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FINAL STREAM ASSESSMENT REPORT

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I-69 EVANSVILLE TO INDIANAPOLIS

Tier 2 Studies

Final Stream Assessment Report

Section 5, SR 37 to SR 39

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Federal Highway Administration and
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1.0 INTRODUCTION

In March of 2004 the Tier 1 Record of Decision (ROD) for I-69 was issued identifying Alternative 3C as the preferred corridor for I-69 and paving the way for the initiation of Tier 2 Studies. The 142-mile long I-69 project corridor (approximately 2,000 feet wide) from Evansville to Indianapolis was divided into six sections for the purpose of these studies. Each of the six Tier 2 section study teams have or will determine the final alignment of the interstate within the approved corridor. This document includes environmental studies and engineering assessments for Section 5, which has culminated in a recommendation of Refined Preferred Alternative 8 as the preferred alternative within Section 5 of the approved Alternative 3C corridor.

The termini of Section 5, as approved in the Tier 1 ROD for I-69, dated March 24, 2004, are located at SR 37 south of Bloomington in Monroe County, and just south of SR 39 near Martinsville in Morgan County. The I-69 Section 5 corridor is centered on existing SR 37, a four-lane divided highway, and will upgrade the existing arterial roadway to interstate standards. The impacts, benefits, and costs of alternatives are fully evaluated in the Final Environmental Impact Statement (FEIS) for Section 5, with recognition that these features include facets which are currently attributable to the existing highway facility. Section 5 is approximately 21 miles in total length and is within the jurisdiction of the Louisville District of the Army Corps of Engineers (USACE). **Figure 1** and **Figure 2**, located at the end of this report, depict the relationship of the Alternatives on United States Geological Survey (USGS) topographic maps and aerial photographs, respectively.

The Upper White River Watershed, Lower White River Watershed, and Lower East Fork White River Watershed are the three 8-digit watersheds traversed by the project corridor. The project crosses three sub-watersheds of the Upper White River Watershed: Indian Creek-Sand Creek Watershed, Little Indian Creek-Jordan Creek Watershed, and Bryant Creek Watershed. The project crosses four sub-watersheds of the Lower White River Watershed: Beanblossom Creek-Indian Creek Watershed, Beanblossom Creek-Buck Creek/Muddy Fork Watershed, Beanblossom Creek-Stout Creek Watershed, and Griffy Creek Watershed. The project crosses two sub-watersheds of the Lower East Fork White River Watershed: Clear Creek-May Creek Watershed and Clear Creek-Jackson Creek Watershed.

Section 5 of I-69 entails upgrading an existing multi-lane, divided transportation facility to a full freeway design. Most of the right-of-way used for the Section 5 project already is devoted to transportation use. Five Build Alternatives were carried forward for detailed analysis in the Section 5 Draft Environmental Impact Statement (DEIS). This stream assessment report identifies the streams that are impacted by these five Alternatives. After the comment period ended for the DEIS, the Preferred Alternative identified in the DEIS was further modified, resulting in the Refined Preferred Alternative 8, which is identified as the preferred alternative for Section 5. The impacts to streams from the Refined Preferred Alternative 8 are also discussed in this report.

In some cases, the stream impacts identified in this report differentiate those which occur within the existing rights-of-way for SR 37 and other transportation facilities from those which occur outside the rights-of-way for SR 37. Many of the streams discussed in this report have been previously modified and/or impacted (i.e., captured in ditches, concrete channels, pipes, culverts, and/or bridges).

All stream segments not within existing culverts with an ordinary high water mark that are crossed by the Alternatives were surveyed, as appropriate. A single stream impact may have more than one stream assessment segment due to the fact that if the habitat along the length of the stream changed, a separate assessment was made. However, if the habitat along the entire impacted length of the stream did not change only one assessment segment was completed. If two or more Alternatives cross a stream in the same location and the habitat was consistent throughout the stream reach, only one assessment was made. The streams were generally assessed from the south end to the north end of the corridor, and the numbering system *generally* follows that course. A total of 370 stream impact segments were identified and surveyed using the Qualitative Habitat Evaluation Index (QHEI) (Rankin, 1979) or the Headwater Habitat Evaluation Index (HHEI) depending on drainage area and maximum pool depth of each stream segment. Surveys were performed in accordance with the Indiana Department of Environmental Management's (IDEM's) Standard Operating Procedure. Water chemistry and biological sampling were not performed in this survey.

The information compiled in this report will serve as a data source for the evaluation of project Alternatives, future environmental reports and ultimately for the preparation of required waterway permits.

1.1 REGULATORY DEFINITIONS

To comply with the requirements of the National Environmental Policy Act, 1969 (NEPA), the potential impacts on sensitive resources must be examined and considered for proposed Federal transportation facilities. These resources include, but are not limited to, floodplains, wetlands, endangered species, historic and archeological sites, parklands, air quality, wildlife habitat, "Waters of the United States." and others.

The term "Waters of the U.S." is defined in the CWA (40 CFR §122.2) and means:

(a) All waters which are currently used, were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;

(b) All interstate waters, including interstate "wetlands";

(c) All other waters such as interstate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds; the use, degradation, or destruction of which would affect or could affect interstate or foreign commerce including any such waters:

  (1) Which are or could be used by interstate or foreign travelers for recreational or other purposes;

  (2) From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or

  (3) Which are used or could be used for industrial purposes by industries in interstate commerce;

(d) All impoundments of waters otherwise defined as waters of the United States under this definition;

(e) Tributaries of waters identified in paragraphs (a) through (d) of this definition;

(f) The territorial sea; and

(g) Wetlands adjacent to waters (other than waters that are themselves wetlands) identified in paragraphs (a) through (f) of this definition.

Waste treatment systems, including treatment ponds or lagoons designed to meet the requirements of the Clean Water Act (CWA) are not Waters of the U.S.

"Waters of the State" means accumulations of waters that are within, partially within, or border on the State of Indiana. The term includes both surface and underground waters, natural and artificial waters, and public and private waters. However, the term does not include any private pond, or any pond, reservoir, or facility built for the reduction or control of pollution. Nor does it include ponds, reservoirs, or facilities built for the cooling of water prior to discharge unless the discharge causes or threatens to cause water pollution.

"Waters of the State" are defined in Indiana Code 13-11-2-265 as meaning:

(a) "Waters", for purposes of water pollution control laws and environmental management laws, means:
  (1) The accumulations of water, surface and underground, natural and artificial, public and private; or
  (2) A part of the accumulations of water;

(a) That are wholly or partially within, flow through, or border upon Indiana.

(b) The term "waters" does not include:
  (1) An exempt isolated wetland;
  (2) A private pond; or
  (3) An off-stream pond, reservoir, wetland, or other facility built for reduction or control of pollution or cooling of water before discharge.

(c) The term includes all Waters of the United States, as defined in Section 502(7) of the federal Clean Water Act (33 U.S.C. §1362(7)), that are located in Indiana.

(d) As added by P.L.1-1996, SEC.1. Amended by P.L.183-2002, SEC.1; P.L.282-2003, SEC.31; P.L.52-2004, SEC.4.

The Waters of the U.S. and the Waters of the State may include perennial, intermittent, and ephemeral streams as defined below.

Perennial Streams: Perennial streams are streams that flow throughout the majority of the year (greater than 90% of the time) and flow in a well-defined channel. However, perennial streams can "dry up", particularly during extended periods of drought. All streams that were identified on the USGS maps by a solid blue line were considered perennial streams for this report.

Intermittent Streams: An intermittent stream is a stream that flows only during wet periods of the year (30% to 90% of the time) and flows in a continuous well-defined channel. During dry periods, especially in summer months, intermittent streams may go down to a trickle of water and appear dry when, in fact, there is water flowing through the stream bottom or "substrate". All streams that were identified on the USGS maps by a broken blue line were considered intermittent streams for this report.

Ephemeral Streams: An ephemeral stream is a stream that flows only during and for short periods following precipitation (less than 30% of the time); and flows in low areas that may or may not have a

well-defined channel. Some commonly used names for ephemeral streams include: stormwater channel, drain, swale, gully, hollow, or saddle. Since ephemeral streams are often headwater streams, it is typically recommended that roads, site-prep, and other soil disturbing activities be minimized in ephemeral streams to avoid erosion and sedimentation of stormwater runoff that will flow downstream to larger streams or waterbodies. All streams identified in the field that were not represented on the USGS maps were classified as ephemeral streams for this report.

1.2 POTENTIAL HABITAT QUALITY IMPACTS

The Section 5 Study Area consists of three primary land uses including forest, developed land, and agricultural land. Developed areas consist mainly of residential areas along with some businesses. These developed areas are scattered throughout the Study Area; however, developed land uses are concentrated near the City of Bloomington. Land use and land cover within the Section 5 corridor are dominated by developed land in the southern potion and by undeveloped upland and agriculture to the north. Developed land accounts for about 39% of the land cover while upland habitats account for about 46% of the land cover. Agricultural lands, primarily pasture, account for approximately 13% of the Section 5 land use. Water and wetlands comprise the remaining 2% of the corridor, while sand/gravel operations and limestone quarry companies make up less than 1% of the land cover within the Section 5 corridor. The existing 1970's SR 37 4-lane pavement, structures, and right-of way make up a significant portion of the Section 5 corridor. The predominant forest type within the corridor is oak-hickory.

Expected habitat impacts to the streams in Section 5 relate to highway construction and operation, and include: direct habitat loss, channelization, relocation, removal of instream cover, removal or narrowing of riparian zones, sedimentation, nutrification, and other impacts relating to highway runoff. Section 5 of I-69 entails upgrading an existing multi-lane, divided transportation facility to a full freeway design. Most of the right-of-way used for the Section 5 project already is devoted to transportation use. Many of these impacts are currently roadside ditches within existing transportation right-of-ways.

1.3 METHODOLOGY

1.3.1 Location of Survey Sites

Survey sites were located by finding the intersections of the Alternative alignments with each ephemeral, intermittent, and perennial stream impacted.

A combination of techniques was used to identify streams, including the use of topographic maps, soil surveys, Digital Elevation Models, and on-site field verification. These data sources were used to compile an updated digital coverage of jurisdictional waterways within the Study Area. Identified streams were generally assessed from the south end to the north end of the corridor, and the numbering system *generally* follows that course.

Prior to beginning fieldwork, the type of evaluation (QHEI or HHEI) required for each stream within the preliminary work limits was determined based on watershed size and subsequently confirmed on-site. A minimum of one evaluation was completed for each stream falling within any of the project Alternative impact footprints. The assessment reach was generally centered approximately at the point the

Alternative centerline crossed the waterway. Additional evaluations were completed for streams if dramatic changes in function (i.e. channel, flow, substrate, cover) occurred within the section of waterway impacted. For example, a stream that originates as a channelized agricultural ditch, which then flows into a forest where it becomes a natural channel, received one evaluation for the modified channel and a second evaluation for the natural channel. In addition, HHEI evaluations were performed on either side of a culvert or pipe regardless of a change in habitat. Multiple evaluations were also performed in instances where an individual Alternative crossed a stream in more than one location or where multiple Alternatives crossed the same stream segment in more than one location.

1.3.2 Delineation of Watersheds

The on-line Geographic Information System (GIS) program and the Hydrologic Map Server-Online Watershed Delineator (HYMAPS-OWL, developed by Purdue University), were used as the basis for developing the watershed of several of the major streams within the project corridor boundary. A total of 172.06 square miles of watershed areas are associated with the Section 5 Alternatives' stream crossings.

1.3.3 Field Surveys

Each site was located in the field using aerial photographs and a Global Positioning Satellite (GPS) receiver. Sites were examined to determine if a bed and bank were present. Grassy swales were not surveyed because they did not meet the definition of "Waters of the U.S." or "Waters of the State". Sites were identified and a two-hundred foot reach (or maximum length of stream segment if less than 200 feet available) was measured off with the site at the center of the reach. Photographs upstream and downstream of each site were taken using a digital camera. Alterations to drainage channels that deviated from the mapped channels were noted and the altered channels were located by GPS for revision to the GIS data. Additional channels that did not appear on the aerial photo field maps were also located by GPS and the site was surveyed using either the QHEI or HHEI standardized forms.

Data collected in the field were entered into database tables. The project maps were updated from digitally corrected GPS files and additional channels were added to the GIS project data.

Tabulated data included:

1. Site identification number
2. Universal Transverse Mercator (UTM) coordinates
3. Quarter-section, Section, Township, and Range
4. 7.5-minute Quadrangle name
5. County
6. Date of survey
7. Type of survey, QHEI or HHEI
8. Survey score
9. Watershed area
10. Map gradient
11. Stream flow (perennial, intermittent, or ephemeral)
12. Classification code (Cowardin, 1979)

13. Associated alignment

1.4 ANALYSIS

A total of 370 field survey sites (stream segments) were completed within the Section 5 Build Alternatives. QHEI surveys were performed on 29 of the sites and HHEI surveys were performed on 341 of the sites. **Figure 1** and **Figure 2** (located at the end of this report) contain maps showing the survey site locations.

The Ohio Environmental Protection Agency (OEPA) developed the QHEI for streams and rivers in Ohio (Rankin 1989, 1995). The QHEI is a physical habitat index designed to provide an empirical, quantified evaluation of the general lotic macrohabitat (OEPA, 1989). Although the OEPA originally developed the QHEI to evaluate fish habitat in streams, IDEM utilizes the QHEI as a measure of general habitat quality. The QHEI is composed of six metrics including substrate composition, in-stream cover, channel morphology, riparian zone and bank erosion, pool/glide and riffle/run quality, and map gradient. Each metric is individually scored and then summed to provide the total QHEI score. The highest possible score is 100.

The QHEI evaluates the characteristics of a stream segment, as opposed to the characteristics of a single sampling site. Thus, the QHEI provides an averaged quality index over the length of a reach instead of a site score that may be influenced by a localized disturbance. QHEI scores from hundreds of stream segments in Ohio have indicated that values greater than 60 are generally conducive to the existence of warm water faunas. Scores greater than 75 typify habitat conditions that have the ability to support exceptional warm water faunas (OEPA, 1999). Rankin (1995) had indicated that stream QHEI's scoring less than 33 were not meeting designated uses for aquatic life in Ohio.

QHEI scores are classified by the OEPA as:

>75 Exceptional Warm Water Habitat
60-75 Suitable for Warm Water Habitat without use impairment
45-60 Warm Water Habitat under some circumstance, but may show level of impairment that requires reclassification as Modified Warm water Habitat
32-45 Modified Warm Water Habitat
<32 Modified Warm Water Habitat if watershed area is greater than 3 mi^2, otherwise Limited Resource Water.

The OEPA developed the HHEI for the extreme headwater habitats of rivers and streams in Ohio (Primary Headwater Habitat, PHWH). Ohio defines these extreme headwaters as primary headwater habitat streams having a defined bed and bank, with either continuous or periodical flowing water, with watershed areas less than or equal to 1.0-square mile, and maximum depth of water pools equal to or less than 40 centimeters (approximately 15.7 inches). The HHEI is based on three physical measurements that have been found to correlate well with biological measures of stream quality; substrate, maximum pool depth, and bank full width (OEPA, 2002)

OEPA (2002) classified headwater streams as Class I, II, or III habitats. The HHEI classifications were

based on habitat scoring. In some instances, the HHEI classification guidelines would require additional biological evaluations to verify the classification.

Class I PHWH - A certain percentage of the primary headwater stream channels were observed to be normally dry, with little or no aquatic life present. This type of primary headwater is normally identified as an ephemeral stream, with water present for short periods of time due to infiltration from snow melt or rainwater runoff, is herein referred to as a Class I-PHWH stream (HHEI score less than 40). If a Class I-PHWH stream is no longer in its natural channel it is considered a Modified Class I-PHWH stream (HHEI score 0 to 30).

Class II – PHWH - Streams found to have a moderately diverse community of warm-water adapted native fauna either present seasonally or on an annual basis. The native fauna of these streams is characterized by species of vertebrates (fish or salamanders) and/or benthic macroinvertebrates that are pioneering, headwater, temporary, and/or temperature facultative. This type of PHWH stream is herein referred to as a Class II PHWH stream (HHEI scores equal to or greater than 40 and less than 60). If a Class II-PHWH stream is no longer in its natural channel it is considered a Modified Class II-PHWH stream (HHEI score equal to or greater than 30).

Class III – PHWH - Streams found to have native fauna adapted to cool-cold perennial flowing water characterized by a community of vertebrates (either cold water adapted species of headwater fish and/or obligate aquatic species of salamanders from the lungless family Plethodontidae), and/or a diverse community of benthic macroinvertebrates including cool water taxa, with larval life stages resident in the stream continuously on an annual basis. This type of PHWH stream is herein referred to as a Class III-PHWH stream (HHEI scores equal to or greater than 60). Note that streams with HHEI scores between 50 and 59 with more than 20% of the substrate being cobble, boulder, boulder/slab, or bedrock are also classified as Class III-PHWH streams. One of the criteria of a Class III-PHWH stream is that the stream is in its natural channel; therefore, there cannot be any Modified Class III-PHWH streams.

1.4.1 Results

Appendix A contains the stream impacts and stream relocation lengths by alternative in tabular form. **Appendix B** contains Stream Impact Site forms and QHEI or HHEI site forms.

Headwater Streams
Most headwater habitat streams (watersheds <1.0 mi^2) in the study area contained little or no water, or only isolated pools. As expected from the underlying bedrock formations, the predominant substrate materials were gradations of limestone and sandstone. Stream gradients ranged from flat to severe. HHEI scores ranged from 6 to 86 with an overall average score of 30.24 (see **Appendix A** – Stream Impacts and Stream Relocation Lengths by Alternative).

Perennial Streams (south to north)
Streams for which QHEI surveys were performed had gravel, hardpan, sand, and silt substrates. QHEI scores ranged from 24 to 66.5 with an overall average score of 44.98 (See **Appendix A** – Stream Impacts and Stream Relocation Lengths by Alternative).

Griffy Creek (S5-s065a_1 and S5-s065a_3)
Segment S5-s065a_1 is upstream of the Bayles Road culverts and S5-s065a_3 is downstream of the road crossing. S5-s065a_2 is the culverted segment. This stream is a perennial stream with good habitat development and moderate sinuosity. The predominant substrate consists of gravel and sand. The stream has a wide riparian corridor associated with both banks. The adjacent floodplain is dominated by forest land. The QHEI score of 61.5 is reflective of a warm water habitat.

Griffy Creek (S5-s065b, S5-s065c, and S5-s065d)
Segment S5-s065b is upstream of the existing SR 37 bridge and S5-s065d is downstream of the bridge. S5-s065c is the portion of stream being bridged and has no functioning riparian corridor along this segment. These segments have experienced previous disturbance and exhibit no recovery. This stream is a perennial stream with poor habitat development and low to no sinuosity where the Alternatives cross this stream. The predominant substrate consists of silt. The stream has a moderately wide riparian corridor associated with both banks, with the exception of the bridged segment which has no riparian corridor. The adjacent floodplain is dominated by an old field. The QHEI score of 37.0 is reflective of a modified warm water habitat.

Beanblossom Creek (S5-s081a and S5-s081b)
Segment S5-s081b includes the bridge carrying old SR 37 over Beanblossom Creek while S5-s081a is the segment upstream from the bridge. This stream is a perennial stream with poor habitat development and low sinuosity where the Alternatives cross this stream. Hardpan is the predominant substrate. The stream has a wide riparian corridor associated with its right bank and a narrow to wide riparian buffer along its left bank. There is no riparian corridor associated with the reach under the bridge. The adjacent floodplain is dominated by forest land. It should be noted that Beanblossom Creek is identified on the Draft 2012 303(d) List of Impaired Waters due to PCB contamination. The QHEI score of 51.5 is reflective of a warm water habitat.

Beanblossom Creek (S5-s081c, S5-s081d, and S5-s081e)
Segment S5-s081c is the portion upstream from the existing bridge carrying SR 37 over Beanblossom Creek, S5-s081d is the bridged portion, and S5-s081e is the portion located downstream from the existing bridge. These segments are recovering from previous channelization due to agricultural practices. This stream is a perennial stream with poor habitat development and no sinuosity where the Alternatives cross this stream. The predominant substrate consists of silt and detritus. The stream has a wide riparian corridor associated with its left bank and a moderately wide riparian buffer along its right bank. There is no riparian corridor associated with the segment under the bridge. The adjacent floodplain is dominated by forest land. It should be noted that Beanblossom Creek is identified on the Draft 2012 303(d) List of Impaired Waters due to PCB contamination. The QHEI score of 34.75 is reflective of a modified warm water habitat.

Beanblossom Creek (S5-s081f, S5-s081g, and S5-s081h)
Segment S5-s081f is the portion from the mouth of Griffy Creek to the North Kinser Pike bridge, segment S5-s081g is the North Kinser Road bridged portion, and S5-s081h is located downstream from the existing bridge. This stream is a perennial stream with poor habitat development and moderate sinuosity. Hardpan is the predominant substrate. The stream has a wide riparian corridor associated with its left bank and a moderately wide riparian buffer along its right bank. There is no riparian

corridor associated with the segment under the bridge. The adjacent floodplain is dominated by forest land where the Alternatives cross this stream. It should be noted that Beanblossom Creek is identified on the Draft 2012 303(d) List of Impaired Waters due to PCB contamination. The QHEI score of 48 is reflective of a warm water habitat.

Unnamed Tributary to Bryant Creek (S5-s253e)
Even though the watershed for S5-s253e is less than 1.0 mi^2; the QHEI methodology was utilized to assess this intermittent stream's habitat community due to its greater than 40 cm (15.7 in) depth. This stream exhibited fair to good habitat development and high sinuosity where the Alternatives cross this stream. The predominant substrate consists of gravel and sand. The stream has a wide riparian corridor associated with its left bank and a narrow riparian buffer along its right bank. The adjacent floodplain is dominated by forest land on the left and transportation (SR 37) on the right. The QHEI score of 55.5 is reflective of a warm water habitat.

Bryant Creek (S5-s288a)
This stream is a perennial stream with excellent habitat development and high sinuosity where the Alternatives cross this stream. The predominant substrate is gravel. The stream has a wide riparian corridor associated with its right bank and a narrow riparian buffer along its left bank. The adjacent floodplain is dominated by forest land on the right and transportation (East Bryants Creek Road) on the left. The QHEI score of 66.5 is reflective of a warm water habitat.

Bryant Creek (S5-s288b and S5-s288c)
Segment S5-s288b is the bridged portion carrying existing SR 37 bridge over Bryant Creek, while S5-s288c is the segment downstream of the existing bridge. This stream is a perennial stream with fair habitat development and moderate sinuosity where the Alternatives cross this stream. The predominant substrate is gravel. The stream has a narrow riparian corridor associated with both its banks, with the exception of the bridged segment which has no riparian corridor. The adjacent floodplain is dominated by forest land. The QHEI score of 64 is reflective of a warm water habitat.

Little Indian Creek (S5-s345c)
This stream is a perennial stream with fair habitat development and low sinuosity where the Alternatives cross the stream. The predominant substrate is sand. The stream has a wide riparian corridor along both of its banks. The adjacent floodplain is dominated by an old field. The QHEI score of 60 is reflective of a warm water habitat.

Little Indian Creek (S5-s345d and S5-s345e)
Segment S5-s345d is the bridged portion carrying existing SR 37 bridge over Bryant creek, while S5-s345e is the segment downstream of the existing bridge. These stream segments have recovered from previous channelization due to agricultural practices. This stream is a perennial stream with poor habitat development and low sinuosity where the Alternatives cross this stream. The predominant substrate is sand and hardpan. The stream has a very narrow riparian corridor along both of its banks. There is no riparian corridor associated with the segment under the bridge. Farmers along the adjacent floodplain have employed conservation tillage. The QHEI score of 52.5 is reflective of a warm water habitat.

Little Indian Creek (S5-s345f, S5-s345g, and S5-s345h)
Segment S5-s345f begins at the downstream end of the conservation tillage area to the existing bridge over Godsey Road, S5-s345g is the portion of stream being bridged, and S5-s345h is downstream of the existing bridge. These stream segments have recovered from previous channelization due to agricultural practices. This stream is a perennial stream with poor habitat development and low sinuosity where the Alternatives cross this stream. The predominant substrate is sand and hardpan. The stream has a moderately wide riparian corridor along both of its banks. There is no riparian corridor associated with the segment under the bridge. The adjacent floodplain is dominated by forest land on the left and old field the right. The QHEI score of 46.75 is reflective of a warm water habitat.

Jordan Creek (S5-s350a)
This stream is a perennial stream with extremely poor habitat development and no sinuosity where the Alternatives cross this stream. This stream is recovering from previous channelization due to agricultural practices. The substrate consists of sand. The stream has a no riparian corridor due to row crops planted up to the tops of banks. The QHEI score of 30 is indicative of a limited water resource.

Jordan Creek (S5-s350b, S5-s350c, and S5-s350d)
Segment S5-s350b is upstream of the existing SR 37 bridge, S5-s350c is the portion of stream being bridged, and S5-s350d is downstream of the existing bridge. This stream is recovering from previous channelization due to agricultural practices. This stream is a perennial stream with poor habitat development and no sinuosity where the Alternatives cross this stream. The predominant substrate consists of silt. The stream has a very narrow riparian corridor associated with both banks. There is no riparian corridor associated with the segment under the bridge. The adjacent floodplain consists of row crops. The QHEI score of 24 is indicative of a limited water resource.

Buckner Branch (S5-s351a and S5-s351c)
Segment S5-s351a is upstream of the existing SR 37 bridge and S5-s351c is downstream of the bridge. These stream segments have exhibited no recovery from past channelization due to agricultural practices. This stream is an intermittent stream with poor habitat development and no sinuosity where the Alternatives cross this stream. The predominant substrate consists of gravel and sand. There is no riparian buffer associated with these segments of Buckner Branch. The adjacent floodplain consists of row crops. The QHEI score of 31 is indicative of a limited water resource.

The numbers of stream crossings impacted by the Alternatives varied, with Alternatives 4 and 5 being similar, at 450 stream segments for Alternative 4 and 445 stream segments for Alternative 5. Stream crossings impacted by Alternatives 6, 7, 8, and Refined Preferred Alternative 8 were similar at 386 stream segments for Alternative 6, 389 stream segments for Alternative 7, 391 stream segments for Alternative 8, and 378 stream segments for Refined Preferred Alternative 8. The linear feet of impact totals associated with the Alternatives also varied with Alternatives 4 and 5 being similar at 106,445 for Alternative 4, and 103,165 for Alternative 5. Total linear feet of impacts for Alternatives 6, 7, 8, and Refined Preferred Alternative 8 were also similar at 85,192 for Alternative 6, 83,291 for Alternative 7, 86,404 for Alternative 8, and 80,582 for Refined Preferred Alternative 8. Stream acreage impact totals associated with the Alternatives are varied with Alternatives 4 and 5 being similar at 13.57 for Alternative 4 and 13.59 for Alternative 5. Stream acreage impact totals for Alternatives 6, 7, 8, and Refined Alternative 8 are similar at 11.49 for Alternative 6, 11.23 for Alternative 7, 11.70 for

Alternative 8, and 10.24 for Refined Preferred Alternative 8. The area of impacts to streams was calculated by multiplying the width of the Ordinary High Water Mark (OHWM) by the length of the impacts for each alternative, then dividing by 43,560 to convert square feet into acres. The number of impacted segments, linear feet of impact and acres of impact for ephemeral, intermittent, and perennial streams are shown in **Table 1**. In addition, **Table 1** differentiates those impacts within the existing rights-of-way for SR 37 and other existing transportation facilities from those which occur elsewhere.

Table 1 – Number of Impact Locations, Linear Feet (lf) of Stream Impact and Acres of Stream Impact by USGS Stream Type and Alternative

USGS Stream Type	Impact	Alternative 4	Alternative 5	Alternative 6	Alternative 7	Alternative 8	RPA 8
Ephemeral	Number	392	387	329	333	336	326
	Linear Feet	87,432	83,795	68,414	66,804	69,506	65692
	Acres	7.25	6.91	5.46	5.38	5.60	5.34
Intermittent	Number	35	37	34	35	34	35
	Linear Feet	14,984	14,816	12,915	12,636	13,067	11862
	Acres	2.84	2.77	2.55	2.47	2.55	2.27
Perennial	Number	23	21	23	21	21	17
	Linear Feet	4,029	4,554	3,863	3,851	3,831	3028
	Acres	3.48	3.91	3.48	3.38	3.55	2.63
TOTAL	Number	450	445	386	389	391	378
	Linear Feet	106,445	103,165	85,192	83,291	86,404	80,582
	Acres	13.57	13.59	11.49	11.23	11.7	10.24
Impacts within SR 37 ROW	Number	317	317	320	320	320	320
	Linear Feet	67,833	67,875	68,832	68,834	68,835	68,815
	Acres	8.77	8.79	8.83	8.83	8.83	8.83
Percent of New Impacts	Number	30%	29%	17%	18%	18%	15%
	Linear Feet	36%	34%	19%	17%	20%	15%
	Acres	35%	35%	23%	21%	25%	14%

1.4.2 QHEI and HHEI Score Trends

QHEI and HHEI scores for the streams crossed by the Section 5 Alternatives were very similar. The average QHEI scores for the Alternatives were; 45.08 for Alternative 4, 43.28 for Alternative 5, 44.29 for Alternative 6, 44.08 for Alternative 7, 43.98 for Alternative 8 and 43.19 for Refined Preferred Alternative 8. Average HHEI scores were; 29.99 for Alternative 4, 29.89 for Alternative 5, 28.85 for Alternative 6, 28.87 for Alternative 7, 28.94 for Alternative 8, and 28.68 for Refined Preferred Alternative 8.

In consideration of the QHEI and HHEI scores of stream segments affected by the Alternatives, a weighted comparison of stream impacts was made by summing the values of stream impact lengths multiplied by habitat evaluation score, and then comparing those sums as percentages against the Refined Preferred Alternative 8. For comparison purposes, Refined Preferred Alternative 8 was assigned the value of 100%. Weighted stream impact values for all other Alternatives fell within the range of 100% to 158% for HHEI evaluated streams and between 100% and 153% for QHEI evaluated streams, demonstrating that the Alternatives affect streams of generally similar quality for the larger perennial streams with a wider range for the project area's smaller headwater streams. Refer to **Table 2** for a summary of stream impacts, weighted by habitat evaluation score.

Table 2 – Summary of Stream Impacts, Weighted by Habitat Evaluation Score

Habitat Eval. / Score Ranges	Alternatives - Linear Feet of Impact					
	Alternative 4	Alternative 5	Alternative 6	Alternative 7	Alternative 8	RPA 8
HHEI Streams						
0 - 40	59,526	56,135	47,254	46,198	48,032	44,946
41 - 59	12,859	12,253	8,787	7,439	9,107	7,435
60 - 100	10,160	10,248	6,174	6,874	6,286	6,040
Totals	82,545	78,636	62,215	60,511	63,425	58,421
QHEI Streams						
0 - 50	3,129	3,607	2,851	2,884	2,786	2,388
51 - 64	1,523	1,620	1,444	1,198	1,487	1,081
> 64	120	176	116	300	108	108
Totals	4,772	5,403	4,411	4,382	4,381	3,577
Impact Lengths Multiplied by Habitat Evaluation Score, Percent Comparison						
HHEI	2,638,024	2,531,726	1,826,432	1,773,555	1,872,304	1,673,398
	158%	151%	109%	106%	112%	100%
QHEI	202,777	225,657	191,322	188,711	188,522	147,562
	137%	153%	130%	128%	128%	100%

1.5 SUMMARY

The impacted stream segment totals associated with the Alternatives are varied, with Alternatives 4 and 5 being similar in impacts and Alternatives 6, 7, 8, and Refined Preferred Alternative 8 being similar. Alternative 4 would have the highest number of impacted segments with 450. Refined Preferred Alternative 8 would have the fewest number of impacts with 378. This is approximately a 16% difference.

Total stream impact lengths associated with the Alternatives were also varied, with Alternatives 4 and 5 being similar and Alternatives 6, 7, 8, and Refined Preferred Alternative 8 being similar. Refined Preferred Alternative 8 would cause the least potential total linear stream impact at 80,582 linear feet, including previously disturbed segments. Alternative 4 would have the highest number of total linear stream impact at 106,445 linear feet of impacts, including previously disturbed segments. The difference between the least amount of impacts (Refined Preferred Alternative 8) and Alternative 4 is 25,863 linear feet. This is approximately a 24% difference.

Weighted stream impact values for the Alternatives fell within the range of 100% to 158% for HHEI evaluated streams and between 100% and 153% for QHEI evaluated streams, demonstrating that the Alternatives affect streams of generally similar quality for the larger perennial streams with a wider range for the project area's headwater streams.

A summary of stream impact data associated with the Section 5 Alternatives is presented in **Table 3**. **Table 4** presents the potential structure sizes and locations for the Refined Preferred Alternative 8.

Table 3 – Stream Impact Data Summary

Impact	Alternative 4	Alternative 5	Alternative 6	Alternative 7	Alternative 8	RPA 8
Stream Crossing Locations	450	445	386	389	391	378
Stream Impact (LF)	106,445	103,165	85,192	83,291	86,404	80,582
Acres of Stream Impact	13.57	13.59	11.49	11.23	11.70	10.24
Average HHEI Score	29.99	29.89	28.85	28.87	28.94	28.68
Weighted Impact Comparison	158%	151%	109%	106%	112%	100%
Average QHEI Score	45.08	43.28	44.29	44.08	43.98	43.19
Weighted Impact Comparison	137%	153%	130%	128%	128%	100%

Table 4 – Stream ID and Bridge Size and Location for the Refined Preferred Alternative 8

Mainline Station at Road	County	Structure Type	Description/Location	Approx. Skew (deg.)	Bridge Length (Ft.)	No. Span	Stream ID #
MAINLINE Structures							
1997+30	Monroe	Bridge	I-69 NB over Griffy Creek	15	283	5	S5-s065
1997+48	Monroe	Bridge	I-69 SB over Griffy Creek	15	283	5	S5-s065
2010+17	Monroe	Bridge	I-69 NB over Beanblossom Creek	50	292.5	3	S5-s081
2009+37	Monroe	Bridge	I-69 SB over Beanblossom Creek	50	292.5	3	S5-s081
2039+50	Monroe	Bridge	I-69 NB over Beanblossom Overflow	0	153	4	S5-s081
2039+50	Monroe	Bridge	I-69 SB over Beanblossom Overflow	0	153	4	S5-s081
2412+88	Monroe	Bridge	I-69 NB over Bryants Creek	45	142.4	3	S5-s288
2411+98	Monroe	Bridge	I-69 SB over Bryants Creek	45	142.5	3	S5-s288
2570+36	Morgan	Bridge	I-69 NB over Little Indian Creek	10	75	1	S5-s345
2570+52	Morgan	Bridge	I-69 SB over Little Indian Creek	10	75	1	S5-s345
2603+48	Morgan	Bridge	I-69 NB over Jordan Creek	0	58	1	S5-s350
2603+45	Morgan	Bridge	I-69 SB over Jordan Creek	0	58	1	S5-s350
2603+45	Morgan	Bridge	Liberty Church SB Exit Ramp over Jordan Creek	11	58	1	S5-s350
ACCESS RD. Structures							
2570+59	Morgan	Bridge	West Access Road over Little Indian Creek	10	75	1	S5-s345
2603+54	Morgan	Bridge	Liberty Church West Access Road over Jordan Creek	0	58	1	S5-s350
2603+52	Morgan	Bridge	Liberty Church East Access Road over Jordan Creek	15	58	1	S5-s350

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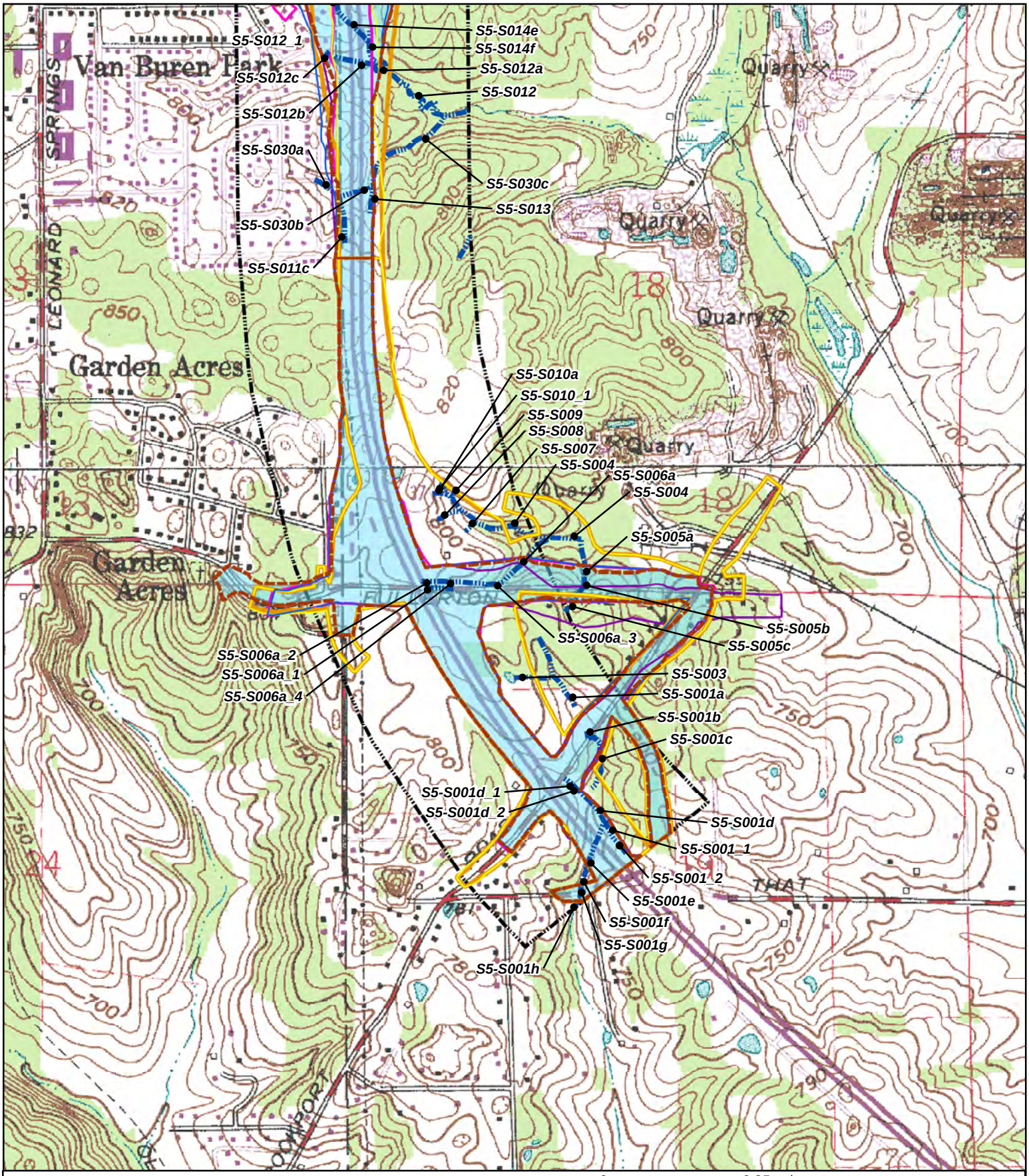
I-69 EVANSVILLE TO INDIANAPOLIS TIER 2 STUDIES
Stream Assessment Report, Section 5

FIGURES



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- Alternative 4
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- Alternative 8
- Refined Preferred Alternative 8
- Section 5 Corridor

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FIGURE 1
I-69 Evansville to Indianapolis
Tier 2 Studies - Section 5
Streams in Relation to the Alternatives on USGS Mapping
(Sheet 1 of 14)

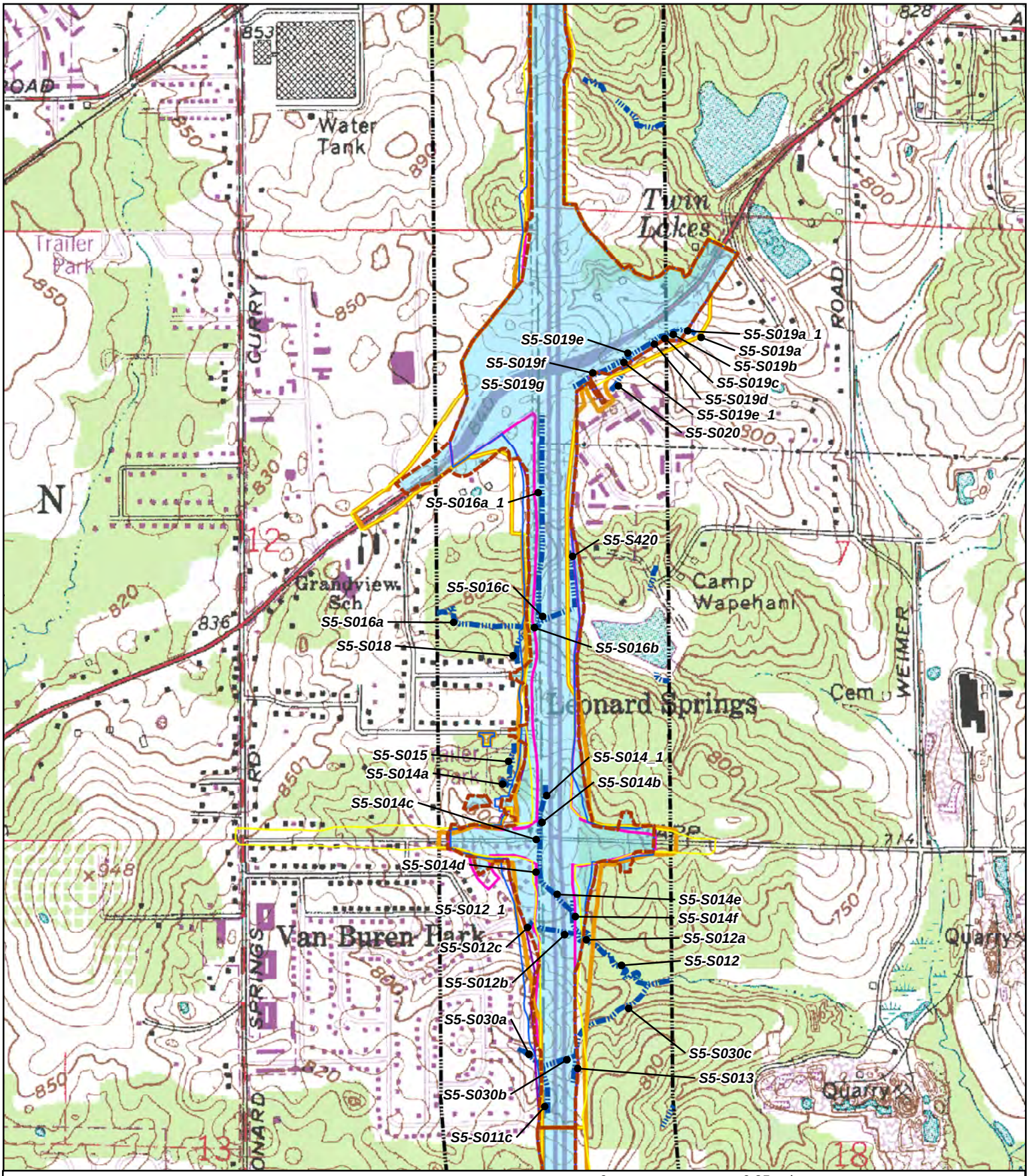

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FIGURE 1
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Tier 2 Studies - Section 5
Streams in Relation to the Alternatives on USGS Mapping
(Sheet 2 of 14)

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- Refined Preferred Alternative 8
- Section 5 Corridor

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FIGURE 1
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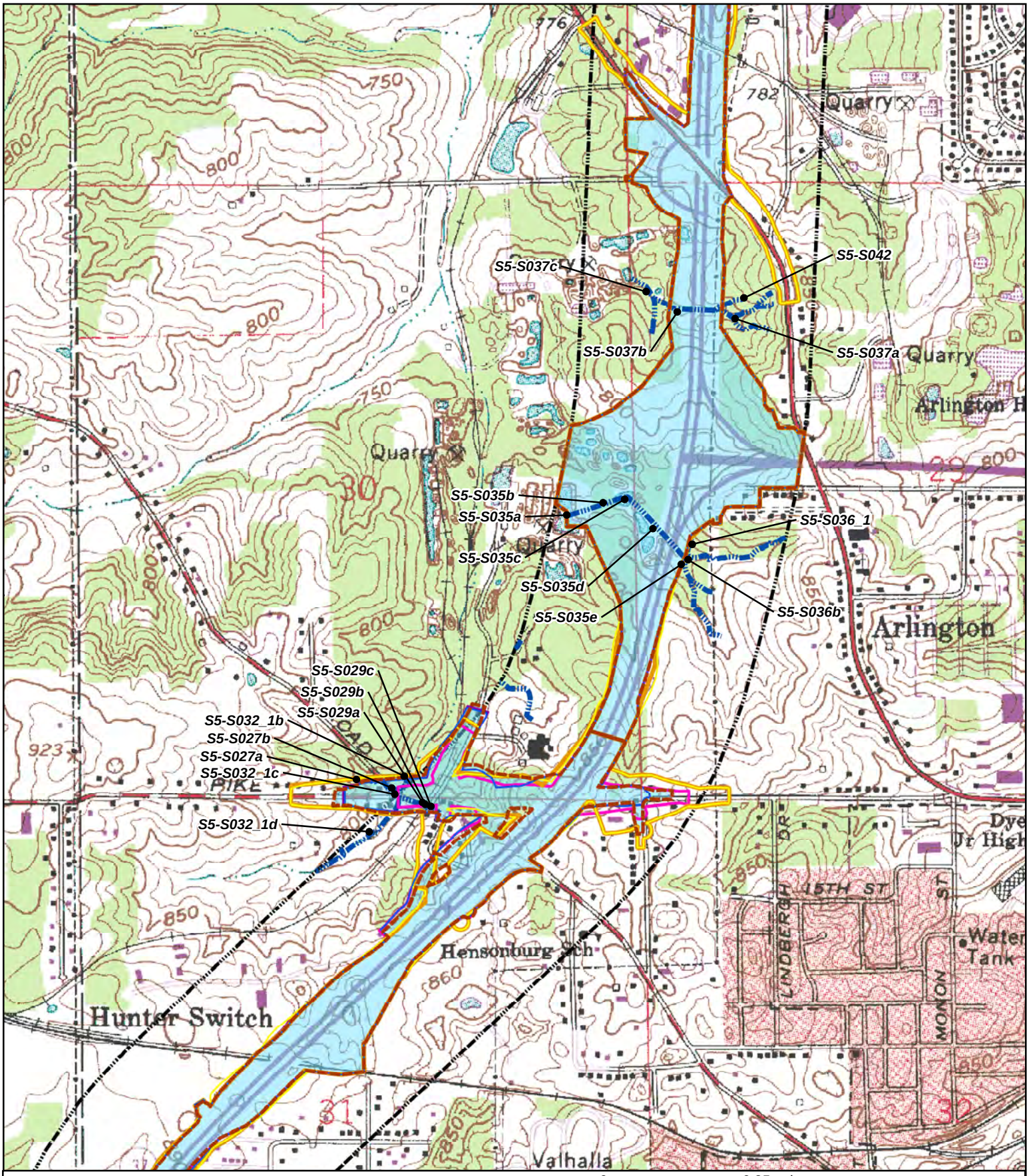

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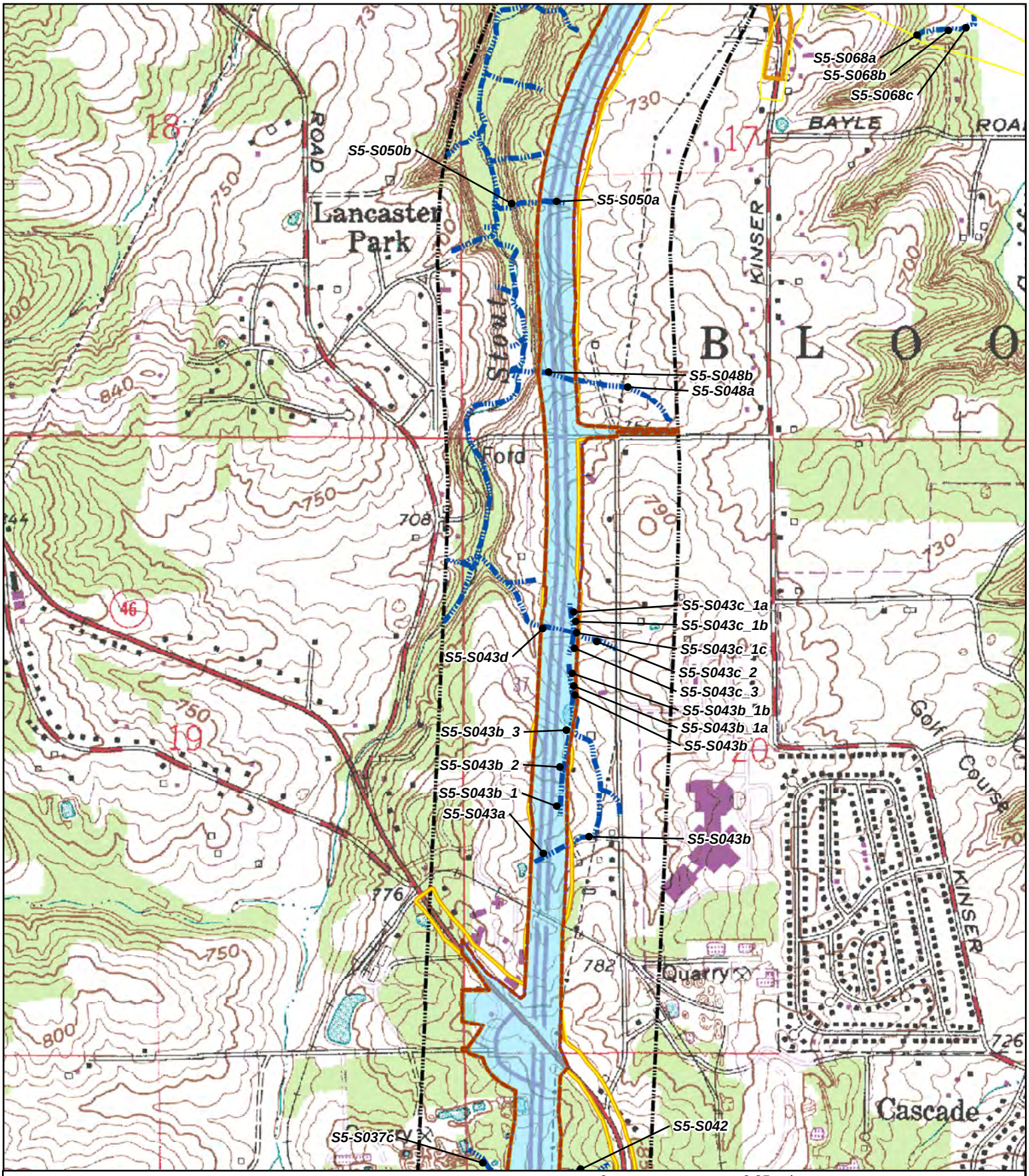

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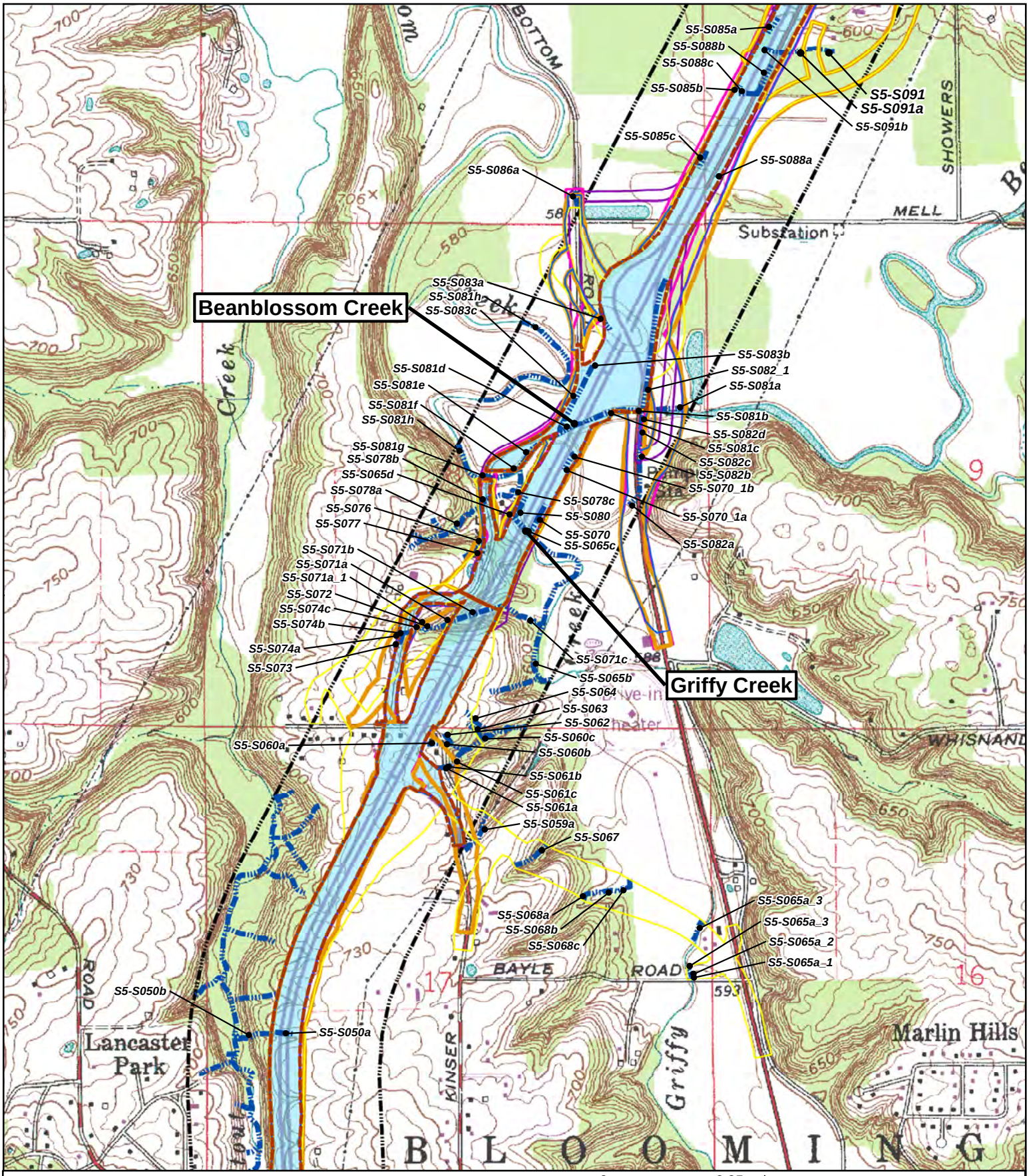

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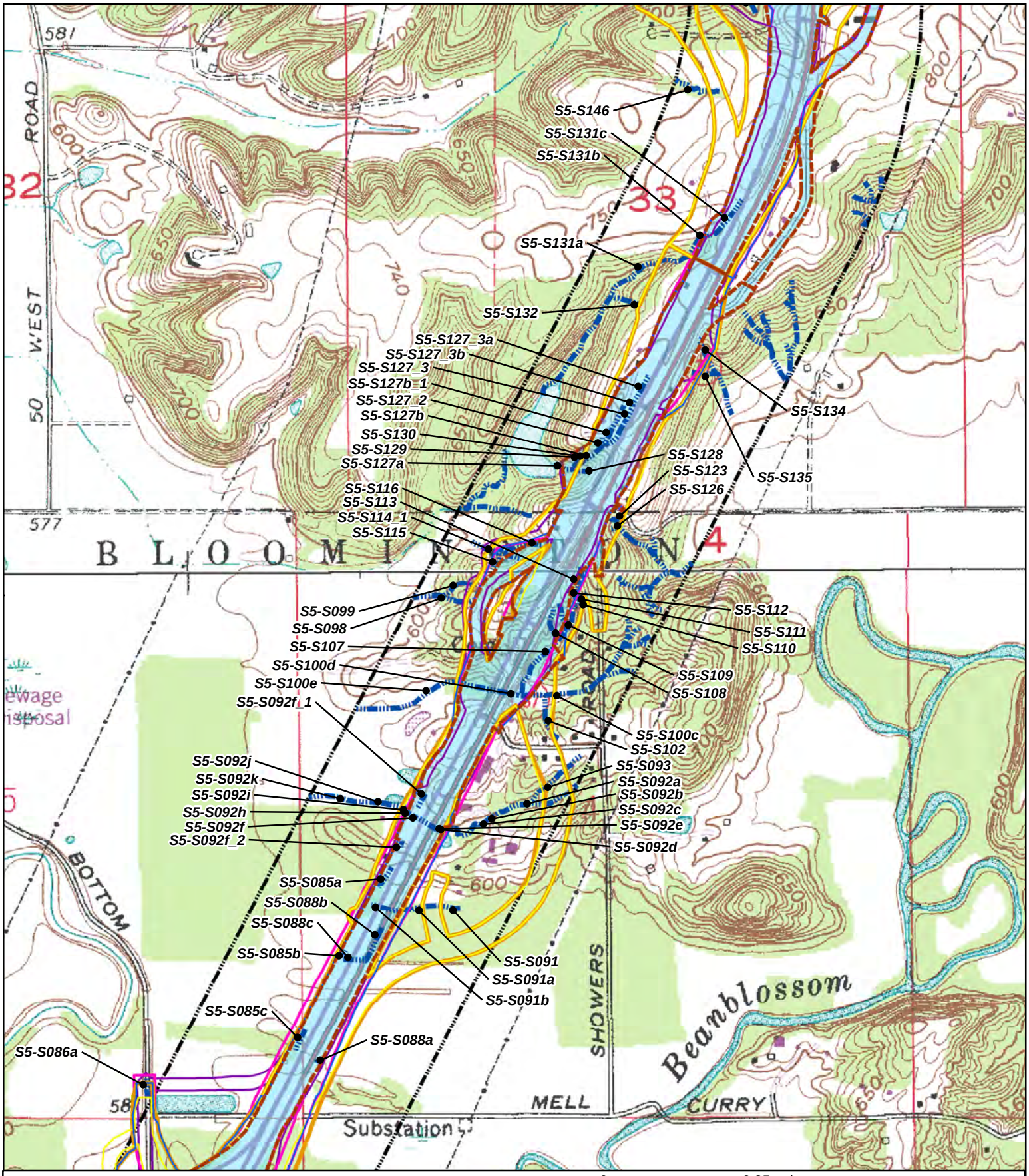
(Sheet 6 of 14)



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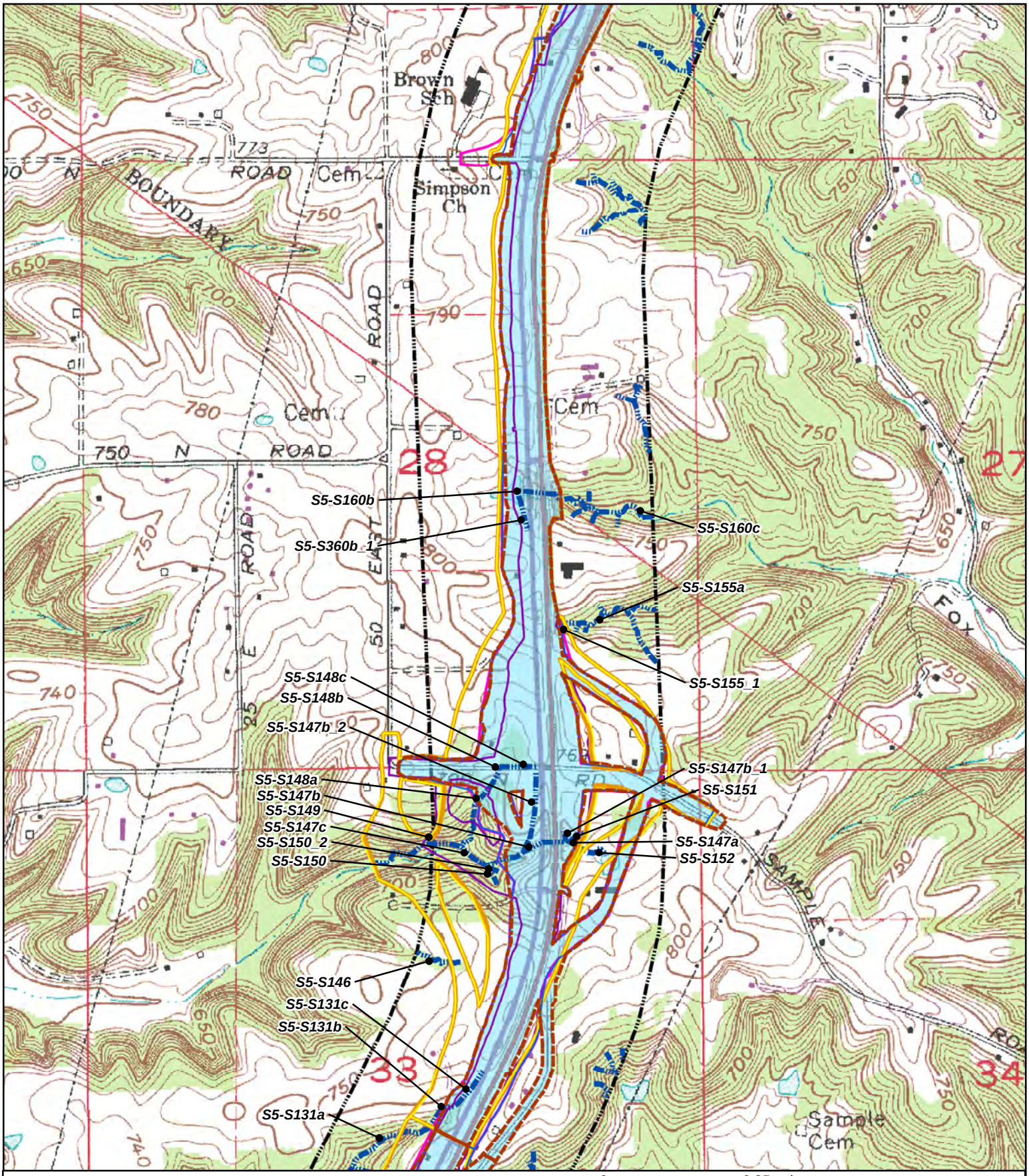
(Sheet 7 of 14)



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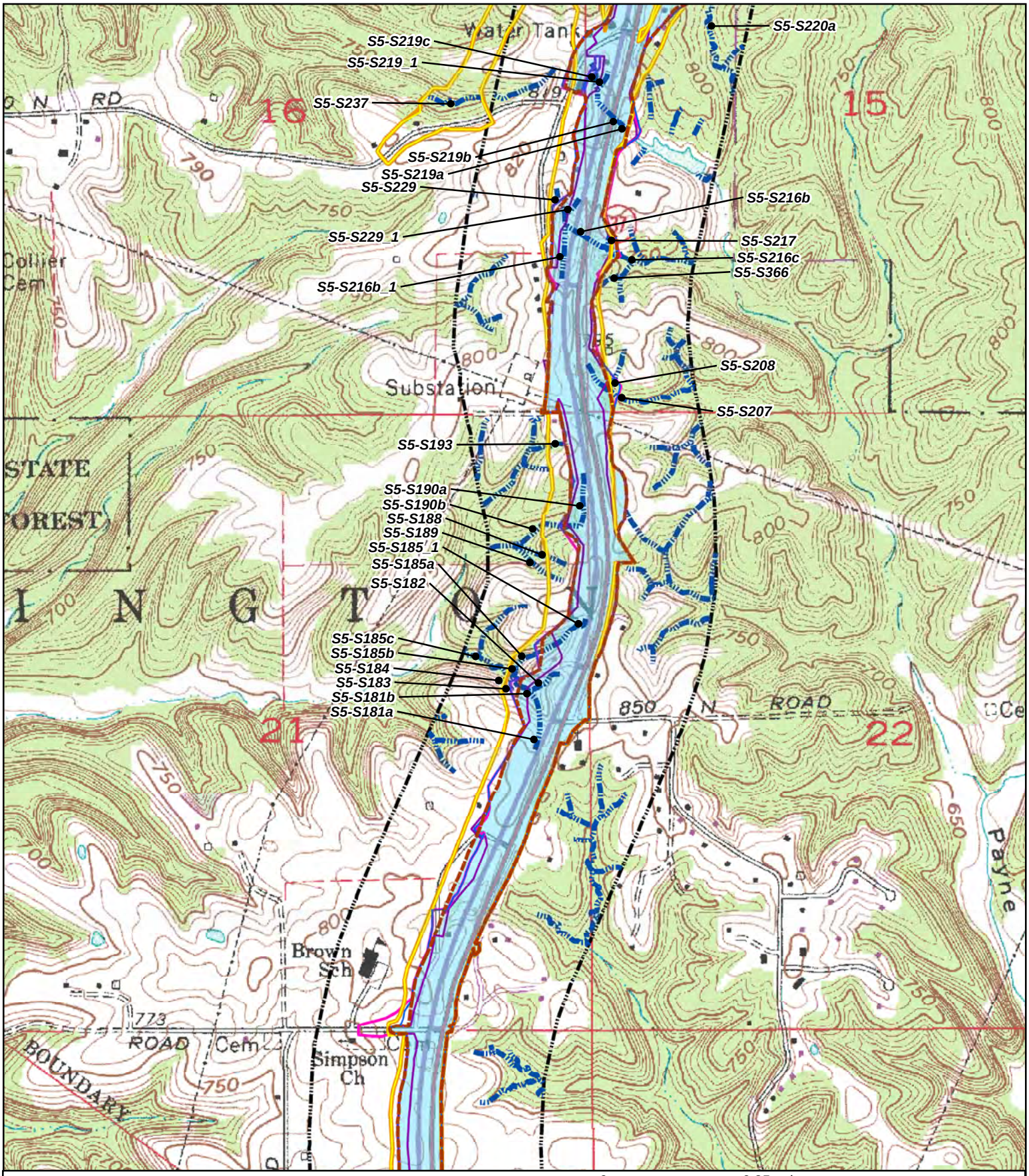

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Tier 2 Studies - Section 5
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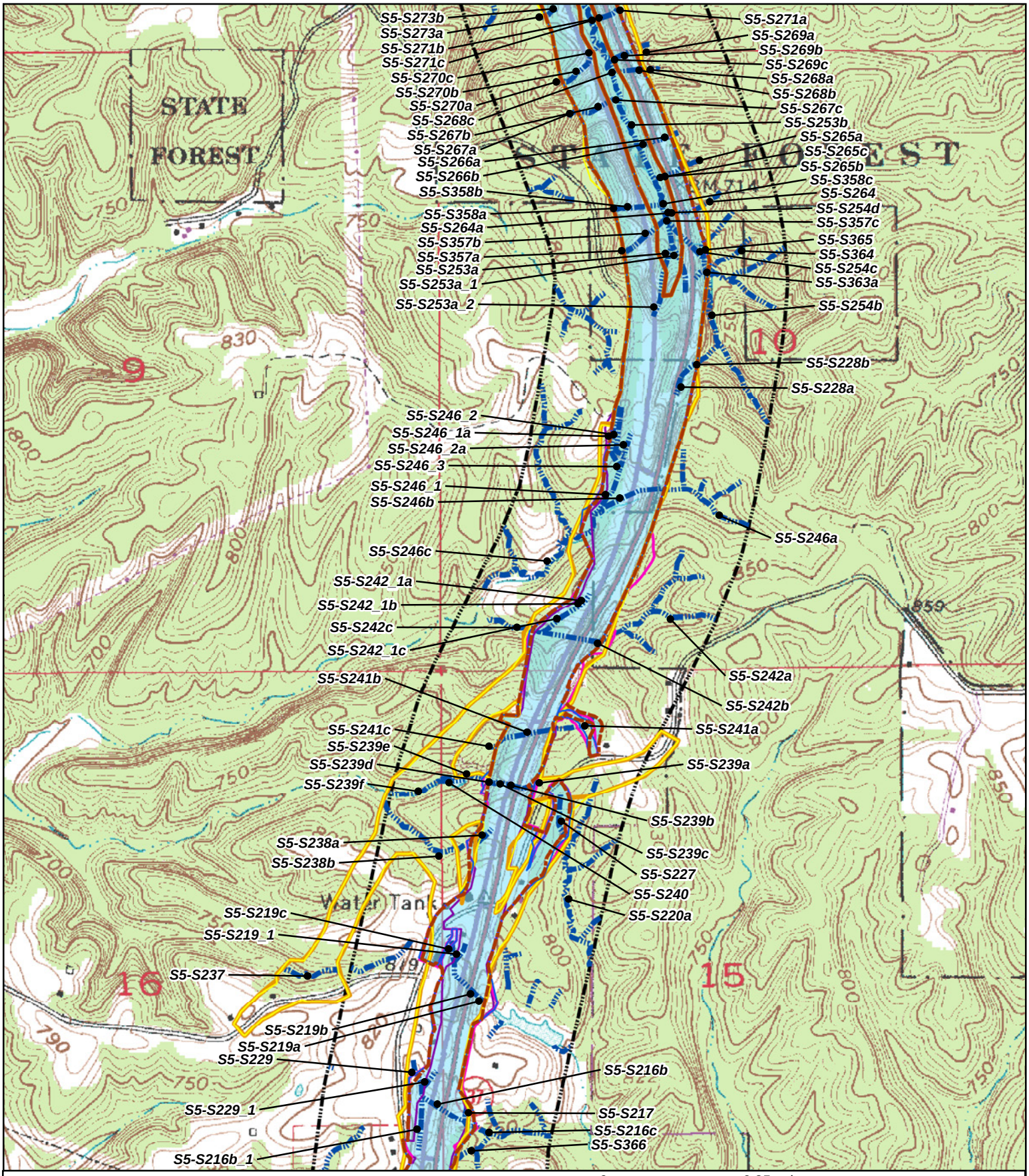

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Tier 2 Studies - Section 5
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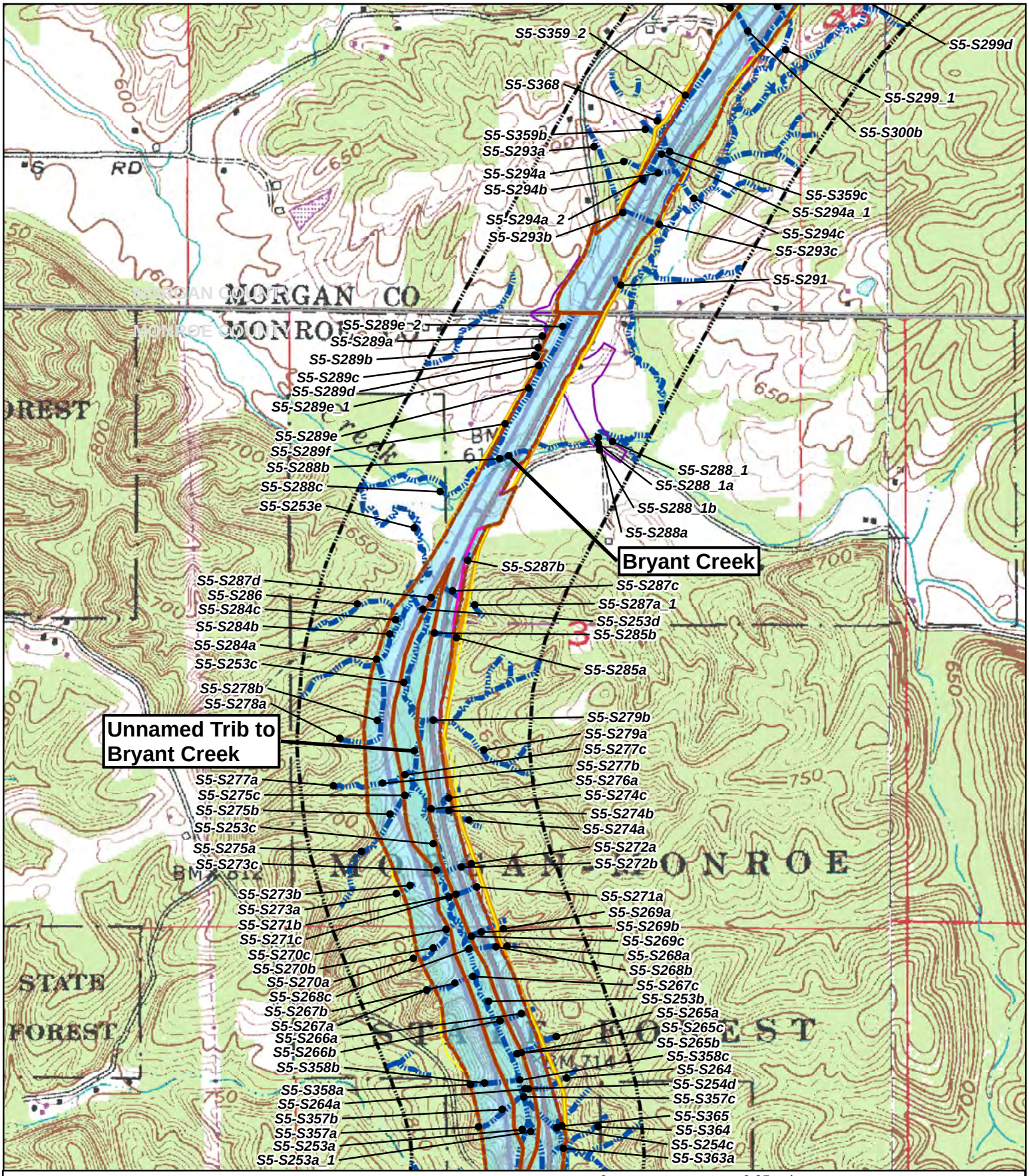

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Tier 2 Studies - Section 5
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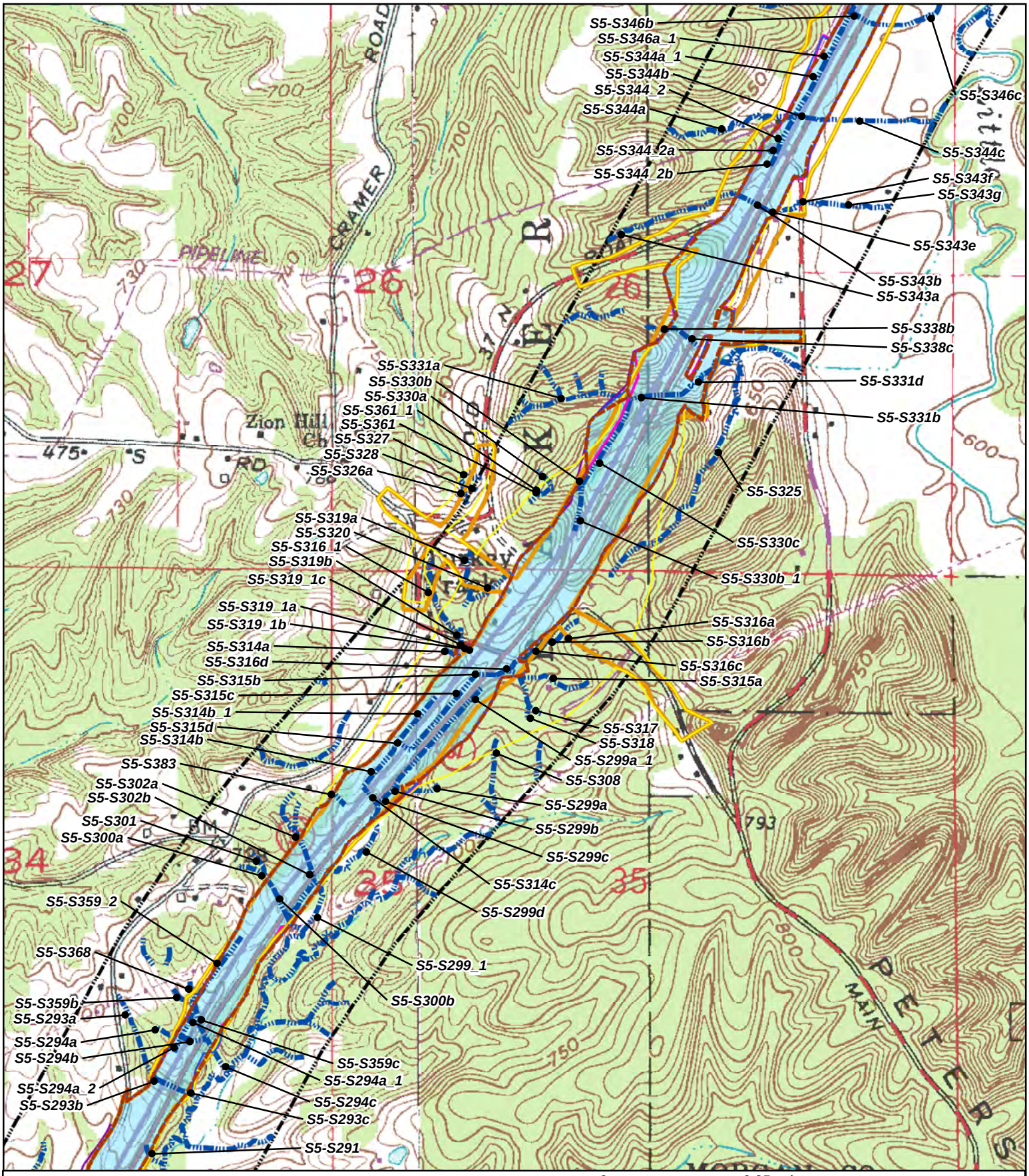
(Sheet 11 of 14)



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Tier 2 Studies - Section 5
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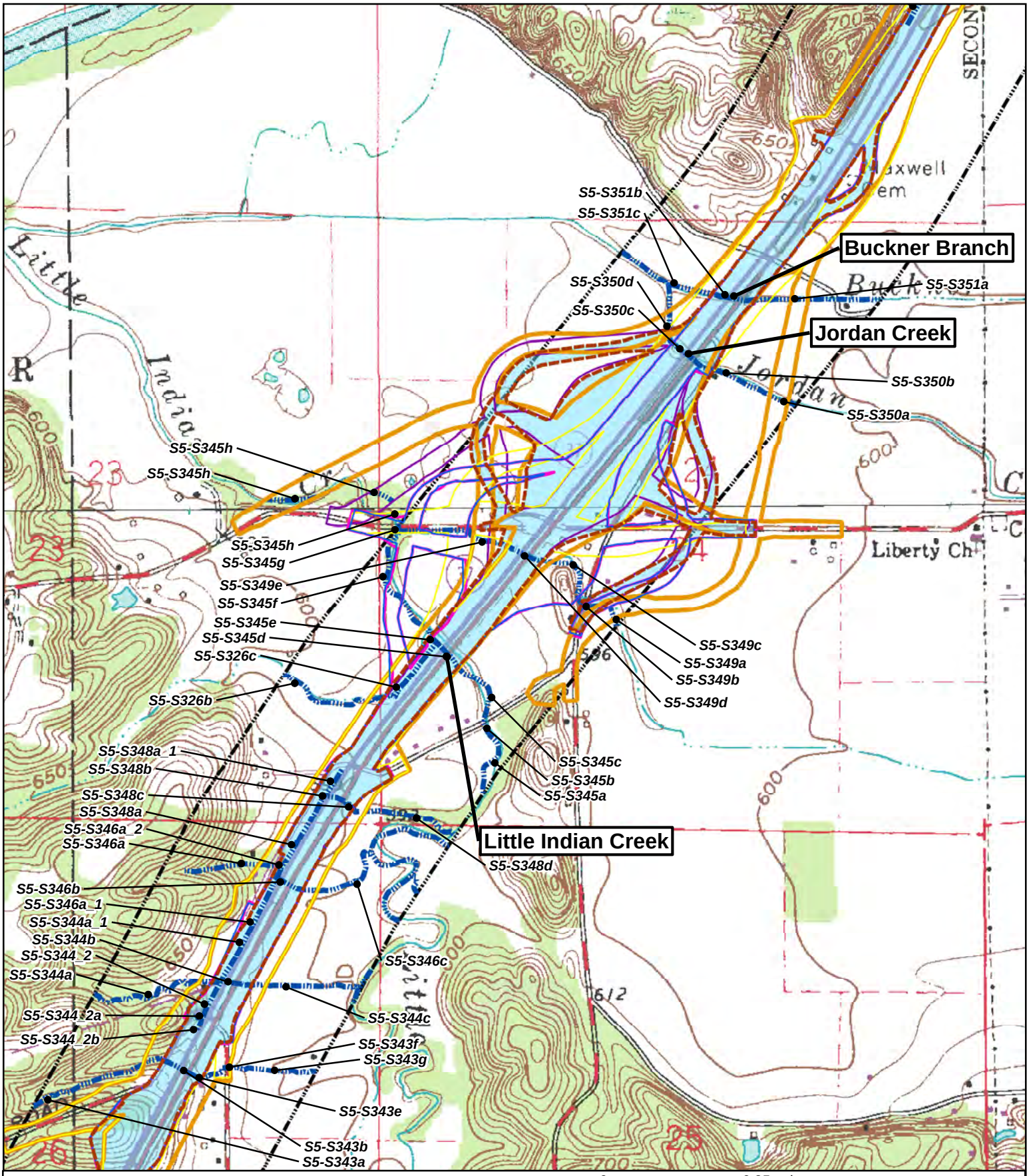

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Tier 2 Studies - Section 5
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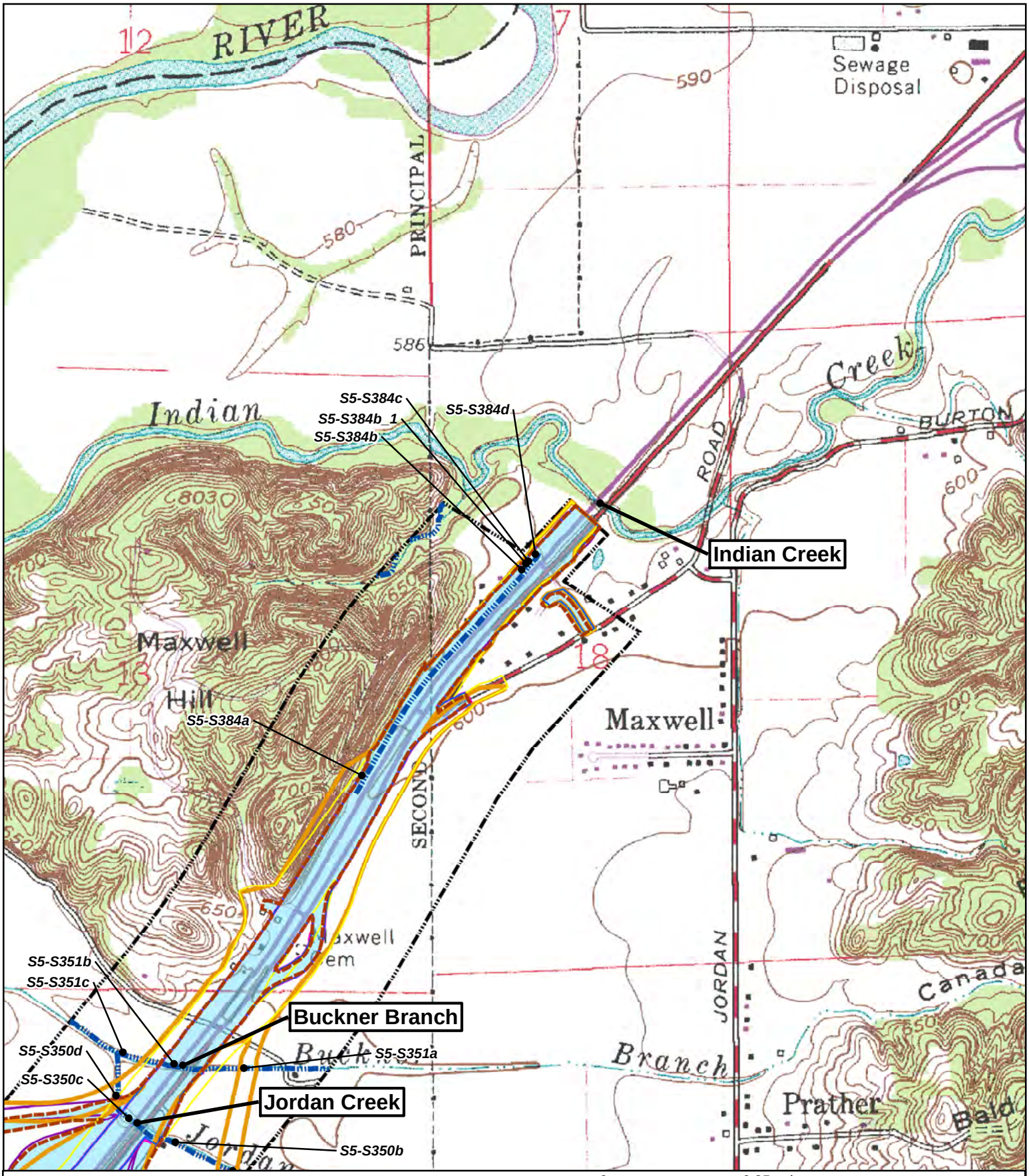

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FIGURE 1
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Tier 2 Studies - Section 5
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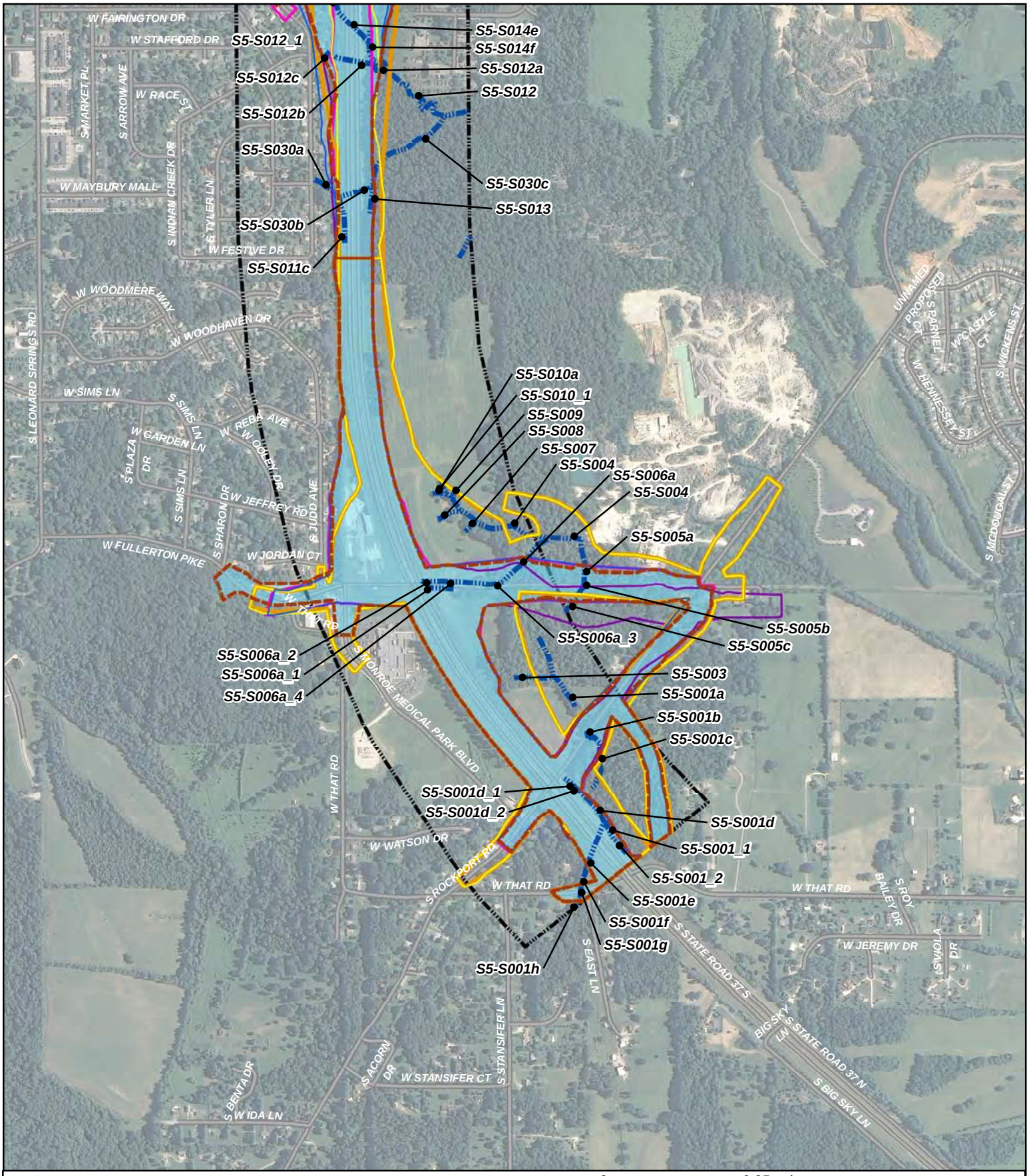

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FIGURE 2
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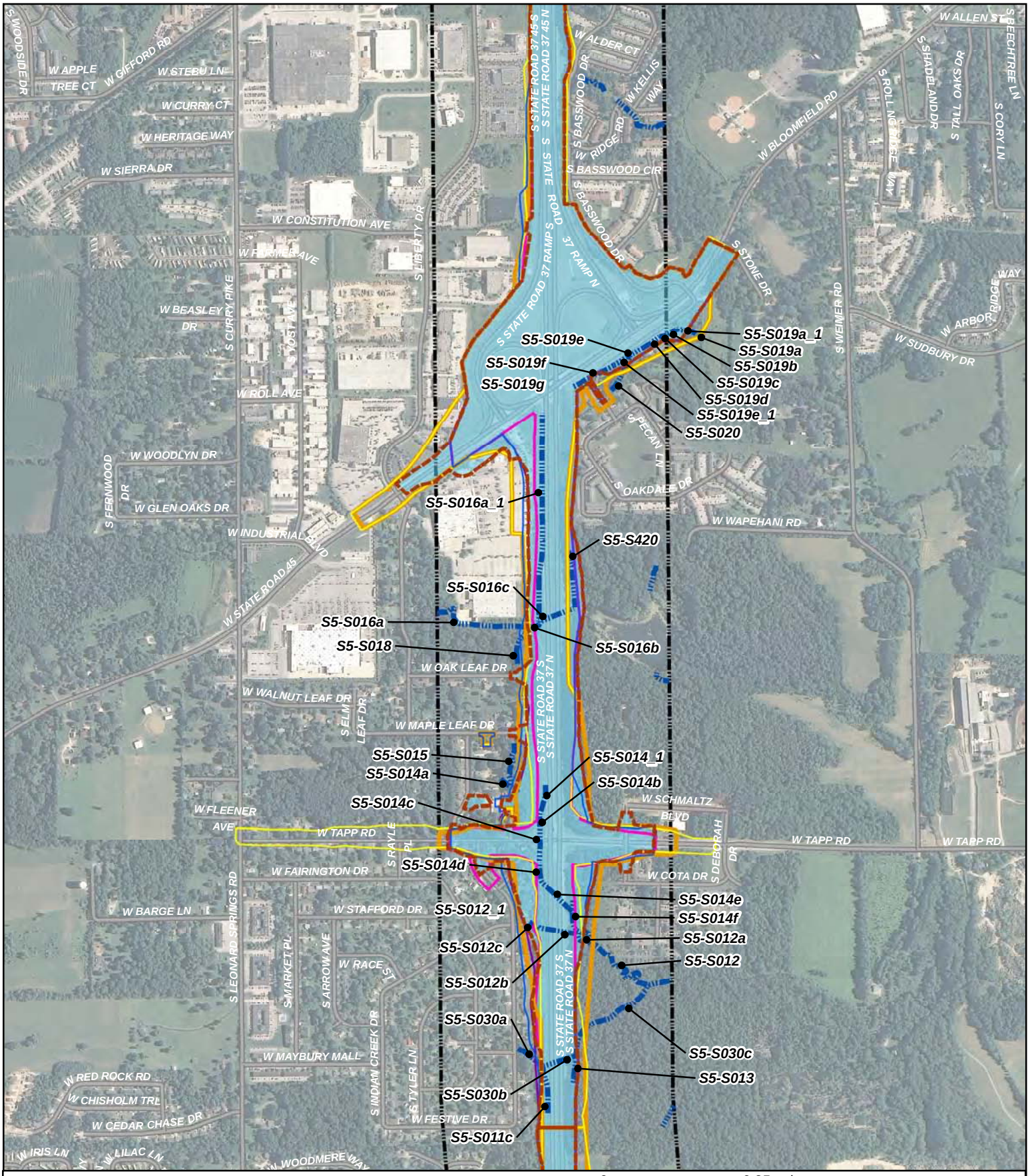
Tier 2 Studies - Section 5
Streams in Relation to the Alternatives on 2010 Aerial Mapping
(Sheet 1 of 14)



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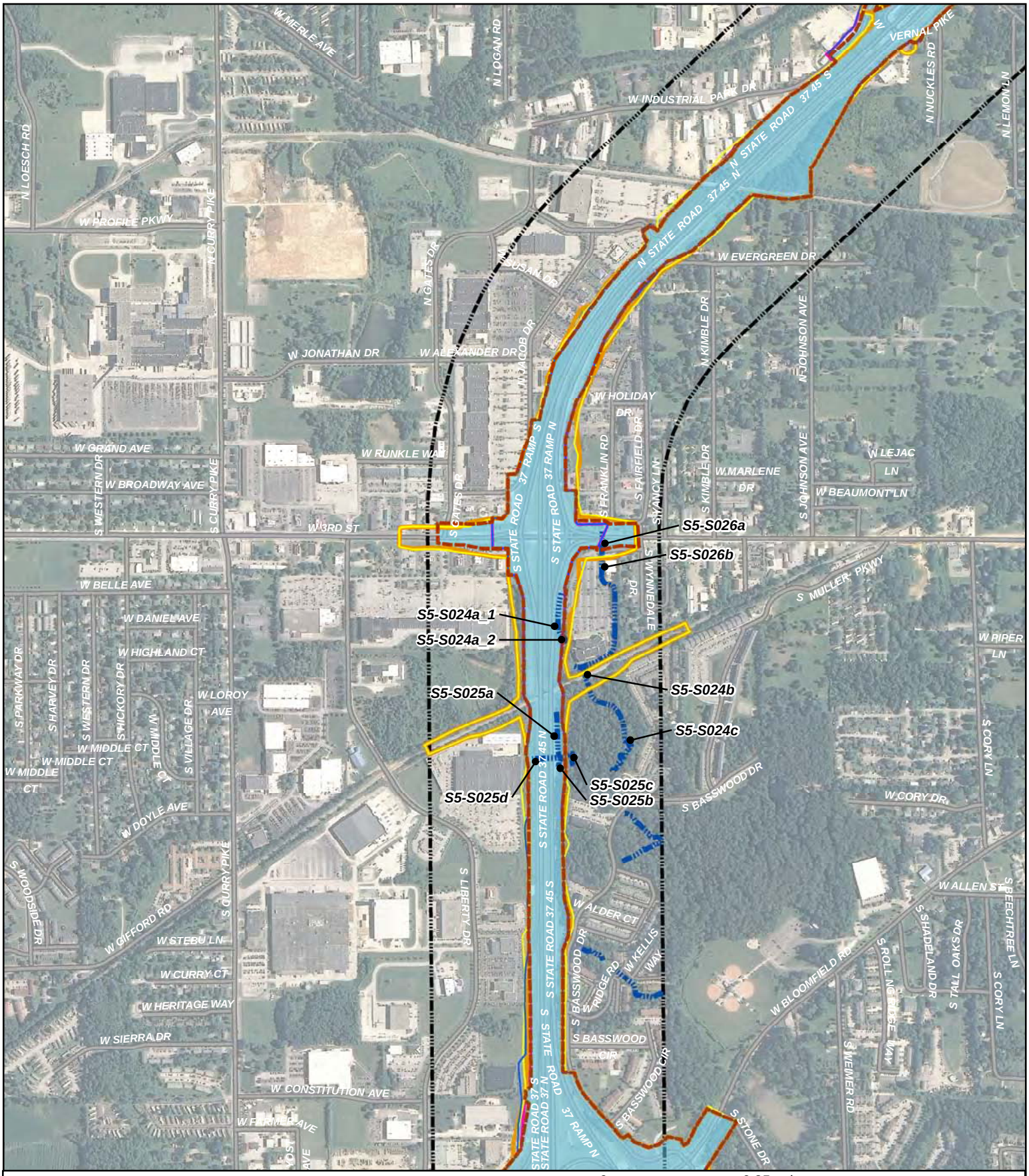

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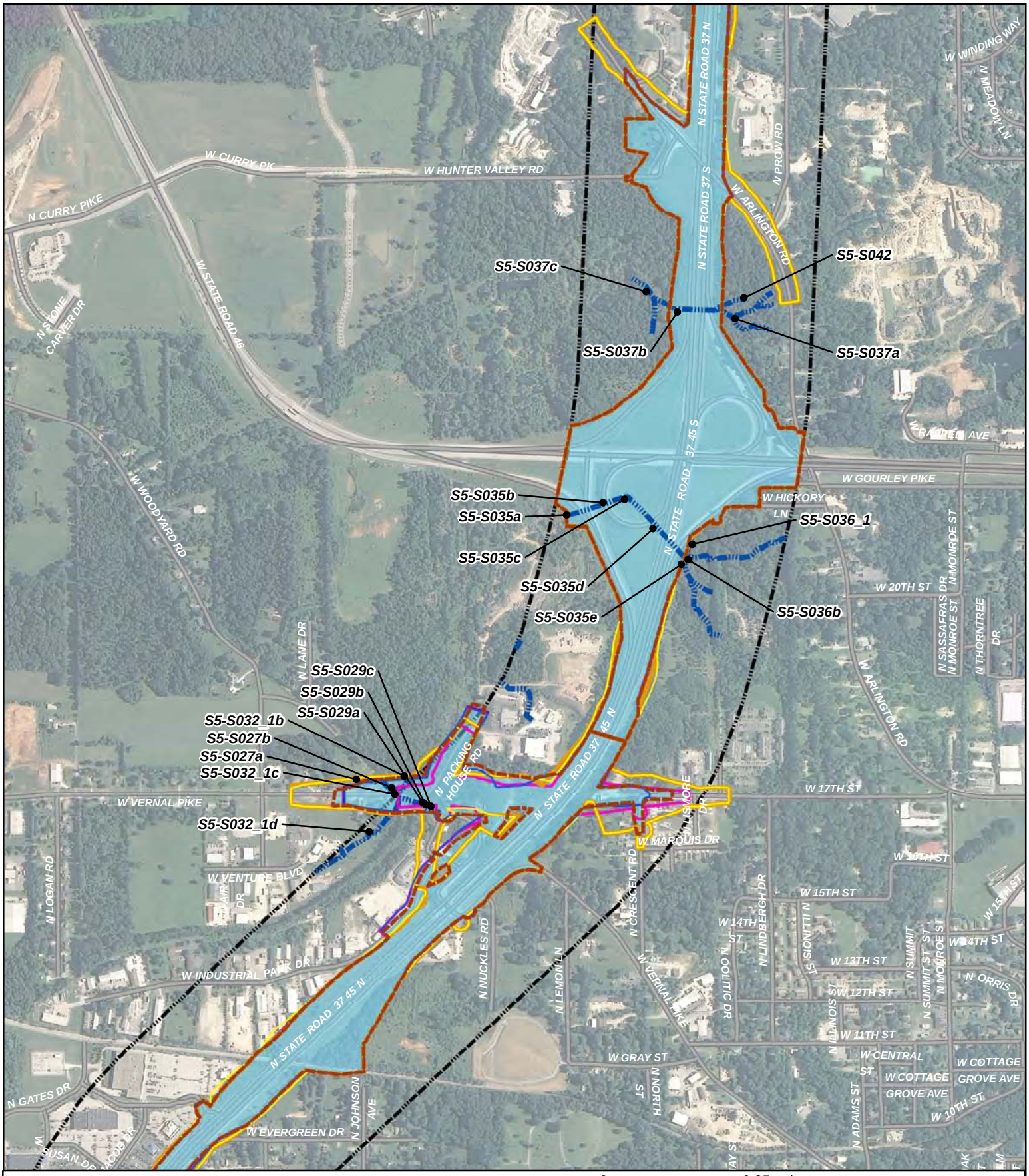

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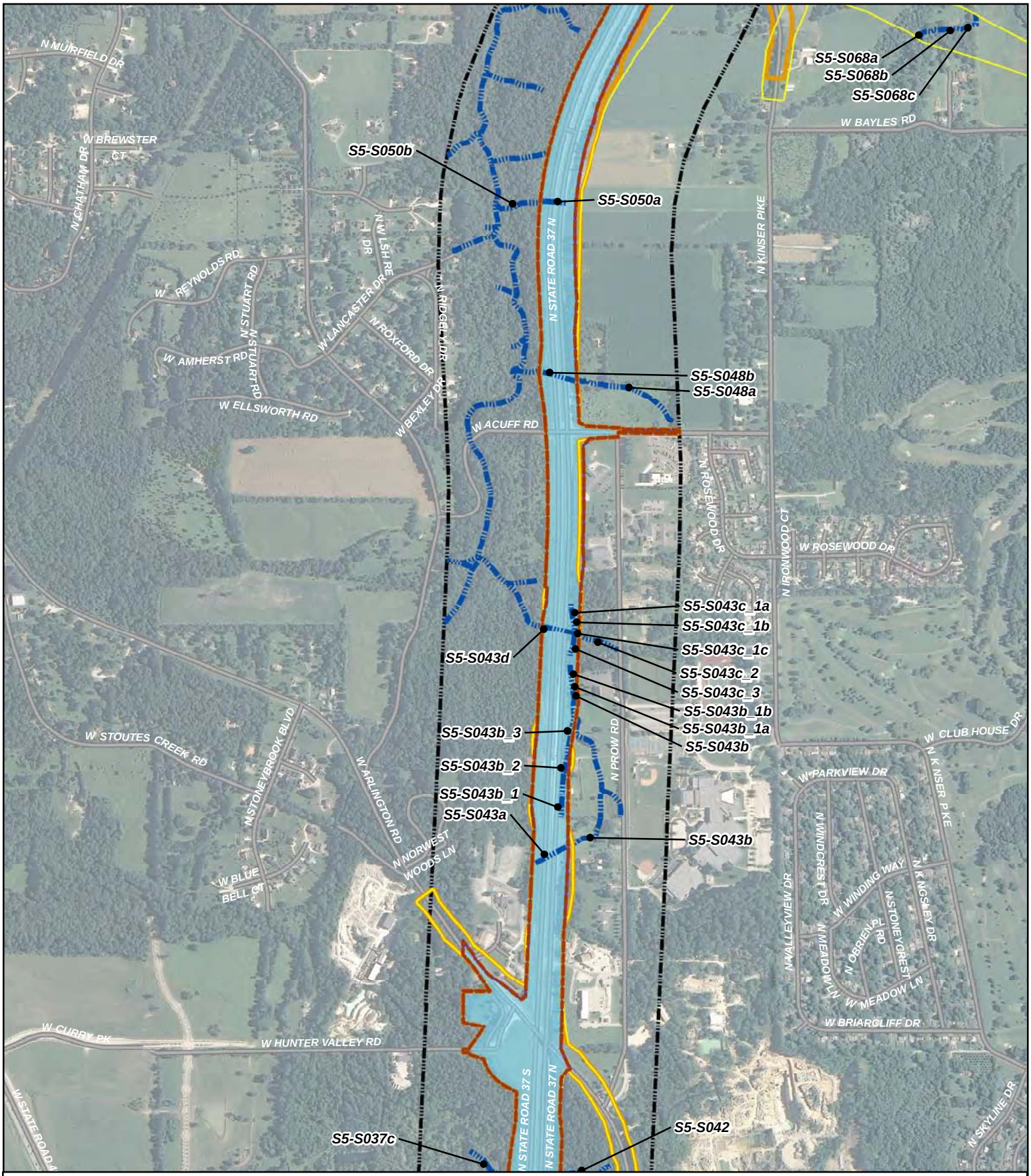

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FIGURE 2
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(Sheet 5 of 14)

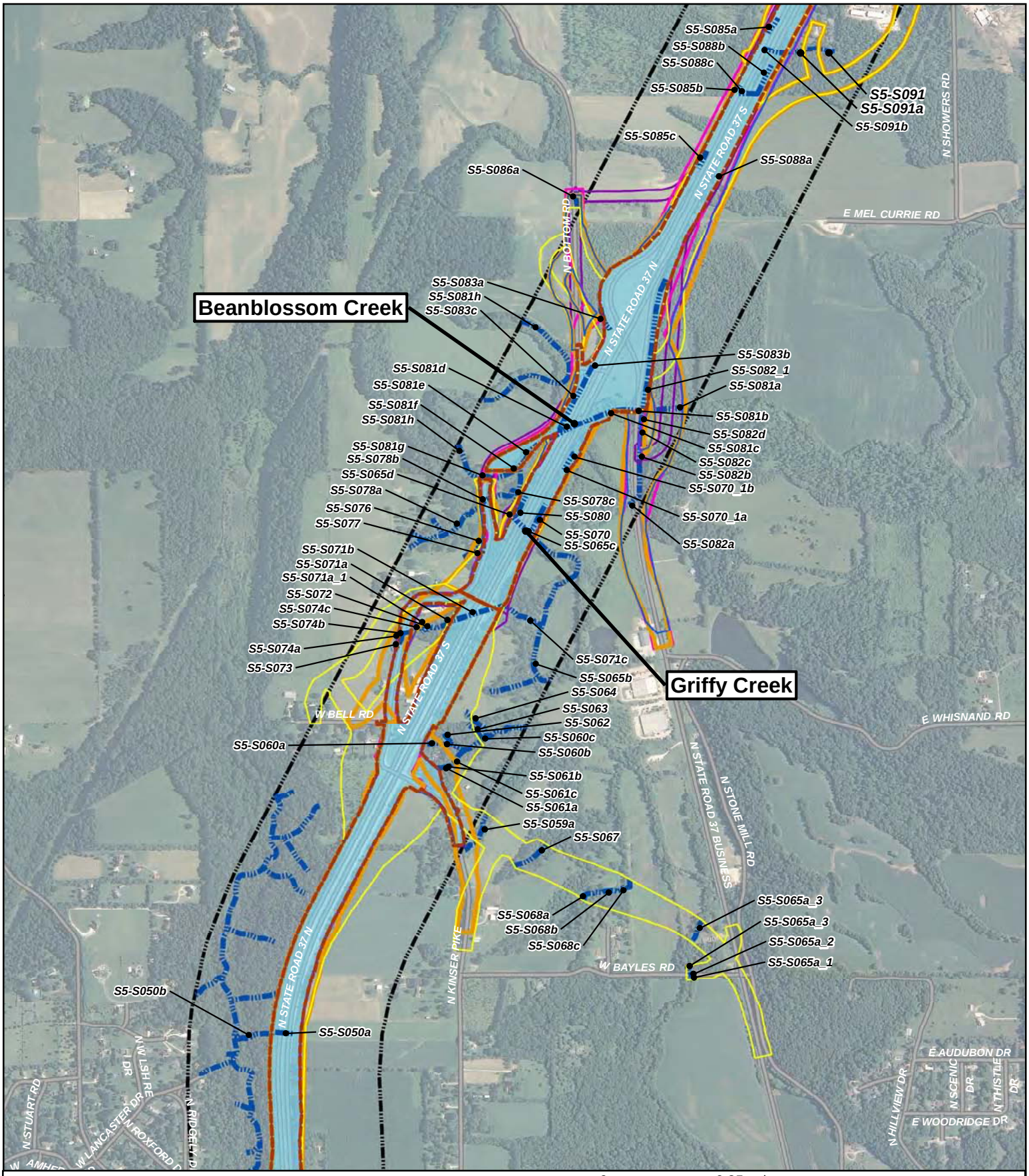

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FIGURE 2
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Tier 2 Studies - Section 5
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(Sheet 6 of 14)

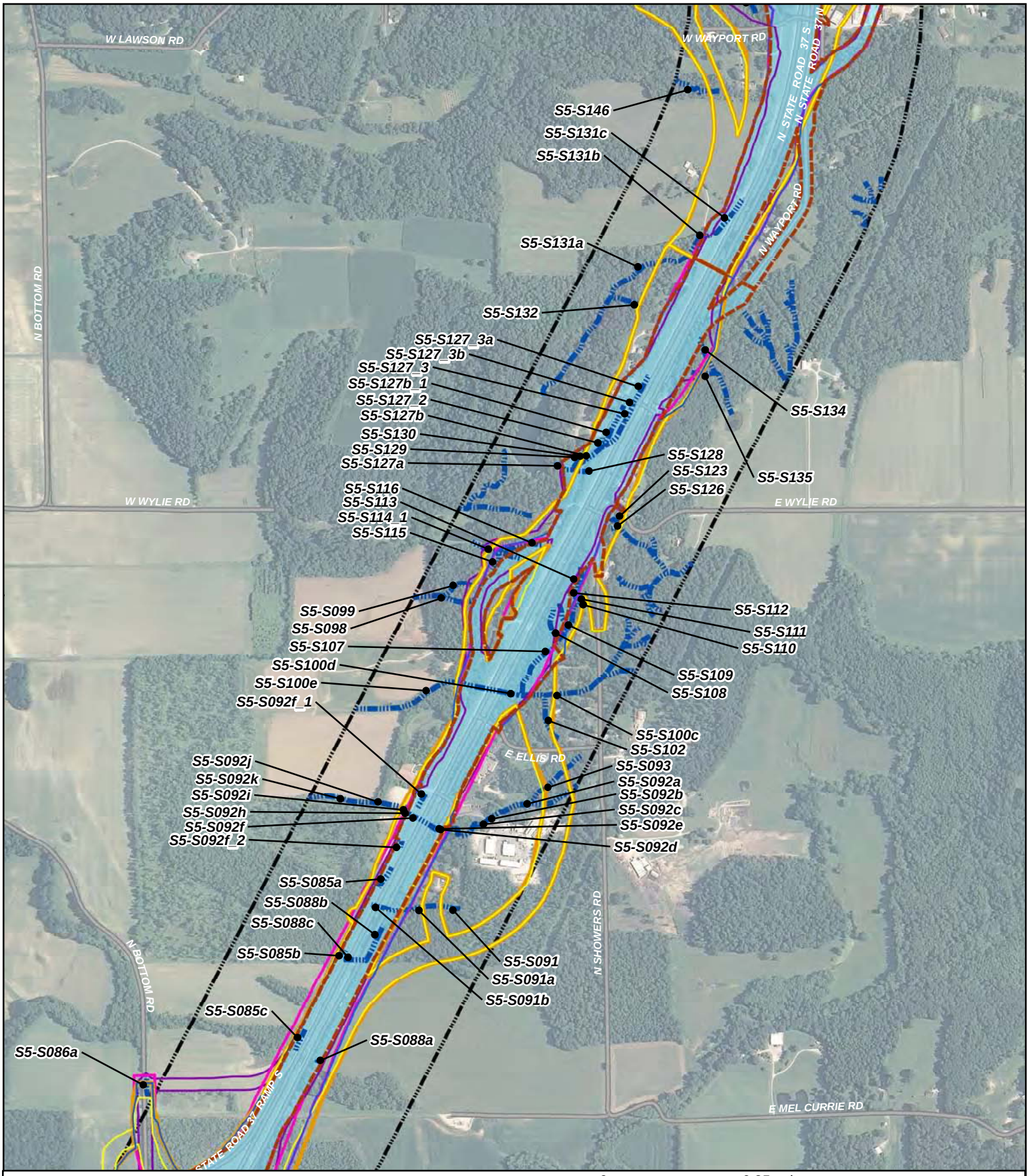

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FIGURE 2
I-69 Evansville to Indianapolis
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(Sheet 7 of 14)

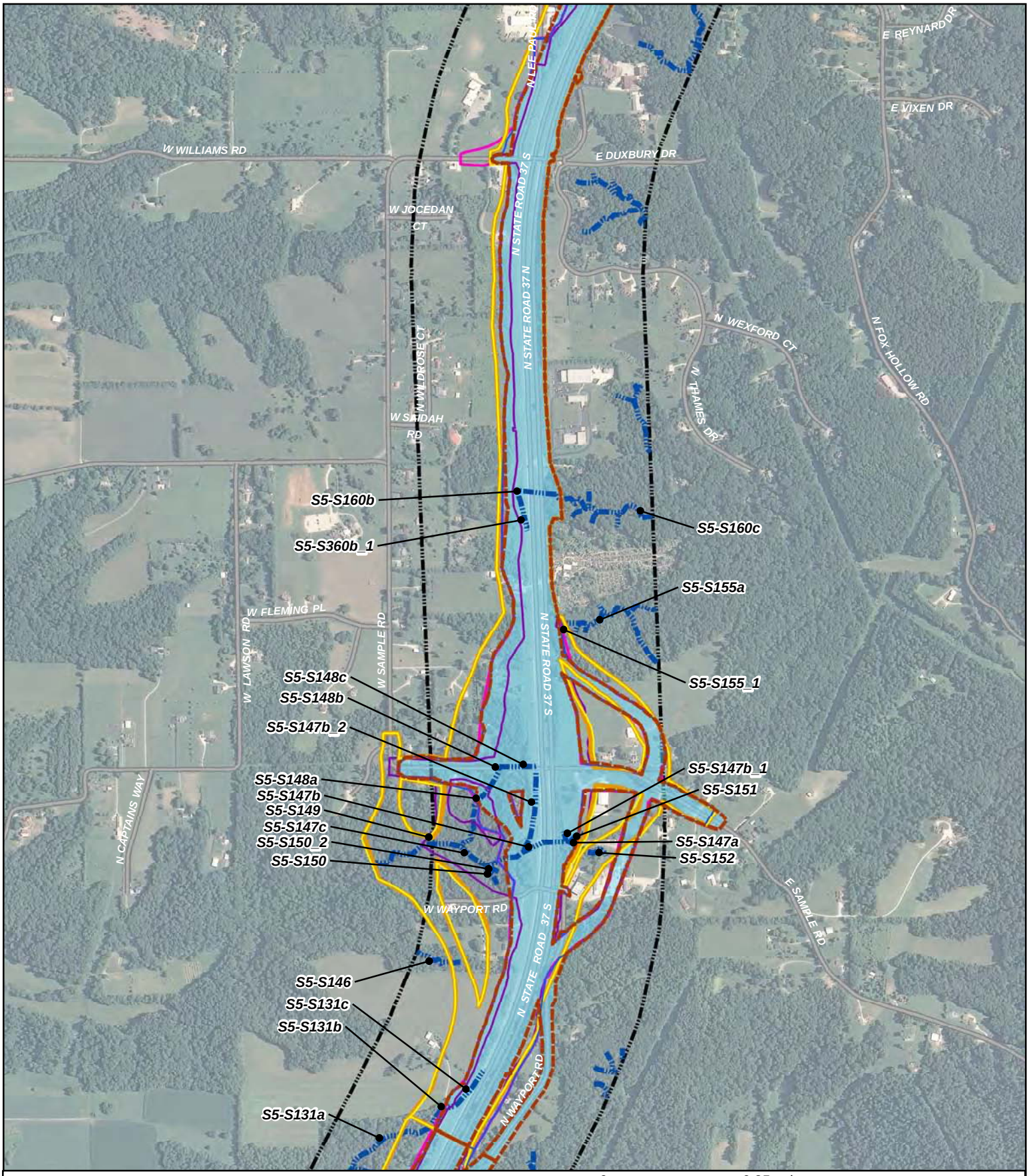

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FIGURE 2
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(Sheet 8 of 14)

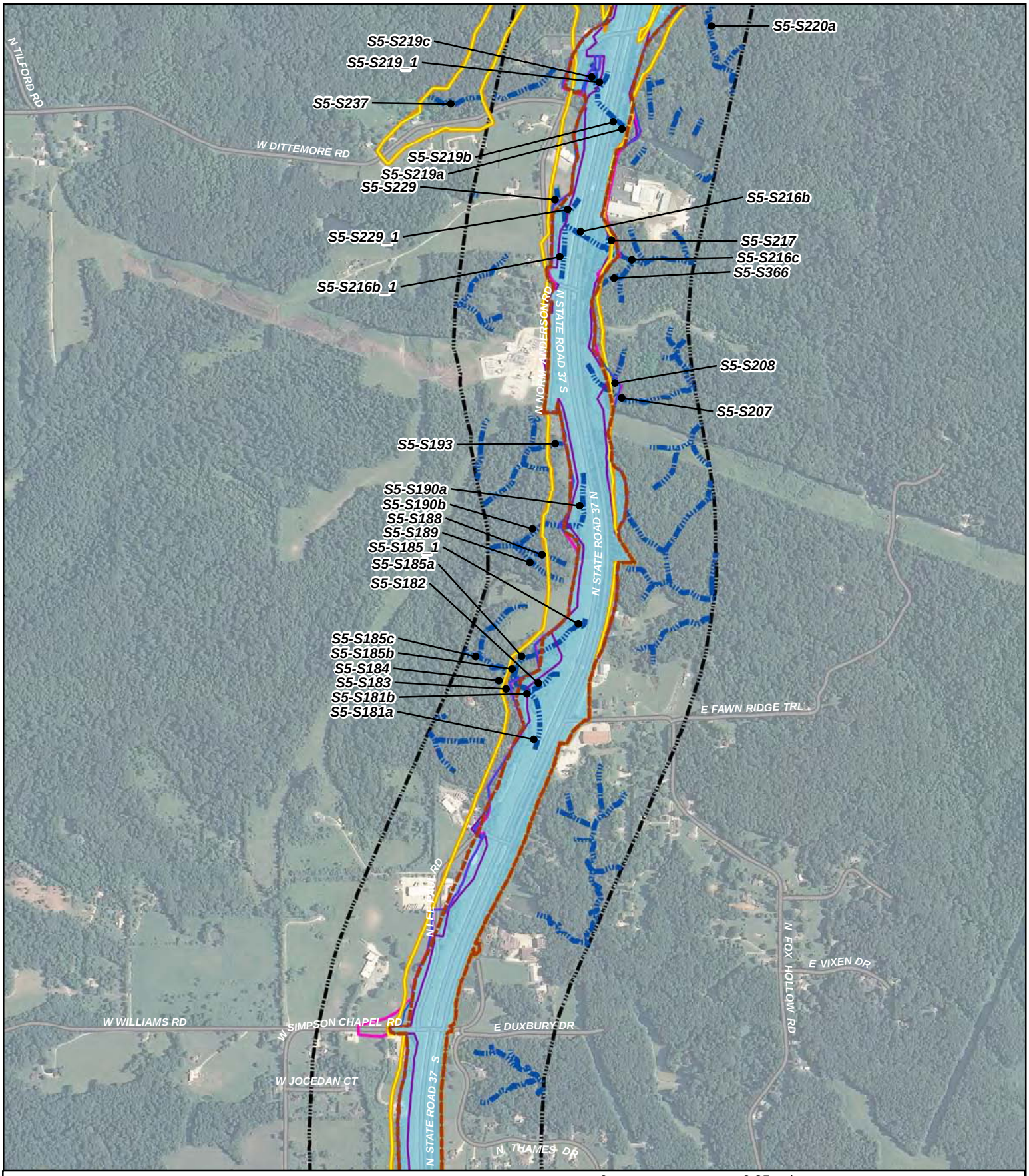

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FIGURE 2
I-69 Evansville to Indianapolis
Tier 2 Studies - Section 5
Streams in Relation to the Alternatives on 2010 Aerial Mapping
(Sheet 9 of 14)

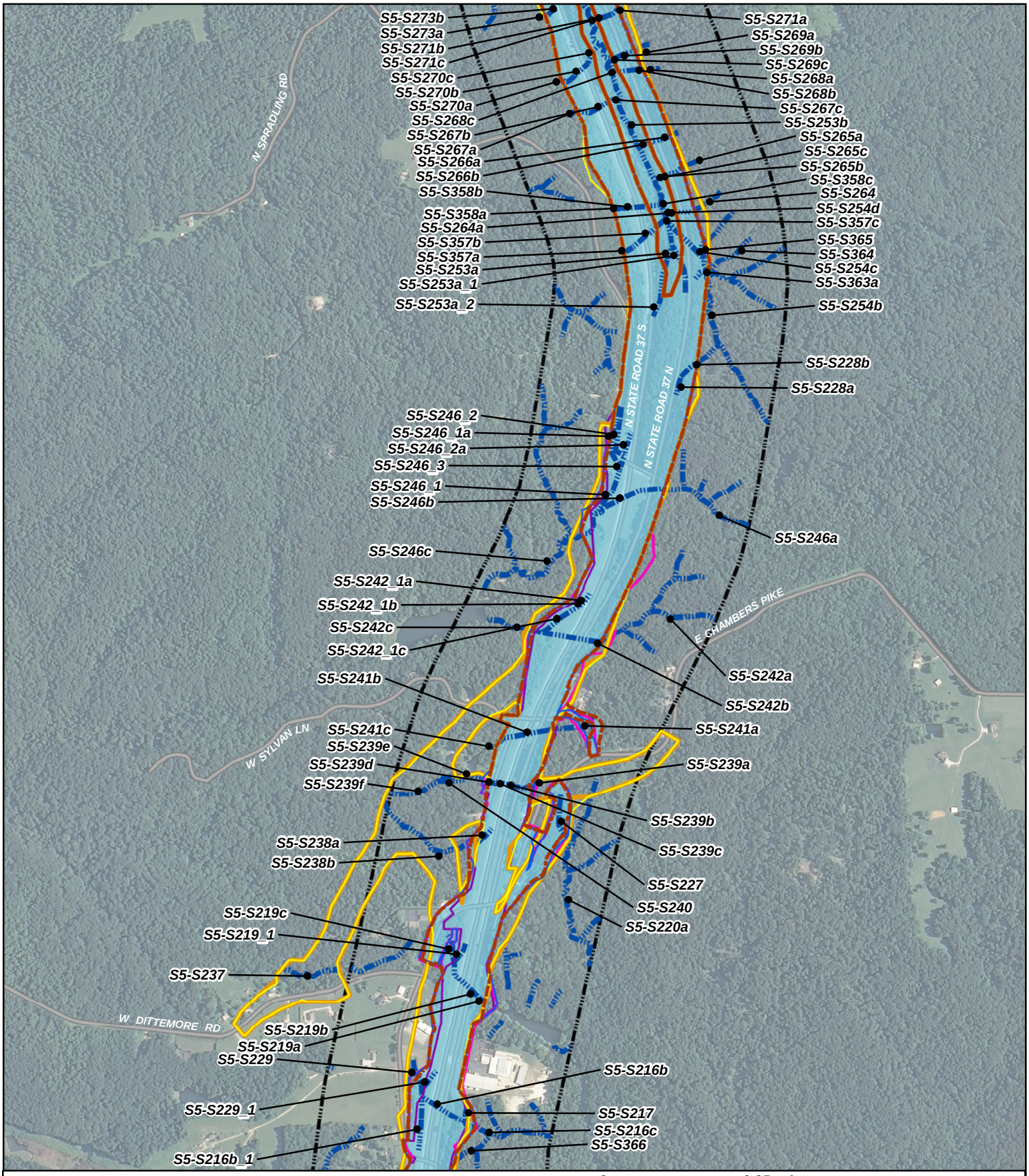

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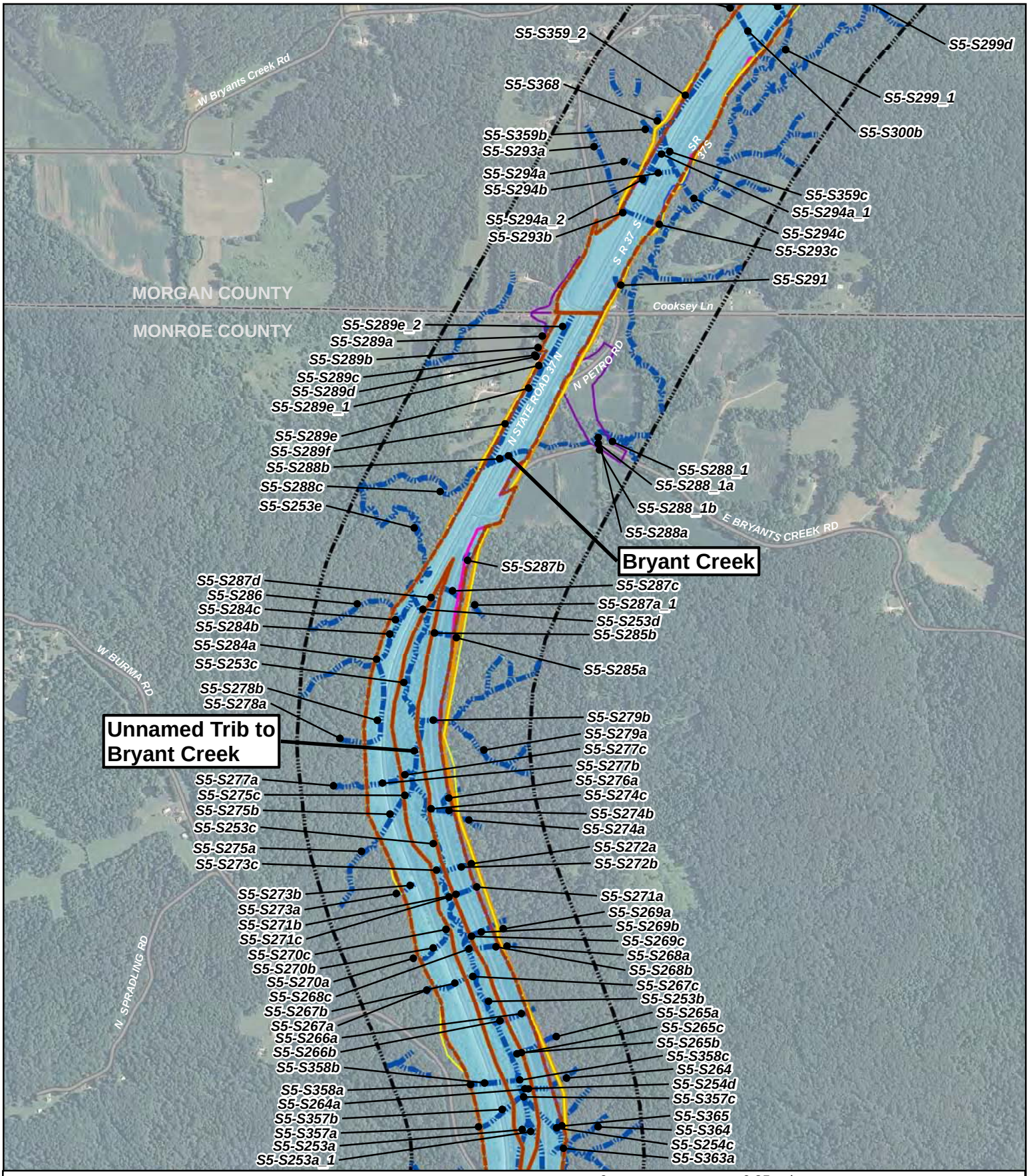
FIGURE 2
I-69 Evansville to Indianapolis
Tier 2 Studies - Section 5
Streams in Relation to the Alternatives on 2010 Aerial Mapping
(Sheet 10 of 14)



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Streams in Relation to the Alternatives on 2010 Aerial Mapping
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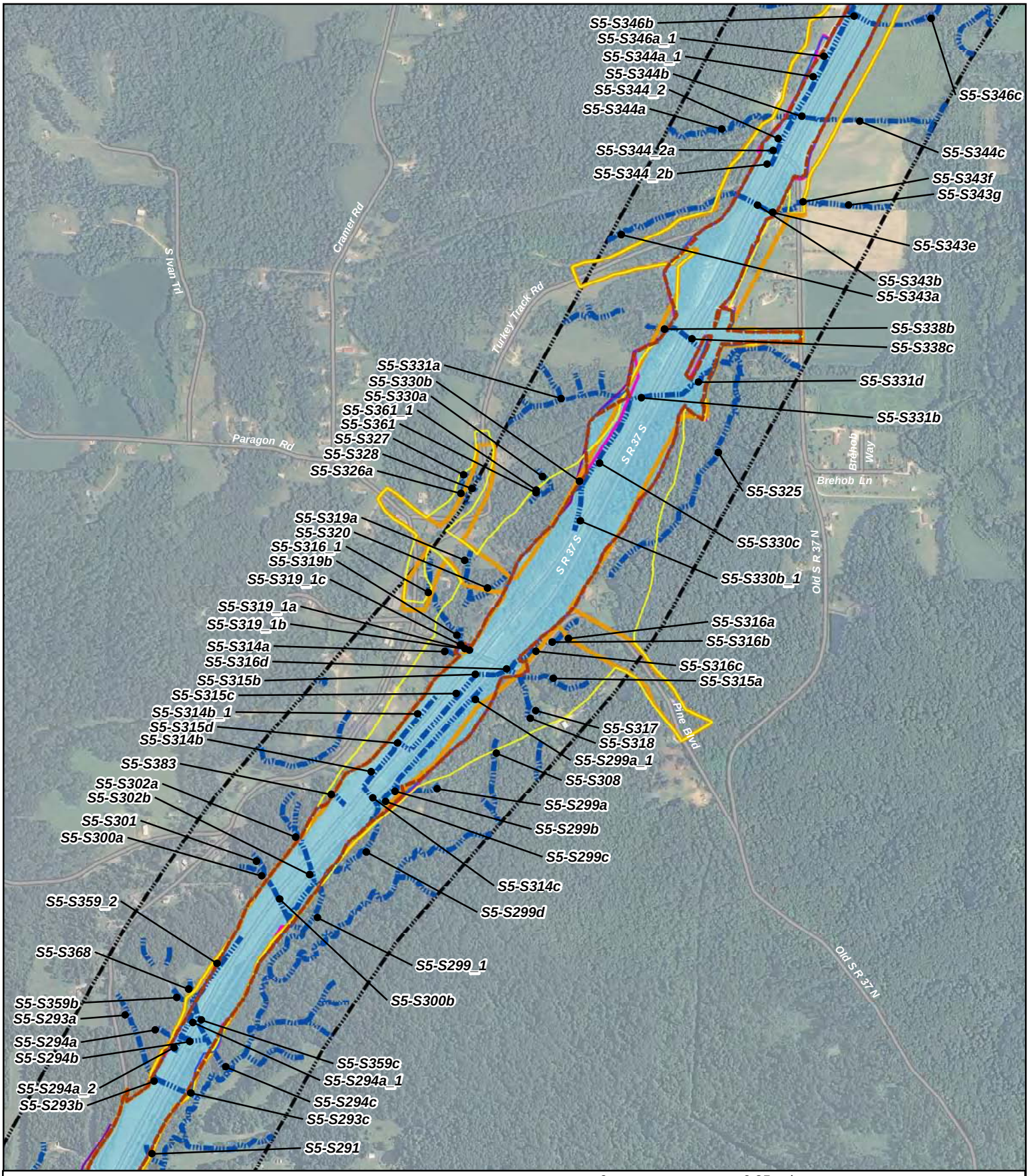
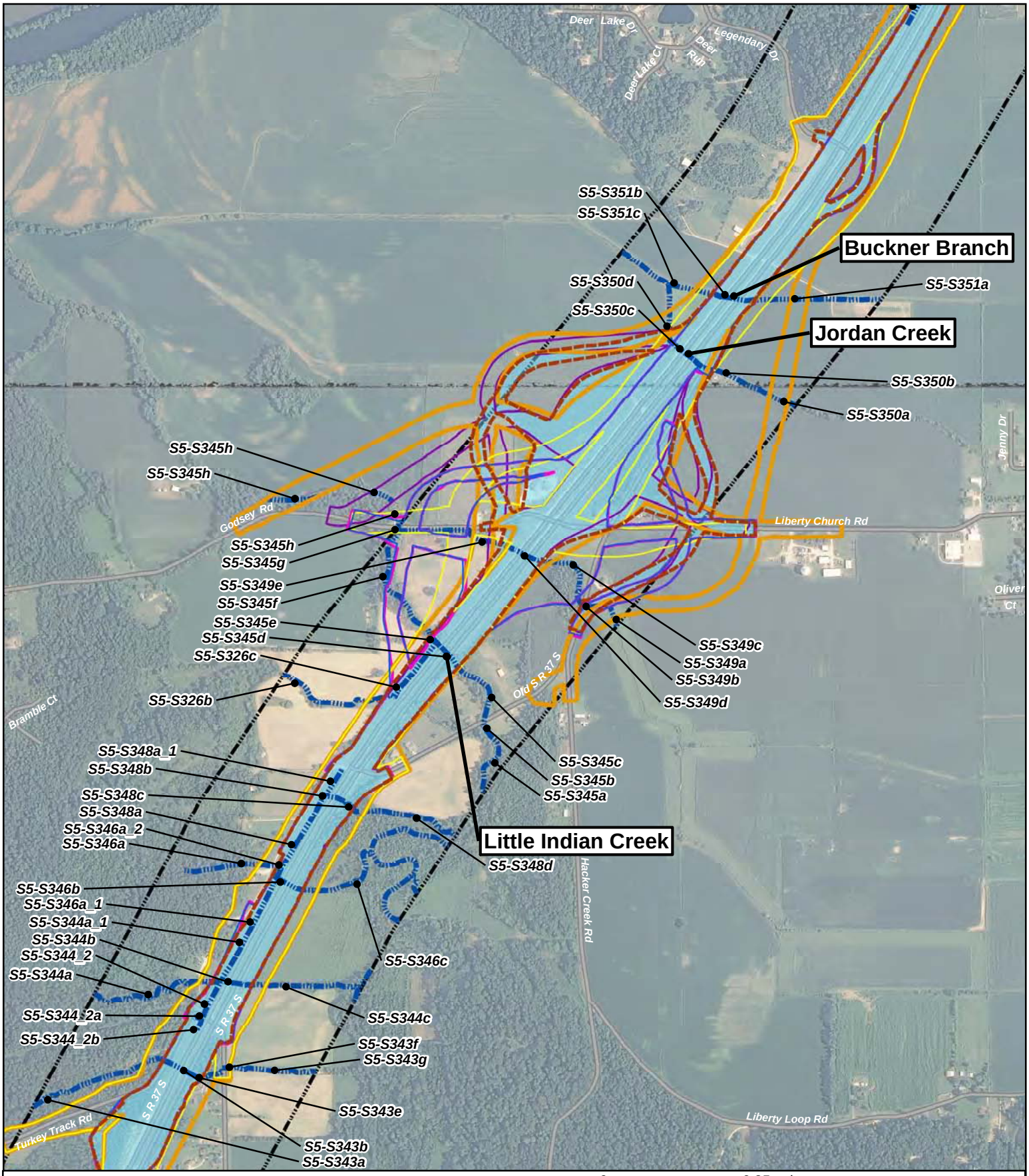


FIGURE 2
I-69 Evansville to Indianapolis
Tier 2 Studies - Section 5
Streams in Relation to the Alternatives on 2010 Aerial Mapping
(Sheet 12 of 14)

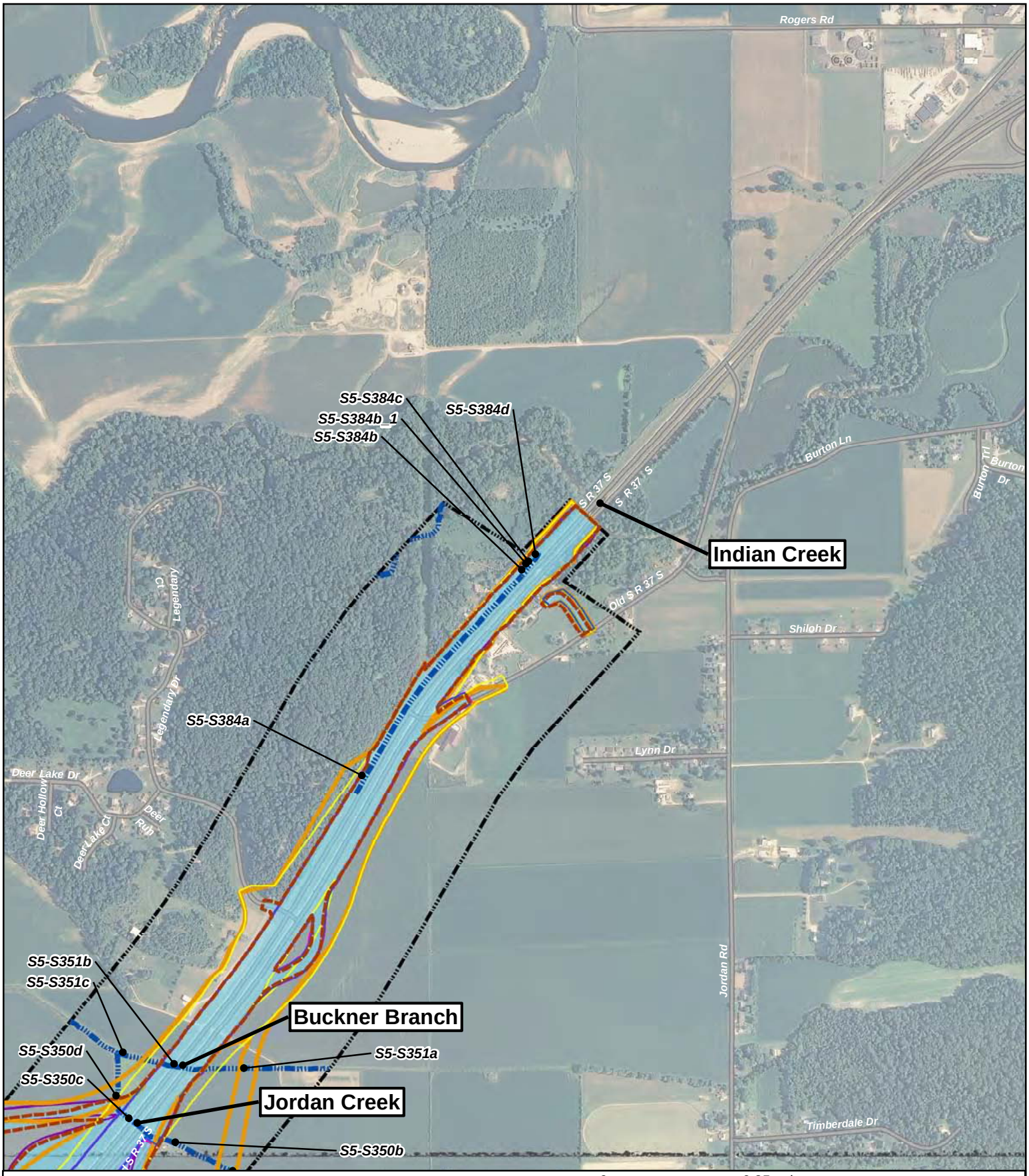


Legend

- Alternative 4
- Alternative 5
- Alternative 6
- Alternative 7
- Alternative 8
- Refined Preferred Alternative 8
- Section 5 Corridor

0 0.25 mi

FIGURE 2
I-69 Evansville to Indianapolis
Tier 2 Studies - Section 5
Streams in Relation to the Alternatives on 2010 Aerial Mapping
(Sheet 13 of 14)



Legend

- Alternative 4
- Alternative 5
- Alternative 6
- Alternative 7
- Alternative 8
- Refined Preferred Alternative 8
- Section 5 Corridor

0 0.25 mi

FIGURE 2
I-69 Evansville to Indianapolis
Tier 2 Studies - Section 5
Streams in Relation to the Alternatives on 2010 Aerial Mapping
(Sheet 14 of 14)

APPENDIX M
FINAL STREAM ASSESSMENT REPORT

TECHNICAL REPORT APPENDICES	
APPENDIX A	**Stream Impacts and Stream Relocation Lengths by Alternative**
APPENDIX B	Stream Site Reports and Data Sheets

Appendix A - Table 1 - Stream Impacts and Stream Relocation Lengths by Alternative

Stream ID#	Stream Name	USGS Stream Type	QHEI Score	HHEI Score	Drain Area (mi2)	Channel Type	Stream Habitat Classification	Waters of the U.S.	Alternative 4			Alternative 5			Alternative 6			Alternative 7			Alternative 8			RPA 8		
									LF in ROW	AC in ROW	LF Relo.	LF in ROW	AC in ROW	LF Relo.	LF in ROW	AC in ROW	LF Relo.	LF in ROW	AC in ROW	LF Relo.	LF in ROW	AC in ROW	LF Relo.	LF in ROW	AC in ROW	LF Relo.
S5-s001_1	Unnamed trib of Clear Creek	Ephemeral	-	12	0.01	Concrete Gutter	Modified Class I		188	0.01	188	188	0.01	188	188	0.01	188	188	0.01	188	188	0.01	188	188	0.01	188
S5-s001_2	Unnamed trib of Clear Creek	Ephemeral	-	17	0.01	Roadside Ditch	Modified Class I		144	0.01	144	144	0.01	144	144	0.01	144	144	0.01	144	144	0.01	144	144	0.01	144
S5-s001b	Unnamed trib of Clear Creek	Ephemeral	-	-	0.04	Culvert		x	58	0.01	0	58	0.01	0	58	0.01	0	58	0.01	0	58	0.01	0	58	0.01	0
S5-s001c	Unnamed trib of Clear Creek	Ephemeral	-	33	0.04	Natural	Class I	x	411	0.06	411	408	0.06	408	226	0.03	226	172	0.03	172	223	0.03	223	209	0.03	209
S5-s001d	Unnamed trib of Clear Creek	Ephemeral	-	17	0.02	Roadside Ditch	Modified Class I	x	312	0.01	312	312	0.01	312	312	0.01	312	312	0.01	312	312	0.01	312	312	0.01	312
S5-s001d_1	Unnamed trib of Clear Creek	Ephemeral	-	22	0.01	Dump Rock Gutter	Modified Class I		146	0.02	146	146	0.02	146	146	0.02	146	146	0.02	146	146	0.02	146	146	0.02	146
S5-s001d_2	Unnamed trib of Clear Creek	Ephemeral	-	17	0.02	Roadside Ditch	Modified Class I		70	0.01	70	70	0.01	70	70	0.01	70	70	0.01	70	70	0.01	70	70	0.01	70
S5-s001e	Unnamed trib of Clear Creek	Intermittent	-	-	0.08	Culvert		x	400	0.02	0	397	0.02	0	402	0.02	0	409	0.02	0	402	0.02	0	401	0.02	0
S5-s001f	Unnamed trib of Clear Creek	Intermittent	-	65	0.08	Natural	Class III	x	25	0.01	0	25	0.01	0	25	0.01	0	25	0.01	0	25	0.01	0	25	0.01	0
S5-s001g	Unnamed trib of Clear Creek	Intermittent	-	-	0.08	Culvert		x	91	0.01	0	91	0.01	0	91	0.01	0	91	0.01	0	91	0.01	0	91	0.01	0
S5-s001h	Unnamed trib of Clear Creek	Intermittent	-	65	0.08	Natural	Class III	x	34	0.01	0	34	0.01	0	34	0.01	0	34	0.01	0	34	0.01	0	34	0.01	0
S5-s003	Unnamed trib of Clear Creek	Ephemeral	-	39	0.01	Natural	Class I	x	185	0.01	185	188	0.01	188	0	0.00	0	0	0.00	0	0	0.00	0	0	0	0
S5-s004	Unnamed trib of Clear Creek	Ephemeral	-	79	0.05	Natural	Class III	x	1,140	0.09	1140	1,149	0.09	1149	0	0.00	0	0	0.00	0	0	0.00	0	0	0	0
S5-s005a	Unnamed trib of Clear Creek	Ephemeral	-	26	0.01	Natural	Class I	x	379	0.03	379	379	0.03	379	143	0.01	0	0	0.00	0	142	0.01	0	142	0.01	0
S5-s005b	Unnamed trib of Clear Creek	Ephemeral	-	-	0.01	Culvert		x	45	0.01	0	45	0.01	0	45	0.01	0	6	0.01	0	45	0.01	0	45	0.01	0
S5-s005c	Unnamed trib of Clear Creek	Ephemeral	-	26	0.01	Natural	Class I	x	74	0.01	74	83	0.01	83	151	0.01	0	269	0.02	0	149	0.01	0	148	0.01	0
S5-s006a	Unnamed trib of Clear Creek	Ephemeral	-	39	0.01	Natural	Class I	x	551	0.06	551	551	0.06	551	282	0.03	282	212	0.02	212	293	0.03	293	285	0.03	285
S5-s006a_1	Unnamed trib of Clear Creek	Ephemeral	-	12	0.01	Concrete Gutter	Modified Class I		215	0.01	215	215	0.01	215	215	0.01	215	215	0.01	215	215	0.01	215	215	0.01	215
S5-s006a_2	Unnamed trib of Clear Creek	Ephemeral	-	12	0.01	Concrete Gutter	Modified Class I		261	0.01	261	261	0.01	261	261	0.01	261	261	0.01	261	261	0.01	261	261	0.01	261
S5-s006a_3	Unnamed trib of Clear Creek	Ephemeral	-	12	0.01	Concrete Gutter	Modified Class I		434	0.01	434	434	0.01	434	434	0.01	434	434	0.01	434	434	0.01	434	434	0.01	434
S5-s006a_4	Unnamed trib of Clear Creek	Ephemeral	-	-	0.01	Culvert			21	0.01	0	21	0.01	0	21	0.01	0	21	0.01	0	21	0.01	0	21	0.01	0
S5-s007	Unnamed trib of Clear Creek	Ephemeral	-	29	0.01	Natural	Class I	x	121	0.01	121	121	0.01	121	0	0.00	0	0	0.00	0	0	0.00	0	0	0	0
S5-s008	Unnamed trib of Clear Creek	Ephemeral	-	29	0.01	Natural	Class I	x	238	0.01	238	238	0.01	238	0	0.00	0	0	0.00	0	0	0.00	0	0	0	0
S5-s009	Unnamed trib of Clear Creek	Ephemeral	-	29	0.01	Natural	Class I	x	78	0.01	78	75	0.01	75	0	0.00	0	0	0.00	0	0	0.00	0	0	0	0
S5-s010_1	Unnamed trib of Clear Creek	Ephemeral	-	32	0.01	Natural	Class I	x	53	0.01	53	53	0.01	53	0	0.00	0	0	0.00	0	0	0.00	0	0	0	0
S5-s010a	Unnamed trib of Clear Creek	Ephemeral	-	29	0.01	Natural	Class I	x	131	0.01	131	131	0.01	131	0	0.00	0	0	0.00	0	0	0.00	0	0	0	0
S5-s011c	Unnamed trib of Clear Creek	Ephemeral	-	22	0.01	Dump Rock Gutter	Modified Class I		410	0.04	410	410	0.04	410	410	0.04	410	410	0.04	410	410	0.04	410	410	0.04	410
S5-s012	Unnamed trib of Clear Creek	Intermittent	-	70	0.24	Natural	Class III	x	0	0.00	0	58	0.01	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0	0
S5-s012_1	Unnamed trib of Clear Creek	Ephemeral	-	22	0.24	Dump Rock Gutter	Modified Class I	x	0	0.00	0	36	0.01	36	0	0.00	0	36	0.01	36	36	0.01	36	36	0.01	36
S5-s012a	Unnamed trib of Clear Creek	Ephemeral	-	81	0.24	Natural	Class III	x	99	0.04	0	152	0.06	0	7	0.01	0	103	0.04	0	105	0.04	0	114	0.05	0
S5-s012b	Unnamed trib of Clear Creek	Ephemeral	-	-	0.24	Culvert		x	304	0.03	0	304	0.03	0	304	0.03	0	304	0.03	0	304	0.03	0	304	0.03	0
S5-s012c	Unnamed trib of Clear Creek	Ephemeral	-	51	0.24	Natural	Class II	x	45	0.01	0	126	0.01	0	56	0.01	0	126	0.01	0	126	0.01	0	126	0.01	0
S5-s013	Unnamed trib of Clear Creek	Ephemeral	-	12	0.01	Concrete Gutter	Modified Class I		252	0.01	252	252	0.01	252	252	0.01	252	252	0.01	252	252	0.01	252	252	0.01	252
S5-s014_1	Unnamed trib of Clear Creek	Ephemeral	-	12	0.01	Dump Rock Gutter	Modified Class I		283	0.02	283	283	0.02	283	283	0.02	283	283	0.02	283	283	0.02	283	283	0.02	283
S5-s014a	Unnamed trib of Clear Creek	Ephemeral	-	48	0.07	Natural	Class II	x	0	0.00	0	35	0.01	35	0	0.00	0	46	0.02	46	91	0.04	91	54	0.02	54
S5-s014b	Unnamed trib of Clear Creek	Ephemeral	-	12	0.06	Concrete Gutter	Modified Class I		138	0.01	138	138	0.01	138	138	0.01	138	138	0.01	138	138	0.01	138	138	0.01	138
S5-s014c	Unnamed trib of Clear Creek	Ephemeral	-	-	0.06	Culvert			126	0.01	0	126	0.01	0	126	0.01	0	126	0.01	0	126	0.01	0	126	0.01	0
S5-s014d	Unnamed trib of Clear Creek	Ephemeral	-	12	0.06	Dump Rock Gutter	Modified Class I		320	0.02	320	320	0.02	320	320	0.02	320	320	0.02	320	320	0.02	320	320	0.02	320
S5-s014e	Unnamed trib of Clear Creek	Ephemeral	-	-	0.06	Culvert			351	0.02	0	351	0.02	0	351	0.02	0	351	0.02	0	351	0.02	0	351	0.02	0
S5-s014f	Unnamed trib of Clear Creek	Ephemeral	-	54	0.06	Natural	Class II	x	318	0.02	318	440	0.02	440	243	0.01	243	332	0.02	332	331	0.02	331	335	0.02	335
S5-s016a	Unnamed trib of Clear Creek	Ephemeral	-	28	0.23	Dump Rock Gutter	Modified Class I	x	2	0.01	2	36	0.01	0	0	0.00	0	31	0.01	0	73	0.01	0	19	0.01	0
S5-s016a_1	Unnamed trib of Clear Creek	Ephemeral	-	12	0.02	Concrete Gutter	Modified Class I		1,803	0.13	1803	1,803	0.13	1803	1,803	0.13	1803	1,803	0.13	1803	1,803	0.13	1803	1803	0.13	1803
S5-s016b	Unnamed trib of Clear Creek	Ephemeral	-	12	0.23	Concrete Gutter	Modified Class I	x	106	0.01	0	106	0.01	0	72	0.01	0	106	0.01	0	106	0.01	0	106	0.01	0
S5-s016c	Unnamed trib of Clear Creek	Ephemeral	-	-	0.23	Culvert		x	268	0.02	0	268	0.02	0	320	0.03	0	320	0.03	0	320	0.03	0	320	0.03	0
S5-s018	Unnamed trib of Clear Creek	Ephemeral	-	26	0.01	Natural	Class I	x	0	0.00	0	60	0.01	60	0	0.00	0	45	0.01	45	140	0.01	140	8	0.01	8
S5-s019a	Unnamed trib of Clear Creek	Ephemeral	-	-	0.14	Culvert		x	46	0.01	0	47	0.01	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0	0
S5-s019a_1	Unnamed trib of Clear Creek	Ephemeral	-	56	0.14	Natural	Class II	x	159	0.03	159	159	0.03	159	79	0.02	0	79	0.02	0	79	0.02	0	79	0.02	0
S5-s019b	Unnamed trib of Clear Creek	Ephemeral	-	-	0.14	Culvert		x	110	0.01	0	110	0.01	0	110	0.01	0	110	0.01	0	110	0.01	0	110	0.01	0
S5-s019c	Unnamed trib of Clear Creek	Ephemeral	-	34	0.14	Roadside Ditch	Modified Class II	x	64	0.01	64	64	0.01	64	64	0.01	0	64	0.01	0	64	0.01	0	64	0.01	0
S5-s019d	Unnamed trib of Clear Creek	Ephemeral	-	-	0.14	Culvert		x	110	0.01	0	110	0.01	0	110	0.01	0	110	0.01	0	110	0.01	0	110	0.01	0
S5-s019e	Unnamed trib of Clear Creek	Ephemeral	-	12	0.14	Concrete Gutter	Modified Class I	x	184	0.01	184	184	0.01	184	184	0.01	0	184	0.01	0	184	0.01	0	184	0.01	0
S5-s019e_1	Unnamed trib of Clear Creek	Ephemeral	-	12	0.14	Concrete Gutter	Modified Class I		167	0.01	167	167	0.01	167	167	0.01	0	167	0.01	0	167	0.01	0	167	0.01	0
S5-s019f	Unnamed trib of Clear Creek	Ephemeral	-	-	0.14	Culvert			208	0.01	0	208	0.01	0	130	0.01	0	130	0.01	0	130	0.01	0	130	0.01	0
S5-s019g	Unnamed trib of Clear Creek	Ephemeral	-	34	0.14	Roadside Ditch	Modified Class II		199	0.01	199	199	0.01	199	170	0.01	170	170	0.01	170	170	0.01	170	170	0.01	170
S5-s020	Unnamed trib of Clear Creek	Ephemeral	-	39	0.01	Natural	Class I	x	165	0.01	165	165	0.01	165	86	0.01	0	86	0.01	0	86	0.01	0	86	0.01	0
S5-s024a_1	Unnamed trib of Clear Creek	Ephemeral	-	12	0.04	Concrete Gutter	Modified Class I		355	0.01	355	355	0.01	355	355	0.01	355	355	0.01	355	355	0.01	355	355	0.01	355
S5-s024a_2	Unnamed trib of Clear Creek	Ephemeral	-	27	0.04	Dump Rock Gutter	Modified Class I		123	0.02	123	123	0.02	123	35	0.01	35	35	0.01	35	35	0.01	35	42	0.01	42
S5-s024b	Unnamed trib of Clear Creek	Ephemeral	-	-	0.04	Culvert		x	74	0.02	0	74	0.02	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0	0
S5-s024c	Unnamed trib of Clear Creek	Ephemeral	-	32	0.04	Natural	Class I	x	76	0.02	0	76	0.02	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0	0
S5-s025a	Unnamed trib of Clear Creek	Ephemeral	-	23	0.01	Roadside Ditch	Modified Class I	x	395	0.02	395	395	0.02	395	395	0.02	395	395	0.02	395	395	0.02	395	395	0.02	395
S5-s025b	Unnamed trib of Clear Creek	Ephemeral	-	12	0.01	Roadside Ditch	Modified Class I	x	74	0.01	74	74	0.01	74	74	0.01	74	74	0.01	74	74	0.01	74	74	0.01	74
S5-s025c	Unnamed trib of Clear Creek	Ephemeral	-	27	0.01	Natural	Class I	x	54	0.01	0	56	0.01	0	56	0.01	0	56	0.01	0	56	0.01	0	56	0.01	0
S5-s025d	Unnamed trib of Clear Creek	Ephemeral	-	-	0.01	Culvert		x	236	0.02	0	236	0.02	0	236	0.02	0	236	0.02	0	236	0.02	0	236	0.02	0
S5-s026a	Unnamed trib of Clear Creek	Ephemeral	-	-	0.33	Culvert		x	202	0.03	0	202	0.03	0	54	0.01	0	54	0.01	0	54	0.01	0	158	0.02	0

Appendix A - Table 1 - Stream Impacts and Stream Relocation Lengths by Alternative

Stream ID#	Stream Name	USGS Stream Type	QHEI Score	HHEI Score	Drain Area (mi2)	Channel Type	Stream Habitat Classification	Waters of the U.S.	Alternative 4			Alternative 5			Alternative 6			Alternative 7			Alternative 8			RPA 8		
									LF in ROW	AC in ROW	LF Relo.	LF in ROW	AC in ROW	LF Relo.	LF in ROW	AC in ROW	LF Relo.	LF in ROW	AC in ROW	LF Relo.	LF in ROW	AC in ROW	LF Relo.	LF in ROW	AC in ROW	LF Relo.
S5-s026b	Unnamed trib of Clear Creek	Ephemeral	-	52	0.33	Roadside Ditch	Modified Class II	x	17	0.01	0	30	0.01	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0	0
S5-s027a	Unnamed trib of Stout Creek	Ephemeral	-	30	0.05	Natural	Class I	x	333	0.02	333	333	0.02	333	0	0.00	0	125	0.01	125	116	0.01	116	236	0.01	236
S5-s027b	Unnamed trib of Stout Creek	Ephemeral	-	-	0.05	Culvert		x	72	0.01	0	72	0.01	0	10	0.01	0	72	0.01	0	72	0.01	0	72	0.01	0
S5-s029a	Unnamed trib of Stout Creek	Ephemeral	-	29	0.08	Roadside Ditch	Modified Class I		258	0.02	258	258	0.02	258	242	0.02	242	258	0.02	258	258	0.02	258	258	0.02	258
S5-s029b	Unnamed trib of Stout Creek	Ephemeral	-	-	0.08	Culvert			16	0.01	0	16	0.01	0	0	0.00	0	16	0.01	0	16	0.01	0	16	0.01	0
S5-s029c	Unnamed trib of Stout Creek	Ephemeral	-	29	0.08	Roadside Ditch	Modified Class I		107	0.01	107	107	0.01	107	33	0.01	33	107	0.01	107	107	0.01	107	99	0.01	99
S5-s030a	Unnamed trib of Clear Creek	Ephemeral	-	16	0.03	Natural	Modified Class I	x	19	0.01	19	16	0.01	16	13	0.01	0	81	0.01	81	64	0.01	64	16	0.01	16
S5-s030b	Unnamed trib of Clear Creek	Ephemeral	-	-	0.03	Culvert		x	269	0.02	0	269	0.02	0	269	0.02	0	269	0.02	0	269	0.02	0	269	0.02	0
S5-s030c	Unnamed trib of Clear Creek	Ephemeral	-	38	0.03	Natural	Class I	x	265	0.05	230	303	0.06	267	100	0.02	64	100	0.02	64	100	0.02	64	100	0.02	64
S5-s032_1b	Unnamed trib of Stout Creek	Intermittent	-	55	0.41	Natural	Class II	x	146	0.01	0	146	0.01	0	49	0.01	49	113	0.01	0	111	0.01	0	133	0.01	0
S5-s032_1c	Unnamed trib of Stout Creek	Intermittent	-	-	0.41	Culvert		x	93	0.01	0	93	0.01	0	92	0.01	0	93	0.01	0	93	0.01	0	93	0.01	0
S5-s032_1d	Unnamed trib of Stout Creek	Intermittent	-	48	0.41	Natural	Class II	x	143	0.01	0	142	0.01	0	43	0.01	0	115	0.01	0	122	0.01	0	133	0.01	0
S5-s035a	Unnamed trib of Stout Creek	Ephemeral	-	-	0.12	Culvert		x	201	0.02	0	199	0.02	0	199	0.02	0	199	0.02	0	199	0.02	0	199	0.02	0
S5-s035b	Unnamed trib of Stout Creek	Ephemeral	-	-	0.12	Culvert		x	337	0.04	0	337	0.04	0	337	0.04	0	337	0.04	0	337	0.04	0	337	0.04	0
S5-s035c	Unnamed trib of Stout Creek	Ephemeral	-	46	0.12	Roadside Ditch	Modified Class II	x	152	0.02	0	152	0.02	0	152	0.02	0	152	0.02	0	152	0.02	0	152	0.02	0
S5-s035d	Unnamed trib of Stout Creek	Ephemeral	-	-	0.12	Culvert		x	574	0.12	0	574	0.12	0	574	0.12	0	574	0.12	0	574	0.12	0	574	0.12	0
S5-s035e	Unnamed trib of Stout Creek	Ephemeral	-	27	0.06	Dump Rock Gutter	Modified Class I	x	6	0.01	0	8	0.01	0	8	0.01	0	8	0.01	0	8	0.01	8	8	0.01	8
S5-s036_1	Unnamed trib of Stout Creek	Ephemeral	-	13	0.01	Dump Rock Gutter	Modified Class I		0	0.00	0	36	0.01	36	0	0.00	0	0	0.00	0	0	0.00	0	0	0	0
S5-s037a	Unnamed trib of Stout Creek	Ephemeral	-	17	0.02	Natural	Class I	x	59	0.01	0	61	0.01	0	61	0.01	0	61	0.01	0	61	0.01	0	61	0.01	0
S5-s037b	Unnamed trib of Stout Creek	Ephemeral	-	-	0.02	Culvert		x	358	0.02	0	358	0.02	0	358	0.02	0	358	0.02	0	358	0.02	0	358	0.02	0
S5-s037c	Unnamed trib of Stout Creek	Ephemeral	-	17	0.02	Natural	Class I	x	41	0.01	0	41	0.01	0	41	0.01	0	41	0.01	0	41	0.01	0	41	0.01	0
S5-s042	Unnamed trib of Stout Creek	Ephemeral	-	17	0.02	Natural	Class I	x	77	0.01	77	79	0.01	79	79	0.01	79	79	0.01	79	79	0.01	79	79	0.01	79
S5-s043a	Unnamed trib of Stout Creek	Ephemeral	-	-	0.27	Culvert		x	296	0.02	0	296	0.02	0	296	0.02	0	296	0.02	0	296	0.02	0	296	0.02	0
S5-s043b	Unnamed trib of Stout Creek	Ephemeral	-	51	0.27	Natural	Class II	x	318	0.02	258	322	0.02	260	279	0.02	260	279	0.02	260	279	0.02	260	279	0.02	260
S5-s043b_1	Unnamed trib of Stout Creek	Ephemeral	-	12	0.01	Concrete Gutter	Modified Class I		429	0.01	429	429	0.01	429	429	0.01	429	429	0.01	429	429	0.01	429	429	0.01	429
S5-s043b_1a	Unnamed trib of Stout Creek	Ephemeral	-	12	0.01	Dump Rock Gutter	Modified Class I	x	109	0.01	109	109	0.01	109	109	0.01	109	109	0.01	109	109	0.01	109	109	0.01	109
S5-s043b_1b	Unnamed trib of Stout Creek	Ephemeral	-	12	0.01	Concrete Gutter	Modified Class I	x	109	0.01	109	109	0.01	109	109	0.01	109	109	0.01	109	109	0.01	109	109	0.01	109
S5-s043b_2	Unnamed trib of Stout Creek	Ephemeral	-	12	0.01	Dump Rock Gutter	Modified Class I		114	0.01	114	114	0.01	114	114	0.01	114	114	0.01	114	114	0.01	114	114	0.01	114
S5-s043b_3	Unnamed trib of Stout Creek	Ephemeral	-	12	0.01	Concrete Gutter	Modified Class I		334	0.01	334	334	0.01	334	334	0.01	334	334	0.01	334	334	0.01	334	334	0.01	334
S5-s043c_1a	Unnamed trib of Stout Creek	Ephemeral	-	12	0.01	Concrete Gutter	Modified Class I		151	0.01	151	151	0.01	151	151	0.01	151	151	0.01	151	151	0.01	151	151	0.01	151
S5-s043c_1b	Unnamed trib of Stout Creek	Ephemeral	-	12	0.01	Dump Rock Gutter	Modified Class I		62	0.01	62	62	0.01	62	62	0.01	62	62	0.01	62	62	0.01	62	62	0.01	62
S5-s043c_1c	Unnamed trib of Stout Creek	Ephemeral	-	12	0.01	Concrete Gutter	Modified Class I		49	0.01	49	49	0.01	49	49	0.01	49	49	0.01	49	49	0.01	49	49	0.01	49
S5-s043c_2	Unnamed trib of Stout Creek	Ephemeral	-	18	0.01	Natural	Class I	x	44	0.01	0	47	0.01	0	43	0.01	0	43	0.01	0	43	0.01	0	43	0.01	0
S5-s043c_3	Unnamed trib of Stout Creek	Ephemeral	-	12	0.01	Concrete Gutter	Modified Class I	x	204	0.01	204	204	0.01	204	204	0.01	204	204	0.01	204	204	0.01	204	204	0.01	204
S5-s043d	Unnamed trib of Stout Creek	Ephemeral	-	-	0.27	Culvert		x	287	0.02	0	285	0.02	0	285	0.02	0	285	0.02	0	285	0.02	0	285	0.02	0
S5-s048a	Unnamed trib of Stout Creek	Ephemeral	-	18	0.04	Natural	Class I	x	14	0.01	0	16	0.01	0	16	0.01	0	16	0.01	0	16	0.01	0	16	0.01	0
S5-s048b	Unnamed trib of Stout Creek	Ephemeral	-	-	0.04	Culvert		x	322	0.02	0	322	0.02	0	322	0.02	0	322	0.02	0	322	0.02	0	322	0.02	0
S5-s050a	Unnamed trib of Stout Creek	Ephemeral	-	-	0.02	Culvert		x	191	0.04	0	191	0.04	0	191	0.04	0	191	0.04	0	191	0.04	0	191	0.04	0
S5-s050b	Unnamed trib of Stout Creek	Ephemeral	-	48	0.02	Natural	Class II	x	42	0.01	0	42	0.01	0	42	0.01	0	42	0.01	0	42	0.01	0	42	0.01	0
S5-s059a	Unnamed trib of Griffy Creek	Ephemeral	-	42	0.04	Natural	Class II	x	330	0.05	0	174	0.02	174	0	0.00	0	0	0.00	0	0	0.00	0	0	0	0
S5-s060a	Unnamed trib of Griffy Creek	Ephemeral	-	34	0.04	Natural	Class I	x	165	0.01	165	147	0.01	147	0	0.00	0	0	0.00	0	0	0.00	0	0	0	0
S5-s060b	Unnamed trib of Griffy Creek	Ephemeral	-	-	0.04	Culvert		x	32	0.01	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0	0
S5-s060c	Unnamed trib of Griffy Creek	Ephemeral	-	34	0.04	Natural	Class I	x	404	0.02	404	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0	0
S5-s061a	Unnamed trib of Griffy Creek	Ephemeral	-	51	0.02	Natural	Class II	x	87	0.02	87	87	0.02	87	0	0.00	0	13	0.01	13	12	0.01	12	11	0.01	11
S5-s061b	Unnamed trib of Griffy Creek	Ephemeral	-	-	0.02	Culvert		x	30	0.01	0	30	0.01	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0	0
S5-s061c	Unnamed trib of Griffy Creek	Ephemeral	-	30	0.02	Natural	Class I	x	273	0.02	273	102	0.01	102	0	0.00	0	0	0.00	0	0	0.00	0	0	0	0
S5-s062	Unnamed trib of Griffy Creek	Ephemeral	-	43	0.01	Natural	Class II	x	140	0.01	140	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0	0
S5-s063	Unnamed trib of Griffy Creek	Ephemeral	-	43	0.01	Natural	Class II	x	82	0.01	82	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0	0
S5-s064	Unnamed trib of Griffy Creek	Ephemeral	-	38	0.01	Natural	Class I	x	102	0.01	102	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0	0
S5-s065a_1	Griffy Creek	Perennial	61.5	-	12.49	Natural	Warm Water Habitat	x	32	0.03	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0	0
S5-s065a_2	Griffy Creek	Perennial	-	-	12.49	Culvert		x	58	0.06	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0	0
S5-s065a_3	Griffy Creek	Perennial	61.5	-	12.49	Natural	Warm Water Habitat	x	321	0.32	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0	0
S5-s065b	Griffy Creek	Perennial	37	-	14.10	Natural	Modified Warm Water Habitat	x	113	0.13	0	115	0.14	0	102	0.12	0	137	0.16	0	102	0.12	0	102	0.12	0
S5-s065c	Griffy Creek	Perennial	37	-	14.10	Bridge	Modified Warm Water Habitat	x	135	0.16	0	135	0.16	0	135	0.16	0	135	0.16	0	135	0.16	0	135	0.16	0
S5-s065d	Griffy Creek	Perennial	37	-	14.10	Natural	Modified Warm Water Habitat	x	220	0.26	0	175	0.21	0	125	0.15	0	251	0.30	0	131	0.16	0	102	0.12	0
S5-s067	Unnamed trib of Griffy Creek	Ephemeral	-	52	0.02	Natural	Class II	x	415	0.05	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0	0
S5-s068a	Unnamed trib of Griffy Creek	Ephemeral	-	44	0.09	Natural	Class II	x	309	0.02	309	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0	0
S5-s068b	Unnamed trib of Griffy Creek	Ephemeral	-	-	0.09	Culvert		x	36	0.01	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0	0
S5-s068c	Unnamed trib of Griffy Creek	Ephemeral	-	45	0.09	Natural	Class II	x	286	0.04	286	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0	0
S5-s070	Unnamed trib of Griffy Creek	Ephemeral	-	36	0.01	Roadside Ditch	Modified Class II		351	0.02	351	351	0.02	351	351	0.02	351	351	0.02	351	351	0.02	351	351	0.02	351
S5-s070_1a	Unnamed trib of Griffy Creek	Ephemeral	-	17	0.01	Concrete Gutter	Modified Class I	x	155	0.01	155	155	0.01	155	155	0.01	155	155	0.01	155	155	0.01	155	155	0.01	155

Appendix A - Table 1 - Stream Impacts and Stream Relocation Lengths by Alternative

Stream ID#	Stream Name	USGS Stream Type	QHEI Score	HHEI Score	Drain Area (mi2)	Channel Type	Stream Habitat Classification	Waters of the U.S.	Alternative 4			Alternative 5			Alternative 6			Alternative 7			Alternative 8			RPA 8		
									LF in ROW	AC in ROW	LF Relo.	LF in ROW	AC in ROW	LF Relo.	LF in ROW	AC in ROW	LF Relo.	LF in ROW	AC in ROW	LF Relo.	LF in ROW	AC in ROW	LF Relo.	LF in ROW	AC in ROW	LF Relo.
S5-s070_1b	Unnamed trib of Griffy Creek	Ephemeral	-	14	0.01	Natural	Modified Class I	x	52	0.01	52	52	0.01	52	52	0.01	52	52	0.01	52	52	0.01	52	52	0.01	52
S5-s071a	Unnamed trib of Griffy Creek	Ephemeral	-	50	0.06	Natural	Class II	x	82	0.02	0	32	0.01	0	31	0.01	0	31	0.01	0	31	0.01	0	31	0.01	0
S5-s071a_1	Unnamed trib of Griffy Creek	Ephemeral	-	24	0.06	Natural	Modified Class I	x	0	0.00	0	18	0.01	18	0	0.00	0	0	0.00	0	0	0.00	0	0	0	0
S5-s071b	Unnamed trib of Griffy Creek	Ephemeral	-	-	0.06	Culvert		x	535	0.10	0	535	0.10	0	535	0.10	0	535	0.10	0	535	0.10	0	535	0.1	0
S5-s071c	Unnamed trib of Griffy Creek	Ephemeral	-	17	0.05	Natural	Modified Class I	x	18	0.01	0	4	0.01	0	4	0.01	0	60	0.01	0	4	0.01	0	4	0.01	0
S5-s073	Unnamed trib of Griffy Creek	Ephemeral	-	28	0.01	Natural	Class I	x	0	0.00	0	212	0.01	212	163	0.01	163	166	0.01	166	163	0.01	163	147	0.01	147
S5-s074a	Unnamed trib of Griffy Creek	Ephemeral	-	28	0.01	Natural	Class I	x	0	0.00	0	71	0.01	0	61	0.01	0	61	0.01	0	61	0.01	0	45	0.01	0
S5-s074b	Unnamed trib of Griffy Creek	Ephemeral	-	-	0.01	Culvert		x	0	0.00	0	29	0.01	0	29	0.01	0	29	0.01	0	29	0.01	0	29	0.01	0
S5-s074c	Unnamed trib of Griffy Creek	Ephemeral	-	28	0.01	Natural	Class I	x	0	0.00	0	125	0.01	0	114	0.01	0	114	0.01	0	114	0.01	0	65	0.01	0
S5-s076	Unnamed trib of Griffy Creek	Ephemeral	-	27	0.01	Natural	Class I	x	44	0.01	44	275	0.02	275	0	0.00	0	27	0.01	27	23	0.01	23	0	0	0
S5-s077	Unnamed trib of Griffy Creek	Ephemeral	-	40	0.01	Natural	Class II	x	221	0.01	221	221	0.01	221	168	0.01	168	192	0.01	192	212	0.01	212	98	0.01	98
S5-s078a	Unnamed trib of Griffy Creek	Ephemeral	-	33	0.04	Natural	Class I	x	65	0.01	0	64	0.01	0	44	0.01	0	65	0.01	0	55	0.01	0	34	0.01	0
S5-s078b	Unnamed trib of Griffy Creek	Ephemeral	-	-	0.05	Culvert		x	61	0.01	0	61	0.01	0	61	0.01	0	61	0.01	0	61	0.01	0	61	0.01	0
S5-s078c	Unnamed trib of Griffy Creek	Ephemeral	-	33	0.04	Natural	Class I	x	72	0.01	0	60	0.01	0	74	0.01	0	22	0.01	0	23	0.01	0	25	0.01	0
S5-s080	Unnamed trib of Griffy Creek	Ephemeral	-	43	0.01	Roadside Ditch	Modified Class II		274	0.01	274	274	0.01	274	274	0.01	274	274	0.01	274	274	0.01	274	274	0.01	274
S5-s081a	Beanblossom Creek	Perennial	51.5	-	42.73	Natural	Warm Water Habitat	x	0	0.00	0	443	0.65	0	370	0.54	0	123	0.18	0	386	0.57	0	0	0	0
S5-s081b	Beanblossom Creek	Perennial	51.5	-	42.73	Bridge	Warm Water Habitat	x	13	0.01	0	32	0.04	0	32	0.04	0	15	0.02	0	32	0.04	0	15	0.02	0
S5-s081c	Beanblossom Creek	Perennial	34.75	-	42.73	Natural	Modified Warm Water Habitat	x	575	0.69	0	575	0.69	0	575	0.69	0	575	0.69	0	575	0.69	0	575	0.69	0
S5-s081d	Beanblossom Creek	Perennial	34.75	-	42.73	Bridge	Modified Warm Water Habitat	x	207	0.25	0	207	0.25	0	207	0.25	0	207	0.25	0	207	0.25	0	207	0.25	0
S5-s081e	Beanblossom Creek	Perennial	34.75	-	42.73	Natural	Modified Warm Water Habitat	x	539	0.64	0	559	0.67	0	444	0.53	44	437	0.52	0	569	0.68	0	453	0.54	0
S5-s081f	Beanblossom Creek	Perennial	48	-	42.73	Natural	Warm Water Habitat	x	59	0.06	0	67	0.07	0	162	0.17	0	128	0.13	0	67	0.07	0	67	0.07	0
S5-s081g	Beanblossom Creek	Perennial	48	-	42.73	Bridge	Warm Water Habitat	x	0	0.00	0	0	0.00	0	33	0.03	0	33	0.03	0	0	0.00	0	0	0	0
S5-s081h	Beanblossom Creek	Perennial	48	-	42.73	Natural	Warm Water Habitat	x	0	0.00	0	0	0.00	0	13	0.01	0	45	0.05	0	0	0.00	0	0	0	0
S5-s082_1	Unnamed trib of Beanblossom Creek	Ephemeral	-	46	0.02	Roadside Ditch	Modified Class II		1,400	0.13	1400	1,404	0.13	1404	1,404	0.13	1404	1,399	0.13	1399	1,404	0.13	1404	1399	0.13	1399
S5-s082a	Unnamed trib of Beanblossom Creek	Ephemeral	-	-	0.04	Culvert		x	0	0.00	0	139	0.01	0	139	0.01	0	0	0.00	0	139	0.01	0	0	0	0
S5-s082b	Unnamed trib of Beanblossom Creek	Ephemeral	-	43	0.04	Roadside Ditch	Modified Class II	x	0	0.00	0	671	0.03	671	493	0.02	493	232	0.01	0	482	0.02	482	0	0	0
S5-s082c	Unnamed trib of Beanblossom Creek	Ephemeral	-	-	0.04	Culvert		x	0	0.00	0	71	0.01	0	36	0.01	0	0	0.00	0	0	0.00	0	0	0	0
S5-s082d	Unnamed trib of Beanblossom Creek	Ephemeral	-	43	0.04	Roadside Ditch	Modified Class II	x	0	0.00	0	156	0.01	156	156	0.01	156	0	0.00	0	136	0.01	136	0	0	0
S5-s083a	Unnamed trib of Beanblossom Creek	Ephemeral	-	30	0.02	Natural	Class I	x	262	0.04	262	262	0.04	262	262	0.04	262	136	0.02	136	262	0.04	262	136	0.02	136
S5-s083b	Unnamed trib of Beanblossom Creek	Ephemeral	-	-	0.01	Culvert		x	79	0.02	0	79	0.02	0	79	0.02	0	79	0.02	0	79	0.02	0	79	0.02	0
S5-s083c	Unnamed trib of Beanblossom Creek	Ephemeral	-	39	0.01	Roadside Ditch	Modified Class II	x	712	0.05	712	712	0.05	712	712	0.05	712	712	0.05	712	712	0.05	712	712	0.05	712
S5-s085a	Unnamed trib of Beanblossom Creek	Ephemeral	-	12	0.01	Concrete Gutter	Modified Class I		202	0.01	202	202	0.01	202	202	0.01	202	202	0.01	202	202	0.01	202	202	0.01	202
S5-s085b	Unnamed trib of Beanblossom Creek	Ephemeral	-	-	0.01	Culvert		x	62	0.01	0	62	0.01	0	62	0.01	0	62	0.01	0	62	0.01	0	62	0.01	0
S5-s085c	Unnamed trib of Beanblossom Creek	Ephemeral	-	26	0.01	Roadside Ditch	Modified Class I	x	203	0.02	203	203	0.02	203	203	0.02	203	203	0.02	203	203	0.02	203	203	0.02	203
S5-s086a	Unnamed trib of Beanblossom Creek	Ephemeral	-	34	0.02	Roadside Ditch	Modified Class II	x	0	0.00	0	142	0.01	142	210	0.01	210	228	0.01	228	142	0.01	142	0	0	0
S5-s088a	Unnamed trib of Beanblossom Creek	Ephemeral	-	19	0.01	Roadside Ditch	Modified Class I	x	20	0.01	20	20	0.01	20	20	0.01	20	20	0.01	20	20	0.01	20	20	0.01	20
S5-s088b	Unnamed trib of Beanblossom Creek	Ephemeral	-	31	0.01	Roadside Ditch	Modified Class II	x	345	0.04	345	345	0.04	345	345	0.04	345	345	0.04	345	345	0.04	345	345	0.04	345
S5-s088c	Unnamed trib of Beanblossom Creek	Ephemeral	-	-	0.01	Culvert		x	187	0.02	0	187	0.02	0	187	0.02	0	187	0.02	0	187	0.02	0	187	0.02	0
S5-s091a	Unnamed trib of Beanblossom Creek	Ephemeral	-	35	0.02	Natural	Class I	x	245	0.02	0	247	0.02	0	148	0.01	0	90	0.01	0	140	0.01	0	73	0.01	0
S5-s091b	Unnamed trib of Beanblossom Creek	Ephemeral	-	-	0.02	Culvert		x	182	0.01	0	182	0.01	0	182	0.01	0	182	0.01	0	182	0.01	0	182	0.01	0
S5-s092a	Unnamed trib of Beanblossom Creek	Ephemeral	-	28	0.04	Natural	Class I	x	273	0.02	0	263	0.01	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0	0
S5-s092c	Unnamed trib of Beanblossom Creek	Ephemeral	-	43	0.04	Natural	Class II	x	16	0.01	0	17	0.01	0	56	0.01	0	17	0.01	0	69	0.01	0	17	0.01	0
S5-s092d	Unnamed trib of Beanblossom Creek	Ephemeral	-	-	0.04	Culvert		x	46	0.01	0	46	0.01	0	46	0.01	0	46	0.01	0	46	0.01	0	46	0.01	0
S5-s092e	Unnamed trib of Beanblossom Creek	Ephemeral	-	53	0.04	Natural	Class II	x	15	0.01	0	15	0.01	0	15	0.01	0	15	0.01	0	15	0.01	0	15	0.01	0
S5-s092f	Unnamed trib of Beanblossom Creek	Ephemeral	-	-	0.04	Culvert		x	213	0.02	0	213	0.02	0	213	0.02	0	213	0.02	0	213	0.02	0	213	0.02	0
S5-s092f_1	Unnamed trib of Beanblossom Creek	Ephemeral	-	12	0.01	Concrete Gutter	Modified Class I		137	0.01	137	137	0.01	137	137	0.01	137	137	0.01	137	137	0.01	137	137	0.01	137
S5-s092f_2	Unnamed trib of Beanblossom Creek	Ephemeral	-	12	0.01	Concrete Gutter	Modified Class I		57	0.01	57	57	0.01	57	57	0.01	57	57	0.01	57	57	0.01	57	57	0.01	57
S5-s092h	Unnamed trib of Beanblossom Creek	Ephemeral	-	-	0.04	Culvert		x	54	0.01	0	54	0.01	0	54	0.01	0	54	0.01	0	54	0.01	0	54	0.01	0
S5-s092i	Unnamed trib of Beanblossom Creek	Ephemeral	-	26	0.04	Natural	Class I	x	40	0.01	0	40	0.01	0	35	0.01	0	2	0.01	0	2	0.01	0	2	0.01	0
S5-s092j	Unnamed trib of Beanblossom Creek	Ephemeral	-	-	0.04	Culvert		x	33	0.01	0	42	0.01	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0	0
S5-s093	Unnamed trib of Beanblossom Creek	Ephemeral	-	42	0.01	Natural	Class II	x	265	0.01	0	228	0.01	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0	0
S5-s098	Unnamed trib of Beanblossom Creek	Ephemeral	-	35	0.01	Natural	Class I	x	76	0.01	76	74	0.01	74	0	0.00	0	100	0.01	100	1	0.01	1	0	0	0
S5-s099	Unnamed trib of Beanblossom Creek	Ephemeral	-	19	0.01	Natural	Class I	x	8	0.01	8	8	0.01	8	0	0.00	0	56	0.01	56	0	0.00	0	0	0	0
S5-s100c	Unnamed trib of Beanblossom Creek	Ephemeral	-	27	0.09	Natural	Class I	x	321	0.03	0	323	0.03	0	107	0.01	0	89	0.01	0	124	0.01	0	118	0.01	0
S5-s100d	Unnamed trib of Beanblossom Creek	Ephemeral	-	-	0.09	Culvert		x	392	0.03	0	392	0.03	0	392	0.03	0	392	0.03	0	392	0.03	0	392	0.03	0
S5-s100e	Unnamed trib of Beanblossom Creek	Ephemeral	-	64	0.09	Natural	Class III	x	146	0.02	0	144	0.02	0	123	0.02	0	126	0.02	0	131	0.02	0	97	0.01	0
S5-s102	Unnamed trib of Beanblossom Creek	Ephemeral	-	41	0.01	Natural	Class II	x	361	0.01	361	334	0.01	334	0	0.00	0	0	0.00	0	0	0.00	0	0	0	0
S5-s107	Unnamed trib of Beanblossom Creek	Ephemeral	-	33	0.02	Natural	Class I	x	1,282	0.16	1282	1,282	0.16	1282	765	0.10	765	520	0.07	520	942	0.12	942	576	0.07	576
S5-s108	Unnamed trib of Beanblossom Creek	Ephemeral	-	30	0.01	Natural	Class I	x	302	0.01	302	302	0.01	302	288	0.01	288	245	0.01	245	302	0.01	302	280	0.01	280
S5-s109	Unnamed trib of Beanblossom Creek	Ephemeral	-	30	0.01	Natural	Class I	x	247	0.01	247	247	0.01	247	184	0.01	184	43	0.01	43	229	0.01	229	179	0.01	179
S5-s110	Unnamed trib of Beanblossom Creek	Ephemeral	-	29	0.01	Natural	Class I	x	86	0.01	86	96	0.01	96	0	0.00	0	0	0.00	0	0	0.00	0	0	0	0

Appendix A - Table 1 - Stream Impacts and Stream Relocation Lengths by Alternative

Stream ID#	Stream Name	USGS Stream Type	QHEI Score	HHEI Score	Drain Area (mi2)	Channel Type	Stream Habitat Classification	Waters of the U.S.	Alternative 4			Alternative 5			Alternative 6			Alternative 7			Alternative 8			RPA 8		
									LF in ROW	AC in ROW	LF Relo.	LF in ROW	AC in ROW	LF Relo.	LF in ROW	AC in ROW	LF Relo.	LF in ROW	AC in ROW	LF Relo.	LF in ROW	AC in ROW	LF Relo.	LF in ROW	AC in ROW	LF Relo.
S5-s111	Unnamed trib of Beanblossom Creek	Ephemeral	-	29	0.01	Natural	Class I	x	103	0.01	103	103	0.01	103	0	0.00	0	0	0.00	0	0	0.00	0	0	0	0
S5-s112	Unnamed trib of Beanblossom Creek	Ephemeral	-	29	0.01	Natural	Class I	x	94	0.01	94	94	0.01	94	88	0.01	88	0	0.00	0	81	0.01	81	26	0.01	26
S5-s113	Unnamed trib of Beanblossom Creek	Ephemeral	-	29	0.01	Natural	Class I	x	51	0.01	51	51	0.01	51	51	0.01	51	0	0.00	0	51	0.01	51	20	0.01	20
S5-s114_1	Unnamed trib of Beanblossom Creek	Ephemeral	-	39	0.01	Natural	Class I	x	267	0.01	267	277	0.01	277	222	0.01	222	330	0.01	330	211	0.01	211	101	0.01	101
S5-s115	Unnamed trib of Beanblossom Creek	Ephemeral	-	39	0.01	Natural	Class I	x	177	0.01	177	177	0.01	177	177	0.01	177	177	0.01	177	177	0.01	177	0	0	0
S5-s116	Unnamed trib of Beanblossom Creek	Ephemeral	-	39	0.01	Natural	Class I	x	387	0.02	387	387	0.02	387	387	0.02	387	387	0.02	387	387	0.02	387	83	0.01	83
S5-s123	Unnamed trib of Beanblossom Creek	Ephemeral	-	28	0.01	Natural	Class I	x	131	0.01	131	121	0.01	121	0	0.00	0	0	0.00	0	0	0.00	0	0	0	0
S5-s126	Unnamed trib of Beanblossom Creek	Ephemeral	-	28	0.01	Natural	Class I	x	86	0.01	86	77	0.01	77	0	0.00	0	0	0.00	0	0	0.00	0	0	0	0
S5-s127_2	Unnamed trib of Beanblossom Creek	Ephemeral	-	12	0.01	Concrete Gutter	Modified Class I		87	0.01	87	87	0.01	87	87	0.01	87	87	0.01	87	87	0.01	87	87	0.01	87
S5-s127_3	Unnamed trib of Beanblossom Creek	Ephemeral	-	12	0.02	Concrete Gutter	Modified Class I		486	0.02	486	486	0.02	486	486	0.02	486	486	0.02	486	486	0.02	486	486	0.02	486
S5-s127_3a	Unnamed trib of Beanblossom Creek	Ephemeral	-	12	0.02	Concrete Gutter	Modified Class I		226	0.01	226	226	0.01	226	226	0.01	226	226	0.01	226	226	0.01	226	226	0.01	226
S5-s127_3b	Unnamed trib of Beanblossom Creek	Ephemeral	-	-	0.02	Culvert			57	0.01	0	57	0.01	0	57	0.01	0	57	0.01	0	57	0.01	0	57	0.01	0
S5-s127a	Unnamed trib of Beanblossom Creek	Ephemeral	-	51	0.02	Natural	Class II	x	0	0.00	0	0	0.00	0	173	0.01	173	186	0.01	186	173	0.01	173	173	0.01	173
S5-s127b	Unnamed trib of Beanblossom Creek	Ephemeral	-	12	0.02	Concrete Gutter	Modified Class I	x	226	0.01	226	226	0.01	226	239	0.01	239	239	0.01	239	239	0.01	239	239	0.01	239
S5-s127b_1	Unnamed trib of Beanblossom Creek	Ephemeral	-	12	0.02	Concrete Gutter	Modified Class I		415	0.01	415	415	0.01	415	415	0.01	415	415	0.01	415	415	0.01	415	415	0.01	415
S5-s128	Unnamed trib of Beanblossom Creek	Ephemeral	-	40	0.01	Natural	Class II	x	92	0.01	92	92	0.01	92	141	0.01	141	141	0.01	141	141	0.01	141	141	0.01	141
S5-s129	Unnamed trib of Beanblossom Creek	Ephemeral	-	39	0.01	Natural	Class I	x	0	0.00	0	0	0.00	0	124	0.01	124	124	0.01	124	124	0.01	124	124	0.01	124
S5-s130	Unnamed trib of Beanblossom Creek	Ephemeral	-	40	0.01	Natural	Class II	x	59	0.01	59	58	0.01	58	108	0.01	108	108	0.01	108	108	0.01	108	108	0.01	108
S5-s131a	Unnamed trib of Beanblossom Creek	Ephemeral	-	41	0.03	Natural	Class II	x	478	0.04	478	467	0.04	467	3	0.01	3	0	0.00	0	0	0.00	0	0	0	0
S5-s131b	Unnamed trib of Beanblossom Creek	Ephemeral	-	-	0.03	Culvert			76	0.01	0	76	0.01	0	76	0.01	0	0	0.00	0	65	0.01	0	65	0.01	0
S5-s131c	Unnamed trib of Beanblossom Creek	Ephemeral	-	12	0.03	Concrete Gutter	Modified Class I		414	0.01	414	414	0.01	414	414	0.01	414	414	0.01	414	414	0.01	414	414	0.01	414
S5-s132	Unnamed trib of Beanblossom Creek	Ephemeral	-	52	0.01	Natural	Class II	x	30	0.01	30	24	0.01	24	0	0.00	0	0	0.00	0	0	0.00	0	0	0	0
S5-s134	Unnamed trib of Beanblossom Creek	Ephemeral	-	38	0.01	Natural	Class I	x	223	0.02	223	222	0.02	222	190	0.01	190	217	0.01	217	217	0.01	217	59	0.01	59
S5-s135	Unnamed trib of Beanblossom Creek	Ephemeral	-	35	0.01	Natural	Class I	x	83	0.01	83	82	0.01	82	39	0.01	39	88	0.01	88	81	0.01	81	0	0	0
S5-s146	Unnamed trib of Beanblossom Creek	Ephemeral	-	28	0.01	Natural	Class I	x	87	0.01	87	90	0.01	90	0	0.00	0	0	0.00	0	0	0.00	0	0	0	0
S5-s147a	Unnamed trib of Beanblossom Creek	Intermittent	-	51	0.17	Natural	Class II	x	159	0.01	159	137	0.01	137	76	0.01	0	121	0.01	121	75	0.01	0	76	0.01	0
S5-s147b	Unnamed trib of Beanblossom Creek	Intermittent	-	-	0.17	Culvert		x	424	0.04	0	424	0.04	0	424	0.04	0	424	0.04	0	424	0.04	0	424	0.04	0
S5-s147b_1	Unnamed trib of Beanblossom Creek	Ephemeral	-	12	0.01	Concrete Gutter	Modified Class I		95	0.01	95	95	0.01	95	95	0.01	95	95	0.01	95	95	0.01	95	95	0.01	95
S5-s147b_2	Unnamed trib of Beanblossom Creek	Ephemeral	-	12	0.01	Concrete Gutter	Modified Class I		708	0.02	708	708	0.02	708	708	0.02	708	708	0.02	708	708	0.02	708	708	0.02	708
S5-s147c	Unnamed trib of Beanblossom Creek	Intermittent	-	66	0.17	Natural	Class III	x	1,482	0.34	1482	1,454	0.33	1454	218	0.05	0	951	0.22	951	217	0.05	0	144	0.03	0
S5-s148a	Unnamed trib of Beanblossom Creek	Ephemeral	-	63	0.04	Natural	Class III	x	797	0.04	797	797	0.04	797	340	0.02	340	453	0.02	453	340	0.02	340	325	0.02	325
S5-s148b	Unnamed trib of Beanblossom Creek	Ephemeral	-	-	0.04	Culvert			39	0.01	0	39	0.01	0	39	0.01	0	39	0.01	0	39	0.01	0	39	0.01	0
S5-s148c	Unnamed trib of Beanblossom Creek	Ephemeral	-	12	0.04	Concrete Gutter	Modified Class I		320	0.01	320	320	0.01	320	320	0.01	320	320	0.01	320	320	0.01	320	320	0.01	320
S5-s149	Unnamed trib of Beanblossom Creek	Ephemeral	-	36	0.01	Natural	Class I	x	102	0.01	102	57	0.01	57	0	0.00	0	109	0.01	109	0	0.00	0	0	0	0
S5-s150	Unnamed trib of Beanblossom Creek	Ephemeral	-	36	0.01	Natural	Class I	x	182	0.01	182	182	0.01	182	0	0.00	0	182	0.01	182	0	0.00	0	0	0	0
S5-s150_2	Unnamed trib of Beanblossom Creek	Ephemeral	-	21	0.01	Natural	Class I	x	100	0.01	100	100	0.01	100	0	0.00	0	100	0.01	100	0	0.00	0	0	0	0
S5-s151	Unnamed trib of Beanblossom Creek	Ephemeral	-	33	0.01	Natural	Class I	x	175	0.01	175	166	0.01	166	103	0.01	103	167	0.01	167	102	0.01	102	103	0.01	103
S5-s152	Unnamed trib of Beanblossom Creek	Ephemeral	-	41	0.17	Natural	Class II	x	213	0.01	213	213	0.01	213	0	0.00	0	0	0.00	0	0	0.00	0	0	0	0
S5-s155_1	Unnamed trib of Fox Hollow	Ephemeral	-	28	0.01	Natural	Class I	x	82	0.01	82	82	0.01	82	39	0.01	39	14	0.01	14	27	0.01	27	14	0.01	14
S5-s155a	Unnamed trib of Fox Hollow	Ephemeral	-	86	0.01	Natural	Class III	x	95	0.03	95	96	0.03	96	22	0.01	22	11	0.01	11	19	0.01	19	16	0.01	16
S5-s160b	Unnamed trib of Fox Hollow	Intermittent	-	-	0.06	Culvert		x	334	0.02	0	334	0.02	0	334	0.02	0	334	0.02	0	334	0.02	0	334	0.02	0
S5-s160c	Unnamed trib of Fox Hollow	Intermittent	-	38	0.06	Natural	Class I	x	56	0.01	0	59	0.01	0	59	0.01	0	59	0.01	0	59	0.01	0	59	0.01	0
S5-s181a	Unnamed trib of Beanblossom Creek	Ephemeral	-	12	0.01	Concrete Gutter	Modified Class I		432	0.01	432	432	0.01	432	432	0.01	432	432	0.01	432	432	0.01	432	432	0.01	432
S5-s181b	Unnamed trib of Beanblossom Creek	Ephemeral	-	57	0.01	Natural	Class II	x	309	0.02	309	309	0.02	309	260	0.02	260	122	0.01	122	264	0.02	264	199	0.01	199
S5-s182	Unnamed trib of Beanblossom Creek	Ephemeral	-	52	0.01	Natural	Class II	x	322	0.01	322	322	0.01	322	322	0.01	322	322	0.01	322	322	0.01	322	322	0.01	322
S5-s183	Unnamed trib of Beanblossom Creek	Ephemeral	-	52	0.01	Natural	Class II	x	116	0.01	116	116	0.01	116	80	0.01	80	0	0.00	0	83	0.01	83	0	0	0
S5-s184	Unnamed trib of Beanblossom Creek	Ephemeral	-	46	0.01	Natural	Class II	x	111	0.01	111	92	0.01	92	0	0.00	0	0	0.00	0	0	0.00	0	0	0	0
S5-s185_1	Unnamed trib of Beanblossom Creek	Ephemeral	-	12	0.04	Concrete Gutter	Modified Class I		114	0.01	114	114	0.01	114	114	0.01	114	114	0.01	114	114	0.01	114	114	0.01	114
S5-s185a	Unnamed trib of Beanblossom Creek	Ephemeral	-	57	0.04	Natural	Class II	x	666	0.03	666	666	0.03	666	434	0.02	434	243	0.01	243	439	0.02	439	380	0.02	380
S5-s185b	Unnamed trib of Beanblossom Creek	Ephemeral	-	-	0.04	Culvert		x	21	0.01	0	21	0.01	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0	0
S5-s185c	Unnamed trib of Beanblossom Creek	Ephemeral	-	57	0.04	Natural	Class II	x	110	0.01	110	94	0.01	94	0	0.00	0	0	0.00	0	0	0.00	0	0	0	0
S5-s188	Unnamed trib of Beanblossom Creek	Ephemeral	-	37	0.09	Natural	Class I	x	177	0.01	177	174	0.01	174	0	0.00	0	0	0.00	0	0	0.00	0	0	0	0
S5-s189	Unnamed trib of Beanblossom Creek	Ephemeral	-	29	0.01	Natural	Class I	x	142	0.01	142	140	0.01	140	0	0.00	0	0	0.00	0	0	0.00	0	0	0	0
S5-s190a	Unnamed trib of Beanblossom Creek	Ephemeral	-	12	0.01	Concrete Gutter	Modified Class I		459	0.01	459	459	0.01	459	459	0.01	459	459	0.01	459	459	0.01	459	459	0.01	459
S5-s190b	Unnamed trib of Beanblossom Creek	Ephemeral	-	77	0.01	Natural	Class III	x	327	0.05	327	331	0.05	331	175	0.02	175	102	0.01	102	176	0.02	176	135	0.02	135
S5-s193	Unnamed trib of Beanblossom Creek	Ephemeral	-	48	0.01	Natural	Class II	x	145	0.01	145	140	0.01	140	0	0.00	0	0	0.00	0	0	0.00	0	0	0	0
S5-s207	Unnamed trib of Payne Hollow	Ephemeral	-	33	0.01	Natural	Class I	x	326	0.04	326	315	0.04	315	400	0.05	400	251	0.03	251	399	0.05	399	302	0.03	302
S5-s208	Unnamed trib of Payne Hollow	Ephemeral	-	21	0.01	Natural	Class I	x	41	0.01	41	25	0.01	25	109	0.01	109	0	0.00	0	106	0.01	106	0	0	0
S5-s216b	Unnamed trib of Payne Hollow	Ephemeral	-	-	0.03	Culvert		x	351	0.01	0	351	0.01	0	351	0.01	0	346	0.01	0	351	0.01	0	351	0.01	0
S5-s216b_1	Unnamed trib of Payne Hollow	Ephemeral	-	12	0.01	Concrete Gutter	Modified Class I		472	0.01	472	472	0.01	472	472	0.01	472	465	0.01	465	472	0.01	472	472	0.01	472
S5-s216c	Unnamed trib of Payne Hollow	Ephemeral	-	76	0.03	Natural	Class III	x	138	0.02	0	130	0.02	0	206	0.03	0	125	0.02	0	193	0.03	0	193	0.03	0
S5-s217	Unnamed trib of Payne Hollow	Ephemeral	-	70	0.01	Natural	Class III	x	159	0.01	159	164	0.01	164	179	0.01	179	126	0.01	126	179	0.01	179	179	0.01	179
S5-s219_1	Unnamed trib of Payne Hollow	Ephemeral	-	12	0.01	Concrete Gutter	Modified Class I	x	186	0.01	186	186	0.01	186	186	0.01	186	186	0.01	186	186	0.01	186	186	0.01	186
S5-s219a	Unnamed trib of Payne Hollow	Ephemeral	-	57	0.01	Natural	Class II	x	39	0.01	0	39	0.01	0	39	0.01	0	39	0.01	0	39	0.01	0	39	0.01	0

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Stream ID#	Stream Name	USGS Stream Type	QHEI Score	HHEI Score	Drain Area (mi2)	Channel Type	Stream Habitat Classification	Waters of the U.S.	Alternative 4			Alternative 5			Alternative 6			Alternative 7			Alternative 8			RPA 8		
									LF in ROW	AC in ROW	LF Relo.	LF in ROW	AC in ROW	LF Relo.	LF in ROW	AC in ROW	LF Relo.	LF in ROW	AC in ROW	LF Relo.	LF in ROW	AC in ROW	LF Relo.	LF in ROW	AC in ROW	LF Relo.
S5-s219b	Unnamed trib of Payne Hollow	Ephemeral	-	-	0.01	Culvert		x	307	0.02	0	307	0.02	0	307	0.02	0	307	0.02	0	307	0.02	0	307	0.02	0
S5-s219c	Unnamed trib of Payne Hollow	Ephemeral	-	29	0.01	Natural	Class I	x	350	0.03	350	350	0.03	350	294	0.02	294	120	0.01	0	294	0.02	294	350	0.03	350
S5-s220a	Unnamed trib of Payne Hollow	Ephemeral	-	29	0.01	Natural	Class I	x	163	0.01	163	162	0.01	162	0	0.00	0	0	0.00	0	0	0.00	0	0	0	0
S5-s227	Unnamed trib of Payne Hollow	Ephemeral	-	17	0.01	Natural	Class I	x	413	0.03	413	416	0.03	416	401	0.03	401	0	0.00	0	399	0.03	399	375	0.03	375
S5-s228a	Unnamed trib of Bryant Creek	Ephemeral	-	17	0.01	Concrete Gutter	Modified Class I		162	0.01	162	162	0.01	162	162	0.01	162	162	0.01	162	162	0.01	162	162	0.01	162
S5-s228b	Unnamed trib of Bryant Creek	Ephemeral	-	40	0.01	Natural	Class II	x	187	0.01	187	190	0.01	190	190	0.01	190	190	0.01	190	190	0.01	190	190	0.01	190
S5-s229	Unnamed trib of Payne Hollow	Ephemeral	-	33	0.02	Natural	Class I	x	329	0.01	329	329	0.01	329	214	0.01	214	0	0.00	0	213	0.01	213	177	0.01	177
S5-s229_1	Unnamed trib of Payne Hollow	Ephemeral	-	12	0.01	Concrete Gutter	Modified Class I		199	0.01	199	199	0.01	199	199	0.01	199	158	0.01	158	199	0.01	199	199	0.01	199
S5-s237	Unnamed trib of Indian Creek	Ephemeral	-	24	0.03	Natural	Class I	x	528	0.04	528	550	0.04	550	0	0.00	0	0	0.00	0	0	0.00	0	0	0	0
S5-s238a	Unnamed trib of Indian Creek	Ephemeral	-	12	0.02	Concrete Gutter	Modified Class I	x	142	0.01	142	142	0.01	142	142	0.01	142	142	0.01	142	142	0.01	142	142	0.01	142
S5-s238b	Unnamed trib of Indian Creek	Ephemeral	-	45	0.02	Natural	Class II	x	879	0.11	879	913	0.12	913	121	0.02	121	57	0.01	57	122	0.02	122	88	0.01	88
S5-s239a	Unnamed trib of Indian Creek	Ephemeral	-	17	0.01	Natural	Class I	x	121	0.01	0	121	0.01	0	121	0.01	0	100	0.01	0	104	0.01	0	44	0.01	0
S5-s239b	Unnamed trib of Indian Creek	Ephemeral	-	-	0.02	Culvert		x	228	0.01	0	228	0.01	0	228	0.01	0	228	0.01	0	228	0.01	0	228	0.01	0
S5-s239c	Unnamed trib of Indian Creek	Ephemeral	-	22	0.02	Concrete Gutter	Modified Class I	x	17	0.01	0	17	0.01	0	17	0.01	0	17	0.01	0	17	0.01	0	17	0.01	0
S5-s239d	Unnamed trib of Indian Creek	Ephemeral	-	-	0.02	Culvert		x	32	0.01	0	32	0.01	0	32	0.01	0	32	0.01	0	32	0.01	0	32	0.01	0
S5-s239e	Unnamed trib of Indian Creek	Ephemeral	-	60	0.02	Natural	Class III	x	368	0.04	368	371	0.04	371	87	0.01	0	53	0.01	0	100	0.01	0	35	0.01	0
S5-s239f	Unnamed trib of Indian Creek	Intermittent	-	60	0.02	Natural	Class III	x	497	0.05	497	494	0.05	494	0	0.00	0	0	0.00	0	0	0.00	0	0	0	0
S5-s240	Unnamed trib of Indian Creek	Intermittent	-	43	0.01	Natural	Class II	x	211	0.01	211	211	0.01	211	0	0.00	0	0	0.00	0	0	0.00	0	0	0	0
S5-s241a	Unnamed trib of Indian Creek	Ephemeral	-	50	0.01	Natural	Class II	x	40	0.01	0	41	0.01	0	197	0.01	0	71	0.01	0	146	0.01	0	117	0.01	0
S5-s241b	Unnamed trib of Indian Creek	Ephemeral	-	-	0.01	Culvert		x	395	0.02	0	395	0.02	0	395	0.02	0	395	0.02	0	395	0.02	0	395	0.02	0
S5-s241c	Unnamed trib of Indian Creek	Ephemeral	-	45	0.01	Natural	Class II	x	41	0.01	0	39	0.01	0	39	0.01	0	39	0.01	0	39	0.01	0	39	0.01	0
S5-s242_1a	Unnamed trib of Indian Creek	Ephemeral	-	12	0.01	Concrete Gutter	Modified Class I		76	0.01	76	76	0.01	76	76	0.01	76	76	0.01	76	76	0.01	76	76	0.01	76
S5-s242_1b	Unnamed trib of Indian Creek	Ephemeral	-	-	0.01	Culvert			51	0.01	0	51	0.01	0	51	0.01	0	51	0.01	0	51	0.01	0	51	0.01	0
S5-s242_1c	Unnamed trib of Indian Creek	Ephemeral	-	12	0.01	Concrete Gutter	Modified Class I	x	416	0.01	416	416	0.01	416	416	0.01	416	416	0.01	416	416	0.01	416	416	0.01	416
S5-s242a	Unnamed trib of Indian Creek	Ephemeral	-	39	0.08	Natural	Class I	x	118	0.01	0	115	0.01	0	174	0.02	0	36	0.01	0	36	0.01	0	36	0.01	0
S5-s242b	Unnamed trib of Indian Creek	Ephemeral	-	-	0.08	Culvert		x	502	0.06	0	502	0.06	0	502	0.06	0	502	0.06	0	502	0.06	0	502	0.06	0
S5-s242c	Unnamed trib of Indian Creek	Ephemeral	-	52	0.08	Natural	Class II	x	116	0.02	0	136	0.02	0	92	0.01	0	49	0.01	0	94	0.01	0	82	0.01	0
S5-s246_1	Unnamed trib of Indian Creek	Ephemeral	-	12	0.01	Concrete Gutter	Modified Class I	x	428	0.02	428	428	0.02	428	428	0.02	428	428	0.02	428	428	0.02	428	428	0.02	428
S5-s246_1a	Unnamed trib of Indian Creek	Ephemeral	-	12	0.01	Concrete Gutter	Modified Class I		592	0.03	592	592	0.03	592	592	0.03	592	592	0.03	592	592	0.03	592	592	0.03	592
S5-s246_2	Unnamed trib of Indian Creek	Ephemeral	-	12	0.01	Concrete Gutter	Modified Class I		462	0.01	462	462	0.01	462	462	0.01	462	462	0.01	462	462	0.01	462	462	0.01	462
S5-s246_2a	Unnamed trib of Indian Creek	Ephemeral	-	12	0.01	Concrete Gutter	Modified Class I		211	0.01	211	211	0.01	211	211	0.01	211	211	0.01	211	211	0.01	211	211	0.01	211
S5-s246_3	Unnamed trib of Indian Creek	Ephemeral	-	-	0.01	Culvert			104	0.01	0	104	0.01	0	104	0.01	0	104	0.01	0	104	0.01	0	104	0.01	0
S5-s246a	Unnamed trib of Indian Creek	Ephemeral	-	40	0.08	Natural	Class II	x	39	0.01	0	41	0.01	0	21	0.01	0	21	0.01	0	21	0.01	0	21	0.01	0
S5-s246b	Unnamed trib of Indian Creek	Ephemeral	-	-	0.08	Culvert		x	554	0.11	0	554	0.11	0	554	0.11	0	554	0.11	0	554	0.11	0	554	0.11	0
S5-s246c	Unnamed trib of Indian Creek	Intermittent	-	38	0.08	Natural	Class I	x	456	0.04	456	455	0.04	455	340	0.03	340	235	0.02	235	345	0.03	345	342	0.03	342
S5-s253a	Unnamed trib of Bryant Creek	Ephemeral	-	12	0.01	Natural	Class I	x	416	0.02	416	416	0.02	416	416	0.02	416	416	0.02	416	416	0.02	416	416	0.02	416
S5-s253a_1	Unnamed trib of Bryant Creek	Ephemeral	-	12	0.01	Concrete Gutter	Modified Class I	x	437	0.02	437	437	0.02	437	437	0.02	437	437	0.02	437	437	0.02	437	437	0.02	437
S5-s253a_2	Unnamed trib of Bryant Creek	Ephemeral	-	12	0.01	Concrete Gutter	Modified Class I		516	0.02	516	516	0.02	516	516	0.02	516	516	0.02	516	516	0.02	516	516	0.02	516
S5-s253b	Unnamed trib of Bryant Creek	Intermittent	-	63.5	0.14	Natural	Class III	x	1,223	0.36	1223	1,223	0.36	1223	1,223	0.36	1223	1,223	0.36	1223	1,223	0.36	1223	1223	0.36	1223
S5-s253c	Unnamed trib of Bryant Creek	Intermittent	-	80	0.48	Natural	Class III	x	3,432	1.02	3409	3,432	1.02	3409	3,432	1.02	3409	3,432	1.02	3409	3,432	1.02	3409	3432	1.02	3409
S5-s253d	Unnamed trib of Bryant Creek	Intermittent	-	-	0.70	Culvert		x	195	0.06	0	195	0.06	0	195	0.06	0	195	0.06	0	195	0.06	0	195	0.06	0
S5-s253e	Unnamed trib of Bryant Creek	Intermittent	55.5	-	0.71	Natural	Warm Water Habitat	x	368	0.13	278	363	0.13	275	363	0.13	275	363	0.13	275	363	0.13	275	363	0.13	275
S5-s254b	Unnamed trib of Bryant Creek	Intermittent	-	41	0.09	Natural	Class II	x	155	0.02	155	165	0.02	165	165	0.02	165	165	0.02	165	165	0.02	165	165	0.02	165
S5-s254c	Unnamed trib of Bryant Creek	Intermittent	-	-	0.09	Culvert		x	451	0.05	0	451	0.05	0	451	0.05	0	451	0.05	0	451	0.05	0	451	0.05	0
S5-s254d	Unnamed trib of Bryant Creek	Intermittent	-	20	0.01	Natural	Modified Class I	x	22	0.01	0	22	0.01	0	22	0.01	0	22	0.01	0	22	0.01	0	22	0.01	0
S5-s264	Unnamed trib of Bryant Creek	Ephemeral	-	21	0.01	Natural	Class I	x	113	0.01	0	115	0.01	0	36	0.01	0	36	0.01	0	36	0.01	0	36	0.01	0
S5-s264a	Unnamed trib of Bryant Creek	Intermittent	-	-	0.01	Culvert		x	213	0.01	0	213	0.01	0	213	0.01	0	213	0.01	0	213	0.01	0	213	0.01	0
S5-s265a	Unnamed trib of Bryant Creek	Ephemeral	-	22	0.01	Natural	Class I	x	91	0.01	0	93	0.01	0	57	0.01	0	57	0.01	0	57	0.01	0	57	0.01	0
S5-s265b	Unnamed trib of Bryant Creek	Ephemeral	-	-	0.01	Culvert		x	159	0.01	0	159	0.01	0	159	0.01	0	159	0.01	0	159	0.01	0	159	0.01	0
S5-s265c	Unnamed trib of Bryant Creek	Ephemeral	-	30	0.01	Natural	Modified Class II	x	36	0.01	0	36	0.01	0	36	0.01	0	36	0.01	0	36	0.01	0	36	0.01	0
S5-s266a	Unnamed trib of Bryant Creek	Ephemeral	-	21	0.01	Natural	Class I	x	108	0.01	0	110	0.01	0	92	0.01	0	92	0.01	0	92	0.01	0	92	0.01	0
S5-s266b	Unnamed trib of Bryant Creek	Ephemeral	-	-	0.01	Culvert		x	183	0.01	0	183	0.01	0	183	0.01	0	183	0.01	0	183	0.01	0	183	0.01	0
S5-s267a	Unnamed trib of Bryant Creek	Ephemeral	-	35	0.01	Natural	Class I	x	127	0.01	0	125	0.01	0	125	0.01	0	125	0.01	0	125	0.01	0	125	0.01	0
S5-s267b	Unnamed trib of Bryant Creek	Ephemeral	-	-	0.01	Culvert		x	204	0.01	0	204	0.01	0	204	0.01	0	204	0.01	0	204	0.01	0	204	0.01	0
S5-s267c	Unnamed trib of Bryant Creek	Ephemeral	-	20	0.01	Natural	Modified Class I	x	13	0.01	0	13	0.01	0	13	0.01	0	13	0.01	0	13	0.01	0	13	0.01	0
S5-s268a	Unnamed trib of Bryant Creek	Ephemeral	-	28	0.02	Natural	Class I	x	62	0.01	0	65	0.01	0	45	0.01	0	45	0.01	0	45	0.01	0	45	0.01	0
S5-s268b	Unnamed trib of Bryant Creek	Ephemeral	-	-	0.02	Culvert		x	149	0.01	0	149	0.01	0	149	0.01	0	149	0.01	0	149	0.01	0	149	0.01	0
S5-s268c	Unnamed trib of Bryant Creek	Ephemeral	-	38	0.02	Natural	Class I	x	154	0.02	154	154	0.02	154	154	0.02	154	154	0.02	154	154	0.02	154	154	0.02	154
S5-s269a	Unnamed trib of Bryant Creek	Ephemeral	-	28	0.01	Natural	Class I	x	92	0.01	0	94	0.01	0	39	0.01	0	39	0.01	0	39	0.01	0	39	0.01	0
S5-s269b	Unnamed trib of Bryant Creek	Ephemeral	-	-	0.01	Culvert		x	168	0.01	0	168	0.01	0	168	0.01	0	168	0.01	0	168	0.01	0	168	0.01	0
S5-s269c	Unnamed trib of Bryant Creek	Ephemeral	-	38	0.01	Natural	Class I	x	12	0.01	0	12	0.01	0	12	0.01	0	12	0.01	0	12	0.01	0	12	0.01	0
S5-s270a	Unnamed trib of Bryant Creek	Ephemeral	-	19	0.01	Natural	Class I	x	153	0.01	0	150	0.01	0	150	0.01	0	150	0.01	0	150	0.01	0	150	0.01	0
S5-s270b	Unnamed trib of Bryant Creek	Ephemeral	-	-	0.01	Culvert		x	139	0.01	0	139	0.01	0	139	0.01	0	139	0.01	0	139	0.01	0	139	0.01	0
S5-s270c	Unnamed trib of Bryant Creek	Ephemeral	-	33	0.01	Natural	Class I	x	202	0.02	0	202	0.02	0	202	0.02	0	202	0.02	0	202	0.02	0	202	0.02	0

Appendix A - Table 1 - Stream Impacts and Stream Relocation Lengths by Alternative

Stream ID#	Stream Name	USGS Stream Type	QHEI Score	HHEI Score	Drain Area (mi2)	Channel Type	Stream Habitat Classification	Waters of the U.S.	Alternative 4			Alternative 5			Alternative 6			Alternative 7			Alternative 8			RPA 8		
									LF in ROW	AC in ROW	LF Relo.	LF in ROW	AC in ROW	LF Relo.	LF in ROW	AC in ROW	LF Relo.	LF in ROW	AC in ROW	LF Relo.	LF in ROW	AC in ROW	LF Relo.	LF in ROW	AC in ROW	LF Relo.
S5-s271a	Unnamed trib of Bryant Creek	Ephemeral	-	12	0.01	Natural	Class I	x	92	0.01	0	92	0.01	0	73	0.01	0	73	0.01	0	73	0.01	0	73	0.01	0
S5-s271b	Unnamed trib of Bryant Creek	Ephemeral	-	-	0.01	Culvert		x	106	0.01	0	106	0.01	0	106	0.01	0	106	0.01	0	106	0.01	0	106	0.01	0
S5-s271c	Unnamed trib of Bryant Creek	Ephemeral	-	14	0.01	Natural	Modified Class I	x	75	0.01	0	75	0.01	0	75	0.01	0	75	0.01	0	75	0.01	0	75	0.01	0
S5-s272a	Unnamed trib of Bryant Creek	Ephemeral	-	12	0.01	Natural	Class I	x	88	0.01	0	88	0.01	0	82	0.01	0	82	0.01	0	82	0.01	0	82	0.01	0
S5-s272b	Unnamed trib of Bryant Creek	Ephemeral	-	-	0.01	Culvert		x	129	0.01	0	129	0.01	0	129	0.01	0	129	0.01	0	129	0.01	0	129	0.01	0
S5-s273a	Unnamed trib of Bryant Creek	Ephemeral	-	50	0.01	Natural	Class II	x	11	0.01	11	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0	0
S5-s273b	Unnamed trib of Bryant Creek	Ephemeral	-	12	0.01	Concrete Gutter	Modified Class I		130	0.01	130	130	0.01	130	130	0.01	130	130	0.01	130	130	0.01	130	130	0.01	130
S5-s273c	Unnamed trib of Bryant Creek	Ephemeral	-	19	0.01	Natural	Modified Class I	x	52	0.01	52	52	0.01	52	52	0.01	52	52	0.01	52	52	0.01	52	52	0.01	52
S5-s274a	Unnamed trib of Bryant Creek	Ephemeral	-	28	0.02	Natural	Class I	x	114	0.01	0	116	0.01	0	74	0.01	0	74	0.01	0	74	0.01	0	74	0.01	0
S5-s274b	Unnamed trib of Bryant Creek	Ephemeral	-	-	0.02	Culvert		x	139	0.01	0	139	0.01	0	139	0.01	0	139	0.01	0	139	0.01	0	139	0.01	0
S5-s274c	Unnamed trib of Bryant Creek	Ephemeral	-	23	0.02	Natural	Class I	x	52	0.01	0	52	0.01	0	52	0.01	0	52	0.01	0	52	0.01	0	52	0.01	0
S5-s275a	Unnamed trib of Bryant Creek	Ephemeral	-	40	0.07	Natural	Class II	x	52	0.01	0	50	0.01	0	50	0.01	0	50	0.01	0	50	0.01	0	50	0.01	0
S5-s275b	Unnamed trib of Bryant Creek	Ephemeral	-	-	0.07	Culvert		x	344	0.02	0	344	0.02	0	344	0.02	0	344	0.02	0	344	0.02	0	344	0.02	0
S5-s275c	Unnamed trib of Bryant Creek	Ephemeral	-	43	0.07	Natural	Class II	x	179	0.02	0	179	0.02	0	179	0.02	0	179	0.02	0	179	0.02	0	179	0.02	0
S5-s276a	Unnamed trib of Bryant Creek	Ephemeral	-	21	0.01	Natural	Class I	x	247	0.01	247	212	0.01	212	172	0.01	172	172	0.01	172	172	0.01	172	172	0.01	172
S5-s277a	Unnamed trib of Bryant Creek	Ephemeral	-	51	0.04	Natural	Class II	x	75	0.01	0	73	0.01	0	73	0.01	0	73	0.01	0	73	0.01	0	73	0.01	0
S5-s277b	Unnamed trib of Bryant Creek	Ephemeral	-	-	0.04	Culvert		x	196	0.02	0	196	0.02	0	196	0.02	0	196	0.02	0	196	0.02	0	196	0.02	0
S5-s277c	Unnamed trib of Bryant Creek	Ephemeral	-	33	0.04	Natural	Class I	x	188	0.02	0	188	0.02	0	188	0.02	0	188	0.02	0	188	0.02	0	188	0.02	0
S5-s278a	Unnamed trib of Bryant Creek	Ephemeral	-	40	0.01	Natural	Class II	x	103	0.01	103	101	0.01	101	101	0.01	101	101	0.01	101	101	0.01	101	101	0.01	101
S5-s278b	Unnamed trib of Bryant Creek	Ephemeral	-	12	0.01	Concrete Gutter	Modified Class I	x	706	0.03	706	706	0.03	706	706	0.03	706	706	0.03	706	706	0.03	706	706	0.03	706
S5-s279a	Unnamed trib of Bryant Creek	Ephemeral	-	72	0.10	Natural	Class III	x	81	0.01	0	83	0.01	0	23	0.01	0	28	0.01	0	30	0.01	0	33	0.01	0
S5-s279b	Unnamed trib of Bryant Creek	Ephemeral	-	-	0.10	Culvert		x	136	0.01	0	136	0.01	0	136	0.01	0	136	0.01	0	136	0.01	0	136	0.01	0
S5-s284a	Unnamed trib of Bryant Creek	Ephemeral	-	21	0.04	Natural	Modified Class I	x	321	0.01	321	319	0.01	319	319	0.01	319	319	0.01	319	319	0.01	319	319	0.01	319
S5-s284b	Unnamed trib of Bryant Creek	Ephemeral	-	-	0.04	Culvert		x	74	0.01	0	74	0.01	0	74	0.01	0	74	0.01	0	74	0.01	0	74	0.01	0
S5-s284c	Unnamed trib of Bryant Creek	Ephemeral	-	30	0.04	Natural	Class I	x	80	0.01	80	80	0.01	80	80	0.01	80	80	0.01	80	80	0.01	80	80	0.01	80
S5-s285a	Unnamed trib of Bryant Creek	Ephemeral	-	12	0.01	Natural	Modified Class I	x	178	0.01	0	135	0.01	0	88	0.01	0	90	0.01	0	90	0.01	0	90	0.01	0
S5-s285b	Unnamed trib of Bryant Creek	Ephemeral	-	-	0.01	Culvert		x	166	0.01	0	166	0.01	0	166	0.01	0	166	0.01	0	166	0.01	0	166	0.01	0
S5-s286	Unnamed trib of Bryant Creek	Ephemeral	-	58	0.12	Natural	Class II	x	347	0.02	347	344	0.02	344	344	0.02	344	344	0.02	344	344	0.02	344	344	0.02	344
S5-s287a_1	Unnamed trib of Bryant Creek	Ephemeral	-	37	0.01	Natural	Class I	x	164	0.01	0	141	0.01	0	57	0.01	0	88	0.01	0	88	0.01	0	88	0.01	0
S5-s287b	Unnamed trib of Bryant Creek	Ephemeral	-	12	0.01	Concrete Gutter	Modified Class I		101	0.01	101	101	0.01	101	35	0.01	35	101	0.01	101	101	0.01	101	101	0.01	101
S5-s287c	Unnamed trib of Bryant Creek	Ephemeral	-	-	0.01	Culvert		x	68	0.01	0	68	0.01	0	68	0.01	0	68	0.01	0	68	0.01	0	68	0.01	0
S5-s287d	Unnamed trib of Bryant Creek	Ephemeral	-	25	0.01	Natural	Class I	x	371	0.01	371	371	0.01	371	371	0.01	342	371	0.01	342	371	0.01	342	371	0.01	342
S5-s288_1	Unnamed trib of Bryant Creek	Ephemeral	-	37	0.01	Natural	Class I	x	0	0.00	0	0	0.00	0	0	0.00	0	50	0.01	50	0	0.00	0	0	0	0
S5-s288_1a	Unnamed trib of Bryant Creek	Ephemeral	-	26	0.09	Natural	Class I	x	0	0.00	0	0	0.00	0	0	0.00	0	52	0.01	52	0	0.00	0	0	0	0
S5-s288_1b	Unnamed trib of Bryant Creek	Ephemeral	-	-	0.09	Culvert		x	0	0.00	0	0	0.00	0	0	0.00	0	28	0.01	0	0	0.00	0	0	0	0
S5-s288a	Bryant Creek	Perennial	66.5	-	5.72	Natural	Warm Water Habitat	x	120	0.10	0	176	0.14	0	116	0.09	0	300	0.24	0	108	0.09	0	108	0.09	0
S5-s288b	Bryant Creek	Perennial	64	-	5.72	Bridge	Warm Water Habitat	x	199	0.09	0	199	0.09	0	199	0.09	0	199	0.09	0	199	0.09	0	199	0.09	0
S5-s288c	Bryant Creek	Perennial	64	-	5.72	Natural	Warm Water Habitat	x	161	0.07	0	159	0.07	0	140	0.06	0	140	0.06	0	140	0.06	0	140	0.06	0
S5-s289a	Unnamed trib of Bryant Creek	Ephemeral	-	25	0.05	Natural	Class I	x	17	0.01	17	8	0.01	8	8	0.01	8	107	0.01	107	8	0.01	8	8	0.01	8
S5-s289b	Unnamed trib of Bryant Creek	Ephemeral	-	-	0.05	Culvert		x	28	0.01	0	28	0.01	0	28	0.01	0	28	0.01	0	28	0.01	0	28	0.01	0
S5-s289c	Unnamed trib of Bryant Creek	Ephemeral	-	35	0.05	Natural	Class I	x	20	0.01	20	19	0.01	19	19	0.01	19	19	0.01	0	19	0.01	19	19	0.01	19
S5-s289e	Unnamed trib of Bryant Creek	Ephemeral	-	27	0.05	Dump Rock Gutter	Modified Class I	x	400	0.02	400	400	0.02	400	400	0.02	400	400	0.02	400	400	0.02	400	400	0.02	400
S5-s289e_1	Unnamed trib of Bryant Creek	Ephemeral	-	27	0.05	Concrete Gutter	Modified Class I	x	86	0.01	86	85	0.01	85	85	0.01	85	85	0.01	85	85	0.01	85	85	0.01	85
S5-s289e_2	Unnamed trib of Bryant Creek	Ephemeral	-	12	0.01	Concrete Gutter	Modified Class I		554	0.02	554	554	0.02	554	554	0.02	554	554	0.02	554	554	0.02	554	554	0.02	554
S5-s289f	Unnamed trib of Bryant Creek	Ephemeral	-	48	0.05	Roadside Ditch	Modified Class II	x	565	0.06	565	565	0.06	565	565	0.06	565	565	0.06	565	565	0.06	565	565	0.06	565
S5-s291	Unnamed trib of Bryant Creek	Ephemeral	-	18	0.01	Natural	Class I	x	103	0.01	103	106	0.01	106	81	0.01	81	83	0.01	83	82	0.01	82	82	0.01	82
S5-s293a	Unnamed trib of Bryant Creek	Ephemeral	-	31	0.01	Natural	Class I	x	70	0.01	0	65	0.01	0	38	0.01	0	38	0.01	0	38	0.01	0	38	0.01	0
S5-s293b	Unnamed trib of Bryant Creek	Ephemeral	-	-	0.01	Culvert		x	237	0.02	0	237	0.02	0	237	0.02	0	237	0.02	0	237	0.02	0	237	0.02	0
S5-s293c	Unnamed trib of Bryant Creek	Ephemeral	-	60	0.01	Natural	Class III	x	89	0.01	0	81	0.01	0	80	0.01	0	82	0.01	0	82	0.01	0	55	0.01	0
S5-s294a	Unnamed trib of Bryant Creek	Ephemeral	-	14	0.01	Natural	Modified Class I	x	66	0.01	0	63	0.01	0	41	0.01	0	42	0.01	0	43	0.01	0	43	0.01	0
S5-s294a_1	Unnamed trib of Bryant Creek	Ephemeral	-	12	0.01	Concrete Gutter	Modified Class I		304	0.01	304	304	0.01	304	282	0.01	282	282	0.01	282	282	0.01	282	282	0.01	282
S5-s294a_2	Unnamed trib of Bryant Creek	Ephemeral	-	12	0.01	Concrete Gutter	Modified Class I		146	0.01	146	146	0.01	146	146	0.01	146	146	0.01	146	146	0.01	146	146	0.01	146
S5-s294b	Unnamed trib of Bryant Creek	Ephemeral	-	-	0.01	Culvert		x	233	0.01	0	233	0.01	0	233	0.01	0	233	0.01	0	233	0.01	0	233	0.01	0
S5-s294c	Unnamed trib of Bryant Creek	Ephemeral	-	29	0.01	Natural	Class I	x	109	0.01	0	111	0.01	0	116	0.01	0	126	0.01	0	126	0.01	0	80	0.01	0
S5-s299a	Unnamed trib of Bryant Creek	Ephemeral	-	30	0.11	Natural	Class I	x	177	0.01	177	94	0.01	94	150	0.01	150	136	0.01	136	136	0.01	136	85	0.01	85
S5-s299a_1	Unnamed trib of Bryant Creek	Ephemeral	-	12	0.14	Concrete Gutter	Modified Class I		1,164	0.03	1164	1,164	0.03	1164	1,164	0.03	1164	1,164	0.03	1164	1,164	0.03	1164	1164	0.03	1164
S5-s299b	Unnamed trib of Bryant Creek	Ephemeral	-	-	0.11	Culvert		x	39	0.01	0	39	0.01	0	39	0.01	0	39	0.01	0	39	0.01	0	39	0.01	0
S5-s299c	Unnamed trib of Bryant Creek	Ephemeral	-	34	0.11	Roadside Ditch	Modified Class II	x	159	0.01	159	159	0.01	159	159	0.01	159	159	0.01	159	159	0.01	159	159	0.01	159
S5-s299d	Unnamed trib of Bryant Creek	Ephemeral	-	51	0.13	Natural	Class II	x	845	0.22	845	815	0.22	815	785	0.21	785	751	0.20	751	761	0.20	761	656	0.17	656
S5-s300a	Unnamed trib of Bryant Creek	Ephemeral	-	40	0.01	Natural	Class II	x	99	0.01	0	98	0.01	0	98	0.01	0	98	0.01	0	98	0.01	0	98	0.01	0
S5-s300b	Unnamed trib of Bryant Creek	Ephemeral	-	-	0.01	Culvert		x	291	0.01	0	291	0.01	0	291	0.01	0	291	0.01	0	291	0.01	0	291	0.01	0
S5-s302a	Unnamed trib of Bryant Creek	Ephemeral	-	21	0.01	Natural	Class I	x	125	0.01	0	123	0.01	0	123	0.01	0	124	0.01	0	124	0.01	0	124	0.01	0
S5-s302b	Unnamed trib of Bryant Creek	Ephemeral	-	-	0.01	Culvert		x	281	0.02	0	281	0.02	0	281	0.02	0	281	0.02	0	281	0.02	0	281	0.02	0
S5-s308	Unnamed trib of Bryant Creek	Ephemeral	-	22	0.01	Natural	Class I	x	113	0.01	113	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0	0

Appendix A - Table 1 - Stream Impacts and Stream Relocation Lengths by Alternative

Stream ID#	Stream Name	USGS Stream Type	QHEI Score	HHEI Score	Drain Area (mi2)	Channel Type	Stream Habitat Classification	Waters of the U.S.	Alternative 4			Alternative 5			Alternative 6			Alternative 7			Alternative 8			RPA 8		
									LF in ROW	AC in ROW	LF Relo.	LF in ROW	AC in ROW	LF Relo.	LF in ROW	AC in ROW	LF Relo.	LF in ROW	AC in ROW	LF Relo.	LF in ROW	AC in ROW	LF Relo.	LF in ROW	AC in ROW	LF Relo.
S5-s314a	Unnamed trib of Bryant Creek	Ephemeral	-	18	0.01	Roadside Ditch	Modified Class I		156	0.01	156	8	0.01	8	8	0.01	8	8	0.01	8	8	0.01	8	7	0.01	7
S5-s314b	Unnamed trib of Bryant Creek	Ephemeral	-	12	0.10	Concrete Gutter	Modified Class I	x	498	0.03	498	498	0.03	498	498	0.03	498	498	0.03	498	498	0.03	498	498	0.03	498
S5-s314b_1	Unnamed trib of Bryant Creek	Ephemeral	-	12	0.10	Concrete Gutter	Modified Class I		500	0.03	500	500	0.03	500	500	0.03	500	500	0.03	500	500	0.03	500	500	0.03	500
S5-s314c	Unnamed trib of Bryant Creek	Ephemeral	-	-	0.10	Culvert		x	199	0.01	0	199	0.01	0	199	0.01	0	199	0.01	0	199	0.01	0	199	0.01	0
S5-s315a	Unnamed trib of Bryant Creek	Ephemeral	-	25	0.04	Natural	Class I	x	875	0.04	875	202	0.01	202	228	0.01	228	228	0.01	228	228	0.01	228	229	0.01	229
S5-s315b	Unnamed trib of Bryant Creek	Ephemeral	-	-	0.04	Culvert		x	168	0.01	0	168	0.01	0	168	0.01	0	168	0.01	0	168	0.01	0	168	0.01	0
S5-s315c	Unnamed trib of Bryant Creek	Ephemeral	-	12	0.04	Concrete Gutter	Modified Class I	x	878	0.04	878	878	0.04	878	878	0.04	878	878	0.04	878	878	0.04	878	878	0.04	878
S5-s315d	Unnamed trib of Bryant Creek	Ephemeral	-	-	0.04	Culvert		x	115	0.01	0	115	0.01	0	115	0.01	0	115	0.01	0	115	0.01	0	115	0.01	0
S5-s316_1	Unnamed trib of Bryant Creek	Ephemeral	-	33	0.01	Natural	Class I	x	379	0.04	379	323	0.04	323	0	0.00	0	0	0.00	0	0	0.00	0	0	0	0
S5-s316a	Unnamed trib of Bryant Creek	Ephemeral	-	30	0.02	Natural	Class I	x	285	0.02	285	168	0.01	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0	0
S5-s316b	Unnamed trib of Bryant Creek	Ephemeral	-	-	0.02	Culvert		x	94	0.01	0	8	0.01	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0	0
S5-s316c	Unnamed trib of Bryant Creek	Ephemeral	-	16	0.02	Natural	Modified Class I	x	337	0.02	337	337	0.02	337	73	0.01	73	73	0.01	73	73	0.01	73	73	0.01	73
S5-s316d	Unnamed trib of Bryant Creek	Ephemeral	-	-	0.02	Culvert		x	56	0.01	0	56	0.01	0	56	0.01	0	56	0.01	0	56	0.01	0	56	0.01	0
S5-s317	Unnamed trib of Bryant Creek	Ephemeral	-	15	0.01	Natural	Class I	x	408	0.02	408	0	0.00	0	7	0.01	7	7	0.01	7	7	0.01	7	7	0.01	7
S5-s318	Unnamed trib of Bryant Creek	Ephemeral	-	24	0.01	Natural	Class I	x	112	0.01	112	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0	0
S5-s319_1a	Unnamed trib of Bryant Creek	Ephemeral	-	16	0.01	Concrete Gutter	Modified Class I	x	24	0.01	24	24	0.01	24	24	0.01	24	24	0.01	24	24	0.01	24	24	0.01	24
S5-s319_1b	Unnamed trib of Bryant Creek	Ephemeral	-	-	0.01	Culvert		x	55	0.01	0	23	0.01	0	55	0.01	0	55	0.01	0	55	0.01	0	55	0.01	0
S5-s319_1c	Unnamed trib of Bryant Creek	Ephemeral	-	32	0.01	Natural	Modified Class II	x	51	0.01	51	0	0.00	0	27	0.01	27	27	0.01	27	27	0.01	27	38	0.01	38
S5-s319a	Unnamed trib of Bryant Creek	Ephemeral	-	30	0.02	Natural	Class I	x	518	0.06	518	315	0.04	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0	0
S5-s319b	Unnamed trib of Bryant Creek	Ephemeral	-	46	0.02	Natural	Class II	x	172	0.01	172	0	0.00	0	11	0.01	11	11	0.01	11	11	0.01	11	14	0.01	14
S5-s320	Unnamed trib of Bryant Creek	Ephemeral	-	29	0.01	Natural	Class I	x	437	0.07	437	215	0.03	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0	0
S5-s325	Unnamed trib of Little Indian Creek	Ephemeral	-	25	0.01	Natural	Class I	x	525	0.05	525	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0	0
S5-s326a	Unnamed trib of Little Indian Creek	Ephemeral	-	6	0.01	Natural	Modified Class I	x	251	0.01	251	116	0.01	116	0	0.00	0	0	0.00	0	0	0.00	0	0	0	0
S5-s326b	Unnamed trib of Little Indian Creek	Intermittent	-	38	0.43	Natural	Class I	x	251	0.05	251	250	0.05	250	84	0.02	84	75	0.01	75	99	0.02	99	97	0.02	97
S5-s326c	Unnamed trib of Little Indian Creek	Intermittent	-	19	0.43	Roadside Ditch	Modified Class I	x	592	0.04	592	592	0.04	592	592	0.04	592	592	0.04	592	592	0.04	592	592	0.04	592
S5-s327	Unnamed trib of Little Indian Creek	Ephemeral	-	22	0.01	Natural	Class I	x	169	0.01	169	95	0.01	95	0	0.00	0	0	0.00	0	0	0.00	0	0	0	0
S5-s328	Unnamed trib of Little Indian Creek	Ephemeral	-	17	0.01	Natural	Class I	x	144	0.01	144	96	0.01	96	0	0.00	0	0	0.00	0	0	0.00	0	0	0	0
S5-s330a	Unnamed trib of Little Indian Creek	Ephemeral	-	18	0.04	Natural	Class I	x	99	0.01	99	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0	0
S5-s330b	Unnamed trib of Little Indian Creek	Intermittent	-	34	0.04	Natural	Class I	x	143	0.02	143	120	0.01	120	103	0.01	103	106	0.01	106	101	0.01	101	101	0.01	101
S5-s330b_1	Unnamed trib of Little Indian Creek	Ephemeral	-	12	0.01	Concrete Gutter	Modified Class I		426	0.01	426	426	0.01	426	426	0.01	426	426	0.01	426	426	0.01	426	426	0.01	426
S5-s330c	Unnamed trib of Little Indian Creek	Intermittent	-	17	0.04	Concrete Gutter	Modified Class I	x	832	0.02	832	832	0.02	832	832	0.02	832	832	0.02	832	832	0.02	832	832	0.02	832
S5-s331a	Unnamed trib of Little Indian Creek	Ephemeral	-	37	0.10	Natural	Class I	x	80	0.01	0	81	0.01	0	27	0.01	27	158	0.02	158	107	0.01	107	37	0.01	37
S5-s331b	Unnamed trib of Little Indian Creek	Intermittent	-	-	0.10	Culvert		x	408	0.04	0	408	0.04	0	408	0.04	0	408	0.04	0	408	0.04	0	408	0.04	0
S5-s331d	Unnamed trib of Little Indian Creek	Intermittent	-	57	0.10	Natural	Class II	x	492	0.09	492	494	0.09	494	494	0.09	494	494	0.09	494	494	0.09	494	478	0.09	478
S5-s338b	Unnamed trib of Little Indian Creek	Ephemeral	-	39	0.03	Natural	Class I	x	98	0.02	0	164	0.03	0	96	0.02	0	99	0.02	0	102	0.02	0	95	0.02	0
S5-s338c	Unnamed trib of Little Indian Creek	Ephemeral	-	-	0.03	Culvert		x	240	0.04	0	240	0.04	0	240	0.04	0	240	0.04	0	240	0.04	0	240	0.04	0
S5-s343a	Unnamed trib of Little Indian Creek	Ephemeral	-	34	0.06	Natural	Class I	x	164	0.02	0	146	0.01	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0	0
S5-s343b	Unnamed trib of Little Indian Creek	Ephemeral	-	-	0.06	Culvert		x	324	0.03	0	324	0.03	0	290	0.03	0	290	0.03	0	290	0.03	0	290	0.03	0
S5-s343e	Unnamed trib of Little Indian Creek	Ephemeral	-	23	0.06	Natural	Class I	x	196	0.01	0	308	0.02	0	84	0.01	0	81	0.01	0	85	0.01	0	85	0.01	0
S5-s343f	Unnamed trib of Little Indian Creek	Ephemeral	-	-	0.06	Culvert		x	34	0.01	0	34	0.01	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0	0
S5-s343g	Unnamed trib of Little Indian Creek	Ephemeral	-	64	0.06	Natural	Class III	x	28	0.01	0	30	0.01	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0	0
S5-s344_2	Unnamed trib of Little Indian Creek	Ephemeral	-	12	0.01	Concrete Gutter	Modified Class I		309	0.01	309	309	0.01	309	309	0.01	309	309	0.01	309	309	0.01	309	309	0.01	309
S5-s344_2a	Unnamed trib of Little Indian Creek	Ephemeral	-	-	0.01	Culvert			61	0.01	0	61	0.01	0	61	0.01	0	61	0.01	0	61	0.01	0	61	0.01	0
S5-s344_2b	Unnamed trib of Little Indian Creek	Ephemeral	-	12	0.01	Concrete Gutter	Modified Class I		193	0.01	193	193	0.01	193	193	0.01	193	193	0.01	193	193	0.01	193	193	0.01	193
S5-s344a	Unnamed trib of Little Indian Creek	Ephemeral	-	29	0.10	Natural	Modified Class I	x	197	0.01	0	195	0.01	0	90	0.01	0	90	0.01	0	79	0.01	0	79	0.01	0
S5-s344a_1	Unnamed trib of Little Indian Creek	Ephemeral	-	15	0.02	Roadside Ditch	Modified Class I		485	0.03	485	485	0.03	485	485	0.03	485	485	0.03	485	485	0.03	485	485	0.03	485
S5-s344b	Unnamed trib of Little Indian Creek	Ephemeral	-	-	0.10	Culvert		x	180	0.01	0	180	0.01	0	180	0.01	0	180	0.01	0	180	0.01	0	180	0.01	0
S5-s344c	Unnamed trib of Little Indian Creek	Ephemeral	-	23	0.10	Natural	Modified Class I	x	213	0.01	0	214	0.01	0	87	0.01	0	87	0.01	0	87	0.01	0	87	0.01	0
S5-s345c	Little Indian Creek	Perennial	60	-	10.75	Natural	Warm Water Habitat	x	113	0.09	0	108	0.09	0	99	0.08	0	106	0.09	0	99	0.08	0	100	0.08	0
S5-s345d	Little Indian Creek	Perennial	52.5	-	10.75	Bridge	Warm Water Habitat	x	130	0.10	0	130	0.10	0	130	0.10	0	130	0.10	0	130	0.10	0	130	0.1	0
S5-s345e	Little Indian Creek	Perennial	52.5	-	10.75	Natural	Warm Water Habitat	x	186	0.25	0	186	0.25	0	111	0.15	0	122	0.16	0	138	0.18	0	134	0.18	0
S5-s345f	Little Indian Creek	Perennial	46.75	-	11.88	Natural	Warm Water Habitat	x	107	0.04	0	41	0.02	0	335	0.14	0	0	0.00	0	327	0.14	0	0	0	0
S5-s345g	Little Indian Creek	Perennial	46.75	-	11.88	Bridge	Warm Water Habitat	x	25	0.01	0	0	0.00	0	25	0.01	0	0	0.00	0	25	0.01	0	0	0	0
S5-s345h	Little Indian Creek	Perennial	46.75	-	11.88	Natural	Warm Water Habitat	x	121	0.05	0	435	0.18	0	74	0.03	0	219	0.09	0	38	0.02	0	0	0	0
S5-s346a	Unnamed trib of Little Indian Creek	Ephemeral	-	37	0.04	Natural	Class I	x	274	0.03	0	282	0.03	0	120	0.01	120	120	0.01	120	120	0.01	120	120	0.01	120
S5-s346a_1	Unnamed trib of Little Indian Creek	Ephemeral	-	15	0.01	Roadside Ditch	Modified Class I		531	0.02	531	531	0.02	531	531	0.02	531	531	0.02	531	531	0.02	531	531	0.02	531
S5-s346a_2	Unnamed trib of Little Indian Creek	Ephemeral	-	32	0.01	Roadside Ditch	Modified Class II	x	112	0.01	112	112	0.01	112	112	0.01	112	112	0.01	112	112	0.01	112	112	0.01	112
S5-s346b	Unnamed trib of Little Indian Creek	Ephemeral	-	-	0.04	Culvert		x	164	0.02	0	164	0.02	0	164	0.02	0	164	0.02	0	164	0.02	0	164	0.02	0
S5-s346c	Unnamed trib of Little Indian Creek	Ephemeral	-	49	0.04	Natural	Modified Class II	x	221	0.01	0	222	0.01	0	92	0.01	0	91	0.01	0	92	0.01	0	92	0.01	0
S5-s348a	Unnamed trib of Little Indian Creek	Ephemeral	-	15	0.04	Roadside Ditch	Modified Class I	x	618	0.03	618	618	0.03	618	618	0.03	618	618	0.03	618	618	0.03	618	618	0.03	618
S5-s348a_1	Unnamed trib of Little Indian Creek	Ephemeral	-	6	0.01	Roadside Ditch	Modified Class I		279	0.01	279	279	0.01	279	279	0.01	279	279	0.01	279	279	0.01	279	279	0.01	279
S5-s348b	Unnamed trib of Little Indian Creek	Ephemeral	-	-	0.04	Culvert		x	183	0.01	0	183	0.01	0	183	0.01	0	183	0.01	0	183	0.01	0	183	0.01	0
S5-s348c	Unnamed trib of Little Indian Creek	Ephemeral	-	40	0.04	Natural	Modified Class II	x	187	0.01	0	187	0.01	0	104	0.01	0	105	0.01	0	104	0.01	0	104	0.01	0
S5-s348d	Unnamed trib of Little Indian Creek	Ephemeral	-	22	0.03	Natural	Class I	x	9	0.01	0	10	0.01	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0	0

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Stream ID#	Stream Name	USGS Stream Type	QHEI Score	HHEI Score	Drain Area (mi2)	Channel Type	Stream Habitat Classification	Waters of the U.S.	Alternative 4			Alternative 5			Alternative 6			Alternative 7			Alternative 8			RPA 8		
									LF in ROW	AC in ROW	LF Relo.	LF in ROW	AC in ROW	LF Relo.	LF in ROW	AC in ROW	LF Relo.	LF in ROW	AC in ROW	LF Relo.	LF in ROW	AC in ROW	LF Relo.	LF in ROW	AC in ROW	LF Relo.
S5-s349a	Unnamed trib of Little Indian Creek	Intermittent	-	56	0.92	Natural	Class II	x	0	0.00	0	219	0.03	0	206	0.03	206	173	0.02	0	206	0.03	206	182	0.02	0
S5-s349b	Unnamed trib of Little Indian Creek	Intermittent	-	-	0.92	Culvert		x	0	0.00	0	0	0.00	0	0	0.00	0	13	0.01	0	0	0.00	0	22	0.01	0
S5-s349c	Unnamed trib of Little Indian Creek	Intermittent	-	53	0.97	Natural	Class II	x	84	0.02	0	163	0.04	0	665	0.15	665	79	0.02	0	665	0.15	665	92	0.02	0
S5-s349d	Unnamed trib of Little Indian Creek	Intermittent	-	-	0.97	Culvert		x	183	0.04	0	183	0.04	0	183	0.04	0	183	0.04	0	183	0.04	0	183	0.04	0
S5-s349e	Unnamed trib of Little Indian Creek	Intermittent	-	32	0.97	Natural	Class I	x	764	0.17	698	259	0.06	0	720	0.16	720	253	0.06	0	712	0.16	712	144	0.03	0
S5-s350a	Jordan Creek	Perennial	30	-	2.72	Natural	Limited Resource Water	x	0	0.00	0	169	0.02	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0	0
S5-s350b	Jordan Creek	Perennial	24	-	2.72	Natural	Limited Resource Water	x	218	0.03	0	157	0.02	0	209	0.02	0	195	0.02	0	196	0.02	0	207	0.02	0
S5-s350c	Jordan Creek	Perennial	24	-	2.72	Bridge	Limited Resource Water	x	129	0.01	0	129	0.01	0	129	0.01	0	129	0.01	0	129	0.01	0	129	0.01	0
S5-s350d	Jordan Creek	Perennial	24	-	2.72	Natural	Limited Resource Water	x	248	0.03	0	357	0.04	0	98	0.01	0	225	0.03	0	98	0.01	0	225	0.03	0
S5-s351a	Buckner Branch	Intermittent	31	-	1.25	Natural	Limited Resource Water	x	230	0.03	0	240	0.03	0	101	0.01	0	87	0.01	0	106	0.01	0	94	0.01	0
S5-s351b	Buckner Branch	Intermittent	-	-	1.25	Culvert		x	192	0.03	0	192	0.03	0	192	0.03	0	192	0.03	0	192	0.03	0	192	0.03	0
S5-s351c	Buckner Branch	Intermittent	31	-	1.25	Natural	Limited Resource Water	x	203	0.03	0	246	0.03	0	84	0.01	0	81	0.01	0	81	0.01	0	92	0.01	0
S5-s357a	Unnamed trib of Bryant Creek	Ephemeral	-	22	0.01	Natural	Class I	x	95	0.01	0	93	0.01	0	93	0.01	0	93	0.01	0	93	0.01	0	93	0.01	0
S5-s357b	Unnamed trib of Bryant Creek	Ephemeral	-	-	0.01	Culvert		x	318	0.01	0	318	0.01	0	318	0.01	0	318	0.01	0	318	0.01	0	318	0.01	0
S5-s357c	Unnamed trib of Bryant Creek	Ephemeral	-	40	0.01	Natural	Class II	x	55	0.01	0	55	0.01	0	55	0.01	0	55	0.01	0	55	0.01	0	55	0.01	0
S5-s358a	Unnamed trib of Bryant Creek	Ephemeral	-	10	0.01	Natural	Class I	x	104	0.01	0	102	0.01	0	102	0.01	0	102	0.01	0	102	0.01	0	102	0.01	0
S5-s358b	Unnamed trib of Bryant Creek	Ephemeral	-	-	0.01	Culvert		x	290	0.01	0	290	0.01	0	290	0.01	0	290	0.01	0	290	0.01	0	290	0.01	0
S5-s358c	Unnamed trib of Bryant Creek	Ephemeral	-	22	0.01	Natural	Modified Class I	x	27	0.01	0	27	0.01	0	27	0.01	0	27	0.01	0	27	0.01	0	27	0.01	0
S5-s359_2	Unnamed trib of Bryant Creek	Ephemeral	-	12	0.03	Concrete Gutter	Modified Class I	x	693	0.02	693	693	0.02	693	585	0.02	585	585	0.02	585	585	0.02	585	585	0.02	585
S5-s359b	Unnamed trib of Bryant Creek	Ephemeral	-	48	0.05	Natural	Class II	x	71	0.01	71	69	0.01	69	0	0.00	0	0	0.00	0	0	0.00	0	0	0	0
S5-s359c	Unnamed trib of Bryant Creek	Ephemeral	-	-	0.05	Culvert		x	347	0.03	0	347	0.03	0	328	0.02	0	328	0.02	0	328	0.02	0	328	0.02	0
S5-s360b_1	Unnamed trib of Fox Hollow	Ephemeral	-	12	0.01	Concrete Gutter	Modified Class I		355	0.01	355	355	0.01	355	355	0.01	355	355	0.01	355	355	0.01	355	355	0.01	355
S5-s361	Unnamed trib of Little Indian Creek	Ephemeral	-	50	0.01	Natural	Class II	x	255	0.08	255	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0	0
S5-s361_1	Unnamed trib of Little Indian Creek	Ephemeral	-	32	0.01	Natural	Class I	x	68	0.01	68	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0	0
S5-s363a	Unnamed trib of Bryant Creek	Ephemeral	-	38	0.01	Natural	Class I	x	132	0.01	132	132	0.01	132	132	0.01	132	132	0.01	132	132	0.01	132	132	0.01	132
S5-s365	Unnamed trib of Bryant Creek	Ephemeral	-	27	0.01	Natural	Class I	x	184	0.01	184	187	0.01	187	144	0.01	144	144	0.01	144	144	0.01	144	144	0.01	144
S5-s366	Unnamed trib of Payne Hollow	Ephemeral	-	21	0.01	Natural	Class I	x	10	0.01	10	19	0.01	19	0	0.00	0	0	0.00	0	0	0.00	0	0	0	0
S5-s368	Unnamed trib of Bryant Creek	Ephemeral	-	40	0.01	Natural	Class II	x	86	0.01	0	85	0.01	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0	0
S5-s383	Unnamed trib of Bryant Creek	Ephemeral	-	12	0.01	Concrete Gutter	Modified Class I	x	160	0.01	160	141	0.01	141	141	0.01	141	141	0.01	141	141	0.01	141	141	0.01	141
S5-s384a	Unnamed trib of Indian Creek	Ephemeral	-	22	0.02	Roadside Ditch	Modified Class I		2,379	0.10	2379	2,379	0.10	2379	2,379	0.10	2379	2,379	0.10	2379	2,379	0.10	2379	2379	0.1	2379
S5-s384b	Unnamed trib of Indian Creek	Ephemeral	-	12	0.04	Concrete Gutter	Modified Class I		101	0.01	101	101	0.01	101	101	0.01	101	101	0.01	101	101	0.01	101	101	0.01	101
S5-s384b_1	Unnamed trib of Indian Creek	Ephemeral	-	12	0.01	Concrete Gutter	Modified Class I		42	0.01	42	42	0.01	42	42	0.01	42	42	0.01	42	42	0.01	42	42	0.01	42
S5-s384c	Unnamed trib of Indian Creek	Ephemeral	-	-	0.04	Culvert			48	0.01	0	48	0.01	0	48	0.01	0	48	0.01	0	48	0.01	0	48	0.01	0
S5-s384d	Unnamed trib of Indian Creek	Ephemeral	-	12	0.04	Concrete Gutter	Modified Class I		99	0.01	99	99	0.01	99	99	0.01	99	99	0.01	99	99	0.01	99	99	0.01	99
S5-s420	Unnamed trib of Clear Creek	Ephemeral	-	12	0.02	Concrete Gutter	Modified Class I		0	0.00	0	0	0.00	0	499	0.01	499	499	0.01	499	499	0.01	499	499	0.01	499
Grand Total									106,445	13.57	73,463	103,165	13.59	68,675	85,192	11.49	55,557	83,291	11.23	53,360	86,404	11.70	56,480	80,582	10.24	51,629

Abbreviations:

LF = Linear feet, USGS = United States Geological Survey, HHEI = Headwater Habitat Evaluation Index, QHEI = Qualitative Headwater Evaluation Index, Relo. = Relocation, Ripar. = Riparian, ROW = Right-of-way, trib = Tributary

† At least a portion of this stream lies within the bifurcation area. The total stream length is 6,579 LF within the bifurcation area under all alternatives. Within the bifurcation area the total stream relocation is 5,218 LF under all alternatives.

Note: Width of the ordinary high water mark (OHWM) x linear feet of impact = acres of impact. HHEI and QHEI were not completed on culverted segments of the stream.