FILE: S03L1-016 (ANNUAL REPORT)

SUITE 1000 / 700 - 9th AVENUE S.W. / CALGARY, ALBERTA, CANADA T2P 3V4

CANADA LTD.

(403) 261-1200
FAX (403) 266-5987

VIA FACSIMILE 867.598.2325 2437 13 pm

January 28, 2005

Sahtu Land & Water Board
Box 1
Fort Good Hope, NT
X0E 0H0

Attention: Patrick Clancy

Re: Apache Canada Ltd. - Nogha/Tunago Settlement Lands 2003/2004 Drilling Program
Water Licence S03L1-016

On behalf of Apache Canada Ltd. (Apache), please consider the following information in response to the Violation of Terms and Conditions. For ease of review, the response has been presented in the same order as the Sahtu Land and Water Board letter dated January 12, 2005.

Part B: General Conditions, Sub-part 2, (b): The Annual Report only reported the annual quantities of waste deposited, but neglected to comment on monthly deposits of waste.

Approximately 60m³ of waste was discharged into the sump in March and 20m³ of waste was discharged in April for the K-14 wellsite. The B-23 sump was completely excavated due to an unauthorized discharge and the contents removed and trucked to Alberta for disposal. Therefore, monthly waste deposits are not applicable.

Part B: General Conditions, Sub-part 2, (b): The volume of waste deposited in the K-14 sump is listed as a total volume of 228m³, however, the Notification of Drill Waste Disposal Form dated April 25, 2004 indicated that only 80m³ was to be mix-buried-covered. Please explain why 2.85 times more waste was deposited than indicated on the Drill Waste Disposal Form.

The results submitted were derived from an e-mail dated August 25, 2004 which listed the sump volumes for the wells (see attached). However, these volumes were the facility disposal quantities for CCS in Rainbow Lake. NESL recently received the original e-mail which clearly indicates the communication error (see attached). The actual disposal quantity for the sump was 80m³, as indicated in the Notification of Drill Waste Disposal Form.

Part B: General Conditions, Sub-part 2 (f): The discharge of Distillate 822 or contaminants into the B-23 sump is considered to be an unauthorized discharge. Please include details of this discharge in this part of the Annual Report.

Details of the discharge of contaminants into the B-23 sump have been included in the unauthorized discharge portion of the Annual Report (see attached).

Part D: Conditions Applying to Waste Disposal, Sub-Part 1: This part requires the submission of a Waste Management Plan three days prior to spudding a well. The plan has not been received to date. This must be submitted immediately and must include the results of baseline soil sampling as set out in Part E: Sub-part 10 of the licence.

The Waste Management Plans for K-14 and B-23 and the baseline soil sampling results for B-23 have been attached. However, Apache did not collect a baseline soil sample of the K-14 drill pad. As an alternative, it is proposed that a control sample be taken 50 metres upslope of the K-14 wellsite in comparable terrain, as well as a sample from the wellsite. Samples will be collected under thawed ground conditions and results will be submitted within 48 hours of receipt, or as directed by the SLWB.

Part E: Conditions Applying to Abandonment and Restoration, Sub-parts 2 to 5. The report detailing the results of the required Annual Summer Inspection have not been received to date. As per Part B: General Conditions, Sub-part 8, the report is due 30 days after the inspection is completed. This information is required immediately.

Annual Summer Inspections of the K-14 and B-23 wellsites and their associated sumps were not conducted. Apache will conduct Annual Summer Inspections and submit a report detailing the inspections within 30 days of the inspection dates for the following 4 years.

Part E: Conditions Applying to Abandonment and Restoration, Sub-Part 9: The required Baseline Soil Sampling has not been received to date and is required as baseline environmental information. This information is required immediately.

The baseline soil sample for the B-23 wellsite is attached, however Apache did not collect a baseline soil sample of the K-14 drill pad. Please see the above response regarding the waste management plan and the recommended alternative.

If you have any questions, please contact the undersigned at (403) 303-1826, FAX at 403.261.1208 or by email (david.calvert@apachecorp.com).

Sincerely,
APACHE CANADA LTD.

David Calvert
Senior Advisor, Surface Land
Regulatory, Aboriginal & Community Affairs

Attach.
cc: Margot Ferguson, Manager, Calgary Office
Northern EnviroSearch Ltd.

SUITE 1000 / 700 - 9th AVENUE S.W. / CALGARY, ALBERTA, CANADA T2P 3V4

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January 28, 2005

Sahtu Land & Water Board
Box 1
Fort Good Hope, NT
X0E 0H0

Attention: Patrick Clancy

Re: Apache Canada Ltd. - Nogha/Tunago Settlement Lands 2003/2004 Drilling Program Water Licence S03L1-016 Annual Report Update

On behalf of Apache Canada Ltd. (Apache), please consider the following additional information supporting Apache's Annual Report submitted on October 15, 2004. For ease of review, the response has been presented with the same lettering format as the original annual report.

b) The monthly and annual quantities (m^3) of each and all wastes discharged:

Approximately 60m^3 of waste was discharged into the sump in March and 20m^3 of waste was discharged in April for the K-14 wellsite. The B-23 sump was completely excavated due to an unauthorized discharge and the contents removed and trucked to Alberta for disposal. Therefore, monthly waste deposits are not applicable. The walls of the sump were sampled and analyzed to ensure no contamination remained and the sump was backfilled (see attached results).

f) List of unauthorized discharges:

One diesel discharge of 180L occurred along the Norman Wells to Ford Good Hope winter road (approximately N66°00".037' W128°19".407') and was contained in snow/ice. The spill was reported and the location was cleaned up with the contaminated snow/ice being trucked out and disposed of by Imperial Oil.

An unauthorized discharge of distillate-based drilling waste to the B-23 sump resulted in the sump being excavated and all materials taken to Rainbow Lake in Alberta for final disposal. The walls of the sump were sampled and analyzed to ensure no contamination remained and the sump was backfilled.

I trust this meets the information requirements for the annual report under Water Licence S03L1-016. If you have any questions, please contact the undersigned at (403) 303-1826 or by email (david.calvert@apachecorp.com).

Sincerely,
APACHE CANADA LTD.

David Calvert
Senior Advisor, Surface Land
Regulatory, Aboriginal & Community Affairs

Attach.
cc: Margot Ferguson, Manager, Calgary Operations
Northern EnviroSearch Ltd.

NOTIFICATIO[N] OF DRILLING WASTE DISPOSAL

The licensee certifies that the information on this form is correct and is submitted to the appropriate regulatory agency 48 hours prior to drilling waste disposal.

DAY MONTH YEAR: 25 04 2004 YOUR FILE NUMBER: West Nogha K-14

1 REGULATORY OFFICE

Appropriate regulatory office: Sahtu Land and Water Board Fax: (867) 598-2325
Second regulatory office *(if applicable)*: INAC Fax: ( ) -

2 WELL INFORMATION

Well licensee: Apache Canada Ltd.
Surface location: Well authorization/licence number:
Unique well identifier: MSL or OGC number *(if applicable)*:
Sump location or storage location 1. Same as surface location /or:
2. Same as surface location /or:
Mud type: Gel chem
Date of Sampling: DAY MONTH YEAR Proposed Date of disposal *(48 hours notice is required)* DAY MONTH YEAR 27 04 2004

Lab Name: Enviroteat Laboratories Lab Work Order: L159838

Operator/company contact	Name: John Laidlaw	Phone: (403) 261-1264			
	Company Name: Apache Canada Ltd	Mobile: (403) 862-1645	Fax: (403) 261-1349		
Sampling company contact	Name: Colin Jardine	Phone: (403) 274-9878			
	Company Name: Nordican Project Resources Ltd	Mobile: (403) 826-3390	Fax: (403) 274-7160		

If drilling sump wastes are to be disposed by landtreatment or alternate disposal methods, attach the required documentation and provide a summary in the comments section on page 2 of this form.

3 ON-SITE DISPOSAL

Fluids: ____ m³ Solids: ____ m³ Total Waste: 80 m³
Soil texture: Silty clay

LANDSPREADING ☐
Application thickness: ____ cm Incorporation depth: ____ cm

Receiving Soil EC: ____ dS/m Receiving Soil SAR: ____

	Minimum area ha	Max application rate m3/ha	Max. amount added kg/ha
Chloride			
Sodium			
Nitrogen			
TDS			

Toxicity pass: ____ Predicted oil content after mix: ____ %
Proposed application rate: ____ m³/ha
Proposed area used for disposal: ____ ha

MIX-BURY-COVER ☒
Established water table depth: 5 m Intended mix ratio: 3:1
Volume to be disposed 80 m³
Has site been used before? No Toxicity pass: Yes

Post disposal values

Chloride 92.91 mg/kg Oil 0.01 %
Total mass chloride: 80.20 kg Total mass nitrogen: 0.08 kg

4 OFF-SITE DISPOSAL

Fluids: ____ m³ Solids: ____ m³ Total Waste: ____ m³
Soil texture: ____ Horizon thickness: ____ cm

LANDSPRAYING ☐ PUMPOFF ☐ LWD ☐
Application thickness: ____ cm Incorporation depth: ____ cm *(if applicable)*

Receiving soil EC: ____ dS/m Receiving soil SAR: ____

	Minimum area ha	Max. application rate m³/ha	Max. amount added kg/ha
Chloride			
Sodium			
Nitrogen			
TDS			

Solids Loading Rate: ____ t/ha
Toxicity pass: ____
Predicted oil content after mix: ____ %
Proposed application rate: ____ m³/
Proposed area used for disposal: ____ ha
Land owner: ____
Phone: ____
Date of consent: ____

Landowner consent is required if the disposal is off site.

Horizontal Oil Well? No Hydrocarbons Added? No Salt Zone Encountered? No Nitrogen > 400 kg added? No
If you answered YES to any one of the above questions, please give details in the comments section on page 2.

WELL LICENCE No. ________

YOUR FILE NUMBER West Noghe K-14

NOTIFICATIOh ﾌF DRILLING WASTE DISPOSAL

Unique well ID ________

[illegible]

[illegible]	[illegible]	[illegible]	[illegible]
As received sample	**As received sample**	**As received sample**	**As received sample**
SG 2.03	SG ____	pH ____	Soil density ____ kg/m³
Mud density 2030.00 kg/m³	Mud density ____ kg/m³	EC ____ dS/m	Oil content ____ % dry wt
DBD 1654.24 kg/m³	DBD ____ kg/m³	TDS ____ mg/L	
Oil content 0.06 % dry wt	Oil content ____ % dry wt	Chloride ____ mg/L	**Saturated paste extract**
Phl 0.38	**Saturated paste**	Sodium ____ mg/L	pH ____
As received filtrate	SG ____	Nitrogen ____ mg/L	EC ____ dS/m
pH 12.10	Phl ____	Calcium ____ mg/L	Chloride ____ mg/L
EC 14.90 dS/m	**Saturated paste extract**	Magnesium ____ mg/L	Sodium ____ mg/L
TDS 10430.00 mg/L	pH ____ dS/m	SAR ____ mg/L	Nitrogen ____ mg/L
Chloride 1670.00 mg/L	EC ____ mg/L	Hydrocarbon, diss ____	Calcium ____ mg/L
Sodium 1440.00 mg/L	TDS ____ mg/L		Magnesium ____ mg/L
Nitrogen 2.80 mg/L	Chloride ____ mg/L		SAR ____
Calcium 1320.00 mg/L	Sodium ____ mg/L		
Magnesium 0.10 mg/L	Nitrogen ____ mg/L		
SAR 10.91	Calcium ____ mg/L		
	Magnesium ____ mg/L		
	SAR ____		

[illegible]	[illegible]

[illegible]	
EC50 (15) original	%
EC50 (15) charcoal	%

Notes

[illegible]

Analysis threshold kg		Conc of analyte mg/kg	Minimum area ha	Application rate m³/ha	Loading rate kg/ha	Max. load rate kg/ha	Total mass kg	Max. appl. quantity kg
B	2.5	0.20				5	0.03	10
Cd	0.75	0.50				1.5	0.07	3
Cr	50	12.40				100	1.64	200
Cu	100	14.00				200	1.85	400
Pb	50	5.00				100	0.66	200
Ni	12.5	8.00				25	1.06	50
V	50	7.00				100	0.93	200
Zn	150	10.00				300	1.32	600

Trace element analysis is only required if the amount of trace elements added to the mud exceeds the threshold.

[illegible]	Mix ratio:	Mix ratio:	Mix ratio:
Electrical Conductivity (dS/m)			
Sodium Adsorption Ratio			

[illegible]

			Section	Township	Range	Meridian
North-east corner	0 m South	0 m West				
South-west corner	0 m South	0 m West				

COMMENTS

Additional comments, disposal/treatment plan details, or site maps may be added on a separate page.

Multiple Wells Location

Locations   Licence/Well Authorization Number   MSL/OGC Number

February 5, 2004

Waste Management Plan
Apache Paramount Nogha K-14

Licencee: Apache Canada Ltd.
Licence Number: S03L1-016
Location: West Nogha K-14, Nogha B-23 and North Tunago E-44

Introduction

This waste management plan is in response to the "Terms and Conditions" for the Sahtu Land and Water Board's Water Licence as outlined in Part D:

> "Part D: Conditions Applying to Waste Disposal
> 1.The Licensee shall submit a Waste Management Plan (3) days prior to the spudding of a well. The plan shall be submitted to the Board and the Water Licence inspector and shall address the following: baseline soil sampling results, permafrost zones, permafrost temperatures, and depth of the active layer, specific to the final in-ground sump locations. A detailed description of the drilling muds (including approximate concentration), drilling additives, fluids, storage, processing, transportation, handling, treatment, disposal and waste minimization technologies utilized during operation shall also be included."

Soils & Permafrost

Soil samples were taken from the sump. Hydraulic conductivity was 0.000284 cm/s. The texture was sandy clay loam with 22% clay content. The active layer was estimated to be 0.0m to 1.5m.

Drilling Mud

Surface hole is to be drilled with fresh water gel chem which will be disposed into a sump adjacent to the location. The drilling plan (from Inteq) follows:

> "Plan an effective solids control strategy- The cost of a drilling fluid is directly related to the amount of dilution required. Run the finest screens possible on the shale shakers. Lease clean-ups can be an environmental problem. Minimize waste where possible. If desired, fluid from the condutor section may be used to drill out, then treat for calcium and increase vis with MILGEL as required. If mud rings are encountered, treat with SAPP or drilling detergent as required. If sand/gravel is encountered, raise viscosity with Milgel as required, to clean the hole. If losses occur, raise viscosity with Milgel and slug with sawdust. If losses are severe, raise viscosity and slug with LCM of various sizes and grades. Maintain Sawdust and Primaseal on location."

MILGEL CHEM

Density (kg/m^3)	1050-1060
F.V. (sec/L)	45-50
PV (mPa)	5-12

YP (Pa)	8-16
Gel 10 sec (Pa)	4-8
Gel 10 min (Pa)	5-10
pH	9.5-10
API FL (cc/30min)	<10
Solids (%vol)	2-4

Prior to Mix-Bury-Cover of the drilling sump, a total waste sample will be analyzed for items in the Water Licence listed under PART D, Item 15. The Water Licence Inspector and the Board will be issued laboratory results at least 10 days prior to MBC.

Main hole will be drilled utilizing Distillate 822. Prior to use, the distillate is contained in double wall 400 bbl tanks. Cuttings will be mixed with sawdust for stabilization and trucked in covered trailers to a licenced Landfill in Alberta. The drilling plan (from Inteq) follows:

> "Mix cuttings with sawdust and store in mixing tank until the end of the well for approved offsite disposal outside of the NWT. DO NOT dispose of any salt and/or invert contaminated cuttings in the sumps – this would be a contravention of the environmental regulations. Drill Shoe and new formation and perform L.O.T. After verifying no losses are occuring, displace to the Distillate 822 invert mud system. Fluid should be displaced to 822 prior to 487m. Pipe slugs and density increases should be obtained by using calcium carbonate. Verify the hole fill is recored for all trips in and out of the hole. Increase funnel viscosity to 80 sec/L and YP to 25 Pa prior to logging."

Distillate 822 Invert:
Maintain MW at 1060 kg/m3 for 60 kg/m3 ofr expected formation pressure

Density (kg/m^3)	1060
F.V. (sec/L)	45-60
PV (mPa)	12-18
YP (Pa)	10-12
Gel 10 sec (Pa)	2-4
Gel 10 min (Pa)	3-6
ES: @50 °C	>700
HTHP: cc/30min @ 50 °C	<10
Excess Lime (kg/m^3)	2.85
Solids (%weight)	26

Distillate 822 Invert System Components

Distillate 822	IRP 14 – 2002 compliant mineral oil base fluid
Calcium Chloride	Increase Filtrate Activity
CARBO-MUL-HT	Wetting agent/emulsifier
Bentone 150	Viscosifier
Carbo-Tec S	Primary Emulsifier
OMNIPLEX	Polymeric Viscosifier
Calcium Carbonate	Weighting agent and bridging material

John Laidlaw
Logistics/Construction
Apache Canada Ltd.
(403) 261-1264

Apache CANADA LTD.

February 5, 2004

Waste Management Plan
Apache Paramount Nogha B-23

Licencee: Apache Canada Ltd.
Licence Number: S03L1-016
Location: West Nogha K-14, Nogha B-23 and North Tunago E-44

Introduction

This waste management plan is in response to the "Terms and Conditions" for the Sahtu Land and Water Board's Water Licence as outlined in Part D:

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Soils & Permafrost

Soil samples were taken from the sump. Hydraulic conductivity was 0.0000965 cm/s. Permafrost temperature was measured at -4.5 °C and the active layer was estimated to be 0.0m to 1.5m.

Drilling Mud

Surface hole is to be drilled with fresh water gel chem which will be disposed into a sump adjacent to the location. The drilling plan (from Inteq) follows:

> "Plan an effective solids control strategy- The cost of a drilling fluid is directly related to the amount of dilution required. Run the finest screens possible on the shale shakers. Lease clean-ups can be an environmental problem. Minimize waste where possible. If desired, fluid from the condutor section may be used to drill out, then treat for calcium and increase vis with MILGEL as required. If mud rings are encountered, treat with SAPP or drilling detergent as required. If sand/gravel is encountered, raise viscosity with Milgel as required, to clean the hole. If losses occur, raise viscosity with Milgel and slug with sawdust. If losses are severe, raise viscosity and slug with LCM of various sizes and grades. Maintain Sawdust and Primaseal on location."

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Gel 10 sec (Pa)	4-8
Gel 10 min (Pa)	5-10
pH	9.5-10
API FL (cc/30min)	<10
Solids (%vol)	2-4

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Distillate 822 Invert:
Maintain MW at 1060 kg/m3 for 60 kg/m3 ofr expected formation pressure

Density (kg/m^3)	1060
F.V. (sec/L)	45-60
PV (mPa)	12-18
YP (Pa)	10-12
Gel 10 sec (Pa)	2-4
Gel 10 min (Pa)	3-6
ES: @50 °C	>700
HTHP: cc/30min @ 50 °C	<10
Excess Lime (kg/m^3)	2.85
Solids (%weight)	26

Distillate 822 Invert System Components

Distillate 822	IRP 14 – 2002 compliant mineral oil base fluid
Calcium Chloride	Increase Filtrate Activity
CARBO-MUL-HT	Wetting agent/emulsifier
Bentone 150	Viscosifier
Carbo-Tec S	Primary Emulsifier
OMNIPLEX	Polymeric Viscosifier
Calcium Carbonate	Weighting agent and bridging material

John Laidlaw
Logistics/Construction
Apache Canada Ltd.
(403) 261-1264

Bob Philips
Drilling Superintendent
Apache Canada Ltd
(403) 261-1316

Natalie

From: Laidlaw, John [John.Laidlaw@can.apachecorp.com]
Sent: Wednesday, August 25, 2004 2:20 PM
To: nataliea@envirosearch.ca
Subject: ACL Colville Drilling Wastes

Sump volumes for wells:
B-23
314.64 tonnes solids (drill cuttings and lease soils)
332.08 m3 fluids (drilling fluids and contaminated snowmelt)

C-34
96.98 tonnes solids (drill cuttings)
103.78 m3 fluids (drilling fluids)

K-14
138.92 tonnes solids (drill cuttings)
143.78 m3 fluids (drilling fluids)

C-49
308.94 tonnes solids (lease remediation – contaminated soils)
0 m3 fluids

All generated within Feb-Mar 2004. Disposal dates from Feb-Aug 2004

Colin Jardine

From: Colin Jardine [cjardine@nordican.ca]
Sent: Friday, August 13, 2004 10:46 AM
To: 'greg.hladun@apachecorp.com'
Cc: John Laidlaw ACL
Subject: ACL Colville Drilling Wastes

Greg, please note facility disposal quantities for drilling wastes per site as requested:

B-23
314.64 tonnes solids (drill cuttings and lease soils)
332.08 m3 fluids (drilling fluids and contaminated snowmelt)

C-34
96.98 tonnes solids (drill cuttings)
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308.94 tonnes solids (lease remediation – contaminated soils)
0 m3 fluids

All generated within Jan-Mar 2004 Disposal dates from Feb-Aug 2004

Let me know if you need anything else.

Colin Jardine
Nordican Project Resources Inc.
Phone: (403) 274-9878
Fax: (403) 274-7160
Cell: (403) 852-3390
cjardine@nordican.ca

NORWEST LABS

Analytical Report

Norwest Labs
7217 Roper Road
Edmonton, AB. T6B 3J4
Phone: (780) 438-5522
Fax: (780) 438-0398

Bill to: Northern EnviroSearch
Report to: Northern EnviroSearch
330, 703 - 6 Avenue SW
Calgary, AB, Canada
T2P 0T9
Attn: Bob Raina
Sampled By: NA
Company: NESL

Project ID: 1778NT04
Name: Apache
Location: B-23
LSD:
P.O.: 1778NT04
Acct. Code:

NWL Lot ID: 285476
Control Number: E 84231
Date Received: Jan 29, 2004
Date Reported: Feb 04, 2004
Report Number: 511497

		NWL Number	285476-1			
		Sample Date	Jan 26, 2004			
		Sample Description	Nogha B-23 / Well Centre			
		Matrix	Soil - general			
Analyte		**Units**	**Results**	**Results**	**Results**	**Detection Limit**
Classification						
Cation Exchange Capacity		meq/100g	24.9			
Salinity						
pH	Saturated Paste	pH	7.6			
Electrical Conductivity	Saturated Paste	dS/m at 25C	0.50			0.01
SAR	Saturated Paste		0.1			
% Saturation		%	40			
Calcium	Saturated Paste	meq/L	3.92			0.01
Calcium	Saturated Paste	mg/kg	31.6			
Magnesium	Saturated Paste	meq/L	2.39			0.02
Magnesium	Saturated Paste	mg/kg	11.7			
Sodium	Saturated Paste	meq/L	0.20			0.04
Sodium	Saturated Paste	mg/kg	2			
Potassium	Saturated Paste	meq/L	0.07			0.03
Potassium	Saturated Paste	mg/kg	1			
Chloride	Saturated Paste	meq/L	0.19			0.03
Chloride	Saturated Paste	mg/kg	3			
Sulphate-S	Saturated Paste	meq/L	1.90			0.06
Sulphate-S	Saturated Paste	mg/kg	12.2			
TGR	Saturated Paste	T/ac	<0.1			
Specific Gravity	Saturated Paste		1.698			
Specific Gravity	As Received		2.163			

		NWL Number	285476-1	285476-2		
		Sample Date	Jan 26, 2004	Jan 26, 2004		
		Sample Description	Nogha B-23 / Well Centre	Nogha B-23 / Sump		
		Matrix	Soil - general	Soil - general		
Analyte		**Units**	**Results**	**Results**	**Results**	**Detection Limit**
Physical and Aggregate Properties						
Hydraulic Conductivity		cm/hr	-	0.347		
Hydraulic Conductivity		cm/s	-	0.0000965		
% solids	Wet Weight	%	85.0	-		0.1

Message

Natalie

From: Laidlaw, John [John.Laidlaw@can.apachecorp.com]
Sent: Wednesday, August 25, 2004 2:20 PM
To: nataliea@envirosearch.ca
Subject: ACL Colville Drilling Wastes

Sump volumes for wells:

B-23
314.64 tonnes solids (drill cuttings and lease soils)
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