UAA College of Engineering
University of Alaska Anchorage

UAA Geomatics Department Overview & Project Examples

Caixia Wang, Ph.D.
cwang12@Alaska.edu

Assistant Professor
Department of Geomatics
College of Engineering

The Department

- Established in 1971, initiated by the industry
- Full time faculty: 4
- Adjuncts: 2-4 per semester
- The program offers courses in areas of:
  - Land Surveying
  - Boundary Law
  - Photogrammetry (+Lidar)
  - Geographic Information System (GIS)
  - Remote Sensing
  - Image Analysis
- BS program is ABET-accredited
- Similar departments in USA (with 4yr programs): **12**
- Provides the ***only ABET approved program in Alaska to meet State Board registration requirements***

Department highlights

High quality education

- Under the ABET accreditation
- Application and ***Technology*** oriented
- Faculty driving innovation in the tools that will be incorporated in tomorrow's solutions

Experience and flexibility

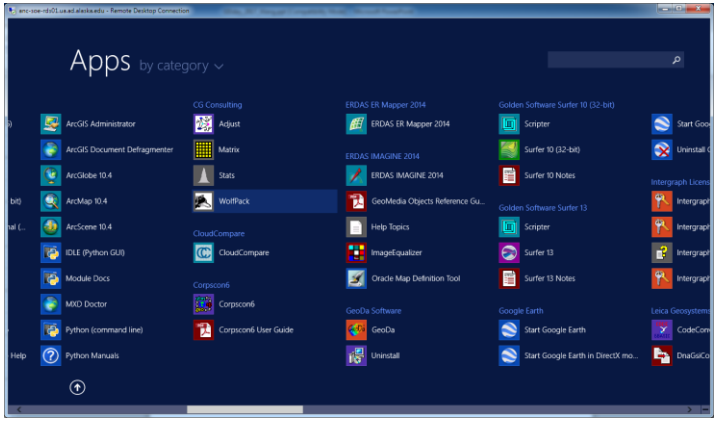
- BS in Geomatics (ABET-accredited): a. Surveying; b. Geospatial Science; c. Geo-developer
- AAS in Geomatics
- Minor in GIS
- Future: graduate certificate in GIS, Master of Science in Geospatial Science, …

Details: https://www.uaa.alaska.edu/academics/college-of-engineering/departments/geomatics/

(Cont.)

Dedicated Geomatics server

- Remote access from anywhere with internet
- Independent from Users' OS: Window or Mac OS
- A suite of Geomatics software installed on the server



Innovative learning environment

- By 2020, all classes in the program will be offered in hybrid mode (face to face & distance delivery)

(Cont.)

Geomatics in the Media (full list is available upon request)

- Mapping Mount Marathon: https://www.adn.com/sports/2017/05/13/mount-marathons-iconic-elevation-of-3022-feet-uh-yeah-about-that/
- What do twitter and drones have in common: https://www.adn.com/culture/article/hometown-u-twitter-and-drones-and-other-tools-frontier-mapping/2015/10/31/
- Student spotlight: http://greenandgold.uaa.alaska.edu/blog/25497/student-spotlight-cody-gibson/?a (Website is under maintenance at this moment and will be back to live on 11/16)
- Mapping the last frontier: http://greenandgold.uaa.alaska.edu/blog/39120/mapping-the-last-frontier/

GEOMATICS STUDENT ASSOCIATION

What Does the GSA Do?

Education: Promote the continuing education, proper ethics and practice of Land Surveying, Hydrography, Photogrammetry, Remote Sensing and Geographic Information Systems (GIS).

Job Opportunities: Promote employment and internship opportunities for students.

Outreach: Boost interest in Geomatics careers through Conferences, Seminars, Lectures, and other professional and student activities at the grade school, high school, and university levels.

Network: Assist and participate in the new Mentorship Program and in ASPLS, ASPRS, AAUG, URISA, and AKSMC activities.

U.S. DEPT. OF THE INTERIOR
BUR. OF LAND MANAGEMENT
1962

HOW TO GET INVOLVED

~Be a ***Guest Speaker*** at a GSA Meeting

~***Mentor*** one of the Students

~***Attend*** a GSA Meeting

~Mixed Meeting of GSA and URISA or AAUG

*Contact uaa.gsa@gmail.com

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Project Examples

Chugach Trail Collector Mobile App and Web Map

Sean Pearson & Ryane Shrank
(Capstone Project - 2017)

Story map:
https://uaa-geomatics.maps.arcgis.com/apps/Cascade/index.html?appid=fcd5783284bc4ee28ee668f4de19d1e3

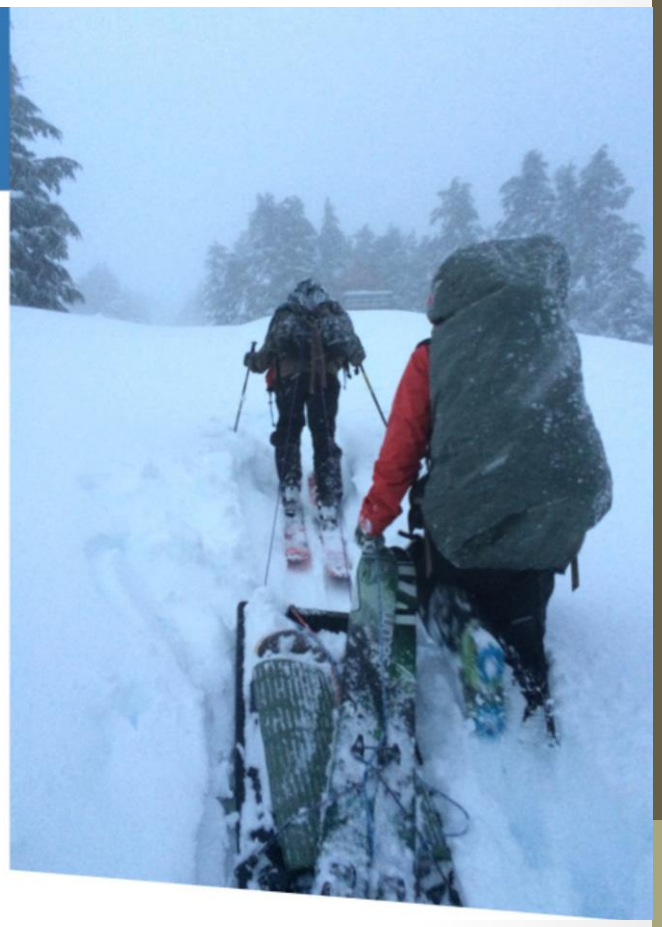
Motivation: Help trail users know trail conditions in advance

Defining the Problem

- Who are the users of the Chugach National Forest?
  - USDA Forest Service
  - Local Alaskans
  - Tourists
- There are several forums available on the internet, but they are inconclusive and irregular.
- Also, they are not mobile friendly or convenient to update.

We need to develop a mobile application that enables users to report trail features and conditions at specific points on the trail.

Also, we want to develop an intuitive interface that enables users to access this information before heading out.



- Designed a database for the data we would allow users to collect:
    - point features for individual locations
    - related table for overall trail descriptions

What kind of data do we need to collect?

Point features will be used to define where the attribute is at.

The use of line features was discussed but this posed an issue for a few reasons:

-Have to understand what line features are.

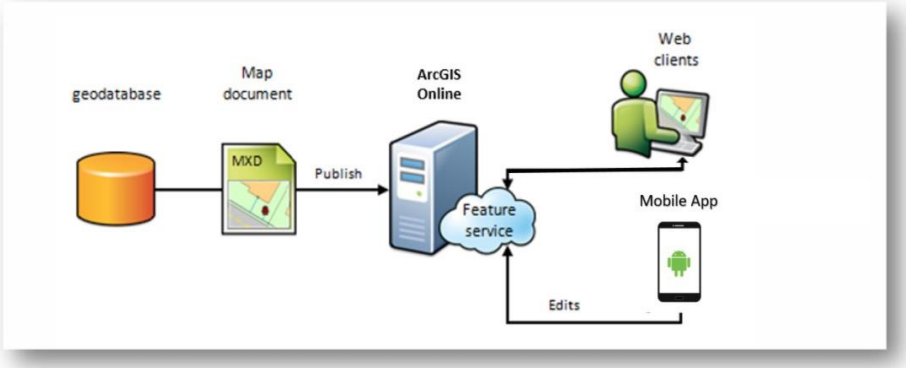
-Once the line feature is started, have to remember to stop it.

-Have to continuously be on phone.

After several discussions with the members of the Forest Service office and our own knowledge as users of trails in the CNF, the attributes to define trail conditions were chosen.

Trail Attributes	
Lat/Long	
X,Y	*WGS 84 Web Mercator projection
Time Stamp	
Trail Surface	
	Snow
	Ice
	Mud
	Dry
Obstruction	
	Avalanche Debris
	Damaged Bridges
	Down Tree
	Overgrown
	Wildlife
	Unauthorized Motor Vehicle Use
	Vandalism
	Flooded
	Other
	None (if no selection)
Description	
Description (Overall Trail)	
	Description
	XC Ski
	Hiking
	Biking
	Fat Biking

Mobile app edits a hosted feature service on ArcGIS Online



Graphic Credit: ESRI

Home Gallery Map Scene Groups My Content My Organization

UAF ALASKA FAIRBANKS My Content

Folders

NEW DELETE

raschrank (Home)
Chugach Trails

Show

All
Maps
Layers
Scenes
Apps
Tools
Files

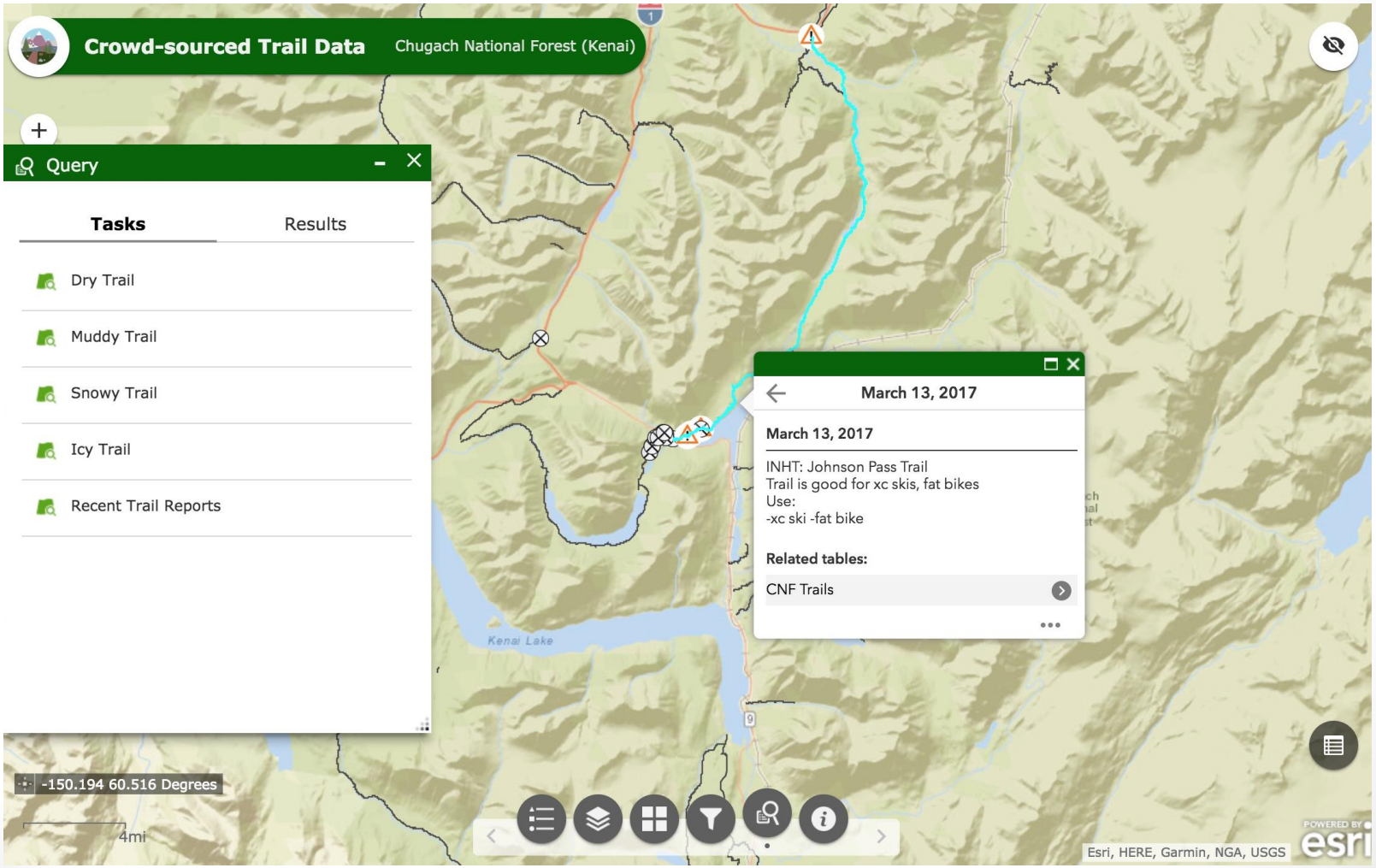
+ Add Item | Create | Share | Delete | Move

Feature Layer
Tile Layer
App
Map
Scene

Title	Type	Modified	Shared
CNF_	Web Mapping Application	Mar 22, 2017	Not Shared
CNF_	Web Map	Mar 23, 2017	Organization
CNF_Base extent-Copy	Web Map	Mar 23, 2017	Not Shared
Explore the Chugach	Web Mapping Application	Mar 22, 2017	Not Shared
Explore the Chugach	Web Mapping Application	Apr 19, 2017	Organization
Exploring the Chugach	Web Mapping Application	Mar 22, 2017	Not Shared
Routes to CNF Recreation Sites	Feature Layer (hosted)	Mar 22, 2017	Not Shared
Ryane Personal Computer	Application	Feb 16, 2017	Not Shared
Test field notes Kenai	Feature Layer (hosted)	Apr 18, 2017	Not Shared

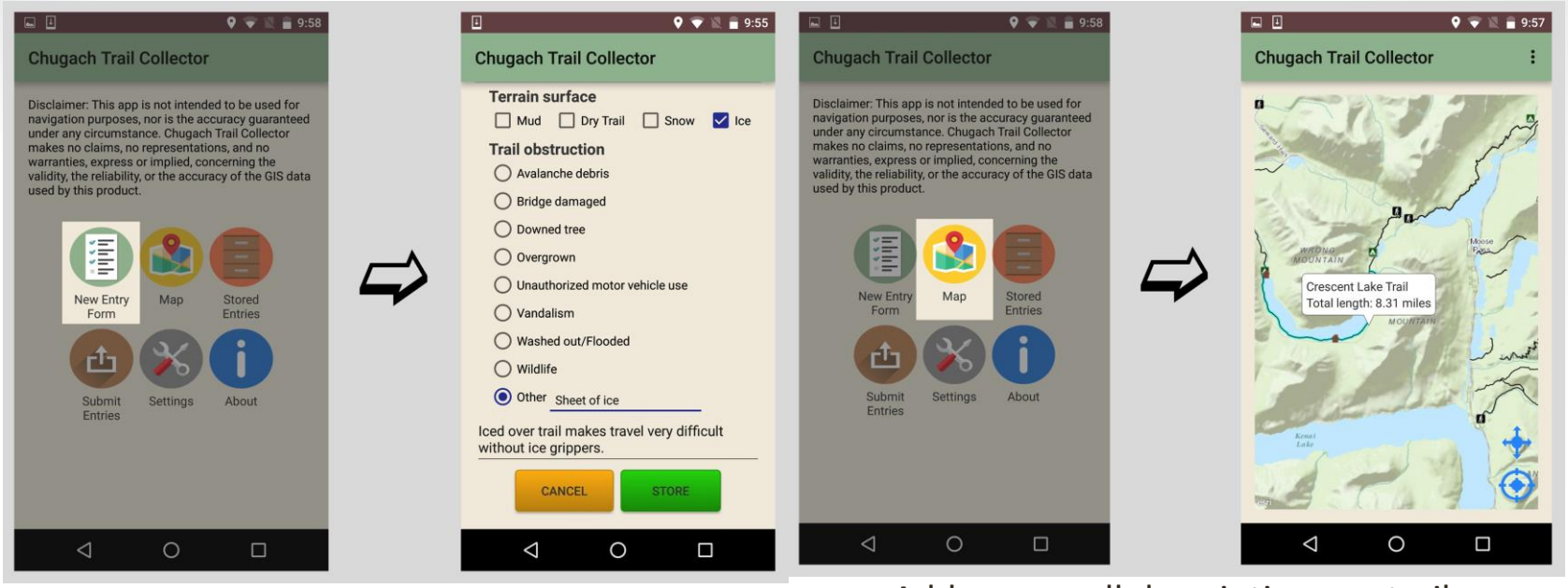
1 - 9 of 9 results

- Run queries on trail conditions and read crowd-sourced written descriptions through ArcGIS Online



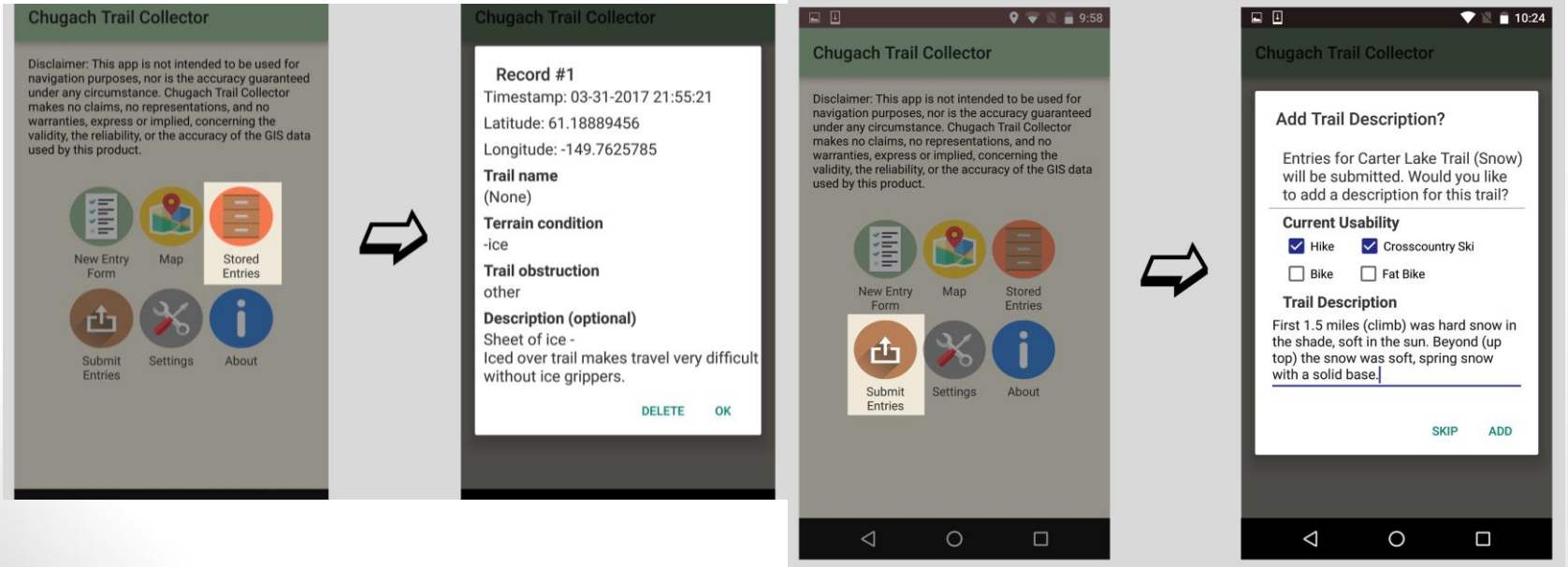
Collect trail condition at a given point

View the map at current location



Review collected data points

Add an overall description per trail when submitting data points



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Online Application for Heritage Land Bank (HLB)

Lauren Hartman
(Capstone Project -2017)

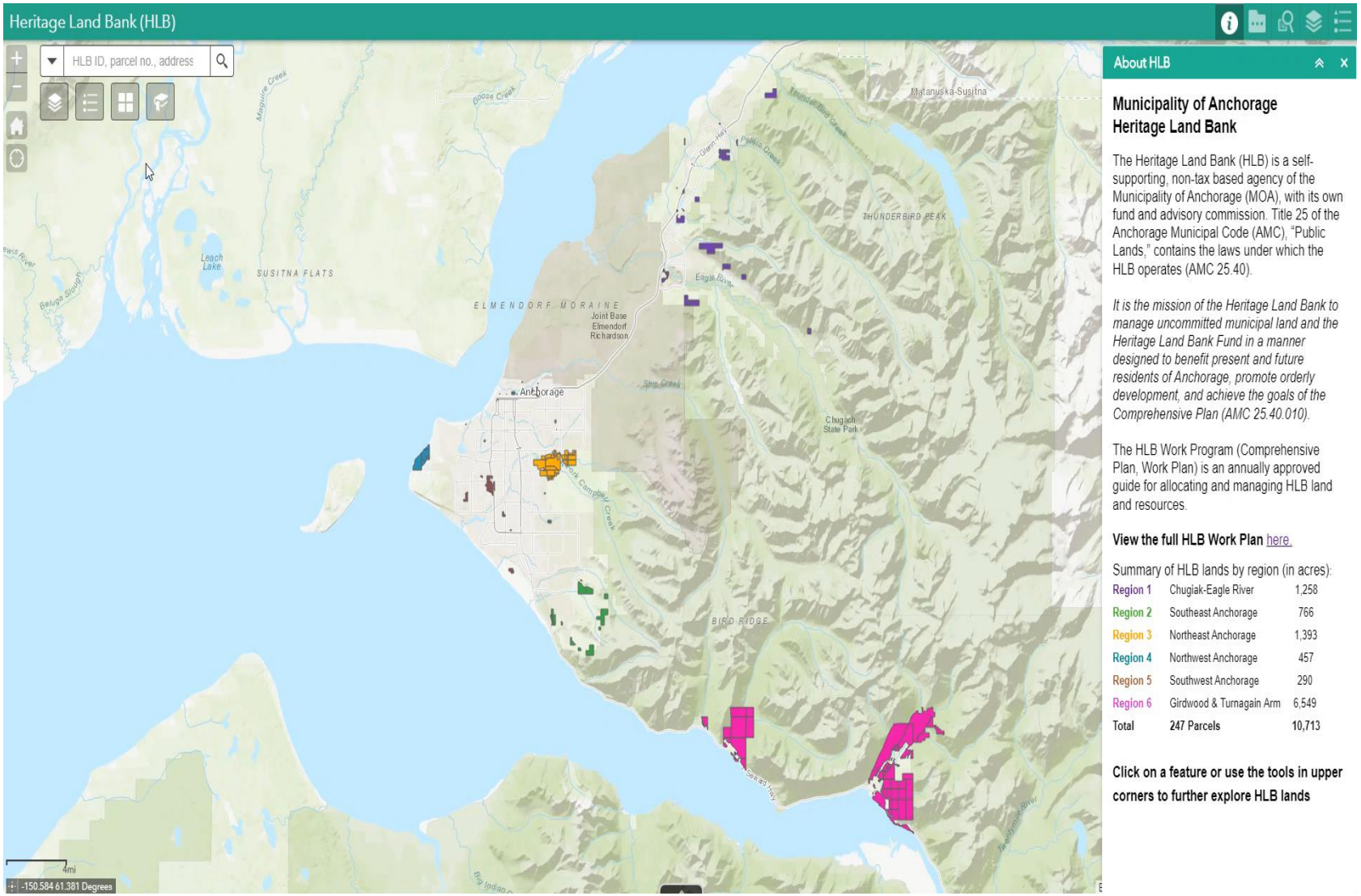
Project Objective

Utilizing existing MOA GIS data layers perform analysis to determine land characteristics for properties held in Heritage Land Bank's inventory.

- Heritage land Bank 2016 Annual work program and 2017-2021 five-year management plan (http://www.muni.org/Departments/hlb/2014%20Docs/Adopted%206.21.2016%20HLB%20Plan%20with%20appendices%20and%20AR%202016-165.pdf)

- MOA GIS data

https://muniorg.maps.arcgis.com/apps/webappviewer/index.html?id=3a90b12df45a49daa282d2d68dfdbcf3



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Acknowledgement

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- Lauren Hartman

Thank You!