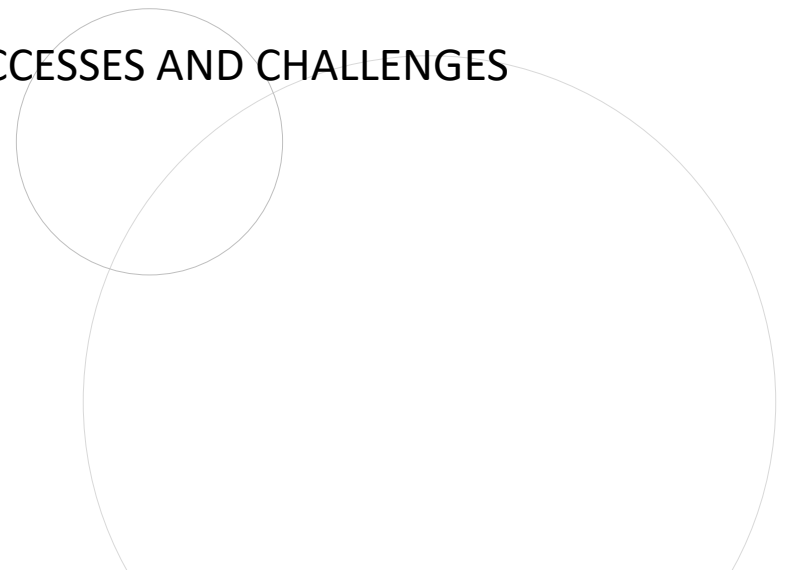




CHEFORNAK INTERAGENCY UPDATE

REVIEW OF THREATS, PROJECTS, SUCCESSES AND CHALLENGES





INTRODUCTIONS



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THREATS



Chefornak faces threats in three major areas, all related in some way to changing climate. These include:

- Flooding
- Erosion
- Thawing Permafrost

FLOODING

Flooding in Chefnak comes from three major sources including:

- Spring breakup
- Fall storm runoff
- Storm surge

Of these, storm surge represents the greatest threat and is also the largest unknown, as there is little to no tidal data in the region.



EROSION

While erosion and bank migration are a common occurrence along any river, especially along cut banks, changing climate has greatly accelerated this process in two ways:

- Riverine erosion- Accelerated by thawing permafrost
 - Saltwater intrusion accelerates thaw
- Wave action- Increased due to longer ice free storm season
 - Saltwater intrusion is more common due to extended season



THAWING PERMAFROST

Thawing permafrost has introduced several new concerns in Chefnak. These include:

- Thaw settlement (building foundations)
- Sinkholes (safety concern)
- Accelerated erosion
 - Warmer temperatures
 - Seawater infiltration





WHAT'S HAPPENED SINCE LAST MEETING?



Our last Interagency Meeting was February 21, 2018. What has happened in Chefnak since then?

- New Design Team established
- Temporary Barge Landing Design completed, construction underway.
 - New Barge Landing Concepts Completed
- New Subdivision planning and supporting work kicked off



NEW DESIGN TEAM ESTABLISHED

Since the last meeting, the village of Chefnak has engaged in an IDIQ (Indefinite Delivery, Indefinite Quantity) contract with a team of design professionals led by PND Engineers, Inc.

The team consists of:

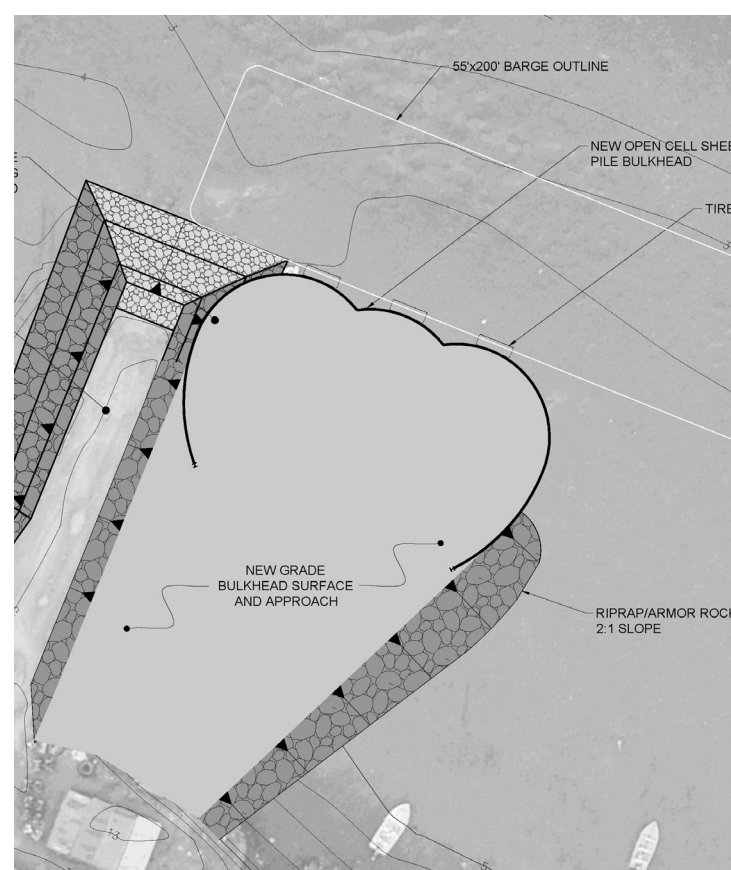
- PND- Team lead, Civil, Structural, Geotechnical, Hydrology, Survey
- DOWL- Team assistant lead, Stakeholder engagement, planning and backup Civil.
- GV Jones-Water and Wastewater
- RSA – Electrical and Mechanical
- CCHRC- Cold Climate consultants to all the above
- Two Bears Environmental- Climate modeling and projections
- Spark design-Architectural
- STG- Construction Contractor



INITIAL TASKS DEFINED

The team was selected in October, 2018 and was assigned 4 tasks within the original contract. These tasks included:

- **Task 1: Design and Construct** a temporary replacement for the damaged **barge landing** and develop concepts for a permanent replacement.
- **Task 2: Design and Construct** erosion control measures to protect “**Dolly’s House**”.
- **Task 3: Detailed Erosion Analysis**
- **Task 4: Subdivision concepts** and **relocation planning**





TASK 1: BARGE LANDING

The barge landing task consists of:

- Design a temporary barge landing to replace the damaged one.
- Develop concepts and provide an alternatives analysis and cost estimates for a permanent replacement.
- Temporary barge landing design is complete and construction is underway.
- Concept design work was completed on 9/12/2019 and a preferred alternative was selected by the Tribal review team.
- An OPEN CELL SHEET PILE (OCSP®) BULKHEAD was selected.



TASK 2: DOLLY'S HOUSE

Dolly's House was one of the first threats identified in Chefnak and in large part came to symbolize the larger problems facing the community.

Here's where things currently stand:

- Flood waters remain very close to Dolly's House
- Plans have been completed for placement of erosion protection to mitigate the threat.
- Construction crews are in Chefnak and will be completing this work within the next few weeks as part of the larger temporary barge landing repair work.



TASK 3: DETAILED EROSION ANALYSIS

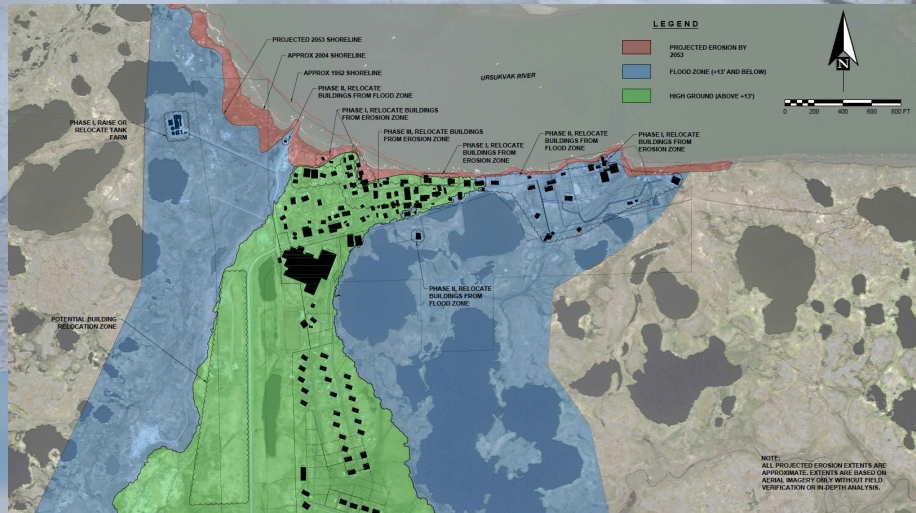
Detailed erosion and flooding analysis is being conducted as part of the design of the permanent barge landing and to support and inform the effort to relocate at risk structures along the riverfront in Chefnak. To this end, several activities have taken place:

- Hydrological instrumentation has been placed at several locations up and down stream from Chefnak to measure water surface elevations and flow characteristics.
- Two weather stations have been placed, one in Chefnak and one at the mouth of the Kinia River to measure wind speeds, temperature and rainfall data to correlate with the hydrological instrumentation.
- Local workforce was engaged both in placement of instruments and in retrieving data.

TASK 4: RELOCATION PLANNING, SUBDIVISION CONCEPTS

This work is just kicking off but here is the current status:

- Final funding was awarded in August.
- Stakeholder engagements are planned in the near future to determine factors affecting the development of the new subdivision.
- Community visit planned in next couple weeks to provide a condition assessment of existing structures along the waterfront to determine their viability for potential moves to a new site further upland.

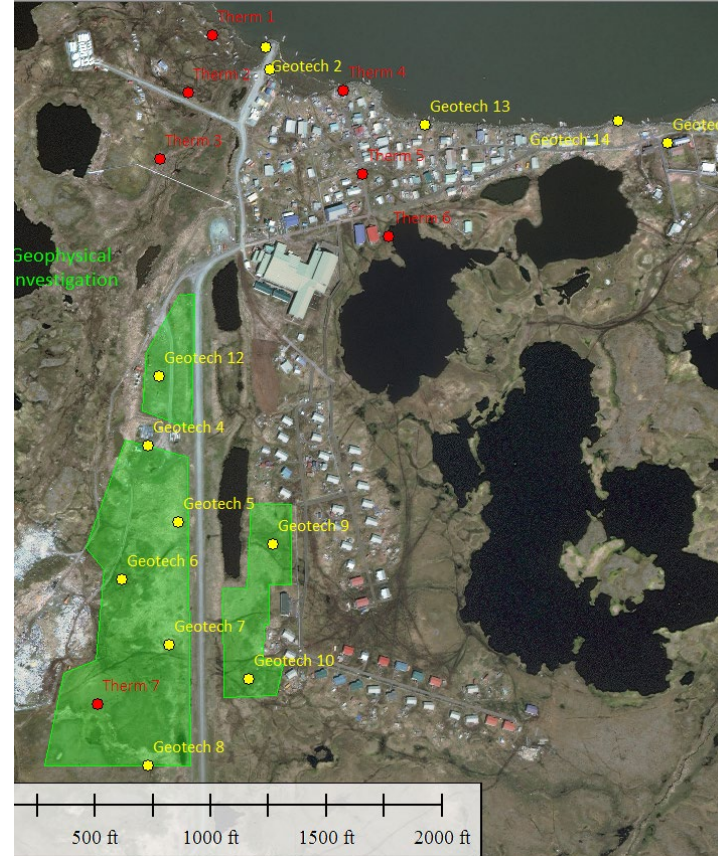




NEW TASKS ADDED

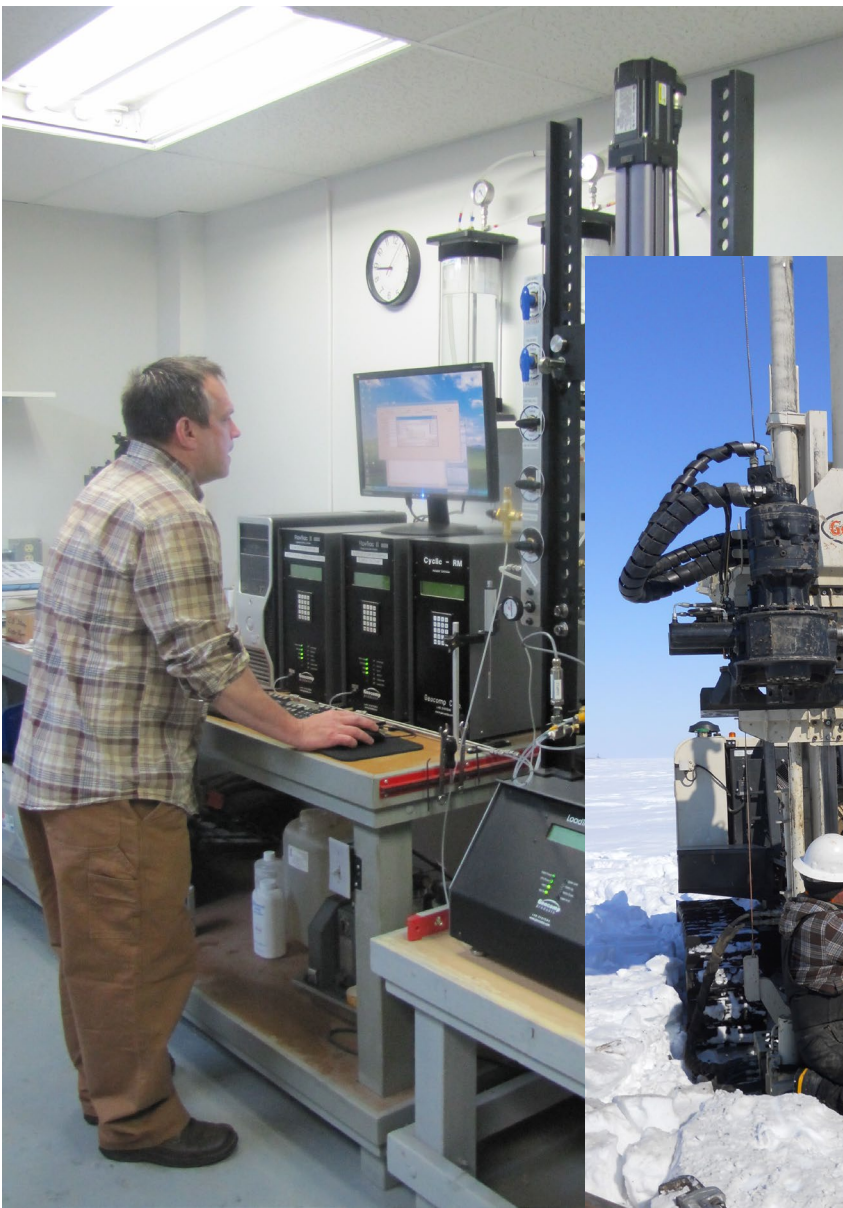
Since the four original tasks were begun, two additional ones have been added to the list:

- **Task 5:** Geotechnical and Geophysical **Investigation**
- **Task 6:** **Design** a replacement Head Start Building



TASK 5: GEOTECHNICAL AND GEOPHYSICAL INVESTIGATION

- Recently awarded task.
- Provides a geotechnical assessment that will drill boreholes at 10 locations, set thermistors at 6 locations
- Supports the Task 4 effort
- determines soil profile, temperature and salinity summarized in a geotechnical report for Chefnak for use in the design of numerous structures.
- This information will be crucial to development of building foundations that will be effective, efficient and last the duration of the life of the structure.



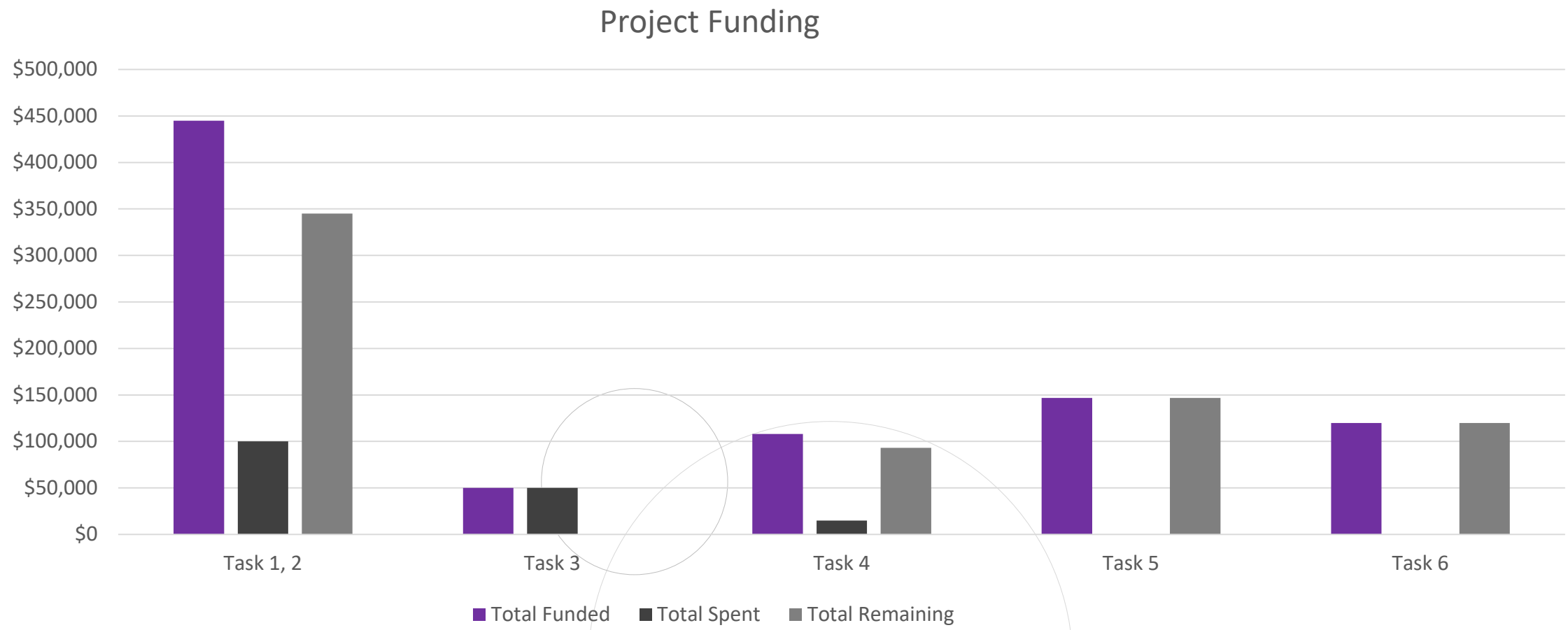
TASK 6: HEAD START REPLACEMENT BUILDING DESIGN

- Recently approved
- Allocation of work is currently underway.
- Location of the Head Start Building will be a subject of discussion within the planning effort in Task 4.





CURRENT PROJECT STATUS





WHAT'S CHALLENGES WERE FACED BY THE COMMUNITY?



CHALLENGES

Chefornak has faced challenges in the last year that have affected the community on many levels...

Community Losses

The loss of Walter Lewis last year was a serious blow to the community and the Traditional Council. He was a crucial leader and mentor for all and his loss had effects throughout Chefornak.

Turnover at TC

As a consequence of some of the losses and the stresses and demands of the leadership position at the Traditional Council, turnover has made continuity of leadership a significant challenge. This has affected many aspects of the work and somewhat slowed progress.

Slow Funding Throughput

It has been challenging to get funding in place where it can be accessed by the community, delaying work. This has primarily been because of the turnover, with new leadership getting familiarized with the operation but has also suffered from insufficient funding allocations for a local management position to track and administer grants once awarded. This is likely a full time position.



WHAT'S NEXT?



FUTURE PROJECTS

In order to complete several of the existing projects, these next steps need to happen...

Final Design of Barge Landing

Complete the design drawings and specifications for the preferred alternative selected for the permanent barge landing. These documents will be essential for seeking final construction support.

A/E Plans for Structure Relocation

After identification and assessment of structures to be moved to the new subdivision in the current planning exercise, plans and specifications should be developed for implementation of the moves. These plans will be important to ensure all needs are identified for each structure.

Final Design of Subdivision

This would provide construction drawings and specifications for the new subdivision currently in planning.



QUESTIONS? DISCUSSION?



THANK YOU (QUYANA)



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