ABANDONMENT AND RESTORATION PLAN

PAULATUK SEWAGE AND SOLID WASTE FACILITY

PAULATUK, N.W.T.

Submitted by:

Hamlet of Paulatuk

August 1994

1.0 BACKGROUND

Paulatuk did not have an adequate disposal site for sewage and solid waste. The original sites were too close to the community, about 350m from existing development which was not in compliance with Municipal and Community Affairs Standards (MACA) or the Public Health Act. In addition, in 1993 a new airstrip was opened to the immediate north of the existing sewage and solid waste sites.

In 1993 construction began on relocating the sewage/solid waste sites to a location in the area of "Lake A" about 3km south of the existing site. The new site consists of a bulky metal waste area, honeybag pit, solid waste trenches and a natural sewage lagoon at Lake A. Construction was complete on the solid waste trenches in September 1993 and the community has been using the new site for solid waste disposal since that time.

Construction is currently being completed on the sewage lagoon portion of the project and it is expected that the community will begin using the new facility by September 1994.

2.0 ABANDONMENT OF EXISTING SITE

This section of the plan has been completed using Part F of the Paulatuk Water Licence as a guideline.

2.1 Contaminated site remediation

Paulatuk is a community of approximately 350 people. There has never been any heavy industry in the area therefore the primary source of solid waste has been from municipal type waste. For this reason it is not believed that there are any wastes on the site which would cause this site to be classified as "contaminated". No specific remediation of contaminated waste is planned.

With regard to the sewage lagoon, there is a steady flow of water through the lagoon system with the ocean as the final receiving body. The specific objective as stated in section 1.3 of "Guidelines For The Abandonment and Restoration of Sewage Lagoons in The NWT" are as follows:

1. minimize future effects on public health and safety

After the lake ceases to be used as a natural lagoon it is expected that natural biological processes active in natural lagoons will return this lake in time to its original state. There is no evidence of any sludge build-up. Only municipal waste water has been treated in the lagoon therefore there is not expected to be any great amount of heavy metal contamination. No specific treatment of sludge is planned.

2. minimize public exposure to odours, noise, etc., during restoration

Restoration will consist of removing structures on site. Natural biological processes will restore site.

3. ensure that effluent quality meets the licence requirements

Effluent from this site will be analyzed on an annual basis to ensure that it is in compliance with water board guidelines. The regional water resource officer (DIAND) has established an SNP site at the mouth of the stream where effluent enters Darnely Bay (ocean receiving body).

4. ensure proper protection of the environment

During and abandonment there is not expected to be much heavy equipment activity in the vicinity of the lagoon. After abandonment the site is to be left with no further development planned for the area.

5. minimize long term maintenance and monitoring

Signage will be place in the abandoned lagoon area restricting further disposal of any waste materials. It is expected that annual monitoring of effluent will be sufficient to ensure compliance with Waterboard guidelines.

6. prevent leaching of contaminants through ground water system

This natural lagoon is at sea level. The entire area is underlain with permafrost. For these reasons it is not expected that leaching from contaminants migrates to any extent through ground water flow.

7.return the site to an appropriate level of contamination and aesthetic appearance, which will vary depending on the final use of the site.

The perimeter of the site will be clear of debris and the chute structure removed. It is recommended that the site be left with no further development plans.

2.2 Leachate Prevention

Regular operation and maintenance of the solid waste site has included trenching and burning of waste material. Solid waste remaining on the site will be levelled into low areas on the site and covered with sand, graded, capped with gravel and seeded. This will restrict moisture from entering waste media and thus limit leachate production. The site is underlain with permafrost which will act a barrier in the transport of any leachate. It is expected that after covering the site the permafrost will move up into the buried waste and further act to prevent any liquid transport through the waste media.

2.3 Scope of Work and Implementation Schedule

1. Removal of Metal Debris from perimeter of Lagoon

This work will include removing various metal debris including empty oil drums from the perimeter of the abandoned sewage lagoon. The metal will be hauled to the new Bulky Metal Waste Site. This work will be done during the summer of 1994.

2. Removal of the old Sewage Chute

The new sewage chute at Lake A will be installed by September 1994. At this time the new facility will be commissioned and the existing lagoon abandoned. The old sewage lagoon chute will be removed during the fall of 1994.

3. Covering of Site

The new site in the area of Lake A is currently being used for waste disposal. The existing site is now ready for abandonment. Abandonment will consist of levelling the remaining solid waste on site into low areas. The entire site will then be capped with .3m to .5m of sand and graded so as to promote drainage away from buried waste. The sand will be excavated from new solid waste pits in the area of the new sewage/solid waste site. The sand will be overlain with .1m of granular material to hold down the sand cover. This work will occur during the summer of 1994.

Finally the site will be fertilized and seeded with an appropriate mix of northern grasses. This work will occur during the spring/summer of 1995.

4. Construct Levee

A levee will be constructed along the face of buried solid waste adjacent to the old sewage lagoon. The levee will be constructed using pit run gravel as per attachment A. The levee will protect the buried waste from any shore erosion. No significant erosion is expected at this site as it is protected from the direct influence of storm surges coming off Darnley Bay. Construction of levee will commence after old waste site has been capped. Construction of levee should be complete by fall 1994.

2.4 Maps

A sketch map delineating all disturbed areas, borrow material locations, and site facilities is included in Appendix B.

2.5 Altered Drainage Patterns

The surface run-off from the reclaimed site will be graded toward the old sewage lagoon and away from buried wastes. This was the original drainage pass, therefore there will be no alterations.

2.6 Type and Source of Cover Material

The sand cover for the reclaimed solid waste site will come from excavated material from new trenches in the area of the new solid waste site.

2.7 Future Area Use

The reclaimed site should be left and no development planned for it as it lays directly on the approach way of the new airstrip.

2.8 Hazardous Wastes

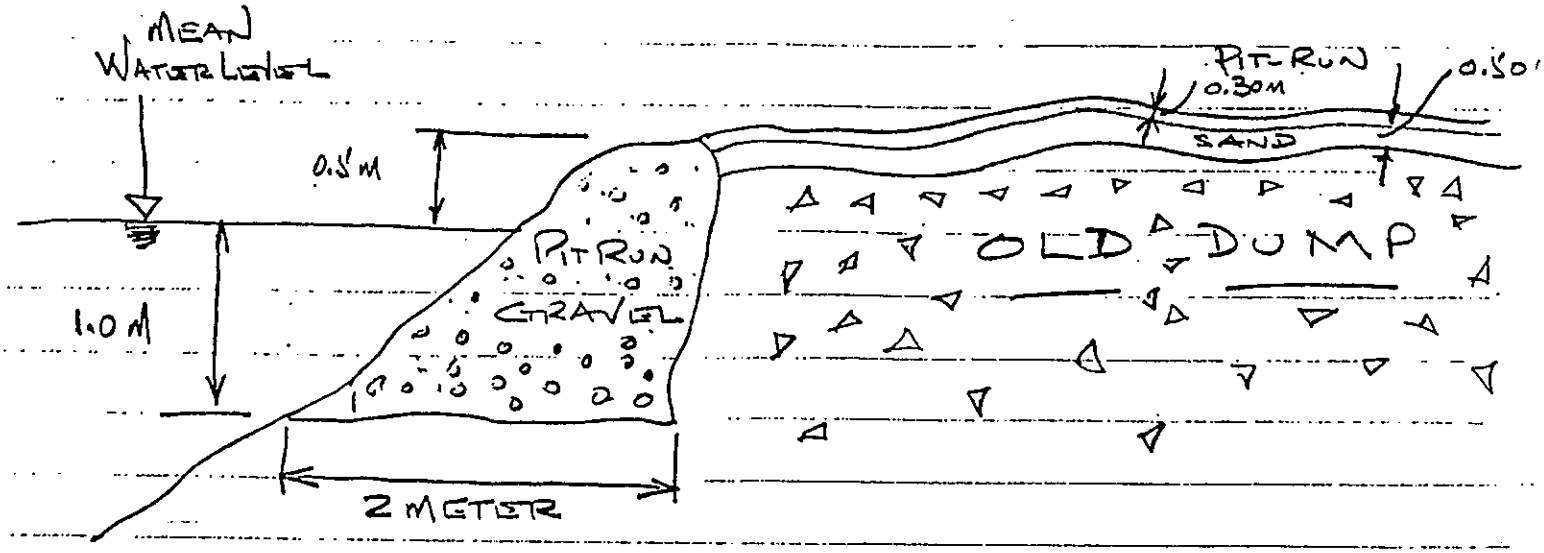
As mentioned previously, the waste material at the old site consists almost entirely of municipal waste. Due to the absence of industrial activity in there is minimal risks from hazardous wastes. The community has restricted disposal of petroleum wastes at the site.

Attachments:

1. Sketch of levee construction
2. Map of Old and New Sites

LEVEE DESIGN TIDAL POND - PAULATUK

DUMP COVER — BURYING OLD DUMP.



NOTE: LEVEE 30 METERS LONG

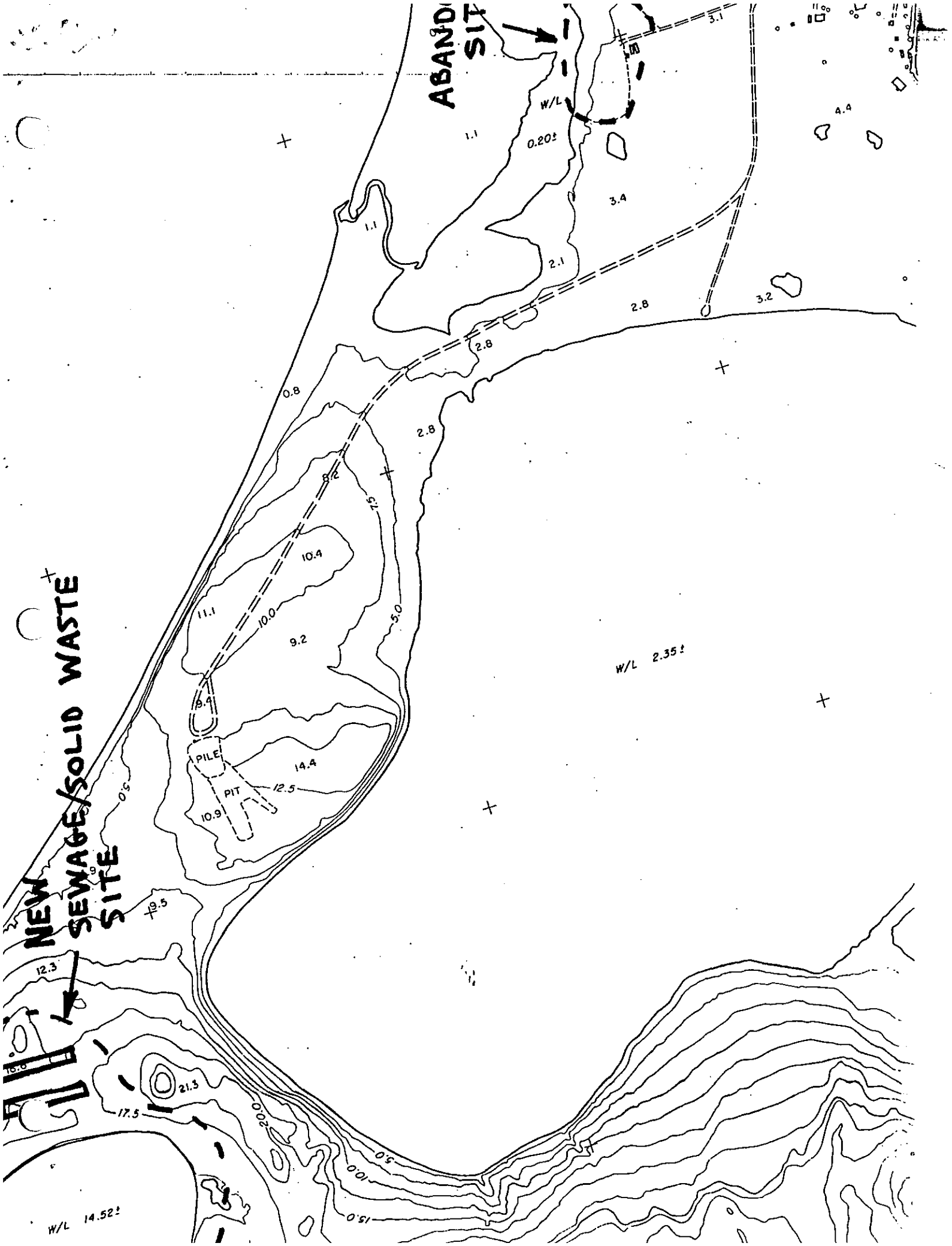
N.T.S.

QUANTITIES.

① PIT-RUN GRAVEL (DPW&S) 135 m^3. (LEVEE)

② SAND (LOCAL) 1,232 m^3. (DUMP)

③ GRAVEL (PIT-RUN) (LOCAL) 660 m^3. (✓)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3.4
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10.4
11.1
10.0
9.2
5.0
W/L 2.35±
PILE
PIT
14.4
12.5
10.9
NEW
SEWAGE/SOLID WASTE
SITE
12.3
21.3
17.5
20.0
15.0
W/L 14.52±