by MDV on 2021-03-19

Client/Project
HAM-LMST Extension to Ranchvale
PID 113602/115291
Technical Memorandum

Figure No.
1.1

Title
Project Location Map

Notes
1. Coordinate System: NAD 1983 StatePlane Ohio South FIPS 3402 Feet
2. Base features produced from project design elements.
3. Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS

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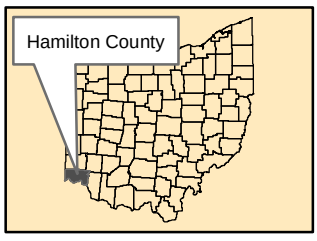

Notes
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2. Base features produced from project design elements.
3. Service Layer Credits: ODOT Mapping Services (2014)

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Stantec

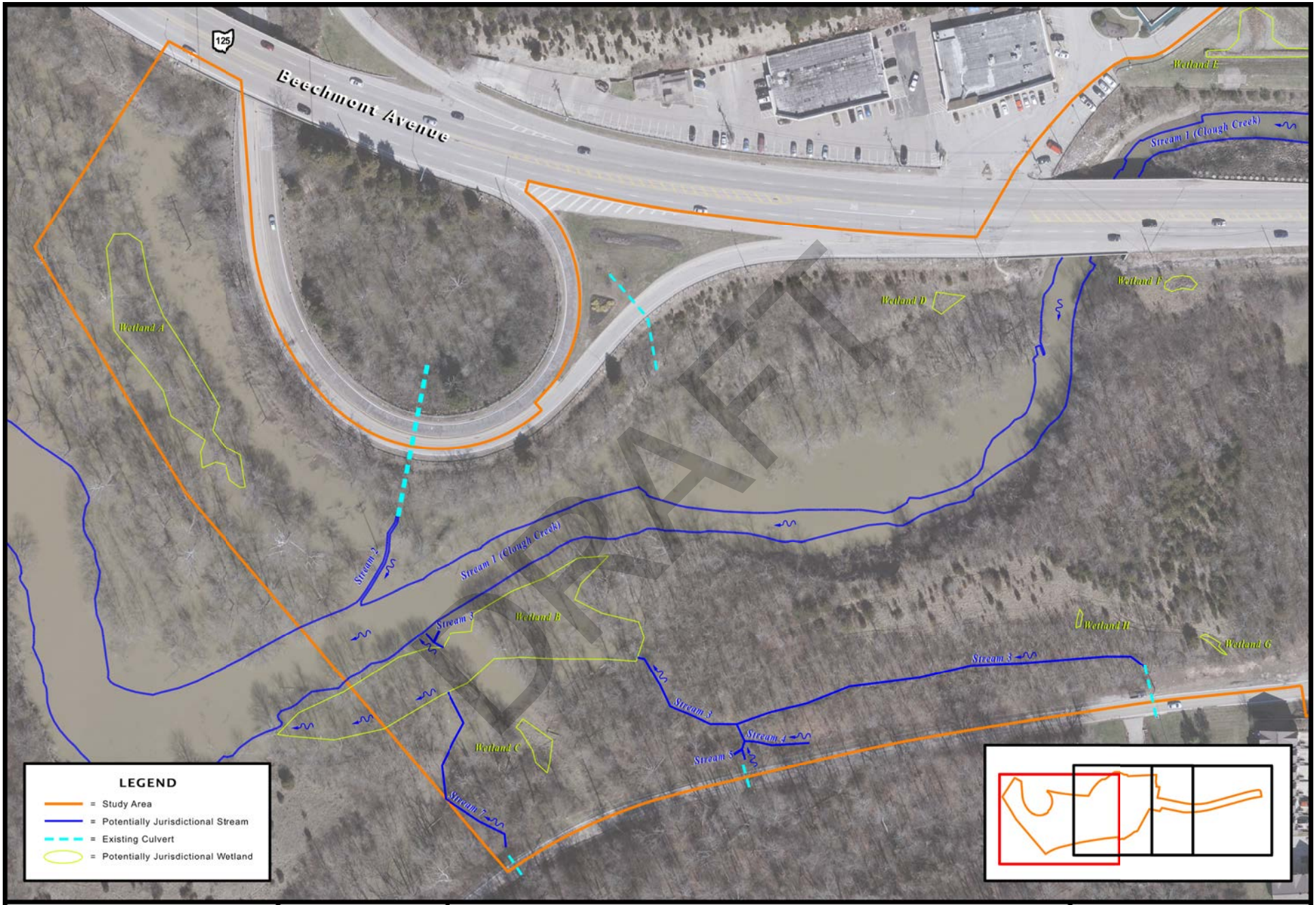
Project Location
Anderson Township, Hamilton County, Ohio

173620137
Prepared by MDV on 2021-04-28

Client/Project
HAM-LMST Extension to Ranchvale
PID 113602/115291
Technical Memorandum

Figure No.
1.2

Title
Project Location Map
County Roadway Map Base



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May 2021

NORTH

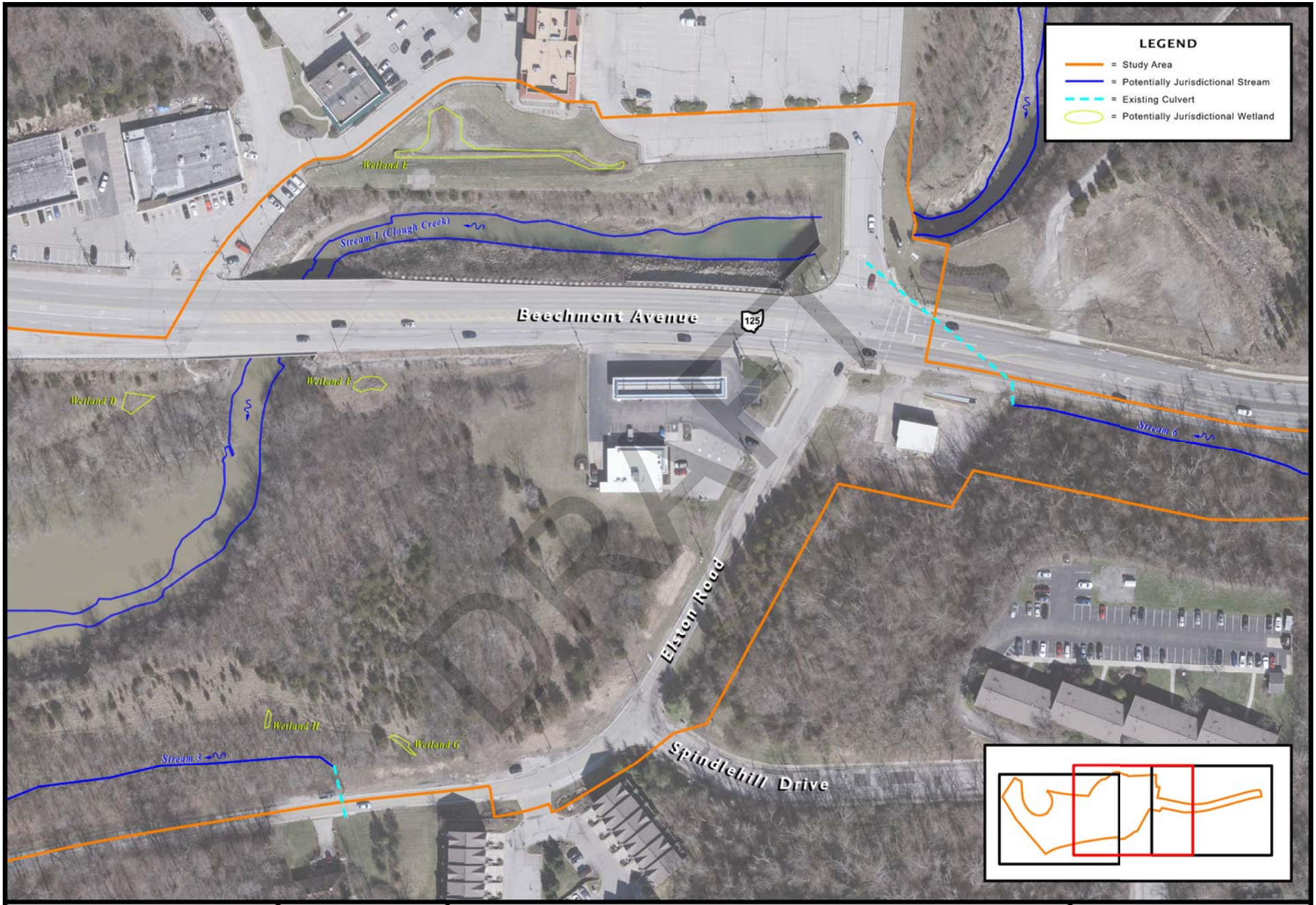
Stantec

Technical Memorandum

EC Segment II/III - LMST to Ranchvale Feasibility Study, Hamilton County, Ohio
HAM-LMST to Ranchvale; PID 113602/115291

Figure 2a

Ecological Resources (Streams and Wetlands)



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May 2021

NORTH

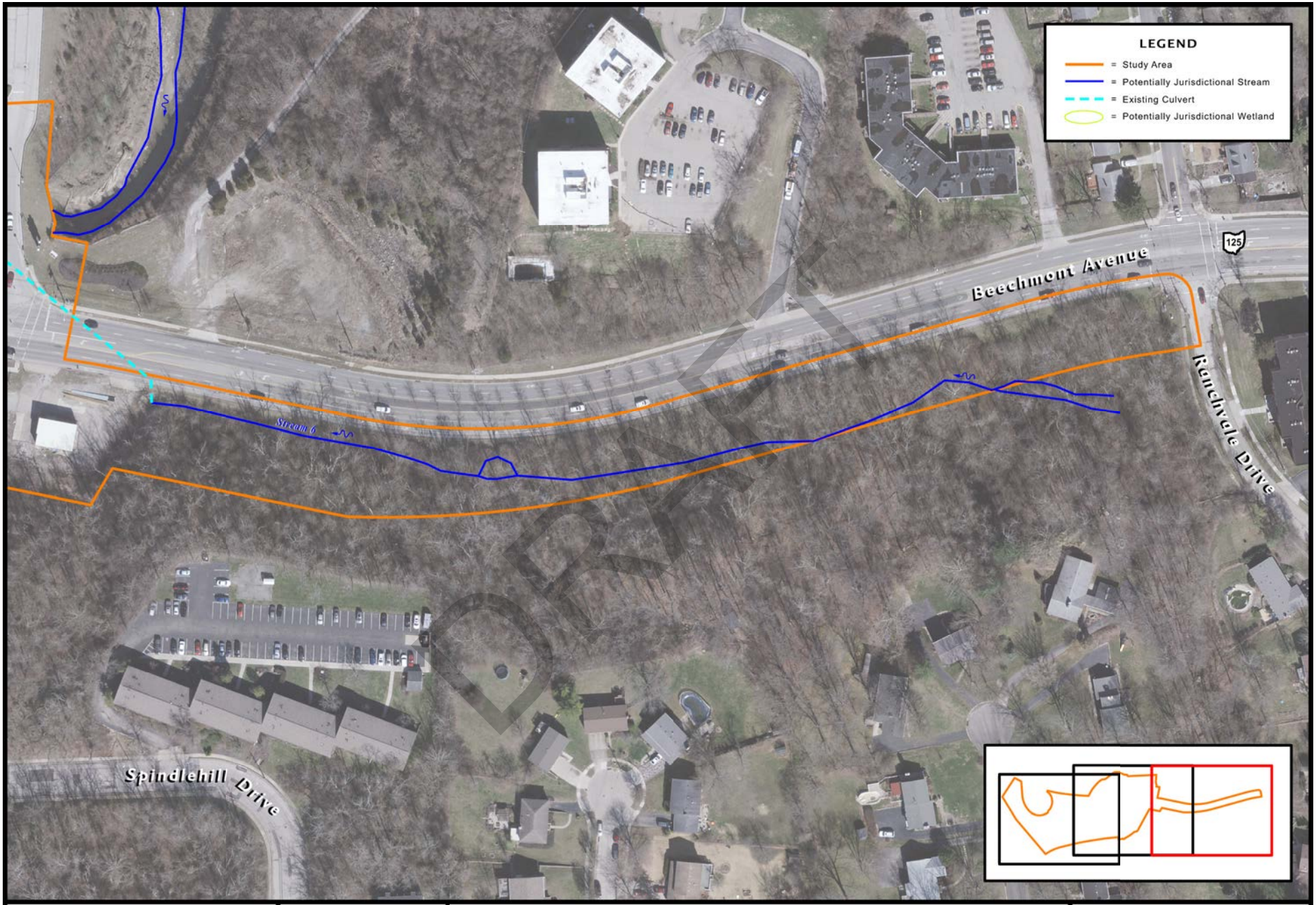
Stantec

Technical Memorandum

EC Segment II/III - LMST to Ranchvale Feasibility Study, Hamilton County, Ohio
HAM-LMST to Ranchvale; PID 113602/115291

Figure 2b

Ecological Resources (Streams and Wetlands)



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May 2021

NORTH

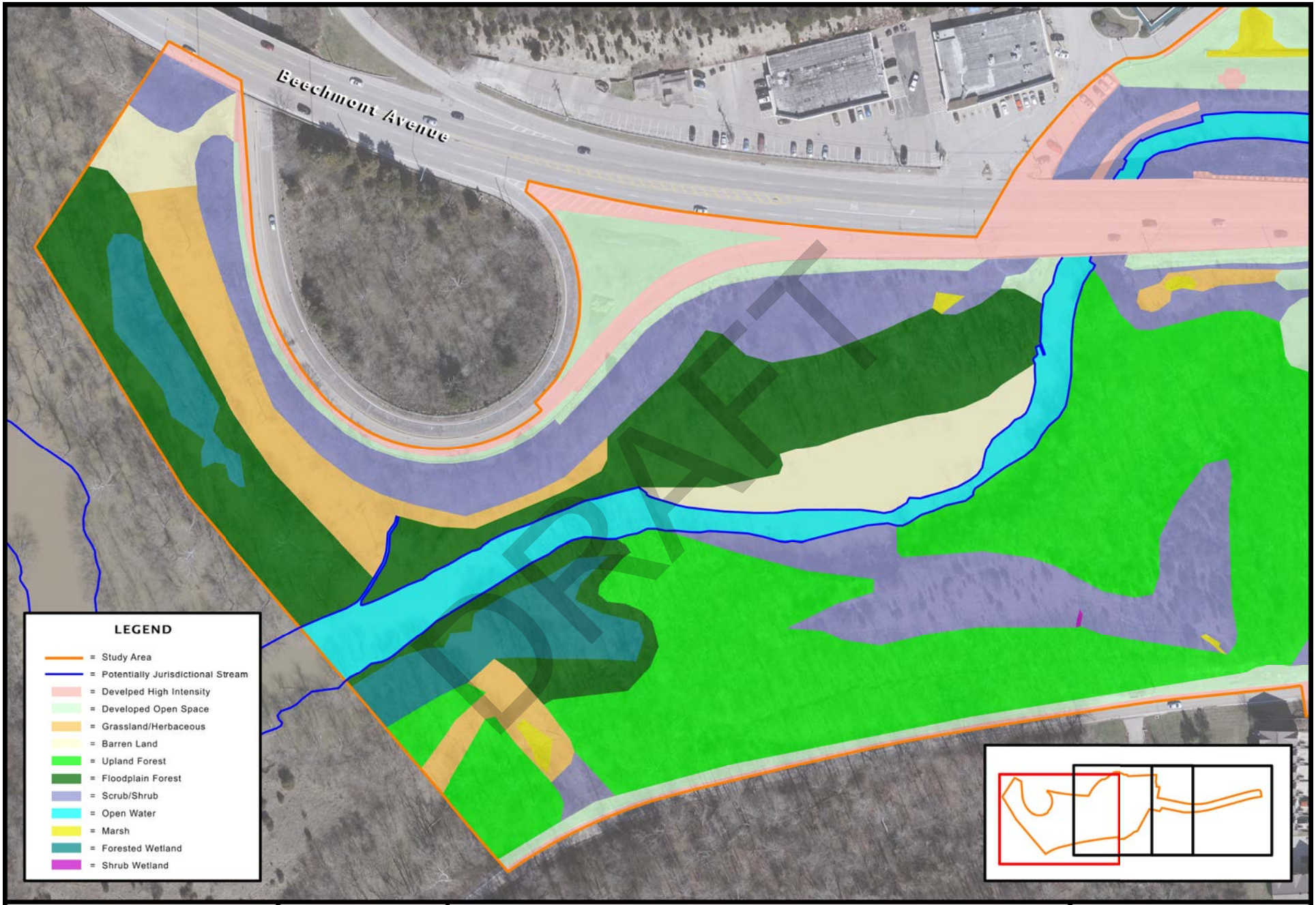
Stantec

Technical Memorandum

EC Segment II/III - LMST to Ranchvale Feasibility Study, Hamilton County, Ohio
HAM-LMST to Ranchvale; PID 113602/115291

Figure 2c

Ecological Resources (Streams and Wetlands)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= Floodplain Forest
= Scrub/Shrub
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= Marsh
= Forested Wetland
= Shrub Wetland
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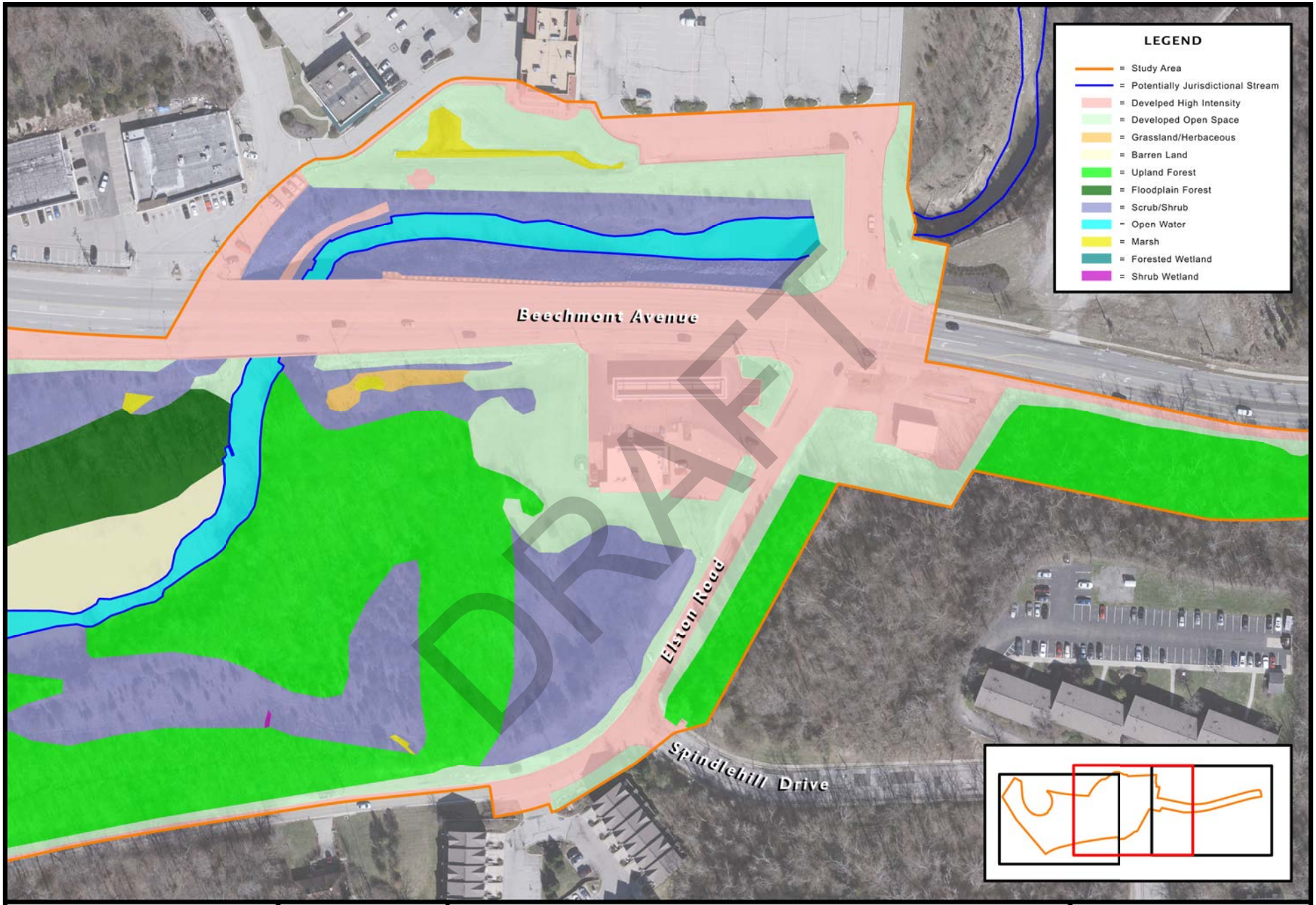
May 2021
NORTH
Stantec
Technical Memorandum
EC Segment II/III - LMST to Ranchvale Feasibility Study, Hamilton County, Ohio
HAM-LMST to Ranchvale; PID 113602/115291
Figure 3a
Ecological Resources
(Vegetative Communities)



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May 2021

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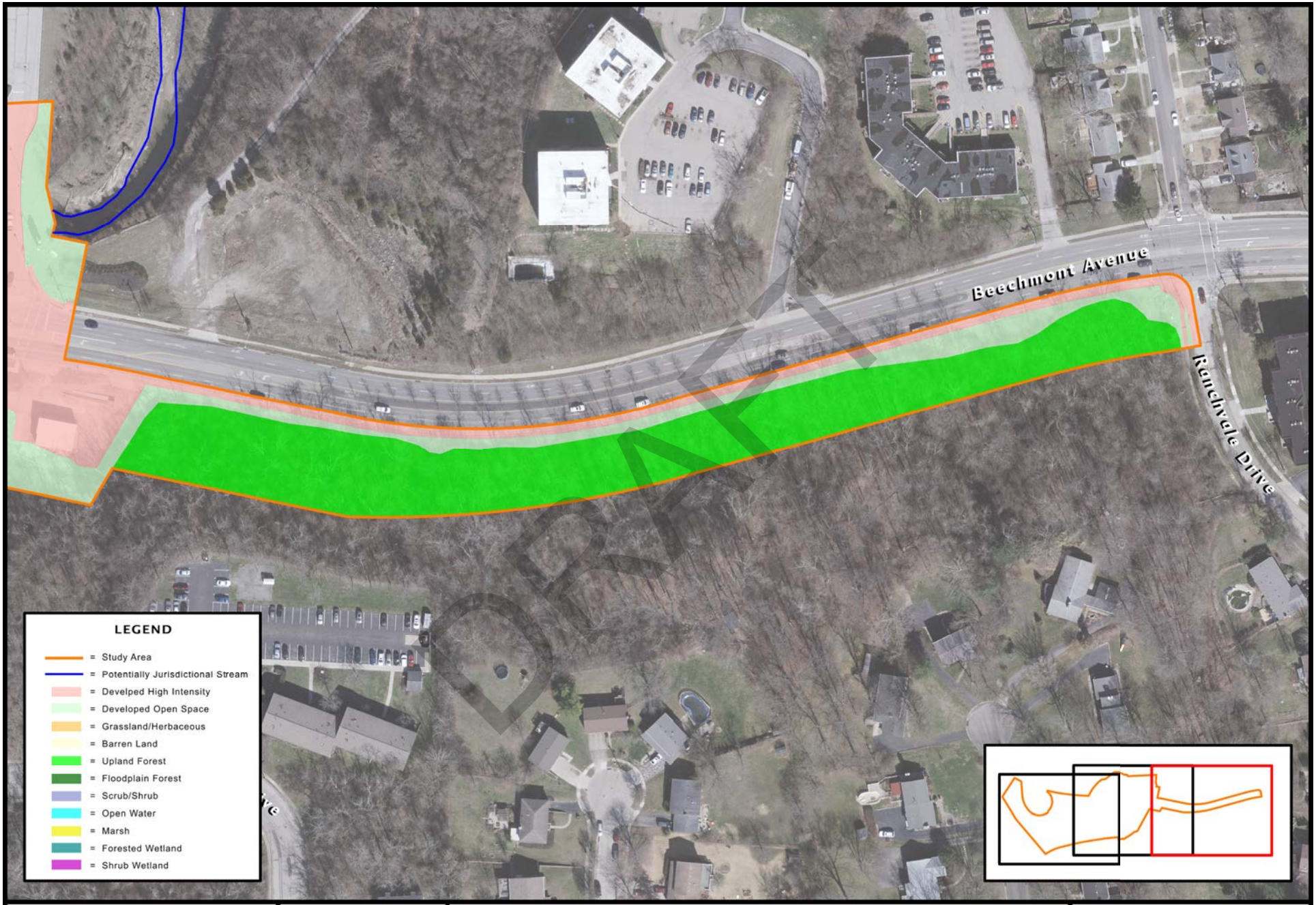
Technical Memorandum

EC Segment II/III - LMST to Ranchvale Feasibility Study, Hamilton County, Ohio
HAM-LMST to Ranchvale; PID 113602/115291

Figure 3b

Ecological Resources (Vegetative Communities)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= Open Water
= Marsh
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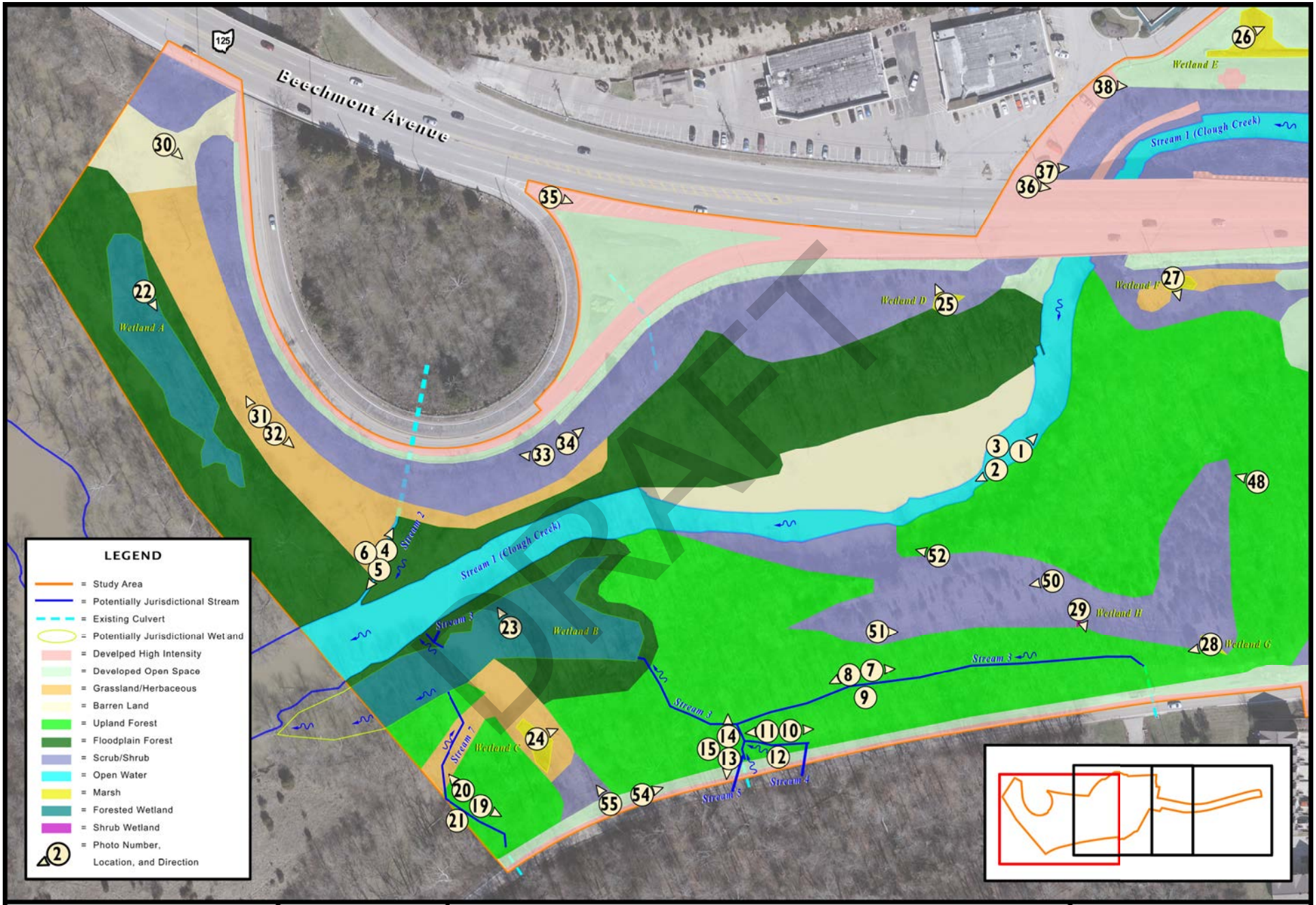
May 2021
NORTH
Stantec
Technical Memorandum
EC Segment II/III - LMST to Ranchvale Feasibility Study, Hamilton County, Ohio
HAM-LMST to Ranchvale; PID 113602/115291
Figure 3c
Ecological Resources
(Vegetative Communities)

Attachment A

Photo Log



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May 2021

NORTH

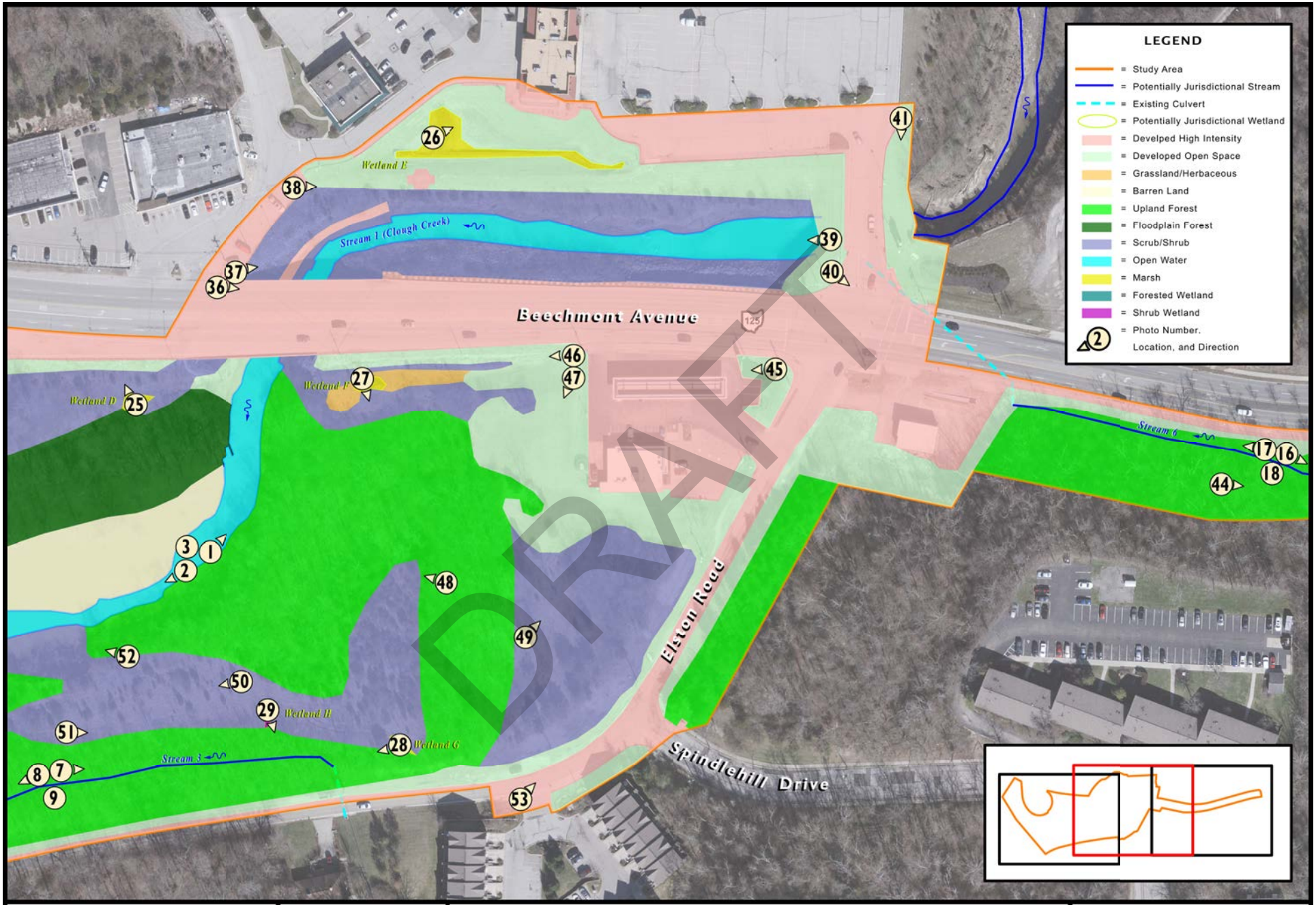
Stantec

Technical Memorandum

EC Segment II/III - LMST to Ranchvale Feasibility Study, Hamilton County, Ohio
HAM-LMST to Ranchvale; PID 113602/115291

Attachment A1

Photograph Location Map



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May 2021

NORTH

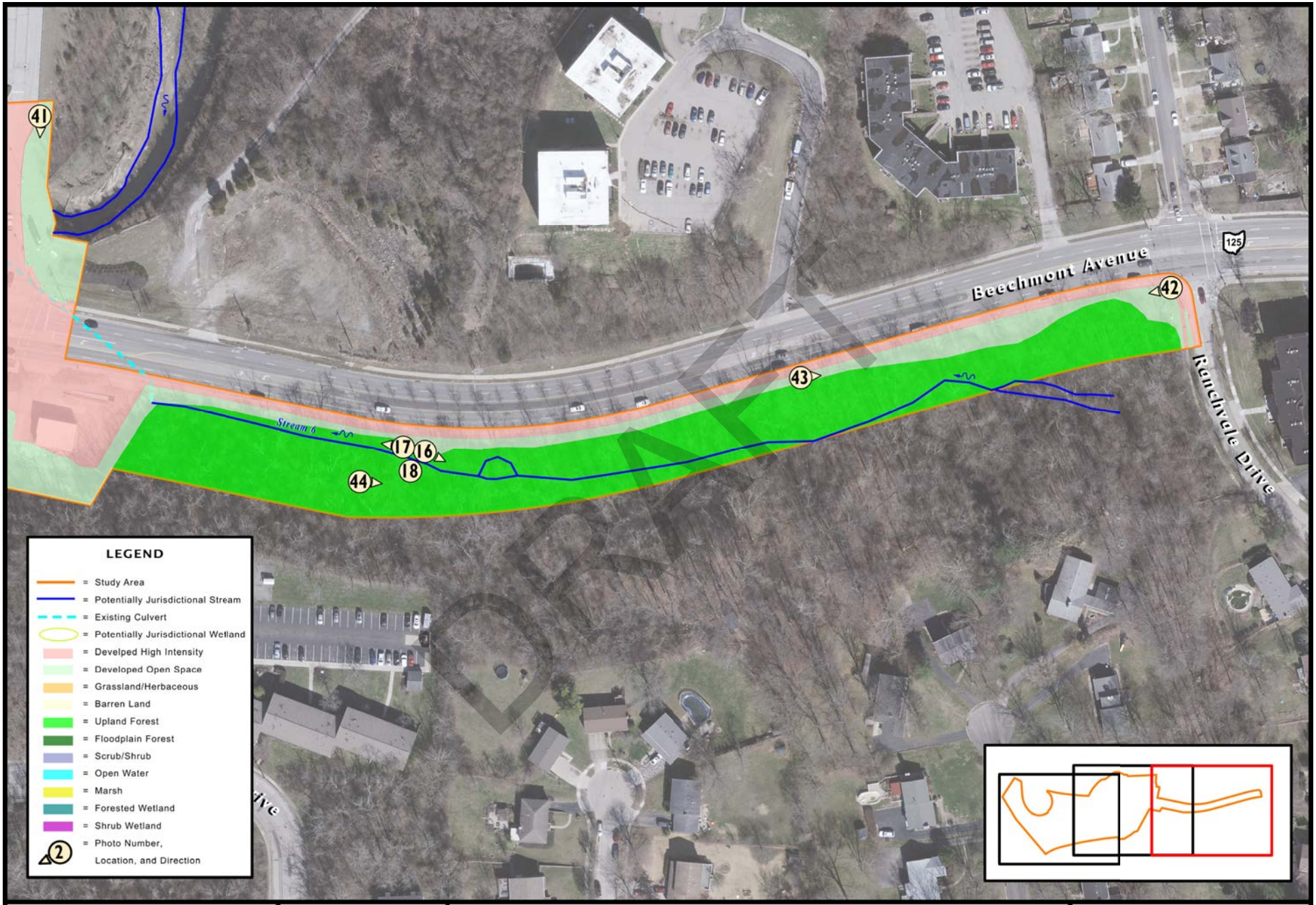
Stantec

Technical Memorandum

EC Segment II/III - LMST to Ranchvale Feasibility Study, Hamilton County, Ohio
HAM-LMST to Ranchvale; PID 113602/115291

Attachment A2

Photograph Location Map



May 2021

Stantec

Technical Memorandum

EC Segment II/III - LMST to Ranchvale Feasibility Study, Hamilton County, Ohio
HAM-LMST to Ranchvale; PID 113602/115291

Attachment A3

Photograph Location Map

Photo 1: Stream 1, Clough Creek, facing upstream, east.

Photo 2: Stream 1, Clough Creek, facing downstream, west.

Photo 3: Stream 1, Clough Creek, typical substrates.

Photo 4: Stream 2, facing upstream, northeast.

Photo 5: Stream 2, facing downstream, southwest.

Photo 6: Stream 2, typical substrates.

Photo 7: Stream 3, facing upstream, east.

Photo 8: Stream 3, facing downstream, west.

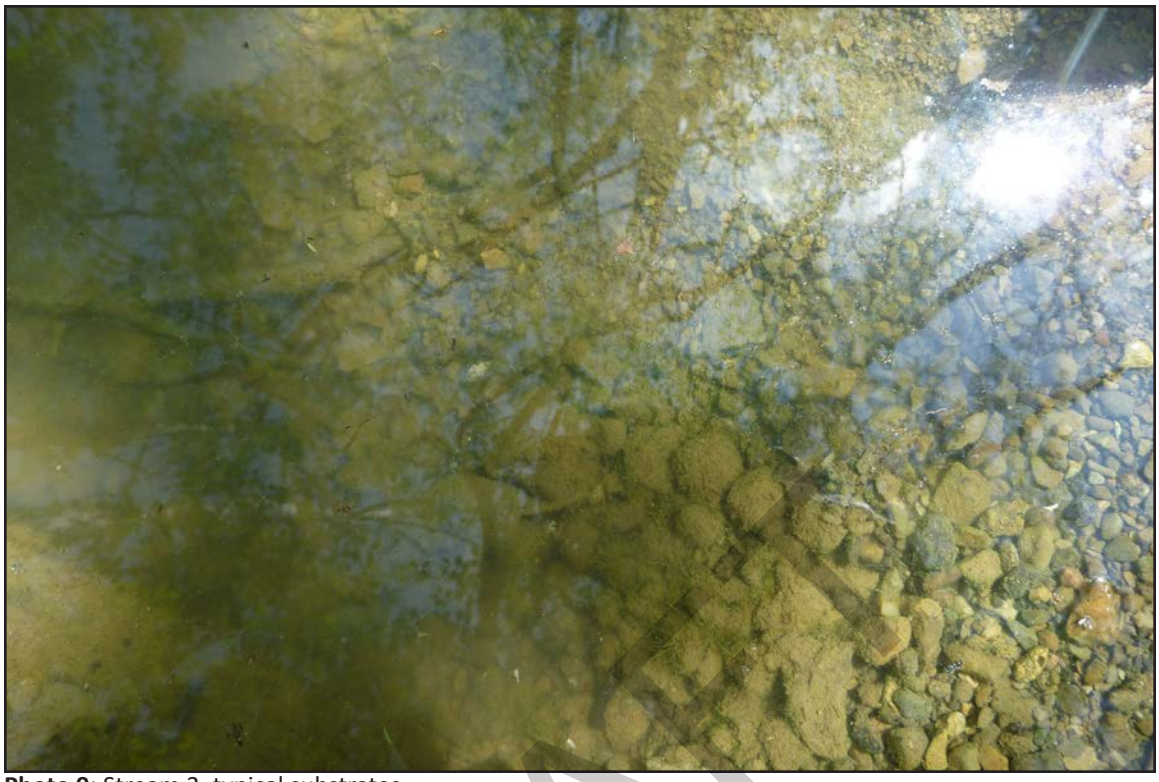


Photo 9: Stream 3, typical substrates.

Photo 10: Stream 4, facing upstream, east.

Photo 11: Stream 4, facing downstream, west.

Photo 12: Stream 4, typical substrates.

Photo 13: Stream 5, facing upstream, south.

Photo 14: Stream 5, facing downstream, north.

Photo 15: Stream 5, typical substrates.

Photo 16: Stream 6, facing upstream, southeast.

Photo 17: Stream 6, facing downstream, northwest.

Photo 18: Stream 6, typical substrates.

Photo 19: Stream 7, facing upstream, southeast.

Photo 20: Stream 7, facing downstream, northwest.

Photo 21: Stream 7, typical substrates.

Photo 22: Wetland A, facing south.

Photo 23: Wetland B, facing north.

Photo 24: Wetland C, facing east.

Photo 25: Wetland D, facing north.

Photo 26: Wetland E, facing east.

Photo 27: Wetland F, facing south.

Photo 28: Wetland G, facing west.

Photo 29: Wetland H, facing south.

Photo 30: Scrub/Shrub (SS) and Grassland/Herbaceous (GH) vegetative communities, facing southeast.

Photo 31: Utility line corridor; Scrub/Shrub (SS) and Grassland/Herbaceous (GH) vegetative communities, facing north.

Photo 32: Utility line corridor; Scrub/Shrub (SS) and Grassland/Herbaceous (GH) vegetative communities, facing southeast.

Photo 33: Combined sewer outflow (CSO) pollution; Scrub/Shrub (SS), facing north.

Photo 34: Combined sewer outflow (CSO) pollution; Scrub/Shrub (SS), facing east.

Photo 35: Developed High Intensity (DH) and Developed Open Space (DS) vegetative communities, facing southeast.

Photo 36: Developed High Intensity (DH) vegetative community, facing southeast.

Photo 37: Scrub/Shrub (SS) vegetative community, facing east.

Photo 38: Developed Open Space (DS) vegetative community, facing southeast.

Photo 39: Open Water (OW) and Scrub/Shrub (SS) vegetative communities , facing west.

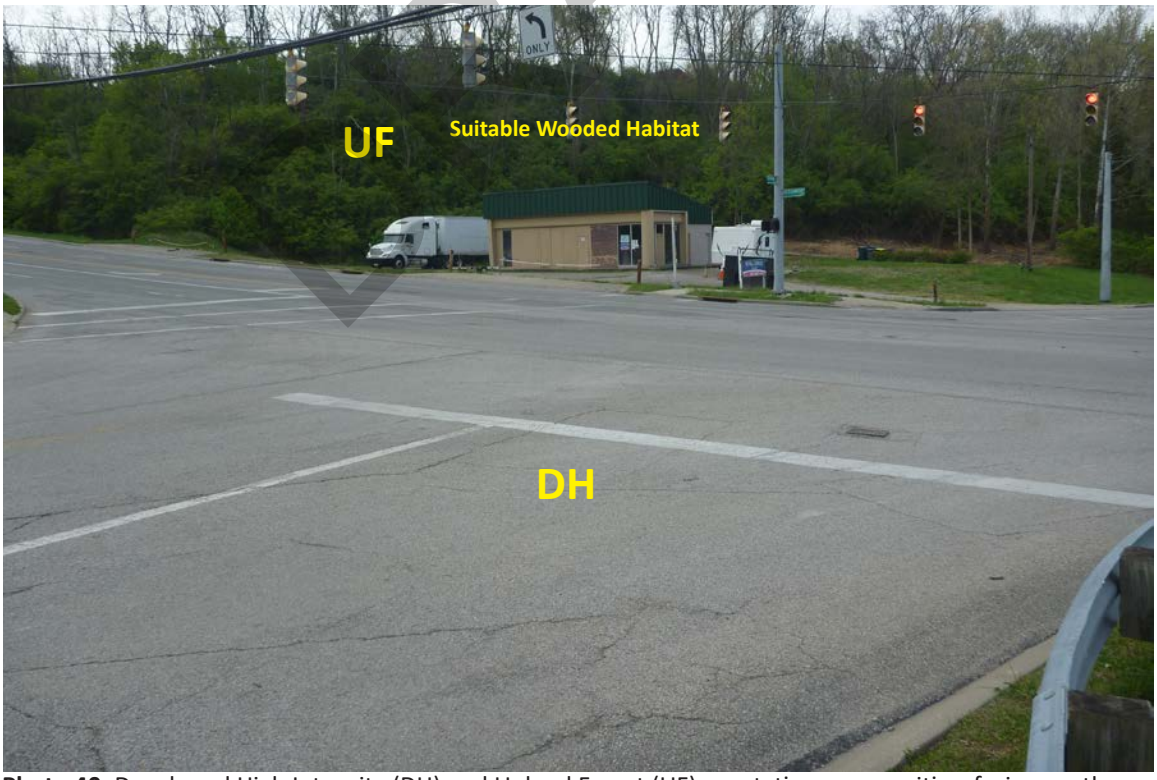


Photo 40: Developed High Intensity (DH) and Upland Forest (UF) vegetative communities, facing south-east.

Photo 41: Developed High Intensity (DH) and Developed Open Space (DS) vegetative communities, facing south.

Photo 42: Developed High Intensity (DH), Developed Open Space (DS), and Upland Forest (UF) vegetative communities, facing west.

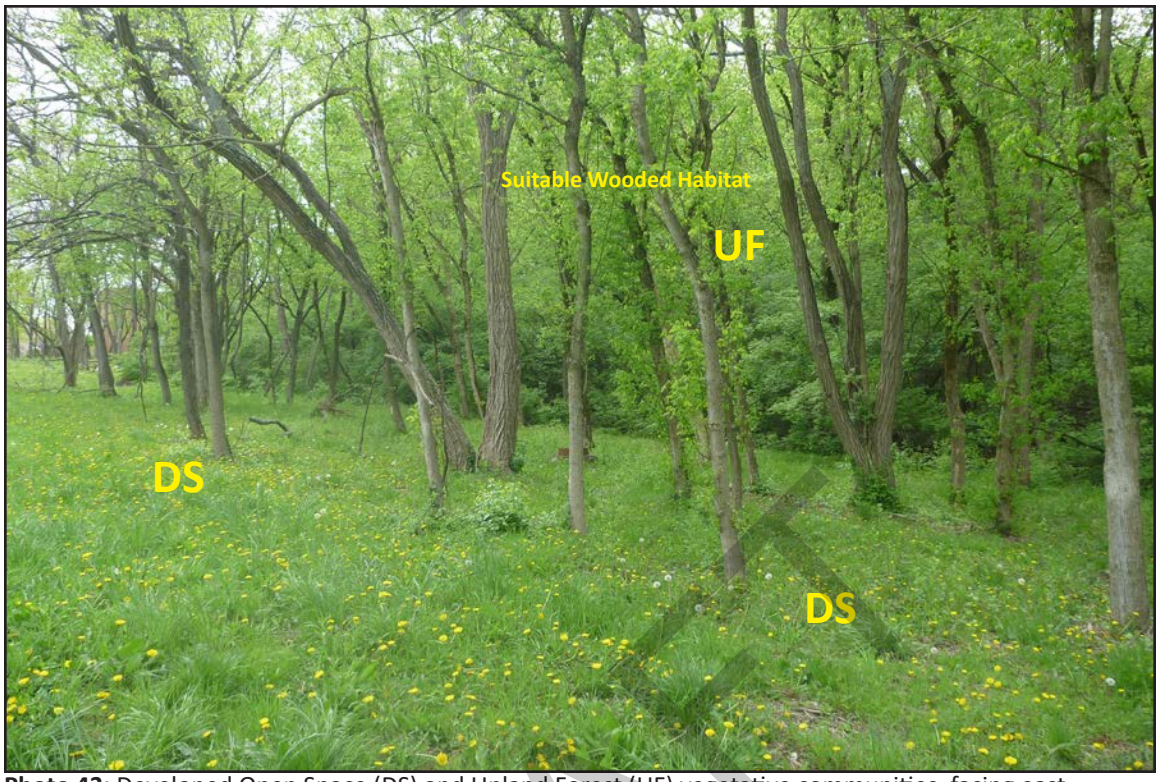


Photo 43: Developed Open Space (DS) and Upland Forest (UF) vegetative communities, facing east.

Photo 44: Scrubby Upland Forest (UF) vegetative community, facing east.

Photo 45: Developed High Intensity (DH) vegetative community, facing west.

Photo 46: Developed Open Space (DS), and Scrub/Shrub vegetative communities, facing west.

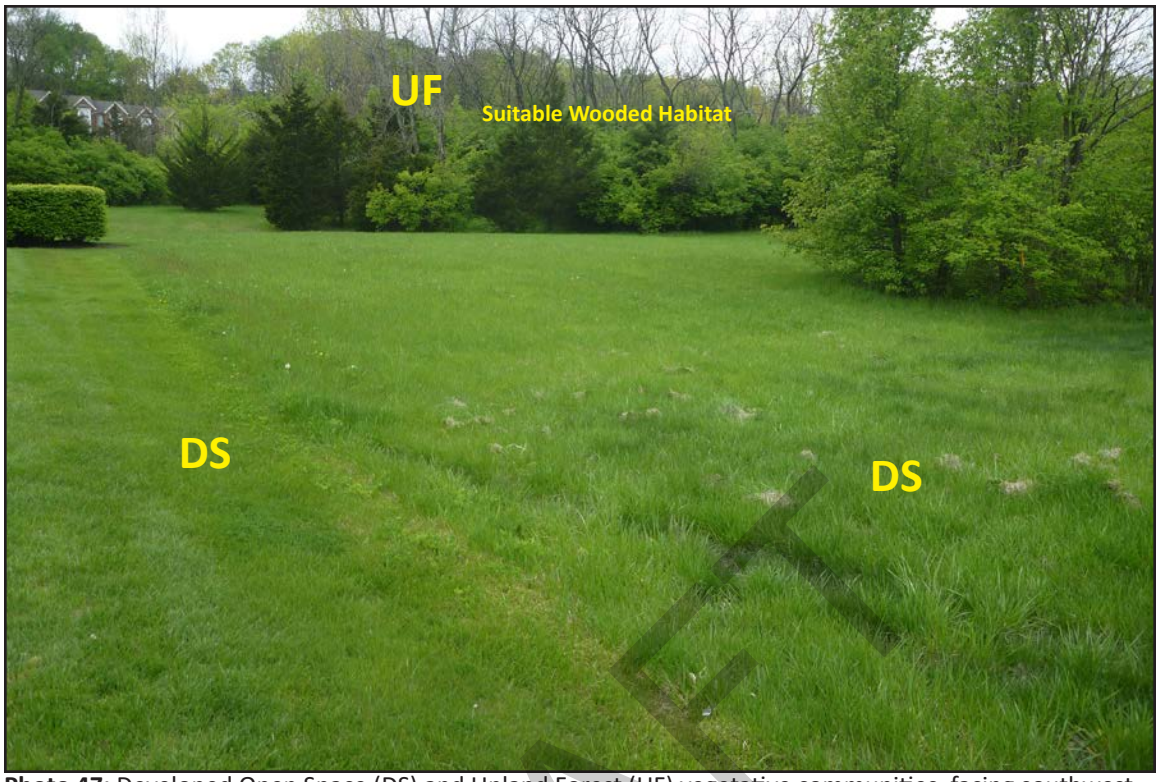


Photo 47: Developed Open Space (DS) and Upland Forest (UF) vegetative communities, facing southwest.

Photo 48: Upland Forest (UF) vegetative community, facing northwest.

Photo 49: Scrub/Shrub (SS) vegetative community, facing northeast.

Photo 50: Scrub/Shrub vegetative community, facing west.

Photo 51: Scrubby Upland Forest (UF) vegetative community, facing southeast.

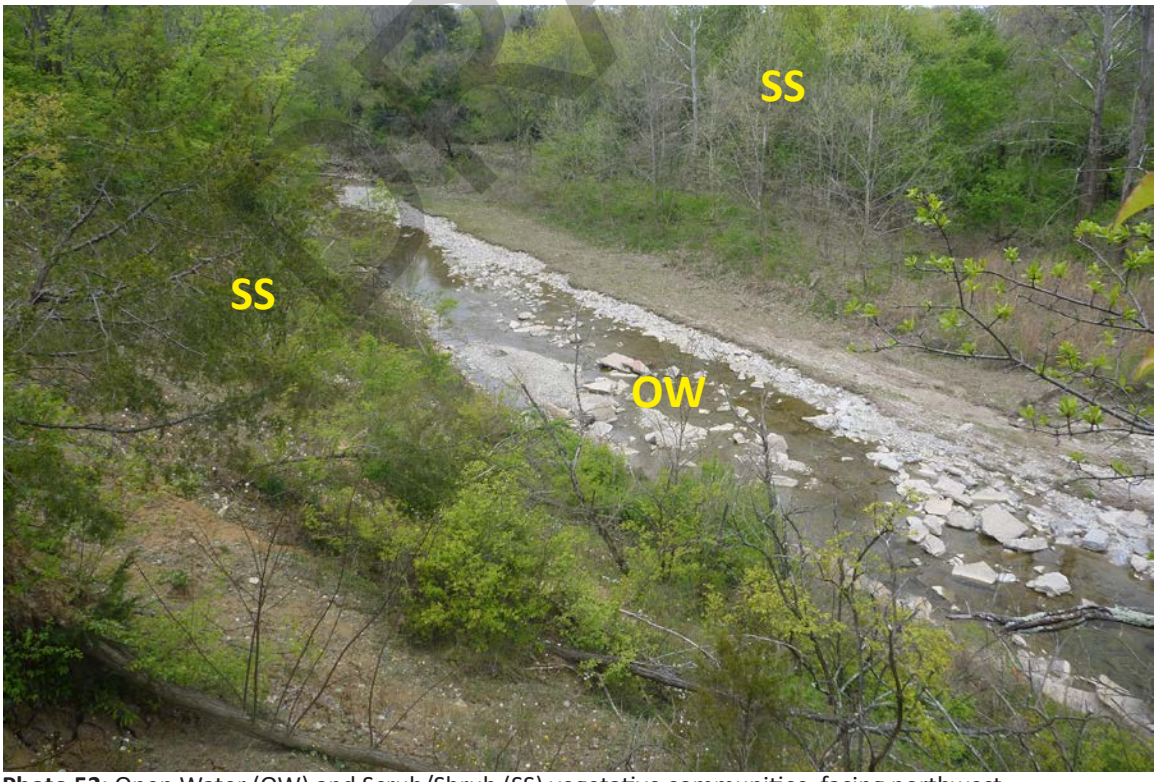


Photo 52: Open Water (OW) and Scrub/Shrub (SS) vegetative communities, facing northwest.

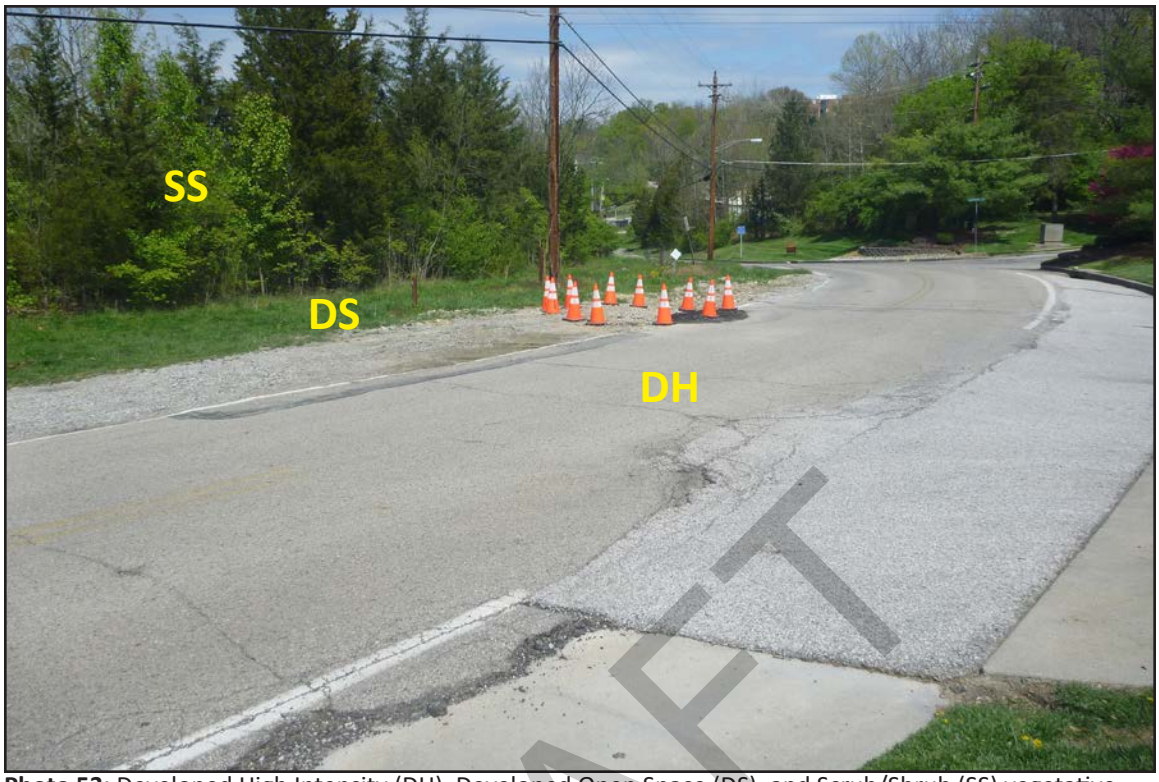


Photo 53: Developed High Intensity (DH), Developed Open Space (DS), and Scrub/Shrub (SS) vegetative communities, facing northeast.

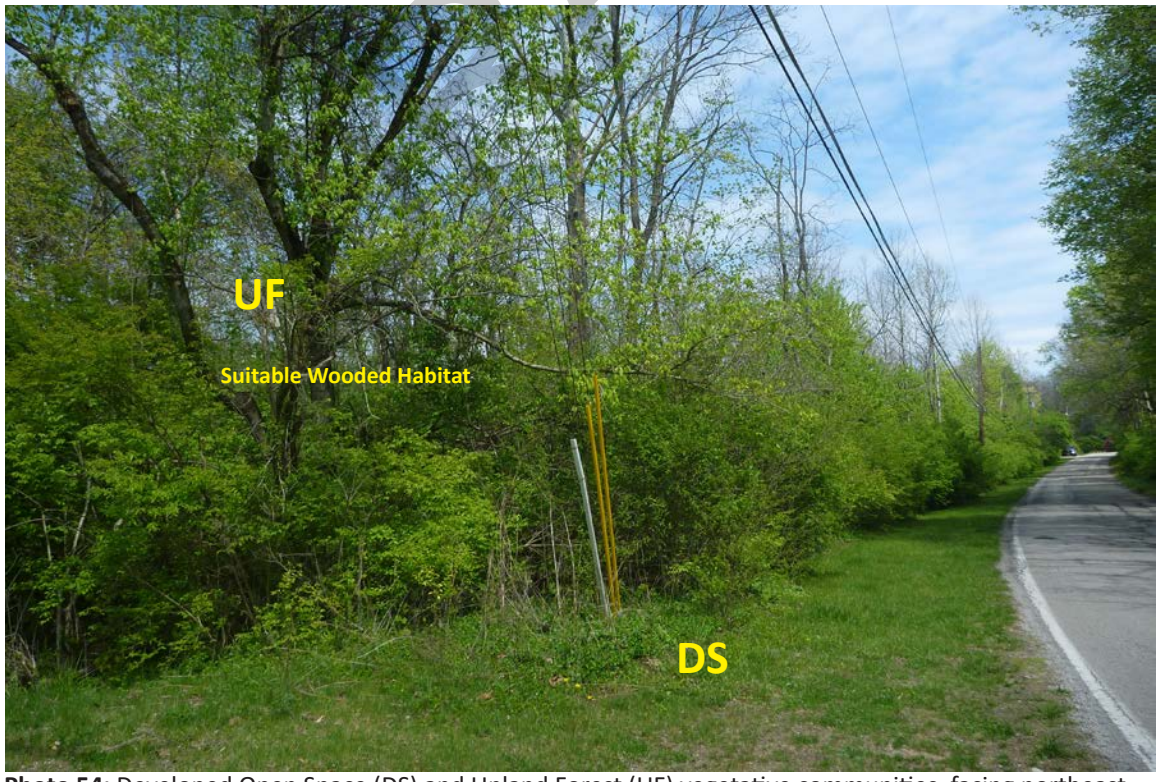


Photo 54: Developed Open Space (DS) and Upland Forest (UF) vegetative communities, facing northeast.

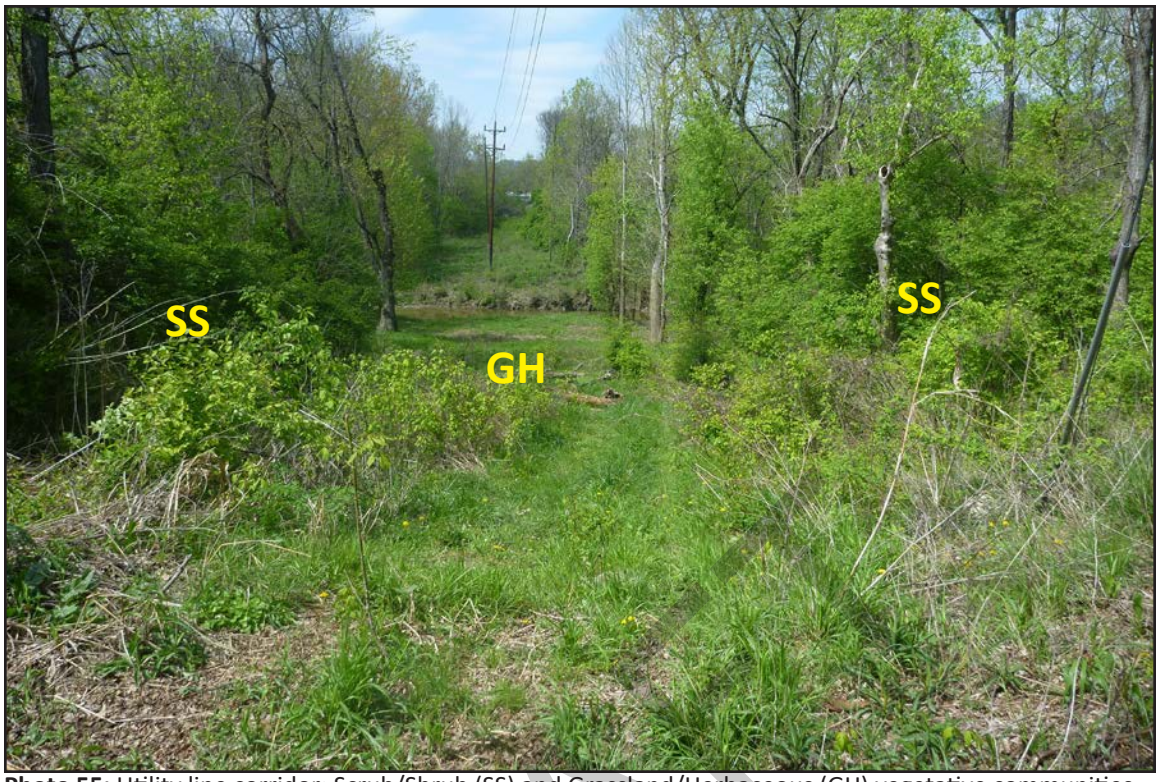


Photo 55: Utility line corridor; Scrub/Shrub (SS) and Grassland/Herbaceous (GH) vegetative communities, facing north.

ATTACHMENT F

Virtual Public Open House Summary Report

ATTACHMENT G

Preliminary Cost Estimates

Estimate Elstun Alt 1

Estimated Cost:$2,835,463.88

Contingency: 11.65%

Estimated Total: $3,165,795.42

HAM-LMST Ext to Ranchvale Feasibility Study
Elstun Connection Alternative 1

Base Date: 02/01/21

Spec Year: 19

Unit System: E

Work Type: GEN CONST: INVLVS 2 OR MOR MAJ WRK TYPE

Highway Type:

Urban/Rural Type: URBAN CLASS

Season: SUMMER

County: HAMILTON

Latitude of Midpoint: 390620

Longitude of Midpoint: 842354

District: 08

Federal/State Project Number: 113602

Estimate Type: C1

Prepared by Stantec on 07/28/21

Line #	Item Number / Description / *Supplemental Description*	Quantity	Units	Unit Price	Extension
Group 0010: Roadway					
0005	201E11000 CLEARING AND GRUBBING	3.000	ACRE	$2,000.00000	$6,000.00
0006	203E10000 EXCAVATION	950.000	CY	$12.00000	$11,400.00
0007	203E20000 EMBANKMENT	2,600.000	CY	$13.00000	$33,800.00
0008	204E10000 SUBGRADE COMPACTION	3,290.000	SY	$1.81738	$5,979.18
0009	606E15050 GUARDRAIL, TYPE MGS	700.000	FT	$17.89218	$12,524.53
0010	607E98000 FENCE, MISC.: *Bikeway Railing*	650.000	FT	$50.00000	$32,500.00
				Total for Group 0010:	$102,203.71
Group 0020: Erosion Control					
0011	659E10000 SEEDING AND MULCHING	14,000.000	SY	$5.25000	$73,500.00
0012	832E15000 STORM WATER POLLUTION PREVENTION PLAN	1.000	LS	$15,000.00000	$15,000.00
0013	832E15002 STORM WATER POLLUTION PREVENTION INSPECTIONS	1.000	LS	$10,000.00000	$10,000.00
0014	832E15010 STORM WATER POLLUTION PREVENTION INSPECTION SOFTWARE	1.000	LS	$10,000.00000	$10,000.00
0015	832E30000 EROSION CONTROL	40,000.000	EACH	$1.00000	$40,000.00
				Total for Group 0020:	$148,500.00
Group 0040: Drainage					
0016	601E37500 PAVED GUTTER, TYPE 1-2	160.000	FT	$49.54079	$7,926.53
0017	611E07900 18" CONDUIT, TYPE D	50.000	FT	$56.77073	$2,838.54
0018	611E10200 24" CONDUIT, TYPE A	50.000	FT	$108.74712	$5,437.36
0019	611E98150	1.000	EACH	$3,159.34997	$3,159.35

Line #	Item Number / Description / *Supplemental Description*	Quantity	Units	Unit Price	Extension
	CATCH BASIN, NO. 3				
0020	611E99574 MANHOLE, NO. 3	1.000	EACH	$3,000.00000	$3,000.00

Total for Group 0040:$22,361.78

Group 0050: Pavement

0021	304E20000 AGGREGATE BASE	460.000	CY	$68.49303	$31,506.79
0022	407E10000 TACK COAT	140.000	GAL	$2.79717	$391.60
0023	823E10000 ASPHALT CONCRETE SURFACE COURSE, TYPE 1, (448)	110.000	CY	$225.00000	$24,750.00
0024	823E15000 ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 1, (448)	130.000	CY	$225.00000	$29,250.00

Total for Group 0050:$85,898.39

Group 0100: Other Utilities

0025	F-MC-UTIL MAJOR COST DRIVERS, UTILITIES *Electric Transmission Line Relocation*	1.000	LS	$60,000.00000	$60,000.00

Total for Group 0100:$60,000.00

Group 0120: Traffic Control

0026	J-MC-TRAF MAJOR COST DRIVERS, TRAFFIC CONTROL *Ground Mounted Signs*	0.400	MILE	$100,000.00000	$40,000.00
0027	J-MC-TRAF MAJOR COST DRIVERS, TRAFFIC CONTROL *Pavement Marking*	1.000	LS	$10,000.00000	$10,000.00

Total for Group 0120:$50,000.00

Group 0150: Retaining Walls

0028	M-MC-WALL MAJOR COST DRIVERS, RETAINING WALLS *CIP Cantilever Retaining Wall, Sta 106+00 Rt*	1.000	LS	$166,500.00000	$166,500.00
0029	M-MC-WALL MAJOR COST DRIVERS, RETAINING WALLS *Soil Nail Wall, Sta 112+50 Lt.*	1.000	LS	$405,000.00000	$405,000.00
0030	M-MC-WALL MAJOR COST DRIVERS, RETAINING WALLS *Drilled Shaft Retaining Wall, Sta 113+90 Rt*	1.000	LS	$195,000.00000	$195,000.00
0031	M-MC-WALL MAJOR COST DRIVERS, RETAINING WALLS *CIP Cantilever Retaining Wall, Sta 115+00 Rt*	1.000	LS	$220,000.00000	$220,000.00

Line #	Item Number / Description / *Supplemental Description*	Quantity	Units	Unit Price	Extension
0032	M-MC-WALL MAJOR COST DRIVERS, RETAINING WALLS *Drilled Shaft Retaining Wall, Sta 115+25 Lt*	1.000	LS	$430,000.00000	$430,000.00
0033	M-MC-WALL MAJOR COST DRIVERS, RETAINING WALLS *Bridge Pier Wall*	1.000	LS	$50,000.00000	$50,000.00

Total for Group 0150:$1,466,500.00

Group 0230: Incidentals

0034	614E11000 MAINTAINING TRAFFIC	1.000	LS	$20,000.00000	$20,000.00
0035	623E10000 CONSTRUCTION LAYOUT STAKES AND SURVEYING *0.5% of construction cost*	1.000	LS	$13,000.00000	$13,000.00
0036	624E10000 MOBILIZATION *per CMS 624.02-1*	1.000	LS	$100,000.00000	$100,000.00

Total for Group 0230:$133,000.00

Group 0240: Design Contingency

0037	V-MC-CNTG MAJOR COST DRIVERS, CONTINGENCY COSTS *Design Contingency (30% Construction Cost)*	1.000	LS	$581,000.00000	$581,000.00

Total for Group 0240:$581,000.00

Group 0250: Construction Administration

0038	U-MC-MISC MAJOR COST DRIVERS, MISCELLANEOUS COSTS *Construction Administration (7% of Construction Cost)*	1.000	LS	$186,000.00000	$186,000.00

Total for Group 0250:$186,000.00

CY 2021-2025 Business Plan Inflation Calculator:

Not sure if you have the latest calculator? Click here.

Last Modified: 2/1/2021

Today's Date:
July 28, 2021

Please Enter Values in the Yellow Areas Only:

Estimation Start Date:
Less than or Equal to Today's Date
(mm/dd/yyyy)

2/1/2021
Start Date:

Enter Construction Mid-Point Date:
(cannot exceed 07/28/2046)
(mm/dd/yyyy)

2/1/2025
Construction Mid-Point Date:

Present-Day Estimated Cost:

$2,835,463.88
Estimated Dollar Amount:

Estimate Start Date to Construction Mid-Point Date: **48** **Months**

Inflation - Start to Mid-Point of Construction:

	(compounded growth rate)	Inflated Dollar Amount:
Business Plan	**11.6%**	**$3,165,734.92**

Estimator's Name:

County - Route - Section: HAM-LMST Ext to Ranchvale

PID: 113602

Estimator's Notes: Alternative 1

Estimate Elstun Alt 3

Estimated Cost:$1,542,149.75

Contingency: 11.65%

Estimated Total: $1,721,810.20

HAM-LMST Ext to Ranchvale Feasibility Study
Elstun Connection Alternative 3

Base Date: 02/01/21

Spec Year: 19

Unit System: E

Work Type: GEN CONST: INVLVS 2 OR MOR MAJ WRK TYPE

Highway Type:

Urban/Rural Type: URBAN CLASS

Season: SUMMER

County: HAMILTON

Latitude of Midpoint: 390620

Longitude of Midpoint: 842354

District: 08

Federal/State Project Number: 113602

Estimate Type: C1

Prepared by Stantec on 07/28/21

Line #	Item Number / Description / *Supplemental Description*	Quantity	Units	Unit Price	Extension
Group 0010: Roadway					
0005	201E11000 CLEARING AND GRUBBING	3.500	ACRE	$2,000.00000	$7,000.00
0006	203E10000 EXCAVATION	500.000	CY	$12.00000	$6,000.00
0007	203E20000 EMBANKMENT	17,000.000	CY	$13.00000	$221,000.00
0008	204E10000 SUBGRADE COMPACTION	3,820.000	SY	$1.74094	$6,650.39
0009	606E15050 GUARDRAIL, TYPE MGS	500.000	FT	$18.20093	$9,100.47
0010	607E98000 FENCE, MISC.: *Bikeway Railing*	150.000	FT	$50.00000	$7,500.00
0011	609E26000 CURB, TYPE 6	200.000	FT	$32.09059	$6,418.12
				Total for Group 0010:	$263,668.98
Group 0020: Erosion Control					
0012	659E10000 SEEDING AND MULCHING	16,000.000	SY	$5.25000	$84,000.00
0013	832E15000 STORM WATER POLLUTION PREVENTION PLAN	1.000	LS	$15,000.00000	$15,000.00
0014	832E15002 STORM WATER POLLUTION PREVENTION INSPECTIONS	1.000	LS	$10,000.00000	$10,000.00
0015	832E15010 STORM WATER POLLUTION PREVENTION INSPECTION SOFTWARE	1.000	LS	$10,000.00000	$10,000.00
0016	832E30000 EROSION CONTROL	40,000.000	EACH	$1.00000	$40,000.00
				Total for Group 0020:	$159,000.00
Group 0040: Drainage					
0017	611E07900 18" CONDUIT, TYPE D	200.000	FT	$56.77073	$11,354.15
				Total for Group 0040:	$11,354.15
Group 0050: Pavement					

Line #	Item Number / Description / *Supplemental Description*	Quantity	Units	Unit Price	Extension
0018	304E20000 AGGREGATE BASE	540.000	CY	$66.94737	$36,151.58
0019	407E10000 TACK COAT	170.000	GAL	$2.79435	$475.04
0020	823E10000 ASPHALT CONCRETE SURFACE COURSE, TYPE 1, (448)	130.000	CY	$225.00000	$29,250.00
0021	823E15000 ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 1, (448)	150.000	CY	$225.00000	$33,750.00

Total for Group 0050:$99,626.62

Group 0100: Other Utilities

0022	F-MC-UTIL MAJOR COST DRIVERS, UTILITIES *Electric Transmission Line Relocation*	1.000	LS	$60,000.00000	$60,000.00

Total for Group 0100:$60,000.00

Group 0120: Traffic Control

0023	J-MC-TRAF MAJOR COST DRIVERS, TRAFFIC CONTROL *Ground Mounted Signs*	0.400	MILE	$100,000.00000	$40,000.00
0024	J-MC-TRAF MAJOR COST DRIVERS, TRAFFIC CONTROL *Pavement Marking*	1.000	LS	$10,000.00000	$10,000.00

Total for Group 0120:$50,000.00

Group 0200: Structures Over 20 Foot Span (Bridge Number of SFN)

0025	R-MC-STRC MAJOR COST DRIVERS, STRUCTURES *Three Span Bridge over Clough Creek*	1.000	LS	$413,500.00000	$413,500.00

Total for Group 0200:$413,500.00

Group 0230: Incidentals

0026	614E11000 MAINTAINING TRAFFIC	1.000	LS	$20,000.00000	$20,000.00
0027	623E10000 CONSTRUCTION LAYOUT STAKES AND SURVEYING *0.5% of construction cost*	1.000	LS	$6,000.00000	$6,000.00
0028	624E10000 MOBILIZATION *per CMS 624.02-1*	1.000	LS	$40,000.00000	$40,000.00

Total for Group 0230:$66,000.00

Group 0240: Design Contingency

Line #	Item Number / Description / *Supplemental Description*	Quantity	Units	Unit Price	Extension
0029	V-MC-CNTG MAJOR COST DRIVERS, CONTINGENCY COSTS *Design Contingency (30% Construction Cost)*	1.000	LS	$318,000.00000	$318,000.00

Total for Group 0240:$318,000.00

Group 0250: Construction Administration

0030	U-MC-MISC MAJOR COST DRIVERS, MISCELLANEOUS COSTS *Construction Administration (7% of Construction Cost)*	1.000	LS	$101,000.00000	$101,000.00

Total for Group 0250:$101,000.00

CY 2021-2025 Business Plan Inflation Calculator:

Not sure if you have the latest calculator? Click here.

Last Modified: 2/1/2021

Today's Date:
July 28, 2021

Please Enter Values in the Yellow Areas Only:

Estimation Start Date:
Less than or Equal to Today's Date
(mm/dd/yyyy)

2/1/2021
Start Date:

Enter Construction Mid-Point Date:
(cannot exceed 07/28/2046)
(mm/dd/yyyy)

2/1/2025
Construction Mid-Point Date:

Present-Day Estimated Cost:

$1,542,149.75
Estimated Dollar Amount:

Estimate Start Date to Construction Mid-Point Date: **48** **Months**

Inflation - Start to Mid-Point of Construction:

	(compounded growth rate)	Inflated Dollar Amount:
Business Plan	**11.6%**	**$1,721,777.29**

Estimator's Name:

County - Route - Section: HAM-LMST Ext to Ranchvale

PID: 113602

Estimator's Notes: Alternative 3

Estimate Elstun Alt 4A

Estimated Cost:$1,860,079.68

Contingency: 11.65%

Estimated Total: $2,076,778.96

HAM-LMST Ext to Ranchvale Feasibility Study
Elstun Connection Alternative 4A

Base Date: 02/01/21

Spec Year: 19

Unit System: E

Work Type: GEN CONST: INVLVS 2 OR MOR MAJ WRK TYPE

Highway Type:

Urban/Rural Type: URBAN CLASS

Season: SUMMER

County: HAMILTON

Latitude of Midpoint: 390620

Longitude of Midpoint: 842354

District: 08

Federal/State Project Number: 113602

Estimate Type: C1

Prepared by Stantec on 07/28/21

Line #	Item Number / Description / *Supplemental Description*	Quantity	Units	Unit Price	Extension
Group 0010: Roadway					
0005	201E11000 CLEARING AND GRUBBING	4.000	ACRE	$2,000.00000	$8,000.00
0006	203E10000 EXCAVATION	7,000.000	CY	$12.00000	$84,000.00
0007	203E20000 EMBANKMENT	15,000.000	CY	$13.00000	$195,000.00
0008	204E10000 SUBGRADE COMPACTION	3,820.000	SY	$1.74094	$6,650.39
0009	606E15050 GUARDRAIL, TYPE MGS	700.000	FT	$17.89218	$12,524.53
0010	607E98000 FENCE, MISC.: *Bikeway Railing*	300.000	FT	$50.00000	$15,000.00
0011	609E26000 CURB, TYPE 6	200.000	FT	$32.09059	$6,418.12
				Total for Group 0010:	$327,593.04
Group 0020: Erosion Control					
0012	659E10000 SEEDING AND MULCHING	20,000.000	SY	$5.25000	$105,000.00
0013	832E15000 STORM WATER POLLUTION PREVENTION PLAN	1.000	LS	$15,000.00000	$15,000.00
0014	832E15002 STORM WATER POLLUTION PREVENTION INSPECTIONS	1.000	LS	$10,000.00000	$10,000.00
0015	832E15010 STORM WATER POLLUTION PREVENTION INSPECTION SOFTWARE	1.000	LS	$10,000.00000	$10,000.00
0016	832E30000 EROSION CONTROL	40,000.000	EACH	$1.00000	$40,000.00
				Total for Group 0020:	$180,000.00
Group 0040: Drainage					
0017	611E07900 18" CONDUIT, TYPE D	50.000	FT	$56.77073	$2,838.54
0018	611E10200 24" CONDUIT, TYPE A	50.000	FT	$108.25403	$5,412.70
0019	601E37500	50.000	FT	$44.90948	$2,245.47

Line #	Item Number	Description / *Supplemental Description*	Quantity	Units	Unit Price	Extension
		PAVED GUTTER, TYPE 1-2				
0020	611E98150	CATCH BASIN, NO. 3	1.000	EACH	$3,159.34997	$3,159.35
0021	611E99574	MANHOLE, NO. 3	1.000	EACH	$3,703.96214	$3,703.96

Total for Group 0040:$17,360.02

Group 0050: Pavement

0022	304E20000	AGGREGATE BASE	540.000	CY	$66.94737	$36,151.58
0023	407E10000	TACK COAT	170.000	GAL	$2.79435	$475.04
0024	823E10000	ASPHALT CONCRETE SURFACE COURSE, TYPE 1, (448)	130.000	CY	$225.00000	$29,250.00
0025	823E15000	ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 1, (448)	150.000	CY	$225.00000	$33,750.00

Total for Group 0050:$99,626.62

Group 0100: Other Utilities

0026	F-MC-UTIL	MAJOR COST DRIVERS, UTILITIES *Electric Transmission Line Relocation*	1.000	LS	$60,000.00000	$60,000.00

Total for Group 0100:$60,000.00

Group 0120: Traffic Control

0027	J-MC-TRAF	MAJOR COST DRIVERS, TRAFFIC CONTROL *Ground Mounted Signs*	0.400	MILE	$100,000.00000	$40,000.00
0028	J-MC-TRAF	MAJOR COST DRIVERS, TRAFFIC CONTROL *Pavement Marking*	1.000	LS	$10,000.00000	$10,000.00

Total for Group 0120:$50,000.00

Group 0150: Retaining Walls

0029	M-MC-WALL	MAJOR COST DRIVERS, RETAINING WALLS *CIP Cantilever Retaining Wall, Sta 106+00 Rt*	1.000	LS	$166,500.00000	$166,500.00

Total for Group 0150:$166,500.00

Group 0200: Structures Over 20 Foot Span (Bridge Number of SFN)

0030	R-MC-STRC		1.000	LS	$384,000.00000	$384,000.00

Line #	Item Number / Description / *Supplemental Description*	Quantity	Units	Unit Price	Extension
	MAJOR COST DRIVERS, STRUCTURES *Three Span Bridge over Clough Creek*				

Total for Group 0200:$384,000.00

Group 0230: Incidentals

0031	614E11000 MAINTAINING TRAFFIC	1.000	LS	$20,000.00000	$20,000.00
0032	623E10000 CONSTRUCTION LAYOUT STAKES AND SURVEYING *0.5% of construction cost*	1.000	LS	$7,000.00000	$7,000.00
0033	624E10000 MOBILIZATION *per CMS 624.02-1*	1.000	LS	$40,000.00000	$40,000.00

Total for Group 0230:$67,000.00

Group 0240: Design Contingency

0034	V-MC-CNTG MAJOR COST DRIVERS, CONTINGENCY COSTS *Design Contingency (30% Construction Cost)*	1.000	LS	$386,000.00000	$386,000.00

Total for Group 0240:$386,000.00

Group 0250: Construction Administration

0035	U-MC-MISC MAJOR COST DRIVERS, MISCELLANEOUS COSTS *Construction Administration (7% of Construction Cost)*	1.000	LS	$122,000.00000	$122,000.00

Total for Group 0250:$122,000.00

CY 2021-2025 Business Plan Inflation Calculator:

Not sure if you have the latest calculator? Click here.

Last Modified: 2/1/2021

Today's Date:
July 28, 2021

Please Enter Values in the Yellow Areas Only:

Estimation Start Date:
Less than or Equal to Today's Date
(mm/dd/yyyy)

2/1/2021
Start Date:

Enter Construction Mid-Point Date:
(cannot exceed 07/28/2046)
(mm/dd/yyyy)

2/1/2025
Construction Mid-Point Date:

Present-Day Estimated Cost:

$1,860,079.68
Estimated Dollar Amount:

Estimate Start Date to Construction Mid-Point Date: **48** **Months**

Inflation - Start to Mid-Point of Construction:

	(compounded growth rate)	Inflated Dollar Amount:
Business Plan	**11.6%**	**$2,076,739.27**

Estimator's Name:

County - Route - Section: HAM-LMST Ext to Ranchvale

PID: 113602

Estimator's Notes: Alternative 4A

Estimate Ranchavle Alt 2

Estimated Cost:$519,898.04

Contingency: 11.65%

Estimated Total: $580,466.16

HAM-LMST Ext to Ranchvale Feasibility Study
Ranchvale Connection Alternative 2

Base Date: 02/01/21

Spec Year: 19

Unit System: E

Work Type: GEN CONST: INVLVS 2 OR MOR MAJ WRK TYPE

Highway Type:

Urban/Rural Type: URBAN CLASS

Season: SUMMER

County: HAMILTON

Latitude of Midpoint: 390620

Longitude of Midpoint: 842354

District: 08

Federal/State Project Number: 115291

Estimate Type: C1

Prepared by Stantec on 07/28/21

Line #	Item Number / Description / *Supplemental Description*	Quantity	Units	Unit Price	Extension
Group 0010: Roadway					
0005	201E11000 CLEARING AND GRUBBING	1.000	ACRE	$2,000.00000	$2,000.00
0006	203E10000 EXCAVATION	200.000	CY	$12.00000	$2,400.00
0007	203E20000 EMBANKMENT	200.000	CY	$13.00000	$2,600.00
0008	204E10000 SUBGRADE COMPACTION	1,620.000	SY	$2.22823	$3,609.73
0011	609E26000 CURB, TYPE 6	1,420.000	FT	$23.18744	$32,926.16
				Total for Group 0010:	$43,535.89
Group 0020: Erosion Control					
0012	659E10000 SEEDING AND MULCHING	4,000.000	SY	$5.25000	$21,000.00
0013	832E15000 STORM WATER POLLUTION PREVENTION PLAN	1.000	LS	$15,000.00000	$15,000.00
0014	832E15002 STORM WATER POLLUTION PREVENTION INSPECTIONS	1.000	LS	$10,000.00000	$10,000.00
0015	832E15010 STORM WATER POLLUTION PREVENTION INSPECTION SOFTWARE	1.000	LS	$10,000.00000	$10,000.00
0016	832E30000 EROSION CONTROL	20,000.000	EACH	$1.00000	$20,000.00
				Total for Group 0020:	$76,000.00
Group 0040: Drainage					
0030	611E05900 15" CONDUIT, TYPE B	150.000	FT	$100.33718	$15,050.58
0031	611E98150 CATCH BASIN, NO. 3	7.000	EACH	$3,330.66385	$23,314.65
0032	611E99574 MANHOLE, NO. 3	1.000	EACH	$3,703.96214	$3,703.96
0033	601E37500 PAVED GUTTER, TYPE 1-2	75.000	FT	$44.90948	$3,368.21

Line #	Item Number / Description / *Supplemental Description*	Quantity	Units	Unit Price	Extension
				Total for Group 0040:	$45,437.40
Group 0050: Pavement					
0018	304E20000 AGGREGATE BASE	270.000	CY	$73.89007	$19,950.32
0019	407E10000 TACK COAT	80.000	GAL	$2.80532	$224.43
0020	823E10000 ASPHALT CONCRETE SURFACE COURSE, TYPE 1, (448)	70.000	CY	$225.00000	$15,750.00
0021	823E15000 ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 1, (448)	80.000	CY	$225.00000	$18,000.00
				Total for Group 0050:	$53,924.75
Group 0120: Traffic Control					
0023	J-MC-TRAF MAJOR COST DRIVERS, TRAFFIC CONTROL *Ground Mounted Signs*	0.300	MILE	$100,000.00000	$30,000.00
0024	J-MC-TRAF MAJOR COST DRIVERS, TRAFFIC CONTROL *Pavement Marking*	1.000	LS	$10,000.00000	$10,000.00
				Total for Group 0120:	$40,000.00
Group 0150: Retaining Walls					
0035	M-MC-WALL MAJOR COST DRIVERS, RETAINING WALLS *Drilled Shaft Retaining Wall*	1.000	LS	$75,000.00000	$75,000.00
				Total for Group 0150:	$75,000.00
Group 0230: Incidentals					
0026	614E11000 MAINTAINING TRAFFIC	1.000	LS	$40,000.00000	$40,000.00
0027	623E10000 CONSTRUCTION LAYOUT STAKES AND SURVEYING *0.5% of construction cost*	1.000	LS	$2,000.00000	$2,000.00
0034	624E10000 MOBILIZATION *per CMS 624.02-1*	1.000	LS	$10,000.00000	$10,000.00
				Total for Group 0230:	$52,000.00
Group 0240: Design Contingency					
0029	V-MC-CNTG MAJOR COST DRIVERS, CONTINGENCY COSTS *Design Contingency (30% Construction Cost)*	1.000	LS	$100,000.00000	$100,000.00

Line #	Item Number	Quantity	Units	Unit Price	Extension
	Description				
	Supplemental Description				

Total for Group 0240:$100,000.00

Group 0250: Construction Administration

0036	U-MC-MISC	1.000	LS	$34,000.00000	$34,000.00
	MAJOR COST DRIVERS, MISCELLANEOUS COSTS				
	Construction Administration (7% of Construction Cost)				

Total for Group 0250:$34,000.00

CY 2021-2025 Business Plan Inflation Calculator:

Not sure if you have the latest calculator? Click here.

Last Modified: 2/1/2021

Today's Date:
July 28, 2021

Please Enter Values in the Yellow Areas Only:

Estimation Start Date:
Less than or Equal to Today's Date
(mm/dd/yyyy)

2/1/2021
Start Date:

Enter Construction Mid-Point Date:
(cannot exceed 07/28/2046)
(mm/dd/yyyy)

2/1/2025
Construction Mid-Point Date:

Present-Day Estimated Cost:

$519,898.04
Estimated Dollar Amount:

Estimate Start Date to Construction Mid-Point Date: **48** **Months**

Inflation - Start to Mid-Point of Construction:

	(compounded growth rate)	Inflated Dollar Amount:
Business Plan	**11.6%**	**$580,455.07**

Estimator's Name:

County - Route - Section: HAM-LMST Ext to Ranchvale

PID: 115291

Estimator's Notes: Alternative 2