

# Distribution Facilities Undergrounding Plan

2018-2022



**CHUGACH**  
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## I. INTRODUCTION

On March 1, 2005, the Anchorage Assembly adopted certain revisions to Section 21.07.050, Utility Distribution Facilities, of the Anchorage Municipal Code. These revisions require an electric utility to “include as part of its annual capital improvement plan, a five-year undergrounding program” (21.07.050F1). In each of the years of this program the electric utility shall plan on expending “at least two percent of a three-year average of its annual gross retail revenues derived from utility service connections within the municipality” (21.07.050G1a). This requirement means that Chugach Electric Association (Chugach) is required to spend approximately \$3.4 million annually to underground existing overhead facilities. Over-expenditures or under expenditures may be carried over as an adjustment to the following year’s obligation.

In the development of the five-year undergrounding program the electric utility is allowed to choose which existing lines to underground. Specifically, priorities for the program “shall be based on undergrounding in conjunction with the electric utility’s essential system improvements and then by target area” (21.07.050F1).

The following document contains Chugach’s five-year undergrounding program. Overall, the plan calls for \$18,450,000 to be expended on undergrounding existing overhead lines from 2018 to 2022, for an average of \$3,600,000 annually.

The projects were chosen taking into account Chugach's overall system needs and consideration of the designated target areas. The inclusion of a project within this plan does not guarantee that the project will be constructed in the designated year.

## II. PROJECT IDENTIFICATION

In order to reduce the overall financial impact of the ordinance on the utility ratepayers, in the revisions adopted by the Anchorage Assembly, provisions were made for utilities to choose projects that have benefits that are not just aesthetic. Therefore, following the direction of the ordinance, Chugach has determined projects essential to the continued reliable operation of the electrical system by reviewing its system outage data, results from an ongoing inspection program, load growth analysis and target areas.

## III. PROJECT SELECTION

Chugach’s undergrounding projects are intended to implement one or a combination of five main objectives. These objectives are listed in order of priority; however, the priority of a project can change depending on the specific project and how it relates to maintaining the integrity of the Chugach system.

1. **Safety:** These projects will improve the safety of our system by retiring overhead facilities as they are identified where clearances or strength requirements are less than mandated by the National Electric Safety Code (NESC). Lines over residential houses or buildings, although not necessarily a code violation, pose a

potential safety concern and will attempt to be relocated underground as part of this plan.

2. **Non-reimbursable Portions of Relocation Projects:** State and Municipal road projects often include the relocation of existing utility facilities at the expense of the road project. Under this category, Chugach will fund any betterment undertaken by the utility embedded within the relocation work or add small system improvements that may lie just outside of the scope of the road project but that are ideal to construct at the same time.
3. **Load Growth Improvements:** Existing overhead facilities are sometimes insufficient to handle the additional load of a large commercial or residential development. Instead of reconductoring an existing pole line with larger conductor, these projects will install larger underground conductor and retire the overhead facilities.
4. **Reliability:** Chugach realizes the need for reliable electrical service and on an ongoing basis analyzes the system to ensure this reliability remains at an acceptable standard. These projects include loop closures to provide an alternate feed for radial underground circuits. Some areas have higher numbers of wind related or tree related outages. These areas may benefit by retiring overhead systems and replacing them with underground facilities.
5. **Target Areas:** Existing overhead facilities located in target areas as defined in “Designation of target areas” (21.07.050F) emphasize locations that would benefit significant numbers of people. Some of the areas specifically listed include central business areas, major traffic corridors, parks and recreational areas, and school and university areas.

#### IV. LIST OF PROJECTS

The following spreadsheet lists the undergrounding projects to be performed in the years from 2018 to 2022. Project summary sheets have been created and are included in Appendix A.



**2018 - 2022 Overhead to Underground Projects**  
**Chugach Electric Association, Inc.**

Project Description	Page Number	Grid	Work Order	Cost Estimate	2018	2019	2020	2021	2022
Dowling Subdivision	(A-1)	2032	E1713784	\$ 650,000	\$ 650,000	\$ -	\$ -	\$ -	\$ -
DeBarr Road - Creekside to Muldoon	(A-2)	1340	E1613659	\$ 550,000	\$ 550,000	\$ -	\$ -	\$ -	\$ -
Old Seward Hwy - O'Malley Rd to Huffman Rd	(A-3)	2632-2732	TBA	\$ 2,500,000	\$ 250,000	\$ 2,250,000	\$ -	\$ -	\$ -
Muldoon Road - Creekside to Northern Lights	(A-4)	1440, 1540, 1640	E1613660	\$ 1,750,000	\$ 250,000	\$ 1,500,000	\$ -	\$ -	\$ -
Huffman Road - Lake Otis to Old Seward - 4/0 ACSR	(A-5)	2832-2833	TBA	\$ 1,700,000	\$ 250,000	\$ 1,450,000	\$ -	\$ -	\$ -
Spring Hill Estates	(A-6)	2436	E1413518	\$ 160,000	\$ -	\$ 160,000	\$ -	\$ -	\$ -
Autumn Ridge	(A-7)	2437	E1413519	\$ 140,000	\$ -	\$ 140,000	\$ -	\$ -	\$ -
Patterson and Tudor - 4/0 ACSR	(A-8)	1740	TBA	\$ 500,000	\$ -	\$ 500,000	\$ -	\$ -	\$ -
Elmore and Tudor - 4/0 ACSR	(A-9)	1835, 1836	TBA	\$ 500,000	\$ -	\$ -	\$ 500,000	\$ -	\$ -
Old Seward Hwy - Dimond Blvd to O'Malley Rd	(A-10)	2332, 2432, 2532	TBA	\$ 2,500,000	\$ -	\$ -	\$ 2,500,000	\$ -	\$ -
LASS 122 Dowling Road to E 66th	(A-11)	2031, 2032	TBA	\$ 500,000	\$ -	\$ -	\$ 500,000	\$ -	\$ -
Alyeska Subdivision	(A-12)	4816	TBA	\$ 250,000	\$ -	\$ -	\$ 250,000	\$ -	\$ -
Arctic Blvd Raspberry to Dimond - 4/0 ACSR	(A-13)	2129, 2130, 2230	TBA	\$ 1,700,000	\$ -	\$ -	\$ -	\$ 1,700,000	\$ -
Jewel Lake Road - Strawberry to 84th	(A-14)	2125, 2225	TBA	\$ 1,700,000	\$ -	\$ -	\$ -	\$ 1,700,000	\$ -
Wisconsin Street	(A-15)	1626, 1726	TBA	\$ 2,000,000	\$ -	\$ -	\$ -	\$ -	\$ 2,000,000
Baxter Road	(A-16)	TBD	TBA	\$ 850,000	\$ -	\$ -	\$ -	\$ -	\$ 850,000
Muldoon Road @ Duben	(A-17)	1240, 1241	TBA	\$ 500,000	\$ -	\$ -	\$ -	\$ -	\$ 500,000
				<b>\$ 20,475,000</b>	<b>\$ 1,950,000</b>	<b>\$ 6,000,000</b>	<b>\$ 3,750,000</b>	<b>\$ 3,400,000</b>	<b>\$ 3,350,000</b>

**Estimated Project Expenditures for Five-Year Plan                      \$ 18,450,000**

# **Appendix A**

## **2018 - 2022 Underground Project Summary Sheets**

# 2018 UNDERGROUNDING PROJECT DOWLING SUBDIVISION

PROJECT NUMBER: E1713784

PROJECT COST: \$650,000

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## PROJECT DESCRIPTION:

This project will upgrade eight spans of #2 ACSR on Dowling Substation Feeder 412 within the Dowling Subdivision on the east side of the New Seward Highway between Dowling Road and E 64th Avenue with 750 kcmil underground cable. This project is a component of load reallocation between LaTouche, Sand Lake, Klatt, Dowling and the new substation on O'Malley Road.

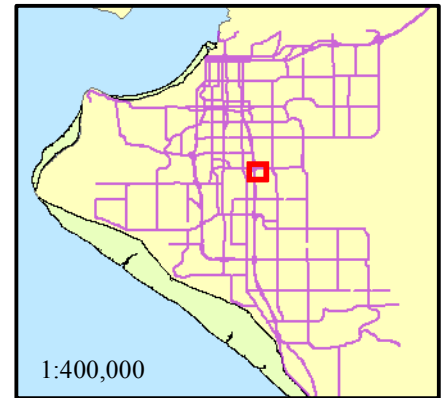
## NOTES:

This is for reference and review purposes only of proposed Undergrounding Projects and is for official Chugach Electric Association use only.

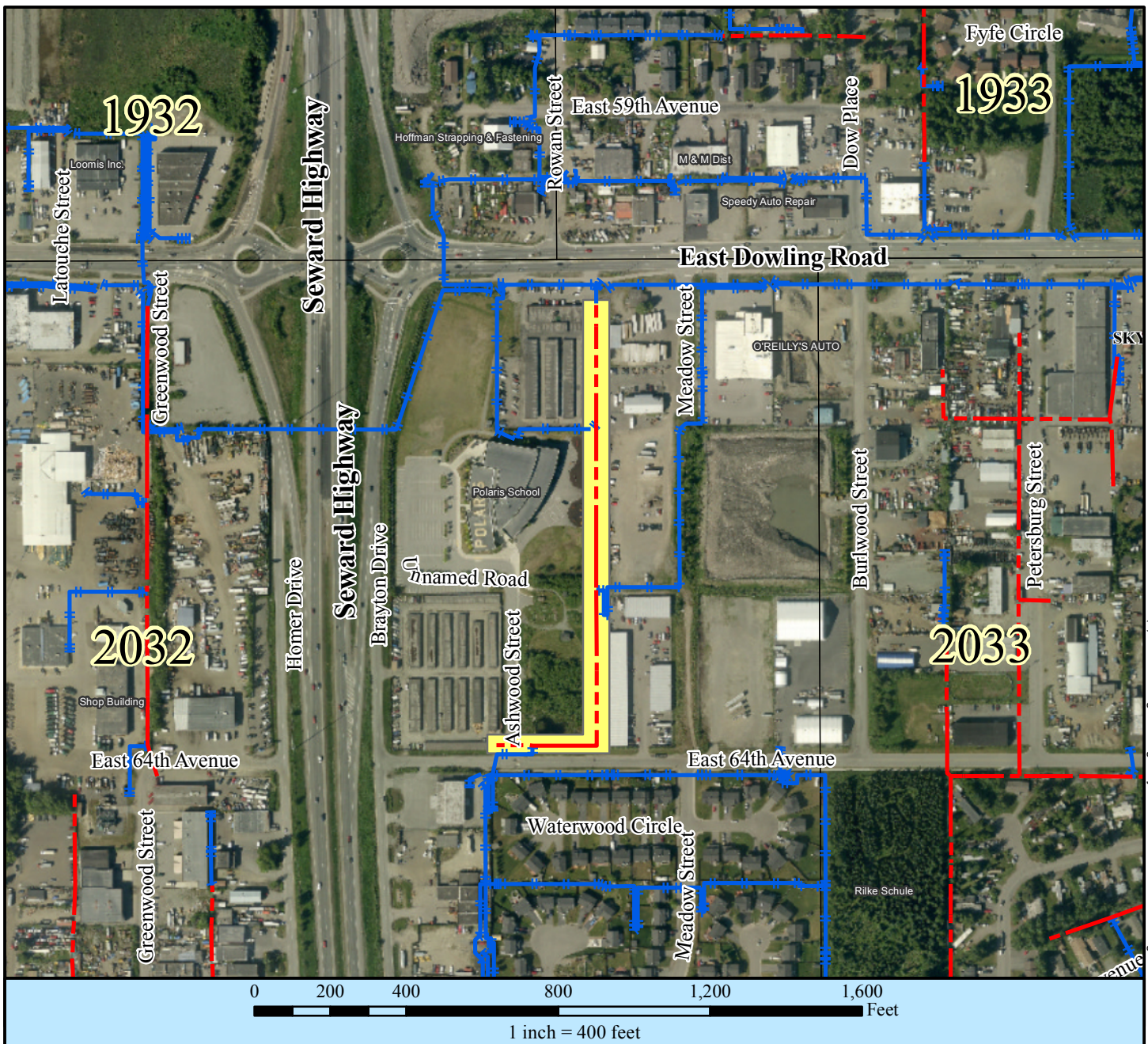
For additional information concerning this project, please contact Shelly Schmitt at 762-4628.

## LEGEND

- Primary Overhead Conductor
- Primary Underground Conductor
- Project Area



VICINITY MAP



Document Path: J:\GIS\Five (5) Year Undergrounding Projects\2018-2022\2018 Dowling Subdivision.mxd



# 2018 UNDERGROUNDING PROJECT

## DEBARR ROAD

Creekside to Muldoon

PROJECT NUMBER: E1613659

PROJECT COST: \$550,000

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### PROJECT DESCRIPTION:

This project will retire 9 distribution poles and wire along DeBarr Road south of Fred Meyer and install underground facilities. With the construction of the Creekside Town Center, Begich Middle School, and Wal-Mart loads have increased and will continue to increase initiating the need for system improvement projects in this area.

DeBarr feeder 172 is 4/0 ACSR overhead and will be upgraded to standard 750 MCM underground construction to accommodate the additional loads.

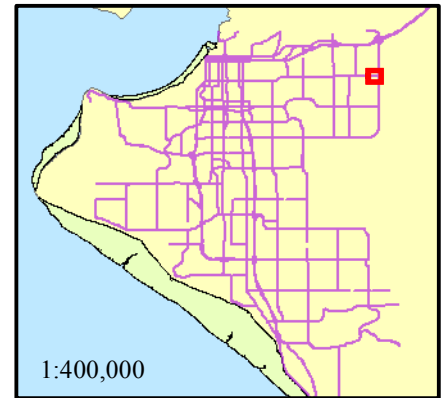
### NOTES:

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For additional information concerning this project, please contact Shelly Schmitt at 762-4628.

### LEGEND

- Primary Overhead Conductor
- Primary Underground Conductor
- Project Area



VICINITY MAP



Document Path: J:\GIS\Five (5) Year Undergrounding Projects\2018-2022\2018 DeBarr Road - Creekside to Muldoon.mxd



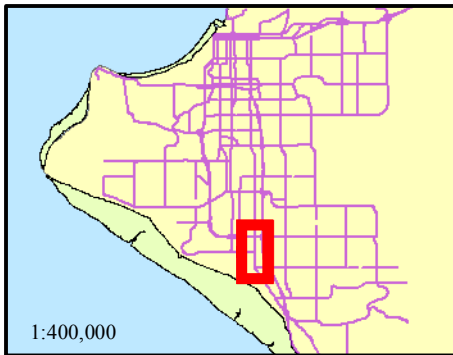
# 2018 UNDERGROUNDING PROJECT OLD SEWARD HWY O'MALLEY TO HUFFMAN

OH to UG Conversion KLSS 412 and KLSS 812

PROJECT NUMBER: TBA

PROJECT COST: \$2,500,000

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VICINITY MAP

## PROJECT DESCRIPTION:

This safety improvement and capacity project will replace 0.9 miles of 336 ACSR three-phase overhead underbuild with a 750 kcmil underground circuit in duct. This is the second phase of the project to remove the distribution underbuild from the 34.5kV overhead to increase the structure strength capacity required to maintain compliance with the NESC. When these projects are completed the available ampacity of this circuit (RRSS 1132) can be uprated based on the additional sag clearance. This project is within the MOA Target Area.

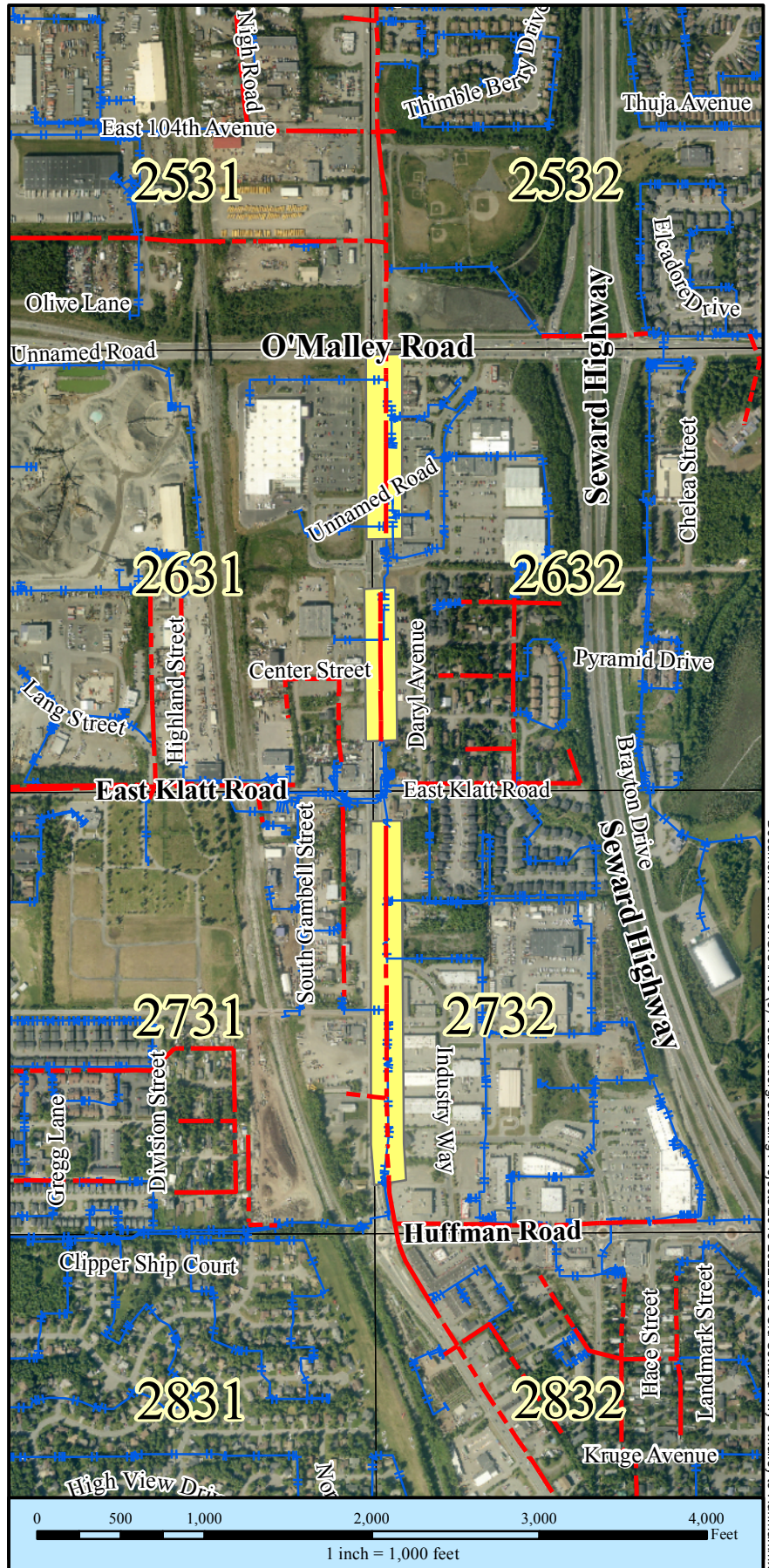
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For additional information concerning this project, please contact Shelly Schmitt at 762-4628.

## LEGEND

- Primary Overhead Conductor
- Primary Underground Conductor
- Project Area



Document Path: J:\GIS\Five (5) Year Undergrounding Projects\2018-2022\2018 Old Seward Hwy O'Malley to Huffman.mxd



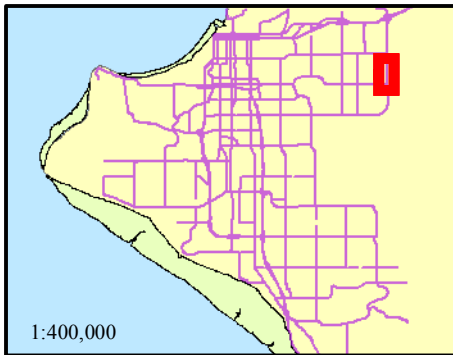
# 2018 UNDERGROUNDING PROJECT MULDOON ROAD

Creekside to Northern Lights

PROJECT NUMBER: E1613660

PROJECT COST: \$1,750,000

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VICINITY MAP

## PROJECT DESCRIPTION:

This project is the last phase of the replacement of 4/0 ACSR three-phase with 750 kcmil cable in duct between Baxter and DeBarr Substations. The overhead line is non-compliant with regard to the NESC strength requirements and in a known high wind corridor. The capacity increase is required to feed DeBarr Feeder 142 and 152 from the Baxter Substation, particularly in the event of the loss of the DeBarr Substation (transformers, bus or 35 kV feed). The circuit is located along a high visibility arterial and in an area of local load growth.

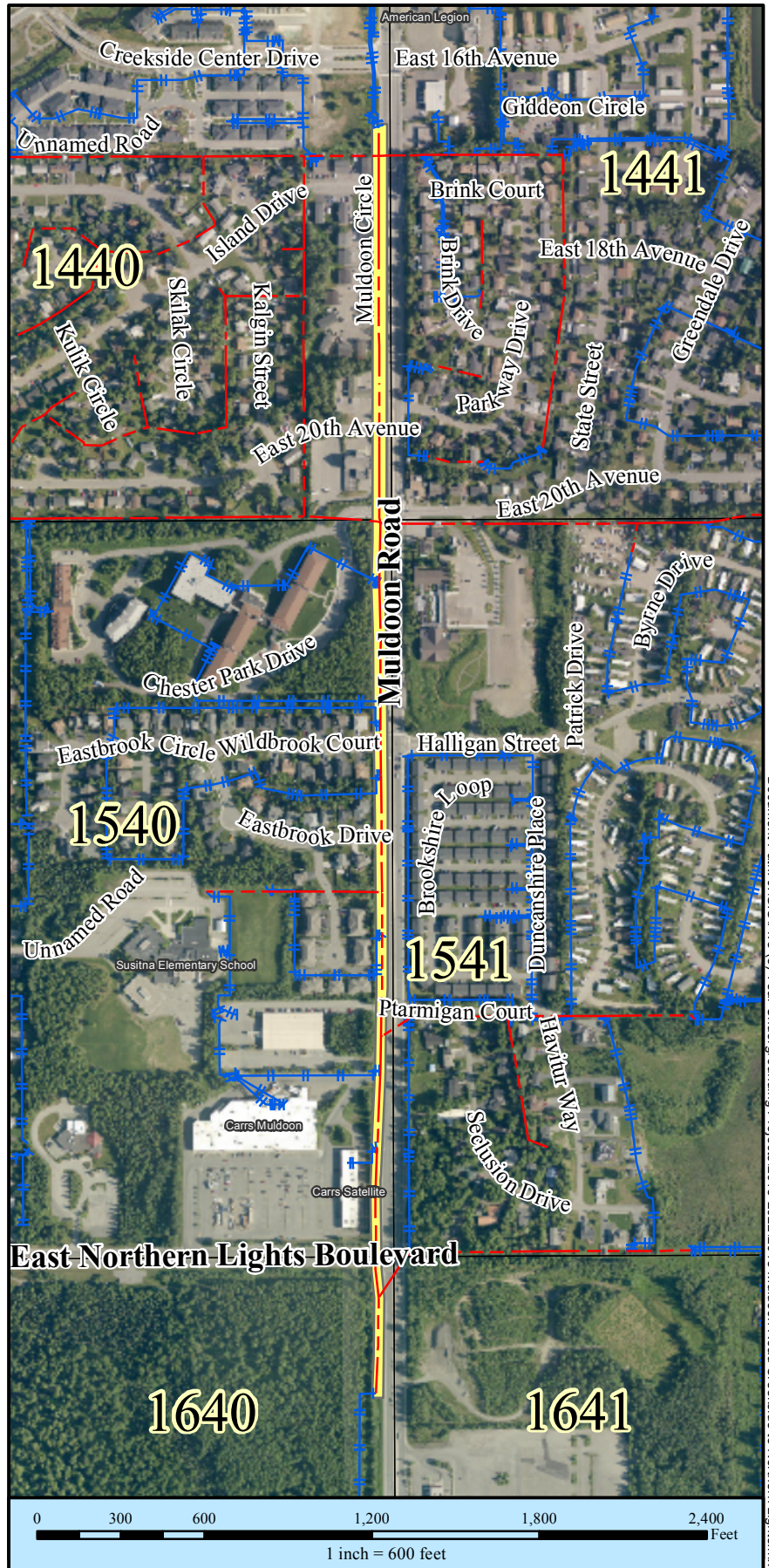
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## LEGEND

- Primary Overhead Conductor
- #— Primary Underground Conductor
- Project Area





# 2018 UNDERGROUNDING PROJECT HUFFMAN ROAD

Huffman Road - Lake Otis to Old Seward (HN 312 TO KL 812)

PROJECT NUMBER: TBA

PROJECT COST: \$1,700,000

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## PROJECT DESCRIPTION:

This project will replace 0.8 miles of 4/0 ACSR 3-phase overhead with 750 kcmil underground on the Hane 312 to Klatt 812 tie (Grids 2732 and 2834). This upgrade will improve the system capacity for existing and new load growth in addition to improving reliability. The summer peak loading is near the capacity limit of the 4/0 ACSR circuit under n-1 contingency conditions.

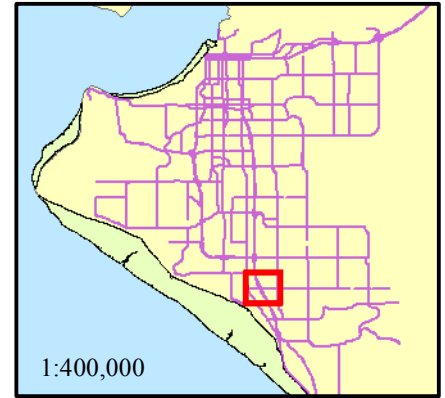
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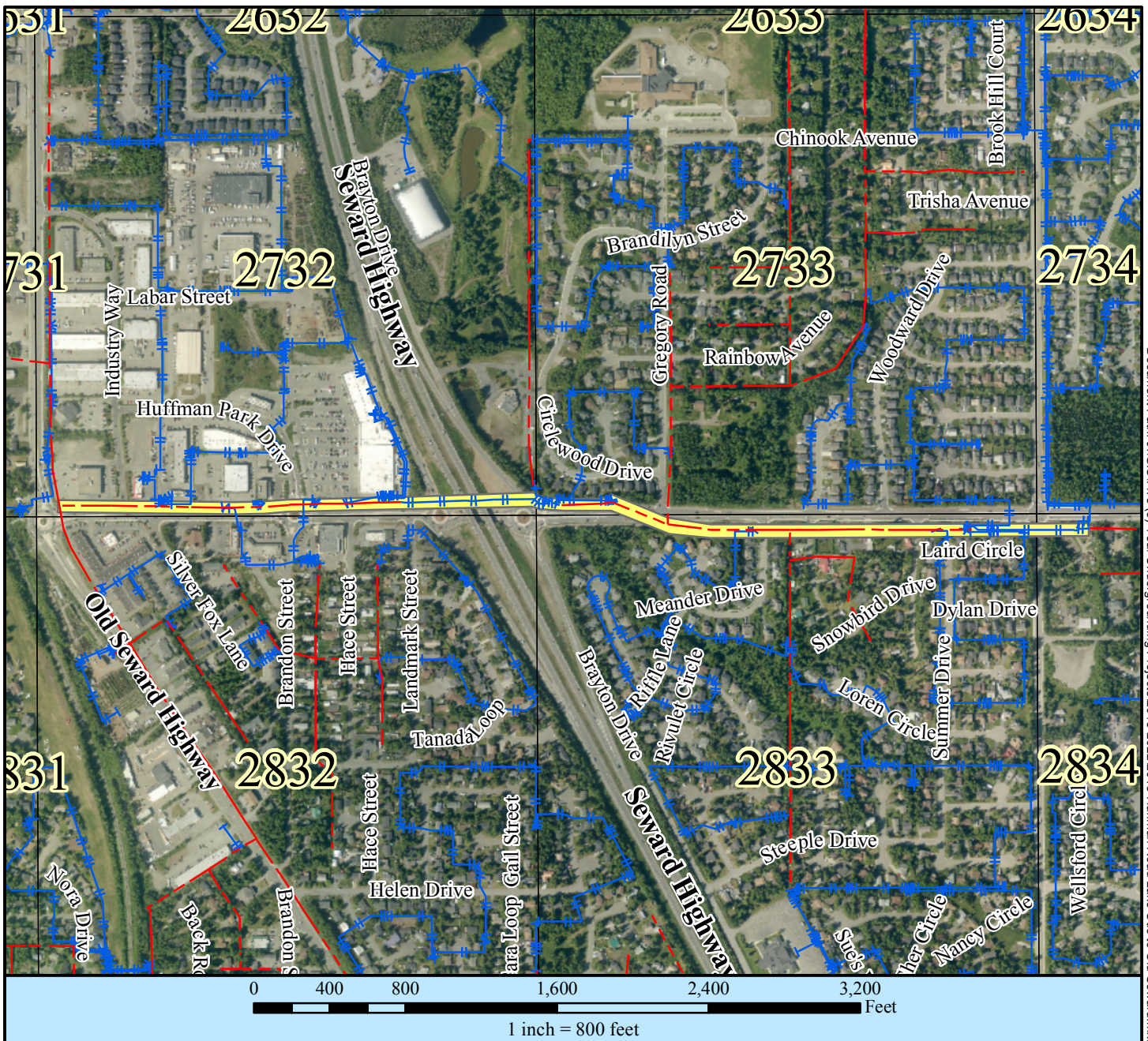
For additional information concerning this project, please contact Shelly Schmitt at 762-4628.

## LEGEND

- Primary Overhead Conductor
- Primary Underground Conductor
- Project Area



VICINITY MAP



Document Path: J:\GIS\Five (5) Year Undergrounding Projects\2018-2022\2018 Huffman Road Lake Otis to Old Seward.mxd



# 2019 UNDERGROUNDING PROJECT

## SPRING HILL ESTATES

OH to UG Conversion

PROJECT NUMBER: E1413518

PROJECT COST: \$160,000

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### PROJECT DESCRIPTION:

The overhead distribution along the west side of Spring Hill Drive will be converted to underground. This line has exposure to large trees and was impacted heavily during the 2012 windstorm. The circuit feeds AK Child & Family's Jesse Lee Campus (formerly Alaska Children's Services) as well as an underground residential circuit. The new underground circuit will be fed directly from the Hillside feeder. Feeders are high priority circuits to be re-energized during major windstorm outages; customers with underground feeder ties will see shorter outage durations.

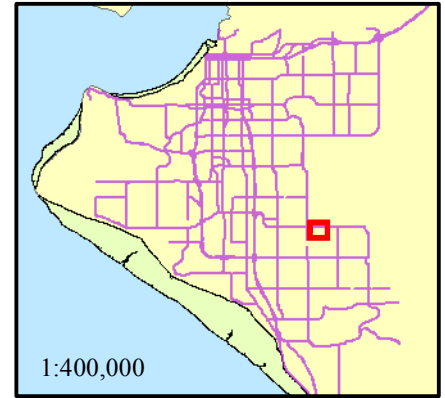
### NOTES:

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For additional information concerning this project, please contact Shelly Schmitt at 762-4628.

### LEGEND

- Primary Overhead Conductor
- Primary Underground Conductor
- Project Area



VICINITY MAP



Document Path: J:\GIS\Five (5) Year Undergrounding Projects\2018-2022\2019 Spring Hill Estates.mxd



# 2019 UNDERGROUNDING PROJECT

## AUTUMN RIDGE

OH to UG Conversion

PROJECT NUMBER: E1413519

PROJECT COST: \$140,000

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### PROJECT DESCRIPTION:

The overhead distribution line along the east side of Strutz Avenue will be converted to underground. This line has exposure to large trees and feeds a residential underground circuit with many homes; it was impacted heavily during the 2012 windstorm. The project will provide an underground feed directly from the main feeder. Feeder circuits are high priority to be re-energized during major windstorm outages; customers with no overhead obstructions between them and the feeder circuit will see shorter outage durations.

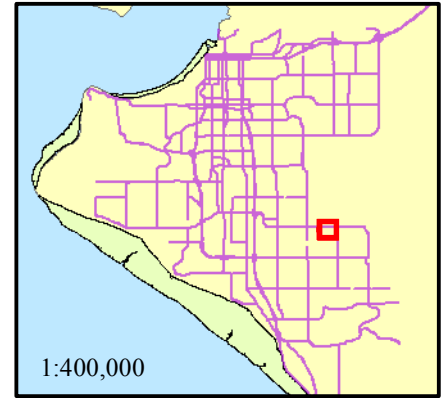
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For additional information concerning this project, please contact Shelly Schmitt at 762-4628.

### LEGEND

- Primary Overhead Conductor
- Primary Underground Conductor
- Project Area



VICINITY MAP



Document Path: J:\GIS\Five (5) Year Undergrounding Projects\2018-2022\2019 Autumn Ridge.mxd

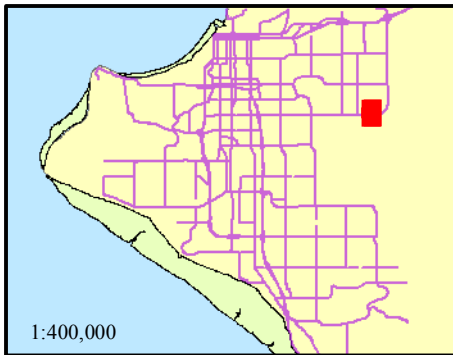


# 2019 UNDERGROUNDING PROJECT PATTERSON & TUDOR

PROJECT NUMBER: TBA

PROJECT COST: \$500,000

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VICINITY MAP



## PROJECT DESCRIPTION:




The project will underground approx. 1/4 mile of 4/0 ACSR 3-phase overhead, and replace the 750 kcmil direct-bury crossing under Tudor Road on feeder BF 512. This project is required as the last phase of the BF 512 feeder improvement for capacity out of the substation, and for contingency support of DL 512.

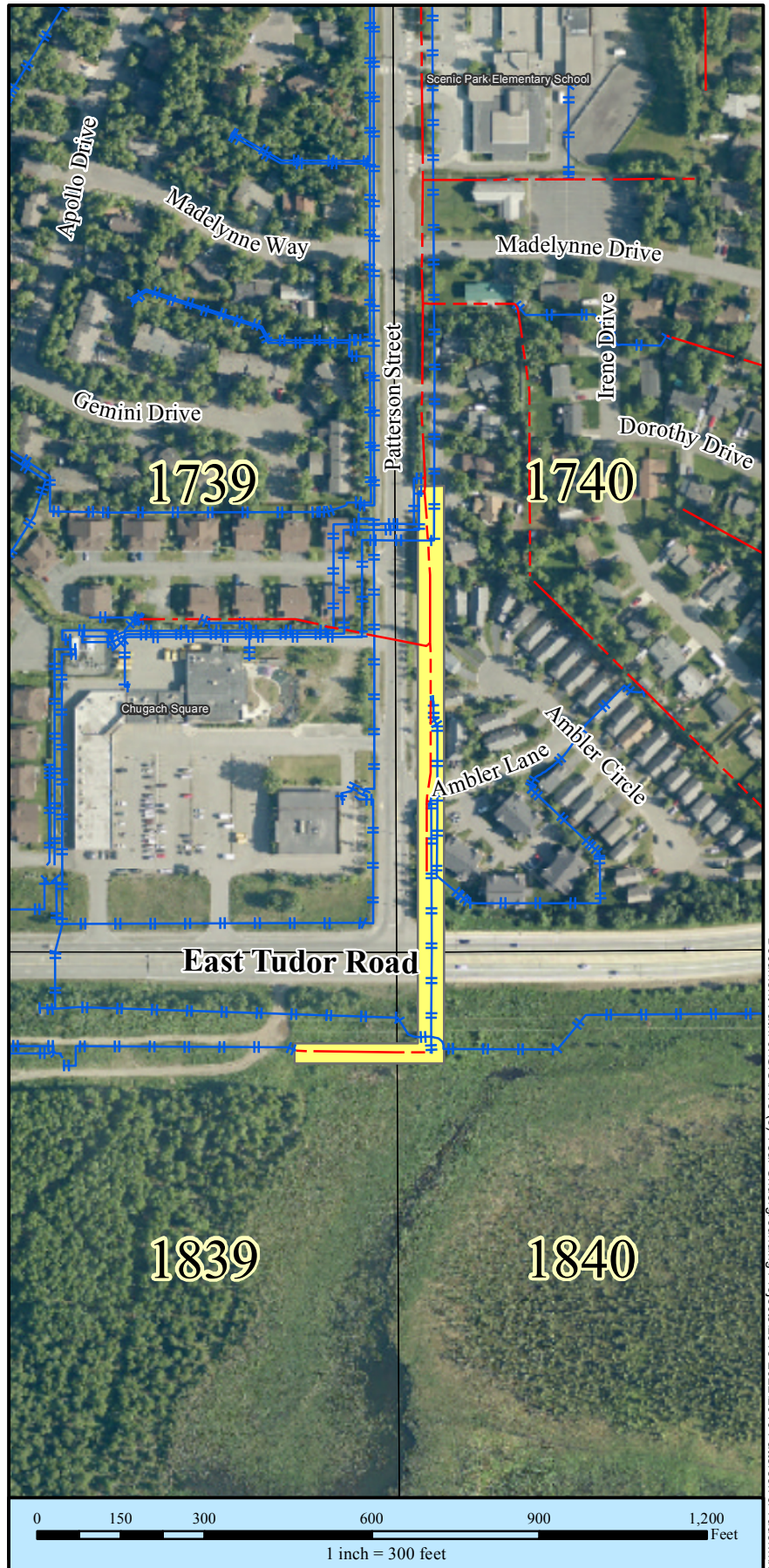
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For additional information concerning this project, please contact Shelly Schmitt at 762-4628.

## LEGEND

-  Primary Overhead Conductor
-  Primary Underground Conductor
-  Project Area



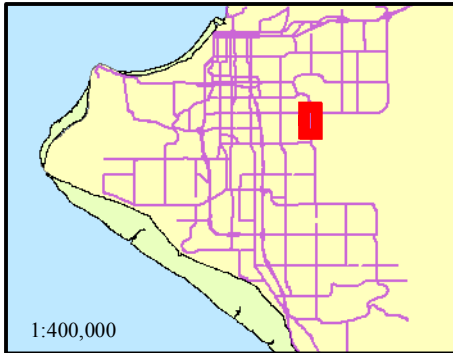


# 2020 UNDERGROUNDING PROJECT ELMORE & TUDOR

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PROJECT NUMBER: TBA

PROJECT COST: \$500,000



VICINITY MAP

## PROJECT DESCRIPTION:

This project will underground approx. 0.75 miles of 4/0 ACSR 3-phase overhead to support feeder load growth on DL 512 and contingency support of BF 512.

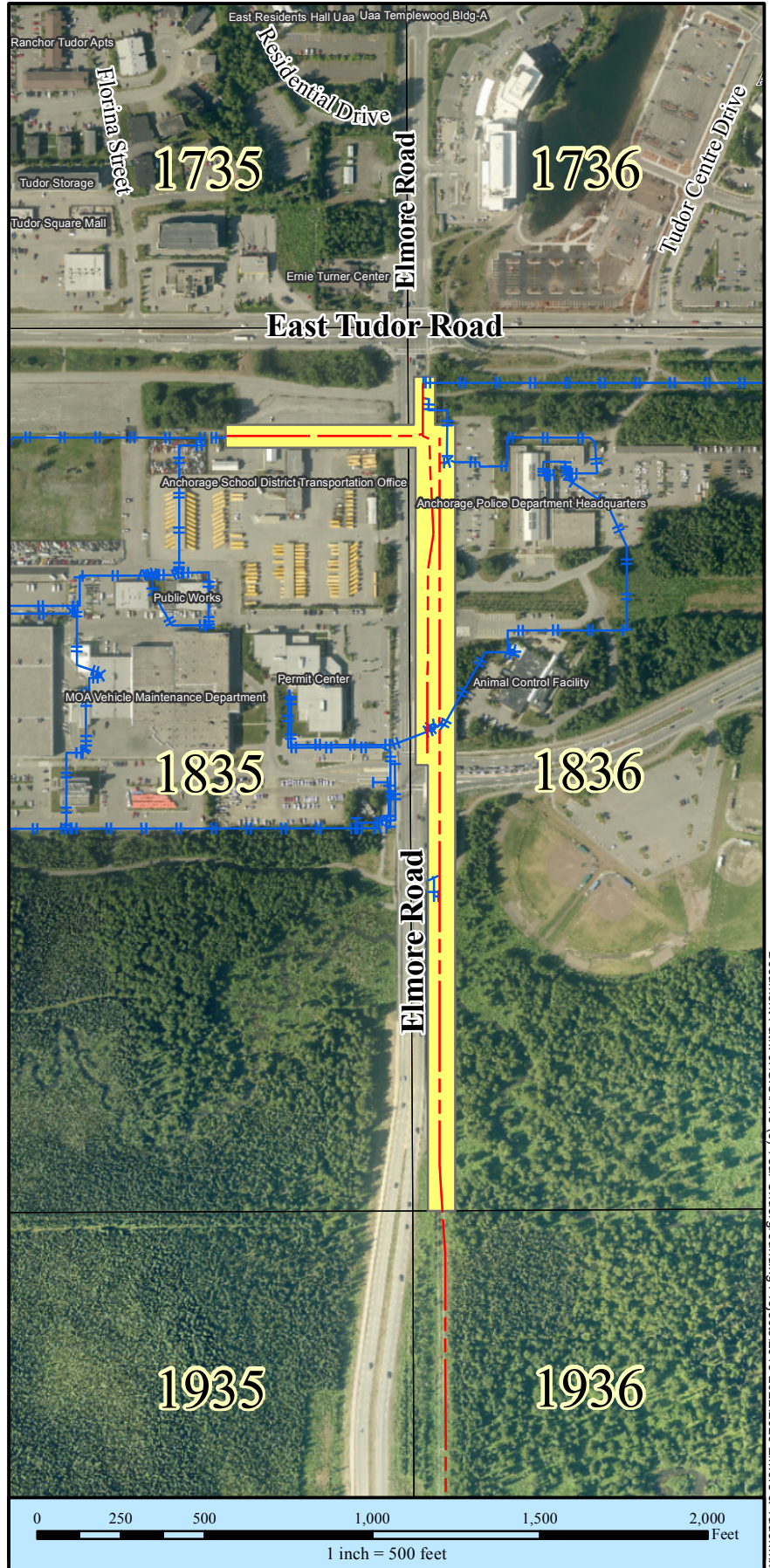
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For additional information concerning this project, please contact Shelly Schmitt at 762-4628.

## LEGEND

- Primary Overhead Conductor
- #— Primary Underground Conductor
- Project Area



Document Path: J:\GIS\Five (5) Year Undergrounding Projects\2018-2022\2020 Elmore & Tudor.mxd



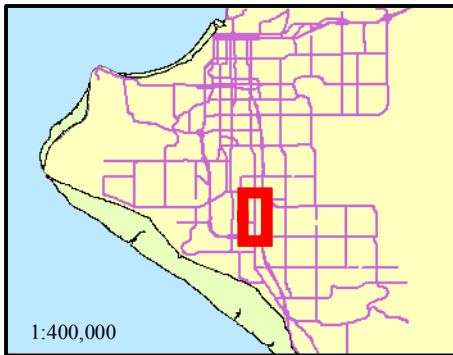
# 2020 UNDERGROUNDING PROJECT OLD SEWARD HWY DIMOND TO O'MALLEY

OH to UG Conversion SLSS 312

PROJECT NUMBER: TBA

PROJECT COST: \$2,500,000

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VICINITY MAP

## PROJECT DESCRIPTION:

This safety improvement project will replace 1.3 miles of the 336 ACSR three-phase overhead underbuild circuit with a 750 kcmil underground circuit in duct. This is the third phase of the project to remove the distribution underbuild from the 34.5kV overhead to increase the structure strength capacity required to maintain compliance with the NESC. When these projects are completed the available ampacity of this circuit (INSS 732) can be uprated based on the additional sag clearance. This project is within the MOA Target Area.

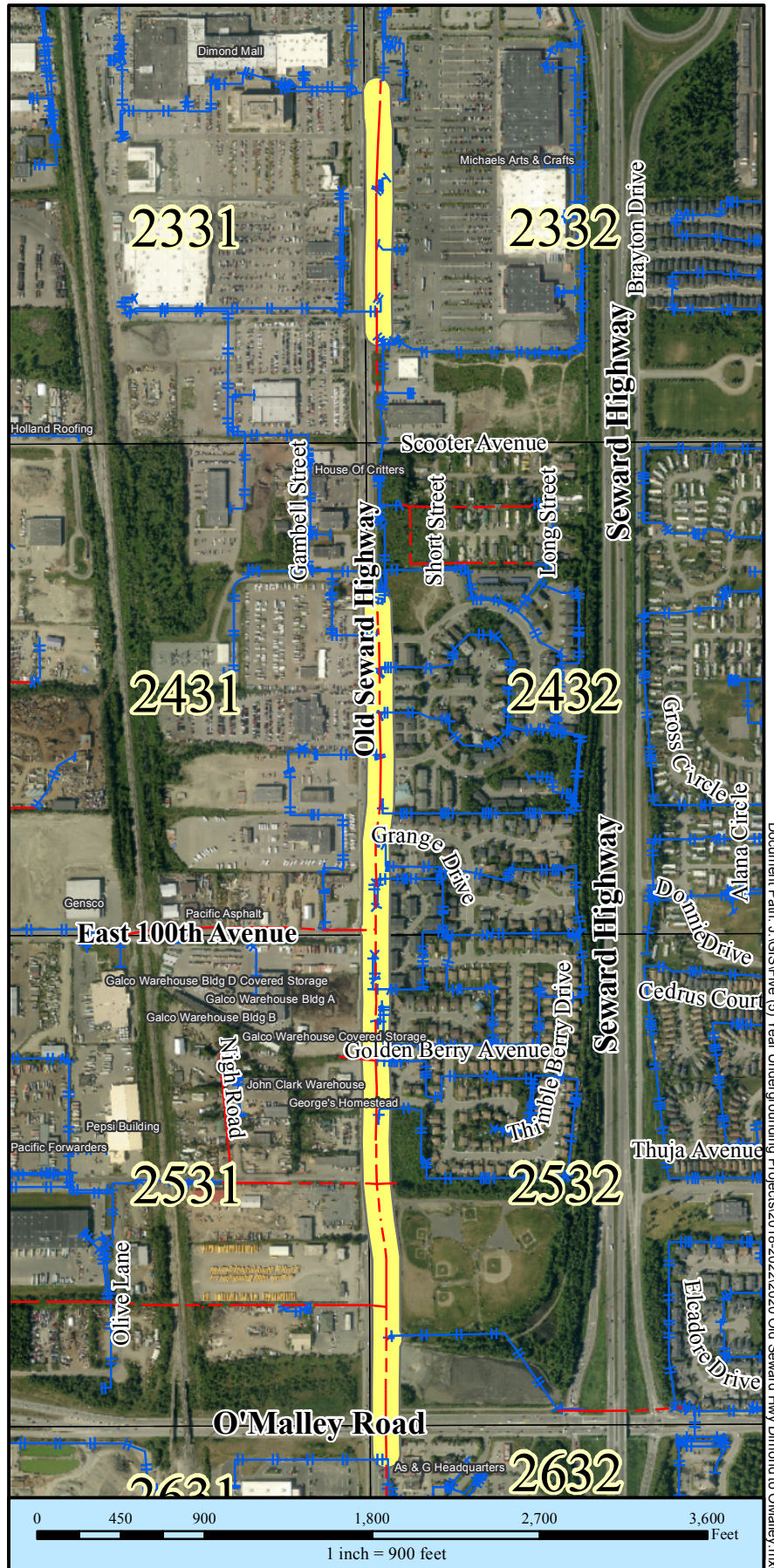
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## LEGEND

- Primary Overhead Conductor
- Primary Underground Conductor
- Project Area



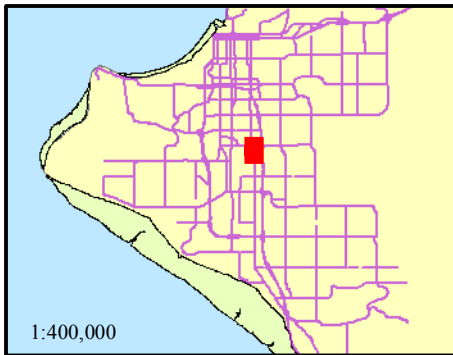


# 2020 UNDERGROUNDING PROJECT LASS 112 DOWLING TO 66TH

PROJECT NUMBER: TBA

PROJECT COST: \$500,000

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VICINITY MAP

## PROJECT DESCRIPTION:

This project will underground approx. 0.35 miles of 4/0 ACSR 3-phase overhead to support feeder load growth on LA 122 and contingency support of SL 712.

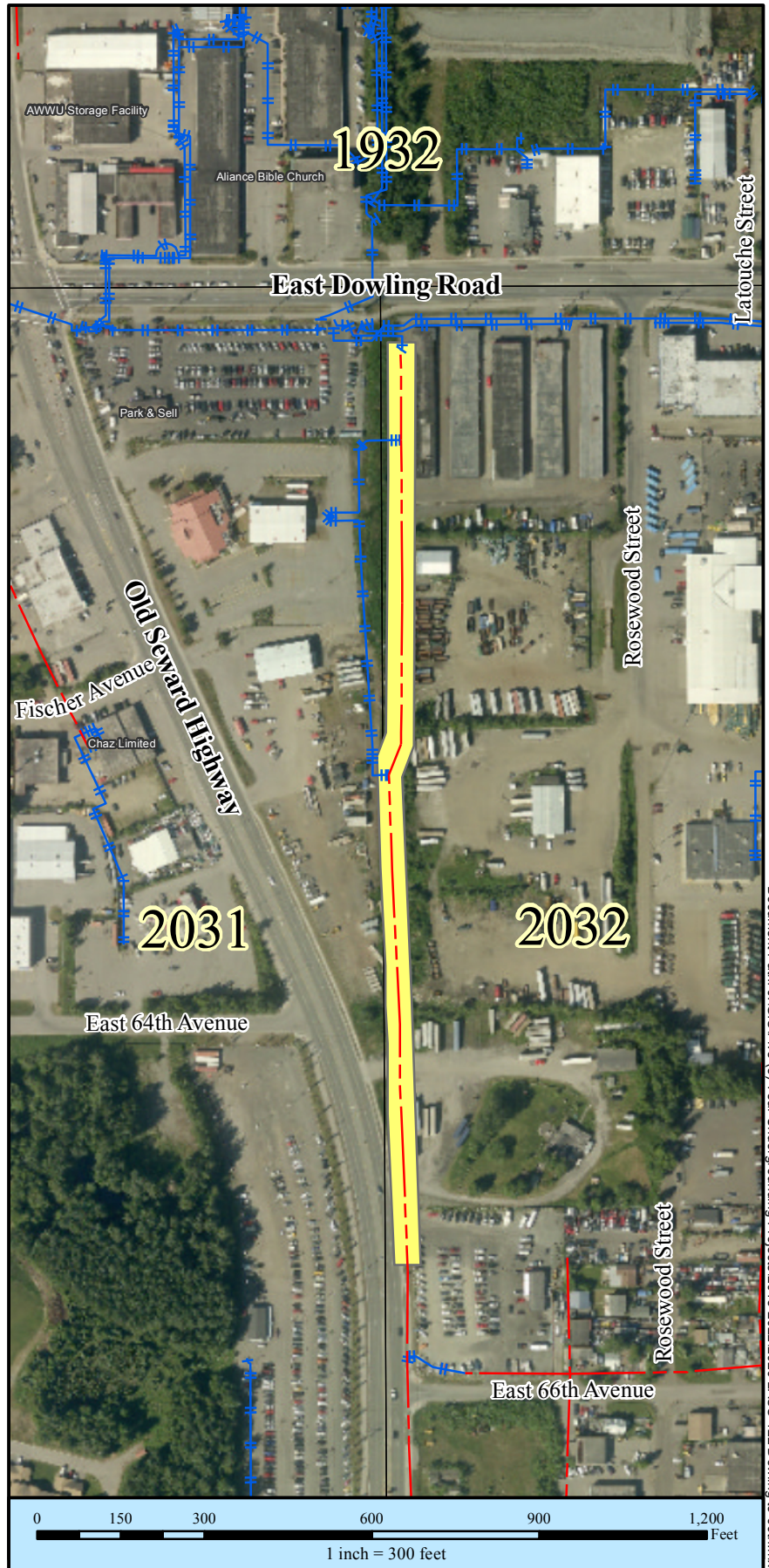
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## LEGEND

- Primary Overhead Conductor
- #— Primary Underground Conductor
- Project Area





# 2020 UNDERGROUNDING PROJECT

## ALYESKA SUBDIVISION

Alyeska at Arlberg

PROJECT NUMBER: TBA

PROJECT COST: \$250,000

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### PROJECT DESCRIPTION:

This project will retire older overhead lines in the Alyeska Subdivision in Girdwood. This project will provide increased system capacity and reliability for residents in the area.

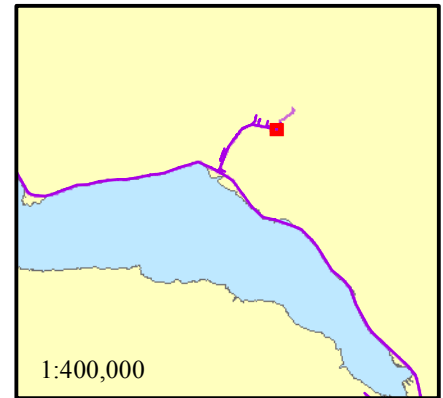
### NOTES:

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For additional information concerning this project, please contact Shelly Schmitt at 762-4628.

### LEGEND

- Primary Overhead Conductor
- Primary Underground Conductor
- Project Area



VICINITY MAP



Document Path: J:\GIS\Five (5) Year Undergrounding Projects\2018-2022\2020 Alyeska Subdivision.mxd

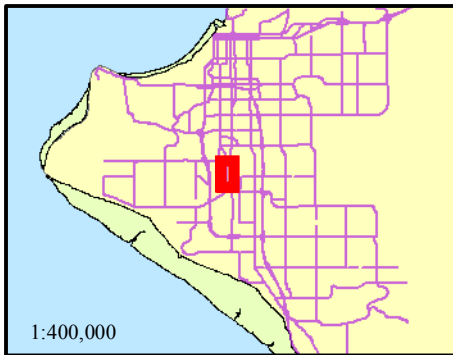


# 2021 UNDERGROUNDING PROJECT ARCTIC BLVD - RASPBERRY TO DIMOND

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PROJECT NUMBER: TBA

PROJECT COST: \$1,700,000



VICINITY MAP

## PROJECT DESCRIPTION:

This project will underground approx. 0.75 miles of 4/0 ACSR 3-phase overhead to support feeder load growth on AT 412 and contingency support of SL 812.

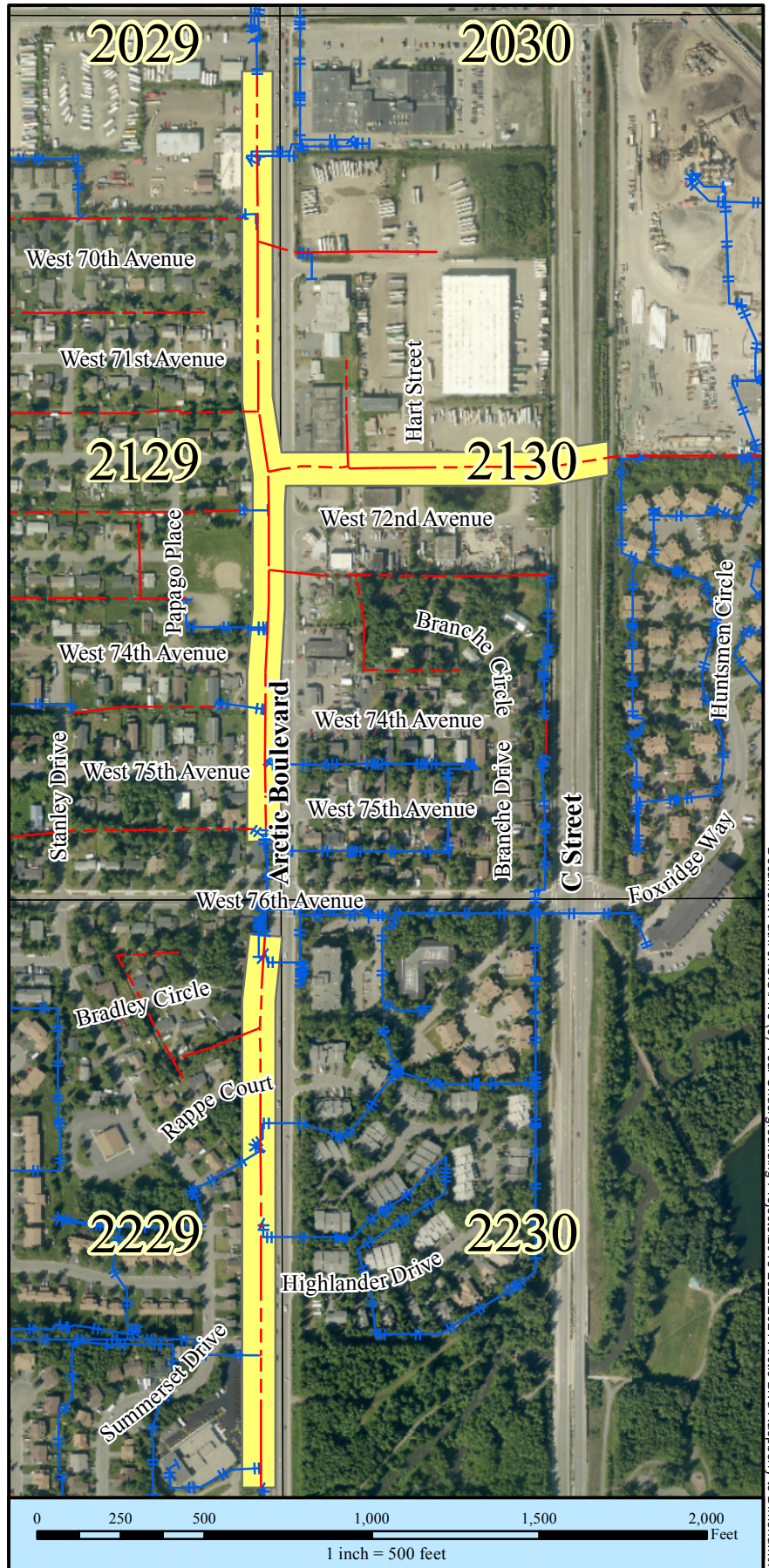
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## LEGEND

- Primary Overhead Conductor
- +— Primary Underground Conductor
- Project Area



Document Path: J:\GIS\Five (5) Year Undergrounding Projects\2018-2022\2021 Arctic Blvd Raspberry to Dimond.mxd



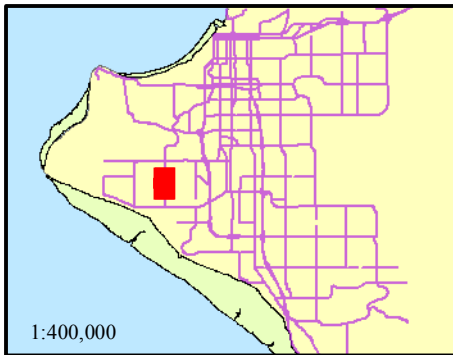
# 2021 UNDERGROUNDING PROJECT JEWEL LAKE ROAD

Strawberry to 84th Avenue

PROJECT NUMBER: TBA

PROJECT COST: \$1,700,000

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VICINITY MAP

## PROJECT DESCRIPTION:

Under this project, the existing 1/0 ACSR three-phase line between Riser Pole 9866 (Grid 2125) and Riser Pole 9708 (Grid 225) will be replaced with Chugach's standard 750 kcmil underground cable specified for main feeder circuits. Approximately 2200 feet of overhead Raspberry 212 main feeder circuit and 2800 feet of Jewel Lake 132 main feeder circuit along Jewel Lake Road, south of the Raspberry Road intersection, would be retired within the scope of this project.

The first phase of this project from Raspberry to Strawberry was completed in 2012. The second phase is scheduled for 2020.

Replacement of this 1/0 ACSR circuit with 750 kcmil cable would increase the feeder transfer capacity from 6 MVA to 13 MVA. This area has also been documented as an area with tree trimming difficulties. By relocating the facilities underground, the reliability associated with tree related outages should improve.

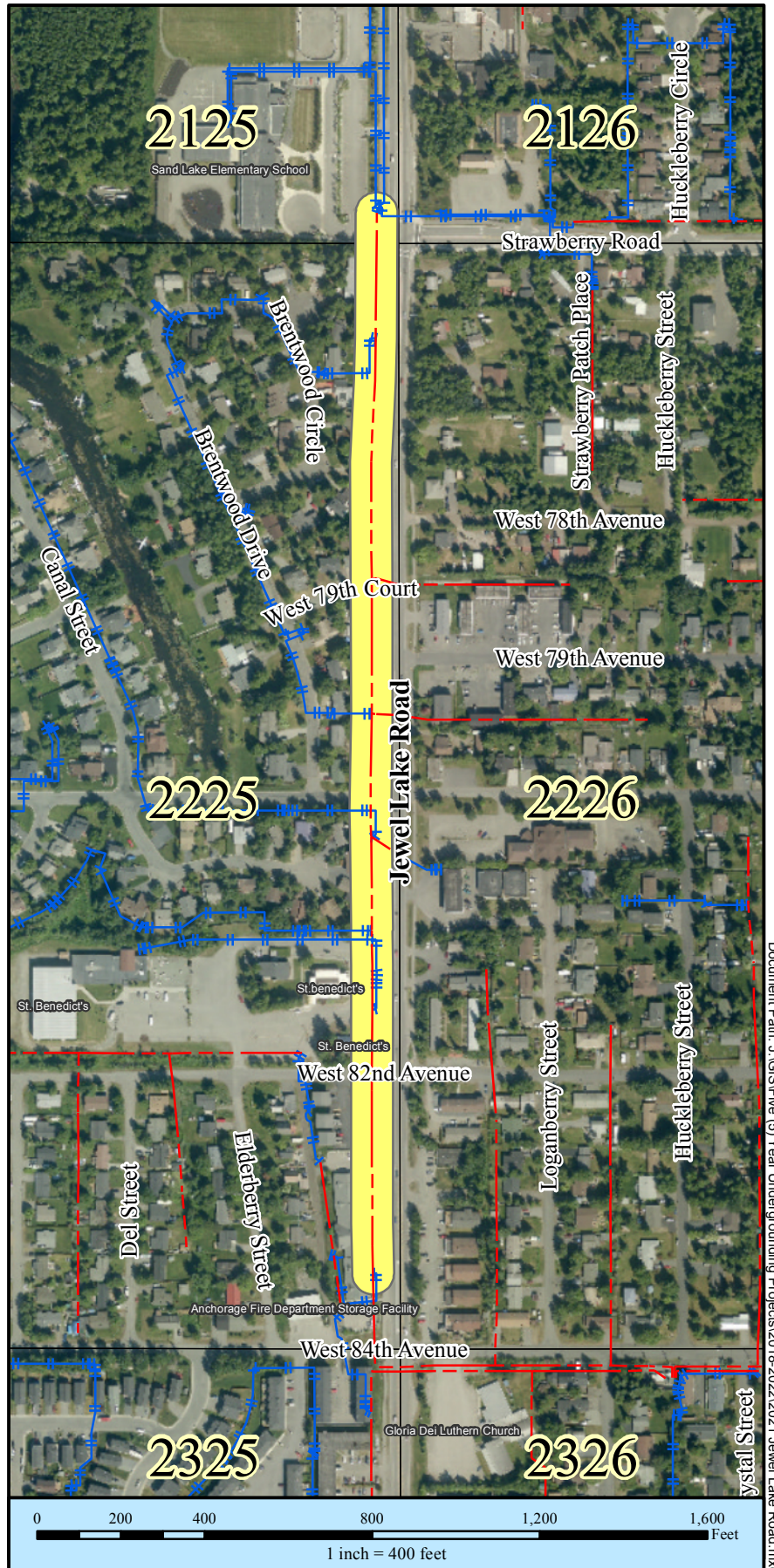
## NOTES:

This is for reference and review purposes only of proposed Undergrounding Projects and is for official Chugach Electric Association use only.

For additional information concerning this project, please contact Shelly Schmitt at 762-4628.

## LEGEND

- Primary Overhead Conductor
- Primary Underground Conductor
- Project Area



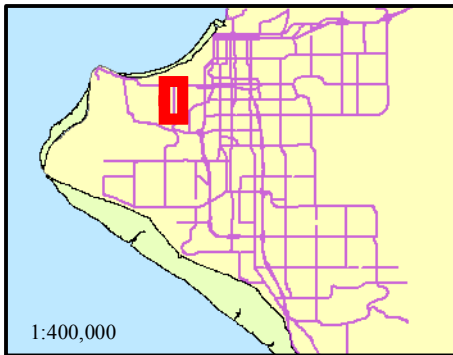


# 2022 UNDERGROUNDING PROJECT WISCONSIN STREET Northern Lights to 44th Avenue

PROJECT NUMBER: TBA

PROJECT COST: \$2,000,000

**CHUGACH**  
POWERING ALASKA'S FUTURE



VICINITY MAP

## PROJECT DESCRIPTION:

This project will retire 36 spans of overhead double-circuit primary conductor along the west side of Wisconsin Drive from Northern Lights Boulevard to W 44th Avenue. The northernmost 26 spans will be retired in addition to the poles, guy spans, and guy wires. The southernmost 10 spans are underbuilt on 138 kV structures and will only have the conductor and any additional distribution facilities removed. These overhead facilities are located on Grids 1626 and 1726 and have a total distance of 5200 feet.

Turnagain Substation is located on the east side of Wisconsin Drive on Grid 1627 and has four distribution feeders: Turnagain 112, 122, 132, and 142. All four feeders leave the substation as underground circuits and rise up to the pole structures on Wisconsin. Turnagain 112 and 122 go south as a double-circuit, and Turnagain 132 and 142 go north as a double-circuit. Double-circuit horizontal construction using one crossarm, as found on Wisconsin Street, creates working clearance problems and requires extra equipment and crew time whenever maintenance is needed.

The majority of the poles supporting the 4/0 ACSR double-circuit overhead line do not meet the NESC grade C minimum strength requirements. Also, under an n-1 contingency, the Turnagain 132 circuit is undersized and not capable of picking up Woodland Park 242 under summer or winter peak loads without complex switching of the load. The total load provided by the Turnagain 122 tie with Spenard 212 is also approaching winter and summer capacity limits. Replacing the circuits with 750 kcmil would resolve both the NESC strength problem and contingency loading capacities.

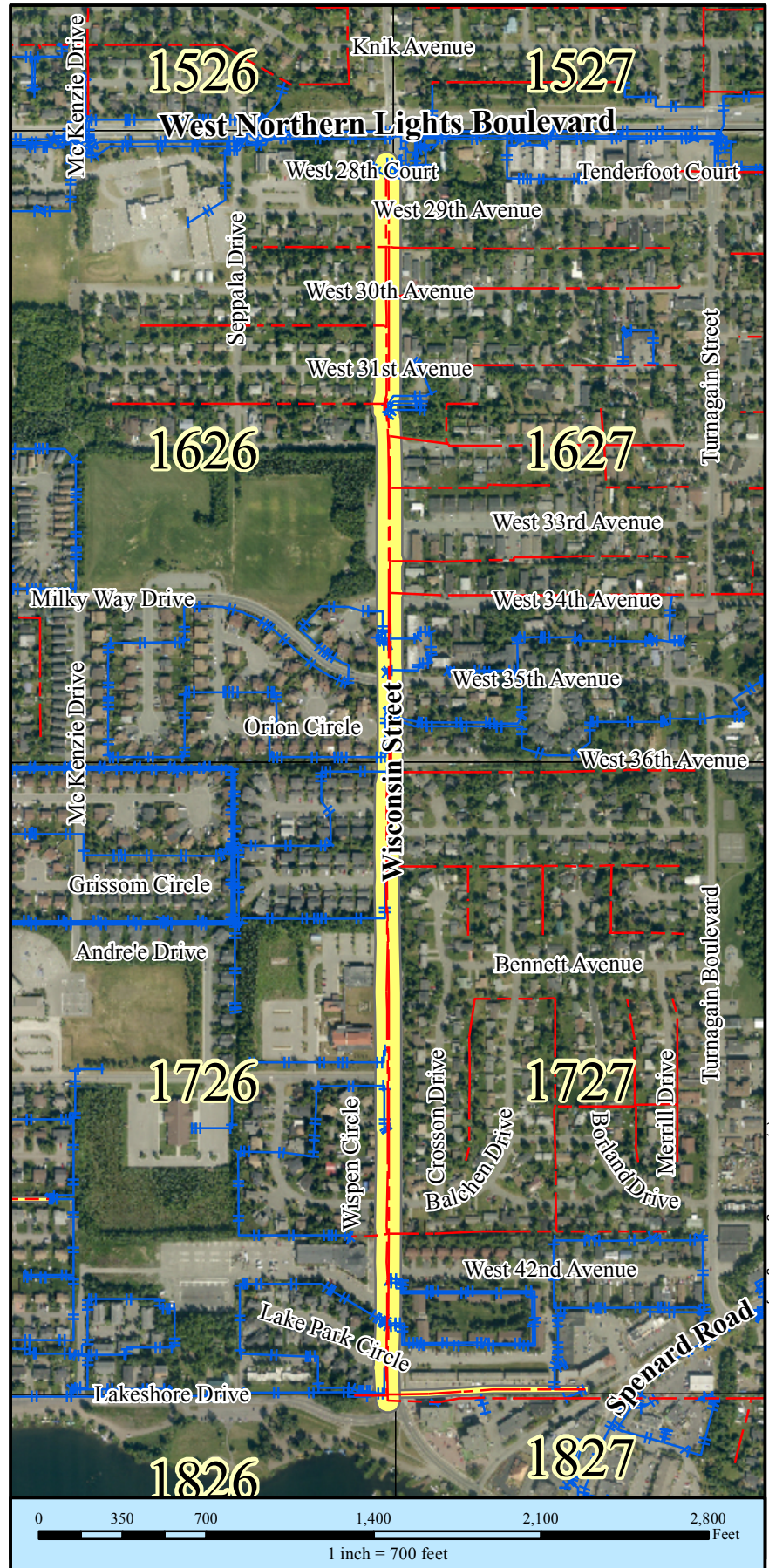
## NOTES:

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For additional information concerning this project, please contact Shelly Schmitt at 762-4628.

## LEGEND

- Primary Overhead Conductor
- #— Primary Underground Conductor
- Project Area





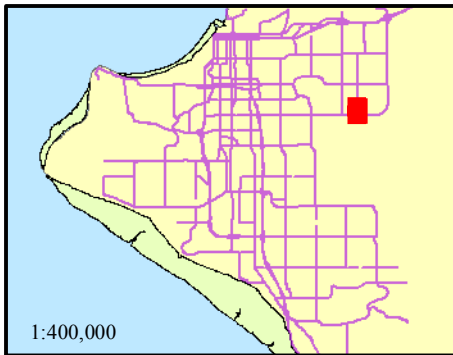
# 2022 UNDERGROUNDING PROJECT BAXTER ROAD

Baxter at Tudor

PROJECT NUMBER: E1613634

PROJECT COST: \$850,000

**CHUGACH**  
POWERING ALASKA'S FUTURE



VICINITY MAP



## PROJECT DESCRIPTION:

The source for this feeder on the south side of Tudor failed resulting in a pole fire. Switching was able to restore power to all but 200 customers for the duration of the repair. Undergrounding a section from pole 0203 in Grid 1739 to pole 0263 in Grid 1739 will tie together two 3-phase radials (BFSS 412 & BXSS 282) to provide increased reliability for the area.

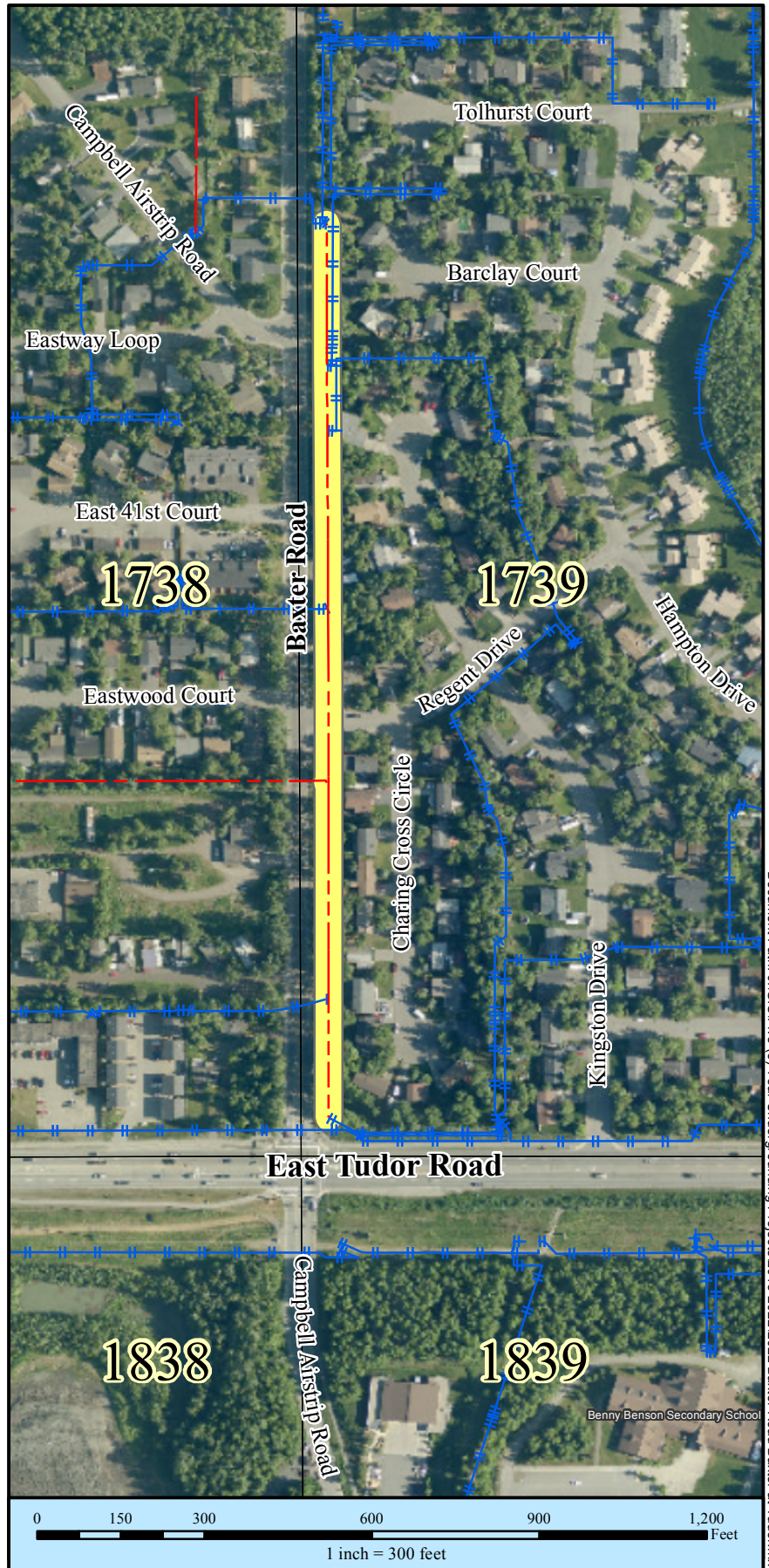
## NOTES:

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For additional information concerning this project, please contact Shelly Schmitt at 762-4628.

## LEGEND

- Primary Overhead Conductor
- +— Primary Underground Conductor
- Project Area



Document Path: J:\GIS\Five (5) Year Undergrounding Projects\2018-2022\2022 Baxter Road Baxter at Tudor.mxd



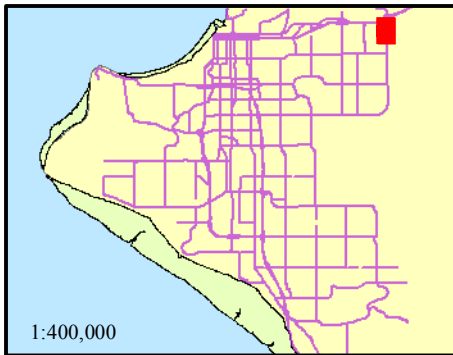
# 2022 UNDERGROUNDING PROJECT MULDOON ROAD

Muldoon at Duben

PROJECT NUMBER: TBA

PROJECT COST: \$500,000

**CHUGACH**  
POWERING ALASKA'S FUTURE



VICINITY MAP

## PROJECT DESCRIPTION:

This project will resolve a pole conflict at the intersection of Muldoon and Duben. This project will replace overhead 4/0 ACSR with 750 kcmil from the tie to alternate feeder DBSS 142 north of the intersection to 3 spans south of the intersection.

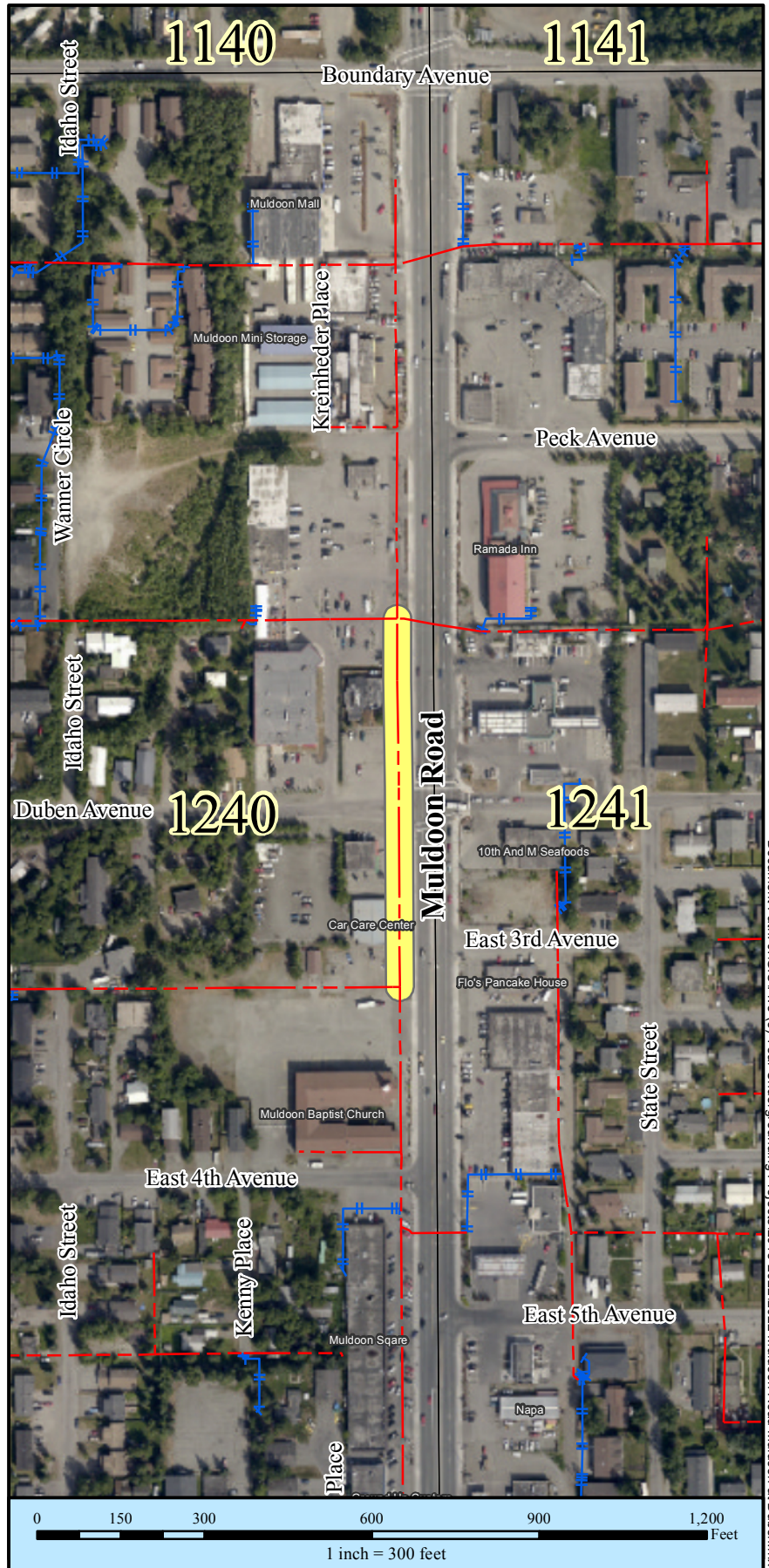
## NOTES:

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For additional information concerning this project, please contact Shelly Schmitt at 762-4628.

## LEGEND

- Primary Overhead Conductor
- Primary Underground Conductor
- Project Area



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