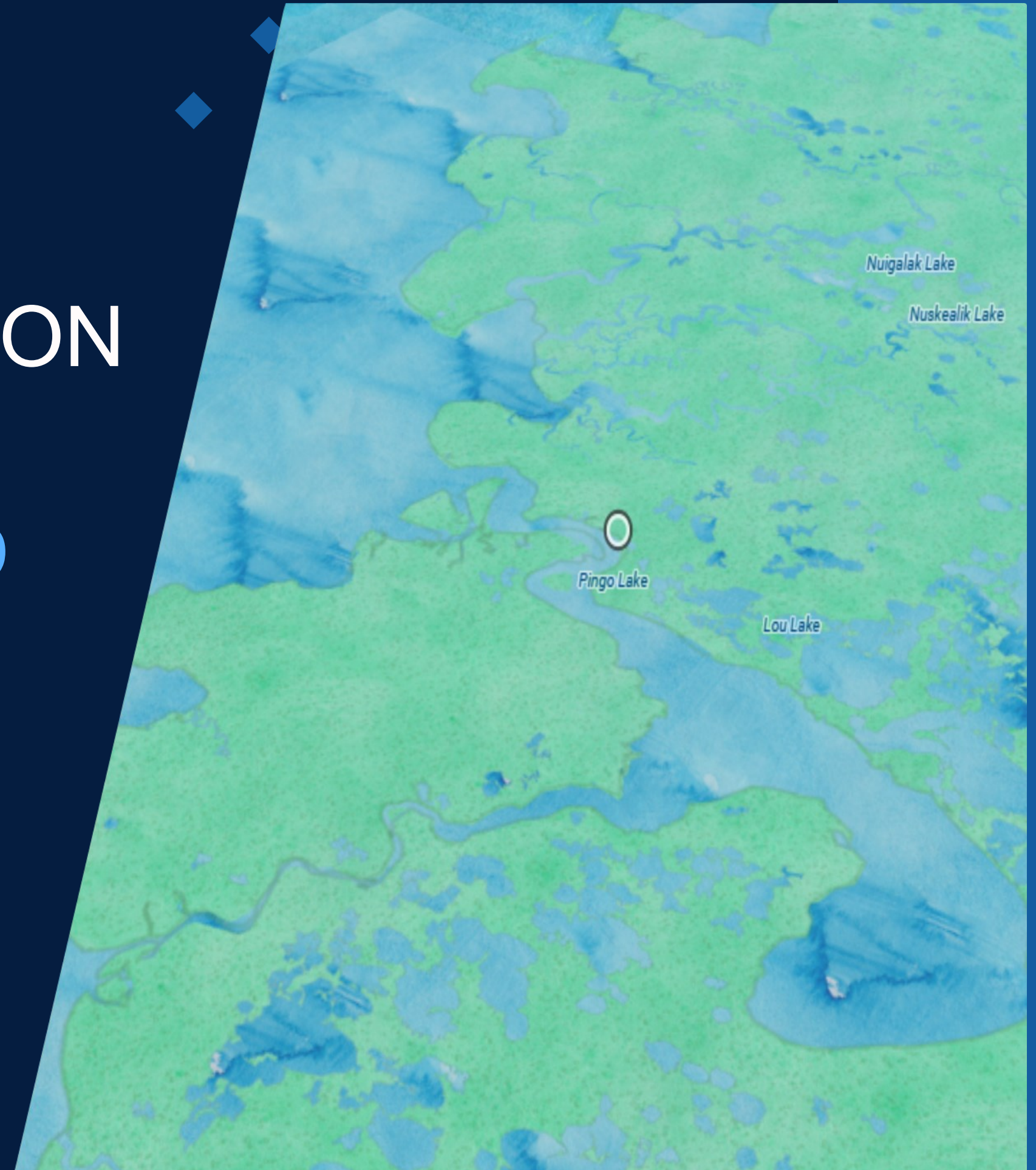


COASTAL VILLAGES REGION FUND GIS PROGRAM DEVELOPMENT OF SHARED RESOURCE GIS

Presented by: Nathaniel Betz, Gary Greenberg, &
Roderick Atti



2023 Alaska Geosummit

ABOUT US



NATHANIEL BETZ

CVRF Director of Community Programs

Based in Anchorage
Support team of 40 across region

Role: Corporate Vision → Strategy →
Deployment Planning → Execution



GARY GREENBERG

Gary Greenberg, GISP, MBA, Alaska
Map Company, LLC.

Based in Kenai

20 years of experience developing
GIS for Small and Remote Alaskan
Communities



RODERICK ATTI

CVRF Community Benefits Coordinator

Based in Toksook Bay

GIS Specialist

OVERVIEW

01

CVRF GIS PROJECT
BACKGROUND

02

SHARED RESOURCE
MODEL

03

PILOT PROJECT

04

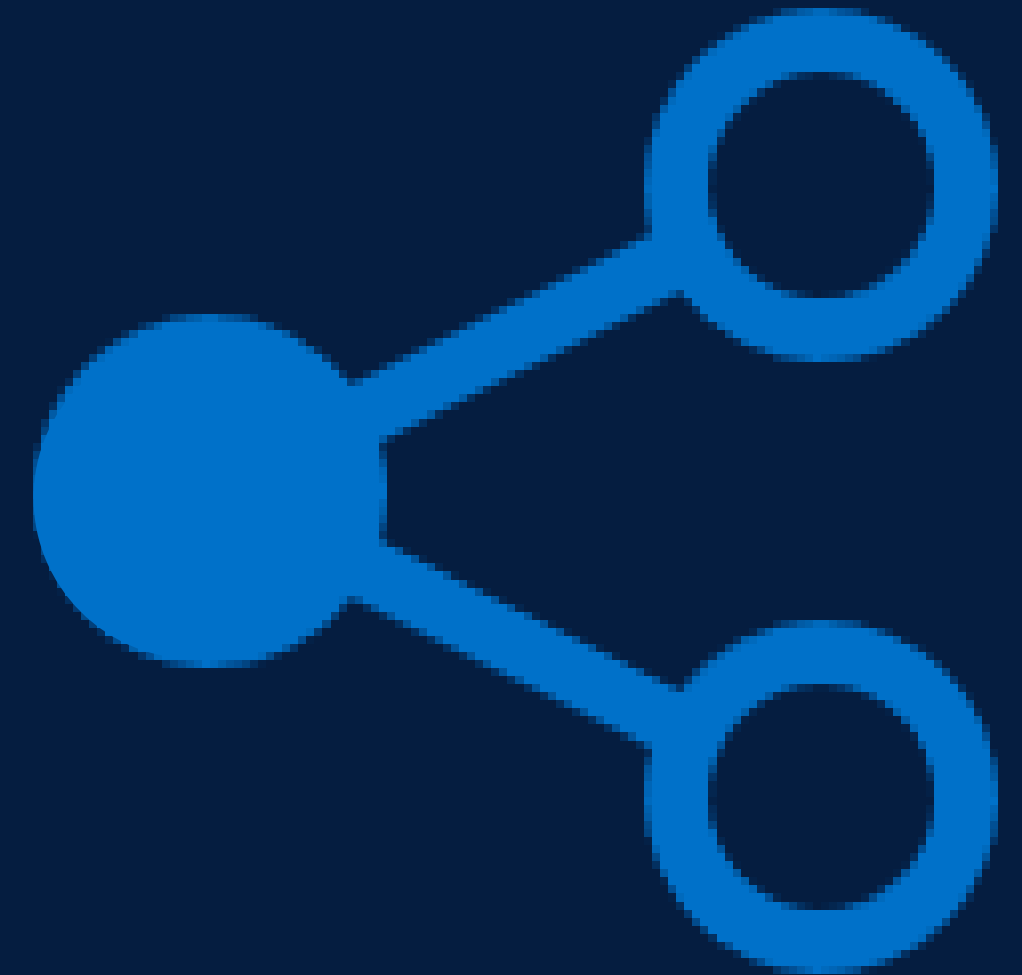
COMMUNITY
CHALLENGES

05

GIS SOLUTIONS

06

Q&A /
DISCUSSION



CVRF

Background

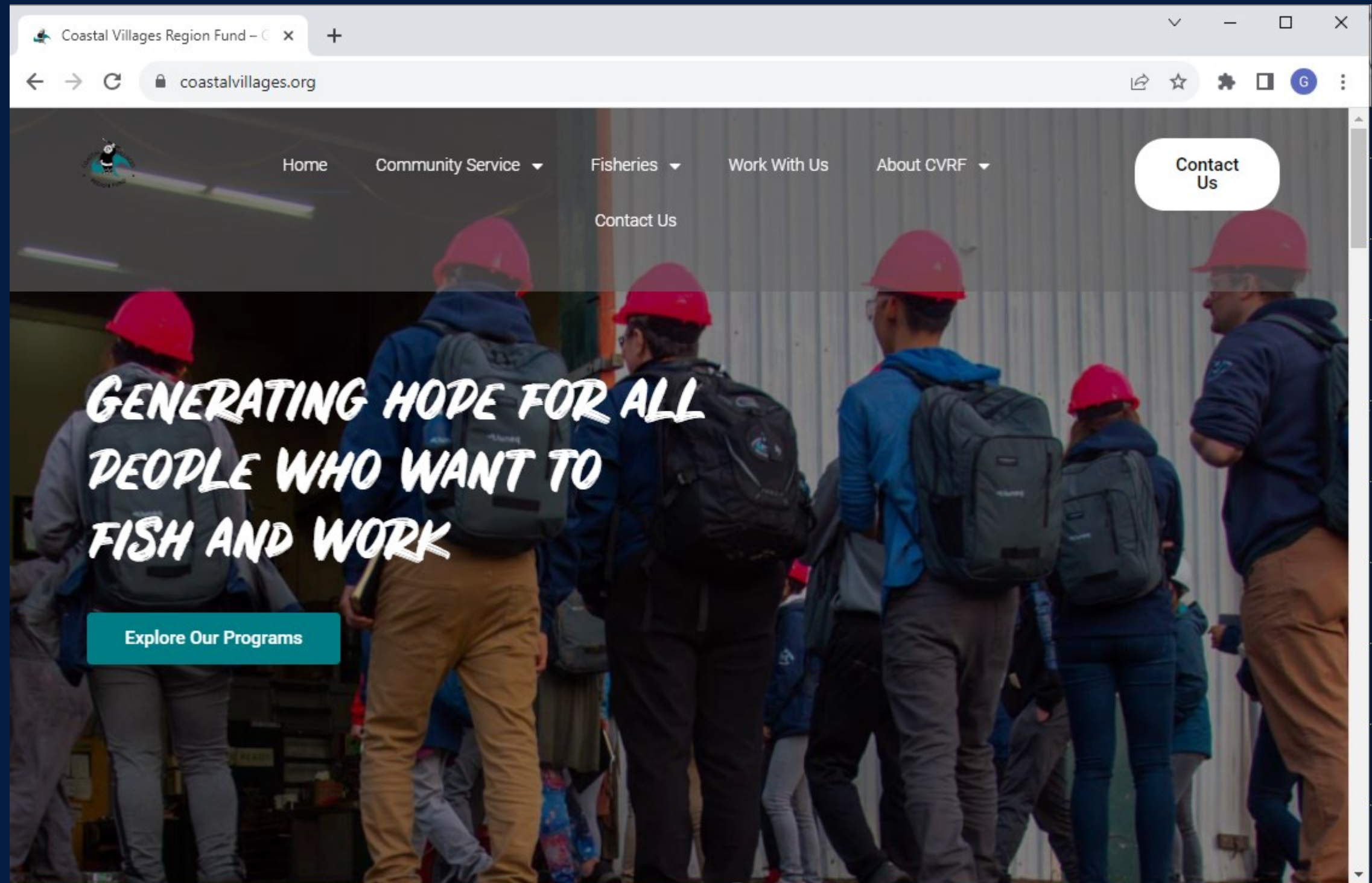
Coastal Villages Pre GIS - Nathaniel Betz

Pandemic inspired: how to add value without interpersonal connection?

- Glaring need for accessible, current geospatial data to guide development
 - CVRF housing pilot project
- Mandate to create local job opportunities
 - Able to connect to online courses in the villages to develop baseline technician capability

Internal sponsors: Nathaniel Betz, CVRF executive team

Internal champion: Roderick Atti

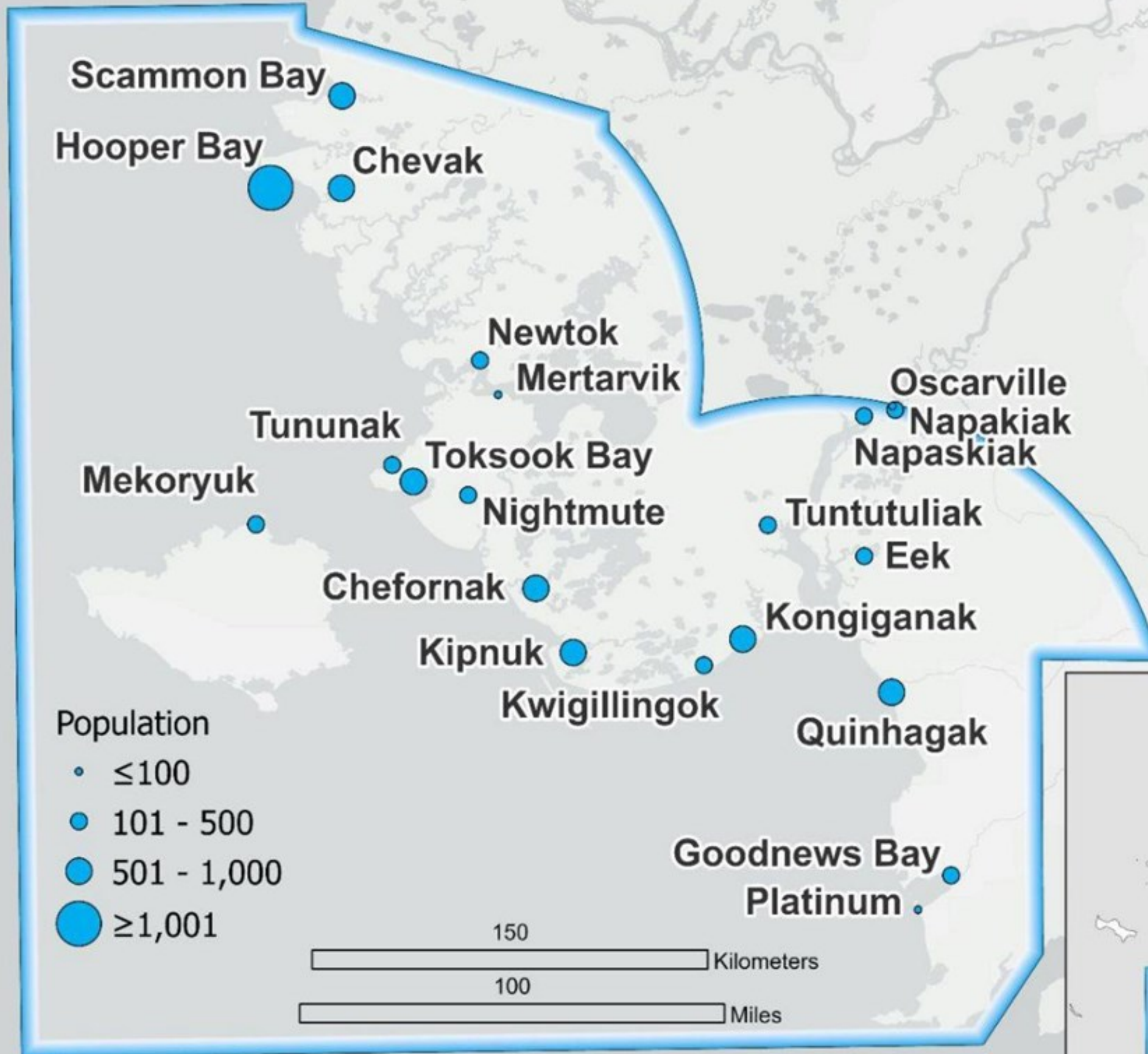


CVRF Region

Coastal Villages Pre GIS - Nathaniel Betz

How do we actualize our emerging skill set?

- Identifying a project partner with established subject matter expertise & the ability to build community-scale GIS functionality in rural Alaska
- Needs assessment with AKMAPCO
- Guidance, coaching, and policy setting from Gary
- Pilot project with Gary
 - Generating interest from community leaders
 - Local governing institutions
 - CVRF board of directors
 - Scaling to our entire region



GIS AS A SHARED RESOURCE

Small communities in Alaska have difficulty developing GIS.

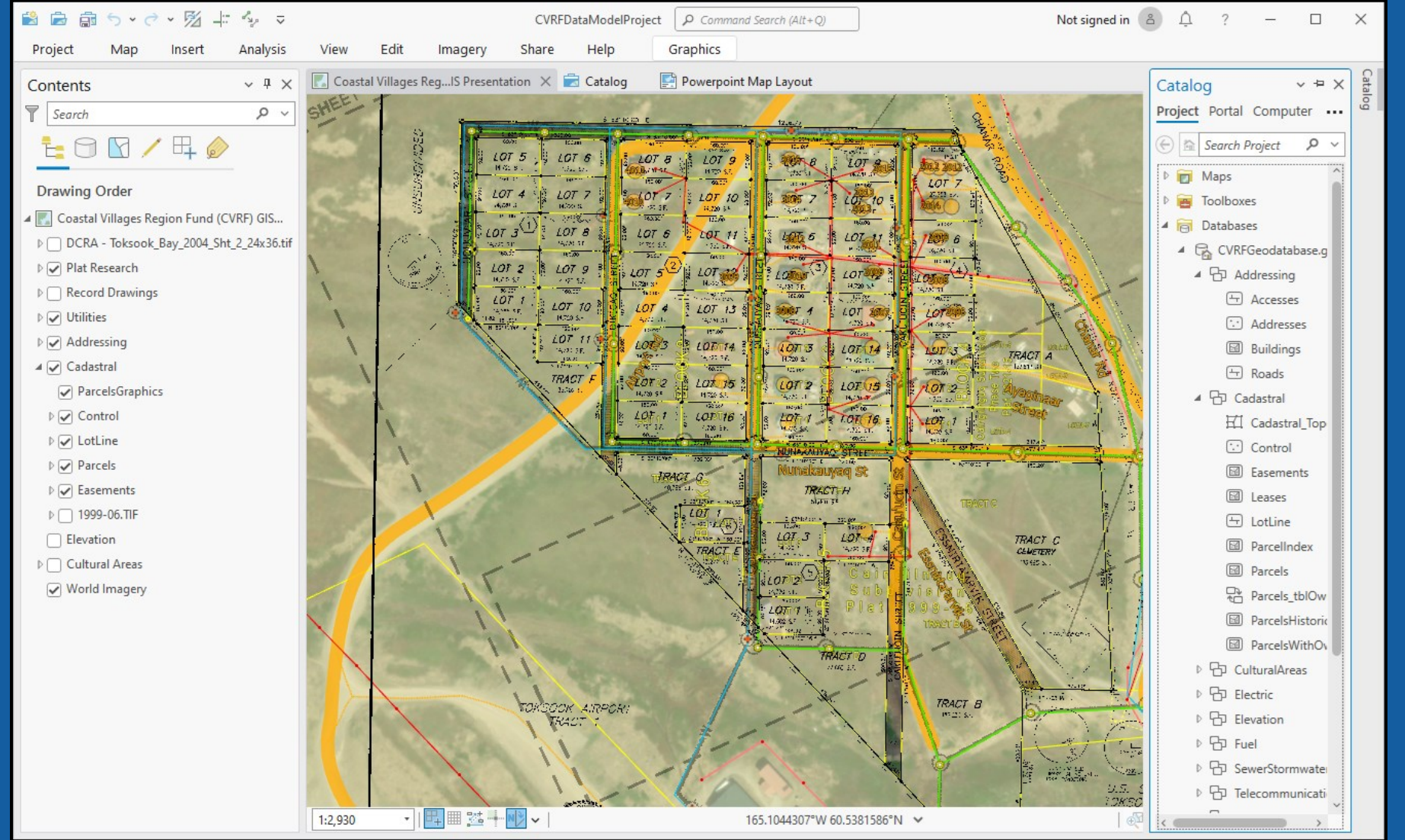
Shared resource models are common in other areas and are beneficial – if not necessary – for rural and remote Alaska.

By design, the CVRF GIS Program is a shared resource model because it serves multiple communities.





Text Recognition
Some pages may contain text recognition to make it easier to read.
Recognize Text



PILOT PROJECT

Process

Prototype GIS for three communities.

1

Strategic Planning & Documentation

(Needs Assessment, Policies and Procedures)

2

Community Mapping

3

Training and Support

Community Base Mapping – DCRA



Spatial Foundation comes from Division of Community Affairs Community DCRA Maps

- Spatial foundation CAD drawings
- Reference information for Surveys
- Deeds, Leases and Easements
- Catalogue of Cultural Areas
- Starting point for Utilities and Addressing
- 20 years old

Community Map TOKSOOK BAY

60° 32' 00" N 165° 06' 35" W (NAD 83)

Approximate Elevation: 35'

Townships 5 & 6 North, Ranges 90 & 91 West, S.M., AK
U.S.G.S. Quadrangle "NUNIVAK ISLAND (C-1)," Alaska

BETHEL RECORDING DISTRICT

LEGEND

	Residential Building		Fuel Line
	Commercial Building		Water Line
	Public Building		Sewer Force Main
	Basis of Coordinates USS 5024,B2		Sewer Line
	Power Poles		Electric Line
	Street Light		Telephone Line
			Power & Telephone
			Edge of Water
			Specified Land Use
			Berrypicking
			Grasspicking

0 200 400 600

SCALE IN FEET

SCALE: 1"=200'

Date of Photography: October 2, 2004

Magnetic Declination computed by U.S.G.S. Geomag

Program using AK-2000.COF model as of October 15, 2004

SHEET
2 of 3

MAP NOTES

This map was prepared by the Coastal Village Regional Fund in cooperation with the Alaska Department of Commerce, Community and Economic Development (Commerce) using funding from Housing and Urban Development, the Alaska Native Tribal Health Consortium, (City of Toksook Bay) and funding from the Initiative for Accelerated Infrastructure Development (IAID). The IAID is supported by grants from the Denali Commission, USDA Rural Development, Alaska Department of Transportation and Public Facilities and Commerce. The Coastal Village Regional Fund contracted with Global Positioning Services, Inc. in May of 2004 to prepare the map.

This map should not be construed as a survey. On-site surveys should be conducted prior to engineering or construction.

This map was compiled to meet horizontal and vertical accuracy in accordance with national map accuracy standards.

Property and utility information has been generated from readily available sources with limited accuracy checks. Property information is not intended to represent a title search of the Records Office record. Utility location is approximate and shows only the main lines as the service lines have been omitted for clarity. Generally, the information is current as of December 2004.

The Alaska Native Tribal Health Consortium provided sanitation facility records.

This map is based on photography acquired on October 2, 2004, at a nominal scale, of 1 in = 800 ft.

AeroMap U.S. prepared the orthophoto and topographic mapping. The orthophoto is an aerial photo which has been corrected, by rectification to ground control stations, to remove distortions and warpage due to ground topography and aircraft tilt and trim.

HORIZONTAL AND VERTICAL CONTROL

The horizontal control monument for the digital orthophoto was NGS OPUS solution for GPS Inc. TBM "BASE 2". The horizontal datum NAD 1983 coordinates for this TBM are North 60° 32' 14.0120" and West 165° 05' 24.3873". The NAVD-88 elevation for this monument is 34.38 feet.

The City of Toksook Bay has been adjusted to this control using high-precision GPS methods and the adjusted coordinates and elevation for BLM Monument "USS 5024 B2", were calculated to establish a local control reference. The NAD 1983 coordinates for this monument are North 60° 32' 00.9500" and West 165° 06' 35.9128" and the NAVD-88 elevation is 34.91 feet.

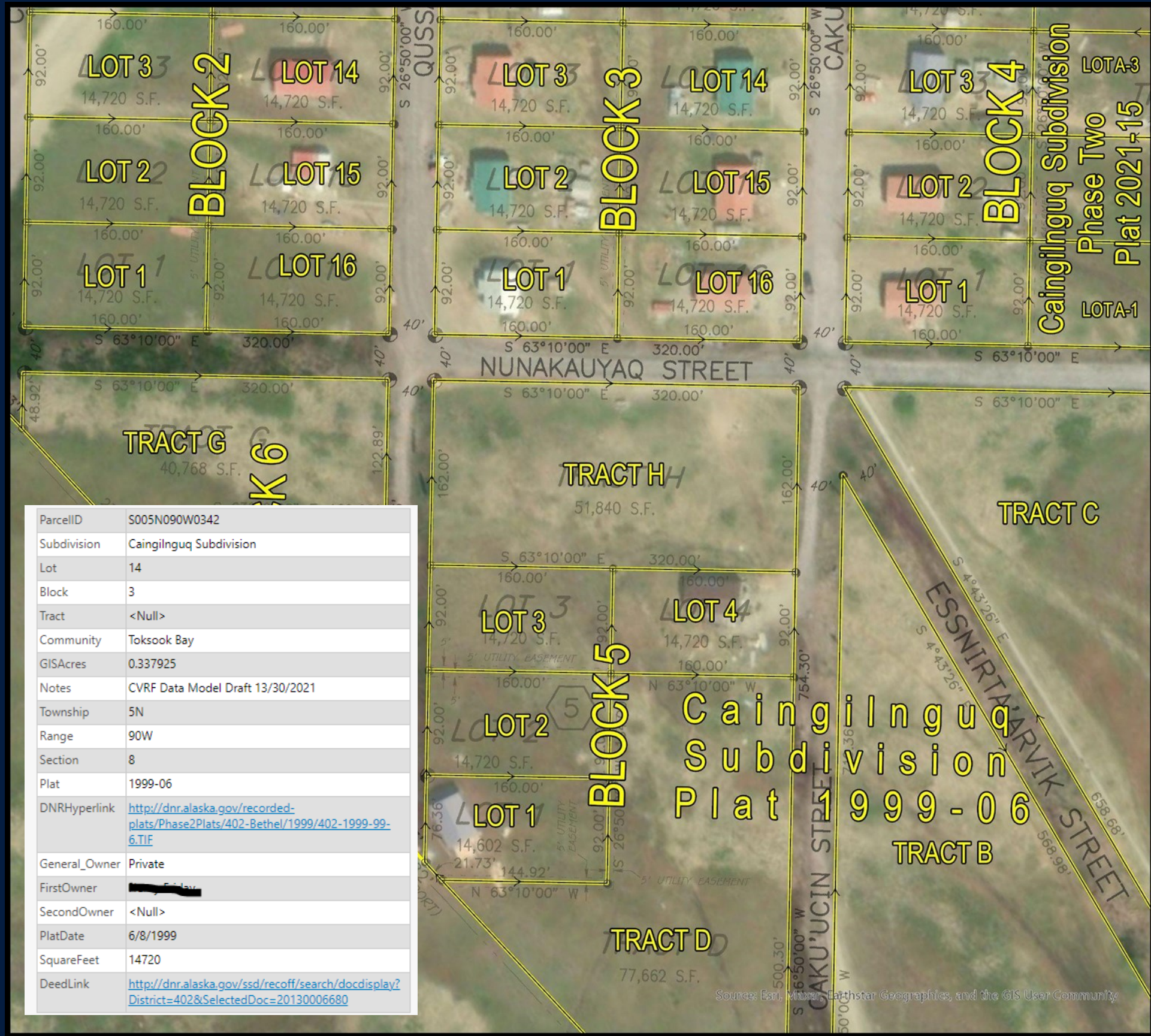
The contours were prepared at two (2) foot contour intervals with index contours every ten (10) feet.



Coastal
Villages
Region
Fund



Community Mapping Foundation Cadastral



Parcels

- Foundational layer providing spatial referenced for other layers
- Data model reflects commonly used layers and fields currently working for several communities
- Links to Plats, Deeds, Leases and Easements

Recorder's Office - Document Display

Document: 2000-001906-0 [See Image](#)

District: 402 - Bethel
 Document Year: 2000 Number: 001
 Date and Time Recorded: 08/24/2000 09:38 AM
 Book: 89
 Pages: 1
 Associated Document: 2000-001906-0
 Index: D - DEEDS
 Description: STAT WARRANTY DEED

Parties

TYPE	NAME
Grantor	NUNAKAUIAK YUPIK CORPORATION
Grantee	NUNAKAUyak TRADITIONAL COUNCIL

Legal Descriptions

Lot: 1	Block: 3
Plat: 99-6	
Lot: 2	Block: 3
Plat: 99-6	
Lot: 3	Block: 3
Plat: 99-6	

Recorder's Office - Document Display

Document: 1999-001032-0 [See Plat Image](#)

District: 402 - Bethel
 Document Year: 1999 Number: 001032 Suffix: 0
 Date and Time Recorded: 06/08/1999 10:09 AM
 Pages: 1
 Associated Document: 1999-001032-0
 Index: PL - PLAT
 Description: PLAT
 Associated Plat: 99-6 [Search for Plat](#) [View Plat Image](#) [See Index Codes](#)

Parties

TYPE	NAME
Grantor	NUNAKAUIAK YUPIK CORPORATION
Grantee	CAINGILNGUQ SUBDIVISION

Legal Descriptions

Lot: 1	Block: 1
Plat: 99-6	
Lot: 2	Block: 1
Plat: 99-6	
Lot: 3	Block: 1
Plat: 99-6	

Community Mapping – Addressing



NENA Standard Addresses

- Dependent on parcels
- Dependent on plats for legal street naming
- Developed to NENA standards
- Includes State and federal functional class information

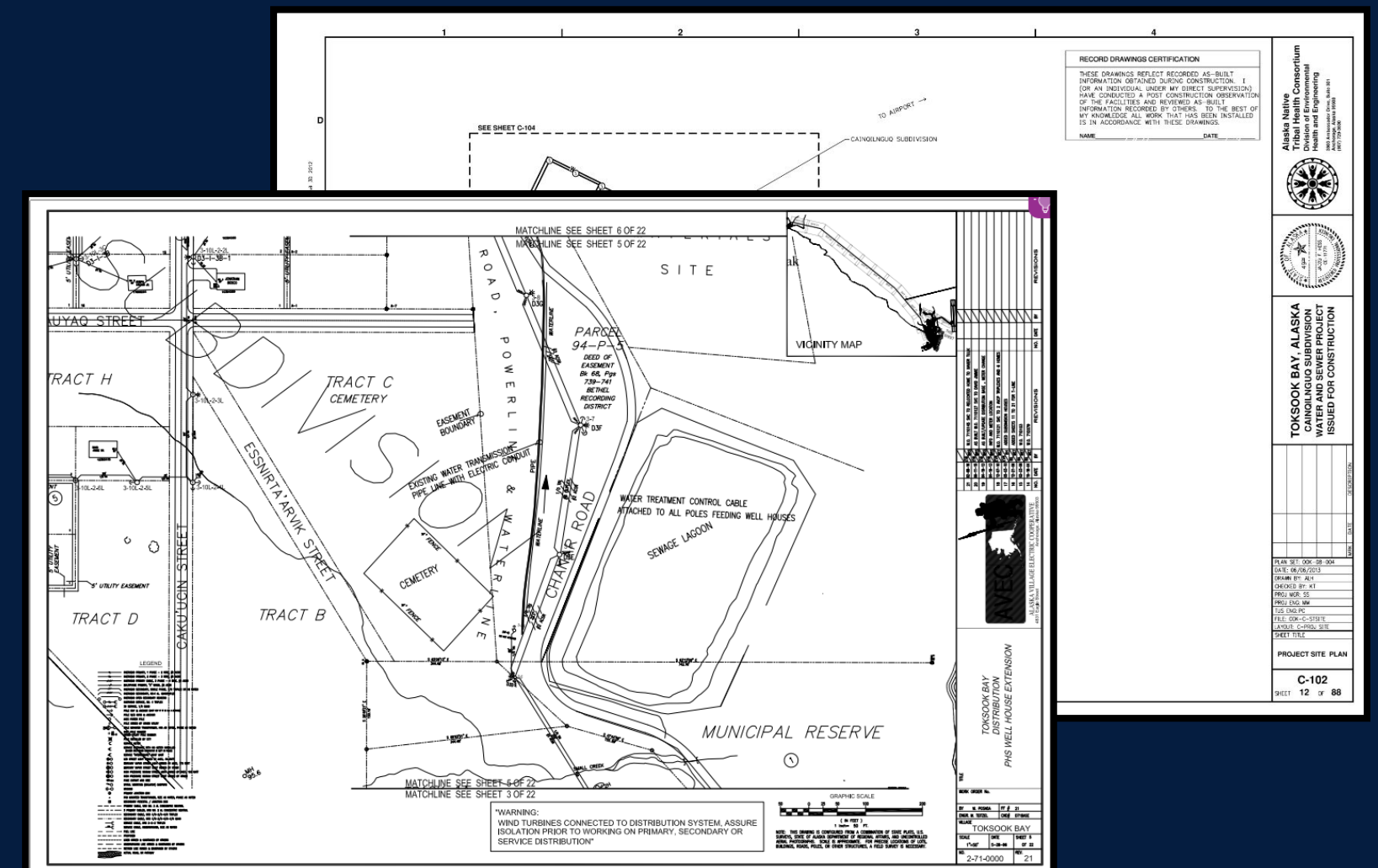
	FullAddress	AddressNumber	Prefix	RoadName	Suffix	Unit	Community
1	2007 Caku'ucin St	2007	<Null>	Caku'ucin	St	<Null>	Toksook Bay
2	2001 Caku'ucin St	2001	<Null>	Caku'ucin	St	<Null>	Toksook Bay
3	2003 Caku'ucin St	2003	<Null>	Caku'ucin	St	<Null>	Toksook Bay
4	2005 Caku'ucin St	2005	<Null>	Caku'ucin	St	<Null>	Toksook Bay
5	2004 Caku'ucin St	2004	<Null>	Caku'ucin	St	<Null>	Toksook Bay
6	2002 Caku'ucin St	2002	<Null>	Caku'ucin	St	<Null>	Toksook Bay
7	2000 Caku'ucin St	2000	<Null>	Caku'ucin	St	<Null>	Toksook Bay
8	3006 Qussauyaq St	3006	<Null>	Qussauyaq	St	<Null>	Toksook Bay
9	3004 Qussauyaq St	3004	<Null>	Qussauyaq	St	<Null>	Toksook Bay
10	3002 Qussauyaq St	3002	<Null>	Qussauyaq	St	<Null>	Toksook Bay
11	3005 Qussauyaq St	3005	<Null>	Qussauyaq	St	<Null>	Toksook Bay
12	1006 Caku'ucin St	1006	<Null>	Caku'ucin	St	<Null>	Toksook Bay

FullRoadName	FromLeft	ToLeft	FromRight	ToRight	Prefix	Name	Suffix	Community	MTFCC	SOAFunctionalClass
Caku'ucin St	2001	2015	2000	2016	<Null>	Caku'ucin	St	Toksook Bay	S1400	Minor Collector
Qussauyaq St	3001	3015	3002	3016	<Null>	Qussauyaq	St	Toksook Bay	S1400	Minor Collector

Community Mapping – Utilities

Local Government Information Model Standard

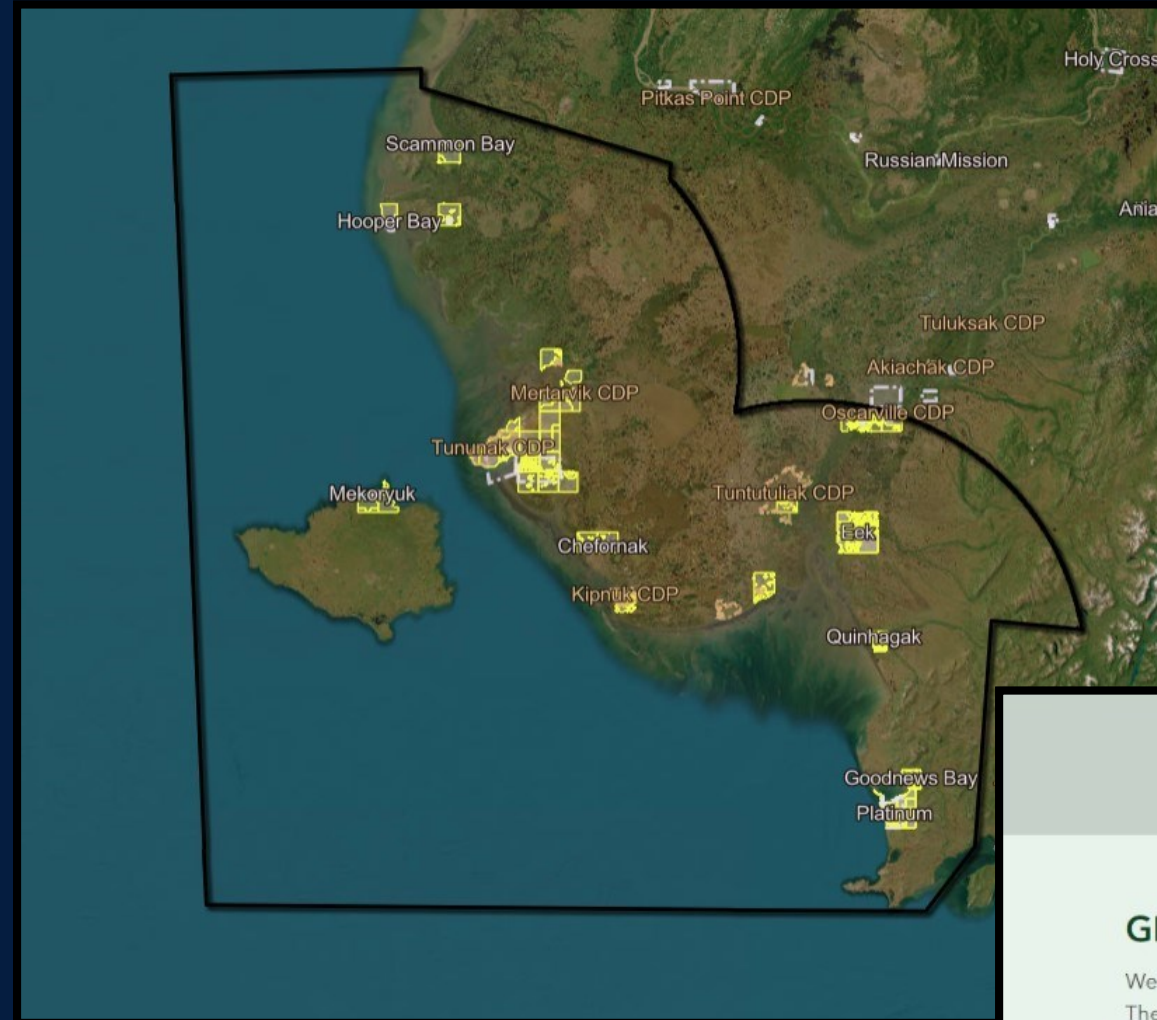
- Dependant on Parcels
- Common industry standard symbology layers
- Developed from ANTHC, Public Works and Village Electric Corps Record Drawings
- Provide links to pdfs when completed



Additional Mapping and GIS

Data Development

- Improve Parcel Accuracy- Parcel Fabric?
- Merge with Federal data sources
- Develop Addressing Systems for each community
- Develop Utility Systems for Asset Management
- Develop Cultural layers



ArcGIS Online Development

- Engage Stakeholders and local communities via HUB
- Develop feedback loop to maintain data
 - Pushpin map to guide technicians to
 - Add New subdivision, Addresses, Utilities, Etc
 - Fix errors and Create projects for longstanding issues
- Project Specific community services mapping to support community mapping needs



Coastal Villages Region Fund

GIS and Mapping Home Page

Welcome to Coastal Villages Region Fund GIS and Mapping Home Page.

The GIS applications accessed through this web page provide a visual display of data for your convenience. Every reasonable effort has been made to assure the accuracy of the maps and associated data. The Coastal Villages Region Fund makes no warranty, representation or guaranty as to the content, sequence, accuracy, timeliness or completeness of any of the data provided herein.

Map Gallery

Map Gallery



Web Mapping Application
CVRF Electric Viewer App

The purpose of this geodatabase is to store GIS information for the member communities of the



Web Mapping Application
CVRF Parcel Viewer

The purpose of this webmap is to store GIS information for the member communities of the



Web Mapping Application
CVRF Water Sewer Viewer App

The purpose of this geodatabase is to store Water System information for the member communities of the



Dashboard
Parcels with Ownership Informa...

Parcels with Ownership Information within the Coastal Villages Region Fund can be viewed here. [Edit home page](#)

What Problems Are We Facing?

- Workforce Development
- Community Development
 - Natural Disasters
 - Availability of Updated Parcel Maps
 - Housing Need
 - Climate Change: Change Forecast detection
 - Project Planning

COMMUNITY ESSENTIALS

CVRF's GIS Mapping Project

Provides Insights into Community Issues



Last year, CVRF kicked off the geographic information system (GIS) mapping project. This GIS map is intended to collate data on regional roads, utilities, topography, and population to create a detailed multi-layer map that can help with future planning and infrastructure projects in all 20 of our communities. Since kicking off this project, our team lead **RODERICK ATTI** has piloted GIS mapping in three communities: Chevak, Toksook Bay, and Tununak.

Using data sourced from many organizations, including the Alaska Division of Community and Regional Affairs, Alaska

Department of Natural Resources Recorder's Office, Bureau of Land Management, Alaska Village Electric Cooperative, and Alaska Native Tribal Health Consortium, our team has begun developing a functional map tool with the help of ArcGIS Pro software. **The ultimate goal of the program is to map all 20 communities and make the maps accessible to key stakeholders via a free web portal.**

"We hope to finish the other 17 communities within the next two or three years," said Atti, whose team has been hard at work developing the maps with ArcGIS and the assistance


“When you look at the number of people per household, it really emphasizes the impact of the housing shortage in our communities.”




STEPHEN MAXIE III, FORMER GIS PROJECT INTERN


of the Alaska Map Company. When completed, the map portal will be an invaluable tool for future development and infrastructure projects. **STEPHEN MAXIE III**, who worked on the mapping project during his internship, said that the data being gathered was eye-opening. “When you look at the number of people per household, it really emphasizes the impact of the housing shortage in our communities.”



We hope that collating the data will help identify solutions to this and other issues in the years to come.


Natural Disasters




Typhoon Merbok Damage 



Open in Map Viewer Classic    Roderick Atti
roderick_cvrf


Layers 

- Typhoon_Damages_GeoTaggedPhotosToPoints 
- ParcelsWithOwners 







Get directions  Zoom to  1 of 2 

IMG_0408.JPG  



IMG_0408.JPG

- Photo is an example from Toksook Bay. Home is sitting on edge of bluff caused by erosion after Typhoon Merbok
- Help locate areas that were impacted
- Can be used to help with future planning to combat future Natural Disaster occurrences

Maxar, Vivid | Coastal Villages Region Fund, Alaska Map Company    

Powered by Esri

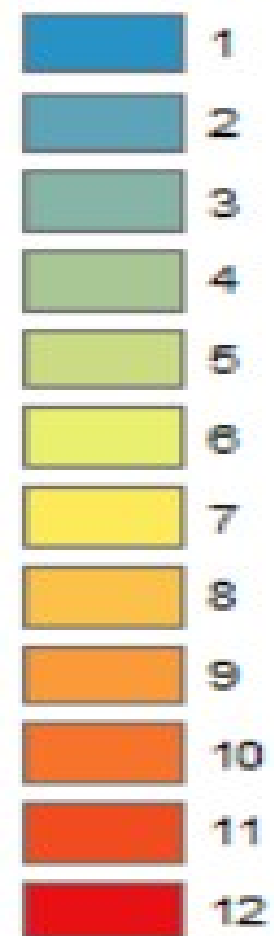
No Access to Updated Parcel Maps



- Helps local entities locate open parcel land lots more conveniently
- Can be updated when new surveyed plats become available

Housing Needs

Toksook Bay Homes Household Size



- Map was created using CVRF SmartVAN Data based on how many people live in a home. This was an assignment for CVRF Interns in 2021
- Map can be used to show how much overcrowded homes

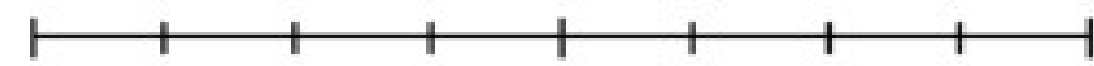
Source: Esri, DeLorme, Garmin, IGN, Intermap, iPC, NITRS, GEBCO, USGS, AeroGRID, IGN, Esri, Mapbox, Swire, GEBCO, and the GIS User Community

Toksook Bay Homes

Author: Janelle Carl

Date: 10/13/2022

0 0.2 0.4 0.8 Miles





- Meander line has eroded approximately 50 feet since surveyed in 1970
- Damaged building on Lot 4 from recent storm
- Can be used for preparation in mitigation to avoid situations like this in the future.

Climate Change:
Change Forecast Detection

Project Planning

- Our project to map all 20 CVRF communities can help plan for future projects such as:
 - Housing
 - Water/Sewer Projects
 - Other local projects



GIS has many benefits for rural communities

- Where are we at?
 - All 20 CVRF communities have been created with parcel data.
 - Completed training on Introduction to ArcGIS training, which has 4 courses.
- Any Questions?

(1 of 3)

Range	90W
Section	8
Plat	1999-06
DNRHyperlink	More info
SiteArea	
General_Owner	Private
DeedType	QUITCLAIM DEED
RecordDistrict	Bethel
OriginalOwner	Nunakauiak Yupik Corp.
FirstOwner	Roderick S & Robin C Atti
SecondOwner	
PlatDate	6/7/1999, 4:00 PM
DeedDate	1/27/2023, 3:07 AM
DeedRecordNumber	2023-000105-0
Zoom to	Zoom to ...

Thank you!

