ᑲᑐᑎᓪᓗᒍ ᓄᓇᕗᑦ ᐱᕙᖅᐸᓪᓕᐊᑎᓪᓚᕗᑦ
Building Nunavut Together
Nunavuliuqatigiingniq
Bâtir le Nunavut ensemble

ᓄᓇᓕᖕᓂ ᒐᕙᒪᒃᑯᓐᓂᓪᓗ ᐱᕕᒃᓴᖅᑎᒃᑯᑦ
Department of Community and Government Services
Nunalingni Kavamatkunnilu Pivikhaqautikkut
Ministère des Services communautaires et gouvernementaux

Panel 2
Planning/project conception

William Patch
Planning and Lands Division

Pan-Northern Meeting on Permafrost Hazard Mapping
March 8, 2018

At what stage in your projects do you find out about permafrost conditions? During which stages are the maps intended to be used, and how?

- Preference to build on bedrock, so permafrost may not be an issue to begin with. If bedrock site is unavailable within close proximity to the existing townsite (which is common in some communities), then we would look elsewhere.
- If permafrost exists, we need to know in advance of updating the Community Plan and/or prior to subdivision development, but the approach must be different for each community. There are three possible scenarios:

  1. Only one possible area to build *or* questions about an existing subdivision: Detailed analysis and investigations at subdivision–scale is required (e.g., Nunami Stantec Geotechnical and Drainage Analysis in Clyde River).

  2. Several possible areas to build: Some combination of 1 & 3.

  3. Little/no community input on where to build: Community-scale terrain mapping is the first step (e.g., 3V Geomatics Terrain Mapping), for the purpos of finding a general area suitable for development.

How do you include local/Indigenous knowledge of permafrost conditions and the map-making process?

- Meetings and groundtruthing (walking) with Elders, Community Councils, and municipal staff is critical portion of hazard mapping and all of our Community Planning work. There are two main reasons for this:

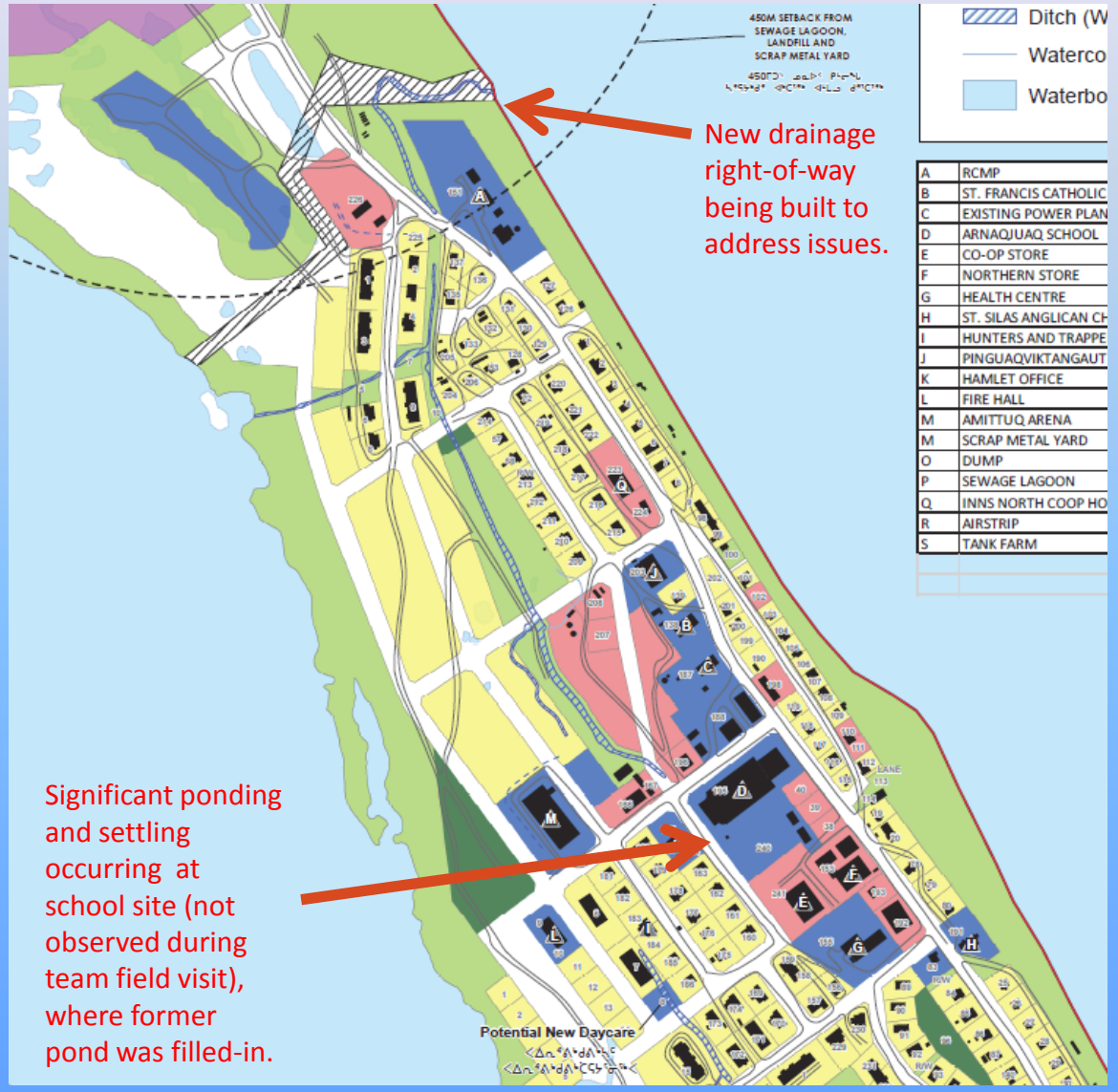
    1. Critical intelligence is gained that would otherwise not be available, for example:

        - former waterbodies that have been filled-in (strong likelihood of subsurface permafrost and of surface water infiltration);
        - small streams/waterbodies/drainage not captured in satellite imagery;
        - small-scale evidence of settling and erosion; and,
        - areas where “ponding” occurs.

    2. The community is less likely to implement the plan without having Elders and Council being brought aboard in the first place and included in the decision-making.

How do you include local/Indigenous knowledge of permafrost conditions?

Example:
Ponding and drainage issues identified by public consultation for Hall Beach Community Plan update



How do you include local/Indigenous knowledge of permafrost conditions?

Example:
Proposed in-filling of a waterbody in Taloyoak.

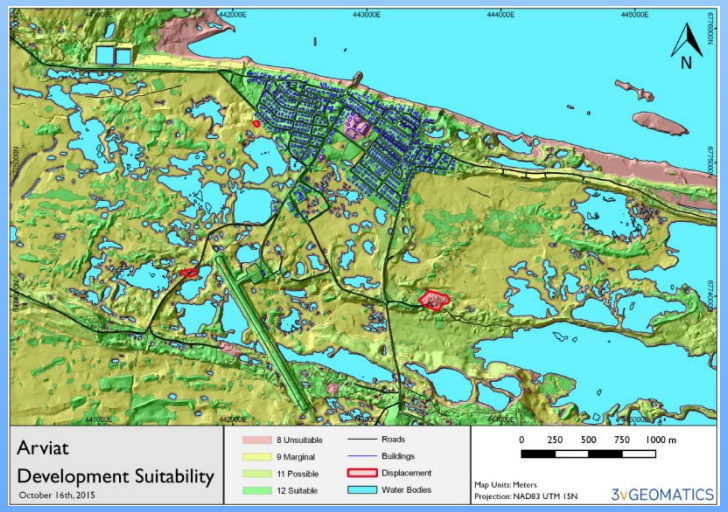
Community support for in-filling the Ghost town lake, to prevent future tragedies and provide new residential lots.

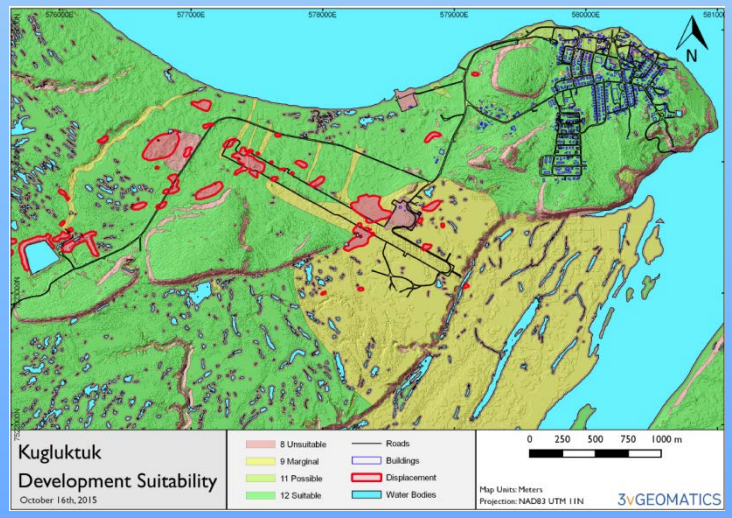
Community Planners have strongly recommended, at least, first doing a geotechnical investigation for permafrost.

Nunavut

Are you getting the right information at the right time to allow you to adapt?

- We have used terrain hazard mapping for Community Plan updates when available, but financial & time constraints have prevented us from commissioning more mapping.
- For example, we used 3V Geomatics terrain mapping in our Community Plan update for the municipalities of Arviat and Kugluktuk.





How could/do hazard maps help you adapt?

- CGS Planning & Lands and Nunavut municipalities have a statutory obligation to update Community Plans on a five-year cycle and we would like permafrost hazard mapping to be integrated into this process, so that it is done in advance of developing each Plan.
- We need to gather as much information as possible on permafrost hazards in order to present to Councils options for future subdivisions.
- However, the presence of permafrost does not necessarily prevent us from developing a site, it simply means that more site preparation and on-going maintenance is required.
- For instance, consistent drainage planning during subdivision development, and maintaining the drainage channels, can improve the developability of a site.