ONCOR ELECTRIC DELIVERY COMPANY LLC
PUBLIC PARTICIPATION MEETING FOR THE PROPOSED RAMHORN HILL—DUNHAM 345 KV TRANSMISSION LINE PROJECT

DECEMBER 7 AND 8, 2022

MARRIOTT HOTEL & GOLF CLUB AT CHAMPIONS CIRCLE
3300 CHAMPIONSHIP PARKWAY
FORT WORTH, TEXAS, 76177
4:00 - 7:00 PM

Welcome and thank you for taking the time to attend this Public Participation Meeting for the proposed Ramhorn Hill—Dunham 345 kV transmission line project (Proposed Transmission Line Project). To continue to provide safe and reliable electric service in this area, Oncor Electric Delivery Company LLC (Oncor) must construct a new transmission line. The new transmission line will connect the proposed Ramhorn Hill Switch, which will be located approximately 2 miles south of the intersection of United States Highway 287 and State Highway 114, near Rhome, Texas, to the proposed Dunham Switch, which will be located approximately 1.4 miles southeast of the intersection of Interstate Highway 35W and Farm-to-Market Road (FM) 1171, in Flower Mound, Texas. The Proposed Transmission Line Project will include a double-circuit, 345 kV transmission line with a vacant position for a future 138 kV circuit. The Proposed Transmission Line Project is currently planned for completion in 2025.

The purpose of this Public Participation Meeting is to present information, receive your ideas and comments, and answer your questions about the Proposed Transmission Line Project. The Questions and Answers below provide general information about the project.

You will notice that there are several subject matter stations with associated exhibits around the room. Each station addresses a different aspect of the Proposed Transmission Line Project. Oncor representatives, as well as representatives from Oncor's environmental and routing consultant, Halff Associates, Inc. (Halff), and Oncor's property abstractor, Integra Realty Resources (Integra), are located at each station and can provide answers to specific questions about the Proposed Transmission Line Project. Oncor, Halff, and Integra representatives are subject-matter experts who can provide information concerning their respective areas of expertise as they relate to the Proposed Transmission Line Project. We encourage you to take advantage of this opportunity to talk with the various representatives.

The stations are arranged in a particular order that will, if visited in order, give a better understanding of the development process for the Proposed Transmission Line Project. Please spend as much time as you need at each station to have your questions answered or address any issues that are important to you. Since this is an informal open house, come-and-go type meeting, there may be times when one particular exhibit is crowded. Please bear with us and we will make every attempt to answer any questions you have in as timely a manner as possible.

Who is Oncor?

Oncor is an electric transmission and distribution utility regulated by the Public Utility Commission of Texas (PUCT). Oncor constructs, owns, and operates electric transmission and distribution lines that move electric power across the state, connecting electric power generators with electric power consumers. Oncor does not own electric generation and does not buy or sell electric power. Oncor is not the same company as, and is not affiliated with, TXU Energy or Luminant.

What does the transmission system do?

Texas' electric grid is a network of electric power generation facilities, transmission lines, switching stations and substations, and distribution lines, all designed to provide safe, reliable electric service to end-use customers who purchase electricity at retail. Transmission lines transport electricity from power generation facilities at a high voltage to local substations, where electricity is converted to a lower voltage and delivered to Texas residences and businesses through the distribution system.

For Oncor to provide safe and reliable electric service, it must work with other utilities and state organizations to design the electric transmission network so that the temporary loss of a power generation plant, a substation, or a transmission line will not result in a major electrical outage. For example, without appropriate planning and system improvements, damage to a single transmission line caused by incidents such as tornadoes, lightning, ice storms, or equipment failure could result in significant disruptions to the delivery of electricity.

Why must a new transmission line be constructed in this area?

Electric demand, or "load," on Oncor's system in North Texas continues to grow. The addition of new load places strain on the transmission grid

in the immediate area, which can impact the reliability of electric service. A new 345 kV double-circuit transmission line (with a vacant position for a future 138 kV circuit) is needed to accommodate load growth in the area and mitigate the reliability issues identified by Oncor and ERCOT (Electric Reliability Council of Texas). This new line will connect the proposed Ramhorn Hill Switch and Dunham Switch. The Proposed Transmission Line Project will address potential reliability issues and increase Oncor's load-serving capability to surrounding areas while limiting the footprint of Oncor's facilities. The location of the Proposed Transmission Line Project is shown on the map attached as Exhibit 1.

What is the approximate location of the proposed transmission line?

The approximate locations of the preliminary route segments being considered for the Proposed Transmission Line Project are shown on the map attached as Exhibit 1. Your input will help us to make appropriate modifications to these preliminary route segments. Once the routing options for the transmission line are finalized, those routes and route segments will be submitted to the PUCT for selection and approval. Upon their submission, all routes and route segments included in Oncor's Application for a Certificate of Convenience and Necessity (CCN) will be available for selection and approval by the PUCT.

How long will the transmission line be?

The proposed transmission line will be approximately 15-20 miles long, depending on the routing that is ultimately approved , or "certificated", by the PUCT.

What type of transmission structure will be used?

For the Proposed Transmission Line Project, Oncor has chosen a self-supporting, steel monopole structure. The structures will include brackets for a future 138 kV circuit. A drawing of this structure is attached as Exhibit 2.

Who will benefit from the new transmission line?

The completion of this transmission line project will provide benefits to all participants in the Texas electric market, including your community. The proposed enhancements will mitigate potential grid reliability issues and improve the electric system, which will allow Oncor to continue to provide the safe, reliable electric service consumers have come to expect from Oncor. The Proposed Transmission Line Project will also add

necessary transmission capacity to support the continuing development and economic growth of the local communities in this area of Denton and Wise counties.

Will environmental studies be conducted to determine the impact of the project?

Yes. Halff, a well-respected environmental consulting and engineering firm headquartered in Richardson, Texas, is preparing an Environmental Assessment to support Oncor's Application for a CCN from the PUCT. The Environmental Assessment will assess the potential impacts of the Proposed Transmission Line Project on existing environmental and land uses.

How will property owners or other interested persons find out information regarding the status of the Oncor project and the results of the certification process?

There are several ways members of the public may: (1) be made aware of Oncor's filing of its CCN application at the PUCT; (2) participate or provide comment in the certification process; (3) monitor the proceeding as it progresses; and (4) determine the outcome of the PUCT proceeding regarding the Proposed Transmission Line Project.

First, as part of the formal Application for a CCN for PUCT approval, a formal notice will be provided via first-class mail to (1) any property owner whose land will be crossed by the Proposed Transmission Line Project, and (2) any owner of property within 520 feet of the centerline of the Proposed Transmission Line Project. As required by PUCT rules, property ownership for this notice has been determined by current county appraisal district tax records.

Second, public notice will be provided in newspapers of general circulation within Denton and Wise counties during the week after Oncor files its application at the PUCT. Information about Oncor's application and the PUCT proceeding can be obtained on the PUCT's online Interchange, which provides free access to documents that are officially filed with the Commission. You may access the Interchange by visiting the PUCT's website at www.puc.state.tx.us.

The docket number (also called a "control number" on the PUCT website) of a PUCT proceeding is a key piece of information used in locating

documents in the proceeding. The docket number will be available once Oncor files its CCN application with the PUCT and will be provided in the mailed and published notices.

One way to become involved in a case at the PUCT is to become an "intervenor." An intervenor is a person who, upon showing a justiciable interest, is permitted to become a party to the proceeding. Intervenors may fully participate in the proceeding and can make legal arguments, conduct discovery, file testimony, cross-examine witnesses, and are themselves, if they testify, subject to cross-examination by the other parties in the case. For more information and rules about participating as an intervenor, visit the PUCT's website at: http://www.puc.texas.gov/agency/rulesnlaws/Participate.aspx.

If you do not wish to be a full participant in this proceeding, you may become a "protestor." Protestors are not parties to the case and may not conduct discovery, cross-examine witnesses or present a direct case. Protestors may, however, make a written or verbal statement in support of, or in opposition to, the CCN application and give information to the PUCT staff that they believe may be helpful. If you intend to be a protestor, you can either send written comments stating your position regarding the application, or, if the docket progresses to a hearing, you can make a statement of protest on the first day of the hearing. Although public comments are not sworn and therefore not treated as evidence, they help to inform the PUCT and its staff of the public's concerns and to identify issues to be explored. The PUCT welcomes such participation in its proceedings.

Finally, if the PUCT approves the Proposed Transmission Line Project, a notice will be sent, via first-class mail, to the property owners who were provided formal notice of Oncor's application, as described above, indicating that the PUCT issued a Final Order for the Proposed Transmission Line Project.

When will construction of the proposed transmission line begin?

Before construction can begin, Oncor must seek and receive approval from the PUCT. This process, along with typical time frames for each step of the process, is provided in the attached document titled **Licensing Process for New Transmission Facilities**. Based on an in-service date of 2025, we anticipate filing an application for PUCT approval in May of 2023 and that, if approved, construction could begin in late 2024.

If I have additional questions following this meeting, who should I contact?

Additional information concerning this and other Oncor transmission line projects can be obtained at the following website: http://www.oncor.com/transmissionprojects. You may also contact the project manager for this project, Mr. Ife Adetoro by phone at: (214) 486-4918, or by email at: transmissionprojects@oncor.com.

Thank you again for attending this open house!

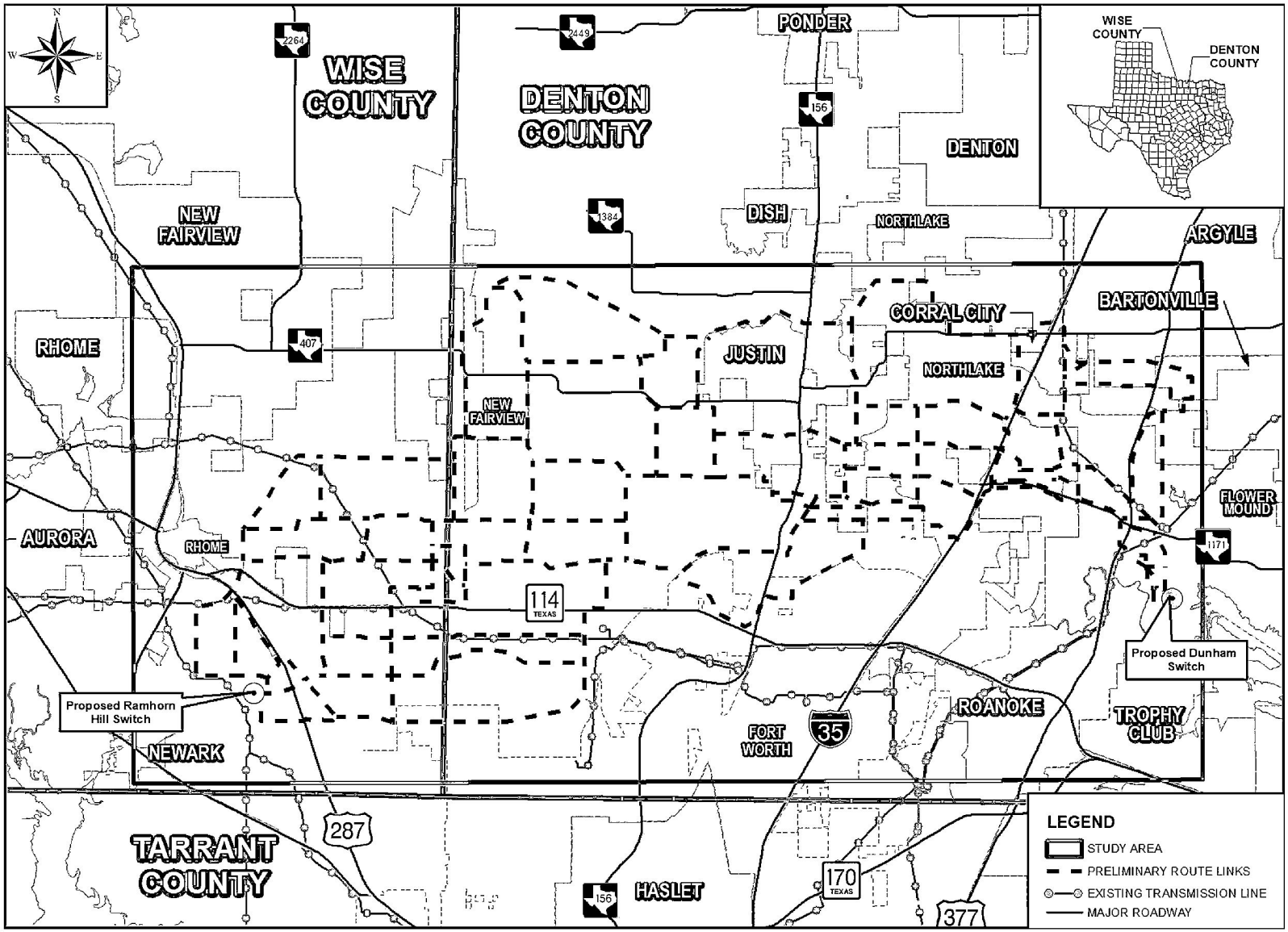
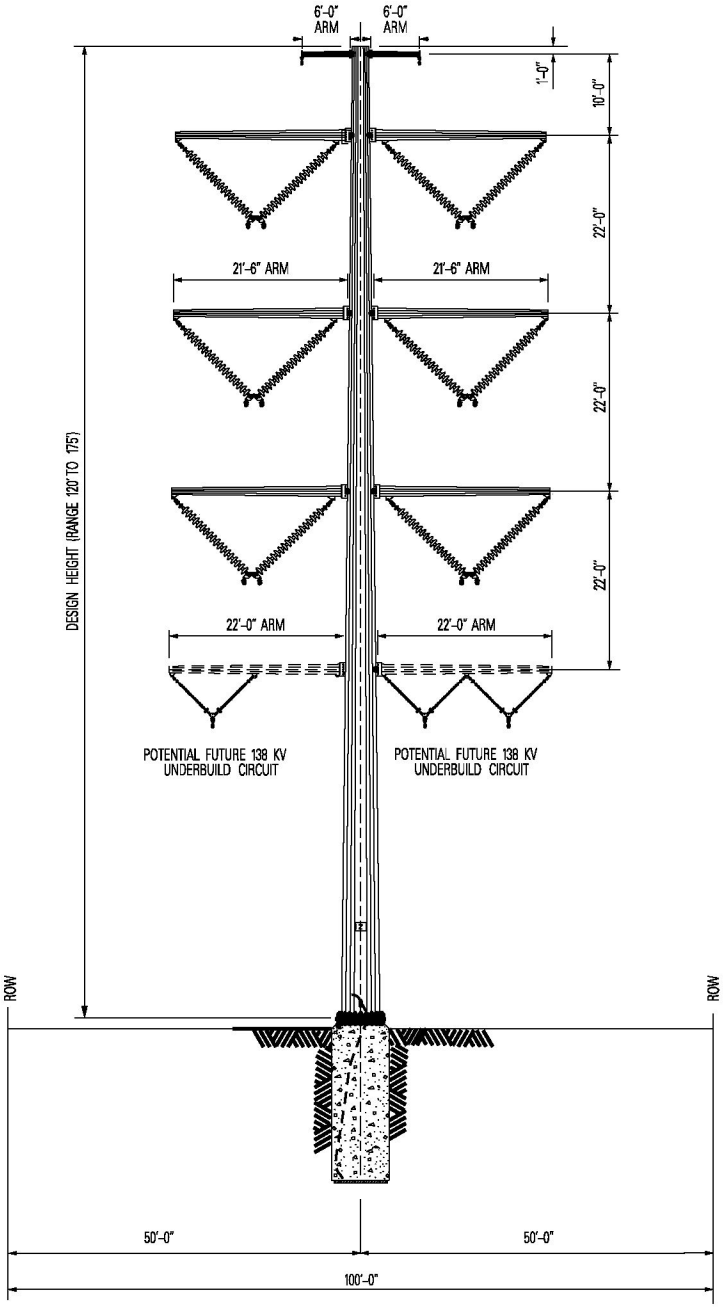

WISE COUNTY
DENTON COUNTY
TARRANT COUNTY
PONDER
DENTON
DISH
NORTHLAKE
ARGYLE
BARTONVILLE
CORRAL CITY
JUSTIN
NEW FAIRVIEW
RHOME
AURORA
FLOWER MOUND
ROANOKE
TROPHY CLUB
FORT WORTH
NEWARK
HASLET
Proposed Ramhorn Hill Switch
Proposed Dunham Switch
2264
2449
156
1384
407
114 TEXAS
35
287
170 TEXAS
377
1171
WISE COUNTY
DENTON COUNTY
LEGEND
STUDY AREA
PRELIMINARY ROUTE LINKS
EXISTING TRANSMISSION LINE
MAJOR ROADWAY

EXHIBIT 1

EXHIBIT 2

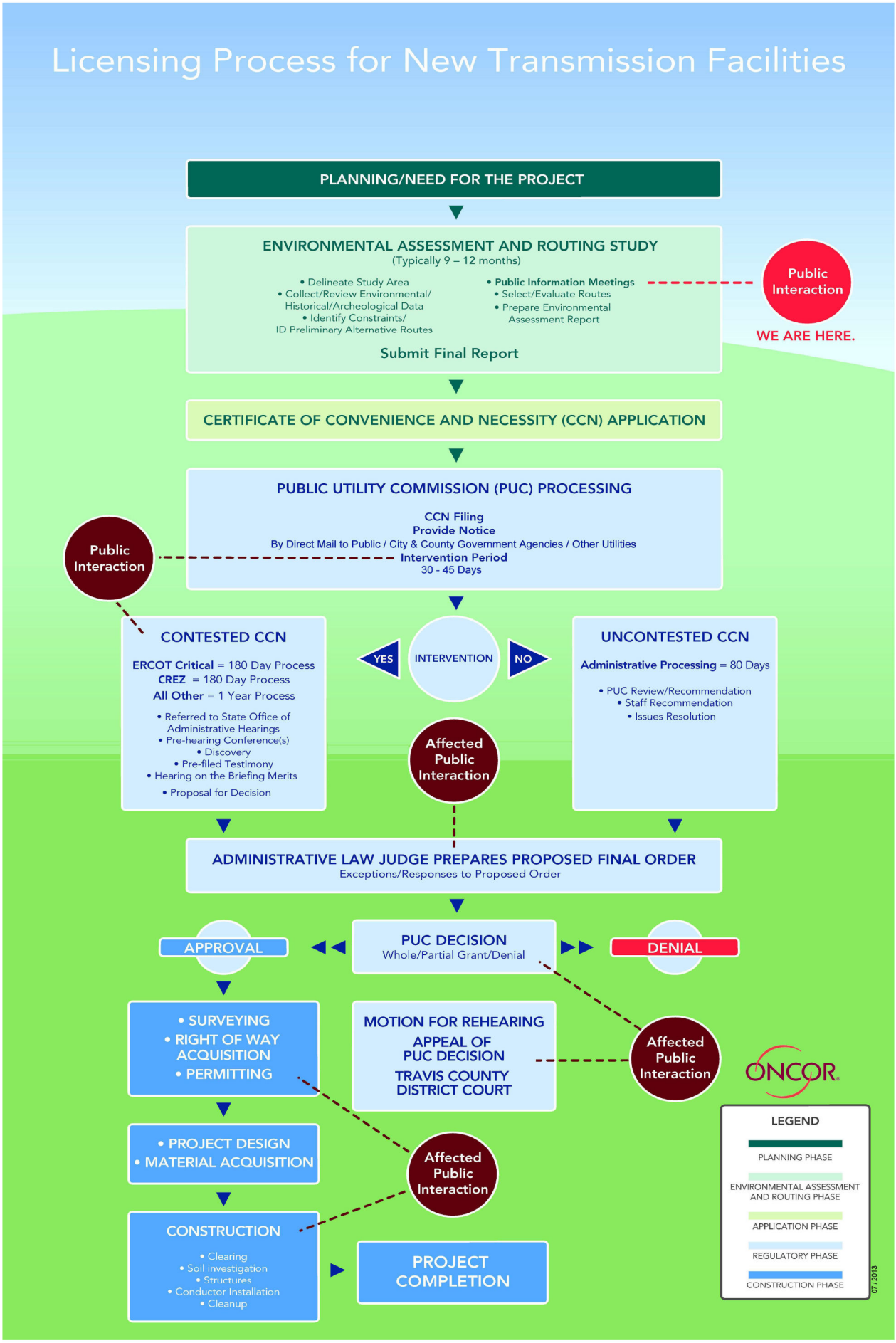


TYPICAL DOUBLE CIRCUIT 345 KV STEEL POLE WITH 138 KV UNDERBUILD

PROPOSED RAMHORN HILL SWITCH - DUNHAM SWITCH
345 KV TRANSMISSION LINE PROJECT

ONCOR

Licensing Process for New Transmission Facilities



Licensing Process for New Transmission Facilities

Texas Utilities Code

The governance of the licensing process for new transmission facilities is included within the Texas Utilities Code, Title II – Public Utilities Regulatory Act, Section 37.056.

Sec 37.056 GRANT OR DENIAL OF CERTIFICATE

(a) The commission may approve applications and grant a certificate only if the commission finds that the certificate is necessary for the service, accommodation, convenience, or safety of the public.

(b) The commission may:
- (1) issue the certificate as requested;
- (2) grant the certificate for the construction of a portion of the requested system, facility, or extension or the partial exercise of the requested right or privilege; or
- (3) refuse to grant the certificate.

(c) The commission shall grant each certificate on a nondiscriminatory basis after considering;
- (1) the adequacy of existing service;
- (2) the need for additional service;
- (3) the effect of granting the certificate on the recipient of the certificate and on any electric utility serving the proximate area; and
- (4) other factors, such as;
  - (A) community values;
  - (B) recreational and park areas;
  - (C) historical and aesthetic values;
  - (D) environmental integrity; and
  - (E) the probable improvement of service or lowering of cost to consumers in the area if the certificate is granted.

If you have additional questions or would like additional information, you may contact the Public Utility Commission of Texas at P.O. Box 13326, Austin, Texas 78711-3326, or call the Public Utility Commission at (512) 936-7120, or (888) 782-8477. Hearing impaired and speech-impaired individuals with text telephones may contact the commission at (512) 936-7136.

09/2011

THE STATE OF TEXAS

LANDOWNER'S BILL OF RIGHTS

This Landowner's Bill of Rights applies to any attempt to condemn your property. The contents of this Bill of Rights are set out by the Texas Legislature in Texas Government Code section 402.031 and chapter 21 of the Texas Property Code. Any entity exercising eminent domain authority must provide a copy of this Bill of Rights to you.

1. You are entitled to receive adequate compensation if your property is condemned.
2. Your property can only be condemned for a public use.
3. Your property can only be condemned by a governmental entity or private entity authorized by law to do so.
4. The entity that wants to acquire your property must notify you that it intends to condemn your property.
5. The entity proposing to acquire your property must provide you with a written appraisal from a certified appraiser detailing the adequate compensation you are owed for your property.
6. If you believe that a registered easement or right-of-way agent acting on behalf of the entity that wants to acquire your property has engaged in misconduct, you may file a written complaint with the Texas Real Estate Commission (TREC) under section 1101.205 of the Texas Occupations Code. The complaint should be signed and may include any supporting evidence.
7. The condemning entity must make a bona fide offer to buy the property before it files a lawsuit to condemn the property—meaning the condemning entity must make a good faith offer that conforms with chapter 21 of the Texas Property Code.
8. You may hire an appraiser or other professional to determine the value of your property or to assist you in any condemnation proceeding.
9. You may hire an attorney to negotiate with the condemning entity and to represent you in any legal proceedings involving the condemnation.
10. Before your property is condemned, you are entitled to a hearing before a court-appointed panel of three special commissioners. The special commissioners must determine the amount of compensation the condemning entity owes for condemning your property. The commissioners must also determine what compensation, if any, you are entitled to receive for any reduction in value of your remaining property.
11. If you are unsatisfied with the compensation awarded by the special commissioners, or if you question whether the condemnation of your property was proper, you have the right to a trial by a judge or jury. You may also appeal the trial court's judgment if you are unsatisfied with the result.

PREPARED BY THE OFFICE OF THE ATTORNEY GENERAL OF TEXAS • JANUARY 2022

CONDEMNATION PROCEDURE

Eminent domain is the legal authority certain governmental and private entities have to condemn private property for public use in exchange for adequate compensation. Only entities authorized by law to do so may condemn private property. Private property can include land and certain improvements that are on that property.

WHO CAN I HIRE TO HELP ME?

You can hire an appraiser or real estate professional to help you determine the value of your property as well as an attorney to negotiate with a condemning entity or to represent you during condemnation proceedings.

WHAT QUALIFIES AS A PUBLIC PURPOSE OR USE?

Your property may be condemned only for a purpose or use that serves the general public. This could include building or expanding roadways, public utilities, parks, universities, and other infrastructure serving the public. Texas law does not allow condemning authorities to exercise eminent domain for tax revenue or economic development.

WHAT IS ADEQUATE COMPENSATION?

Adequate compensation typically means the market value of the property being condemned. It could also include certain damages if your remaining property's market value is diminished by the condemnation or the public purpose for which it is being condemned.

OTHER THAN ADEQUATE COMPENSATION, WHAT OTHER COMPENSATION COULD I BE OWED?

If you are displaced from your residence or place of business, you may be entitled to reimbursement for reasonable expenses incurred while moving to a new site. However, reimbursement costs may not be available if those expenses are recoverable under another law. Also, reimbursement costs are capped at the market value of the property.

WHAT DOES A CONDEMNOR HAVE TO DO BEFORE CONDEMNING MY PROPERTY?

- Provide you a copy of this Landowner's Bill of Rights before, or at the same time as, the entity first represents that it possesses eminent domain authority. It is also required to send this Landowner's Bill of Rights to the last known address of the person listed as the property owner on the most recent tax roll at least seven days before making its final offer to acquire the property.
  - If the condemnor seeks to condemn a right-of-way easement for a pipeline or electric transmission line and is a private entity, the condemnor must also provide you a copy of the Landowner's Bill of Right's addendum.
  - The addendum describes the standard terms required in an instrument conveying property rights (such as a deed transferring title or an easement spelling out the easement rights) and what terms you can negotiate.
- Make a bona fide offer to purchase the property. This process is described more fully in chapter 21 of the Texas Property Code. A "bona fide offer" involves both an initial written offer as well as a final written offer.
  - The initial written offer must include:
    - » a copy of the Landowner's Bill of Rights and addendum (if applicable);
    - » either a large-font, bold-print statement saying whether the offered compensation includes damages to the remainder of your remaining property or a formal appraisal of the property that identifies any damages to the remaining property (if any);
    - » the conveyance instrument (such as an easement or deed); and
    - » the name and telephone number of an employee, affiliate, or legal representative of the condemning entity.
  - The final written offer must be made at least 30 days after the initial written offer and must include, if not previously provided:
    - » compensation equal to or more than the amount listed in a written, certified appraisal that is provided to you;
    - » copies of the conveyance instrument; and
    - » the Landowner's Bill of Rights.
- Disclose any appraisal reports. When making its initial offer, the condemning entity must share its appraisal reports that relate to the property from the past 10 years. You have the right to discuss the offer with others and to either accept or reject the offer made by the condemning entity.

WHAT IF I DO NOT ACCEPT AN OFFER BY THE CONDEMNING AUTHORITY?

The condemnor must give you at least 14 days to consider the final offer before filing a lawsuit to condemn your property, which begins the legal condemnation process.

HOW DOES THE LEGAL CONDEMNATION PROCESS START?

The condemnor can start the legal condemnation process by filing a lawsuit to acquire your property in the appropriate court of the county where the property is located. When filing the petition, the condemnor must send you a copy of the petition by certified mail, return receipt requested, and first class mail. It must also send a copy to your attorney if you are represented by counsel.

WHAT DOES THE CONDEMNOR HAVE TO INCLUDE IN THE LAWSUIT FILED WITH THE COURT?

The lawsuit must describe the property being condemned and state the following: the public use; your name; that you and the condemning entity were unable to agree on the value of the property; that the condemning entity gave you the Landowner's Bill of Rights; and that the condemning entity made a bona fide offer to voluntarily purchase the property from you.

SPECIAL COMMISSIONERS' HEARING AND AWARD

No later than 30 days after the condemning entity files a condemnation lawsuit in court, the judge will appoint three local landowners to serve as special commissioners and two alternates. The judge will promptly give the condemnor a signed order appointing the special commissioners and the condemnor must give you, your lawyer, and other parties a copy of the order by certified mail, return receipt requested. The special commissioners will then schedule a condemnation hearing at the earliest practical time and place and to give you written notice of the hearing.

WHAT DO THE SPECIAL COMMISSIONERS DO?

The special commissioners' job is to decide what amount of money is adequate to compensate you for your property. The special commissioners will hold a hearing where you and other interested parties may introduce evidence. Then the special commissioners will determine the amount of money that is adequate compensation and file their written decision, known as an "Award," in the court with notice to all parties. Once the Award is filed, the condemning entity may take possession and start using the property being condemned, even if one or more parties object to the Award of the special commissioners.

ARE THERE LIMITATIONS ON WHAT THE SPECIAL COMMISSIONERS CAN DO?

Yes. The special commissioners are tasked only with determining monetary compensation for the value of the property condemned and the value of any damages to the remaining property. They do not decide whether the condemnation is necessary or if the public use is proper. Further, the special commissioners do not have the power to alter the terms of an easement, reduce the size of the land acquired, or say what access will be allowed to the property during or after the condemnation. The special commissioners also cannot determine who should receive what portion of the compensation they award. Essentially, the special commissioners are empowered only to say how much money the condemnor should pay for the land or rights being acquired.

WHO CAN BE A SPECIAL COMMISSIONER?

Special commissioners must be landowners and residents in the county where the condemnation proceeding is filed, and they must take an oath to assess the amount of adequate compensation fairly, impartially, and according to the law.

WHAT IF I WANT TO OBJECT TO A SPECIAL COMMISSIONER?

The judge must provide to the parties the names and contact information of the special commissioners and alternates. Each party will have up to 10 days after the date of the order appointing the special commissioners or 20 days after the date the petition was filed, whichever is later, to strike one of the three special commissioners. If a commissioner is struck, an alternate will serve as a replacement. Another party may strike a special commissioner from the resulting panel within three days after the date the initial strike was filed or the date of the initial strike deadline, whichever is later.

WHAT WILL HAPPEN AT THE SPECIAL COMMISSIONERS' HEARING?

The special commissioners will consider any evidence (such as appraisal reports and witness testimony) on the value of your condemned property, the damages or value added to remaining property that is not being condemned, and the condemning entity's proposed use of the property.

WHAT ARE MY RIGHTS AT THE SPECIAL COMMISSIONERS' HEARING?

You have the right to appear or not appear at the hearing. If you do appear, you can question witnesses or offer your own evidence on the value of the property. The condemning entity must give you all existing appraisal reports regarding your property used to determine an opinion of value at least three days before the hearing. If you intend to use appraisal reports to support your claim about adequate compensation, you must provide them to the condemning entity 10 days after you receive them or three business days before the hearing, whichever is earlier.

DO I HAVE TO PAY FOR THE SPECIAL COMMISSIONERS' HEARING?

If the special commissioners' award is less than or equal to the amount the condemning entity offered to pay before the proceedings began, then you may be financially responsible for the cost of the condemnation proceedings. But, if the award is more than the condemning entity offered to pay before the proceedings began, then the condemning entity will be responsible for the costs.

WHAT DOES THE CONDEMNOR NEED TO DO TO TAKE POSSESSION OF THE PROPERTY?

Once the condemning entity either pays the amount of the award to you or deposits it into the court's registry, the entity may take possession of the property and put the property to public use. Non-governmental condemning authorities may also be required to post bonds in addition to the award amount. You have the right to withdraw funds that are deposited into the registry of the court, but when you withdraw the money, you can no longer challenge whether the eminent domain action is valid—only whether the amount of compensation is adequate.

OBJECTING TO THE SPECIAL COMMISSIONERS' AWARD

If you, the condemning entity, or any other party is unsatisfied with the amount of the award, that party can formally object. The objection must be filed in writing with the court and is due by the first Monday following the 20th day after the clerk gives notice that the commissioners have filed their award with the court. If no party timely objects to the special commissioners' award, the court will adopt the award amount as the final compensation due and issue a final judgment in absence of objection.

WHAT HAPPENS AFTER I OBJECT TO THE SPECIAL COMMISSIONERS' AWARD?

If a party timely objects, the court will hear the case just like other civil lawsuits. Any party who objects to the award has the right to a trial and can elect whether to have the case decided by a judge or jury.

WHO PAYS FOR TRIAL?

If the verdict amount at trial is greater than the amount of the special commissioners' award, the condemnor may be ordered to pay costs. If the verdict at trial is equal to or less than the amount the condemnor originally offered, you may be ordered to pay costs.

IS THE TRIAL VERDICT THE FINAL DECISION?

Not necessarily. After trial any party may appeal the judgment entered by the court.

DISMISSAL OF THE CONDEMNATION ACTION

A condemnation action may be dismissed by either the condemning authority itself or on a motion by the landowner.

WHAT HAPPENS IF THE CONDEMNING AUTHORITY NO LONGER WANTS TO CONDEMN MY PROPERTY?

If a condemning entity decides it no longer needs your condemned property, it can file a motion to dismiss the condemnation proceeding. If the court grants the motion to dismiss, the case is over, and you can recover reasonable and necessary fees for attorneys, appraisers, photographers, and for other expenses up to that date.

WHAT IF I DO NOT THINK THE CONDEMNING ENTITY HAS THE RIGHT TO CONDEMN MY PROPERTY?

You can challenge the right to condemn your property by filing a motion to dismiss the condemnation proceeding. For example, a landowner could challenge the condemning entity's claim that it seeks to condemn the property for a public use. If the court grants the landowner's motion, the court may award the landowner reasonable and necessary fees and expenses incurred to that date.

CAN I GET MY PROPERTY BACK IF IT IS CONDEMNED BUT NEVER PUT TO A PUBLIC USE?

You may have the right to repurchase your property if your property is acquired through eminent domain and:

- the public use for which the property was acquired is canceled before that property is put to that use,
- no actual progress is made toward the public use within 10 years, or
- the property becomes unnecessary for public use within 10 years.

The repurchase price is the price you were paid at the time of the condemnation.

ADDITIONAL RESOURCES AND ADDENDA

For more information about the procedures, timelines, and requirements outlined in this document, see chapter 21 of the Texas Property Code. An addenda discussing the terms required for an instrument of conveyance under Property Code section 21.0114(c), and the conveyance terms that a property owner may negotiate under Property Code section 21.0114(d), is attached to this statement.

The information in this statement is intended to be a summary of the applicable portions of Texas state law as required by HB 1495, enacted by the 80th Texas Legislature, Regular Session, and HB 2730, enacted by the 87th Texas Legislature, Regular Session. This statement is not legal advice and is not a substitute for legal counsel.

ADDENDUM A:

Required Terms for an Instrument Conveying a Pipeline Right-of-Way Easement or an Easement Related to Pipeline Appurtenances[1]

(1) The maximum number of pipelines that may be installed in the right-of-way acquired through this instrument is _____.

(2) The types of pipeline appurtenances that are authorized to be installed under this instrument for pipeline-related appurtenances, such as pipes, valves, compressors, pumps, meters, pigging stations, dehydration facilities, electric facilities, communication facilities, and any other appurtenances that may be necessary or desirable in connection with a pipeline, are described as follows: _____.

(3) The maximum diameter, excluding any protective coating or wrapping, of each pipeline to be initially installed under this instrument for a pipeline right-of-way is _____.

(4) For each pipeline to be installed under this instrument, the type or category of substances permitted to be transported through each pipeline is _____.

(5) Any aboveground equipment or facility that Grantee[2] intends to install, maintain, or operate under this instrument on the surface of the pipeline easement is described as follows: _____.

(6) A description or illustration of the location of the easement, including a metes and bounds or centerline description, plat, or aerial or other map-based depiction of the location of the easement on the property, is attached as Exhibit _____.

(7) The maximum width of the easement under this instrument is _____.

(8) For each pipeline to be installed under this instrument, the minimum depth at which the pipeline will initially be installed is _____.

(9) The entity installing pipeline(s) under this instrument: (check one)

- ☐ intends to double-ditch areas of the pipeline easement that are not installed by boring or horizontal directional drilling.
- ☐ does not intend to double-ditch areas of the pipeline easement that are not installed by boring or horizontal directional drilling.

(10) Grantee shall provide written notice to Grantor[3], at the last known address of the person in whose name the property is listed on the most recent tax roll of any taxing unit authorized to levy property taxes against the property, if and when Grantee assigns any interest conveyed under this instrument to another entity, provided that this provision does not require notice by Grantee for assignment to an affiliate or to a successor through merger, consolidation, or other sale or transfer of all or substantially all of its assets and businesses.

(11) The easement rights conveyed by this instrument are: (check one)

- ☐ exclusive.
- ☐ nonexclusive.

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1 The easement terms listed in this addendum may be amended, altered, or omitted by the agreement of the condemning authority and the landowner, pursuant to Sections 21.0114(d), (e), and (f) of the Texas Property Code.

2 "Grantee" is the private entity, as defined by Section 21.0114(a) of the Texas Property Code, that is acquiring the pipeline easement.

3 "Grantor" is the property owner from whom the Grantee is acquiring the pipeline easement.

(12) Grantee may not grant to a third party access to the easement area for a purpose that is not related to one of the following: the construction, safety, repair, maintenance, inspection, replacement, operation, or removal of each pipeline to be installed under this instrument or of pipeline appurtenances to be installed under this instrument.

(13) Grantor: (check one)

- ☐ may recover from Grantee actual monetary damages, if any, arising from the construction and installation of each pipeline to be installed under this instrument.
- ☐ acknowledges that the consideration paid for the easement acquired under this instrument includes monetary damages, if any, arising from the construction and installation of each pipeline to be installed under this instrument.

(14) After initial construction and installation of each pipeline installed under this instrument, Grantor: (check one)

- ☐ may recover from Grantee actual monetary damages, if any, arising from the repair, maintenance, inspection, replacement, operation, or removal of each pipeline to be installed under this instrument.
- ☐ acknowledges that the consideration paid for the easement acquired under this instrument includes monetary damages, if any, arising from the repair, maintenance, inspection, replacement, operation, or removal of each pipeline to be installed under this instrument.

(15) Grantor: (check one)

- ☐ and Grantee agree, with regard to Grantee's removal, cutting, use, repair, and replacement of gates and fences that cross the easement or that will be used by Grantee under this instrument, that Grantee will access and secure the easement acquired under this instrument as follows: _____.
- ☐ may recover from Grantee payment for monetary damages, if any, caused by Grantee to gates and fences, if any, to the extent that the gates or fences are not restored or paid for as part of the consideration paid for the instrument.
- ☐ acknowledges that the consideration paid for the easement acquired under this instrument includes monetary damages, if any, caused by Grantee to gates and fences.

(16) With regard to restoring the pipeline easement area acquired under this instrument and Grantor's remaining property used by Grantee to as near to original condition as is reasonably practicable and maintaining the easement in a manner consistent with the purposes for which the easement is to be used under this instrument: (check one)

- ☐ Grantee will be responsible for the restoration.
- ☐ Grantee will reimburse Grantor for monetary damages that arise from damage to the pipeline easement area or the Grantor's remaining property, if any, caused by the Grantee and not restored or paid for as part of the consideration for the instrument.
- ☐ acknowledges that the consideration paid for the easement acquired under this instrument includes monetary damages, if any, caused by Grantee to the pipeline easement area or the Grantor's remaining property.

(17) Grantee's rights of ingress, egress, entry, and access on, to, over, and across Grantor's property under this instrument are described as follows: _____.

(18) Grantee may not make use of the property rights acquired by this instrument, other than as provided by this instrument, without the express written consent of Grantor.

(19) The terms of this instrument bind the heirs, successors, and assigns of Grantor and Grantee.

ADDENDUM B:

Required Terms for an Instrument Conveying an Electric Transmission Line Right-of-Way Easement[4]

(1) The uses of the surface of the property to be encumbered by the electric transmission line right-of-way easement acquired by Grantee[5] under this instrument are generally described as follows: _____.

(2) A description or illustration of the location of the electric transmission line right-of-way easement, including a metes and bounds or centerline description, plat, or aerial or other map-based depiction of the location of the easement on the property, is attached as Exhibit _____.

(3) The maximum width of the electric transmission line right-of-way easement acquired by this instrument is _____.

(4) Grantee will access the electric transmission line right-of-way easement acquired under this instrument in the following manner: _____.

(5) Grantee may not grant to a third party access to the electric transmission line right-of-way easement area for a purpose that is not related to the construction, safety, repair, maintenance, inspection, replacement, operation, or removal of the electric and appurtenant facilities installed under this instrument.

(6) Grantor[6]: (check one)

- ☐ may recover from Grantee actual monetary damages, if any, arising from the construction, operation, repair, maintenance, inspection, replacement, and future removal of lines and support facilities after initial construction in the easement, if any.
- ☐ acknowledges that the consideration paid for the easement acquired under this instrument includes monetary damages, if any, arising from the construction, operation, repair, maintenance, inspection, replacement, and future removal of lines and support facilities after initial construction in the easement.

(7) Grantor: (check one)

- ☐ and Grantee agree, with regard to Grantee's removal, cutting, use, repair, and replacement of gates and fences that cross the easement or that will be used by Grantee under this instrument, that Grantee will access and secure the easement acquired under this instrument as follows: _____
- ☐ may recover from Grantee payment for monetary damages, if any, caused by Grantee to gates and fences, if any, to the extent that the gates or fences are not restored or paid for as part of the consideration paid for the instrument.
- ☐ acknowledges that the consideration paid for the easement acquired under this instrument includes monetary damages, if any, caused by Grantee to gates and fences.

4 The easement terms listed in this addendum may be amended, altered, or omitted by the agreement of the condemning authority and the landowner, pursuant to Sections 21.0114(d), (e), and (f) of the Texas Property Code.

5 "Grantee" is the private entity, as defined by Section 21.0114(a) of the Texas Property Code, that is acquiring the electric transmission line right-of-way easement.

6 "Grantor" is the property owner from whom the Grantee is acquiring the electric transmission line right-of-way easement.

(8) Grantee shall restore the easement area and Grantor's remaining property to their original contours and grades, to the extent reasonably practicable, unless Grantee's safety or operational needs and the electric facilities located on the easement would be impaired. With regard to restoring the electric transmission line right-of-way easement area acquired under this instrument and Grantor's remaining property used by Grantee to as near to original condition as is reasonably practicable following future damages, if any, directly attributed to Grantee's use of the easement: (check one)

- ☐ Grantee will be responsible for the restoration, unless the safety or operational needs of Grantee and the electric facilities would be impaired.
- ☐ Grantor acknowledges that the consideration paid for the easement acquired under this instrument includes future damages, if any, caused by Grantee to the easement area or the Grantor's remaining property.

(9) The easement rights acquired under this instrument are: (check one)

- ☐ exclusive.
- ☐ nonexclusive.
- ☐ otherwise limited under the terms of the instrument as follows: _____.

(10) Grantee may not assign Grantee's interest in the property rights acquired under this instrument to an assignee that will not operate as a utility subject to the jurisdiction of the Public Utility Commission of Texas or the Federal Energy Regulatory Commission without written notice to Grantor at the last known address of the person in whose name the property is listed on the most recent tax roll of any taxing unit authorized to levy property taxes against the property.

(11) Grantee may not make use of the property rights acquired by this instrument, other than as provided by this instrument, without the express written consent of Grantor.

(12) The terms of this instrument bind the heirs, successors, and assigns of Grantor and Grantee.

ADDENDUM C:

Optional Terms for an Instrument Conveying a Pipeline Right-of-Way Easement, an Easement Related to Pipeline Appurtenances, or an Electric Transmission Line Right-of-Way Easement[7]

(1) With regard to the specific vegetation described as follows: _____, Grantor[8]: (check one):

- ☐ may recover from Grantee[9] payment for monetary damages, if any, caused by Grantee to the vegetation.
- ☐ Grantor acknowledges that the consideration paid for the easement acquired under this instrument includes monetary damages, if any, caused by Grantee to the vegetation.

(2) With regard to income loss from disruption of existing agricultural production or existing leases based on verifiable loss or lease payments caused by Grantee's use of the easement acquired under this instrument, Grantor: (check one)

- ☐ may recover from Grantee payment for monetary damages, if any, caused by Grantee to Grantor's income.
- ☐ Grantor acknowledges that the consideration paid for the easement acquired under this instrument includes monetary damages, if any, caused by Grantee to Grantor's income.

(3) Grantee shall maintain commercial liability insurance or self-insurance at all times, including during Grantee's construction and operations on the easement, while Grantee uses the easement acquired under this instrument. The insurance must insure Grantor against liability for personal injuries and property damage sustained by any person to the extent caused by the negligence of Grantee or Grantee's agents or contractors and to the extent allowed by law. If Grantee maintains commercial liability insurance, it must be issued by an insurer authorized to issue liability insurance in the State of Texas.

(4) If Grantee is subject to the electric transmission cost-of-service rate jurisdiction of the Public Utility Commission of Texas or has a net worth of at least $25 million, Grantee shall maintain commercial liability insurance or self-insurance at levels approved by the Public Utility Commission of Texas in the entity's most recent transmission cost-of-service base rate proceeding.

7 Pursuant to Section 21.0114(d) of the Texas Property Code, in addition to the terms set forth in Addenda A and B, a property owner may negotiate for the inclusion of the terms in this Addendum in any instrument conveying an easement to a private entity, as defined by Section 21.0114(a) of the Texas Property Code. The easement terms listed in this addendum may be amended, altered, or omitted by the agreement of the condemning authority and the landowner, pursuant to Sections 21.0114(d), (e), and (f) of the Texas Property Code.

8 "Grantor" is the property owner from whom the Grantee is acquiring the pipeline or electric transmission line right-of-way easement.

9 "Grantee" is the private entity, as defined by Section 21.0114(a) of the Texas Property Code, that is acquiring the easement.

ONCOR ELECTRIC DELIVERY COMPANY LLC
PUBLIC PARTICIPATION MEETING FOR THE PROPOSED RAMHORN HILL—DUNHAM 345 KV TRANSMISSION LINE PROJECT

DECEMBER 7 AND 8, 2022

MARRIOTT HOTEL & GOLF CLUB AT CHAMPIONS CIRCLE
3300 CHAMPIONSHIP PARKWAY
FORT WORTH, TEXAS, 76177
4:00 - 7:00 PM

1. In your opinion, has the need for the project been adequately explained to you?
   Yes _____ No _____

   How could we have improved this effort?
   _____
   _____
   _____

2. Were the exhibits and explanations of the need for the project helpful to you?
   Yes _____ No _____
   _____
   _____
   _____

3. Was the information presented helpful for your understanding of the project?
   Yes _____ No _____

4. The Public Utility Commission of Texas requires that several factors be considered when routing an electric transmission line, including:
   - Proximity to single-family and multi-family dwellings and related structures, mobile homes, apartment buildings, commercial structures, industrial structures, business structures, churches, hospitals, nursing homes, and schools;
   - Proximity to commercial radio transmitters, microwave relay stations or other electronic installations;
   - Proximity to parks and recreational areas;
   - Proximity to FAA-registered airports, private airstrips, and heliports;
   - Proximity to historical or archeological sites;
   - Agricultural areas irrigated by traveling irrigation systems;
   - Environmentally sensitive areas, and
   - Protected or endangered species.

HALFF has plotted these features that we know about on the Environmental and Land Use Constraints Map. To your knowledge, are those features shown on this map accurately plotted? Yes___ No___

Are you aware of any of these features that are not presently shown or are incorrectly located on this map? Yes___ No___

If so, please help us identify the approximate location of any missing or incorrectly located features in the space below

_____
_____
_____

5. The routing of a transmission line includes consideration of land use factors including the following: Please rank the following factors in order of importance to you. Indicate the most important factor with a number 1, the second most important with a number 2, and so on.

_____ a) Minimize the overall length of the line
_____ b) Minimize the length across cultivated land
_____ c) Minimize the length across pastureland
_____ d) Minimize the length across road frontage
_____ e) Minimize the length across residential areas
_____ f) Minimize the length along wooded areas
_____ g) Minimize the visibility of the line
_____ h) Other (please specify)

_____
_____

6. The routing of a transmission line also includes consideration of paralleling and/or utilizing existing corridors (e.g., existing transmission line and roadway corridors). Please rank the following existing corridors that are found within the project study area that you would prefer the new transmission line to parallel and/or use: Indicate your first preference with the number 1, your second preference with the number 2, and so on.

_____ a) Maximize the distance along existing transmission line corridors
_____ b) Maximize the distance along existing roadway corridors
_____ c) Maximize the distance along existing railroad corridors
_____ d) Maximize the distance along existing property Boundaries
_____ e) Other (please specify)

_____
_____
_____

7. The routing of a transmission line also includes consideration of the distance to habitable structures and community resources. Please rank the following in the order that you would prefer to maximize the distance from the proposed transmission line: Indicate your first preference with the number 1, your second preference with the number 2, and so on.

_____ a) Maximize the distance from residences, including single-family and multi-family dwellings
_____ b) Maximize the distance from commercial, industrial, and/or business structures
_____ c) Maximize the distance from churches
_____ d) Maximize the distance from hospitals
_____ e) Maximize the distance from nursing homes
_____ f) Maximize the distance from schools
_____ g) Maximize the distance from parks/recreational areas
_____ h) Maximize the distance from historical and archeological sites
_____ i) Other (please specify)

_____
_____
_____

8. In your opinion, are there any other factors or features that should be considered in determining the location of the proposed transmission line?
Yes _____ No _____

If so, please list them in the space below.

_____
_____
_____
_____

9. How did you learn about this open house?

_____
_____
_____

10. Which of the following applies to your situation?

_____ a) Proposed line route is near my home
_____ b) Proposed line route is near my business
_____ c) Proposed line route is on my land
_____ d) Other please specify

_____
_____
_____

11. If you would like, please enter your name and address below.

Name _____
Address _____
City/State _____ Zip_____

12. Do you have any general remarks or comments?

Thank you for your comments.

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Appendix C

Preliminary Route Modifications

STUDY AREA BOUNDARY

STUDY AREA BOUNDARY

Ramhorn Hill Switch

Dunham Switch

N

0 1,000 2,000
SCALE IN FEET

LEGEND

- STUDY AREA BOUNDARY
- USACE RECREATIONAL AREA
- PROJECT ENDPOINT
- NODE BETWEEN ADJACENT ROUTE LINK
- PRELIMINARY ALTERNATIVE ROUTE LINK
- ALTERNATIVE ROUTE LINK REMOVED

FIGURE 6-1

LINK REMOVALS

RAMHORN HILL SWITCH — DUNHAM SWITCH
345 kV TRANSMISSION LINE PROJECT

0 3,500 7,000
SCALE IN FEET

HALFF

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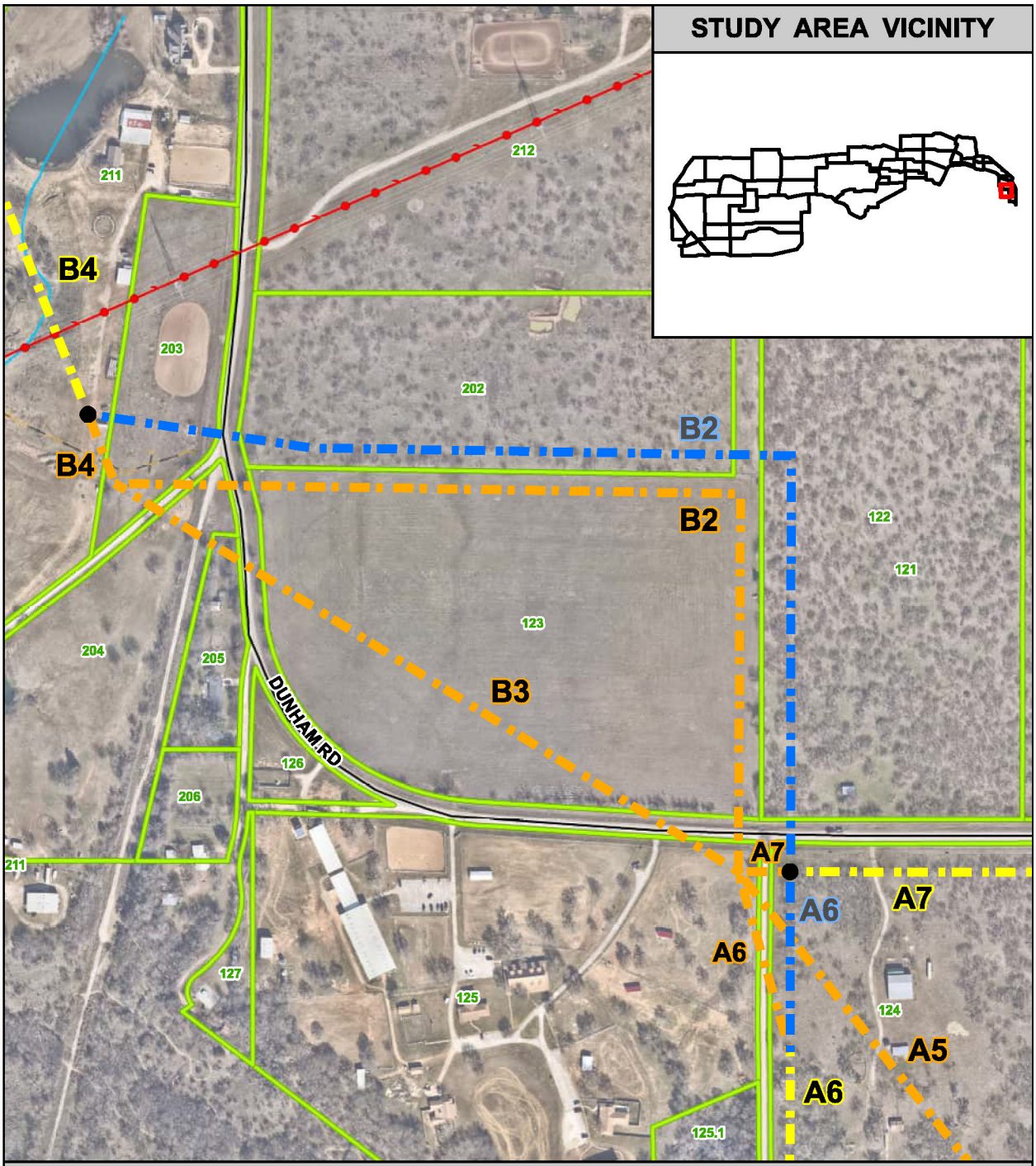
STUDY AREA VICINITY
B4
B4
B2
B2
B3
A7
A6
A7
A6
A5
A6
DUNHAM RD
211
212
203
202
122
121
123
204
205
126
206
211
127
125
124
125.1
LEGEND
PRELIMINARY LINK ALIGNMENT (UNMODIFIED SINCE PUBLIC MEETING)
NEW OR REVISED LINK ALIGNMENT
PRELIMINARY LINK ALIGNMENT
LINK NODE
EXISTING TRANSMISSION LINE
EXISTING PIPELINE
STREAM / CREEK
ROADWAY
TRACT BOUNDARY
FIGURE 6-2
REVISION OF LINK B2
RAMHORN HILL SWITCH — DUNHAM SWITCH
345 kV TRANSMISSION LINE PROJECT
N
W
E
S
0
200
400
SCALE IN FEET
BASE MAP: NEARMAP, 2023
HALFF

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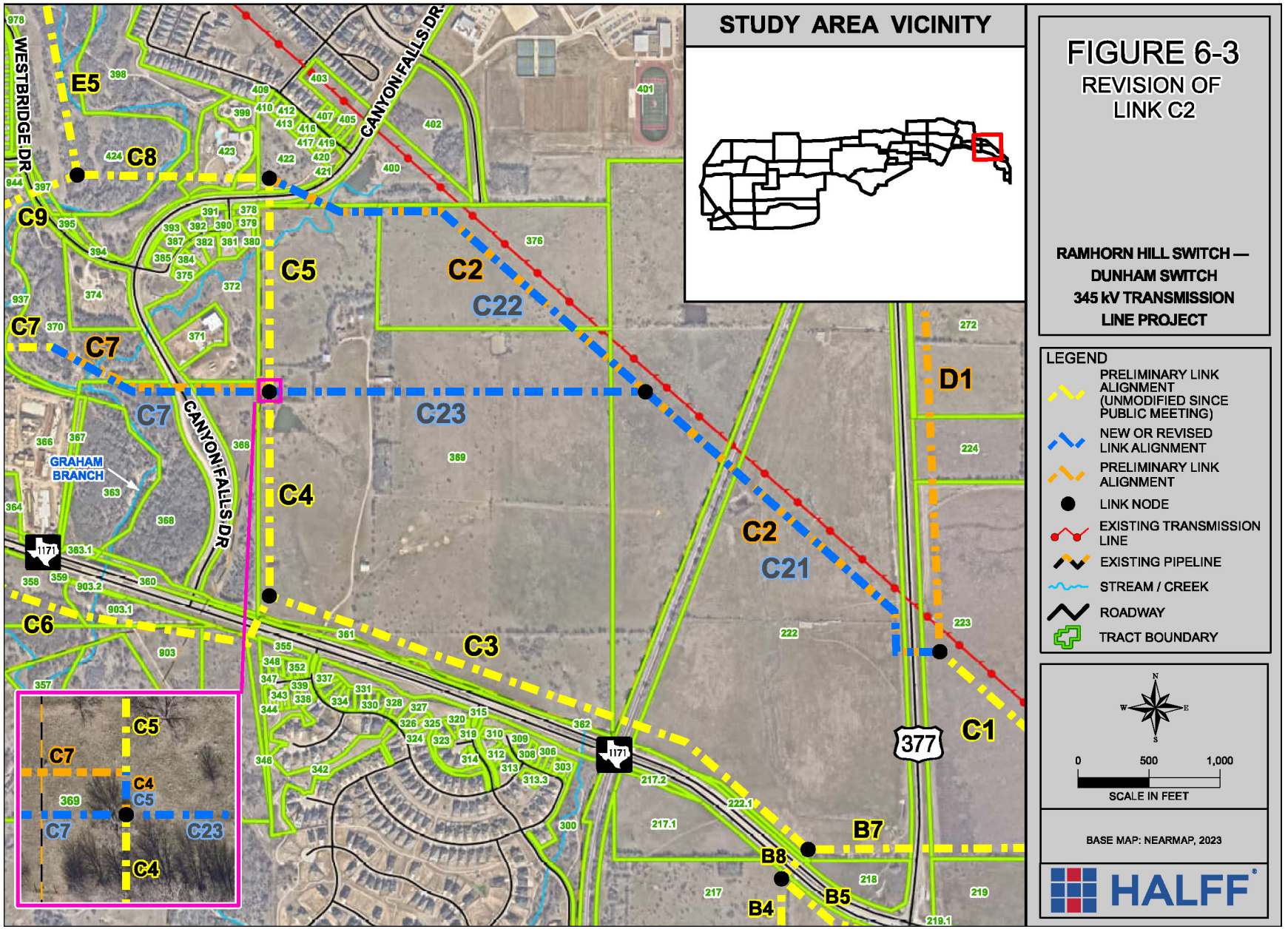
STUDY AREA VICINITY
FIGURE 6-3
REVISION OF
LINK C2
RAMHORN HILL SWITCH — DUNHAM SWITCH 345 kV TRANSMISSION LINE PROJECT
LEGEND
PRELIMINARY LINK ALIGNMENT (UNMODIFIED SINCE PUBLIC MEETING)
NEW OR REVISED LINK ALIGNMENT
PRELIMINARY LINK ALIGNMENT
LINK NODE
EXISTING TRANSMISSION LINE
EXISTING PIPELINE
STREAM / CREEK
ROADWAY
TRACT BOUNDARY
0
500
1,000
SCALE IN FEET
BASE MAP: NEARMAP, 2023
HALFF
WESTBRIDGE DR
CANYON FALLS DR
GRAHAM BRANCH
E5
C8
C9
C5
C2
C22
C7
C23
C4
C6
C3
C21
C1
D1
B7
B8
B5
B4
377
1171

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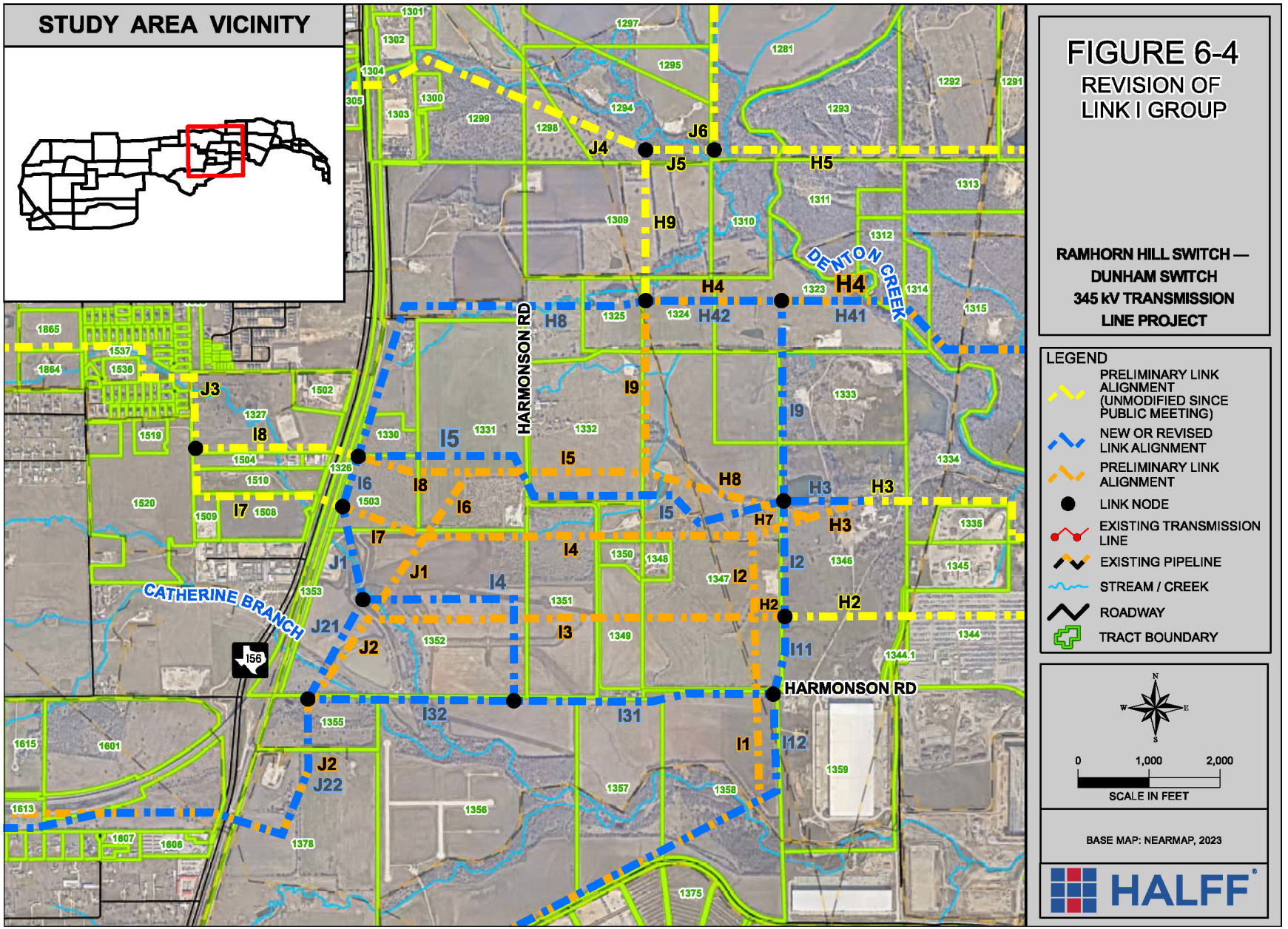
STUDY AREA VICINITY
FIGURE 6-4
REVISION OF
LINK I GROUP
RAMHORN HILL SWITCH — DUNHAM SWITCH
345 kV TRANSMISSION
LINE PROJECT
LEGEND
PRELIMINARY LINK ALIGNMENT (UNMODIFIED SINCE PUBLIC MEETING)
NEW OR REVISED LINK ALIGNMENT
PRELIMINARY LINK ALIGNMENT
LINK NODE
EXISTING TRANSMISSION LINE
EXISTING PIPELINE
STREAM / CREEK
ROADWAY
TRACT BOUNDARY
N
W
E
S
0
1,000
2,000
SCALE IN FEET
BASE MAP: NEARMAP, 2023
HALFF
HARMONSON RD
DENTON CREEK
CATHERINE BRANCH
156
J1
J2
J3
J4
J5
J6
J21
J22
H2
H3
H4
H5
H7
H8
H9
H41
H42
I1
I2
I3
I4
I5
I6
I7
I8
I9
I11
I12
I31
I32

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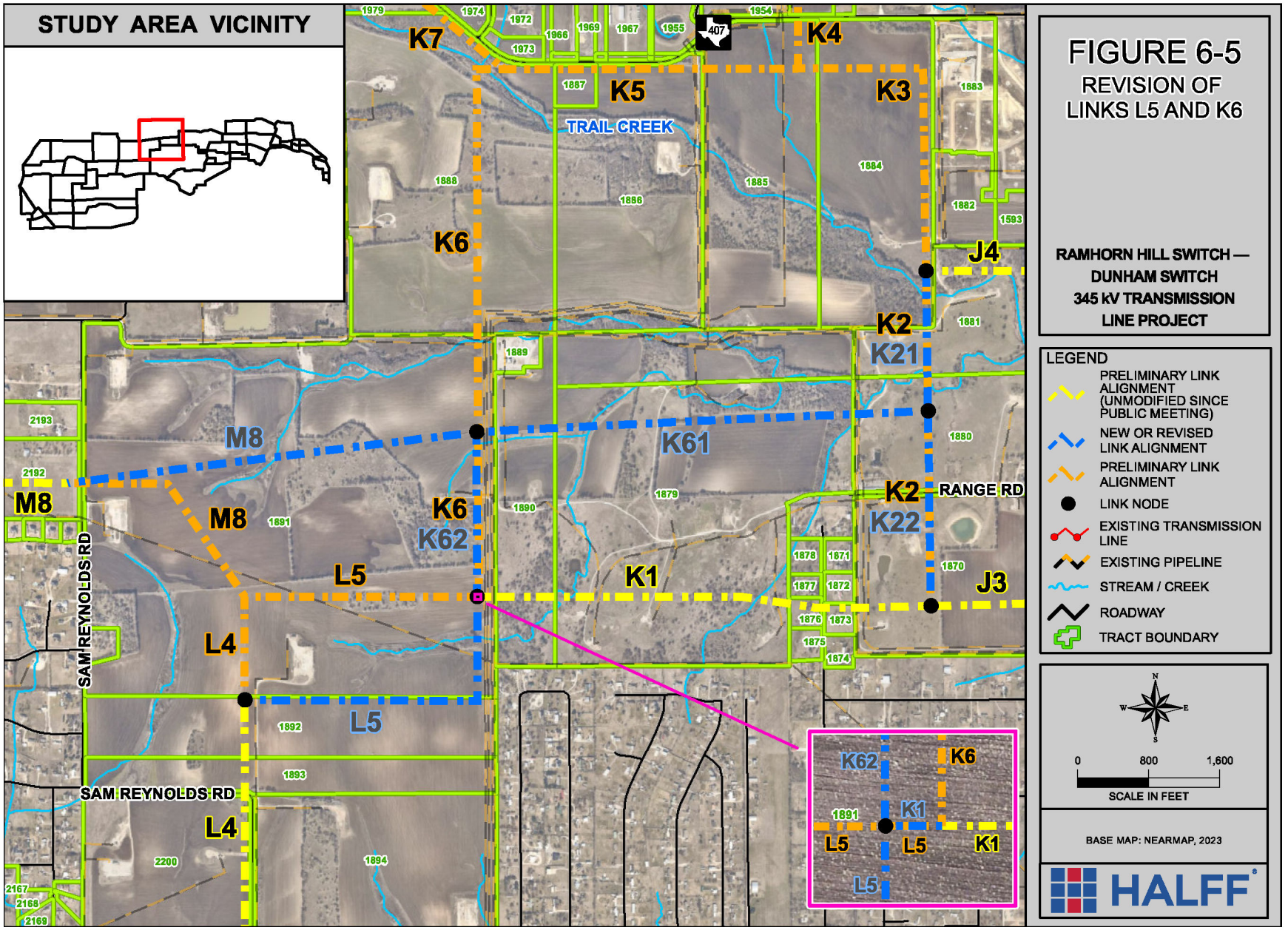
STUDY AREA VICINITY
K7
K5
K4
K3
TRAIL CREEK
K6
J4
K2
K21
K61
M8
K62
K22
RANGE RD
L5
K1
J3
L4
SAM REYNOLDS RD
SAM REYNOLDS RD
FIGURE 6-5
REVISION OF
LINKS L5 AND K6
RAMHORN HILL SWITCH — DUNHAM SWITCH 345 kV TRANSMISSION LINE PROJECT
LEGEND
PRELIMINARY LINK ALIGNMENT (UNMODIFIED SINCE PUBLIC MEETING)
NEW OR REVISED LINK ALIGNMENT
PRELIMINARY LINK ALIGNMENT
LINK NODE
EXISTING TRANSMISSION LINE
EXISTING PIPELINE
STREAM / CREEK
ROADWAY
TRACT BOUNDARY
0
800
1,600
SCALE IN FEET
BASE MAP: NEARMAP, 2023
HALFF

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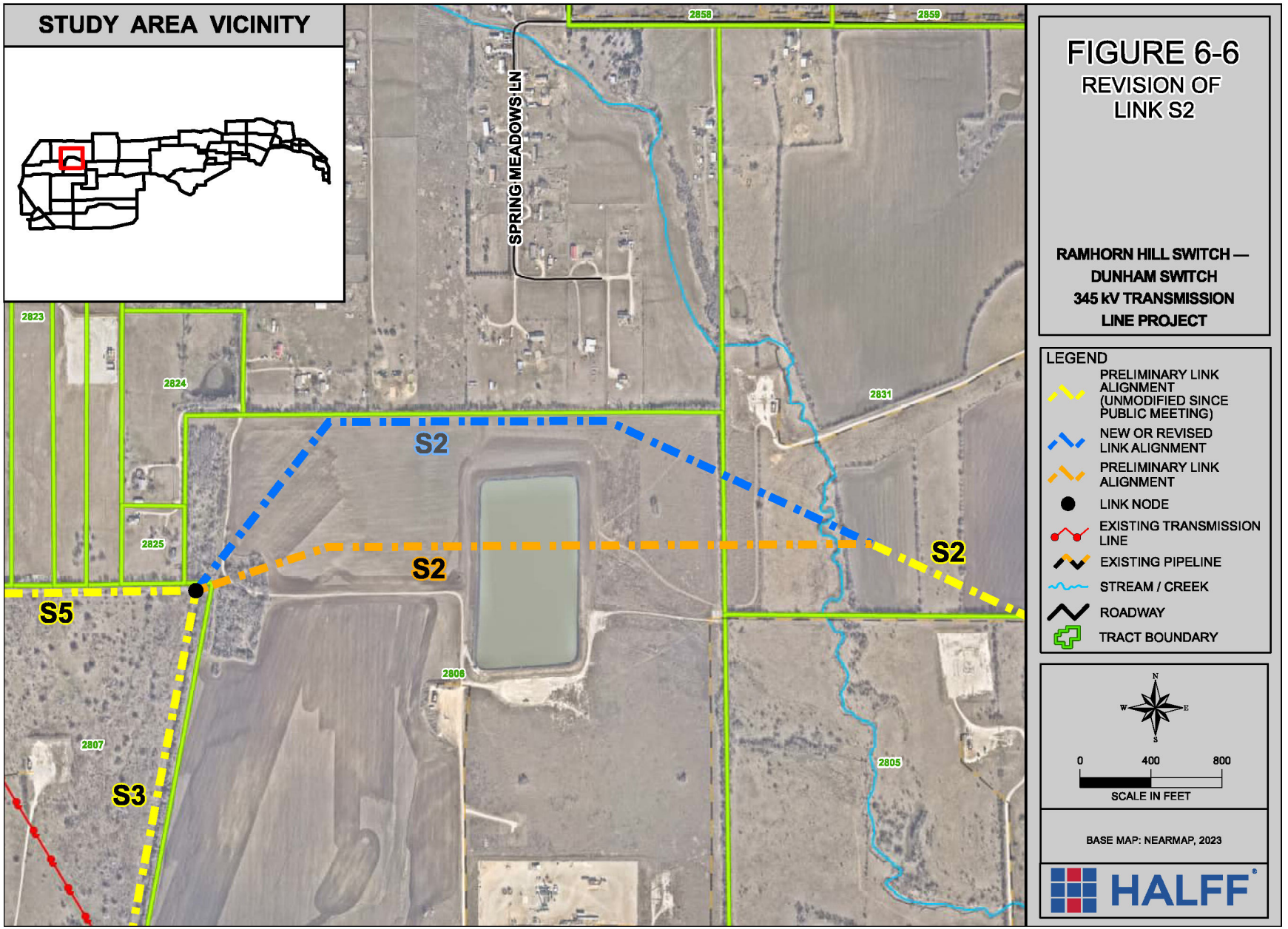
STUDY AREA VICINITY
SPRING MEADOWS LN
2858
2859
2823
2824
2825
2831
2806
2807
2805
S2
S2
S2
S5
S3
FIGURE 6-6
REVISION OF
LINK S2
RAMHORN HILL SWITCH — DUNHAM SWITCH 345 kV TRANSMISSION LINE PROJECT
LEGEND
PRELIMINARY LINK ALIGNMENT (UNMODIFIED SINCE PUBLIC MEETING)
NEW OR REVISED LINK ALIGNMENT
PRELIMINARY LINK ALIGNMENT
LINK NODE
EXISTING TRANSMISSION LINE
EXISTING PIPELINE
STREAM / CREEK
ROADWAY
TRACT BOUNDARY
N
W
E
S
0
400
800
SCALE IN FEET
BASE MAP: NEARMAP, 2023
HALFF

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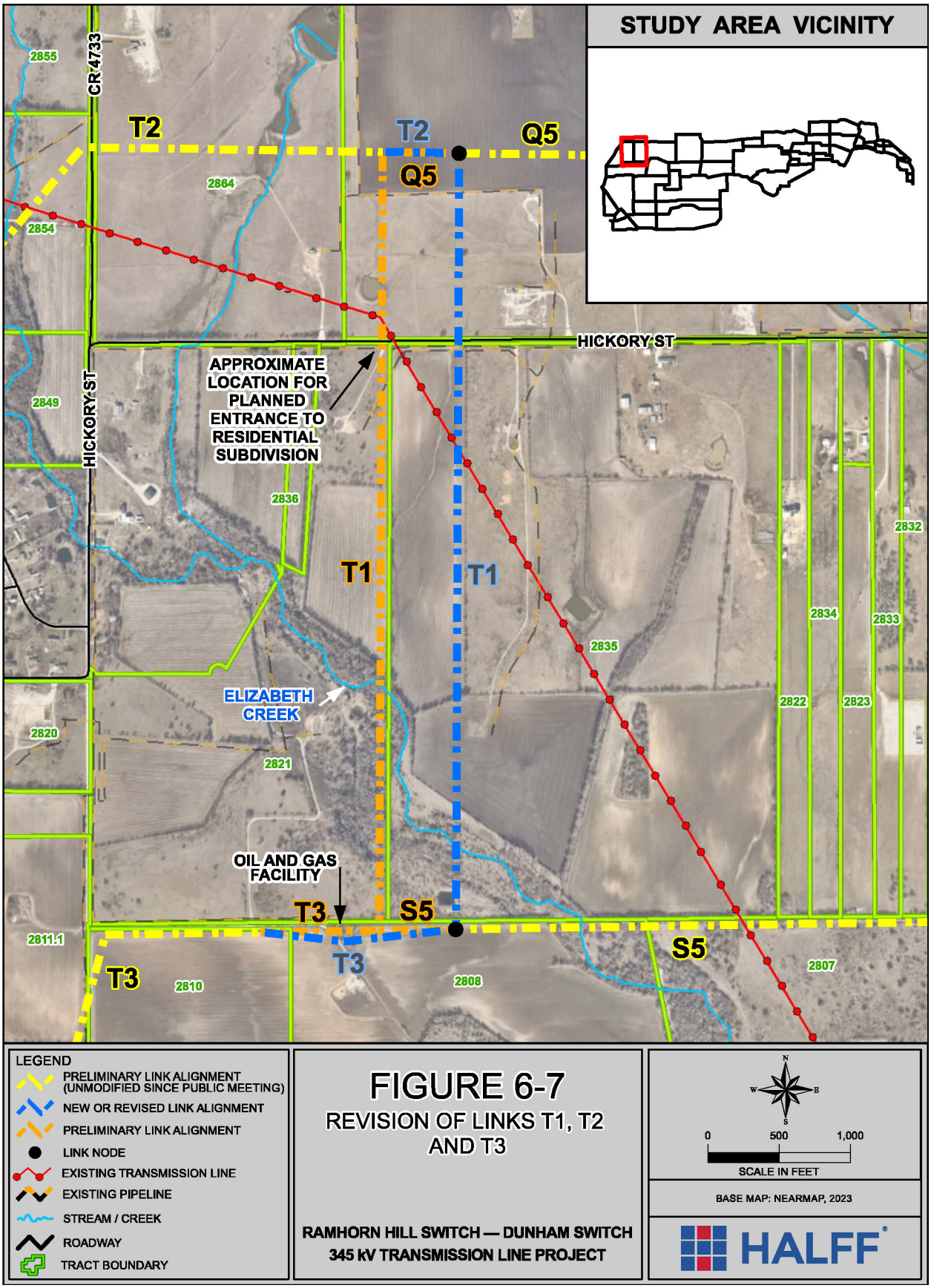
STUDY AREA VICINITY
CR 4733
HICKORY ST
HICKORY ST
T2
T2
Q5
Q5
APPROXIMATE LOCATION FOR PLANNED ENTRANCE TO RESIDENTIAL SUBDIVISION
T1
T1
ELIZABETH CREEK
OIL AND GAS FACILITY
T3
S5
T3
S5
2855
2854
2864
2849
2836
2832
2834
2833
2835
2822
2823
2820
2821
2811.1
2810
2808
2807
LEGEND
PRELIMINARY LINK ALIGNMENT (UNMODIFIED SINCE PUBLIC MEETING)
NEW OR REVISED LINK ALIGNMENT
PRELIMINARY LINK ALIGNMENT
LINK NODE
EXISTING TRANSMISSION LINE
EXISTING PIPELINE
STREAM / CREEK
ROADWAY
TRACT BOUNDARY
FIGURE 6-7
REVISION OF LINKS T1, T2 AND T3
RAMHORN HILL SWITCH — DUNHAM SWITCH
345 kV TRANSMISSION LINE PROJECT
N
W
E
S
0
500
1,000
SCALE IN FEET
BASE MAP: NEARMAP, 2023
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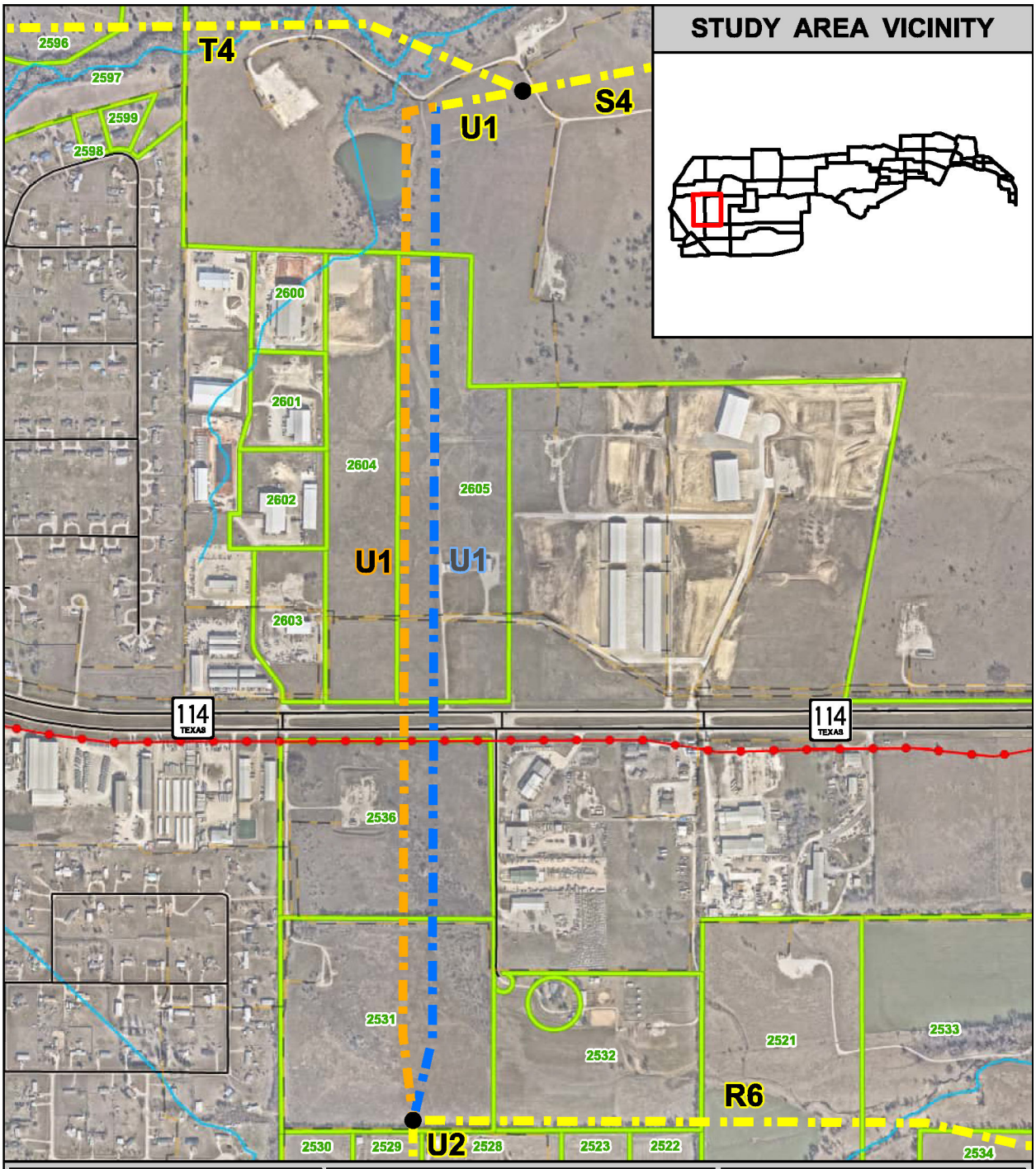
STUDY AREA VICINITY
T4
S4
U1
U1
U1
U1
U2
R6
2596
2597
2599
2598
2600
2601
2604
2605
2602
2603
2536
2531
2532
2521
2533
2534
2530
2529
2528
2523
2522
114
TEXAS
114
TEXAS
LEGEND
PRELIMINARY LINK ALIGNMENT (UNMODIFIED SINCE PUBLIC MEETING)
NEW OR REVISED LINK ALIGNMENT
PRELIMINARY LINK ALIGNMENT
LINK NODE
EXISTING TRANSMISSION LINE
EXISTING PIPELINE
STREAM / CREEK
ROADWAY
TRACT BOUNDARY
FIGURE 6-8
REVISION OF LINK U1
RAMHORN HILL SWITCH — DUNHAM SWITCH
345 kV TRANSMISSION LINE PROJECT
N
W
E
S
0
500
1,000
SCALE IN FEET
BASE MAP: NEARMAP, 2023
HALFF

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Appendix D

Link Composition of Alternative Routes

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TABLE 7-1. LINK COMPOSITION OF ALTERNATIVE ROUTES

Route	Link Sequence	Miles
1	A0-A4-B1-B5-B8-C3-C6-E6-F5-F6-G4-H5-J5-J4-K21-K61-M8-O2-O7-P7-S2-S3-S4-U1-U2-U3-V3-V4-Z	21.16
2	A0-A4-B1-B5-B8-C3-C6-E6-G1-G2-H2-I11-I12-L1-L2-M1-M2-M3-R4-V2-Z	21.41
3	A0-A4-B1-B5-B8-C3-C6-E6-G1-G2-H2-I11-I12-L1-L2-M1-M2-M4-R5-U3-V3-V4-Z	20.64
4	A0-A4-B1-B5-B8-C3-C6-E6-G1-G2-H2-I11-I12-L1-L2-M1-M5-R2-R5-U3-W5-W7-X-V4-Z	21.06
5	A0-A4-B1-B5-B8-C3-C6-E6-G1-G2-H2-I11-I12-L1-L2-M1-M5-R2-R5-U3-V3-V4-Z	20.56
6	A0-A4-B1-B5-B8-C3-C6-E6-G1-G2-H2-I11-I12-L1-L2-M1-M5-R6-U2-U3-W5-W7-X-V4-Z	21.10
7	A0-A4-B1-B5-B8-C3-C6-E6-G1-G2-H2-I11-I12-L1-L2-M1-M5-R6-U2-U3-V3-V4-Z	20.60
8	A0-A4-B1-B5-B8-C3-C6-E6-G1-G2-H2-I11-I31-I32-J22-L1-L2-M6-O5-P3-P5-P4-R1-R2-R5-U3-V3-V4-Z	20.56
9	A0-A4-B1-B5-B8-C3-C6-E6-G1-G2-H2-I11-I31-I32-J22-L1-L2-M6-O5-P3-P5-S1-S4-U1-U2-U3-V3-V4-Z	20.51
10	A0-A4-B1-B5-B8-C3-C6-E6-G1-G2-H2-I11-I31-I32-J22-L1-L2-M6-O5-O6-P1-R1-R2-R5-U3-V3-V4-Z	20.45
11	A0-A4-B1-B5-B8-C3-C6-E6-G1-G2-H2-I11-I31-I32-J22-L1-L2-M6-O5-O6-P1-R1-R6-U2-U3-V3-V4-Z	20.49
12	A0-A4-B1-B5-B8-C3-C6-E6-G1-G2-H2-I11-I31-I32-J22-L1-L2-M1-M2-M3-R4-V2-Z	20.77
13	A0-A4-B1-B5-B8-C3-C6-E6-G1-G2-H2-I11-I31-I32-J22-L1-L2-M1-M2-M3-R4-V1-V3-V4-Z	20.63
14	A0-A4-B1-B5-B8-C3-C6-E6-G1-G2-H2-I11-I31-I32-J22-L1-L2-M1-M2-M3-R3-R5-U3-V3-V4-Z	21.12
15	A0-A4-B1-B5-B8-C3-C6-E6-G1-G2-H2-I11-I31-I32-J22-L1-L2-M1-M2-M4-R5-U3-V3-V4-Z	19.99
16	A0-A4-B1-B5-B8-C3-C6-E6-G1-G2-H2-I11-I31-I32-J22-L1-L2-M1-M5-R2-R5-U3-V3-V4-Z	19.91
17	A0-A4-B1-B5-B8-C3-C6-E6-G1-G2-H2-I11-I31-I32-J22-L1-L2-M1-M5-R6-U2-U3-V3-V4-Z	19.95
18	A0-A4-B1-B5-B8-C3-C6-E6-G1-G2-H2-I11-I31-I4-J21-J22-L1-L2-M1-M2-M3-R4-V1-V3-V4-Z	21.06
19	A0-A4-B1-B5-B8-C3-C6-E6-G1-G3-G7-H5-J5-J4-K21-K61-K62-L5-L4-L3-L2-M6-O5-O6-P1-R1-R2-R5-U3-V3-V4-Z	21.64
20	A0-A1-A3-A6-B2-B4-B8-C3-C6-E6-G1-G2-H2-I11-I12-L1-L2-M1-M2-M3-R4-V2-Z	21.55
21	A0-A1-A3-A6-B2-B4-B8-C3-C6-E6-G1-G2-H2-I11-I31-I32-J22-L1-L2-M6-O5-O6-P1-R1-R2-R5-U3-V3-V4-Z	20.58
22	A0-A1-A3-A6-B2-B4-B8-C3-C6-E6-G1-G2-H2-I11-I31-I32-J22-L1-L2-M1-M2-M3-R4-V2-Z	20.90
23	A0-A1-A3-A6-B2-B4-B8-C3-C6-E6-G1-G2-H2-I11-I31-I32-J22-L1-L2-M1-M2-M3-R4-V1-V3-V4-Z	20.76
24	A0-A1-A3-A6-B2-B4-B8-C3-C6-E6-G1-G2-H2-I11-I31-I32-J22-L1-L2-M1-M2-M4-R5-U3-V3-V4-Z	20.12
25	A0-A1-A3-A6-B2-B4-B8-C3-C6-E6-G1-G2-H2-I11-I31-I32-J22-L1-L2-M1-M5-R2-R5-U3-V3-V4-Z	20.04
26	A0-A1-A3-A6-B2-B4-B8-C3-C6-E6-G1-G2-H2-I11-I31-I32-J22-L1-L2-M1-M5-R6-U2-U3-V3-V4-Z	20.08
27	A0-A4-B1-B5-B8-C3-C6-E6-G1-G3-G6-H3-I2-I11-I12-L1-L2-M1-M2-M3-R4-V2-Z	21.75
28	A0-A4-B1-B5-B8-C3-C6-E6-G1-G3-G6-H3-I2-I11-I12-L1-L2-M1-M5-R2-R5-U3-V3-V4-Z	20.89
29	A0-A4-B1-B5-B8-C3-C6-E6-G1-G3-G6-H3-I5-I8-J3-K1-L5-L4-L3-L2-M1-M2-M3-R4-V2-Z	21.65
30	A0-A4-B1-B5-B8-C3-C6-E6-G1-G3-G6-H3-I5-I8-J3-K1-L5-L4-M7-O7-P7-S2-S5-T3-T5-W1-W4-W7-X-V4-Z	21.90
31	A0-A4-B1-B5-B8-C3-C6-E6-G1-G3-H41-I9-I2-I11-I12-L1-L2-M1-M2-M3-R4-V2-Z	21.75
32	A0-A4-B1-B5-B8-C3-C6-E6-G1-G3-H41-I9-I5-I8-J3-K1-L5-L4-L3-L2-M1-M2-M3-R4-V2-Z	21.65
33	A0-A4-B1-B5-B8-C3-C6-E6-G1-G3-H41-H42-H8-I8-J3-K1-L5-L4-L3-L2-M6-O5-P3-P5-S1-S4-T4-W1-W4-W7-X-V4-Z	22.09
34	A0-A4-B1-B5-B8-C3-C6-E6-G1-G3-H41-H42-H8-I8-J3-K1-L5-L4-L3-L2-M6-O5-P3-P5-S1-S4-T4-W1-W3-W6-X-V4-Z	22.28
35	A0-A4-B1-B5-B8-C3-C6-E6-G1-G3-H41-H42-H8-I8-J3-K1-L5-L4-L3-L2-M1-M2-M4-R5-U3-W5-W7-X-V4-Z	21.03
36	A0-A4-B1-B5-B8-C3-C6-E6-G1-G3-H41-H42-H8-I8-J3-K1-L5-L4-L3-L2-M1-M2-M4-R5-U3-V3-V4-Z	20.53
37	A0-A4-B1-B5-B8-C3-C6-E6-G1-G3-H41-H42-H8-I8-J3-K1-L5-L4-L3-L2-M1-M5-R2-R5-U3-W5-W7-X-V4-Z	20.95
38	A0-A4-B1-B5-B8-C3-C6-E6-G1-G3-H41-H42-H8-I8-J3-K1-L5-L4-L3-L2-M1-M5-R2-R5-U3-V3-V4-Z	20.45
39	A0-A4-B1-B5-B8-C3-C6-E6-G1-G3-H41-H42-H8-I8-J3-K1-L5-L4-L3-L2-M1-M5-R6-U2-U3-W5-W7-X-V4-Z	20.99
40	A0-A4-B1-B5-B8-C3-C6-E6-G1-G3-H41-H42-H8-I8-J3-K1-L5-L4-L3-L2-M1-M5-R6-U2-U3-V3-V4-Z	20.49
41	A0-A4-B1-B5-B8-C3-C6-E6-G1-G3-H41-H42-H8-I8-J3-K1-L5-L4-M7-O7-P7-S2-S3-S4-U1-U2-U3-W5-W7-X-V4-Z	20.96
42	A0-A4-B1-B5-B8-C3-C6-E6-G1-G3-H41-H42-H8-I8-J3-K1-L5-L4-M7-O7-P7-S2-S3-S4-U1-U2-U3-V3-V4-Z	20.46
43	A0-A4-B1-B5-B8-C3-C6-E6-G1-G3-H41-H42-H8-I6-J1-J21-J22-L1-L2-M1-M2-M3-R4-V1-V3-V4-Z	20.79
44	A0-A4-B1-B5-B8-C3-C6-E6-G1-G3-H41-H42-H8-I6-J1-J21-J22-L1-L2-M1-M2-M4-R5-U3-V3-V4-Z	20.15

TABLE 7-1. LINK COMPOSITION OF ALTERNATIVE ROUTES

Route	Link Sequence	Miles
45	A0-A4-B1-B5-B8-C3-C6-E6-G1-G3-H41-H42-H8-I6-J1-J21-J22-L1-L2-M1-M5-R2-R5-U3-V3-V4-Z	20.07
46	A0-A4-B1-B5-B8-C3-C6-E6-G1-G3-H41-H42-H8-I6-J1-J21-J22-L1-L2-M1-M5-R6-U2-U3-V3-V4-Z	20.12
47	A0-A1-A3-A6-B2-B4-B8-C3-C6-E6-G1-G3-G6-H3-I5-I8-J3-K1-L5-L4-M7-O7-P7-S2-S5-T3-T5-W1-W4-W7-X-V4-Z	22.03
48	A0-A1-A3-A6-B2-B4-B8-C3-C6-E6-G1-G3-H41-H42-H8-I8-J3-K1-L5-L4-L3-L2-M1-M2-M3-R4-V1-V3-V4-Z	21.30
49	A0-A1-A3-A6-B2-B4-B8-C3-C6-E6-G1-G3-H41-H42-H8-I8-J3-K1-L5-L4-L3-L2-M1-M5-R2-R5-U3-W5-W7-X-V4-Z	21.08
50	A0-A1-A3-A6-B2-B4-B8-C3-C6-E6-G1-G3-H41-H42-H8-I8-J3-K1-L5-L4-L3-L2-M1-M5-R6-U2-U3-W5-W7-X-V4-Z	21.12
51	A0-A1-A3-A6-B2-B4-B8-C3-C6-E6-G1-G3-H41-H42-H8-I8-J3-K1-L5-L4-M7-O7-P7-S2-S3-S4-T4-W1-W3-W6-X-V4-Z	21.83
52	A0-A1-A3-A6-B2-B4-B8-C3-C6-E6-G1-G3-H41-H42-H8-I8-J3-K1-L5-L4-M7-O7-P7-S2-S3-S4-U1-U2-U3-W5-W7-X-V4-Z	21.10
53	A0-A1-A3-A6-B2-B4-B8-C3-C6-E6-G1-G3-H41-H42-H8-I8-J3-K1-L5-L4-M7-O7-P7-S2-S3-S4-U1-U2-U3-V3-V4-Z	20.59
54	A0-A1-A3-A6-B2-B4-B8-C3-C6-E6-G1-G3-H41-H42-H8-I8-J3-K1-L5-L4-M7-O1-O5-P3-P5-P4-R1-R2-R5-U3-V3-V4-Z	21.06
55	A0-A1-A3-A6-B2-B4-B8-C3-C6-E6-G1-G3-H41-H42-H8-I8-J3-K1-L5-L4-M7-O1-O5-P3-P5-P4-R1-R6-U2-U3-V3-V4-Z	21.11
56	A0-A1-A3-A6-B2-B4-B8-C3-C6-E6-G1-G3-H41-H42-H8-I8-J3-K22-K61-M8-O3-O8-Q2-Q5-T1-T3-T5-W1-W4-W7-X-V4-Z	22.94
57	A0-A1-A3-A6-B2-B4-B8-C3-C6-E6-G1-G3-H41-H42-H8-I6-I7-J3-K1-L5-L4-M7-O7-P7-S2-S3-S4-T4-W1-W3-W6-X-V4-Z	22.05
58	A0-A1-A3-A6-B2-B4-B8-C3-C6-E6-G1-G3-H41-H42-H8-I6-J1-J21-J22-L1-L2-M1-M2-M4-R5-U3-V3-V4-Z	20.29
59	A0-A4-B1-B5-B8-C3-C6-E1-E7-F1-F5-G1-G2-H2-I11-I12-L1-L2-M1-M2-M3-R4-V2-Z	21.60
60	A0-A4-B1-B5-B8-C3-C6-E1-E7-F1-F5-G1-G2-H2-I11-I31-I32-J22-L1-L2-M1-M2-M3-R4-V1-V3-V4-Z	20.82
61	A0-A4-B1-B5-B8-C3-C6-E1-E7-F1-F5-G1-G2-H2-I11-I31-I32-J22-L1-L2-M1-M5-R2-R5-U3-V3-V4-Z	20.10
62	A0-A1-A3-A6-B2-B4-B8-C3-C6-E1-E7-F1-F5-G1-G2-H2-I11-I12-L1-L2-M1-M2-M3-R4-V2-Z	21.73
63	A0-A1-A3-A6-B2-B4-B8-C3-C6-E1-E7-F1-F5-G1-G2-H2-I11-I31-I32-J22-L1-L2-M1-M2-M4-R5-U3-V3-V4-Z	20.31
64	A0-A4-B1-B5-B8-C3-C6-E1-E7-F1-F5-G1-G3-G6-H3-I5-I8-J3-K1-L5-L4-M7-O7-P7-S2-S5-T3-T5-W1-W4-W7-X-V4-Z	22.09
65	A0-A4-B1-B5-B8-C3-C6-E1-E7-F1-F6-G4-H5-J5-J4-K21-K61-M8-O2-O7-P7-S2-S3-S4-U1-U2-U3-V3-V4-Z	21.13
66	A0-A1-A3-A6-B2-B4-B8-C3-C6-E1-E7-F1-F6-G4-H5-J5-J4-K21-K61-M8-O2-O7-P7-S2-S3-S4-U1-U2-U3-V3-V4-Z	21.27
67	A0-A4-B1-B5-B8-C3-C6-E1-E7-F2-F3-G4-H5-J5-J4-K21-K61-M8-O3-O8-Q2-Q1-P7-S2-S3-S4-U1-U2-U3-V3-V4-Z	21.53
68	A0-A4-B1-B5-B8-C3-C6-E1-E7-F2-F3-G4-H5-J5-J4-K21-K61-M8-O3-O8-Q2-Q5-T2-T5-W1-W4-W7-X-V4-Z	21.97
69	A0-A4-B1-B5-B8-C3-C6-E1-E7-F2-F3-G4-H5-J5-J4-K21-K61-M8-O3-O8-Q2-Q5-T1-T3-T5-W1-W4-W7-X-V4-Z	22.50
70	A0-A4-B1-B5-B8-C3-C6-E1-E7-F2-F3-F7-G5-G8-H5-J5-H9-H8-I6-J1-J21-J22-L1-L2-M1-M2-M4-R5-U3-V3-V4-Z	22.18
71	A0-A4-B1-B5-B8-C3-C4-C7-E2-E1-E6-G1-G3-H41-H42-H8-I8-J3-K1-L5-L4-M7-O7-P7-S2-S5-T3-T5-W1-W4-W7-X-V4-Z	22.01
72	A0-A4-B1-B61-B62-B7-C3-C6-E6-F5-F6-G4-H5-J5-J4-K21-K61-M8-O2-O7-P7-S2-S3-S4-U1-U2-U3-V3-V4-Z	21.26
73	A0-A4-B1-B61-B62-B7-C3-C6-E6-G1-G2-H2-I11-I12-L1-L2-M1-M2-M3-R4-V2-Z	21.51
74	A0-A4-B1-B61-B62-B7-C3-C6-E6-G1-G2-H2-I11-I31-I32-J22-L1-L2-M6-O5-O6-P1-R1-R2-R5-U3-V3-V4-Z	20.54
75	A0-A4-B1-B61-B62-B7-C3-C6-E6-G1-G2-H2-I11-I31-I32-J22-L1-L2-M6-O5-O6-P1-R1-R6-U2-U3-V3-V4-Z	20.58
76	A0-A4-B1-B61-B62-B7-C3-C6-E6-G1-G2-H2-I11-I31-I32-J22-L1-L2-M1-M2-M3-R4-V2-Z	20.86
77	A0-A4-B1-B61-B62-B7-C3-C6-E6-G1-G2-H2-I11-I31-I32-J22-L1-L2-M1-M2-M3-R4-V1-V3-V4-Z	20.72
78	A0-A4-B1-B61-B62-B7-C3-C6-E6-G1-G2-H2-I11-I31-I32-J22-L1-L2-M1-M2-M4-R5-U3-V3-V4-Z	20.08
79	A0-A4-B1-B61-B62-B7-C3-C6-E6-G1-G2-H2-I11-I31-I32-J22-L1-L2-M1-M5-R2-R5-U3-V3-V4-Z	20.00
80	A0-A4-B1-B61-B62-B7-C3-C6-E6-G1-G2-H2-I11-I31-I32-J22-L1-L2-M1-M5-R6-U2-U3-V3-V4-Z	20.05
81	A0-A4-B1-B61-B62-B7-C3-C6-E6-G1-G3-G6-H3-I5-I8-J3-K1-L5-L4-L3-L2-M1-M2-M3-R4-V2-Z	21.75
82	A0-A4-B1-B61-B62-B7-C3-C6-E6-G1-G3-H41-I9-I5-I8-J3-K1-L5-L4-L3-L2-M1-M2-M3-R4-V2-Z	21.75
83	A0-A4-B1-B61-B62-B7-C3-C6-E6-G1-G3-H41-H42-H8-I8-J3-K1-L5-L4-L3-L2-M1-M5-R2-R5-U3-V3-V4-Z	20.54
84	A0-A4-B1-B61-B62-B7-C3-C6-E6-G1-G3-H41-H42-H8-I8-J3-K1-L5-L4-L3-L2-M1-M5-R6-U2-U3-V3-V4-Z	20.58
85	A0-A4-B1-B61-B62-B7-C3-C6-E6-G1-G3-H41-H42-H8-I8-J3-K1-L5-L4-M7-O7-P7-S2-S3-S4-U1-U2-U3-W5-W7-X-V4-Z	21.06
86	A0-A4-B1-B61-B62-B7-C3-C6-E6-G1-G3-H41-H42-H8-I8-J3-K1-L5-L4-M7-O7-P7-S2-S3-S4-U1-U2-U3-V3-V4-Z	20.56
87	A0-A4-B1-B61-B62-B7-C3-C6-E6-G1-G3-H41-H42-H8-I6-J1-J21-J22-L1-L2-M1-M2-M3-R4-V1-V3-V4-Z	20.89
88	A0-A4-B1-B61-B62-B7-C3-C6-E1-E7-F1-F5-G1-G2-H2-I11-I12-L1-L2-M1-M2-M3-R4-V2-Z	21.69

TABLE 7-1. LINK COMPOSITION OF ALTERNATIVE ROUTES

Route	Link Sequence	Miles
89	A0-A4-B1-B61-B62-B7-C3-C6-E1-E7-F1-F5-G1-G2-H2-I11-I31-I32-J22-L1-L2-M1-M2-M3-R4-V1-V3-V4-Z	20.91
90	A0-A4-B1-B61-B62-B7-C3-C6-E1-E7-F1-F6-G4-H5-J5-J4-K21-K61-M8-O2-O7-P7-S2-S3-S4-U1-U2-U3-V3-V4-Z	21.23
91	A0-A4-B1-B61-B62-C1-C21-C22-C8-C9-E8-F3-G4-H5-J5-H9-H8-I8-J3-K1-L5-L4-L3-L2-M1-M2-M3-R4-V1-V3-V4-Z	21.92
92	A0-A4-B1-B61-B62-C1-C21-C22-C8-C9-E8-F3-G4-H5-J5-J4-K21-K22-K1-L5-L4-L3-L2-M6-O5-P3-P5-S1-S4-T4-W1-W4-W7-X-V4-Z	22.68
93	A0-A4-B1-B61-B62-C1-C21-C22-C8-C9-E8-F3-G4-H5-J5-J4-K21-K22-K1-L5-L4-L3-L2-M1-M2-M3-R4-V1-V3-V4-Z	21.76
94	A0-A4-B1-B61-B62-C1-C21-C22-C8-C9-E8-F3-G4-H5-J5-J4-K21-K22-K1-L5-L4-M7-O7-P7-S2-S3-S4-U1-U2-U3-V3-V4-Z	21.06
95	A0-A4-B1-B61-B62-C1-C21-C22-C8-C9-E8-F3-G4-H5-J5-J4-K21-K61-M8-O2-O7-P7-S2-S5-T3-T5-W1-W4-W7-X-V4-Z	21.94
96	A0-A4-B1-B61-B62-C1-C21-C22-C8-C9-E8-F3-G4-H5-J5-J4-K21-K61-M8-O2-O7-P7-S2-S3-S4-U1-U2-U3-V3-V4-Z	20.85
97	A0-A4-B1-B61-B62-C1-C21-C22-C8-C9-E8-F3-G4-H5-J5-J4-K21-K61-M8-O3-O8-Q2-Q5-T2-T5-W1-W4-W7-X-V4-Z	22.04
98	A0-A4-B1-B61-B62-C1-C21-C22-C8-C9-E8-F3-G4-H5-J5-J4-K21-K61-M8-O3-O8-Q2-Q5-T2-T5-W1-W3-W6-X-V4-Z	22.23
99	A0-A4-B1-B61-B62-C1-C21-C22-C8-C9-E8-F3-G4-H5-J5-J4-K21-K61-M8-O3-O8-Q2-Q5-T1-T3-T5-W1-W4-W7-X-V4-Z	22.57
100	A0-A4-B1-B61-B62-C1-C21-C22-C8-C9-E8-F3-G4-H5-J5-J4-K21-K61-M8-O3-O8-Q2-Q5-T1-T3-T5-W1-W3-W6-X-V4-Z	22.76
101	A0-A4-B1-B61-B62-C1-C21-C22-C8-C9-E8-F3-G4-H5-J5-J4-K21-K61-K62-L5-L4-L3-L2-M6-O5-P3-P6-S2-S3-S4-U1-U2-U3-V3-V4-Z	22.45
102	A0-A4-B1-B61-B62-C1-C21-C22-C8-C9-E8-F3-G4-H5-J5-J4-K21-K61-K62-L5-L4-L3-L2-M1-M2-M3-R4-V1-V3-V4-Z	21.69
103	A0-A4-B1-B61-B62-C1-C21-C22-C8-C9-E8-F3-G4-H5-J5-J4-K21-K61-K62-L5-L4-M7-O7-P7-S2-S3-S4-U1-U2-U3-V3-V4-Z	20.99
104	A0-A4-B1-B61-B62-C1-C21-C22-C8-C9-E8-F3-G4-G7-G6-H3-I2-I11-I31-I32-J22-L1-L2-M6-O5-P3-P6-S2-S3-S4-U1-U2-U3-V3-V4-Z	22.68
105	A0-A4-B1-B61-B62-C1-C21-C22-C8-C9-E8-F3-G4-G7-G6-H3-I2-I11-I31-I32-J22-L1-L2-M1-M2-M3-R4-V1-V3-V4-Z	21.91
106	A0-A4-B1-B61-B62-C1-C21-C22-C8-C9-E8-F3-G4-G7-G6-H3-I2-I11-I31-I32-J22-L1-L2-M1-M5-R2-R5-U3-W5-W7-X-V4-Z	21.70
107	A0-A4-B1-B61-B62-C1-C21-C22-C8-C9-E8-F3-G4-G7-H41-H42-H8-I8-J3-K1-L5-L4-M7-O7-P7-S2-S5-T3-T5-W1-W4-W7-X-V4-Z	22.50
108	A0-A4-B1-B61-B62-C1-C21-C22-C8-C9-E8-F3-F7-G5-G8-H5-J5-J4-K21-K22-K1-L5-L4-L3-L2-M1-M5-R2-R5-U3-V3-V4-Z	22.38
109	A0-A4-B1-B61-B62-C1-C21-C22-C8-C9-E8-F2-F1-F5-G1-G2-H1-H3-I2-I11-I31-I32-J22-L1-L2-M6-O5-P3-P6-S2-S3-S4-U1-U2-U3-V3-V4-Z	22.62
110	A0-A4-B1-B61-B62-C1-C21-C22-C8-C9-E8-F2-F1-F5-G1-G2-H1-H3-I2-I11-I31-I32-J22-L1-L2-M1-M2-M3-R4-V2-Z	22.00
111	A0-A4-B1-B61-B62-C1-C21-C22-C8-C9-E8-F2-F1-F5-G1-G2-H1-H3-I2-I11-I31-I32-J22-L1-L2-M1-M2-M3-R4-V1-V3-V4-Z	21.86
112	A0-A4-B1-B61-B62-C1-C21-C22-C8-C9-E8-F2-F1-F5-G1-G2-H1-H3-I2-I11-I31-I32-J22-L1-L2-M1-M5-R2-R5-U3-W5-W7-X-V4-Z	21.64
113	A0-A4-B1-B61-B62-C1-C21-C22-C8-C9-E8-F2-F1-F5-G1-G2-H1-H3-I2-I11-I31-I32-J22-L1-L2-M1-M5-R2-R5-U3-V3-V4-Z	21.14
114	A0-A4-B1-B61-B62-C1-C21-C22-C8-C9-E8-F2-F1-F5-G1-G2-H1-H3-I2-I11-I31-I32-J22-L1-L2-M1-M5-R6-U2-U3-W5-W7-X-V4-Z	21.68
115	A0-A4-B1-B61-B62-C1-C21-C22-C8-C9-E8-F2-F1-F5-G1-G2-H1-H3-I2-I11-I31-I32-J22-L1-L2-M1-M5-R6-U2-U3-V3-V4-Z	21.18
116	A0-A4-B1-B61-B62-C1-C21-C22-C8-C9-E8-F2-F1-F5-G1-G2-H1-H3-I5-I8-J3-K1-L5-L4-L3-L2-M1-M2-M3-R4-V2-Z	22.54
117	A0-A4-B1-B61-B62-C1-C21-C22-C8-C9-E8-F2-F1-F5-G1-G2-H2-I11-I12-L1-L2-M6-O5-P3-P6-S2-S3-S4-U1-U2-U3-V3-V4-Z	22.65
118	A0-A4-B1-B61-B62-C1-C21-C22-C8-C9-E8-F2-F1-F5-G1-G2-H2-I11-I12-L1-L2-M1-M2-M3-R4-V1-V3-V4-Z	21.89
119	A0-A4-B1-B61-B62-C1-C21-C22-C8-C9-E8-F2-F1-F5-G1-G2-H2-I11-I12-L1-L2-M1-M2-M3-R3-R5-U3-V3-V4-Z	22.37
120	A0-A4-B1-B61-B62-C1-C21-C22-C8-C9-E8-F2-F1-F5-G1-G2-H2-I11-I31-I32-J22-L1-L2-M6-O5-P3-P6-S2-S3-S4-U1-U2-U3-W5-W7-X-V4-Z	22.51
121	A0-A4-B1-B61-B62-C1-C21-C22-C8-C9-E8-F2-F1-F5-G1-G2-H2-I11-I31-I32-J22-L1-L2-M1-M2-M3-R4-V1-W5-W7-X-V4-Z	21.74
122	A0-A4-B1-B61-B62-C1-C21-C22-C8-C9-E8-F2-F1-F5-G1-G2-H2-I11-I31-I32-J22-L1-L2-M1-M2-M4-R5-U3-W5-W7-X-V4-Z	21.10
123	A0-A4-B1-B61-B62-C1-C21-C22-C8-C9-E8-F2-F1-F5-G1-G2-H2-I11-I31-I32-J22-L1-L2-M1-M2-M4-R5-U3-V3-V4-Z	20.60
124	A0-A4-B1-B61-B62-C1-C21-C22-C8-C9-E8-F2-F1-F5-G1-G3-G7-H5-J5-J4-K21-K61-M8-O2-O7-P7-S2-S5-T3-T5-W1-W4-W7-X-V4-Z	22.68
125	A0-A4-B1-B61-B62-C1-C21-C22-C8-C9-E8-F2-F1-F5-G1-G3-G6-H3-I2-I11-I31-I32-J22-L1-L2-M6-O5-P3-P5-S1-S4-T4-W1-W4-W7-X-V4-Z	22.50
126	A0-A4-B1-B61-B62-C1-C21-C22-C8-C9-E8-F2-F1-F5-G1-G3-G6-H3-I2-I11-I31-I32-J22-L1-L2-M6-O5-P3-P6-S2-S3-S4-U1-U2-U3-V3-V4-Z	22.34
127	A0-A4-B1-B61-B62-C1-C21-C22-C8-C9-E8-F2-F1-F5-G1-G3-G6-H3-I2-I11-I31-I32-J22-L1-L2-M1-M2-M3-R4-V1-V3-V4-Z	21.58
128	A0-A4-B1-B61-B62-C1-C21-C22-C8-C9-E8-F2-F1-F5-G1-G3-G6-H3-I2-I11-I31-I32-J22-L1-L2-M1-M2-M4-R5-U3-W5-W7-X-V4-Z	21.44
129	A0-A4-B1-B61-B62-C1-C21-C22-C8-C9-E8-F2-F1-F5-G1-G3-G6-H3-I2-I11-I31-I32-J22-L1-L2-M1-M2-M4-R5-U3-V3-V4-Z	20.94

TABLE 7-1. LINK COMPOSITION OF ALTERNATIVE ROUTES

Route	Link Sequence	Miles
130	A0-A4-B1-B61-B62-C1-C21-C22-C8-C9-E8-F2-F1-F5-G1-G3-G6-H3-I5-I8-J3-K1-L5-L4-L3-L2-M1-M2-M3-R4-V2-Z	22.26
131	A0-A4-B1-B61-B62-C1-C21-C22-C8-C9-E8-F2-F1-F5-G1-G3-G6-H3-I5-I8-J3-K1-L5-L4-M7-O7-P7-S2-S5-T3-T5-W1-W4-W7-X-V4-Z	22.51
132	A0-A4-B1-B61-B62-C1-C21-C22-C8-C9-E8-F2-F1-F5-G1-G3-G6-H3-I5-I6-I7-J3-K1-L5-L4-L3-L2-M1-M2-M3-R4-V2-Z	22.49
133	A0-A4-B1-B61-B62-C1-C21-C22-C8-C9-E8-F2-F1-F5-G1-G3-H41-I9-I5-I8-J3-K1-L5-L4-M7-O7-P7-S2-S5-T3-T5-W1-W4-W7-X-V4-Z	22.51
134	A0-A4-B1-B61-B62-C1-C21-C22-C8-C9-E8-F2-F1-F5-G1-G3-H41-H42-H9-J4-K21-K61-M8-O2-O7-P7-S2-S5-T3-T5-W1-W4-W7-X-V4-Z	22.60
135	A0-A4-B1-B61-B62-C1-C21-C22-C8-C9-E8-F2-F1-F5-G1-G3-H41-H42-H8-I8-J3-K1-L5-L4-L3-L2-M6-O5-P3-P6-S2-S3-S4-U1-U2-U3-V3-V4-Z	22.54
136	A0-A4-B1-B61-B62-C1-C21-C22-C8-C9-E8-F2-F1-F5-G1-G3-H41-H42-H8-I8-J3-K1-L5-L4-L3-L2-M1-M2-M3-R4-V1-V3-V4-Z	21.78
137	A0-A4-B1-B61-B62-C1-C21-C22-C8-C9-E8-F2-F1-F5-G1-G3-H41-H42-H8-I8-J3-K1-L5-L4-L3-L2-M1-M2-M4-R5-U3-V3-V4-Z	21.14
138	A0-A4-B1-B61-B62-C1-C21-C22-C8-C9-E8-F2-F1-F5-G1-G3-H41-H42-H8-I8-J3-K1-L5-L4-M7-O7-P7-S2-S3-S4-U1-U2-U3-V3-V4-Z	21.07
139	A0-A4-B1-B61-B62-C1-C21-C22-C8-C9-E8-F2-F1-F5-G1-G3-H41-H42-H8-I6-I7-J3-K1-L5-L4-L3-L2-M1-M2-M3-R4-V1-V3-V4-Z	22.00
140	A0-A4-B1-B61-B62-C1-C21-C22-C8-C9-E8-F2-F1-F5-G1-G3-H41-H42-H8-I6-I7-J3-K1-L5-L4-M7-O7-P7-S2-S5-T3-T5-W1-W4-W7-X-V4-Z	22.39
141	A0-A4-B1-B61-B62-C1-C21-C22-C8-C9-E8-F2-F1-F6-G4-H5-J5-J4-K21-K61-M8-O2-O7-P7-S2-S5-T3-T5-W1-W4-W7-X-V4-Z	22.65
142	A0-A4-B1-B61-B62-C1-C21-C22-C8-E5-F4-F8-G5-H6-J6-J5-J4-K21-K61-M8-O2-O7-P7-S2-S3-S4-U1-U2-U3-V3-V4-Z	22.09
143	A0-A4-B1-B61-B62-C1-C21-C22-C8-E5-F4-F8-G5-G8-H5-J5-J4-K21-K61-M8-O2-O7-P7-S2-S3-S4-U1-U2-U3-V3-V4-Z	22.09
144	A0-A4-B1-B61-B62-C1-C21-C23-C5-C8-E5-F4-F8-G5-H6-J6-J5-J4-K21-K61-K62-L5-L4-L3-L2-M1-M2-M4-R5-U3-V3-V4-Z	22.48
145	A0-A4-B1-B61-B62-C1-C21-C23-C5-C8-E5-F4-F8-G5-H6-J6-J5-J4-K21-K61-K62-L5-L4-L3-L2-M1-M5-R6-U2-U3-V3-V4-Z	22.44
146	A0-A4-B1-B61-B62-C1-C21-C23-C5-C8-E5-F4-F8-G5-G8-H5-J5-J4-K21-K22-K1-L5-L4-L3-L2-M1-M5-R2-R5-U3-V3-V4-Z	22.47
147	A0-A4-B1-B61-B62-C1-C21-C23-C5-C8-E5-F4-F8-G5-G8-H5-J5-J4-K21-K61-K62-L5-L4-L3-L2-M1-M2-M4-R5-U3-V3-V4-Z	22.48
148	A0-A4-B1-B61-B62-C1-C21-C23-C4-C6-E6-G1-G3-H41-H42-H8-I8-J3-K1-L5-L4-L3-L2-M1-M2-M3-R4-V2-Z	21.84
149	A0-A4-B1-B61-B62-C1-C21-C23-C7-E2-E7-F1-F5-G1-G2-H2-I11-I31-I32-J22-L1-L2-M6-O5-P3-P5-S1-S4-T4-W1-W4-W7-X-V4-Z	22.09
150	A0-A4-B1-B61-B62-C1-C21-C23-C7-E2-E7-F1-F5-G1-G2-H2-I11-I31-I32-J22-L1-L2-M6-O5-P3-P5-S1-S4-T4-W1-W3-W6-X-V4-Z	22.28
151	A0-A4-B1-B61-B62-C1-C21-C23-C7-E2-E7-F1-F5-G1-G2-H2-I11-I31-I32-J22-L1-L2-M1-M2-M4-R5-U3-W5-W7-X-V4-Z	21.03
152	A0-A4-B1-B61-B62-C1-C21-C23-C7-E2-E7-F1-F5-G1-G2-H2-I11-I31-I32-J22-L1-L2-M1-M2-M4-R5-U3-V3-V4-Z	20.53
153	A0-A4-B1-B61-B62-C1-C21-C23-C7-E2-E7-F1-F5-G1-G3-H41-H42-H9-J4-K21-K61-M8-O3-O8-Q2-Q5-T1-T3-T5-W1-W4-W7-X-V4-Z	23.16
154	A0-A4-B1-B61-B62-C1-C21-C23-C7-E2-E7-F1-F5-G1-G3-H41-H42-H8-I8-J3-K1-L5-L4-L3-L2-M6-O5-P3-P5-S1-S4-T4-W1-W4-W7-X-V4-Z	22.63
155	A0-A4-B1-B61-B62-C1-C21-C23-C7-E2-E7-F1-F5-G1-G3-H41-H42-H8-I8-J3-K1-L5-L4-L3-L2-M1-M2-M3-R4-V2-Z	21.84
156	A0-A4-B1-B61-B62-C1-C21-C23-C7-E2-E7-F1-F5-G1-G3-H41-H42-H8-I8-J3-K1-L5-L4-M7-O7-P7-S2-S5-T3-T5-W1-W4-W7-X-V4-Z	22.09
157	A0-A4-B1-B61-B62-C1-C21-C23-C7-E2-E7-F1-F5-G1-G3-H41-H42-H8-I8-J3-K1-L5-L4-M7-O7-P7-S2-S5-T3-T5-W1-W3-W6-X-V4-Z	22.28
158	A0-A4-B1-B61-B62-C1-C21-C23-C7-E2-E7-F1-F5-G1-G3-H41-H42-H8-I8-J3-K1-L5-L4-M7-O7-P7-S2-S3-S4-T4-W1-W4-W7-X-V4-Z	22.04
159	A0-A4-B1-B61-B62-C1-C21-C23-C7-E2-E7-F1-F5-G1-G3-H41-H42-H8-I6-I7-J3-K1-L5-L4-M7-O7-P7-S2-S5-T3-T5-W1-W4-W7-X-V4-Z	22.32
160	A0-A4-B1-B61-B62-C1-C21-C23-C7-E2-E7-F1-F5-G1-G3-H41-H42-H8-I6-I7-J3-K1-L5-L4-M7-O7-P7-S2-S3-S4-T4-W1-W4-W7-X-V4-Z	22.27
161	A0-A4-B1-B61-B62-C1-C21-C23-C7-E2-E7-F1-F6-G4-H5-J5-J4-K21-K61-M8-O2-O7-P7-S2-S3-S4-U1-U2-U3-V3-V4-Z	21.49
162	A0-A4-B1-B61-B62-C1-C21-C23-C7-E2-E7-F1-F6-G4-H5-J5-J4-K21-K61-K62-L5-L4-L3-L2-M1-M5-R2-R5-U3-V3-V4-Z	21.61
163	A0-A4-B1-B61-B62-C1-C21-C23-C7-E2-E7-F2-F3-G4-H5-J5-J4-K21-K61-M8-O2-O7-P7-S2-S5-T3-T5-W1-W4-W7-X-V4-Z	22.22
164	A0-A4-B1-B61-B62-C1-C21-C23-C7-E2-E1-E6-G1-G2-H2-I11-I12-L1-L2-M1-M2-M3-R4-V2-Z	21.87
165	A0-A4-B1-B61-B62-C1-C21-C23-C7-E2-E1-E6-G1-G2-H2-I11-I31-I32-J22-L1-L2-M6-O5-P3-P5-S1-S4-T4-W1-W4-W7-X-V4-Z	22.01
166	A0-A4-B1-B61-B62-C1-C21-C23-C7-E2-E1-E6-G1-G2-H2-I11-I31-I32-J22-L1-L2-M6-O5-P3-P5-S1-S4-T4-W1-W3-W6-X-V4-Z	22.20
167	A0-A4-B1-B61-B62-C1-C21-C23-C7-E2-E1-E6-G1-G2-H2-I11-I31-I32-J22-L1-L2-M1-M2-M4-R5-U3-V3-V4-Z	20.45
168	A0-A4-B1-B61-B62-C1-C21-C23-C7-E2-E1-E6-G1-G3-G7-H5-J5-J4-K21-K61-M8-O3-O8-Q2-Q1-P7-S2-S3-S4-U1-U2-U3-V3-V4-Z	22.19
169	A0-A4-B1-B61-B62-C1-C21-C23-C7-E2-E1-E6-G1-G3-G7-H5-J5-J4-K21-K61-M8-O3-O8-Q2-Q5-T1-T3-T5-W1-W4-W7-X-V4-Z	23.16

TABLE 7-1. LINK COMPOSITION OF ALTERNATIVE ROUTES

Route	Link Sequence	Miles
170	A0-A4-B1-B61-B62-C1-C21-C23-C7-E2-E1-E6-G1-G3-G7-H5-J5-J4-K21-K61-K62-L5-L4-L3-L2-M6-O5-O6-P1-R1-R2-R5-U3-V3-V4-Z	22.10
171	A0-A4-B1-B61-B62-C1-C21-C23-C7-E2-E1-E6-G1-G3-G6-H3-I2-I11-I31-I32-J22-L1-L2-M1-M2-M4-R5-U3-V3-V4-Z	20.79
172	A0-A4-B1-B61-B62-C1-C21-C23-C7-E2-E1-E6-G1-G3-G6-H3-I5-I8-J3-K1-L5-L4-M7-O7-P7-S2-S3-S4-T4-W1-W4-W7-X-V4-Z	22.31
173	A0-A4-B1-B61-B62-C1-C21-C23-C7-E2-E1-E6-G1-G3-G6-H3-I5-I8-J3-K1-L5-L4-M7-O7-P7-S2-S3-S4-T4-W1-W3-W6-X-V4-Z	22.50
174	A0-A4-B1-B61-B62-C1-C21-C23-C7-E2-E1-E6-G1-G3-H41-I9-I2-I11-I31-I32-J22-L1-L2-M1-M2-M4-R5-U3-V3-V4-Z	20.79
175	A0-A4-B1-B61-B62-C1-C21-C23-C7-E2-E1-E6-G1-G3-H41-I9-I5-I8-J3-K1-L5-L4-M7-O7-P7-S2-S3-S4-T4-W1-W4-W7-X-V4-Z	22.31
176	A0-A4-B1-B61-B62-C1-C21-C23-C7-E2-E1-E6-G1-G3-H41-I9-I5-I8-J3-K1-L5-L4-M7-O7-P7-S2-S3-S4-T4-W1-W3-W6-X-V4-Z	22.50
177	A0-A4-B1-B61-B62-C1-C21-C23-C7-E2-E1-E6-G1-G3-H41-H42-H9-J4-K21-K61-M8-O3-O8-Q2-Q5-T1-T3-T5-W1-W4-W7-X-V4-Z	23.08
178	A0-A4-B1-B61-B62-C1-C21-C23-C7-E2-E1-E6-G1-G3-H41-H42-H8-I8-J3-K1-L5-L4-L3-L2-M6-O5-P3-P5-S1-S4-T4-W1-W4-W7-X-V4-Z	22.55
179	A0-A4-B1-B61-B62-C1-C21-C23-C7-E2-E1-E6-G1-G3-H41-H42-H8-I8-J3-K1-L5-L4-L3-L2-M1-M2-M3-R4-V2-Z	21.76
180	A0-A4-B1-B61-B62-C1-C21-C23-C7-E2-E1-E6-G1-G3-H41-H42-H8-I8-J3-K1-L5-L4-M7-O7-P7-S2-S5-T3-T5-W1-W4-W7-X-V4-Z	22.01
181	A0-A4-B1-B61-B62-C1-C21-C23-C7-E2-E1-E6-G1-G3-H41-H42-H8-I8-J3-K1-L5-L4-M7-O7-P7-S2-S3-S4-T4-W1-W4-W7-X-V4-Z	21.96
182	A0-A4-B1-B61-B62-C1-C21-C23-C7-E2-E1-E6-G1-G3-H41-H42-H8-I8-J3-K1-L5-L4-M7-O1-O5-P3-P5-P4-R1-R2-R5-U3-V3-V4-Z	21.39
183	A0-A4-B1-B61-B62-C1-C21-C23-C7-E2-E1-E6-G1-G3-H41-H42-H8-I8-J3-K1-L5-L4-M7-O1-O5-O6-P1-R1-R2-R5-U3-V3-V4-Z	21.28
184	A0-A4-B1-B61-B62-C1-C21-C23-C7-E2-E1-E6-G1-G3-H41-H42-H8-I6-I7-J3-K1-L5-L4-M7-O7-P7-S2-S5-T3-T5-W1-W4-W7-X-V4-Z	22.24
185	A0-A4-B1-B61-B62-C1-C21-C23-C7-E2-E1-E6-G1-G3-H41-H42-H8-I6-I7-J3-K1-L5-L4-M7-O7-P7-S2-S3-S4-T4-W1-W4-W7-X-V4-Z	22.19
186	A0-A4-B1-B61-B62-C1-C21-C23-C7-E3-E8-F3-G4-H5-J5-H9-H8-I8-J3-K1-L5-L4-L3-L2-M6-O5-O6-P1-R1-R2-R5-U3-V3-V4-Z	21.74
187	A0-A4-B1-B61-B62-C1-C21-C23-C7-E3-E8-F3-G4-H5-J5-H9-H8-I6-I7-J3-K1-L5-L4-L3-L2-M6-O5-O6-P1-R1-R2-R5-U3-V3-V4-Z	21.97
188	A0-A4-B1-B61-B62-C1-C21-C23-C7-E3-E8-F3-G4-H5-J5-J4-K21-K22-K1-L5-L4-L3-L2-M1-M2-M3-R4-V2-Z	21.90
189	A0-A4-B1-B61-B62-C1-C21-C23-C7-E3-E8-F3-G4-H5-J5-J4-K21-K61-M8-O2-O7-P7-S2-S3-S4-U1-U2-U3-V3-V4-Z	20.85
190	A0-A4-B1-B61-B62-C1-C21-C23-C7-E3-E8-F3-G4-H5-J5-J4-K21-K61-M8-O2-O1-O5-P3-P5-P4-R1-R2-R5-U3-V3-V4-Z	21.32
191	A0-A4-B1-B61-B62-C1-C21-C23-C7-E3-E8-F3-G4-H5-J5-J4-K21-K61-M8-O2-O1-O5-O6-P1-R1-R2-R5-U3-V3-V4-Z	21.22
192	A0-A4-B1-B61-B62-C1-C21-C23-C7-E3-E8-F3-G4-H5-J5-J4-K21-K61-M8-O2-O1-O5-O6-P1-R1-R6-U2-U3-V3-V4-Z	21.26
193	A0-A4-B1-B61-B62-C1-C21-C23-C7-E3-E8-F3-G4-H5-J5-J4-K21-K61-M8-O3-O8-Q2-Q1-P7-S2-S3-S4-U1-U2-U3-V3-V4-Z	21.60
194	A0-A4-B1-B61-B62-C1-C21-C23-C7-E3-E8-F3-G4-H5-J5-J4-K21-K61-K62-L5-L4-L3-L2-M1-M2-M3-R4-V2-Z	21.83
195	A0-A4-B1-B61-B62-C1-C21-C23-C7-E3-E8-F3-F7-G5-H6-J6-J5-J4-K21-K61-K62-L5-L4-L3-L2-M1-M5-R6-U2-U3-V3-V4-Z	22.36
196	A0-A4-B1-B61-B62-C1-C21-C23-C7-E3-E8-F3-F7-G5-G8-H5-J5-J4-K21-K61-K62-L5-L4-L3-L2-M1-M5-R2-R5-U3-V3-V4-Z	22.32
197	A0-A4-B1-B61-B62-C1-C21-C23-C7-E3-E8-F2-F1-F5-G1-G3-H41-H42-H8-I8-J3-K1-L5-L4-L3-L2-M1-M2-M3-R4-V2-Z	21.92
198	A0-A4-A7-B2-B4-B8-C3-C6-E6-G1-G2-H2-I11-I12-L1-L2-M1-M2-M3-R4-V2-Z	21.62
199	A0-A4-A7-B2-B4-B8-C3-C6-E6-G1-G2-H2-I11-I31-I32-J22-L1-L2-M1-M2-M3-R4-V1-V3-V4-Z	20.83
200	A0-A4-A7-B2-B4-B8-C3-C6-E6-G1-G2-H2-I11-I31-I32-J22-L1-L2-M1-M5-R2-R5-U3-V3-V4-Z	20.11
201	A0-A4-A7-B2-B4-B8-C3-C6-E6-G1-G3-G6-H3-I5-I8-J3-K1-L5-L4-L3-L2-M1-M2-M3-R4-V2-Z	21.86
202	A0-A4-A7-B2-B4-B8-C3-C6-E6-G1-G3-H41-H42-H8-I8-J3-K1-L5-L4-L3-L2-M1-M2-M3-R4-V1-V3-V4-Z	21.37
203	A0-A4-A7-B2-B4-B8-C3-C6-E6-G1-G3-H41-H42-H8-I8-J3-K1-L5-L4-L3-L2-M1-M5-R2-R5-U3-V3-V4-Z	20.65
204	A0-A4-A7-B2-B4-B8-C3-C6-E6-G1-G3-H41-H42-H8-I8-J3-K1-L5-L4-L3-L2-M1-M5-R6-U2-U3-W5-W7-X-V4-Z	21.20
205	A0-A4-A7-B2-B4-B8-C3-C6-E6-G1-G3-H41-H42-H8-I8-J3-K1-L5-L4-M7-O7-P7-S2-S3-S4-T4-W1-W3-W6-X-V4-Z	21.90
206	A0-A4-A7-B2-B4-B8-C3-C6-E6-G1-G3-H41-H42-H8-I8-J3-K1-L5-L4-M7-O7-P7-S2-S3-S4-U1-U2-U3-W5-W7-X-V4-Z	21.17
207	A0-A4-A7-B2-B4-B8-C3-C6-E6-G1-G3-H41-H42-H8-I8-J3-K1-L5-L4-M7-O7-P7-S2-S3-S4-U1-U2-U3-V3-V4-Z	20.67
208	A0-A4-A7-B2-B4-B8-C3-C6-E6-G1-G3-H41-H42-H8-I8-J3-K1-L5-L4-M7-O1-O5-P3-P5-P4-R1-R2-R5-U3-V3-V4-Z	21.14
209	A0-A4-A7-B2-B4-B8-C3-C6-E6-G1-G3-H41-H42-H8-I8-J3-K22-K61-M8-O3-O8-Q2-Q1-P7-S2-S3-S4-U1-U2-U3-V3-V4-Z	22.04
210	A0-A4-A7-B2-B4-B8-C3-C6-E6-G1-G3-H41-H42-H8-I8-J3-K22-K61-M8-O3-O8-Q2-Q5-T1-T3-T5-W1-W4-W7-X-V4-Z	23.01
211	A0-A4-A7-B2-B4-B8-C3-C6-E1-E7-F1-F5-G1-G2-H2-I11-I12-L1-L2-M1-M2-M3-R4-V2-Z	21.80
212	A0-A4-A7-B2-B4-B8-C3-C6-E1-E7-F1-F5-G1-G3-G6-H3-I5-I8-J3-K1-L5-L4-M7-O7-P7-S2-S3-S4-T4-W1-W4-W7-X-V4-Z	22.24

TABLE 7-1. LINK COMPOSITION OF ALTERNATIVE ROUTES

Route	Link Sequence	Miles
213	A0-A4-A7-B2-B4-B8-C3-C6-E1-E7-F1-F5-G1-G3-H41-I9-I5-I8-J3-K1-L5-L4-M7-O7-P7-S2-S3-S4-T4-W1-W4-W7-X-V4-Z	22.24
214	A0-A4-A7-B2-B4-B8-C3-C6-E1-E7-F1-F5-G1-G3-H41-H42-H8-I8-J3-K1-L5-L4-M7-O7-P7-S2-S3-S4-T4-W1-W3-W6-X-V4-Z	22.09
215	A0-A4-A7-B2-B4-B8-C3-C6-E1-E7-F1-F6-G4-H5-J5-J4-K21-K61-M8-O2-O7-P7-S2-S3-S4-U1-U2-U3-V3-V4-Z	21.34
216	A0-A4-A7-B2-B4-B8-C3-C4-C7-E3-E8-F2-F1-F5-G1-G3-H41-H42-H8-I8-J3-K1-L5-L4-L3-L2-M6-O5-P3-P5-S1-S4-T4-W1-W4-W7-X-V4-Z	22.91
217	A0-A4-B1-B61-B62-C1-C21-C23-C7-E3-E8-F3-G4-H5-J5-H9-H8-I8-J3-K1-L5-L4-M7-O7-P7-P6-P5-P4-R1-R2-R5-U3-V3-V4-Z	21.22
218	A0-A4-B1-B61-B62-C1-C21-C23-C7-E3-E8-F3-G4-H5-J5-H9-H8-I8-J3-K1-L5-L4-M7-O7-P7-P6-P5-S1-S4-U1-U2-U3-V3-V4-Z	21.18
219	A0-A4-B1-B61-B62-C1-C21-C23-C7-E3-E8-F3-G4-H5-J5-J4-K21-K22-K1-L5-L4-M7-O7-P7-P6-P5-P4-R1-R2-R5-U3-V3-V4-Z	21.07
220	A0-A1-A3-A6-B2-B4-B8-C3-C6-E6-F5-F6-G4-H5-J5-J4-K21-K61-M8-O2-O7-P7-S2-S3-S4-U1-U2-U3-V3-V4-Z	21.30
221	A0-A4-A7-B2-B4-B8-C3-C4-C7-E2-E1-E6-G1-G3-H41-H42-H8-I8-J3-K1-L5-L4-M7-O7-P7-P6-P5-P4-R1-R2-R5-U3-V3-V4-Z	21.13

End of Table

Appendix E

Environmental Data

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APPENDIX E - TABLE 7-2. ENVIRONMENTAL DATA FOR ALTERNATIVE ROUTE EVALUATION

ALTERNATIVE ROUTE NUMBER	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Length of alternative route	111,751	113,061	108,960	111,188	108,537	111,412	108,761	108,538	108,295	107,966	108,190	109,648	108,924	111,501	105,547	105,124	105,348	111,183	114,265	113,758
Length of route parallel to existing electric transmission lines	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Length of route parallel to railroads	0	0	0	2,435	0	2,435	0	5,514	5,514	5,514	5,514	5,514	9,775	5,514	5,514	5,514	5,514	9,775	0	0
Length of route parallel to existing public roads/highways	6,399	17,471	18,576	18,076	17,471	18,076	17,471	15,417	15,417	13,164	13,164	11,973	13,422	11,973	13,079	11,973	11,973	13,422	10,475	15,113
Length of route parallel to pipelines (1)	14,491	17,036	20,687	20,685	18,840	21,529	19,685	16,566	14,279	12,611	13,456	11,981	11,981	11,981	15,633	13,785	14,630	11,981	13,868	17,036
Length of route parallel to apparent property boundaries	20,181	29,851	34,445	30,060	29,455	31,473	30,868	30,804	31,622	32,172	33,585	30,326	34,587	29,931	34,920	29,931	31,343	31,685	22,421	28,062
Total length of route parallel to existing compatible rights-of-way	20,181	29,851	34,445	30,060	29,455	31,473	30,868	36,147	36,965	35,263	36,675	30,326	34,587	29,931	34,920	29,931	31,343	31,685	25,511	28,062
Number of habitable structures within 500 feet of the route centerline (2)	188	131	151	142	132	146	136	313	246	348	352	190	193	191	210	191	195	193	320	138
Number of parks or recreational areas within 1,000 feet of the route centerline (3)	7	8	8	8	8	8	8	4	4	5	5	4	4	4	4	4	4	4	9	9
Length of the route across parks/recreational areas	3,343	2,110	2,110	2,110	2,110	2,110	2,110	12	12	12	12	12	12	12	12	12	12	12	3,343	2,110
Length of route through commercial/industrial areas	4,442	14,128	14,410	14,295	14,072	14,297	14,074	10,946	10,921	11,359	11,360	10,747	10,757	10,651	11,029	10,691	10,693	10,769	5,282	14,886
Length of the route across cropland/hay meadow	22,786	12,347	13,846	14,791	14,791	16,568	16,568	16,078	15,025	16,078	17,856	16,701	16,701	16,701	18,200	19,144	20,922	19,126	20,377	9,600
Length across rangeland pasture	59,773	62,833	55,809	52,224	50,198	49,153	47,127	62,565	61,066	60,596	57,524	61,928	60,399	64,096	54,905	49,294	46,222	60,404	62,432	63,069
Length of route across agricultural cropland with mobile irrigation systems	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Length of route across upland woodlands	13,402	11,825	12,571	13,305	13,010	14,140	13,845	10,241	12,107	10,920	11,755	11,437	12,043	11,427	12,184	12,622	13,457	12,056	13,108	14,327
Length of route across riparian areas	9,245	10,548	10,765	15,031	14,923	15,688	15,581	7,302	7,481	7,456	8,113	7,742	7,493	7,530	7,959	12,117	12,774	7,281	10,631	10,548
Length of route across potential wetlands	224	393	393	393	393	393	393	661	1,018	790	790	393	393	393	393	393	393	393	621	393
Number of stream crossings by the route	28	20	19	22	21	22	21	19	17	19	19	18	16	16	17	19	19	16	29	21
Length of route parallel to streams (within 100 feet)	3,901	1,160	504	504	504	504	504	0	0	0	0	656	0	0	0	0	0	0	3,165	1,160
Length across lakes or ponds (open waters)	1,879	987	1,165	1,150	1,150	1,174	1,174	745	676	768	792	700	1,139	704	878	863	886	1,154	1,814	936
Number of known rare/unique plant locations within the right-of-way	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Length of route through known habitat of endangered or threatened species	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of recorded cultural resource sites crossed by the route	0	1	1	1	1	1	1	0	0	0	0	1	1	1	1	1	1	1	0	1
Number of recorded cultural resources within 1,000 feet of the route centerline	3	3	3	3	3	3	3	2	2	2	2	3	3	3	3	3	3	3	4	3
Length of route across areas of high archaeological/historical site potential	37,497	40,506	42,191	59,761	59,354	59,931	59,523	32,564	31,300	32,394	32,563	34,787	33,746	34,797	36,472	53,635	53,804	36,005	48,534	40,936
Number of private airstrips within 10,000 feet of the route centerline	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of FAA-registered airports with at least one runway more than 3,200 feet in length within 20,000 feet of route centerline	3	3	3	3	3	3	3	4	4	4	4	3	3	3	3	3	3	3	4	3
Number of FAA-registered airports with no runway greater than 3,200 feet in length within 10,000 feet of the route centerline	5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	5	1
Number of heliports located within 5,000 feet of the route centerline	1	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	1	3
Number of commercial AM radio transmitters located within 10,000 feet of the route centerline	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of FM, microwave, and other electronic installations within 2,000 feet of the route centerline	1	6	6	6	6	6	6	2	2	3	3	4	3	3	4	4	4	3	2	6
Number of U.S. or State Highway crossings by the route	17	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	19	16
Number of Farm to Market (F.M.), county roads, or other street crossings by the route	9	12	13	10	11	11	12	8	9	9	10	9	8	8	10	8	9	8	8	13
Estimated length of right-of-way within foreground visual zone of U.S. and State Highways	42,489	56,399	56,026	75,058	72,406	81,153	78,501	50,287	46,599	55,542	61,637	48,869	50,817	48,497	48,497	64,876	70,971	52,203	49,132	55,522
Estimated length of right-of-way within foreground visual zone of park/recreational areas	42,567	49,263	45,051	48,029	45,051	48,029	45,051	50,643	46,904	55,500	55,500	47,756	43,544	43,544	43,544	43,544	43,544	43,544	59,890	50,707

NOTES: All length measurements are in feet. Measurements for many of the environmental criteria were obtained from mosaics of ortho-rectified images (NearMap, 2023), whose capture process utilizes global positioning system and precise point positioning technologies to achieve sub-meter (or approximately 7.8 inches) horizontal accuracy to true ground location.

(1) Not included in length of route parallel to existing compatible rights-of-way.

(2) Structures normally inhabited by humans on a daily or regular basis. Habitable structures include but are not limited to single-family and multi-family dwellings and related structures, mobile homes, apartment buildings, commercial structures, industrial structures, churches, hospitals, nursing homes, and schools.

(3) Defined as parks and recreational areas owned by a governmental body or an organized group, club, or church.

APPENDIX E - TABLE 7-2. ENVIRONMENTAL DATA FOR ALTERNATIVE ROUTE EVALUATION

ALTERNATIVE ROUTE NUMBER	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
Length of alternative route	108,663	110,345	109,621	106,244	105,821	106,045	114,844	110,319	114,320	115,633	114,844	114,321	116,619	117,631	111,027	108,375	110,604	107,952	110,828	108,176
Length of route parallel to existing electric transmission lines	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Length of route parallel to railroads	5,514	5,514	9,775	5,514	5,514	5,514	0	0	0	0	0	0	0	0	2,435	0	2,435	0	2,435	0
Length of route parallel to existing public roads/highways	10,806	9,616	11,065	10,721	9,616	9,616	14,204	14,204	10,672	14,191	13,322	9,790	19,333	13,843	12,109	11,504	11,004	10,399	11,004	10,399
Length of route parallel to pipelines (1)	12,611	11,981	11,981	15,633	13,785	14,630	16,213	18,017	10,506	22,999	15,214	9,507	12,545	12,545	15,743	13,898	13,895	12,051	14,740	12,896
Length of route parallel to apparent property boundaries	30,383	28,537	32,798	33,131	28,141	29,554	30,763	30,367	28,240	36,316	27,556	25,034	26,245	22,158	28,725	28,120	23,736	23,131	25,148	24,543
Total length of route parallel to existing compatible rights-of-way	33,473	28,537	32,798	33,131	28,141	29,554	30,763	30,367	28,240	37,719	27,556	25,034	32,991	27,501	28,725	28,120	23,736	23,131	25,148	24,543
Number of habitable structures within 500 feet of the route centerline (2)	355	197	200	217	198	202	132	133	131	146	132	131	183	185	165	155	146	136	150	140
Number of parks or recreational areas within 1,000 feet of the route centerline (3)	6	5	5	5	5	5	9	9	3	3	9	3	3	3	3	3	3	3	3	3
Length of the route across parks/recreational areas	12	12	12	12	12	12	2,099	2,099	0	0	2,099	0	0	0	0	0	0	0	0	0
Length of route through commercial/industrial areas	12,116	11,504	11,514	11,787	11,449	11,450	11,796	11,740	5,249	6,281	11,461	4,914	6,015	4,997	5,181	4,958	4,843	4,620	4,844	4,622
Length of the route across cropland/hay meadow	13,330	13,953	13,953	15,453	16,397	18,174	12,198	14,642	18,489	24,188	13,573	19,864	20,260	20,260	21,747	21,747	22,691	22,691	24,469	24,469
Length across rangeland pasture	60,832	62,164	60,635	55,141	49,530	46,458	65,226	52,592	69,551	61,066	64,479	68,803	67,061	68,478	63,294	61,268	57,683	55,657	54,612	52,585
Length of route across agricultural cropland with mobile irrigation systems	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Length of route across upland woodlands	13,422	13,940	14,545	14,686	15,125	15,960	12,599	13,784	12,740	14,817	11,089	11,230	11,491	11,744	11,603	11,307	12,041	11,746	12,876	12,581
Length of route across riparian areas	7,456	7,742	7,493	7,959	12,117	12,774	11,343	15,718	6,125	6,910	13,199	7,982	9,331	9,586	7,319	7,211	11,477	11,369	12,134	12,027
Length of route across potential wetlands	790	393	393	393	393	393	404	404	404	404	0	0	625	625	0	0	0	0	0	0
Number of stream crossings by the route	20	19	17	18	20	20	24	25	27	27	24	27	28	29	26	25	28	27	28	27
Length of route parallel to streams (within 100 feet)	0	656	0	0	0	0	1,674	1,018	1,865	3,153	1,160	1,351	695	695	695	695	695	695	695	695
Length across lakes or ponds (open waters)	717	649	1,088	826	811	835	1,277	1,440	1,763	1,968	1,043	1,529	1,836	1,940	1,883	1,883	1,868	1,868	1,892	1,892
Number of known rare/unique plant locations within the right-of-way	1	1	1	1	1	1	1	1	1	4	1	1	4	4	1	1	1	1	1	1
Length of route through known habitat of endangered or threatened species	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of recorded cultural resource sites crossed by the route	0	1	1	1	1	1	1	1	1	0	1	1	0	0	1	1	1	1	1	1
Number of recorded cultural resources within 1,000 feet of the route centerline	2	3	3	3	3	3	3	3	3	1	3	3	2	2	3	3	3	3	3	3
Length of route across areas of high archaeological/historical site potential	32,823	35,217	34,176	36,902	54,065	54,234	45,358	64,206	39,609	43,587	45,359	39,609	42,802	44,347	40,792	40,385	57,955	57,548	58,124	57,717
Number of private airstrips within 10,000 feet of the route centerline	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of FAA-registered airports with at least one runway more than 3,200 feet in length within 20,000 feet of route centerline	4	3	3	3	3	3	3	3	3	4	3	3	4	4	3	3	3	3	3	3
Number of FAA-registered airports with no runway greater than 3,200 feet in length within 10,000 feet of the route centerline	1	1	1	1	1	1	2	2	4	4	2	4	4	4	4	4	4	4	4	4
Number of heliports located within 5,000 feet of the route centerline	3	3	3	3	3	3	3	3	2	2	3	2	2	2	2	2	2	2	2	2
Number of commercial AM radio transmitters located within 10,000 feet of the route centerline	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of FM, microwave, and other electronic installations within 2,000 feet of the route centerline	3	4	3	4	4	4	6	6	3	3	6	3	3	3	3	3	3	3	3	3
Number of U.S. or State Highway crossings by the route	16	16	16	16	16	16	19	19	19	20	19	19	20	20	19	19	19	19	19	19
Number of Farm to Market (F.M.), county roads, or other street crossings by the route	10	10	9	11	9	10	11	10	10	8	11	10	8	7	10	11	8	9	9	10
Estimated length of right-of-way within foreground visual zone of U.S. and State Highways	54,665	47,992	49,940	47,620	63,999	70,095	52,047	68,054	43,149	45,828	52,047	43,149	48,563	45,697	47,246	44,594	63,625	60,974	69,720	67,069
Estimated length of right-of-way within foreground visual zone of park/recreational areas	56,943	49,200	44,988	44,988	44,988	44,988	50,254	46,042	42,806	40,508	49,864	42,416	49,997	45,208	44,826	41,848	44,826	41,848	44,826	41,848

NOTES: All length measurements are in feet. Measurements for many of the environmental criteria were obtained from mosaics of ortho-rectified images (NearMap, 2023), whose capture process utilizes global positioning system and precise point positioning technologies to achieve sub-meter (or approximately 7.8 inches) horizontal accuracy to true ground location.

(1) Not included in length of route parallel to existing compatible rights-of-way.

(2) Structures normally inhabited by humans on a daily or regular basis. Habitable structures include but are not limited to single-family and multi-family dwellings and related structures, mobile homes, apartment buildings, commercial structures, industrial structures, churches, hospitals, nursing homes, and schools.

(3) Defined as parks and recreational areas owned by a governmental body or an organized group, club, or church.

APPENDIX E - TABLE 7-2. ENVIRONMENTAL DATA FOR ALTERNATIVE ROUTE EVALUATION

ALTERNATIVE ROUTE NUMBER	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Length of alternative route	110,686	108,034	109,788	106,411	105,987	106,211	116,330	112,449	111,300	111,525	115,239	111,383	108,731	111,219	111,443	121,116	116,434	107,108	114,046	109,910
Length of route parallel to existing electric transmission lines	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Length of route parallel to railroads	2,435	0	9,775	5,514	5,514	5,514	0	4,261	2,435	2,435	0	2,435	0	0	0	0	0	5,514	0	9,775
Length of route parallel to existing public roads/highways	7,940	7,335	9,410	9,067	7,961	7,961	11,833	9,490	8,646	8,646	4,977	5,582	4,977	8,950	8,950	10,049	5,215	6,709	23,083	19,034
Length of route parallel to pipelines (1)	22,956	21,112	11,409	15,060	13,213	14,058	22,999	10,247	13,895	14,740	21,112	22,956	21,112	19,983	20,828	10,781	21,112	15,060	17,036	11,981
Length of route parallel to apparent property boundaries	24,374	23,769	23,357	23,690	18,701	20,113	34,526	25,998	21,947	23,359	19,314	22,584	21,979	21,050	22,463	23,125	20,507	21,901	34,725	39,461
Total length of route parallel to existing compatible rights-of-way	24,374	23,769	23,357	23,690	18,701	20,113	35,929	25,998	21,947	23,359	19,314	22,584	21,979	25,023	26,436	24,528	20,507	21,901	34,869	39,605
Number of habitable structures within 500 feet of the route centerline (2)	168	158	197	214	195	199	153	145	153	157	159	175	165	267	271	154	159	221	131	193
Number of parks or recreational areas within 1,000 feet of the route centerline (3)	3	3	5	5	5	5	4	4	4	4	4	4	4	4	4	4	4	6	8	4
Length of the route across parks/recreational areas	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2,110	12
Length of route through commercial/industrial areas	4,730	4,507	7,998	8,270	7,932	7,934	7,039	5,444	5,600	5,602	5,412	5,488	5,265	5,547	5,549	6,566	5,123	9,028	14,340	10,968
Length of the route across cropland/hay meadow	20,443	20,443	15,589	17,089	18,033	19,810	21,441	17,500	19,944	21,721	19,384	17,696	17,696	18,902	20,679	35,197	19,384	14,341	13,702	18,055
Length across rangeland pasture	63,880	61,854	64,498	59,004	53,393	50,322	61,302	66,998	57,919	54,848	63,139	64,116	62,090	66,496	63,425	56,569	64,447	59,240	63,805	61,371
Length of route across agricultural cropland with mobile irrigation systems	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Length of route across upland woodlands	11,836	11,541	11,058	11,199	11,637	12,472	17,319	13,669	14,544	15,379	14,556	14,338	14,043	11,265	12,100	12,583	14,742	13,701	10,236	10,454
Length of route across riparian areas	7,866	7,759	9,071	9,537	13,695	14,352	6,910	6,746	11,477	12,134	10,612	7,866	7,759	7,255	7,912	8,566	10,604	9,537	10,593	7,538
Length of route across potential wetlands	0	0	0	0	0	0	404	0	0	0	0	0	0	268	268	194	0	0	393	393
Number of stream crossings by the route	26	25	20	21	23	23	28	25	29	29	30	27	26	29	29	29	30	22	20	16
Length of route parallel to streams (within 100 feet)	695	695	0	0	0	0	3,153	695	695	695	695	695	695	695	695	3,527	695	0	1,468	308
Length across lakes or ponds (open waters)	1,930	1,930	1,574	1,312	1,297	1,321	1,916	2,093	1,817	1,841	2,136	1,879	1,879	1,486	1,510	1,440	2,134	1,261	978	1,130
Number of known rare/unique plant locations within the right-of-way	1	1	1	1	1	1	4	1	1	1	4	1	1	1	1	4	4	1	1	1
Length of route through known habitat of endangered or threatened species	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of recorded cultural resource sites crossed by the route	0	0	1	1	1	1	0	1	1	1	0	0	0	0	0	0	0	1	1	1
Number of recorded cultural resources within 1,000 feet of the route centerline	1	1	3	3	3	3	1	3	3	3	1	1	1	1	1	1	1	3	3	3
Length of route across areas of high archaeological/historical site potential	40,653	40,246	38,472	41,197	58,360	58,529	44,017	38,089	58,385	58,554	49,810	41,083	40,675	40,248	40,417	36,864	51,005	41,627	41,081	34,321
Number of private airstrips within 10,000 feet of the route centerline	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of FAA-registered airports with at least one runway more than 3,200 feet in length within 20,000 feet of route centerline	4	4	3	3	3	3	4	3	3	3	4	4	4	4	4	3	4	3	3	3
Number of FAA-registered airports with no runway greater than 3,200 feet in length within 10,000 feet of the route centerline	4	4	2	2	2	2	4	4	4	4	4	4	4	4	4	5	4	2	1	1
Number of heliports located within 5,000 feet of the route centerline	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	3	3
Number of commercial AM radio transmitters located within 10,000 feet of the route centerline	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of FM, microwave, and other electronic installations within 2,000 feet of the route centerline	1	1	3	4	4	4	3	2	3	3	3	1	1	1	1	4	3	4	6	3
Number of U.S. or State Highway crossings by the route	19	19	19	19	19	19	20	19	19	19	20	19	19	19	19	20	20	19	19	19
Number of Farm to Market (F.M.), county roads, or other street crossings by the route	9	10	7	9	7	8	9	10	9	10	8	10	11	10	11	13	8	10	12	8
Estimated length of right-of-way within foreground visual zone of U.S. and State Highways	45,348	42,697	52,551	50,232	66,611	72,706	44,951	46,037	62,749	68,844	44,821	44,472	41,820	45,508	51,603	46,768	46,016	49,355	57,384	51,802
Estimated length of right-of-way within foreground visual zone of park/recreational areas	41,950	38,973	47,790	47,790	47,790	47,790	41,951	43,292	46,270	46,270	40,416	43,394	40,416	44,976	44,976	45,205	38,564	49,233	50,193	44,474

NOTES: All length measurements are in feet. Measurements for many of the environmental criteria were obtained from mosaics of ortho-rectified images (NearMap, 2023), whose capture process utilizes global positioning system and precise point positioning technologies to achieve sub-meter (or approximately 7.8 inches) horizontal accuracy to true ground location.

(1) Not included in length of route parallel to existing compatible rights-of-way.

(2) Structures normally inhabited by humans on a daily or regular basis. Habitable structures include but are not limited to single-family and multi-family dwellings and related structures, mobile homes, apartment buildings, commercial structures, industrial structures, churches, hospitals, nursing homes, and schools.

(3) Defined as parks and recreational areas owned by a governmental body or an organized group, club, or church.

APPENDIX E - TABLE 7-2. ENVIRONMENTAL DATA FOR ALTERNATIVE ROUTE EVALUATION

ALTERNATIVE ROUTE NUMBER	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
Length of alternative route	106,109	114,743	107,230	116,619	111,587	112,284	113,673	115,997	118,810	117,115	116,232	112,248	113,558	108,463	108,687	110,145	109,421	106,044	105,621	105,845
Length of route parallel to existing electric transmission lines	0	0	0	0	0	0	0	0	0	0	0	803	803	803	803	803	803	803	803	803
Length of route parallel to railroads	5,514	0	5,514	0	0	0	0	0	0	5,514	0	0	0	5,514	5,514	5,514	9,775	5,514	5,514	5,514
Length of route parallel to existing public roads/highways	17,585	20,725	16,333	19,803	12,011	9,653	8,982	14,472	15,565	18,182	13,918	3,087	14,159	9,853	9,853	8,662	10,111	9,767	8,662	8,662
Length of route parallel to pipelines (1)	13,785	17,036	15,633	22,999	14,491	14,491	12,787	10,823	11,916	19,686	22,740	14,491	17,036	12,611	13,456	11,981	11,981	15,633	13,785	14,630
Length of route parallel to apparent property boundaries	34,805	32,936	38,005	41,190	25,055	23,265	20,232	21,779	25,853	31,354	32,718	19,358	29,028	31,349	32,762	29,503	33,764	34,097	29,108	30,520
Total length of route parallel to existing compatible rights-of-way	34,948	33,079	38,148	42,736	25,198	23,409	20,376	23,326	27,400	31,498	34,121	20,161	29,831	35,243	36,655	30,307	34,567	34,900	29,911	31,323
Number of habitable structures within 500 feet of the route centerline (2)	191	138	217	146	188	195	252	240	234	266	146	188	131	348	352	190	193	210	191	195
Number of parks or recreational areas within 1,000 feet of the route centerline (3)	4	9	5	3	7	8	7	7	7	5	4	7	8	5	5	4	4	4	4	4
Length of the route across parks/recreational areas	12	2,110	12	0	3,343	3,343	3,343	3,343	3,343	3,062	0	3,343	2,110	12	12	12	12	12	12	12
Length of route through commercial/industrial areas	10,903	15,097	11,998	6,493	4,324	5,082	4,304	5,699	5,687	8,534	6,004	4,259	13,945	11,176	11,177	10,564	10,574	10,846	10,508	10,509
Length of the route across cropland/hay meadow	20,499	10,954	16,807	25,543	24,140	21,393	29,210	31,022	36,231	18,299	25,947	22,786	12,347	16,078	17,856	16,701	16,701	18,200	19,144	20,922
Length across rangeland pasture	50,266	64,041	56,113	62,038	60,097	60,333	57,538	57,509	54,065	70,487	61,783	60,259	63,318	61,081	58,010	62,414	60,884	55,390	49,779	46,708
Length of route across agricultural cropland with mobile irrigation systems	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Length of route across upland woodlands	11,034	12,739	13,098	13,229	11,813	14,315	11,792	10,365	11,313	11,236	12,592	13,596	12,020	11,114	11,950	11,632	12,238	12,379	12,817	13,652
Length of route across riparian areas	12,162	10,593	8,004	6,955	9,118	9,118	9,157	9,766	9,797	7,248	7,946	9,245	10,548	7,456	8,113	7,742	7,493	7,959	12,117	12,774
Length of route across potential wetlands	393	393	393	404	224	224	418	418	418	224	0	224	393	790	790	393	393	393	393	393
Number of stream crossings by the route	19	21	18	27	28	29	26	29	27	21	27	28	20	19	19	18	16	17	19	19
Length of route parallel to streams (within 100 feet)	308	1,468	308	3,461	3,593	3,593	3,165	3,165	5,108	381	2,639	3,901	1,160	0	0	656	0	0	0	0
Length across lakes or ponds (open waters)	854	927	817	1,959	1,870	1,819	1,254	1,216	1,298	1,088	1,960	1,879	987	768	792	700	1,139	878	863	886
Number of known rare/unique plant locations within the right-of-way	1	1	1	4	1	1	1	4	4	1	4	1	1	1	1	1	1	1	1	1
Length of route through known habitat of endangered or threatened species	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of recorded cultural resource sites crossed by the route	1	1	1	0	0	0	0	0	0	1	0	0	1	0	0	1	1	1	1	1
Number of recorded cultural resources within 1,000 feet of the route centerline	3	3	3	1	3	3	3	3	3	3	1	3	3	2	2	3	3	3	3	3
Length of route across areas of high archaeological/historical site potential	54,210	41,511	37,476	44,162	36,923	37,352	34,737	32,866	35,128	34,833	41,883	37,497	40,506	32,394	32,563	34,787	33,746	36,472	53,635	53,804
Number of private airstrips within 10,000 feet of the route centerline	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of FAA-registered airports with at least one runway more than 3,200 feet in length within 20,000 feet of route centerline	3	3	3	4	3	3	3	3	3	3	4	3	3	4	4	3	3	3	3	3
Number of FAA-registered airports with no runway greater than 3,200 feet in length within 10,000 feet of the route centerline	1	1	1	4	5	5	6	6	6	3	4	5	1	1	1	1	1	1	1	1
Number of heliports located within 5,000 feet of the route centerline	3	3	3	2	1	1	1	1	1	2	2	1	3	3	3	3	3	3	3	3
Number of commercial AM radio transmitters located within 10,000 feet of the route centerline	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of FM, microwave, and other electronic installations within 2,000 feet of the route centerline	4	6	4	3	1	1	1	4	4	4	3	1	6	3	3	4	3	4	4	4
Number of U.S. or State Highway crossings by the route	19	19	19	23	18	18	18	19	19	18	20	17	16	16	16	16	16	16	16	16
Number of Farm to Market (F.M.), county roads, or other street crossings by the route	8	13	11	8	9	10	11	11	10	9	9	9	12	9	10	9	8	10	8	9
Estimated length of right-of-way within foreground visual zone of U.S. and State Highways	65,862	56,507	48,605	46,813	42,325	41,448	40,470	45,418	45,418	52,600	50,088	42,986	56,896	56,039	62,134	49,366	51,314	48,994	65,373	71,468
Estimated length of right-of-way within foreground visual zone of park/recreational areas	44,474	51,636	45,917	41,437	42,347	43,790	41,782	46,571	46,571	49,262	44,767	41,866	48,562	54,798	54,798	47,055	42,843	42,843	42,843	42,843

NOTES: All length measurements are in feet. Measurements for many of the environmental criteria were obtained from mosaics of ortho-rectified images (NearMap, 2023), whose capture process utilizes global positioning system and precise point positioning technologies to achieve sub-meter (or approximately 7.8 inches) horizontal accuracy to true ground location.

(1) Not included in length of route parallel to existing compatible rights-of-way.

(2) Structures normally inhabited by humans on a daily or regular basis. Habitable structures include but are not limited to single-family and multi-family dwellings and related structures, mobile homes, apartment buildings, commercial structures, industrial structures, churches, hospitals, nursing homes, and schools.

(3) Defined as parks and recreational areas owned by a governmental body or an organized group, club, or church.

APPENDIX E - TABLE 7-2. ENVIRONMENTAL DATA FOR ALTERNATIVE ROUTE EVALUATION

ALTERNATIVE ROUTE NUMBER	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
Length of alternative route	114,817	114,818	108,449	108,673	111,183	108,531	110,285	114,543	110,407	112,084	115,728	119,760	114,894	111,175	115,841	110,086	116,351	117,363	119,164	120,176
Length of route parallel to existing electric transmission lines	803	803	803	803	803	803	803	803	803	803	7,149	7,149	7,149	7,149	7,149	7,149	7,149	7,149	7,149	7,149
Length of route parallel to railroads	0	0	0	0	2,435	0	9,775	0	9,775	0	4,261	0	4,261	0	0	0	0	0	0	0
Length of route parallel to existing public roads/highways	7,360	6,478	7,087	7,087	4,628	4,023	6,099	19,771	15,723	8,699	8,261	14,631	7,146	2,633	7,705	1,122	6,612	1,122	7,706	2,216
Length of route parallel to pipelines (1)	10,506	9,507	12,051	12,896	22,956	21,112	11,409	17,036	11,981	14,491	10,399	11,069	8,771	19,636	13,508	11,880	8,212	8,212	9,305	9,305
Length of route parallel to apparent property boundaries	27,417	24,211	22,308	23,720	23,551	22,946	22,534	33,902	38,638	24,232	28,145	21,316	22,859	18,840	23,992	16,159	15,912	11,825	19,986	15,899
Total length of route parallel to existing compatible rights-of-way	28,220	25,014	23,111	24,524	24,354	23,749	23,337	34,849	39,585	25,179	35,294	35,211	30,008	25,989	32,544	23,308	24,464	18,974	28,538	23,048
Number of habitable structures within 500 feet of the route centerline (2)	131	131	136	140	168	158	197	131	193	188	240	319	274	294	282	290	289	291	283	285
Number of parks or recreational areas within 1,000 feet of the route centerline (3)	3	3	3	3	3	3	5	8	4	7	5	9	9	9	9	9	9	9	9	9
Length of the route across parks/recreational areas	0	0	0	0	0	0	0	2,110	12	3,343	3,563	3,844	3,844	3,844	3,844	3,844	3,844	3,844	3,844	3,844
Length of route through commercial/industrial areas	5,065	4,730	4,437	4,439	4,547	4,324	7,815	14,156	10,785	4,141	4,906	6,084	4,755	4,576	5,749	4,547	5,863	4,845	5,850	4,833
Length of the route across cropland/hay meadow	18,489	19,864	22,691	24,469	20,443	20,443	15,589	13,702	18,055	24,140	19,425	18,429	18,417	18,612	28,433	22,930	30,904	30,904	36,113	36,113
Length across rangeland pasture	70,036	69,288	56,142	53,071	64,365	62,339	64,984	64,290	61,856	60,582	74,143	69,710	69,411	64,503	57,865	59,912	58,097	59,514	54,653	56,071
Length of route across agricultural cropland with mobile irrigation systems	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Length of route across upland woodlands	12,935	11,425	11,941	12,776	12,031	11,735	11,252	10,431	10,649	12,008	10,316	12,130	11,805	12,179	12,389	11,292	9,732	9,985	10,680	10,934
Length of route across riparian areas	6,125	7,982	11,369	12,027	7,866	7,759	9,071	10,593	7,538	9,118	4,773	10,878	8,292	9,306	9,443	9,423	10,082	10,338	10,113	10,368
Length of route across potential wetlands	404	0	0	0	0	0	0	393	393	224	224	849	224	224	224	224	418	418	418	418
Number of stream crossings by the route	27	27	27	27	26	25	20	20	16	28	26	28	24	25	28	27	30	31	28	29
Length of route parallel to streams (within 100 feet)	1,865	1,351	695	695	695	695	0	1,468	308	3,593	1,046	2,627	2,627	2,627	5,459	3,515	3,515	3,515	5,459	5,459
Length across lakes or ponds (open waters)	1,763	1,529	1,868	1,892	1,930	1,930	1,574	978	1,130	1,870	1,943	1,681	1,990	1,775	1,738	1,758	1,254	1,358	1,336	1,440
Number of known rare/unique plant locations within the right-of-way	1	1	1	1	1	1	1	1	1	1	0	3	0	0	3	0	3	3	3	3
Length of route through known habitat of endangered or threatened species	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of recorded cultural resource sites crossed by the route	1	1	1	1	0	0	1	1	1	0	1	0	1	0	0	0	0	0	0	0
Number of recorded cultural resources within 1,000 feet of the route centerline	3	3	3	3	1	1	3	3	3	3	3	4	5	3	3	3	3	3	3	3
Length of route across areas of high archaeological/historical site potential	39,609	39,609	57,548	57,717	40,653	40,246	38,472	41,081	34,321	36,923	29,779	40,966	35,823	38,410	38,825	36,393	32,336	33,882	34,598	36,144
Number of private airstrips within 10,000 feet of the route centerline	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of FAA-registered airports with at least one runway more than 3,200 feet in length within 20,000 feet of route centerline	3	3	3	3	4	4	3	3	3	3	3	4	3	4	3	3	3	3	3	3
Number of FAA-registered airports with no runway greater than 3,200 feet in length within 10,000 feet of the route centerline	4	4	4	4	4	4	2	1	1	5	5	5	5	5	5	5	6	6	6	6
Number of heliports located within 5,000 feet of the route centerline	2	2	2	2	2	2	2	3	3	1	2	1	1	1	1	1	1	1	1	1
Number of commercial AM radio transmitters located within 10,000 feet of the route centerline	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of FM, microwave, and other electronic installations within 2,000 feet of the route centerline	3	3	3	3	1	1	3	6	3	1	1	2	1	0	2	0	3	3	3	3
Number of U.S. or State Highway crossings by the route	19	19	19	19	19	19	19	19	19	18	14	15	14	14	15	14	15	15	15	15
Number of Farm to Market (F.M.), county roads, or other street crossings by the route	10	10	9	10	9	10	7	12	8	9	11	10	11	12	9	11	13	12	12	11
Estimated length of right-of-way within foreground visual zone of U.S. and State Highways	43,646	43,646	61,471	67,566	45,845	43,194	53,048	57,881	52,299	42,822	44,359	43,501	41,852	37,635	42,583	37,635	42,583	39,718	42,583	39,718
Estimated length of right-of-way within foreground visual zone of park/recreational areas	42,105	41,715	41,147	41,147	41,249	38,272	47,088	49,491	43,773	41,646	42,246	51,799	43,650	40,775	45,564	40,775	45,564	40,775	45,564	40,775

NOTES: All length measurements are in feet. Measurements for many of the environmental criteria were obtained from mosaics of ortho-rectified images (NearMap, 2023), whose capture process utilizes global positioning system and precise point positioning technologies to achieve sub-meter (or approximately 7.8 inches) horizontal accuracy to true ground location.

(1) Not included in length of route parallel to existing compatible rights-of-way.

(2) Structures normally inhabited by humans on a daily or regular basis. Habitable structures include but are not limited to single-family and multi-family dwellings and related structures, mobile homes, apartment buildings, commercial structures, industrial structures, churches, hospitals, nursing homes, and schools.

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APPENDIX E - TABLE 7-2. ENVIRONMENTAL DATA FOR ALTERNATIVE ROUTE EVALUATION

ALTERNATIVE ROUTE NUMBER	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120
Length of alternative route	118,557	114,525	110,806	119,742	115,710	114,561	118,792	118,176	119,449	116,141	115,417	114,268	111,617	114,492	111,841	119,030	119,593	115,561	118,138	118,832
Length of route parallel to existing electric transmission lines	7,149	7,149	7,149	7,149	7,149	7,149	7,149	7,149	7,149	7,149	7,149	7,149	7,149	7,149	7,149	7,149	7,149	7,149	7,149	7,149
Length of route parallel to railroads	0	4,261	0	5,514	9,775	7,949	0	0	5,514	5,514	9,775	7,949	5,514	7,949	5,514	0	0	4,261	0	7,949
Length of route parallel to existing public roads/highways	9,141	7,146	2,633	8,563	6,568	5,725	10,331	10,540	15,936	12,492	13,941	13,097	12,492	13,097	12,492	14,457	20,551	18,556	17,107	15,659
Length of route parallel to pipelines (1)	14,455	10,627	21,492	12,375	8,547	12,195	20,129	12,438	16,244	12,417	12,417	16,065	14,221	16,910	15,065	11,764	18,253	14,425	14,425	15,042
Length of route parallel to apparent property boundaries	22,435	22,516	18,497	38,452	38,534	34,482	34,637	19,641	40,232	36,053	40,314	36,262	35,657	37,675	37,070	33,055	34,922	35,003	30,347	36,002
Total length of route parallel to existing compatible rights-of-way	34,927	29,665	25,646	50,945	45,683	41,631	43,189	26,791	52,725	43,202	47,463	43,411	42,806	44,824	44,219	40,204	47,414	42,152	37,496	48,495
Number of habitable structures within 500 feet of the route centerline (2)	323	267	287	352	296	304	252	271	322	263	266	274	264	278	268	203	263	207	205	332
Number of parks or recreational areas within 1,000 feet of the route centerline (3)	9	9	9	7	7	7	5	9	7	7	7	7	7	7	7	5	11	11	11	7
Length of the route across parks/recreational areas	3,844	3,844	3,844	502	502	502	502	3,844	513	513	513	513	513	513	513	513	2,612	2,612	2,612	513
Length of route through commercial/industrial areas	4,760	4,690	4,512	8,697	8,628	8,785	5,912	4,897	8,955	8,876	8,886	9,042	8,820	9,044	8,821	5,709	14,702	14,633	14,526	11,543
Length of the route across cropland/hay meadow	23,039	22,159	22,354	18,739	17,859	20,302	27,254	22,775	19,054	18,174	18,174	20,617	20,617	22,395	22,395	20,110	14,700	13,820	13,820	19,054
Length across rangeland pasture	67,802	65,860	60,952	71,095	69,153	60,075	66,168	62,995	66,685	66,273	64,743	55,665	53,638	52,593	50,567	71,502	66,109	64,167	67,864	67,231
Length of route across agricultural cropland with mobile irrigation systems	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Length of route across upland woodlands	12,191	10,967	11,341	12,849	11,625	12,500	11,446	12,639	13,168	11,339	11,945	12,819	12,524	13,654	13,359	11,867	11,656	10,433	9,817	11,564
Length of route across riparian areas	8,946	8,650	9,663	7,072	6,776	11,507	6,267	12,916	10,108	10,061	9,812	14,543	14,436	15,201	15,093	7,650	10,957	10,661	10,698	8,258
Length of route across potential wetlands	224	224	224	404	404	404	0	224	393	393	393	393	393	393	393	393	393	393	393	393
Number of stream crossings by the route	28	25	26	24	21	25	27	26	21	20	18	22	21	22	21	25	22	19	19	21
Length of route parallel to streams (within 100 feet)	3,515	3,515	3,515	864	864	864	2,989	3,007	1,173	1,829	1,173	1,173	1,173	1,173	1,173	2,524	1,162	1,162	1,162	658
Length across lakes or ponds (open waters)	1,596	1,975	1,761	886	1,265	989	1,746	1,729	1,086	1,026	1,465	1,189	1,189	1,213	1,213	1,800	1,076	1,455	1,020	789
Number of known rare/unique plant locations within the right-of-way	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0
Length of route through known habitat of endangered or threatened species	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of recorded cultural resource sites crossed by the route	0	1	0	0	1	1	0	1	0	1	1	1	1	1	1	1	0	1	1	0
Number of recorded cultural resources within 1,000 feet of the route centerline	4	5	3	2	3	3	1	5	2	3	3	3	3	3	3	3	2	3	3	2
Length of route across areas of high archaeological/historical site potential	39,930	40,915	43,501	31,771	32,756	53,052	36,836	56,699	39,144	41,170	40,130	60,426	60,018	60,595	60,187	41,140	38,525	39,510	40,561	33,213
Number of private airstrips within 10,000 feet of the route centerline	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of FAA-registered airports with at least one runway more than 3,200 feet in length within 20,000 feet of route centerline	4	3	4	4	3	3	4	3	4	3	3	3	3	3	3	3	4	3	3	4
Number of FAA-registered airports with no runway greater than 3,200 feet in length within 10,000 feet of the route centerline	5	5	5	3	3	3	5	5	1	1	1	1	1	1	1	3	1	1	1	1
Number of heliports located within 5,000 feet of the route centerline	1	1	1	3	3	3	2	1	3	3	3	3	3	3	3	2	3	3	3	3
Number of commercial AM radio transmitters located within 10,000 feet of the route centerline	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of FM, microwave, and other electronic installations within 2,000 feet of the route centerline	0	1	0	1	2	3	2	2	1	3	2	3	3	3	3	2	3	4	4	1
Number of U.S. or State Highway crossings by the route	14	14	14	14	14	14	15	14	15	15	15	15	15	15	15	15	15	15	15	15
Number of Farm to Market (F.M.), county roads, or other street crossings by the route	10	9	10	10	9	8	10	11	10	10	9	8	9	9	10	12	14	13	13	10
Estimated length of right-of-way within foreground visual zone of U.S. and State Highways	37,635	41,852	37,635	39,693	43,910	60,622	45,090	57,999	46,634	48,904	50,851	67,563	64,911	73,658	71,006	47,535	54,164	58,381	56,061	49,286
Estimated length of right-of-way within foreground visual zone of park/recreational areas	46,954	43,650	40,775	49,256	45,953	48,931	45,179	43,718	49,248	50,156	45,944	48,922	45,944	48,922	45,944	44,215	48,277	44,974	44,974	49,748

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(1) Not included in length of route parallel to existing compatible rights-of-way.

(2) Structures normally inhabited by humans on a daily or regular basis. Habitable structures include but are not limited to single-family and multi-family dwellings and related structures, mobile homes, apartment buildings, commercial structures, industrial structures, churches, hospitals, nursing homes, and schools.

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APPENDIX E - TABLE 7-2. ENVIRONMENTAL DATA FOR ALTERNATIVE ROUTE EVALUATION

ALTERNATIVE ROUTE NUMBER	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140
Length of alternative route	114,800	111,423	108,771	119,764	118,797	117,963	113,931	113,206	110,554	117,544	118,857	118,739	118,858	119,332	119,009	114,977	111,599	111,258	116,172	118,208
Length of route parallel to existing electric transmission lines	7,149	7,149	7,149	7,149	7,149	7,149	7,149	7,149	7,149	7,149	7,149	7,149	7,149	7,149	7,149	7,149	7,149	7,149	7,149	7,149
Length of route parallel to railroads	12,210	7,949	5,514	0	5,514	5,514	9,775	7,949	5,514	0	0	0	0	0	0	4,261	0	0	4,261	0
Length of route parallel to existing public roads/highways	13,664	13,320	12,715	10,929	17,277	11,787	9,792	10,053	9,448	10,308	13,827	10,546	12,945	10,929	13,479	11,484	11,141	6,971	11,723	13,793
Length of route parallel to pipelines (1)	11,214	14,866	13,021	13,508	10,844	12,375	8,547	14,042	12,198	7,894	20,387	7,894	19,389	10,744	11,463	7,636	11,287	18,501	7,636	20,129
Length of route parallel to apparent property boundaries	36,084	36,417	35,811	27,203	34,847	36,309	36,390	37,328	36,723	29,131	37,207	30,324	34,000	24,526	28,597	28,679	29,012	24,660	29,871	33,686
Total length of route parallel to existing compatible rights-of-way	43,233	43,566	42,961	35,755	48,743	48,801	43,539	44,477	43,872	36,281	45,759	37,473	42,553	33,078	41,090	35,828	36,161	31,809	37,020	42,238
Number of habitable structures within 500 feet of the route centerline (2)	276	293	283	253	312	323	267	294	284	204	219	204	219	254	267	211	228	231	211	223
Number of parks or recreational areas within 1,000 feet of the route centerline (3)	7	7	7	11	8	8	8	8	8	6	6	6	6	10	6	6	6	6	6	6
Length of the route across parks/recreational areas	513	513	513	3,844	502	502	502	502	502	502	502	502	502	782	502	502	502	502	502	502
Length of route through commercial/industrial areas	11,474	11,746	11,523	6,233	10,248	8,989	8,919	9,414	9,191	5,743	6,776	5,454	6,441	6,076	5,250	5,180	5,453	5,002	4,892	5,914
Length of the route across cropland/hay meadow	18,174	19,673	19,673	28,747	18,037	18,905	18,025	19,524	19,524	19,961	25,661	19,961	27,036	30,764	22,601	21,720	23,220	21,916	21,720	27,420
Length across rangeland pasture	65,289	59,795	57,769	57,104	65,955	67,598	65,656	62,189	60,162	72,415	63,930	73,723	63,182	56,726	71,568	69,626	64,132	64,718	70,934	63,979
Length of route across agricultural cropland with mobile irrigation systems	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Length of route across upland woodlands	10,341	10,482	10,186	13,656	11,144	12,043	10,820	11,256	10,961	10,742	12,819	10,928	11,310	11,897	10,392	9,169	9,310	9,543	9,354	10,826
Length of route across riparian areas	7,962	8,428	8,320	11,823	11,235	8,945	8,649	9,222	9,115	6,487	7,271	6,480	9,127	11,901	7,403	7,107	7,573	8,121	7,100	8,133
Length of route across potential wetlands	393	393	393	224	1,029	404	404	404	404	404	404	404	0	0	0	0	0	0	0	0
Number of stream crossings by the route	18	19	18	30	25	24	21	23	22	28	28	28	28	29	28	25	26	26	25	27
Length of route parallel to streams (within 100 feet)	658	658	658	5,767	1,173	1,173	1,173	1,173	1,173	2,524	3,811	2,524	3,297	5,767	1,354	1,354	1,354	1,354	1,354	3,297
Length across lakes or ponds (open waters)	1,168	907	907	1,977	1,149	1,078	1,458	1,196	1,196	1,792	1,997	1,790	1,762	1,969	1,794	2,174	1,912	1,959	2,171	1,936
Number of known rare/unique plant locations within the right-of-way	0	0	0	3	3	0	0	0	0	0	3	0	3	3	0	0	0	0	0	3
Length of route through known habitat of endangered or threatened species	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of recorded cultural resource sites crossed by the route	1	1	1	0	0	0	1	1	1	1	0	1	0	0	0	1	1	0	1	0
Number of recorded cultural resources within 1,000 feet of the route centerline	3	3	3	3	2	2	3	3	3	3	1	3	1	3	2	3	3	1	3	1
Length of route across areas of high archaeological/historical site potential	34,199	36,924	36,517	47,841	43,786	37,658	38,643	41,776	41,369	39,654	43,632	40,849	43,633	50,994	36,719	37,704	40,430	40,291	38,899	43,918
Number of private airstrips within 10,000 feet of the route centerline	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of FAA-registered airports with at least one runway more than 3,200 feet in length within 20,000 feet of route centerline	3	3	3	3	4	4	3	3	3	3	4	3	4	3	4	3	3	4	3	4
Number of FAA-registered airports with no runway greater than 3,200 feet in length within 10,000 feet of the route centerline	1	1	1	5	2	2	2	2	2	4	4	4	4	5	4	4	4	4	4	4
Number of heliports located within 5,000 feet of the route centerline	3	3	3	1	3	3	3	3	3	2	2	2	2	1	2	2	2	2	2	2
Number of commercial AM radio transmitters located within 10,000 feet of the route centerline	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of FM, microwave, and other electronic installations within 2,000 feet of the route centerline	2	3	3	2	3	1	2	3	3	2	2	2	2	2	0	1	2	0	1	2
Number of U.S. or State Highway crossings by the route	15	15	15	19	19	18	18	18	18	18	19	18	19	19	18	18	18	18	18	19
Number of Farm to Market (F.M.), county roads, or other street crossings by the route	9	11	12	9	8	10	9	10	11	12	10	12	10	9	12	11	13	12	11	10
Estimated length of right-of-way within foreground visual zone of U.S. and State Highways	53,503	51,183	48,531	45,172	48,148	42,282	46,499	46,831	44,180	43,183	45,862	44,378	45,862	45,172	42,731	46,948	44,629	42,731	48,143	48,875
Estimated length of right-of-way within foreground visual zone of park/recreational areas	46,444	46,444	43,467	49,770	52,606	47,762	44,458	47,436	44,458	42,729	40,430	40,877	40,040	49,142	45,074	41,771	41,771	38,895	39,919	41,832

NOTES: All length measurements are in feet. Measurements for many of the environmental criteria were obtained from mosaics of ortho-rectified images (NearMap, 2023), whose capture process utilizes global positioning system and precise point positioning technologies to achieve sub-meter (or approximately 7.8 inches) horizontal accuracy to true ground location.

(1) Not included in length of route parallel to existing compatible rights-of-way.

(2) Structures normally inhabited by humans on a daily or regular basis. Habitable structures include but are not limited to single-family and multi-family dwellings and related structures, mobile homes, apartment buildings, commercial structures, industrial structures, churches, hospitals, nursing homes, and schools.

(3) Defined as parks and recreational areas owned by a governmental body or an organized group, club, or church.

APPENDIX E - TABLE 7-2. ENVIRONMENTAL DATA FOR ALTERNATIVE ROUTE EVALUATION

ALTERNATIVE ROUTE NUMBER	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160
Length of alternative route	119,580	116,653	116,661	118,684	118,484	118,637	118,691	115,330	116,635	117,646	111,043	108,391	122,275	119,463	115,320	116,633	117,645	116,374	117,828	117,569
Length of route parallel to existing electric transmission lines	7,149	7,149	7,149	5,227	5,227	5,227	5,227	5,227	5,227	5,227	5,227	5,227	5,227	5,227	5,227	5,227	5,227	5,227	5,227	5,227
Length of route parallel to railroads	0	0	0	0	0	0	0	0	5,514	5,514	7,949	5,514	0	0	0	0	0	0	0	0
Length of route parallel to existing public roads/highways	12,619	3,416	3,416	9,097	7,992	7,992	9,097	6,591	22,711	17,221	15,487	14,882	13,096	21,136	12,202	15,722	10,231	14,628	15,960	14,867
Length of route parallel to pipelines (1)	13,508	15,031	16,218	18,724	17,722	16,209	19,911	7,636	11,668	11,668	14,866	13,021	6,541	9,933	7,636	20,129	20,129	18,501	20,129	18,501
Length of route parallel to apparent property boundaries	28,906	19,899	16,575	25,875	22,298	17,903	22,550	19,718	35,226	31,138	37,706	37,101	21,809	28,426	25,708	33,783	29,696	27,372	34,975	28,564
Total length of route parallel to existing compatible rights-of-way	37,458	27,048	23,724	31,103	27,525	23,131	27,778	24,945	47,343	41,853	43,077	42,472	28,583	40,543	31,079	40,557	35,067	34,146	41,749	35,338
Number of habitable structures within 500 feet of the route centerline (2)	253	223	220	215	200	200	212	108	200	202	182	172	144	145	97	112	114	112	112	112
Number of parks or recreational areas within 1,000 feet of the route centerline (3)	9	9	9	8	8	8	8	3	5	5	5	5	8	4	4	4	4	4	4	4
Length of the route across parks/recreational areas	3,844	2,292	3,844	2,292	2,292	3,844	3,844	0	12	12	12	12	281	0	0	0	0	0	0	0
Length of route through commercial/industrial areas	5,808	5,180	5,112	5,323	4,986	4,981	5,254	4,312	11,879	10,861	11,044	10,822	5,475	5,808	4,469	5,501	4,484	5,465	5,213	5,176
Length of the route across cropland/hay meadow	29,762	25,369	23,449	26,097	28,819	21,379	24,177	20,248	18,067	18,067	19,555	19,555	38,325	21,614	21,602	27,302	27,302	23,486	27,302	23,486
Length across rangeland pasture	59,942	60,818	61,915	62,554	53,872	61,591	63,651	71,603	64,265	65,683	60,498	58,472	54,217	70,628	71,859	63,374	64,792	65,053	64,683	66,361
Length of route across agricultural cropland with mobile irrigation systems	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Length of route across upland woodlands	12,501	11,597	12,766	11,333	12,607	13,779	12,502	10,416	10,294	10,548	10,407	10,111	10,112	9,418	8,488	10,565	10,818	9,728	10,751	9,913
Length of route across riparian areas	9,454	11,615	11,213	11,307	16,123	14,706	10,905	6,994	10,291	10,546	8,279	8,171	12,422	9,543	7,207	7,991	8,246	10,569	7,984	10,561
Length of route across potential wetlands	224	80	224	80	80	224	224	0	1,018	1,018	393	393	194	625	0	0	0	0	0	0
Number of stream crossings by the route	30	33	28	32	34	28	27	26	21	22	19	18	29	29	27	27	28	29	27	29
Length of route parallel to streams (within 100 feet)	5,887	4,255	4,255	4,255	4,255	3,366	4,255	1,351	308	308	308	308	5,416	1,003	1,659	2,947	2,947	1,003	2,947	1,003
Length across lakes or ponds (open waters)	1,888	1,994	1,982	1,989	1,998	1,977	1,977	1,757	820	924	867	867	1,528	1,826	1,695	1,899	2,003	2,074	1,897	2,071
Number of known rare/unique plant locations within the right-of-way	3	0	0	0	0	0	0	1	3	3	0	0	3	3	0	3	3	3	3	3
Length of route through known habitat of endangered or threatened species	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of recorded cultural resource sites crossed by the route	0	0	0	1	1	1	1	1	0	0	1	1	0	0	1	0	0	0	0	0
Number of recorded cultural resources within 1,000 feet of the route centerline	3	3	3	5	5	5	5	3	2	2	3	3	3	2	3	1	1	1	1	1
Length of route across areas of high archaeological/historical site potential	38,825	43,461	39,966	50,709	68,041	59,285	47,213	38,700	38,669	40,214	36,659	36,252	46,502	42,582	38,480	42,458	44,003	47,615	43,653	48,810
Number of private airstrips within 10,000 feet of the route centerline	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of FAA-registered airports with at least one runway more than 3,200 feet in length within 20,000 feet of route centerline	3	3	3	3	3	3	3	3	4	4	3	3	3	4	3	4	4	4	4	4
Number of FAA-registered airports with no runway greater than 3,200 feet in length within 10,000 feet of the route centerline	5	5	5	5	5	5	5	4	1	1	1	1	6	4	4	4	4	4	4	4
Number of heliports located within 5,000 feet of the route centerline	1	1	1	1	1	1	1	2	3	3	3	3	1	2	2	2	2	2	2	2
Number of commercial AM radio transmitters located within 10,000 feet of the route centerline	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of FM, microwave, and other electronic installations within 2,000 feet of the route centerline	2	0	0	2	2	2	2	2	3	3	3	3	3	2	2	2	2	2	2	2
Number of U.S. or State Highway crossings by the route	15	14	14	14	14	14	14	19	16	16	15	15	19	19	18	19	19	19	19	19
Number of Farm to Market (F.M.), county roads, or other street crossings by the route	9	10	10	10	9	10	10	10	8	7	10	11	11	9	11	9	8	9	9	9
Estimated length of right-of-way within foreground visual zone of U.S. and State Highways	46,322	37,760	34,227	42,277	64,751	55,123	38,744	47,820	55,309	52,444	53,992	51,341	47,981	51,406	47,810	50,489	47,624	51,406	51,684	52,601
Estimated length of right-of-way within foreground visual zone of park/recreational areas	46,129	42,285	42,292	46,100	46,100	46,108	46,108	44,363	51,367	46,578	46,196	43,219	48,894	49,671	45,735	43,436	38,647	43,436	41,584	41,584

NOTES: All length measurements are in feet. Measurements for many of the environmental criteria were obtained from mosaics of ortho-rectified images (NearMap, 2023), whose capture process utilizes global positioning system and precise point positioning technologies to achieve sub-meter (or approximately 7.8 inches) horizontal accuracy to true ground location.

(1) Not included in length of route parallel to existing compatible rights-of-way.

(2) Structures normally inhabited by humans on a daily or regular basis. Habitable structures include but are not limited to single-family and multi-family dwellings and related structures, mobile homes, apartment buildings, commercial structures, industrial structures, churches, hospitals, nursing homes, and schools.

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APPENDIX E - TABLE 7-2. ENVIRONMENTAL DATA FOR ALTERNATIVE ROUTE EVALUATION

ALTERNATIVE ROUTE NUMBER	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180
Length of alternative route	113,445	114,083	117,345	115,482	116,212	117,224	107,969	117,147	122,284	116,686	109,751	117,796	118,807	109,752	117,796	118,808	121,853	119,040	114,898	116,211
Length of route parallel to existing electric transmission lines	5,227	5,227	5,227	5,227	5,227	5,227	5,227	5,227	5,227	5,227	5,227	5,227	5,227	5,227	5,227	5,227	5,227	5,227	5,227	5,227
Length of route parallel to railroads	0	0	0	0	5,514	5,514	5,514	0	0	0	5,514	0	0	5,514	0	0	0	0	0	0
Length of route parallel to existing public roads/highways	8,202	12,778	11,757	13,662	17,099	11,609	9,270	901	7,484	6,667	6,003	9,289	3,799	5,121	8,407	2,917	7,484	15,524	6,591	10,110
Length of route parallel to pipelines (1)	11,880	12,431	13,508	14,425	11,668	11,668	13,021	10,176	9,305	11,257	12,198	18,760	18,760	11,199	17,761	17,761	6,541	9,933	7,636	20,129
Length of route parallel to apparent property boundaries	22,362	24,063	27,167	27,158	30,351	26,264	32,227	13,991	19,612	19,728	33,139	27,211	23,124	29,932	24,005	19,918	16,935	23,552	20,834	28,909
Total length of route parallel to existing compatible rights-of-way	27,733	29,433	33,941	32,385	42,325	36,835	37,454	19,219	26,242	28,046	38,366	33,842	28,352	35,160	30,635	25,145	23,565	35,525	26,061	35,539
Number of habitable structures within 500 feet of the route centerline (2)	150	125	195	93	200	202	172	161	143	282	173	108	110	173	108	110	144	145	97	112
Number of parks or recreational areas within 1,000 feet of the route centerline (3)	7	7	7	9	5	5	5	9	9	10	6	4	4	6	4	4	8	4	4	4
Length of the route across parks/recreational areas	3,343	3,343	3,343	2,110	12	12	12	3,343	3,343	3,343	0	0	0	0	0	0	281	0	0	0
Length of route through commercial/industrial areas	3,905	3,983	5,166	14,059	12,017	10,999	10,960	4,389	5,771	5,213	8,628	6,175	5,158	8,293	5,841	4,823	5,614	5,946	4,607	5,640
Length of the route across cropland/hay meadow	24,140	25,813	28,552	12,347	16,713	16,713	18,200	27,933	34,954	20,377	18,052	20,372	20,372	19,426	21,747	21,747	36,971	20,260	20,248	25,947
Length across rangeland pasture	62,692	57,535	59,873	65,592	63,457	64,875	57,664	57,260	53,787	65,192	60,058	65,504	66,922	59,310	64,757	66,174	53,409	69,820	71,051	62,566
Length of route across agricultural cropland with mobile irrigation systems	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Length of route across upland woodlands	11,329	11,583	12,538	11,390	11,932	12,185	11,749	13,988	13,509	12,673	12,523	13,545	13,798	11,013	12,035	12,288	11,750	11,056	10,126	12,203
Length of route across riparian areas	9,286	13,136	9,293	10,715	10,246	10,501	8,126	11,659	12,299	10,798	8,921	9,655	9,910	10,777	11,511	11,766	12,377	9,498	7,162	7,946
Length of route across potential wetlands	224	224	224	393	1,018	1,018	393	418	418	621	404	404	404	0	0	0	194	625	0	0
Number of stream crossings by the route	29	30	28	21	21	22	18	29	30	30	22	30	31	22	30	31	29	29	27	27
Length of route parallel to streams (within 100 feet)	3,593	3,593	5,108	1,160	0	0	0	3,165	5,108	3,165	514	1,209	1,209	0	695	695	5,108	695	1,351	2,639
Length across lakes or ponds (open waters)	1,869	1,809	1,698	986	829	933	876	1,500	1,545	1,812	1,166	2,141	2,244	932	1,906	2,010	1,537	1,835	1,704	1,908
Number of known rare/unique plant locations within the right-of-way	0	0	3	1	4	4	1	1	4	1	1	4	4	1	4	4	4	4	1	4
Length of route through known habitat of endangered or threatened species	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of recorded cultural resource sites crossed by the route	0	1	0	1	0	0	1	0	0	0	1	0	0	1	0	0	0	0	1	0
Number of recorded cultural resources within 1,000 feet of the route centerline	3	5	3	3	2	2	3	3	3	4	3	1	1	3	1	1	3	2	3	1
Length of route across areas of high archaeological/historical site potential	36,128	60,538	38,560	39,711	38,094	39,639	35,677	42,384	42,775	47,739	40,529	47,949	49,494	40,530	47,949	49,495	45,927	42,007	37,905	41,883
Number of private airstrips within 10,000 feet of the route centerline	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of FAA-registered airports with at least one runway more than 3,200 feet in length within 20,000 feet of route centerline	3	3	3	3	4	4	3	3	3	4	3	4	4	3	4	4	3	4	3	4
Number of FAA-registered airports with no runway greater than 3,200 feet in length within 10,000 feet of the route centerline	5	5	5	1	1	1	1	6	6	5	2	4	4	2	4	4	6	4	4	4
Number of heliports located within 5,000 feet of the route centerline	1	1	1	3	3	3	3	1	1	1	3	2	2	3	2	2	1	2	2	2
Number of commercial AM radio transmitters located within 10,000 feet of the route centerline	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of FM, microwave, and other electronic installations within 2,000 feet of the route centerline	0	2	2	5	3	3	3	0	3	1	3	2	2	3	2	2	3	2	2	2
Number of U.S. or State Highway crossings by the route	14	14	15	16	17	17	16	19	20	19	19	20	20	19	20	20	20	20	19	20
Number of Farm to Market (F.M.), county roads, or other street crossings by the route	10	8	8	13	8	7	11	12	11	9	10	9	8	10	9	8	11	9	11	9
Estimated length of right-of-way within foreground visual zone of U.S. and State Highways	44,183	62,460	47,277	58,820	54,887	52,022	50,918	42,611	47,559	51,553	46,566	49,167	46,301	46,566	49,167	46,301	47,559	50,984	47,388	50,066
Estimated length of right-of-way within foreground visual zone of park/recreational areas	41,092	43,968	45,316	48,571	51,001	46,212	42,853	44,367	49,156	59,198	43,844	39,816	35,027	43,454	39,426	34,637	48,527	49,305	45,369	43,070

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(1) Not included in length of route parallel to existing compatible rights-of-way.

(2) Structures normally inhabited by humans on a daily or regular basis. Habitable structures include but are not limited to single-family and multi-family dwellings and related structures, mobile homes, apartment buildings, commercial structures, industrial structures, churches, hospitals, nursing homes, and schools.

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APPENDIX E - TABLE 7-2. ENVIRONMENTAL DATA FOR ALTERNATIVE ROUTE EVALUATION

ALTERNATIVE ROUTE NUMBER	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200
Length of alternative route	115,951	112,943	112,371	117,406	117,146	114,792	115,987	115,639	110,108	112,596	112,023	112,247	114,049	115,270	118,045	117,829	115,722	114,143	110,007	106,206
Length of route parallel to existing electric transmission lines	5,227	5,227	5,227	5,227	5,227	5,227	5,227	5,227	5,227	5,227	5,227	5,227	5,227	5,227	5,227	5,227	5,227	0	0	0
Length of route parallel to railroads	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9,775	5,514
Length of route parallel to existing public roads/highways	9,017	7,500	5,247	10,348	9,255	8,003	8,241	5,698	1,122	5,095	2,842	2,842	1,122	5,698	10,540	10,540	10,036	15,690	11,642	10,193
Length of route parallel to pipelines (1)	18,501	17,372	13,417	20,129	18,501	11,029	11,029	8,771	11,880	10,752	6,796	7,641	10,176	10,627	13,951	14,293	7,636	17,036	11,981	13,785
Length of route parallel to apparent property boundaries	22,498	20,146	21,515	30,101	23,690	25,558	26,751	18,426	15,987	15,058	16,426	17,839	14,193	18,083	23,864	19,127	24,246	27,922	32,658	28,002
Total length of route parallel to existing compatible rights-of-way	29,128	29,347	28,463	36,732	30,321	33,876	35,068	23,653	21,214	24,258	23,374	24,786	19,420	23,311	29,092	24,354	29,473	27,922	32,658	28,002
Number of habitable structures within 500 feet of the route centerline (2)	112	222	257	112	112	364	364	240	259	361	396	400	270	233	240	233	177	133	195	193
Number of parks or recreational areas within 1,000 feet of the route centerline (3)	4	4	5	4	4	4	4	7	7	7	8	8	7	7	7	7	4	8	4	4
Length of the route across parks/recreational areas	0	0	0	0	0	3,062	3,062	3,343	3,343	3,343	3,343	3,343	3,343	3,343	1,790	3,343	0	2,110	12	12
Length of route through commercial/industrial areas	5,603	4,721	5,134	5,351	5,314	4,897	4,608	4,134	3,936	4,219	4,632	4,633	3,857	4,069	4,291	4,222	4,560	14,818	11,447	11,381
Length of the route across cropland/hay meadow	22,131	21,649	21,649	25,947	22,131	18,802	18,802	18,417	22,930	24,135	24,135	25,913	29,092	22,159	30,215	26,517	21,720	11,389	15,743	18,187
Length across rangeland pasture	64,245	69,020	67,051	63,875	65,553	75,009	76,318	71,610	60,581	64,988	63,019	59,947	58,795	68,059	55,945	60,113	71,825	62,028	59,594	48,489
Length of route across agricultural cropland with mobile irrigation systems	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Length of route across upland woodlands	11,366	8,327	9,006	12,388	11,551	9,345	9,530	11,352	11,444	8,666	9,345	10,180	11,311	10,514	11,620	11,953	8,715	14,032	14,250	14,829
Length of route across riparian areas	10,524	7,422	7,575	7,939	10,516	4,586	4,579	8,392	9,274	8,769	8,923	9,580	9,324	8,749	14,183	13,124	7,207	10,548	7,493	12,117
Length of route across potential wetlands	0	268	397	0	0	621	621	224	224	492	621	621	418	224	80	224	0	393	393	393
Number of stream crossings by the route	29	29	29	27	29	29	29	26	27	30	30	30	27	27	32	27	27	21	17	20
Length of route parallel to streams (within 100 feet)	695	695	695	2,639	695	695	695	2,932	3,165	3,165	3,165	3,165	3,165	3,821	3,545	3,545	1,659	1,160	0	0
Length across lakes or ponds (open waters)	2,083	1,536	1,559	1,906	2,080	1,532	1,529	1,511	1,719	1,326	1,349	1,372	1,252	1,496	1,710	1,675	1,695	936	1,088	811
Number of known rare/unique plant locations within the right-of-way	4	1	1	4	4	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1
Length of route through known habitat of endangered or threatened species	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of recorded cultural resource sites crossed by the route	0	0	0	0	0	0	0	1	0	0	0	0	0	1	1	1	1	1	1	1
Number of recorded cultural resources within 1,000 feet of the route centerline	1	1	1	1	1	2	2	5	3	3	3	3	3	5	5	5	3	3	3	3
Length of route across areas of high archaeological/historical site potential	47,040	39,023	38,852	43,078	48,235	28,161	29,356	36,599	36,128	35,700	35,529	35,698	33,942	41,690	65,190	61,526	38,480	40,506	33,746	53,635
Number of private airstrips within 10,000 feet of the route centerline	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of FAA-registered airports with at least one runway more than 3,200 feet in length within 20,000 feet of route centerline	4	4	4	4	4	4	4	3	3	3	3	3	3	3	3	3	3	3	3	3
Number of FAA-registered airports with no runway greater than 3,200 feet in length within 10,000 feet of the route centerline	4	4	4	4	4	5	5	5	5	5	5	5	6	5	5	5	4	1	1	1
Number of heliports located within 5,000 feet of the route centerline	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1	1	2	3	3	3
Number of commercial AM radio transmitters located within 10,000 feet of the route centerline	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of FM, microwave, and other electronic installations within 2,000 feet of the route centerline	2	0	1	2	2	1	1	2	0	0	1	1	0	2	2	2	2	6	3	4
Number of U.S. or State Highway crossings by the route	20	19	19	20	20	14	14	14	14	14	14	14	14	14	14	14	18	16	16	16
Number of Farm to Market (F.M.), county roads, or other street crossings by the route	9	10	11	9	9	11	11	11	10	9	10	11	12	9	9	8	11	13	9	9
Estimated length of right-of-way within foreground visual zone of U.S. and State Highways	50,984	48,806	54,061	51,262	52,179	52,296	53,491	43,115	40,846	44,534	49,788	55,883	40,846	43,115	70,838	61,210	48,212	55,529	49,947	64,007
Estimated length of right-of-way within foreground visual zone of park/recreational areas	43,070	42,840	47,697	41,218	41,218	54,223	52,371	47,884	40,797	45,356	50,212	50,212	40,797	47,884	43,732	43,740	46,005	51,092	45,373	45,373

NOTES: All length measurements are in feet. Measurements for many of the environmental criteria were obtained from mosaics of ortho-rectified images (NearMap, 2023), whose capture process utilizes global positioning system and precise point positioning technologies to achieve sub-meter (or approximately 7.8 inches) horizontal accuracy to true ground location.

(1) Not included in length of route parallel to existing compatible rights-of-way.

(2) Structures normally inhabited by humans on a daily or regular basis. Habitable structures include but are not limited to single-family and multi-family dwellings and related structures, mobile homes, apartment buildings, commercial structures, industrial structures, churches, hospitals, nursing homes, and schools.

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APPENDIX E - TABLE 7-2. ENVIRONMENTAL DATA FOR ALTERNATIVE ROUTE EVALUATION

ALTERNATIVE ROUTE NUMBER	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221
Length of alternative route	115,403	112,835	109,034	111,910	115,624	111,768	109,117	111,604	116,364	121,501	115,129	117,442	117,442	116,610	112,669	120,969	112,061	111,817	111,226	112,448	111,588
Length of route parallel to existing electric transmission lines	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5,227	5,227	5,227	0	0
Length of route parallel to railroads	0	4,261	0	2,435	0	2,435	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Length of route parallel to existing public roads/highways	8,891	10,067	8,619	9,224	5,554	6,159	5,554	9,528	4,043	10,627	21,302	16,929	16,047	11,166	10,230	20,997	3,748	3,748	2,633	4,041	5,554
Length of route parallel to pipelines (1)	10,506	10,247	12,051	14,740	21,112	22,956	21,112	19,983	11,652	10,781	17,036	21,371	20,372	21,112	14,491	12,545	26,468	24,181	24,840	14,491	26,316
Length of route parallel to apparent property boundaries	26,311	25,859	21,202	23,220	19,175	22,445	21,840	20,911	17,365	22,986	32,796	32,850	29,643	24,049	23,126	28,844	20,252	21,070	14,966	18,391	19,253
Total length of route parallel to existing compatible rights-of-way	26,311	25,859	21,202	23,220	19,175	22,445	21,840	24,884	17,365	24,389	32,940	34,396	31,190	24,193	23,270	35,590	25,480	26,298	20,193	18,391	19,253
Number of habitable structures within 500 feet of the route centerline (2)	133	140	138	152	154	170	160	262	167	149	133	148	148	154	190	261	293	226	327	195	220
Number of parks or recreational areas within 1,000 feet of the route centerline (3)	3	3	3	3	3	3	3	3	3	3	8	3	3	3	7	4	3	3	7	8	4
Length of the route across parks/recreational areas	0	0	0	0	0	0	0	0	0	0	2,110	0	0	0	3,343	0	3,062	3,062	3,343	3,343	0
Length of route through commercial/industrial areas	5,938	5,376	5,310	5,534	5,344	5,420	5,197	5,480	5,116	6,498	15,029	7,145	6,811	5,555	5,014	6,952	4,236	4,211	4,085	5,199	5,612
Length of the route across cropland/hay meadow	17,531	19,290	21,734	23,511	21,173	19,486	19,486	20,691	29,965	36,986	12,744	20,769	22,144	22,528	23,183	20,775	18,117	17,065	17,110	20,038	17,983
Length across rangeland pasture	68,746	65,957	54,852	53,807	62,098	63,075	61,049	65,455	59,001	55,529	63,000	62,912	62,164	63,070	59,292	69,006	74,231	72,731	69,499	60,009	67,352
Length of route across agricultural cropland with mobile irrigation systems	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Length of route across upland woodlands	14,947	13,373	13,952	15,083	14,260	14,043	13,747	10,969	12,766	12,287	12,443	14,598	13,088	12,672	14,020	12,241	8,022	9,888	9,511	15,904	10,881
Length of route across riparian areas	6,125	6,746	11,369	12,134	10,612	7,866	7,759	7,255	7,927	8,566	10,593	9,533	11,389	10,657	9,118	9,543	5,289	5,468	8,808	9,245	7,578
Length of route across potential wetlands	404	0	0	0	0	0	0	268	194	194	393	404	0	0	224	625	492	849	492	224	268
Number of stream crossings by the route	28	25	28	29	30	27	26	29	28	29	21	30	30	30	29	30	29	27	27	29	29
Length of route parallel to streams (within 100 feet)	1,865	695	695	695	695	695	695	695	1,584	3,527	1,468	1,517	1,003	1,003	3,593	1,003	695	695	2,276	3,901	695
Length across lakes or ponds (open waters)	1,712	2,093	1,817	1,841	2,136	1,879	1,879	1,486	1,395	1,440	927	2,082	1,847	2,127	1,819	1,826	1,674	1,605	1,721	1,828	1,914
Number of known rare/unique plant locations within the right-of-way	1	1	1	1	4	1	1	1	1	4	1	4	4	4	1	3	0	0	0	1	1
Length of route through known habitat of endangered or threatened species	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of recorded cultural resource sites crossed by the route	1	1	1	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
Number of recorded cultural resources within 1,000 feet of the route centerline	3	3	3	3	1	1	1	1	1	1	3	1	1	1	3	2	1	1	3	3	1
Length of route across areas of high archaeological/historical site potential	39,609	37,659	57,548	58,124	49,380	40,653	40,246	39,818	36,043	36,435	41,081	49,318	49,319	49,955	36,923	42,582	36,350	35,086	42,395	37,927	43,701
Number of private airstrips within 10,000 feet of the route centerline	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of FAA-registered airports with at least one runway more than 3,200 feet in length within 20,000 feet of route centerline	3	3	3	3	4	4	4	4	3	3	3	4	4	4	3	4	4	4	4	3	4
Number of FAA-registered airports with no runway greater than 3,200 feet in length within 10,000 feet of the route centerline	4	4	4	4	4	4	4	4	5	5	1	4	4	4	5	4	5	5	5	5	4
Number of heliports located within 5,000 feet of the route centerline	2	2	2	2	2	2	2	2	2	2	3	2	2	2	1	2	2	2	1	1	2
Number of commercial AM radio transmitters located within 10,000 feet of the route centerline	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of FM, microwave, and other electronic installations within 2,000 feet of the route centerline	3	2	3	3	3	1	1	1	1	4	6	3	3	3	1	3	0	0	0	1	1
Number of U.S. or State Highway crossings by the route	19	19	19	19	20	19	19	19	19	20	19	23	23	23	18	19	14	14	14	17	19
Number of Farm to Market (F.M.), county roads, or other street crossings by the route	11	10	10	10	8	10	11	10	14	13	13	9	9	8	10	10	10	11	10	10	11
Estimated length of right-of-way within foreground visual zone of U.S. and State Highways	42,279	46,044	60,104	68,851	44,828	44,479	41,827	45,515	41,827	46,775	56,514	46,861	46,861	45,813	41,455	50,960	47,041	43,353	44,534	41,612	47,958
Estimated length of right-of-way within foreground visual zone of park/recreational areas	44,635	43,677	43,677	46,655	40,802	43,779	40,802	45,361	40,802	45,591	52,022	43,266	42,876	41,731	44,176	53,467	43,188	39,448	44,592	44,011	45,602

NOTES: All length measurements are in feet. Measurements for many of the environmental criteria were obtained from mosaics of ortho-rectified images (NearMap, 2023), whose capture process utilizes global positioning system and precise point positioning technologies to achieve sub-meter (or approximately 7.8 inches) horizontal accuracy to true ground location.

(1) Not included in length of route parallel to existing compatible rights-of-way.

(2) Structures normally inhabited by humans on a daily or regular basis. Habitable structures include but are not limited to single-family and multi-family dwellings and related structures, mobile homes, apartment buildings, commercial structures, industrial structures, churches, hospitals, nursing homes, and schools.

(3) Defined as parks and recreational areas owned by a governmental body or an organized group, club, or church.

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APPENDIX E - TABLE 7-3. ENVIRONMENTAL DATA FOR ALTERNATIVE LINK EVALUATION

ALTERNATIVE LINK NUMBER	A0	A1	A3	A4	A6	A7	B1	B2	B4	B5	B61	B62	B7	B8	C1	C21	C22	C23	C3	C4
Length of alternative link	403	837	222	2,287	2,374	1,531	3,067	2,830	3,099	3,312	794	803	2,489	277	2,084	2,930	3,181	2,647	4,252	1,438
Length of link parallel to existing electric transmission lines	0	0	0	0	0	0	0	0	0	0	0	803	0	0	2,084	2,340	1,922	0	0	0
Length of link parallel to railroads	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Length of link parallel to existing public roads/highways	0	0	0	0	954	1,531	0	0	0	3,312	0	0	0	0	0	283	0	0	780	0
Length of link parallel to pipelines (1)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2,611	0
Length of link parallel to apparent property boundaries	0	0	222	0	1,449	1,531	1,215	1,067	0	3,312	0	0	2,489	0	0	283	714	0	780	0
Total length of link parallel to existing compatible rights-of-way	0	0	222	0	1,449	1,531	1,215	1,067	0	3,312	0	803	2,489	0	2,084	2,623	2,636	0	708	0
Number of habitable structures within 500 feet of the link centerline (2)	1	3	1	2	5	0	2	0	4	0	0	0	0	0	0	0	23	1	35	6
Number of parks or recreational areas within 1,000 feet of the link centerline (3)	0	**3**	**3**	0	**3**	1	1	2	**2**	0	0	0	0	0	0	0	2	0	0	0
Length of the link across parks/recreational areas	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Length of link through commercial/industrial areas	29	89	0	0	31	52	370	477	1,110	580	149	0	430	182	0	343	428	16	111	0
Length of the link across cropland/hay meadow	0	0	0	1,543	0	247	1,204	0	0	0	0	0	0	0	0	0	0	0	0	0
Length across rangeland pasture	145	632	154	276	819	288	995	1,092	1,289	2,478	645	747	1,667	95	2,084	2,586	2,451	2,505	3,946	1,264
Length of link across agricultural cropland with mobile irrigation systems	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Length of link across upland woodlands	230	116	68	468	1,525	945	446	1,262	700	254	0	56	392	0	0	0	301	126	196	122
Length of link across riparian areas	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Length of link across potential wetlands	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of stream crossings by the link	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0
Length of link parallel to streams (within 100 feet)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Length across lakes or ponds (open waters)	0	0	0	0	0	0	51	0	0	0	0	0	0	0	0	0	0	0	0	51
Number of known rare/unique plant locations within the right-of-way	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Length of link through known habitat of endangered or threatened species	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of recorded cultural resource sites crossed by the link	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of recorded cultural resources within 1,000 feet of the link centerline	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Length of link across areas of high archaeological/historical site potential	0	0	0	0	430	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of private airstrips within 10,000 feet of the link centerline	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of FAA-registered airports with at least one runway more than 3,200 feet in length within 20,000 feet of link centerline	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Number of FAA-registered airports with no runway greater than 3,200 feet in length within 10,000 feet of the link centerline	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of heliports located within 5,000 feet of the link centerline	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of commercial AM radio transmitters located within 10,000 feet of the link centerline	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of FM, microwave, and other electronic installations within 2,000 feet of the link centerline	0	0	0	0	0	0	0	1	1	1	0	0	1	1	0	0	0	0	1	0
Number of U.S. or State Highway crossings by the link	0	0	0	0	0	0	0	0	1	1	2	0	1	2	0	1	0	0	0	0
Number of Farm to Market (F.M.), county roads, or other street crossings by the link	0	1	0	0	0	1	1	1	0	0	0	0	0	0	0	0	1	0	0	0
Estimated length of right-of-way within foreground visual zone of U.S. and State Highways	0	0	0	2	0	6	3,067	2,404	3,099	3,312	794	803	2,489	277	2,084	2,930	1,165	2,647	4,252	1,438
Estimated length of right-of-way within foreground visual zone of park/recreational areas	403	837	222	2,287	2,374	1,531	3,067	2,830	3,099	3,312	794	803	2,489	277	2,084	2,930	3,181	2,647	4,252	1,438

NOTES: All length measurements are in feet. Measurements for many of the environmental criteria were obtained from mosaics of ortho-rectified images (NearMap, 2023), whose capture process utilizes global positioning system and precise point positioning technologies to achieve sub-meter (or approximately 7.8 inches) horizontal accuracy to true ground location.

Caution should be exercised when combining link-based values to form cumulative path values. Distance-based features (e.g., within 1,000 feet) may be over-represented for routes that contain multiple links in proximity to the same feature. Simple addition of link values may result in certain variables being counted multiple times.

(1) Not included in length of link parallel to existing compatible rights-of-way.

(2) Structures normally inhabited by humans on a daily or regular basis. Habitable structures include but are not limited to single-family and multi-family dwellings and related structures, mobile homes, apartment buildings, commercial structures, industrial structures, churches, hospitals, nursing homes, and schools.

(3) Defined as parks and recreational areas owned by a governmental body or an organized group, club, or church.

APPENDIX E - TABLE 7-3. ENVIRONMENTAL DATA FOR ALTERNATIVE LINK EVALUATION

ALTERNATIVE LINK NUMBER	C5	C6	C7	C8	C9	E1	E2	E3	E5	E6	E7	E8	F1	F2	F3	F4	F5	F6	F7	F8
Length of alternative link	1,503	2,629	2,237	1,353	1,041	282	1,115	713	4,449	5,483	3,109	2,972	2,503	942	2,673	3,673	575	2,967	3,103	1,160
Length of link parallel to existing electric transmission lines	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Length of link parallel to railroads	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Length of link parallel to existing public roads/highways	0	0	0	0	0	0	0	0	0	0	3,109	0	2,503	942	839	0	0	2,307	1,709	0
Length of link parallel to pipelines (1)	1,295	0	0	0	0	0	0	0	2,476	0	0	0	0	0	0	0	0	0	0	0
Length of link parallel to apparent property boundaries	0	0	0	0	170	0	1,115	713	0	594	2,966	964	2,503	942	839	2,659	0	2,307	1,709	0
Total length of link parallel to existing compatible rights-of-way	0	0	0	0	170	0	1,115	713	0	594	3,109	964	2,503	942	839	2,659	0	2,307	1,709	0
Number of habitable structures within 500 feet of the link centerline (2)	24	13	1	22	17	1	1	8	50	3	1	81	2	15	55	0	0	0	0	0
Number of parks or recreational areas within 1,000 feet of the link centerline (3)	2	1	1	2	2	1	1	1	2	1	0	1	0	0	0	0	0	0	0	0
Length of the link across parks/recreational areas	0	0	0	502	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Length of link through commercial/industrial areas	139	220	340	382	157	175	0	0	57	255	127	159	0	60	0	389	165	0	468	695
Length of the link across cropland/hay meadow	0	0	0	0	0	0	0	0	0	0	0	0	1,354	118	780	0	0	636	705	90
Length across rangeland pasture	1,229	1,270	1,004	330	714	82	897	657	1,236	3,276	2,855	2,408	987	652	1,893	2,726	324	2,331	1,930	297
Length of link across agricultural cropland with mobile irrigation systems	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Length of link across upland woodlands	96	853	445	81	88	25	219	56	1,094	1,740	126	405	0	112	0	558	0	0	0	60
Length of link across riparian areas	0	244	411	508	52	0	0	0	1,842	53	0	0	12	0	0	0	86	0	0	0
Length of link across potential wetlands	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of stream crossings by the link	1	1	2	1	0	0	0	0	3	2	1	1	1	0	0	0	0	1	0	0
Length of link parallel to streams (within 100 feet)	0	0	0	0	350	0	0	0	709	0	0	0	0	0	0	0	308	428	0	0
Length across lakes or ponds (open waters)	39	42	41	51	30	0	0	0	220	159	0	0	150	0	0	0	0	0	0	18
Number of known rare/unique plant locations within the right-of-way	0	1	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0
Length of link through known habitat of endangered or threatened species	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of recorded cultural resource sites crossed by the link	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of recorded cultural resources within 1,000 feet of the link centerline	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Length of link across areas of high archaeological/historical site potential	0	2,263	1,468	692	1,041	0	0	0	3,627	0	0	0	0	0	0	0	575	0	0	0
Number of private airstrips within 10,000 feet of the link centerline	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of FAA-registered airports with at least one runway more than 3,200 feet in length within 20,000 feet of link centerline	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Number of FAA-registered airports with no runway greater than 3,200 feet in length within 10,000 feet of the link centerline	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
Number of heliports located within 5,000 feet of the link centerline	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of commercial AM radio transmitters located within 10,000 feet of the link centerline	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of FM, microwave, and other electronic installations within 2,000 feet of the link centerline	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of U.S. or State Highway crossings by the link	0	2	0	0	0	2	0	0	0	0	0	0	0	0	0	3	1	0	3	0
Number of Farm to Market (F.M.), county roads, or other street crossings by the link	1	0	1	0	1	0	0	0	0	1	1	1	0	0	0	0	0	0	0	1
Estimated length of right-of-way within foreground visual zone of U.S. and State Highways	1,138	2,629	2,237	179	1,041	282	1,115	713	67	5,483	3,109	2,972	2,503	942	2,673	3,068	575	2,967	3,103	1,160
Estimated length of right-of-way within foreground visual zone of park/recreational areas	1,503	2,629	2,237	1,353	1,041	282	1,115	713	4,449	5,483	3,109	2,972	2,503	942	2,673	3,673	575	2,967	3,103	1,160

NOTES: All length measurements are in feet. Measurements for many of the environmental criteria were obtained from mosaics of ortho-rectified images (NearMap, 2023), whose capture process utilizes global positioning system and precise point positioning technologies to achieve sub-meter (or approximately 7.8 inches) horizontal accuracy to true ground location.

Caution should be exercised when combining link-based values to form cumulative path values. Distance-based features (e.g., within 1,000 feet) may be over-represented for routes that contain multiple links in proximity to the same feature. Simple addition of link values may result in certain variables being counted multiple times.

(1) Not included in length of link parallel to existing compatible rights-of-way.

(2) Structures normally inhabited by humans on a daily or regular basis. Habitable structures include but are not limited to single-family and multi-family dwellings and related structures, mobile homes, apartment buildings, commercial structures, industrial structures, churches, hospitals, nursing homes, and schools.

(3) Defined as parks and recreational areas owned by a governmental body or an organized group, club, or church.

APPENDIX E - TABLE 7-3. ENVIRONMENTAL DATA FOR ALTERNATIVE LINK EVALUATION

ALTERNATIVE LINK NUMBER	G1	G2	G3	G4	G5	G6	G7	G8	H1	H2	H3	H41	H42	H5	H6	H8	H9	I11	I12	I2
Length of alternative link	1,277	8,434	5,928	7,480	8,128	2,637	2,851	3,332	1,617	4,845	4,866	4,680	1,914	5,330	5,329	5,616	2,121	1,114	23,395	1,630
Length of link parallel to existing electric transmission lines	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Length of link parallel to railroads	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Length of link parallel to existing public roads/highways	617	4,149	0	0	3,133	0	0	0	0	0	882	0	0	0	0	609	0	0	6,713	0
Length of link parallel to pipelines (1)	0	2,253	0	0	1,862	0	0	0	1,617	0	999	0	0	2,764	1,577	1,680	0	0	5,055	431
Length of link parallel to apparent property boundaries	617	6,755	713	3,403	3,133	2,637	2,677	0	519	0	2,686	0	0	0	0	609	0	498	10,711	1,630
Total length of link parallel to existing compatible rights-of-way	617	6,755	713	3,403	3,133	2,637	2,677	0	519	0	2,686	0	0	0	0	609	0	498	10,711	1,630
Number of habitable structures within 500 feet of the link centerline (2)	0	0	1	1	0	0	0	0	0	0	0	0	1	0	3	5	1	0	71	0
Number of parks or recreational areas within 1,000 feet of the link centerline (3)	0	1	2	0	1	1	1	1	1	0	1	1	0	1	1	0	0	0	4	0
Length of the link across parks/recreational areas	0	12	0	0	0	0	0	0	0	0	0	0	0	3,062	1,509	0	0	0	2,099	0
Length of link through commercial/industrial areas	0	472	505	342	42	0	97	39	0	2,892	527	25	0	112	220	73	26	83	7,249	0
Length of the link across cropland/hay meadow	0	990	841	1,294	1,766	0	74	737	0	0	0	1,045	1,845	817	2,303	509	17	274	3,889	0
Length across rangeland pasture	555	1,257	2,131	4,886	5,773	256	1,368	1,872	218	1,609	1,487	91	69	859	1,508	4,278	1,689	657	6,836	1,384
Length of link across agricultural cropland with mobile irrigation systems	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Length of link across upland woodlands	649	1,503	339	870	442	69	1,036	683	30	253	1,876	0	0	958	473	409	327	101	1,773	246
Length of link across riparian areas	73	3,547	1,956	0	0	1,797	253	0	1,369	91	679	3,345	0	2,262	660	0	62	0	3,337	0
Length of link across potential wetlands	0	393	0	0	0	404	0	0	0	0	0	0	0	224	80	0	0	0	0	0
Number of stream crossings by the link	0	2	3	3	2	2	1	0	0	0	1	2	0	2	4	1	1	0	5	0
Length of link parallel to streams (within 100 feet)	0	0	0	0	381	0	0	0	0	0	514	0	0	0	0	0	0	0	504	0
Length across lakes or ponds (open waters)	0	273	155	89	105	111	23	0	0	0	297	174	0	97	85	346	0	0	311	0
Number of known rare/unique plant locations within the right-of-way	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Length of link through known habitat of endangered or threatened species	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of recorded cultural resource sites crossed by the link	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of recorded cultural resources within 1,000 feet of the link centerline	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Length of link across areas of high archaeological/historical site potential	1,277	8,434	5,928	329	1,316	2,637	1,565	0	1,617	145	4,866	4,680	1,914	3,032	3,203	0	2,121	0	9,711	0
Number of private airstrips within 10,000 feet of the link centerline	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of FAA-registered airports with at least one runway more than 3,200 feet in length within 20,000 feet of link centerline	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1
Number of FAA-registered airports with no runway greater than 3,200 feet in length within 10,000 feet of the link centerline	0	1	1	2	2	2	2	2	1	1	1	2	2	3	2	2	3	1	1	1
Number of heliports located within 5,000 feet of the link centerline	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	1	0	2	2	2
Number of commercial AM radio transmitters located within 10,000 feet of the link centerline	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of FM, microwave, and other electronic installations within 2,000 feet of the link centerline	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0
Number of U.S. or State Highway crossings by the link	0	3	6	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0
Number of Farm to Market (F.M.), county roads, or other street crossings by the link	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	1	3	0
Estimated length of right-of-way within foreground visual zone of U.S. and State Highways	1,277	7,481	3,129	3,164	2,148	0	0	0	0	0	0	0	0	0	2,716	4,396	0	0	15,260	0
Estimated length of right-of-way within foreground visual zone of park/recreational areas	1,277	8,434	5,928	7,480	8,128	2,637	2,851	3,332	1,617	4,845	4,866	4,680	1,914	5,330	5,329	5,616	2,121	1,114	23,395	1,630

NOTES: All length measurements are in feet. Measurements for many of the environmental criteria were obtained from mosaics of ortho-rectified images (NearMap, 2023), whose capture process utilizes global positioning system and precise point positioning technologies to achieve sub-meter (or approximately 7.8 inches) horizontal accuracy to true ground location.

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(1) Not included in length of link parallel to existing compatible rights-of-way.

(2) Structures normally inhabited by humans on a daily or regular basis. Habitable structures include but are not limited to single-family and multi-family dwellings and related structures, mobile homes, apartment buildings, commercial structures, industrial structures, churches, hospitals, nursing homes, and schools.

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APPENDIX E - TABLE 7-3. ENVIRONMENTAL DATA FOR ALTERNATIVE LINK EVALUATION

ALTERNATIVE LINK NUMBER	I31	I32	I4	I5	I6	I7	I8	I9	J1	J21	J22	J3	J4	J5	J6	K1	K21	K22	K61	K62
Length of alternative link	3,664	2,902	3,562	6,552	743	2,761	2,309	2,823	1,342	1,599	13,416	6,431	11,869	966	3,325	5,119	1,575	2,198	5,092	1,856
Length of link parallel to existing electric transmission lines	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Length of link parallel to railroads	0	0	0	0	0	0	0	0	0	0	5,514	0	0	0	0	0	0	0	0	0
Length of link parallel to existing public roads/highways	1,216	0	0	0	743	0	505	0	0	0	0	0	0	0	0	0	0	0	0	0
Length of link parallel to pipelines (1)	0	0	0	940	0	0	0	0	0	0	0	560	0	0	0	0	612	0	0	1,856
Length of link parallel to apparent property boundaries	3,141	2,902	0	0	743	2,314	1,865	2,117	0	0	5,143	2,812	0	0	3,325	342	0	0	0	0
Total length of link parallel to existing compatible rights-of-way	3,141	2,902	0	0	743	2,314	1,865	2,117	0	0	5,143	2,812	0	0	3,325	342	0	0	0	0
Number of habitable structures within 500 feet of the link centerline (2)	2	0	0	1	1	3	3	0	0	0	128	62	103	0	0	7	0	0	0	0
Number of parks or recreational areas within 1,000 feet of the link centerline (3)	0	0	0	0	0	0	0	0	0	0	0	0	4	1	1	0	0	0	0	0
Length of the link across parks/recreational areas	0	0	0	0	0	0	0	0	0	0	0	0	281	0	0	0	0	0	0	0
Length of link through commercial/industrial areas	0	0	0	144	0	344	633	167	72	12	3,867	62	612	0	0	102	18	14	38	13
Length of the link across cropland/hay meadow	3,646	1,569	2,998	1,640	0	0	0	330	131	996	3,028	1,256	774	0	1,170	173	0	0	2,917	999
Length across rangeland pasture	0	687	278	3,954	642	2,247	1,581	905	682	414	5,244	4,376	4,174	0	127	3,218	853	2,165	1,299	533
Length of link across agricultural cropland with mobile irrigation systems	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Length of link across upland woodlands	18	139	30	643	101	85	0	435	56	122	1,230	297	2,279	92	0	1,557	225	19	427	310
Length of link across riparian areas	0	485	241	0	0	75	82	987	368	31	46	54	3,359	813	2,004	54	359	0	412	0
Length of link across potential wetlands	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of stream crossings by the link	0	2	1	1	0	1	1	1	1	1	1	3	2	1	3	2	2	0	2	1
Length of link parallel to streams (within 100 feet)	0	0	0	0	0	0	0	0	0	0	0	695	2,276	0	0	0	0	0	889	0
Length across lakes or ponds (open waters)	0	24	15	170	0	10	12	0	33	24	0	386	672	61	24	15	120	0	0	0
Number of known rare/unique plant locations within the right-of-way	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Length of link through known habitat of endangered or threatened species	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of recorded cultural resource sites crossed by the link	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of recorded cultural resources within 1,000 feet of the link centerline	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0
Length of link across areas of high archaeological/historical site potential	0	2,902	3,562	0	743	2,761	2,309	2,823	1,342	1,599	1,089	2,970	11,869	966	3,325	0	1,575	0	5,092	0
Number of private airstrips within 10,000 feet of the link centerline	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of FAA-registered airports with at least one runway more than 3,200 feet in length within 20,000 feet of link centerline	2	2	2	1	1	1	1	1	1	2	1	0	1	1	1	0	0	0	0	0
Number of FAA-registered airports with no runway greater than 3,200 feet in length within 10,000 feet of the link centerline	1	1	1	1	1	1	1	2	1	1	1	2	4	3	3	3	1	2	2	2
Number of heliports located within 5,000 feet of the link centerline	2	1	1	1	1	1	1	0	1	1	1	1	0	0	0	0	0	0	0	0
Number of commercial AM radio transmitters located within 10,000 feet of the link centerline	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of FM, microwave, and other electronic installations within 2,000 feet of the link centerline	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
Number of U.S. or State Highway crossings by the link	0	0	0	0	0	2	2	0	0	0	2	0	2	0	0	0	0	0	0	0
Number of Farm to Market (F.M.), county roads, or other street crossings by the link	0	0	0	1	0	0	0	0	0	0	0	1	1	0	0	1	0	1	0	0
Estimated length of right-of-way within foreground visual zone of U.S. and State Highways	0	1,994	1,781	2,579	743	2,761	2,309	0	1,342	1,599	5,736	1,474	5,672	0	817	0	0	0	0	0
Estimated length of right-of-way within foreground visual zone of park/recreational areas	3,664	2,902	3,562	6,552	743	2,761	2,309	2,823	1,342	1,599	13,416	6,431	11,869	966	3,325	5,119	1,575	2,198	5,092	1,856

NOTES: All length measurements are in feet. Measurements for many of the environmental criteria were obtained from mosaics of ortho-rectified images (NearMap, 2023), whose capture process utilizes global positioning system and precise point positioning technologies to achieve sub-meter (or approximately 7.8 inches) horizontal accuracy to true ground location.

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APPENDIX E - TABLE 7-3. ENVIRONMENTAL DATA FOR ALTERNATIVE LINK EVALUATION

ALTERNATIVE LINK NUMBER	L1	L2	L3	L4	L5	M1	M2	M3	M4	M5	M6	M7	M8	O1	O2	O3	O5	O6	O7	O8
Length of alternative link	4,836	1,783	3,519	2,729	3,794	8,472	2,407	20,104	18,213	16,882	7,503	8,372	10,811	3,589	5,219	2,015	5,186	1,849	6,639	5,441
Length of link parallel to existing electric transmission lines	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Length of link parallel to railroads	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Length of link parallel to existing public roads/highways	0	0	1,165	1,511	0	1,900	0	0	1,105	0	1,370	0	0	0	0	0	1,720	0	0	0
Length of link parallel to pipelines (1)	2,894	0	0	0	1,173	4,223	0	0	3,651	1,804	1,432	6,584	0	0	0	0	1,714	1,332	6,006	4,302
Length of link parallel to apparent property boundaries	0	0	1,165	1,511	2,622	1,900	0	0	4,990	0	0	0	0	0	1,794	0	2,773	0	0	0
Total length of link parallel to existing compatible rights-of-way	0	0	1,165	1,511	2,622	1,900	0	0	4,990	0	1,370	0	0	0	1,794	0	4,493	0	0	0
Number of habitable structures within 500 feet of the link centerline (2)	7	2	0	0	5	3	0	0	19	0	2	5	13	0	0	0	42	0	4	13
Number of parks or recreational areas within 1,000 feet of the link centerline (3)	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Length of the link across parks/recreational areas	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Length of link through commercial/industrial areas	340	65	22	118	42	299	70	147	526	198	160	27	113	134	124	60	81	80	182	0
Length of the link across cropland/hay meadow	0	0	1,677	2,299	3,408	4,446	0	0	1,499	1,722	1,332	2,229	7,058	2,804	2,453	1,620	1,439	0	1,535	3,909
Length across rangeland pasture	1,838	1,642	1,433	236	240	1,752	2,253	18,929	13,718	8,024	5,452	5,317	3,084	543	2,202	254	3,506	1,759	4,321	1,001
Length of link across agricultural cropland with mobile irrigation systems	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Length of link across upland woodlands	440	76	24	75	104	1,100	84	1,028	1,867	2,284	558	36	327	21	149	0	141	9	32	35
Length of link across riparian areas	2,135	0	64	0	0	821	0	0	429	4,518	0	716	229	48	247	82	0	0	135	301
Length of link across potential wetlands	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	194
Number of stream crossings by the link	1	0	1	0	1	2	0	3	4	4	1	2	4	1	1	0	2	0	2	2
Length of link parallel to streams (within 100 feet)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Length across lakes or ponds (open waters)	84	0	298	0	0	53	0	0	173	136	0	46	0	39	43	0	19	0	436	0
Number of known rare/unique plant locations within the right-of-way	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Length of link through known habitat of endangered or threatened species	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of recorded cultural resource sites crossed by the link	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of recorded cultural resources within 1,000 feet of the link centerline	0	1	0	0	0	2	0	0	0	0	1	0	0	0	0	0	0	0	0	0
Length of link across areas of high archaeological/historical site potential	4,836	1,783	3,519	0	0	8,472	0	1,358	3,034	16,882	0	8,372	670	271	593	100	0	0	3,243	650
Number of private airstrips within 10,000 feet of the link centerline	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of FAA-registered airports with at least one runway more than 3,200 feet in length within 20,000 feet of link centerline	1	1	1	1	0	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1
Number of FAA-registered airports with no runway greater than 3,200 feet in length within 10,000 feet of the link centerline	0	0	2	2	2	0	0	0	0	0	0	2	2	1	2	3	0	0	1	3
Number of heliports located within 5,000 feet of the link centerline	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of commercial AM radio transmitters located within 10,000 feet of the link centerline	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of FM, microwave, and other electronic installations within 2,000 feet of the link centerline	0	0	0	0	0	1	0	0	1	1	0	0	0	0	0	0	0	0	0	0
Number of U.S. or State Highway crossings by the link	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of Farm to Market (F.M.), county roads, or other street crossings by the link	1	0	0	1	0	0	0	1	3	1	0	0	2	0	0	1	0	0	1	0
Estimated length of right-of-way within foreground visual zone of U.S. and State Highways	0	0	0	0	0	6,773	522	0	0	16,882	0	0	0	0	0	0	0	662	0	0
Estimated length of right-of-way within foreground visual zone of park/recreational areas	4,836	1,783	3,519	2,729	3,794	8,472	2,407	20,104	18,213	16,882	7,503	8,372	10,811	3,589	5,219	2,015	5,186	1,849	6,639	5,441

NOTES: All length measurements are in feet. Measurements for many of the environmental criteria were obtained from mosaics of ortho-rectified images (NearMap, 2023), whose capture process utilizes global positioning system and precise point positioning technologies to achieve sub-meter (or approximately 7.8 inches) horizontal accuracy to true ground location.

Caution should be exercised when combining link-based values to form cumulative path values. Distance-based features (e.g., within 1,000 feet) may be over-represented for routes that contain multiple links in proximity to the same feature. Simple addition of link values may result in certain variables being counted multiple times.

(1) Not included in length of link parallel to existing compatible rights-of-way.

(2) Structures normally inhabited by humans on a daily or regular basis. Habitable structures include but are not limited to single-family and multi-family dwellings and related structures, mobile homes, apartment buildings, commercial structures, industrial structures, churches, hospitals, nursing homes, and schools.

(3) Defined as parks and recreational areas owned by a governmental body or an organized group, club, or church.

APPENDIX E - TABLE 7-3. ENVIRONMENTAL DATA FOR ALTERNATIVE LINK EVALUATION

ALTERNATIVE LINK NUMBER	P1	P3	P4	P5	P6	P7	Q1	Q2	Q5	R1	R2	R3	R4	R5	R6	S1	S2	S3	S4	S5
Length of alternative link	6,815	4,424	3,497	1,315	2,223	1,877	5,363	2,981	11,089	6,844	3,314	4,063	4,969	5,848	5,948	6,145	6,181	3,718	2,708	3,738
Length of link parallel to existing electric transmission lines	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Length of link parallel to railroads	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Length of link parallel to existing public roads/highways	0	2,253	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Length of link parallel to pipelines (1)	375	2,060	2,287	1,315	2,223	1,877	0	0	0	0	0	0	0	0	845	0	622	0	0	0
Length of link parallel to apparent property boundaries	1,368	0	0	0	0	0	0	0	3,096	0	0	0	3,469	1,773	1,821	1,227	1,570	2,540	0	3,738
Total length of link parallel to existing compatible rights-of-way	1,368	2,253	0	0	0	0	0	0	3,096	0	0	0	3,469	1,773	1,821	1,227	1,570	2,540	0	3,738
Number of habitable structures within 500 feet of the link centerline (2)	116	0	81	4	0	0	2	2	1	0	0	0	0	0	2	6	9	1	0	1
Number of parks or recreational areas within 1,000 feet of the link centerline (3)	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Length of the link across parks/recreational areas	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Length of link through commercial/industrial areas	519	129	33	24	0	0	53	112	212	324	60	0	16	33	32	87	17	0	31	0
Length of the link across cropland/hay meadow	0	0	0	0	0	0	3,434	1,186	4,513	332	721	0	0	0	2,499	0	2,556	0	0	468
Length across rangeland pasture	5,239	4,280	3,464	1,223	2,051	1,877	1,799	1,682	5,231	5,123	2,336	3,981	4,953	5,674	2,354	4,579	3,316	1,709	1,857	898
Length of link across agricultural cropland with mobile irrigation systems	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Length of link across upland woodlands	723	15	0	39	103	0	14	0	339	249	105	82	0	86	649	464	215	1,345	820	1,799
Length of link across riparian areas	182	0	0	29	69	0	49	0	754	495	69	0	0	36	349	366	47	586	0	535
Length of link across potential wetlands	129	0	0	0	0	0	0	0	0	268	0	0	0	0	0	625	0	0	0	0
Number of stream crossings by the link	1	1	0	0	1	0	1	0	2	2	2	0	1	1	1	1	1	1	0	1
Length of link parallel to streams (within 100 feet)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Length across lakes or ponds (open waters)	23	0	0	0	0	0	13	0	40	53	23	0	0	18	64	24	31	77	0	39
Number of known rare/unique plant locations within the right-of-way	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Length of link through known habitat of endangered or threatened species	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of recorded cultural resource sites crossed by the link	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of recorded cultural resources within 1,000 feet of the link centerline	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Length of link across areas of high archaeological/historical site potential	1,661	517	0	1,315	2,223	0	900	0	929	2,452	3,314	0	0	1,050	3,245	1,556	656	1,452	2,708	2,157
Number of private airstrips within 10,000 feet of the link centerline	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of FAA-registered airports with at least one runway more than 3,200 feet in length within 20,000 feet of link centerline	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	1	1	1	1	1
Number of FAA-registered airports with no runway greater than 3,200 feet in length within 10,000 feet of the link centerline	0	0	0	0	0	0	1	2	1	0	0	0	0	0	0	0	0	0	0	0
Number of heliports located within 5,000 feet of the link centerline	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of commercial AM radio transmitters located within 10,000 feet of the link centerline	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of FM, microwave, and other electronic installations within 2,000 feet of the link centerline	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
Number of U.S. or State Highway crossings by the link	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0
Number of Farm to Market (F.M.), county roads, or other street crossings by the link	2	1	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0
Estimated length of right-of-way within foreground visual zone of U.S. and State Highways	6,815	0	2,222	0	0	0	0	0	0	6,844	19	0	0	0	5,948	0	0	0	0	0
Estimated length of right-of-way within foreground visual zone of park/recreational areas	6,815	4,424	3,497	1,315	2,223	1,877	5,363	2,981	11,089	6,844	3,314	4,063	4,969	5,848	5,948	6,145	6,181	3,718	2,708	3,738

NOTES: All length measurements are in feet. Measurements for many of the environmental criteria were obtained from mosaics of ortho-rectified images (NearMap, 2023), whose capture process utilizes global positioning system and precise point positioning technologies to achieve sub-meter (or approximately 7.8 inches) horizontal accuracy to true ground location.

Caution should be exercised when combining link-based values to form cumulative path values. Distance-based features (e.g., within 1,000 feet) may be over-represented for routes that contain multiple links in proximity to the same feature. Simple addition of link values may result in certain variables being counted multiple times.

(1) Not included in length of link parallel to existing compatible rights-of-way.

(2) Structures normally inhabited by humans on a daily or regular basis. Habitable structures include but are not limited to single-family and multi-family dwellings and related structures, mobile homes, apartment buildings, commercial structures, industrial structures, churches, hospitals, nursing homes, and schools.

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APPENDIX E - TABLE 7-3. ENVIRONMENTAL DATA FOR ALTERNATIVE LINK EVALUATION

ALTERNATIVE LINK NUMBER	T1	T2	T3	T4	T5	U1	U2	U3	V1	V2	V3	V4	W1	W3	W4	W5	W6	W7	X	Z
Length of alternative link	5,452	10,631	7,992	7,801	2,756	6,969	3,438	1,896	4,261	9,114	3,545	585	2,969	7,419	7,590	3,214	2,800	1,617	1,365	600
Length of link parallel to existing electric transmission lines	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Length of link parallel to railroads	0	0	0	0	0	0	0	0	4,261	0	0	0	0	0	0	2,435	0	0	0	0
Length of link parallel to existing public roads/highways	0	0	1,093	0	0	0	0	0	1,449	0	0	0	0	0	5,490	605	0	0	0	0
Length of link parallel to pipelines (1)	0	0	1,093	0	535	0	0	0	0	0	0	0	0	0	0	1,844	0	0	0	0
Length of link parallel to apparent property boundaries	0	0	4,074	0	1,140	0	1,365	1,300	4,261	0	0	0	0	0	4,087	605	0	0	0	0
Total length of link parallel to existing compatible rights-of-way	0	0	4,074	0	1,140	0	1,365	1,300	4,261	0	0	0	0	0	5,490	605	0	0	0	0
Number of habitable structures within 500 feet of the link centerline (2)	0	6	0	0	0	6	4	3	5	2	2	0	1	4	2	12	0	1	0	0
Number of parks or recreational areas within 1,000 feet of the link centerline (3)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Length of the link across parks/recreational areas	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Length of link through commercial/industrial areas	39	143	92	24	0	245	62	0	123	750	636	0	976	79	1,031	782	0	66	11	0
Length of the link across cropland/hay meadow	3,462	1,186	2,933	1,672	2,087	0	0	0	0	0	0	0	16	0	0	0	0	0	0	0
Length across rangeland pasture	1,234	7,954	3,276	2,482	195	6,078	2,585	1,884	2,889	7,470	2,698	353	1,545	6,635	6,143	2,019	2,478	1,552	1,154	600
Length of link across agricultural cropland with mobile irrigation systems	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Length of link across upland woodlands	112	505	1,340	610	474	645	377	12	795	632	210	232	386	601	415	413	67	0	92	0
Length of link across riparian areas	497	799	333	2,859	0	0	415	0	0	249	0	0	45	0	0	0	255	0	107	0
Length of link across potential wetlands	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of stream crossings by the link	1	4	1	3	0	0	2	0	0	3	0	1	1	0	0	0	1	0	1	0
Length of link parallel to streams (within 100 feet)	0	0	1,944	0	0	0	0	0	0	656	0	0	0	0	0	0	0	0	0	0
Length across lakes or ponds (open waters)	108	44	18	154	0	0	0	0	453	14	0	0	0	103	0	0	0	0	0	0
Number of known rare/unique plant locations within the right-of-way	0	2	2	2	2	0	0	0	0	0	0	0	3	3	3	0	0	0	0	0
Length of link through known habitat of endangered or threatened species	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of recorded cultural resource sites crossed by the link	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of recorded cultural resources within 1,000 feet of the link centerline	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Length of link across areas of high archaeological/historical site potential	742	3,128	4,648	7,801	0	0	1,289	0	0	1,626	0	585	669	0	0	0	1,545	0	407	600
Number of private airstrips within 10,000 feet of the link centerline	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of FAA-registered airports with at least one runway more than 3,200 feet in length within 20,000 feet of link centerline	1	1	1	1	1	1	0	0	0	1	1	1	1	1	0	0	1	1	1	1
Number of FAA-registered airports with no runway greater than 3,200 feet in length within 10,000 feet of the link centerline	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of heliports located within 5,000 feet of the link centerline	0	0	0	0	0	0	0	0	0	1	1	1	0	1	1	1	1	1	1	1
Number of commercial AM radio transmitters located within 10,000 feet of the link centerline	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of FM, microwave, and other electronic installations within 2,000 feet of the link centerline	0	0	0	0	0	0	0	0	0	1	0	0	0	2	2	0	0	0	0	0
Number of U.S. or State Highway crossings by the link	0	0	0	0	0	2	0	0	0	4	4	0	7	0	0	4	0	0	0	0
Number of Farm to Market (F.M.), county roads, or other street crossings by the link	1	2	0	0	0	0	1	0	0	3	2	0	0	0	1	1	0	0	0	0
Estimated length of right-of-way within foreground visual zone of U.S. and State Highways	0	0	0	2,806	1,889	5,231	166	1,540	3,860	6,042	3,545	585	2,969	5,070	7,590	3,214	1,272	1,617	1,365	23
Estimated length of right-of-way within foreground visual zone of park/recreational areas	5,452	10,631	7,992	7,801	2,756	6,969	3,438	1,896	4,261	9,114	3,545	585	2,969	7,419	7,590	3,214	2,800	1,617	1,365	600

NOTES: All length measurements are in feet. Measurements for many of the environmental criteria were obtained from mosaics of ortho-rectified images (NearMap, 2023), whose capture process utilizes global positioning system and precise point positioning technologies to achieve sub-meter (or approximately 7.8 inches) horizontal accuracy to true ground location.

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(1) Not included in length of link parallel to existing compatible rights-of-way.

(2) Structures normally inhabited by humans on a daily or regular basis. Habitable structures include but are not limited to single-family and multi-family dwellings and related structures, mobile homes, apartment buildings, commercial structures, industrial structures, churches, hospitals, nursing homes, and schools.

(3) Defined as parks and recreational areas owned by a governmental body or an organized group, club, or church.

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Appendix F

Habitable Structures within 500 Feet of the Alternative Links

Parks and Recreational Areas within or Near the Study Area

Aircraft Landing Facilities within or Near the Study Area

Electronic Installations within or Near the Study Area

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TABLE 7-4. HABITABLE STRUCTURES WITHIN 500 FEET OF THE ALTERNATIVE LINKS

Habitable Structure Group	Habitable Structure	Distance†	Direction*	Description	Link
	1	315	NNE	Commercial	A1
		376	E	Commercial	A0
		405	ENE	Commercial	A4
	2	430	NNE	Industrial	A1
	3	357	N	SFR‡	A6
		379	NNE	SFR	A3
		490	NE	SFR	A1
	4	285	E	Commercial	A4
	5	407	W	SFR	A6
	6	146	W	SFR	A6
	7	407	E	Commercial	A6
	8	409	E	Commercial	A6
	9	65	E	SFR	B1
	10	137	E	SFR	B1
	11	253	WSW	SFR	B4
	12	277	ENE	SFR	B4
	13	156	E	Commercial	B4
	14	429	E	Commercial	B4
1 (40 HS)	15	413	NNE	SFR	C3
	16	402	NNE	SFR	C3
	17	401	NNE	SFR	C3
	18	398	NNE	SFR	C3
	19	396	NNE	SFR	C3
	20	388	NNE	SFR	C3
	21	383	NNE	SFR	C3
	22	352	NNE	SFR	C3
	23	510	NNE	SFR	C3
	24	450	NNE	SFR	C3
	25	408	NNE	SFR	C3
	26	344	NNE	SFR	C3
	27	367	NNE	SFR	C3
	28	378	NNE	SFR	C3
	29	460	NNE	SFR	C3
	30	482	NNE	SFR	C3
	31	449	NNE	SFR	C3
	32	423	NNE	SFR	C3
	33	410	NNE	SFR	C3
	34	403	NNE	SFR	C3
	35	414	NNE	SFR	C3
	36	430	NNE	SFR	C3
	37	448	NNE	SFR	C3
	38	461	NNE	SFR	C3
	39	483	NNE	SFR	C3
	40	461	NNE	SFR	C3
	41	437	NNE	SFR	C3
	42	392	NNE	SFR	C3
	43	477	NW	SFR	C6
		517	NNE	SFR	C3
	44	445	NW	SFR	C6
	45	424	NW	SFR	C6
	46	413	NNW	SFR	C6
	47	394	NNW	SFR	C6
	48	362	NNW	SFR	C6

Shaded values represent the shortest and longest distance between a habitable structure and a link within a group route subset

* Direction represents the distance beginning from the habitable structure towards the provided link.

† To account for photographic interpretation limitations such as shadows, tree canopies, and horizontal accuracy of the photography, Halff identified all habitable structures within a measured distance of 520 feet of the alternative route centerline.

‡ Denotes single-family residence

TABLE 7-4. HABITABLE STRUCTURES WITHIN 500 FEET OF THE ALTERNATIVE LINKS

Habitable Structure Group	Habitable Structure	Distance†	Direction*	Description	Link
(HS Group 1 cont.)	49	368	WNW	SFR	C6
		369	NNE	SFR	C3
		508	NNW	SFR	C4
	50	321	WNW	SFR	C6
		385	NNE	SFR	C3
		489	NNW	SFR	C4
	51	276	WNW	SFR	C6
		393	NNE	SFR	C3
		472	NNW	SFR	C4
	52	217	WNW	SFR	C6
		393	NNE	SFR	C3
		445	N	SFR	C4
	53	183	NW	SFR	C6
		415	NNE	SFR	C3
		448	N	SFR	C4
	54	182	NNW	SFR	C6
		466	NNE	SFR	C3
		485	N	SFR	C4
	55	261	W	SFR	E2
		262	W	SFR	E7
		262	W	SFR	E1
		430	SW	SFR	C6
		449	WSW	SFR	E6
	62	326	E	Industrial	C5
		418	S	Industrial	C7
	63	398	S	SFR	C23
		471	W	SFR	C5
	64	459	N	SFR	C8
		470	E	SFR	C5
	65	383	E	SFR	C5
		420	N	SFR	C8
	66	258	E	SFR	C5
		425	N	SFR	C8
		505	NNE	SFR	C22
	67	164	E	SFR	C5
		359	N	SFR	C8
		421	NNE	SFR	C22
	68	160	E	SFR	C5
		273	N	SFR	C8
		315	NNE	SFR	C22
	69	169	E	SFR	C5
		203	N	SFR	C8
		263	NE	SFR	C22
	70	260	N	SFR	C8
		462	E	SFR	C5
	71	244	N	SFR	C8
		397	E	SFR	C5
		473	ENE	SFR	C22
	72	249	N	SFR	C8
		332	E	SFR	C5
		415	NE	SFR	C22
	73	100	S	Recreational	C8
		247	ESE	Recreational	C5
		247	ESE	Recreational	C22
	74	262	S	Recreational	C8
		348	SE	Recreational	C5
		348	SE	Recreational	C22
2 (15 HS)	75	498	S	SFR	C8
		498	S	SFR	C5
		498	S	SFR	C22

Shaded values represent the shortest and longest distance between a habitable structure and a link within a group route subset.
* Direction represents the distance beginning from the habitable structure towards the provided link.
† To account for photographic interpretation limitations such as shadows, tree canopies, and horizontal accuracy of the photography, Halff identified all habitable structures within a measured distance of 520 feet of the alternative route centerline.
‡ Denotes single-family residence

TABLE 7-4. HABITABLE STRUCTURES WITHIN 500 FEET OF THE ALTERNATIVE LINKS

Habitable Structure Group	Habitable Structure	Distance†	Direction*	Description	Link
(HS Group 2 cont.)	76	473	S	SFR	C5
		473	S	SFR	C8
		473	S	SFR	C22
	77	436	S	SFR	C5
		436	S	SFR	C8
		436	S	SFR	C22
	78	411	SSW	SFR	C5
		411	SSW	SFR	C8
		411	SSW	SFR	C22
	79	394	SSW	SFR	C5
		394	SSW	SFR	C8
		394	SSW	SFR	C22
	80	392	SSW	SFR	C22
		393	SSW	SFR	C5
		393	SSW	SFR	C8
	81	369	SSW	SFR	C22
		378	SW	SFR	C5
		378	SW	SFR	C8
	82	359	SSW	SFR	C22
		382	SW	SFR	C5
		382	SW	SFR	C8
	83	336	SSW	SFR	C22
		377	SW	SFR	C5
		377	SW	SFR	C8
	84	324	SSW	SFR	C22
		383	SW	SFR	C5
		383	SW	SFR	C8
	85	310	SSW	SFR	C22
		399	WSW	SFR	C5
		399	WSW	SFR	C8
	86	515	SSW	SFR	C22
	87	500	SSW	SFR	C22
	88	485	SSW	SFR	C22
	89	477	SSW	SFR	C22
3 (89 HS)	90	489	SW	SFR	F3
	91	433	SW	SFR	F3
	92	355	SW	SFR	F3
	93	324	SW	SFR	F3
	94	275	SW	SFR	F3
	95	255	WSW	SFR	F3
	96	224	WSW	SFR	F3
	97	424	WSW	SFR	F3
	98	466	WSW	SFR	F3
	99	511	WSW	SFR	F3
	100	374	WSW	SFR	F3
	101	423	W	SFR	F3
	102	472	W	SFR	F3
	103	210	W	SFR	F3
	104	209	W	SFR	F3
	105	212	W	SFR	F3
	106	210	W	SFR	F3
	107	210	W	SFR	F3
	108	206	W	SFR	F3
	109	211	W	SFR	F3
		473	S	SFR	E8
		518	SSW	SFR	F2
	110	206	W	SFR	F3
		423	S	SFR	E8
		469	SSW	SFR	F2
	111	213	W	SFR	F3
		373	S	SFR	E8
		427	SSW	SFR	F2

Shaded values represent the shortest and longest distance between a habitable structure and a link within a group route subset.
* Direction represents the distance beginning from the habitable structure towards the provided link.
† To account for photographic interpretation limitations such as shadows, tree canopies, and horizontal accuracy of the photography, Halff identified all habitable structures within a measured distance of 520 feet of the alternative route centerline.
‡ Denotes single-family residence

TABLE 7-4. HABITABLE STRUCTURES WITHIN 500 FEET OF THE ALTERNATIVE LINKS

Habitable Structure Group	Habitable Structure	Distance†	Direction*	Description	Link
(HS Group 3 cont.)	112	221	W	SFR	F3
		322	S	SFR	E8
		389	SW	SFR	F2
	113	216	W	SFR	F3
		258	S	SFR	E8
		335	SW	SFR	F2
	114	206	S	SFR	E8
		207	W	SFR	F3
		291	SW	SFR	F2
	115	129	S	SFR	E8
		218	W	SFR	F3
		270	WSW	SFR	F2
	116	75	S	SFR	E8
		284	W	SFR	F3
		299	WSW	SFR	F2
	117	78	S	SFR	E8
		354	W	SFR	F3
		366	WSW	SFR	F2
	118	78	S	SFR	E8
		405	W	SFR	F3
		412	W	SFR	F2
	119	77	S	SFR	E8
		455	W	SFR	F3
		462	W	SFR	F2
	120	72	S	SFR	E8
		504	W	SFR	F3
		509	W	SFR	F2
	121	89	S	SFR	E8
	122	78	S	SFR	E8
	123	78	S	SFR	E8
	124	79	S	SFR	E8
	125	89	S	SFR	E8
	126	78	S	SFR	E8
	127	78	S	SFR	E8
	128	80	S	SFR	E8
	129	78	S	SFR	E8
	130	67	S	SFR	E8
	131	72	S	SFR	E8
	132	372	W	SFR	F3
	133	373	W	SFR	F3
	134	372	W	SFR	F3
	135	372	W	SFR	F3
	136	372	W	SFR	F3
	137	373	W	SFR	F3
	138	373	W	SFR	F3
		482	S	SFR	E8
	139	372	W	SFR	F3
		434	S	SFR	E8
	140	372	W	SFR	F3
		384	S	SFR	E8
	141	333	S	SFR	E8
		371	W	SFR	F3
		497	SW	SFR	F2
	142	283	S	SFR	E8
		371	W	SFR	F3
		465	SW	SFR	F2
	143	234	S	SFR	E8
		373	W	SFR	F3
		439	WSW	SFR	F2
	144	492	W	SFR	F3
	145	500	W	SFR	F3
	146	498	W	SFR	F3

Shaded values represent the shortest and longest distance between a habitable structure and a link within a group route subset.
* Direction represents the distance beginning from the habitable structure towards the provided link.
† To account for photographic interpretation limitations such as shadows, tree canopies, and horizontal accuracy of the photography, Halff identified all habitable structures within a measured distance of 520 feet of the alternative route centerline.
‡ Denotes single-family residence

TABLE 7-4. HABITABLE STRUCTURES WITHIN 500 FEET OF THE ALTERNATIVE LINKS

Habitable Structure Group	Habitable Structure	Distance†	Direction*	Description	Link
(HS Group 3 cont.)	147	495	W	SFR	F3
	148	503	W	SFR	F3
	149	511	W	SFR	F3
	150	485	S	SFR	E8
		511	W	SFR	F3
	151	435	S	SFR	E8
		500	W	SFR	F3
	152	385	S	SFR	E8
		511	W	SFR	F3
	153	334	S	SFR	E8
		501	W	SFR	F3
	154	285	S	SFR	E8
		511	W	SFR	F3
	155	234	S	SFR	E8
		504	W	SFR	F3
	156	375	S	SFR	E8
	157	371	S	SFR	E8
	158	372	S	SFR	E8
	159	364	S	SFR	E8
	160	376	S	SFR	E8
	161	395	S	SFR	E8
	162	414	S	SFR	E8
	163	475	S	SFR	E8
	164	239	S	SFR	E8
	165	239	S	SFR	E8
	166	239	S	SFR	E8
	167	239	S	SFR	E8
	168	239	S	SFR	E8
	169	239	S	SFR	E8
	170	250	S	SFR	E8
	171	284	S	SFR	E8
	172	282	S	SFR	E8
	173	362	S	SFR	E8
	174	412	S	SFR	E8
	175	463	S	SFR	E8
	176	368	S	SFR	E8
	177	423	S	SFR	E8
	178	473	S	SFR	E8
4 (27 HS)	179	410	S	SFR	E8
	180	399	S	SFR	E8
	181	387	S	SFR	E8
	182	387	S	SFR	E8
	183	387	S	SFR	E8
	184	369	S	SFR	E8
	185	387	S	SFR	E8
	186	396	S	SFR	E8
	187	382	S	SFR	E8
	188	388	S	SFR	E8
	189	398	S	SFR	E8
	190	397	S	SFR	E8
	191	386	S	SFR	E8
	192	398	S	SFR	E8
		492	ESE	SFR	C9
	193	387	S	SFR	E8
		438	ESE	SFR	C9
	194	387	SE	SFR	C9
		395	S	SFR	E8
		506	SE	SFR	E3
	195	281	SE	SFR	C9
		387	S	SFR	E8

Shaded values represent the shortest and longest distance between a habitable structure and a link within a group route subset.
* Direction represents the distance beginning from the habitable structure towards the provided link.
† To account for photographic interpretation limitations such as shadows, tree canopies, and horizontal accuracy of the photography, Halff identified all habitable structures within a measured distance of 520 feet of the alternative route centerline.
‡ Denotes single-family residence

TABLE 7-4. HABITABLE STRUCTURES WITHIN 500 FEET OF THE ALTERNATIVE LINKS

Habitable Structure Group	Habitable Structure	Distance†	Direction*	Description	Link
(HS Group 4 cont.)		426	SSE	SFR	E3
	196	251	SSE	SFR	C9
		384	S	SFR	E8
		407	SSE	SFR	E3
	197	228	SSE	SFR	C9
		387	S	SFR	E8
		394	S	SFR	E3
	198	201	SSE	SFR	C9
		387	S	SFR	E8
		388	S	SFR	E3
	199	184	SSE	SFR	C9
		388	S	SFR	E8
		388	S	SFR	E3
	200	165	SSE	SFR	C9
		405	S	SFR	E8
		405	S	SFR	E3
	201	141	SSE	SFR	C9
		417	SSW	SFR	E8
		417	SSW	SFR	E3
	202	494	SE	SFR	C9
	203	411	SSE	SFR	C9
	204	389	SSE	SFR	C9
	205	353	SSE	SFR	C9
5 (21 HS)	206	520	E	SFR	E5
	207	508	E	SFR	E5
	208	502	E	SFR	E5
	209	510	E	SFR	E5
	210	346	SSE	SFR	C9
		449	E	SFR	E5
	211	408	SSE	SFR	C9
		441	E	SFR	E5
	212	419	E	SFR	E5
		480	SSE	SFR	C9
	213	424	E	SFR	E5
	214	406	E	SFR	E5
	215	387	E	SFR	E5
	216	377	E	SFR	E5
	217	362	E	SFR	E5
	218	343	E	SFR	E5
	219	347	E	SFR	E5
	220	334	E	SFR	E5
	221	336	E	SFR	E5
	222	342	E	SFR	E5
	223	361	E	SFR	E5
	224	394	E	SFR	E5
	225	440	E	SFR	E5
	226	481	E	SFR	E5
6 (29 HS)	227	517	E	SFR	E5
	228	518	E	SFR	E5
	229	508	E	SFR	E5
	230	501	E	SFR	E5
	231	498	E	SFR	E5
	232	401	E	SFR	E5
	233	395	E	SFR	E5
	234	389	E	SFR	E5
	235	381	E	SFR	E5
	236	379	E	SFR	E5
	237	372	E	SFR	E5
	238	386	E	SFR	E5
	239	456	E	SFR	E5
	240	328	E	SFR	E5

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† To account for photographic interpretation limitations such as shadows, tree canopies, and horizontal accuracy of the photography, Halff identified all habitable structures within a measured distance of 520 feet of the alternative route centerline.
‡ Denotes single-family residence

TABLE 7-4. HABITABLE STRUCTURES WITHIN 500 FEET OF THE ALTERNATIVE LINKS

Habitable Structure Group	Habitable Structure	Distance†	Direction*	Description	Link
(HS Group 6 cont.)	241	277	E	SFR	E5
	242	245	E	SFR	E5
	243	240	E	SFR	E5
	244	241	E	SFR	E5
	245	228	E	SFR	E5
	246	205	E	SFR	E5
	247	223	E	SFR	E5
	248	200	E	SFR	E5
	249	212	E	SFR	E5
	250	212	E	SFR	E5
	251	224	E	SFR	E5
	252	272	E	SFR	E5
	253	349	E	SFR	E5
	254	408	E	SFR	E5
	255	483	E	SFR	E5
	256	257	N	SFR	F1
		275	S	SFR	E6
	257	118	S	SFR	E6
		423	N	SFR	F1
	258	333	NNE	SFR	G3
	259	454	N	Industrial	G4
	260	459	N	Educational	H6
	261	496	N	Educational	H6
	262	448	N	Educational	H6
	263	72	NNW	SFR	J4
	264	179	NNW	SFR	J4
	265	494	S	Commercial	J4
	266	378	S	MFR	J4
	267	212	S	MFR	J4
	268	58	S	MFR	J4
	269	365	S	MFR	J4
	270	213	S	MFR	J4
	271	109	S	MFR	J4
	272	148	S	MFR	J4
7 (36 HS)	273	505	S	SFR	J4
	274	506	S	SFR	J4
	275	505	S	SFR	J4
	276	321	S	SFR	J4
	277	216	S	SFR	J4
	278	137	S	SFR	J4
	279	125	SSE	SFR	J4
	280	151	SSE	SFR	J4
	281	148	SSE	SFR	J4
	282	160	SSE	SFR	J4
	283	173	SSE	SFR	J4
	284	193	SSE	SFR	J4
	285	217	SSE	SFR	J4
	286	264	SSE	SFR	J4
	287	265	SSW	SFR	J4
	288	253	SSW	SFR	J4
	289	268	SSW	SFR	J4
	290	293	SSW	SFR	J4
	291	267	SSW	SFR	J4
	292	269	SSW	SFR	J4
	293	308	SSE	SFR	J4
	294	317	SSE	SFR	J4
	295	324	SSE	SFR	J4
	296	331	SSE	SFR	J4
	297	340	SSE	SFR	J4

Shaded values represent the shortest and longest distance between a habitable structure and a link within a group route subset.
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† To account for photographic interpretation limitations such as shadows, tree canopies, and horizontal accuracy of the photography, Halff identified all habitable structures within a measured distance of 520 feet of the alternative route centerline.
‡ Denotes single-family residence

TABLE 7-4. HABITABLE STRUCTURES WITHIN 500 FEET OF THE ALTERNATIVE LINKS

Habitable Structure Group	Habitable Structure	Distance†	Direction*	Description	Link
(HS Group 7 cont.)	298	366	SSE	SFR	J4
	299	409	SSE	SFR	J4
	300	435	SSW	SFR	J4
	301	430	SSW	SFR	J4
	302	434	SSW	SFR	J4
	303	501	SSW	SFR	J4
	304	417	SSE	SFR	J4
	305	448	SSE	SFR	J4
	306	457	SSE	SFR	J4
	307	456	SSE	SFR	J4
	308	471	SSE	SFR	J4
8 (57 HS)	309	236	NNW	SFR	J4
	310	208	NNW	SFR	J4
	311	186	NNW	SFR	J4
	312	160	NNW	SFR	J4
	313	128	N	SFR	J4
	314	130	N	SFR	J4
	315	119	NNE	SFR	J4
	316	127	NNE	SFR	J4
	317	137	NNE	SFR	J4
	318	131	NNE	SFR	J4
	319	133	NNE	SFR	J4
	320	127	NNE	SFR	J4
	321	120	NNE	SFR	J4
	322	128	NNE	SFR	J4
	323	116	NNE	SFR	J4
	324	110	NNE	SFR	J4
	325	119	NNE	SFR	J4
	326	105	NNE	SFR	J4
	327	97	NNE	SFR	J4
	328	81	NNE	SFR	J4
	329	63	NNE	SFR	J4
	330	370	NNW	SFR	J4
	331	422	NNW	SFR	J4
	332	477	NNW	SFR	J4
	333	317	NNW	SFR	J4
	334	387	NNW	SFR	J4
	335	322	NNW	SFR	J4
	336	309	N	SFR	J4
	337	304	NNE	SFR	J4
	338	506	NNW	SFR	J4
	339	473	N	SFR	J4
	340	455	N	SFR	J4
	341	467	N	SFR	J4
	342	467	N	SFR	J4
	343	300	NNE	SFR	J4
	344	487	NNE	SFR	J4
	345	299	NNE	SFR	J4
	346	354	NNE	SFR	J4
	347	421	NNE	SFR	J4
	348	350	NNE	SFR	J4
	348.01	284	NNE	SFR	J4
	349	411	NNE	SFR	J4
	350	298	NNE	SFR	J4
	351	371	NNE	SFR	J4
	352	432	NNE	SFR	J4
	353	494	NNE	SFR	J4
	354	334	NNE	SFR	J4
	355	395	NNE	SFR	J4

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* Direction represents the distance beginning from the habitable structure towards the provided link.
† To account for photographic interpretation limitations such as shadows, tree canopies, and horizontal accuracy of the photography, Halff identified all habitable structures within a measured distance of 520 feet of the alternative route centerline.
‡ Denotes single-family residence

TABLE 7-4. HABITABLE STRUCTURES WITHIN 500 FEET OF THE ALTERNATIVE LINKS

Habitable Structure Group	Habitable Structure	Distance†	Direction*	Description	Link
(HS Group 8 cont.)	356	456	NNE	SFR	J4
	357	270	NNE	SFR	J4
	358	392	NNE	SFR	J4
	359	515	NNE	SFR	J4
	360	227	NNE	SFR	J4
	361	296	NNE	SFR	J4
	362	364	NNE	SFR	J4
	363	487	NNE	SFR	J4
	364	139	S	SFR	J4
	365	54	S	SFR	H8
		374	E	SFR	H9
		374	E	SFR	H42
	366	395	N	SFR	H8
	367	228	WNW	SFR	H8
	368	84	WNW	SFR	H8
	369	91	N	Commercial	I8
		457	S	Commercial	I7
		476	ESE	Commercial	I6
		517	E	Commercial	H8
		517	E	Commercial	I5
	370	76	N	Commercial	I8
		505	S	Commercial	I7
	371	187	N	Commercial	I8
		419	S	Commercial	I7
9 (22 HS)	372	127	E	SFR	J3
	373	138	E	SFR	J3
	374	113	E	SFR	J3
	375	338	E	SFR	J3
	376	423	N	SFR	J3
	377	424	N	SFR	J3
	378	425	N	SFR	J3
	379	431	N	SFR	J3
	380	449	NNE	SFR	J3
	381	496	NNE	SFR	J3
	382	65	N	SFR	J3
	383	213	N	SFR	J3
	384	190	N	SFR	J3
	385	210	N	SFR	J3
	386	231	N	SFR	J3
	387	253	NNE	SFR	J3
	388	323	NE	SFR	J3
	389	386	ENE	SFR	J3
	390	501	ENE	SFR	J3
	391	483	N	SFR	J3
	392	354	N	SFR	J3
	393	220	N	SFR	J3
10 (12 HS)	394	503	WSW	SFR	J3
	395	457	WSW	SFR	J3
	396	407	WSW	SFR	J3
	397	359	WSW	SFR	J3
	398	313	WSW	SFR	J3
	399	396	SW	SFR	J3
	400	433	SW	SFR	J3
	401	471	SW	SFR	J3
	402	262	SSW	SFR	J3
	403	398	SSW	SFR	J3
	404	450	SSW	SFR	J3
	405	494	SSW	SFR	J3

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* Direction represents the distance beginning from the habitable structure towards the provided link.
† To account for photographic interpretation limitations such as shadows, tree canopies, and horizontal accuracy of the photography, Halff identified all habitable structures within a measured distance of 520 feet of the alternative route centerline.
‡ Denotes single-family residence

TABLE 7-4. HABITABLE STRUCTURES WITHIN 500 FEET OF THE ALTERNATIVE LINKS

Habitable Structure Group	Habitable Structure	Distance†	Direction*	Description	Link
11 (28 HS)	406	119	S	SFR	J3
	407	229	S	SFR	J3
	408	361	S	SFR	J3
	409	456	S	SFR	J3
	410	202	S	SFR	J3
	411	286	W	SFR	J3
	412	294	W	SFR	J3
	413	366	WSW	SFR	J3
	414	281	SW	SFR	J3
	415	202	SSW	SFR	J3
	416	157	S	SFR	J3
	417	172	S	SFR	J3
	418	153	S	SFR	J3
	419	153	S	SFR	J3
	420	154	S	SFR	J3
	421	168	S	SFR	J3
	422	170	S	SFR	J3
	423	170	S	SFR	J3
	424	493	SW	SFR	J3
	425	425	SSW	SFR	J3
	426	389	S	SFR	J3
	427	387	S	SFR	J3
	428	374	S	SFR	J3
	429	482	S	SFR	J3
	430	385	S	SFR	J3
	431	386	S	SFR	J3
	432	387	S	SFR	J3
	433	387	S	SFR	J3
	434	87	S	SFR	I31
	435	79	S	SFR	I31
	436	111	ESE	SFR	J22
	437	289	N	Commercial	J22
	438	502	N	Commercial	J22
	439	497	N	SFR	J22
	440	318	N	SFR	J22
	441	462	N	SFR	J22
	442	448	NNW	SFR	J22
	443	279	NNW	SFR	J22
	444	353	NNW	SFR	J22
	445	166	NNW	SFR	J22
	446	281	NNW	SFR	J22
	447	233	N	SFR	J22
	448	299	N	SFR	J22
	449	129	N	SFR	J22
	450	331	N	SFR	J22
	451	315	N	SFR	J22
	452	337	N	SFR	J22
	453	320	N	SFR	J22
	454	307	N	SFR	J22
	455	265	NNE	SFR	J22
	456	315	NE	SFR	J22
	457	511	WSW	Commercial	J22
	458	403	SW	Commercial	J22
	459	514	SW	Commercial	J22
	460	385	SSW	SFR	J22
	461	447	S	SFR	J22
	462	380	S	SFR	J22
	463	357	S	SFR	J22
	464	374	S	SFR	J22

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‡ Denotes single-family residence

TABLE 7-4. HABITABLE STRUCTURES WITHIN 500 FEET OF THE ALTERNATIVE LINKS

Habitable Structure Group	Habitable Structure	Distance†	Direction*	Description	Link
	465	352	S	SFR	J22
	466	307	S	SFR	J22
	467	464	S	SFR	J22
	468	344	S	SFR	J22
	469	483	S	SFR	J22
	470	328	SSE	SFR	J22
	471	455	SSE	SFR	J22
	472	378	SSE	SFR	J22
	473	501	SSE	SFR	J22
	474	371	SSE	SFR	J22
	475	370	SSE	SFR	J22
	476	353	SSE	SFR	J22
	477	510	SSE	SFR	J22
	478	369	SSE	SFR	J22
	479	374	SSE	SFR	J22
	480	287	SW	SFR	J22
	481	214	SSW	SFR	J22
	482	114	S	SFR	J22
	483	119	S	SFR	J22
	484	109	S	SFR	J22
	485	93	S	SFR	J22
	486	86	S	SFR	J22
	487	102	S	SFR	J22
	488	114	S	SFR	J22
	489	115	S	SFR	J22
	490	112	S	SFR	J22
	491	116	SSE	SFR	J22
	492	113	SSE	SFR	J22
	493	111	SSE	SFR	J22
	494	98	SSE	SFR	J22
	495	109	SSE	SFR	J22
	496	70	SSE	SFR	J22
	497	84	SSE	SFR	J22
	498	110	SSE	SFR	J22
	499	99	SSE	SFR	J22
	500	101	SSE	SFR	J22
12 (29 HS)	501	473	N	SFR	J22
	502	403	N	SFR	J22
	503	385	N	SFR	J22
	504	406	N	SFR	J22
	505	483	N	SFR	J22
	506	503	N	SFR	J22
	507	421	N	SFR	J22
	508	374	N	SFR	J22
	509	399	NNW	SFR	J22
	510	471	NNW	SFR	J22
	511	477	NNW	SFR	J22
	512	406	NNW	SFR	J22
	513	378	NNW	SFR	J22
	514	382	NNW	SFR	J22
	515	427	NNW	SFR	J22
	516	493	NNW	SFR	J22
	517	490	NNW	SFR	J22
	518	505	NNW	SFR	J22
	519	493	NNW	SFR	J22
	520	481	NNW	SFR	J22
	521	481	NNW	SFR	J22
	522	464	NNW	SFR	J22
	523	448	NNW	SFR	J22

Shaded values represent the shortest and longest distance between a habitable structure and a link within a group route subset.
* Direction represents the distance beginning from the habitable structure towards the provided link.
† To account for photographic interpretation limitations such as shadows, tree canopies, and horizontal accuracy of the photography, Halff identified all habitable structures within a measured distance of 520 feet of the alternative route centerline.
‡ Denotes single-family residence

TABLE 7-4. HABITABLE STRUCTURES WITHIN 500 FEET OF THE ALTERNATIVE LINKS

Habitable Structure Group	Habitable Structure	Distance†	Direction*	Description	Link
(HS Group 12 cont.)	524	432	NNW	SFR	J22
	525	414	NNW	SFR	J22
	526	393	NNW	SFR	J22
	527	400	NNW	SFR	J22
	528	457	NNW	SFR	J22
	529	507	NNW	SFR	J22
13 (21 HS)	530	481	WNW	SFR	J22
	531	455	NW	SFR	J22
	532	426	NW	SFR	J22
	533	371	NW	SFR	J22
	534	343	NW	SFR	J22
	535	303	NNW	SFR	J22
	536	248	NNW	SFR	J22
	537	232	NW	SFR	J22
	538	503	NW	SFR	J22
	539	468	NNW	SFR	J22
	540	445	NNW	SFR	J22
	541	416	NNW	SFR	J22
	542	125	NNW	SFR	J22
	543	176	NNW	SFR	J22
	544	213	NNW	SFR	J22
	545	266	NNW	SFR	J22
	546	308	NNW	SFR	J22
	547	347	NNW	SFR	J22
	548	391	NNW	SFR	J22
	549	435	NNW	SFR	J22
	550	483	NNW	SFR	J22
14 (13 HS)	551	419	SE	SFR	J22
	552	416	SE	SFR	J22
	553	424	SE	SFR	J22
	554	429	SE	SFR	J22
	555	432	SE	SFR	J22
	555.01	429	SE	SFR	J22
	556	438	SE	SFR	J22
	557	441	SE	SFR	J22
	558	450	SE	SFR	J22
	559	466	SE	SFR	J22
	560	478	SE	SFR	J22
	561	492	SE	SFR	J22
	562	506	SE	SFR	J22
15 (7 HS)	563	408	SSW	SFR	L1
	564	419	SSW	SFR	L1
	565	265	SSW	SFR	L1
	566	267	SSW	SFR	L1
	567	291	SW	SFR	L1
	568	313	SW	SFR	L1
	569	342	SW	SFR	L1
16 (39 HS)	570	345	NNE	SFR	I12
	571	359	NNE	SFR	I12
	572	339	NNE	SFR	I12
	573	298	NNE	SFR	I12
	573.01	275	NNE	SFR	I12
	573.02	324	NNE	SFR	I12
	573.02	398	NNE	SFR	I12
	574	517	NNE	SFR	I12
	575	480	NNE	SFR	I12
	576	466	NNE	SFR	I12
	577	450	NNE	SFR	I12
	578	435	NNE	SFR	I12

Shaded values represent the shortest and longest distance between a habitable structure and a link within a group route subset.
* Direction represents the distance beginning from the habitable structure towards the provided link.
† To account for photographic interpretation limitations such as shadows, tree canopies, and horizontal accuracy of the photography, Halff identified all habitable structures within a measured distance of 520 feet of the alternative route centerline.
‡ Denotes single-family residence

TABLE 7-4. HABITABLE STRUCTURES WITHIN 500 FEET OF THE ALTERNATIVE LINKS

Habitable Structure Group	Habitable Structure	Distance†	Direction*	Description	Link
(HS Group 16 cont.)	579	421	NNE	SFR	I12
	579.01	406	NNE	SFR	I12
	579.02	260	NNE	SFR	I12
	579.03	245	NNE	SFR	I12
	580	389	NNE	SFR	I12
	581	376	NNE	SFR	I12
	582	360	NNE	SFR	I12
	583	347	NNE	SFR	I12
	584	332	NNE	SFR	I12
	585	315	NNE	SFR	I12
	586	301	NNE	SFR	I12
	587	504	NNE	SFR	I12
	588	486	NNE	SFR	I12
	589	487	NNE	SFR	I12
	590	455	NNE	SFR	I12
	591	448	NNE	SFR	I12
	592	432	NNE	SFR	I12
	593	266	NNE	SFR	I12
	594	314	NNE	SFR	I12
	595	363	NNE	SFR	I12
	596	403	NE	SFR	I12
	597	253	NE	Educational	I12
17 (7 HS)	598	478	SSW	SFR	I12
	599	486	SSW	SFR	I12
	600	487	SSW	SFR	I12
	601	488	SSW	SFR	I12
	602	494	SSW	SFR	I12
	603	505	SSW	SFR	I12
	604	516	SW	SFR	I12
	605	475	SW	SFR	I12
	606	498	WSW	SFR	I12
18 (HS 21)	607	498	WSW	SFR	I12
	608	500	WSW	SFR	I12
	609	474	WSW	SFR	I12
	610	472	WSW	SFR	I12
	611	465	WSW	SFR	I12
	612	451	WSW	SFR	I12
	613	452	WSW	SFR	I12
	614	427	WSW	SFR	I12
	615	422	WSW	SFR	I12
	616	455	WSW	SFR	I12
	617	446	WSW	SFR	I12
	618	453	WSW	SFR	I12
	619	471	WSW	SFR	I12
	620	488	WSW	SFR	I12
	621	509	WSW	SFR	I12
	622	500	SSW	SFR	I12
	623	497	SSW	SFR	I12
	624	492	SSW	SFR	I12
	625	505	SSW	SFR	I12
	626	495	SSW	SFR	I12
	627	505	SSW	SFR	I12
	628	477	ESE	Commercial	I12
	629	339	S	Industrial	I12
	630	353	S	Industrial	I12
	631	135	WNW	Industrial	I12
	632	103	N	Industrial	I12
	633	403	N	Industrial	I12
	634	355	WNW	Industrial	I12

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† To account for photographic interpretation limitations such as shadows, tree canopies, and horizontal accuracy of the photography, Halff identified all habitable structures within a measured distance of 520 feet of the alternative route centerline.
‡ Denotes single-family residence

TABLE 7-4. HABITABLE STRUCTURES WITHIN 500 FEET OF THE ALTERNATIVE LINKS

Habitable Structure Group	Habitable Structure	Distance†	Direction*	Description	Link
	635	429	S	SFR	K1
	636	140	S	SFR	K1
	637	90	S	SFR	K1
	638	112	N	SFR	K1
	639	85	N	SFR	K1
	640	440	N	SFR	K1
	641	453	N	SFR	K1
	642	365	W	SFR	L5
	643	253	W	SFR	L5
	644	344	W	SFR	L5
	645	388	WNW	SFR	L5
	646	501	NW	SFR	L5
	647	335	S	SFR	M8
	648	520	N	SFR	M8
	649	518	N	SFR	M8
	650	488	N	SFR	M8
	651	511	N	SFR	M8
	652	519	N	SFR	M8
	653	448	N	SFR	M8
	654	515	N	SFR	M8
	655	519	N	SFR	M8
	656	516	N	SFR	M8
	657	511	N	SFR	M8
	658	484	N	SFR	M8
	659	508	N	SFR	M8
	660	385	N	SFR	O8
	661	382	N	SFR	O8
	662	363	N	SFR	O8
	663	341	N	SFR	O8
	664	337	N	SFR	O8
	665	498	N	SFR	O8
	666	315	N	SFR	O8
	667	303	N	SFR	O8
	668	205	N	SFR	O8
	669	227	N	SFR	O8
	670	190	N	SFR	O8
	671	190	N	SFR	O8
	672	375	N	SFR	O8
		382	N	SFR	Q2
	673	101	W	SFR	Q2
		514	SSW	SFR	Q5
		514	SSW	SFR	Q1
	674	307	NW	SFR	T2
	675	341	WNW	SFR	T2
	676	434	WNW	SFR	T2
	677	505	WNW	SFR	T2
	678	518	WNW	SFR	T2
	679	404	WNW	SFR	T2
	680	379	S	SFR	S5
		489	SE	SFR	S2
		497	SE	SFR	S3
	681	461	SE	SFR	S2
	682	249	SE	SFR	S2
	683	181	S	SFR	S2
	684	248	S	SFR	S2
	685	256	S	SFR	S2
	686	456	S	SFR	S2
	687	395	S	SFR	S2
	688	219	SSW	SFR	S2

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‡ Denotes single-family residence

TABLE 7-4. HABITABLE STRUCTURES WITHIN 500 FEET OF THE ALTERNATIVE LINKS

Habitable Structure Group	Habitable Structure	Distance†	Direction*	Description	Link
	689	428	W	SFR	Q1
	690	422	S	SFR	O7
	691	259	S	SFR	O7
	692	368	S	SFR	O7
	693	259	S	SFR	O7
	694	519	S	SFR	M7
	695	482	S	SFR	M7
	696	324	S	SFR	M7
	697	307	S	SFR	M7
	698	470	S	SFR	M7
	699	184	S	SFR	L2
	700	341	N	SFR	L2
		366	W	SFR	M1
		498	NW	SFR	M6
	701	302	E	SFR	M1
		457	N	SFR	M6
	702	424	N	Commercial	M1
19 (42 HS)	703	475	N	SFR	O5
	704	437	N	SFR	O5
	705	392	N	SFR	O5
	706	343	N	SFR	O5
	707	294	N	SFR	O5
	708	245	N	SFR	O5
	709	152	N	SFR	O5
	710	120	N	SFR	O5
	711	135	N	SFR	O5
	712	125	N	SFR	O5
	713	133	N	SFR	O5
	714	123	N	SFR	O5
	715	128	N	SFR	O5
	716	131	N	SFR	O5
	717	141	N	SFR	O5
	718	130	N	SFR	O5
	719	131	N	SFR	O5
	720	116	N	SFR	O5
	721	142	N	SFR	O5
	722	506	N	SFR	O5
	723	454	N	SFR	O5
	724	393	N	SFR	O5
	725	282	N	SFR	O5
	726	282	N	SFR	O5
	727	281	N	SFR	O5
	728	281	N	SFR	O5
	729	281	N	SFR	O5
	730	405	N	SFR	O5
	731	448	N	SFR	O5
	732	495	N	SFR	O5
	733	505	N	SFR	O5
	734	467	N	SFR	O5
	735	424	N	SFR	O5
	736	377	N	SFR	O5
	737	282	N	SFR	O5
	738	283	N	SFR	O5
	739	318	N	SFR	O5
	740	515	N	SFR	O5
	741	474	N	SFR	O5
	742	430	N	SFR	O5
	743	390	N	SFR	O5
	744	379	N	SFR	O5

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‡ Denotes single-family residence

TABLE 7-4. HABITABLE STRUCTURES WITHIN 500 FEET OF THE ALTERNATIVE LINKS

Habitable Structure Group	Habitable Structure	Distance†	Direction*	Description	Link
	745	424	W	Industrial	P1
	746	510	NW	Industrial	P1
	747	297	W	Industrial	P1
	748	285	N	Commercial	P1
	749	188	N	Commercial	P1
20 (111 HS)	750	495	E	SFR	P1
	751	466	E	SFR	P1
	752	426	E	SFR	P1
	753	389	E	SFR	P1
	754	352	E	SFR	P1
	755	324	E	SFR	P1
	756	287	E	SFR	P1
	757	274	E	SFR	P1
	758	512	E	SFR	P1
	759	474	E	SFR	P1
	760	448	E	SFR	P1
	761	411	E	SFR	P1
	762	474	E	SFR	P1
	763	418	E	SFR	P1
	764	473	E	SFR	P1
	765	487	S	SFR	P1
	766	486	S	SFR	P1
	767	486	S	SFR	P1
	768	485	S	SFR	P1
	769	488	S	SFR	P1
	770	488	S	SFR	P1
	771	486	S	SFR	P1
	772	486	S	SFR	P1
	773	484	S	SFR	P1
	774	484	S	SFR	P1
	775	484	S	SFR	P1
	776	485	S	SFR	P1
	777	486	S	SFR	P1
	778	494	S	SFR	P1
	779	508	S	SFR	P1
	780	339	S	SFR	P1
	781	353	S	SFR	P1
	782	347	S	SFR	P1
	783	340	S	SFR	P1
	784	340	S	SFR	P1
	785	335	S	SFR	P1
	786	338	S	SFR	P1
	787	343	S	SFR	P1
	788	340	S	SFR	P1
	789	332	S	SFR	P1
	790	338	S	SFR	P1
	791	343	S	SFR	P1
	792	338	S	SFR	P1
	793	338	S	SFR	P1
	794	353	S	SFR	P1
	795	339	S	SFR	P1
	796	355	S	SFR	P1
	797	372	S	SFR	P1
	798	397	S	SFR	P1
	799	423	S	SFR	P1
	800	473	S	SFR	P1
	801	508	S	SFR	P1
	802	224	S	SFR	P1
	803	225	S	SFR	P1

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* Direction represents the distance beginning from the habitable structure towards the provided link.
† To account for photographic interpretation limitations such as shadows, tree canopies, and horizontal accuracy of the photography, Halff identified all habitable structures within a measured distance of 520 feet of the alternative route centerline.
‡ Denotes single-family residence

TABLE 7-4. HABITABLE STRUCTURES WITHIN 500 FEET OF THE ALTERNATIVE LINKS

Habitable Structure Group	Habitable Structure	Distance†	Direction*	Description	Link
(HS Group 20 cont.)	804	228	S	SFR	P1
	805	227	S	SFR	P1
	806	227	S	SFR	P1
	807	226	S	SFR	P1
	808	226	S	SFR	P1
	809	226	S	SFR	P1
	810	225	S	SFR	P1
	811	227	S	SFR	P1
	812	224	S	SFR	P1
	813	224	S	SFR	P1
	814	224	S	SFR	P1
	815	223	S	SFR	P1
	816	224	S	SFR	P1
	817	229	S	SFR	P1
	818	237	S	SFR	P1
	819	254	S	SFR	P1
	820	276	S	SFR	P1
	821	311	S	SFR	P1
	822	334	S	SFR	P1
	823	368	S	SFR	P1
	824	414	S	SFR	P1
	825	454	S	SFR	P1
	826	503	S	SFR	P1
	827	276	E	SFR	P1
	828	283	E	SFR	P1
	829	290	E	SFR	P1
	830	272	E	SFR	P1
	831	279	E	SFR	P1
	832	284	E	SFR	P1
	833	237	S	SFR	P1
	834	168	S	SFR	P1
	835	77	S	SFR	P1
	836	65	S	SFR	P1
	837	79	S	SFR	P1
	838	85	S	SFR	P1
	839	80	S	SFR	P1
	840	75	S	SFR	P1
	841	90	S	SFR	P1
	842	86	S	SFR	P1
	843	95	S	SFR	P1
	844	84	S	SFR	P1
	845	80	S	SFR	P1
	846	67	S	SFR	P1
	847	87	S	SFR	P1
	848	88	S	SFR	P1
	849	93	S	SFR	P1
	850	81	S	SFR	P1
	851	86	S	SFR	P1
	852	69	S	SFR	P1
	853	84	S	SFR	P1
	854	97	S	SFR	P1
	855	101	S	SFR	P1
	856	121	S	SFR	P1
	857	145	S	SFR	P1
	858	173	S	SFR	P1
	859	204	S	SFR	P1
	860	258	S	SFR	P1

Shaded values represent the shortest and longest distance between a habitable structure and a link within a group route subset.
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† To account for photographic interpretation limitations such as shadows, tree canopies, and horizontal accuracy of the photography, Halff identified all habitable structures within a measured distance of 520 feet of the alternative route centerline.
‡ Denotes single-family residence

TABLE 7-4. HABITABLE STRUCTURES WITHIN 500 FEET OF THE ALTERNATIVE LINKS

Habitable Structure Group	Habitable Structure	Distance†	Direction*	Description	Link
21 (81 HS)	861	513	WNW	SFR	P4
	862	460	W	SFR	P4
	863	460	W	SFR	P4
	864	401	W	SFR	P4
	865	332	W	SFR	P4
	866	466	W	SFR	P4
	867	405	W	SFR	P4
	868	345	W	SFR	P4
	869	285	W	SFR	P4
	870	461	W	SFR	P4
	871	402	W	SFR	P4
	872	346	W	SFR	P4
	873	289	W	SFR	P4
	874	407	W	SFR	P4
	875	406	W	SFR	P4
	876	400	W	SFR	P4
	877	411	W	SFR	P4
	878	404	W	SFR	P4
	879	415	W	SFR	P4
	880	407	W	SFR	P4
	881	420	W	SFR	P4
	882	399	W	SFR	P4
	883	404	W	SFR	P4
	884	417	W	SFR	P4
	885	422	W	SFR	P4
	886	291	W	SFR	P4
	887	292	W	SFR	P4
	888	290	W	SFR	P4
	889	292	W	SFR	P4
	890	294	W	SFR	P4
	891	294	W	SFR	P4
	892	292	W	SFR	P4
	893	293	W	SFR	P4
	894	292	W	SFR	P4
	895	293	W	SFR	P4
	896	293	W	SFR	P4
	897	296	W	SFR	P4
	898	294	W	SFR	P4
	899	294	W	SFR	P4
	900	499	W	SFR	P4
	901	456	W	SFR	P4
	902	408	W	SFR	P4
	903	359	W	SFR	P4
	904	297	W	SFR	P4
	905	498	W	SFR	P4
	906	448	W	SFR	P4
	907	409	W	SFR	P4
	908	362	W	SFR	P4
	909	317	W	SFR	P4
	910	476	W	SFR	P4
	911	433	W	SFR	P4
	912	387	W	SFR	P4
	913	353	W	SFR	P4
	914	152	W	SFR	P4
	915	148	W	SFR	P4
	916	138	W	SFR	P4
	917	138	W	SFR	P4

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‡ Denotes single-family residence

TABLE 7-4. HABITABLE STRUCTURES WITHIN 500 FEET OF THE ALTERNATIVE LINKS

Habitable Structure Group	Habitable Structure	Distance†	Direction*	Description	Link
(HS Group 21 cont.)	918	148	W	SFR	P4
	919	151	W	SFR	P4
	920	138	W	SFR	P4
	921	148	W	SFR	P4
	922	138	W	SFR	P4
	923	141	W	SFR	P4
	924	139	W	SFR	P4
	925	138	W	SFR	P4
	926	153	W	SFR	P4
	927	148	W	SFR	P4
	928	140	W	SFR	P4
	929	152	W	SFR	P4
	930	139	W	SFR	P4
	931	149	W	SFR	P4
	932	143	W	SFR	P4
	933	139	W	SFR	P4
	934	139	W	SFR	P4
	935	151	W	SFR	P4
	936	145	W	SFR	P4
	937	140	W	SFR	P4
	938	147	W	SFR	P4
		485	NNW	SFR	S1
		485	NNW	SFR	P5
	939	169	W	SFR	P4
		422	NNW	SFR	S1
		422	NNW	SFR	P5
	940	206	W	SFR	P4
		398	NW	SFR	S1
		398	NW	SFR	P5
	941	251	W	SFR	P4
		384	NW	SFR	S1
		384	NW	SFR	P5
	942	386	S	SFR	S1
	943	249	S	SFR	S1
	944	201	SSW	SFR	M4
	945	132	S	SFR	M4
	946	438	S	SFR	M4
	947	158	SSE	SFR	M4
	948	248	SSE	SFR	M4
	949	322	SSE	SFR	M4
	950	228	N	SFR	M4
	951	321	N	SFR	M4
	952	407	N	SFR	M4
	953	392	N	SFR	M4
	954	179	N	SFR	M4
	955	425	N	Other	M4
	956	198	N	SFR	M4
	957	382	N	SFR	M4
	958	287	NNW	SFR	M4
	959	199	NNW	SFR	M4
	960	270	NNW	SFR	M4
	961	357	NNW	SFR	M4
	962	124	NNW	SFR	M4
	963	467	W	SFR	U2
	964	341	W	Commercial	U2
	965	158	E	SFR	U2
		440	NNE	SFR	R6
		440	NNE	SFR	U1
	966	84	W	SFR	U2
		99	N	SFR	R6

Shaded values represent the shortest and longest distance between a habitable structure and a link within a group route subset.
* Direction represents the distance beginning from the habitable structure towards the provided link.
† To account for photographic interpretation limitations such as shadows, tree canopies, and horizontal accuracy of the photography, Halff identified all habitable structures within a measured distance of 520 feet of the alternative route centerline.
‡ Denotes single-family residence

TABLE 7-4. HABITABLE STRUCTURES WITHIN 500 FEET OF THE ALTERNATIVE LINKS

Habitable Structure Group	Habitable Structure	Distance†	Direction*	Description	Link
		131	NW	SFR	U1
	967	492	W	Industrial	U1
	968	491	W	Industrial	U1
	969	463	W	Industrial	U1
	970	97	W	SFR	U1
	971	314	SW	SFR	V1
	972	156	SW	SFR	V1
	973	446	NE	SFR	V1
	974	189	S	SFR	U3
	975	206	SE	SFR	V3
		430	NE	SFR	W5
		490	ENE	SFR	V1
		490	ENE	SFR	U3
	976	319	NE	SFR	W5
		367	SE	SFR	V3
		504	E	SFR	V1
		504	E	SFR	U3
	977	307	NE	SFR	W5
	978	362	NE	Commercial	W5
	979	323	NE	Commercial	W5
	980	285	NE	Commercial	W5
	981	325	NE	Commercial	W5
	982	275	NE	Commercial	W5
	983	269	NE	Commercial	W5
	984	159	NNW	Commercial	W5
		484	WSW	Commercial	W4
		484	WSW	Commercial	W7
	985	338	SE	Commercial	W5
	986	440	SE	Commercial	W5
	987	241	W	SFR	W3
	988	409	W	SFR	W3
	989	286	W	SFR	W3
	990	365	W	SFR	W3
	991	59	ENE	Commercial	W4
	992	447	ESE	SFR	W1
	993	507	N	SFR	V2
	994	352	S	SFR	V2

End of Table 7-4

Shaded values represent the shortest and longest distance between a habitable structure and a link within a group route subset.
* Direction represents the distance beginning from the habitable structure towards the provided link.
† To account for photographic interpretation limitations such as shadows, tree canopies, and horizontal accuracy of the photography, Halff identified all habitable structures within a measured distance of 520 feet of the alternative route centerline.
‡ Denotes single-family residence

TABLE 7-5. PARKS AND RECREATIONAL AREAS WITHIN OR NEAR THE STUDY AREA

Name	Owner/ Organization	Description	Link	Distance (ft)	Direction to Link
USACE Recreational Areas (includes Wildlife Management Areas, Environmentally Sensitive Areas)	USACE	Forested areas surrounding Denton Creek, Grapevine Lake, and associated tributaries	A1	555	Northeast
			A3	345	Northeast
			A6	50	East
			A7	535	North
			B2	255	East
			B4	240	East
			C6	75	North
			E1	975	North
			E6	975	Northwest
			G2	0	-
			G3	50	North
			G6	50	West
			G7	265	North
			H1	860	South
			H3	860	South
			H41	265	North
Knob Hills Trail	USACE	Hike and bike, soft surface trail	A1	720	Northeast
			A3	540	Northeast
			A6	100	East
North Shore Park	USACE	Trailhead and access area	B2	250	East
			B4	240	Northeast
Troop 771 Scout Barn	Boy Scouts of America	Open space, meeting place, and recreational area for Boy Scout troop	B1	965	West
Argyle High School	Argyle Independent School District	High school with sports fields and recreational areas	C22	255	Southwest
Canyon Falls Club	Canyon Falls HOA	Community pool, clubhouse, playground, and greenspace	C22	85	East
			C5	85	East
			C8	0	-
			C9	710	West
			E5	710	West
Canyon Falls Dog Park	Canyon Falls HOA	Community fenced open space and picnic area	C5	910	East
			C7	175	Southwest
			C8	455	North
			C9	375	North
			E2	760	West
			E3	710	West
			E5	455	North
			E8	710	West
Quail Creek Shooting Range	QUAIL CREEK LLC	Wooded area with lanes cleared for recreational target shooting	G3	355	South
Northwest ISD Outdoor Learning Center	Northwest Independent School District	Open space with walking trails, ponds, picnic areas, and learning and gathering	G5	910	Southeast
			G8	910	Southeast
			H5	0	-
			H6	0	-
			J5	575	Southwest
			J6	400	West

TABLE 7-5. PARKS AND RECREATIONAL AREAS WITHIN OR NEAR THE STUDY AREA

Name	Owner/ Organization	Description	Link	Distance (ft)	Direction to Link
		areas for students			
Bishop Park	City of Justin	Open space with walking trail and river access	J4	0	-
Justin Community Park	City of Justin	Open space with walking trails, playgrounds, and baseball fields	J4	0	-
Justin Elementary School	Northwest Independent School District	Elementary school with open space and playgrounds	J4	795	South
Kid's Kampus Preschool		Elementary school with open space and playgrounds	J4	525	South
HCR HOA Pool and Playground #1	Harriet Creek Ranch HOA	Community pool, clubhouse, and playground	I12	575	West
Northwest ISD Complex	Northwest Independent School District	High school and school district owned athletic fields and athletic buildings	I12	480	Northeast
Harriet Creek Ranch Park	City of Fort Worth	Open space with walking trail, playgrounds, and river access	I12	0	-
Clara Love Elementary School	Northwest Independent School District	Elementary school with open space and recreational areas	I12	120	Northeast
Wildflower Ranch Park	Wildflower Ranch HOA	Community open space with playground	L1	825	Southwest
Wildflower Ranch Lazy River	Wildflower Ranch HOA	Community lazy river and club house	L1	930	Southwest
Shale Creek Park	LGI Homes	Community open space with playground, pool, and clubhouse	P1	795	South

TABLE 7-6. AIRCRAFT LANDING FACILITIES WITHIN OR NEAR THE STUDY AREA

Facility Name	FAA ID	Facility Use	County	Link	Distance (ft)	Direction to Link
FAA REGISTERED AIRPORTS WITH RUNWAY GREATER THAN 3,200 WITHIN 20,000 FEET OF A ROUTE						
Northwest Regional	52F	Open to the public	Denton	A0	12,580	East
				A1	11,775	East
				A3	11,560	East
				A4	12,235	East
				A6	10,710	East
				A7	10,710	East
				B1	11,400	East
				B2	8,905	East
				B4	8,295	East
				B5	8,320	East
				B61	11,400	East
				B62	11,000	East
				B7	8,510	East
				B8	8,320	East
				C1	9,520	East
				C21	7,985	Northeast
				C22	6,580	Northeast
				C23	5,635	Northeast
				C3	4,995	East
				C4	4,995	East
				C5	5,635	Northeast
				C6	3,190	Northeast
				C7	4,255	Northeast
				C8	5,705	Northeast
				C9	4,840	Northeast
				E1	3,190	Northeast
				E2	3,435	Northeast
				E3	4,255	Northeast
				E5	5,705	Northeast
				E6	2,640	North
				E7	3,020	North
				E8	4,090	North
				F1	3,175	North
				F2	3,175	North
				F3	4,110	North
				F4	9,000	North
				F5	3,825	Northwest
				F6	4,225	Northwest
				F7	6,190	North
				F8	8,680	North
				G1	3,825	Northwest
				G2	4,130	Northwest
				G3	4,130	Northwest
				G4	6,190	North
				G5	8,680	North
				G6	9,375	West
				G7	9,975	West
				G8	11,300	Northwest
				H1	8,825	West
				H2	8,830	West
				H3	9,375	West
				H41	9,975	West
				H42	14,350	West
				H5	11,300	Northwest
				H6	13,460	Northwest

TABLE 7-6. AIRCRAFT LANDING FACILITIES WITHIN OR NEAR THE STUDY AREA

Facility Name	FAA ID	Facility Use	County	Link	Distance (ft)	Direction to Link
FAA REGISTERED AIRPORTS WITH RUNWAY GREATER THAN 3,200 WITHIN 20,000 FEET OF A ROUTE						
Northwest Regional (Continued)	52F	Open to the public	Denton	H8	16,190	West
				H9	16,190	West
				I11	13,670	West
				I12	13,810	West
				I2	13,670	West
				I31	13,845	West
				I32	17,495	West
				I4	17,485	West
				I5	13,760	West
				I6	19,780	West
				I7	19,940	West
				I8	19,780	West
				I9	13,760	West
				J1	19,610	West
				J21	19,610	West
				J4	16,865	West
				J5	15,970	Northwest
				J6	15,970	Northwest
Fort Worth Alliance	AFW	Open to the public	Denton and Tarrant Counties	I12	9,475	North
				I31	19,720	Northeast
				I32	18,475	North
				I4	19,720	Northeast
				J21	18,475	North
				J22	13,620	North
				L1	13,620	North
				L2	16,360	Northwest
				L3	16,360	Northwest
				L4	19,590	North
				M1	13,395	Northwest
				M2	12,035	Northwest
				M3	10,970	West
				M4	12,035	Northwest
				M5	13,395	Northwest
				M6	17,230	Northwest
				M7	19,590	North
Fairview	70T	Open to the public	Wise	M8	18,365	East
				O2	18,365	East
				O3	17,370	East
				O5	19,355	Southeast
				O6	19,355	Southeast
				O7	15,775	Southeast
				O8	12,180	East
				P1	19,195	South
				P3	16,495	Southeast
				P4	17,640	Southeast
				P5	16,495	Southeast
				P6	14,620	Southeast
				P7	14,620	Southeast
				Q1	12,215	Southeast
				Q2	11,265	Southeast
				Q5	6,395	South
				R1	18,410	South
				S1	15,590	South
				S2	11,425	South
				S3	12,130	South

TABLE 7-6. AIRCRAFT LANDING FACILITIES WITHIN OR NEAR THE STUDY AREA

Facility Name	FAA ID	Facility Use	County	Link	Distance (ft)	Direction to Link
FAA REGISTERED AIRPORTS WITH RUNWAY GREATER THAN 3,200 WITHIN 20,000 FEET OF A ROUTE						
Fairview (Continued)	70T	Open to the public	Wise	S4	15,405	South
				S5	11,820	South
				T1	6,435	South
				T2	6,435	South
				T3	11,865	South
				T4	15,210	South
				T5	15,150	Southwest
				U1	15,570	South
				W1	17,510	Southwest
Kenneth Copeland	4T2	Open to the public	Tarrant	V2	15,750	Northeast
				V3	17,770	Northeast
				V4	17,325	Northeast
				W3	16,830	Northeast
				W6	16,830	Northeast
				W7	18,660	Northeast
				X	17,770	Northeast
				Z	16,870	Northeast
Facility Name	**FAA ID**	**Facility Use**	**County**	**Link**	**Distance (ft)**	**Direction to Link**
FAA REGISTERED AIRPORTS WITH RUNWAY LESS THAN 3,200 WITHIN 10,000 FEET OF A ROUTE						
Blue Jay Airfield	XA49	Private use	Denton	F4	9,850	East
				F7	9,420	East
				F8	9,420	East
				G3	8,130	South
				G4	5,335	South
				G5	2,255	Southeast
				G6	8,130	South
				G7	5,335	South
				G8	2,255	Southeast
				H41	7,470	South
				H42	7,960	Southwest
				H5	5,215	South
				H6	1,855	South
				H8	8,880	Southwest
				H9	7,225	Southwest
				I9	7,960	Southwest
				J4	7,225	Southwest
				J5	6,590	Southwest
				J6	4,350	Southwest
Dooley	0TS1	Private use	Denton	G4	8,925	Southeast
				G5	6,030	Southeast
				G7	8,925	Southeast
				G8	6,030	Southeast
				H5	8,200	South
				H6	4,860	South
				H9	8,630	South
				J4	8,605	South
				J5	8,380	South
				J6	5,170	South
Bell Training Facility	3XS7	Private use	Denton	G2	9,205	East
				G6	9,240	Northeast
				H1	9,240	Northeast
				H2	4,875	Northeast
				H3	5,895	Northeast