

Department of Indian Affairs
and Northern Development (DIAND)

**WORKSHOP ON BORROW
MATERIAL REQUIREMENTS OF
PROPOSED MACKENZIE VALLEY
PIPELINES**



D003331

February 16 - 17, 1993

The Explorer Hotel - Katimavik Room
Yellowknife, Northwest Territories



Stanley

Workshop Facilitators:
Stanley Associates Engineering Ltd.
Yellowknife and Edmonton

Department of Indian Affairs and Northern Development (DIAND)

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WORKSHOP AGENDA

DAY 1 - TUESDAY, FEBRUARY 16, 1993

7:15 - 7:45 a.m. Continental Breakfast Meeting with Technical Presenters
7:45 - 8:15 Workshop Registration

Explorer Hotel - Katimavik Room
Explorer Hotel - Katimavik Room

Opening Plenary Session

8:15 - 8:25 a.m. WELCOME AND OPENING REMARKS
8:25 - 8:35 Workshop Objectives and Agenda Review
8:35 - 8:45 Workshop Communications

Bob Gowan, DIAND
Colin Anderson, Stanley Engineering
Bob Mahnic, Communiplan/Stamley

Technical Panel "A" - Sources of Information on Borrow Resources

8:45 - 9:00 a.m. Status of Surficial Geology Mapping
9:00 - 9:15 Federal Borrow Resources Inventory Programs
9:15 - 9:30 Borrow Resources in Bibliographic Databases
9:30 - 9:45 Question Period and Summary
9:45 - 10:00 Coffee/Refreshment Break

Alejandra Duk-Rodkin, Geolog. Survey of Canada
Bob Gowan, DIAND
Ross Goodwin, Arctic Institute of North America
Bob Mahnic, Communiplan/Stamley

Technical Panel "B" - Regional Borrow Deposits Inventories

10:00 - 10:20 a.m. South Slave Region Inventory
10:20 - 10:40 Upper Mackenzie Corridor Inventory
10:40 - 11:00 Lower Mackenzie Corridor Inventory
11:00 - 11:20 Bed of Mackenzie River Inventory
11:20 - 11:40 Mackenzie Delta Region Inventory
11:40 - 12:00 p.m. Question Period and Summary
12:00 - 1:15 Lunch Break

Nick Hernadi, Thurber Engineering
Rita Olthof, EBA Engineering
Jim Oswell, HBT AGRA
Neil MacLeod, EBA Engineering
Jack Fujino, Stanley Engineering
Bob Mahnic, Communiplan/Stamley

Technical Panel "C" - Typical Borrow Materials Usage

1:15 - 1:30 p.m. Typical Transportation Requirements
1:30 - 1:45 Typical Community Requirements
1:45 - 2:00 Norman Wells Pipeline Borrow Materials
2:00 - 2:15 Historical Borrow Demand Forecasts
2:15 - 2:30 Question Period and Summary
2:30 - 2:45 Coffee/Refreshment Break

Bryan Peterson, GNWT-Transport
T.B.A., GNWT-Public Works
John Smith, Interprovincial Pipe Line
Jack Fujino, Stanley Engineering
Bob Mahnic, Communiplan/Stamley

S. TRAYNOR

Technical Panel "D" - Potential Industrial Demands

2:45 - 3:15 p.m. Borrow Requirements for Potential Hydrocarbon Development
3:15 - 3:30 Question Period and Summary

Jim McDougall, North of 60 Engineering
Bob Mahnic, Communiplan/Stamley

Discussion Panel "A" - Industrial Borrow Demand Issues

3:30 - 3:45 p.m. Mackenzie Delta Production Facility Borrow Demand Issues
3:45 - 4:00 Gas Pipeline Borrow Demand Issues
4:00 - 4:15 Oil Pipeline Borrow Demand Issues

Jim Herbert, Inuvialuit Petroleum Corporation
Olie Kaustinen, Polar Gas
John Smith, Interprovincial Pipe Line

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Optional Evening Program (Cash Bar Available)

7:00 - 7:30 p.m. "Norman Wells Pipeline Project" Construction Video
7:30 - 7:50 Mackenzie Valley Granular Resources Computer Demonstration
7:50 - 8:10 NOGAP Bibliographic Database Computer Demonstration
8:10 - 8:30 Beaufort-Delta Pipeline Resources Computer Demonstration
8:30 - 8:50 "Upon This Rock-Managing Our Granular Resources" Video

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Bob Gowan, DIAND
Bob Gowan, DIAND
Lorne Matthews, GNWT-Energy and Mines

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DAY 2 -- WEDNESDAY, FEBRUARY 17, 1993

8:15 - 8:20 a.m. Day 2 Agenda Review

Colin Anderson, Stanley Engineering

Discussion Panel "B" - Potential Constraints to Borrow Development

8:20 - 8:35 a.m. Potential Environmental Impacts: Biophysical
8:35 - 8:50 Potential Environmental Impacts: Fisheries
8:50 - 9:00 Heritage and Archaeological Sites

David Sherstone, Science Institute of the NWT
Steve Harbicht, Fisheries and Oceans
T.B.A., Prince of Wales Heritage Centre

Discussion Panel "C" - Land Claims and Borrow Supply: Aboriginal Perspective

9:00 - 9:30 a.m. Borrow Availability and Cost - Inuvialuit Lands
9:30 - 9:45 Coffee/Refreshment
9:45 - 10:15 Borrow Availability and Cost - Gwich'in Lands
10:15 - 10:45 Sahtu Region Borrow Issues
10:45 - 11:15 Deh Cho Region Borrow Issues

Charles Klingenberg, Inuvialuit Land Admin.

Willard Hagen, Gwich'in Tribal Council
George Cleary, Sahtu Tribal Council
Marvin McDonald, Deh Cho Tribal Council

Break-Out Work Groups and Plenary Session

11:15 - 11:30 a.m. Overview of Break-Out Sessions
11:30 - 12:30 p.m. Room Check-out / Lunch Break
12:45 - 2:30 Break-Out Work Group Sessions
2:30 - 2:45 Coffee/Refreshment
2:45 - 3:15 Break-Out Group Presentations and Recommendations

Bob Mahnic, Communiplan/Stamley

Assigned Break-Out Groups

Group #1 and Group #2 Leaders

Concluding Plenary Session

3:15 - 3:25 p.m. Workshop Proceedings and Evaluation
3:25 - 3:30 CLOSING REMARKS

Bob Mahnic, Communiplan/Stamley
Bob Gowan, DIAND



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Facsimile

To: All Mackenzie Borrow Resources Workshop Participants

Attention: Alejandra Duk-Rodkin, GSC, Calgary (fax: 1-292-5377)
 Jack Fujino, Stanley, Edmonton (fax: 425-1065)
 Ross Goodwin, Arctic Institute, Calgary (fax: 1-282-4609)
 ✓ Bob Gowan, DIAND, Ottawa (fax: 1-819-953-2590)
 Jim Herbert, IPC, Calgary (fax: 1-266-4833)
 Nick Hernadi, Thurber, Calgary (fax: 1-252-8159)
 Ollie Kaustinen, Polar-Delta, Calgary (fax: 1-267-2667)
 Neil McLeod, EBA, Calgary (fax: 1-236-7033)
 Jim McDougall, North of 60, Calgary (fax: 1-245-0166)
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 Rita Olthof, EBA, Calgary (fax: 1-236-7033)
 Jim Oswell, HBT AGRA, Calgary (fax: 1-248-2188)
 ✓ Betty Anne Rail, DIAND, Ottawa (fax: 1-819-953-2590)
 John Smith, IPL, Edmonton (fax: 420-8157)
 ✓ Steven Traynor, DIAND, Ottawa (fax: 1-819-953-2590)

From: Bob Mahnic

Date / Pages: February 12, 1993 / 3 pages including cover

Comments: Attached is a copy of the workshop agenda for the Mackenzie Valley Borrow Resources Workshop to be held on Tuesday, February 16 and Wednesday, February 17. Forty participants have registered for the workshop.

Workshop registration will commence at 7:45 on Tuesday morning. Workshop participant guides (including the presentation abstracts) will be distributed at that time.

We would ask that those speakers appearing in any of the "Technical Panel" sessions attend a briefing at 7:15 a.m. on Tuesday morning, as per the agenda.

We look forward to seeing you at the workshop. Thanks.

S. TRAYNOR

Workshop Agenda and Participant List

Technical Panel "D" - Potential Industrial Demands

2:45 - 3:15 p.m. Borrow Requirements for Potential Hydrocarbon Development
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Colin Anderson, Stanley Engineering

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Gary White
~~David Shaw~~, Science Institute of the NWT
Steve Harbicht, Fisheries and Oceans *Brian Ferguson*
~~T.B.A.~~, Prince of Wales Heritage Centre
Tom Andrews

Discussion Panel "C" - Land Claims and Borrow Supply: Aboriginal Perspective

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Charles Klingenberg, Inuvialuit Land Admin. ✓
see GNWT
Willard Hagen, Gwich'in Tribal Council ✗
George Cleary, Sahtu Tribal Council ✓
Marvin McDonald, Deh Cho Tribal Council ✓

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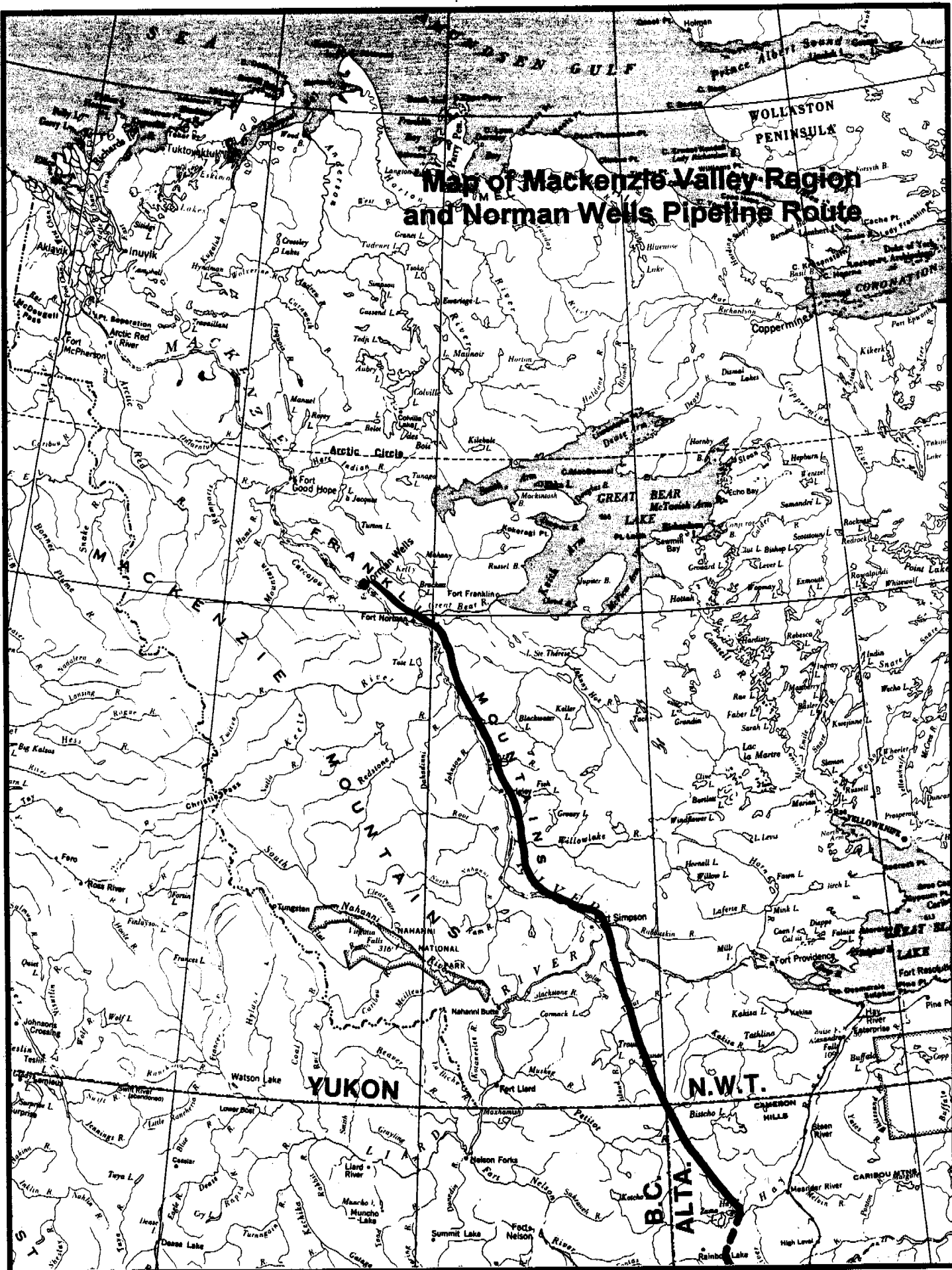
Assigned Break-Out Groups

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Bob Gowan, DIAND



Workshop Purpose and Objectives

- MACKENZIE VALLEY BORROW RESOURCES WORKSHOP NOTES -

→ how does our work via reports and interpretation agree/disagree w. the GSC interpretations

→ what may be possible can only be a scuff of gravel over ice

a sensitive terrain
in that minor changes can create hazardous effects.

→ part interested in the dynamic areas geomorphologically which lead into the optimization of a granular resource and environmental and development concerns

→ pit development ^{often} results in poor design
↳ utilization and development of ground probing radar to delineate the boundaries and depth of ground ice

Technical Panel "A"

Sources of Information on Borrow Resources

- MACKENZIE VALLEY BORROW RESOURCES WORKSHOP NOTES -

- Forest fires can be big problem with detachment slides which can lead to retrogressive thaw flow
- landslide ~~at~~ map of Mackenzie delta available in open file report

- MACKENZIE VALLEY BORROW RESOURCES WORKSHOP NOTES -

H&R => geotechnical support & research, major projects, transboundary issues

DIAND => Resource manager, not resource user
Regions => planning, permits etc.

-> NO GAP Project

-> current projects -> an overhead of projects

- MACKENZIE VALLEY BORROW RESOURCES WORKSHOP NOTES -

- all NO GAP reports are in a database
- on another base database (CANGAS database)
- 241 citations in draft
- will be adding codes for linking to GIS applications

Technical Panel "B"

Regional Borrow Deposits Inventories

- MACKENZIE VALLEY BORROW RESOURCES WORKSHOP NOTES -

-> Taylor and Nightingale studies - ask about?

- MACKENZIE VALLEY BORROW RESOURCES WORKSHOP NOTES -

→ converting to ESE BASE 4, the data from GSC boreholes

- MACKENZIE VALLEY BORROW RESOURCES WORKSHOP NOTES -

→ Inuvik area

→ another Red Hat in management area

- MACKENZIE VALLEY BORROW RESOURCES WORKSHOP NOTES -

- is material there
- demand for it
- an evaluation of the environmental impacts
- env. effects overall would be negligible
 - ↳ however, you would have to be very site specific
 - ↳ but it is env. manageable.

- MACKENZIE VALLEY BORROW RESOURCES WORKSHOP NOTES -

Proven Prospective
38,900 682,700
 ←
 20%

↳ serious work need to be done

→ caution should be used in reviewing
the available numbers

Technical Panel "C"

Typical Borrow Materials Usage

- MACKENZIE VALLEY BORROW RESOURCES WORKSHOP NOTES -

new winding 150,000 m³ of fill & sub
15,000 m³ surfacing & gravel
maintenance 10,000 m³ winding / 20 yrs

highway maint. 100 m³ / km / yr.

Total of 1,000,000 m³ for 20 yrs

no
embankment

Extension of Mackenzie Highway

↳ wexley to Dempster 800 km

350,000 m³ of pitrun capping mtl

850,000 m³ of processed surfacing mtl

up to 3,000,000 m³ of processed maint. mtl / 20 years

Paved track up to 9,000,000 m³ of granular mtl.

- MACKENZIE VALLEY BORROW RESOURCES WORKSHOP NOTES -

- produce material through stockpiling in the different communities
 - demands are difficult to assess
 - sort out the private sector
 - to need to historical use figures to get a handle on requirements
 - 20 - 30,000 m³ / ~~year~~ yr
 - 100,000 m³ / ~~year~~ yr for Norman Wells
 - doesn't get involved in regional centres such as Norman Wells
 - 20-30 avg. isolated 70-80 avg.
- Tuktoyaktuk is the longest haulage

John Smith, P. Eng

① Construction Phase

- Select backfill on slopes 17,000 m³
- Facilities: valve sites 500 m³
- Pump Stations / Remote maintenance site minor
- Camps 500 m³
- Stream Rip Rap 2,000 m³
- Stockpile Sites unavailable

② Operations & Maintenance

1986 → 65,000 m³ first year 50th 10^{3rd}

~1,000 depending on the site maintenance

- ③ Features 2 small 2 inch Pipe (line to Inuvik @ 0°C)
- slopes 20,000 m³ valves and facilities 10,000 m³

- MACKENZIE VALLEY BORROW RESOURCES WORKSHOP NOTES -

Alaska Gas Pipeline	27,743	} all from 70's
Arctic Gas Pipeline	27,743	
Mackenzies	47163	

→ is this
reasonable

Offshore → huge consumer

102,649

Technical Panel "D"

Potential Industrial Demands

- MACKENZIE VALLEY BORROW RESOURCES WORKSHOP NOTES -

→ make a photocopy of Bob's handout from Jim's talk

→ if technology uplift or force was incorporated then they can become competitive at 20 dollars @ today prices

→ need a 200mb input from to start the process

NORCOST

Is can you link to a GIS system similar to the forest industry

→ 2006-2010 $\Rightarrow 5,500,000 m^3$ possibly required

→ cost of adding environmental bonds may significantly increase the cost

Discussion Panel "A"

Industrial Borrow Demand Issues

- MACKENZIE VALLEY BORROW RESOURCES WORKSHOP NOTES -

5117 → shallow exploratory well converted to a production well for regeneration of power at Tuktoyaktuk

Cameron Hills - Tanker → oil 900 barrel / day

↳ pipeline not viable

↳ 500,000 m³ is a best estimate

→ size (i.e. diameter of the pipeline) is a significant factor in determining the granular resource requirements

→ a definite decrease in the requirements for granular resources in oil and gas production and associated features

→ is it economics or technology

↳ a little bit of both.

↳ experience and technology makes the industry more efficient and thus more cost-effective and less wasteful.

Discussion Panel "B"

Potential Constraints to Borrow Development

- MACKENZIE VALLEY BORROW RESOURCES WORKSHOP NOTES -

- climate change too will have a significant impact on the physiography, if the climate warms up then the ground will change.
- look on the research ~~projects~~ projects going on in the western arctic through the Science Institute in Inuvik
- Inuvik Library is well stocked
- what is a deleterious substance
 - ↳ i.e. does that include water laden with suspended sediment
- river channels themselves
 - Fisheries database from Steve Harbeck.
 - ↳ call back in a few months
- guidelines for the regulatory aspects of the heritage
 - ↳ get a copy of the the database from Canadian museum of civilisation
- with NORCOST the env. studies can really set off the timing and should be taken into some consideration especially onshore and offshore.
- need to divulge the information ^{on archaeology} to the resource management areas for their own information
- communities are important sources of information since they often keep quiet on areas of significance so community involvement is important

Discussion Panel "C"

Land Claims and Borrow Supply: Aboriginal Perspective

- MACKENZIE VALLEY BORROW RESOURCES WORKSHOP NOTES -

7(1)(A) surface and subsurface

7(1)(B) surface rights including sand & gravel

ACC HCC ICC PCC TCC SHCC

IRC — ILA — ILAC

ATC HCC ITC PTC TTC HTC

- implementing a program of environmental monitors
- ILAC - 2nd Wednesday of every month

1992-93

↳ 1000 cubic metres $\Rightarrow$ \$17,994

↳ for admin cost $\approx$ \$40 / cu. yard

↳ cost for removal is borne by contractor

any person can get 50 cubic yards
for free once a year

↳ rarely used in Tuktoyaktuk but can
see future growth

→ an umbrella agreement with GNWT
which excludes gravel.

→ pre-inspection and those as required

→ small use right now just some road upkeep

- MACKENZIE VALLEY BORROW RESOURCES WORKSHOP NOTES -

- 1990 Dene-Metis split which led to Gwich'in Land Claim
- amt of land impacts on selection
 - aboriginal source of gravel is Willow Creek
 - ↳ G.N.W.T needs access 1.83 or 89 cubic yard royalty
 - is access true access and what is the definition
 - ↓ + \$6 admin
 - + \$6 reclamation
 - + 185 application fee
 - protected 2 other sites for government use
 - don't know any of the exact requirements
 - gov't gets access when no other sites are available
 - water board controls gravel and sand
 - flexibility on waiving for the royalty fee for the community projects
 - Gwich'in strong central organization

George Cleary's Talk:

- key to the claim is the management aspects
- don't have participation agreements
 - ↳ worked out under more negotiations
- a tight time schedule
- #1 priority is ratification
 - ↳ complete implementation plan
- Good Hope 80% Feasibility 0% complete
 - ↳ corridors along Mackenzie are a problem
- community level - aboriginal district
 - ↳ Fort Good Hope - Norman District
- Benefits on surface lands will be given to community up to & amt then the surplus will be distributed to other communities equally

Don't know may be the next claim.

Break-Out Work Group Assignment

- MACKENZIE VALLEY BORROW RESOURCES WORKSHOP NOTES -

Final Plenary Session Recommendations