

FILE # 1-30-0139
- what info in file?

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7 October 2003

Auckland Regional Council
Private Bag 92 012
Auckland

FILE No:	56839
UNIQUE No:	
RECEIVED	
	
- 8 OCT 2003	
Auckland Regional Council	
ATTENTION:	
INFORMATION:	
ACTIONED:	

Attention: Mary Manastyrski

Dear Mary,

WITHOUT PREJUDICE

RE: KOWHAI TIMBER, MATAKANA

Please find enclosed for your information a copy of an environmental assessment prepared for Mobil Oil New Zealand Limited (Mobil) by Pattle Delamore Partners Ltd (PDP). This report documents an environmental assessment conducted following the removal of the underground and aboveground diesel storage tanks from the site in April 1997.

The assessment shows that the residual concentrations of petroleum hydrocarbons present in the soils beneath the underground diesel storage tank fall below the analytical laboratory detection limit and the commercial/industrial soil acceptance criteria of the Ministry for the Environment "Guidelines for Assessing and Managing Petroleum Hydrocarbon Contaminated Sites in New Zealand".

Although elevated concentrations of petroleum hydrocarbons were measured in the soil around the diesel engine and aboveground diesel storage tank at the time, PDP concluded that the residual hydrocarbon concentrations did not represent a risk to human health or the environment for continued commercial/industrial use of the site use. It is also noted that Mobil's aboveground tank was in good condition at the time of removal and that the residual soil impacts were a result of fuel and lube oil leakage from the adjacent engine owned and operated by Kowhai Timber.

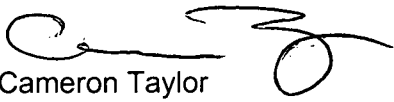
On the basis of the PDP report, no further investigation or remediation works are required with respect to Mobil's removed equipment. Mobil therefore seeks documented acceptance of the report and project closure with Auckland Regional Council.

Mobil submits that this information is commercially sensitive in terms of Section 7 of the Local Government and Official Information and Meetings Act 1987, as it could be construed as having an affect on real estate values. Mobil therefore requests that it be held as confidential and protected from public access, and released to Council employees only on a need to know basis for the sole purpose of discussing with them the effects of any petroleum product contamination identified in the report.

Please note that Mobil has provided this information as part of its commitment to avoid, remedy, or mitigate adverse environmental effects on sites where it operates. Mobil is not to be construed as admitting any liability or accepting any responsibility in respect of any

matters contained in this information and it should not be construed as an acknowledgement of liability on its part.

Yours faithfully
MOBIL OIL NEW ZEALAND LIMITED


Cameron Taylor
Remediation Manager

Encl.

PRIVILEGED AND CONFIDENTIAL
PREPARED FOR THE PURPOSES OF OBTAINING LEGAL ADVICE

REPORT ON
SITE RECONNAISSANCE
KOWHAI TIMBERS
MATAKANA

Prepared for
MOBIL OIL (NZ) LIMITED
WELLINGTON

Prepared by
PATTLE DELAMORE PARTNERS LIMITED
AUCKLAND

Reference A497
June 1997

SUMMARY

Kowhai Timbers is located near Matakana township, about 10km northeast of Warkworth. Recently, some hydrocarbon impacted soil was removed from the surface around an above ground storage tank and diesel engine in the sawmill. Analysis of soil samples collected from the base of the excavation revealed elevated total petroleum hydrocarbon concentrations in the remaining soil. Pattle Delamore Partners Limited on behalf of Mobil Oil (NZ) Limited undertook a site reconnaissance to establish the likelihood of the contamination migrating, the proximity of any receptors and determine if any additional investigation is required.

It is considered that there are no health risks associated with the hydrocarbon impacted soil in the vicinity of the diesel engine and Mobil storage tank in the sawmill. Migration of the remaining petroleum residues in the soil is unlikely, so there should be no adverse environmental impacts related to the petroleum residues remaining in the ground. No additional investigation is recommended.

Table of Contents

	Page
1.0 INTRODUCTION	1
2.0 SITE DESCRIPTION	1
3.0 PREVIOUS RESULTS	2
4.0 SITE VISIT	2
5.0 RESULTS	3
5.1 Site Observations	3
5.2 Hydrogeology	4
6.0 ASSESSMENT	5
6.1 General	5
6.2 Groundwater	5
6.3 Surface Water	6
6.4 Protection of Human Health	6
7.0 CONCLUSIONS	6
8.0 RECOMMENDATIONS	7
9.0 REFERENCES	7

Table

Table 1: Soil Sample Results	8
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Appendix

Figure
Borehole Log
Laboratory Report
Photographs

1.0 INTRODUCTION

Kowhai Timbers is located near Matakana township, about 10km northeast of Warkworth. On 9 April 1997, a diesel underground storage tank was removed from the site. During the removal, some hydrocarbon impacted soil was excavated from around an above ground storage tank (supplied by Mobil) and a diesel engine in the nearby sawmill. The Mobil engineer on site during the tank removal collected soil samples from the tankpit and from the base of the excavation in the sawmill. Analysis of the soil samples revealed elevated total petroleum hydrocarbon (TPH) concentrations in the soil remaining within the sawmill.

The following report has been prepared by Pattle Delamore Partners Limited on behalf of Mobil Oil (NZ) Limited to establish the likelihood of the contamination migrating, the proximity of any receptors and to determine if any additional investigation is required.

2.0 SITE DESCRIPTION

Kowhai Timbers Ltd is located on Matakana Valley Road about 2km northwest of Matakana township (Figure 1). The site is bounded by the road to the southwest and by Matakana River to the northeast. Kowhai Timbers Ltd produces sawn and treated timber. The neighbouring properties are farms.

The sawmill shed is located towards the northwestern end of the site, within a log storage area (Photo 1). Matakana Valley Road is located about 15m to the southwest of the shed and Matakana River is located approximately 30m to the northeast of the shed. The river surface is about 8 to 10m below the ground surface at the shed. Matakana River discharges into Kawau Bay approximately 8km to the southeast.

Figure 1 shows the area around the northwestern end of the mill shed. An above ground diesel storage tank (Photo 2) and a diesel engine (Photo 3) are contained within a bunded concrete area inside the shed.

3.0 PREVIOUS RESULTS

On 9 April 1997, a 4,500L diesel underground storage tank was removed from near the sawmill, adjacent to Matakana Valley Road (Figure 1). According to the Mobil tank removal report, the tank was in good condition with paint still intact. The soil profile in the tankpit was described as clay. Total petroleum hydrocarbon (TPH) concentrations were below detection limits in two soil samples taken from the base of the tankpit by the Mobil engineer. (Mobil, 1996)

In addition to the removal of the tank from near the sawmill, approximately 13m³ of hydrocarbon impacted soil was excavated from around the tank and engine inside the sawmill (it is understood that the fuel pump on the diesel engine had been leaking over an extended period, contributing to the petroleum residues in the ground). The excavation ranged down to 500mm in depth and the excavated soil was removed off site for disposal. Subsequently, the excavation was backfilled with gravel, then concreted and bunded.

fuel stored on top of gravelled area?

Two soil samples were collected by the Mobil engineer from the base of the excavation in the sawmill prior to backfilling. TPH concentrations of 1,700mg/kg and 24,300mg/kg were measured in the soil samples. The associated chromatograms indicated that the petroleum residues in the soil were due to diesel and, to a lesser extent, lubricating oil. The laboratory reports are appended. The soil sample with the highest TPH concentration was taken from a point immediately adjacent to the diesel engine, where the most extensive hydrocarbon impacts were observed prior to excavation.

4.0 SITE VISIT

PDP visited the Kowhai Timber site on 26 May 1997. The site manager, Mr Gary Ryan, was interviewed regarding the site history and general site practices. The area in the vicinity of the diesel engine and storage tank was closely inspected. To inspect the shallow geology, a hand auger hole (BH1) was drilled adjacent to the concrete bund wall (Figure 1). It was not possible to drill additional auger holes in the vicinity of the sawmill due to the hardness of the ground surface.

The Auckland Regional Council were contacted to provide information on groundwater usage within a 1km radius of the site. The contractor who removed the impacted soil from the site, Mr Ray Humphrey, was contacted for information on the site.

5.0 RESULTS

5.1 Site Observations

The site investigation was focussed around the end of the sawmill containing the diesel engine and the Mobil storage tank (Figure 1). The area beneath the diesel engine and Mobil tank was unsurfaced prior to the April 9 excavation. At the time of the PDP site visit, the area was sealed with a concrete floor. A bund, 60 to 300mm high, surrounds the concrete floor (Figure 1). Hydrocarbon staining was noted on the concrete beneath the diesel engine (Photo 3). The engine appeared to be leaking a small amount of diesel and possibly lubricating oil. The concrete beneath the Mobil storage tank appeared clean.

treated wood?
Outside the bunded area and adjacent to the building, the ground surface consists of concrete or gravel over wooden boards. Beyond the concrete and gravel, woodchip and sawdust covers the ground surface, to an unknown depth, a few metres from the sawmill to within a few metres of Matakana River, about 30m to the northeast (Photo 4). The hand auger hole (BH1) was drilled in a small area (about 0.5m²) of exposed soil located adjacent to the northeastern edge of the sawmill shed (Figure 1). There were no obvious hydrocarbon impacts on the ground surface in the vicinity of the bunded area.

The sides of the building, in the vicinity of the Mobil tank, are unclad along the northeastern edge of the building and at a vehicle access point on the southwestern side. The corrugated iron roof is rusted with several sizable holes. It is understood that the roof will be repaired and the side of the building reclad in the near future to prevent rain from entering the shed (Gary Ryan, pers comm).

5.2 Hydrogeology

The New Zealand Geological Survey Map (B.N.Thompson, 1961) shows the site area to be underlain by undifferentiated material including terrace deposits. Hand auger hole BH1 revealed a 100mm layer of gravel and woodchip fill over a layer of soft to firm clayey silt, which extended to the base of the hole at 0.5m depth. It was not possible to auger deeper than 0.5m due to the increasing firmness of the silt. The clayey silt was grey, with a slight undefined odour, to a depth of 300mm. Between 300mm and the base of the hole, the clayey silt was yellow brown with some grey areas and no odour.

According to the Mobil tank removal report, the tankpit excavation, approximately 15m from the sawmill (Figure 1), was excavated in clay. The clay extended to the base of the tankpit at about 2.5m depth. No groundwater was observed in the tankpit. It is expected that similar geological conditions exist beneath the sawmill.

Given the elevation of the sawmill above the nearby river (8 to 10m), the groundwater table beneath the sawmill is expected to be at some point below 2.5m depth (the base of the tankpit). Ground water was not encountered in either BH1 or the tankpit. The groundwater flow direction is expected to be between the northeast and east, towards Matakana River. The permeability of the clayey silt encountered is expected to be low. There are no known underground services in the vicinity of the sawmill that could act as preferential migration pathways (Gary Ryan, pers comm).

Records show that there are no groundwater wells in the expected down gradient direction, within a 1km radius. The nearest well is approximately 400m to the north, on the opposite side of Matakana River. The well is screened from 32 to 45m depth.

6.0 ASSESSMENT

6.1 General

It is considered that there is no health hazard associated with the hydrocarbon impacted soil in the vicinity of the diesel engine and Mobil storage tank in the northwestern end of the sawmill. The peak TPH concentrations measured in the soil samples collected from the area are within the relevant soil acceptance criteria from the Oil Industry Guidelines (OIEWG, 1996). The soil acceptance criteria are protective of human health.

Needs to be confirmed In addition, the area of concern is now sealed and banded with concrete, providing a barrier for human access and infiltration of water. The petroleum residues are unlikely to migrate because of the reduced infiltration and the low permeability of the underlying soil.

6.2 Groundwater

It is considered that adverse impacts on groundwater quality are unlikely given the nature and composition of the petroleum residues in the soil, the concrete capping over the impacted area, and the low permeability of the underlying soil.

~~As discussed above, the groundwater table is expected to be at least 2.5m below the ground surface in the vicinity of the sawmill shed. The Oil Industry Guidelines provide screening criteria to indicate the potential for soil to have an adverse effect on groundwater quality (Table 1). For the soil sample test results, the criteria are exceeded by the highest concentration of C₁₀-C₁₄ hydrocarbons, assuming the water table is at 2.0m depth (a peak concentration of 1,378mg/kg, compared with the acceptance criteria of 560mg/kg). However, if the water table is assumed to be at 4.0m, the acceptance criteria for C₁₀-C₁₄ hydrocarbons are above concentrations that may be encountered on site (OIEWG, 1996). The screening criteria are designed to be conservative, indicating the potential for an adverse effect rather than any actual effects. As the area is now sealed, the potential for downward migration of petroleum residues is significantly reduced.~~

In addition, since according to ARC records the shallow groundwater in the site vicinity is not utilised, no adverse effect on the groundwater resource is expected.

6.3 Surface Water

The Matakana River is a possible receptor, given its proximity to the sawmill. The two potential migration pathways from the sawmill to the river are groundwater migration or overland flow of surface runoff. As discussed above, groundwater is unlikely to be a complete migration pathway.

Any petroleum residues in surface runoff in the past are likely to have been significantly attenuated by the sawdust and woodchip piles between the sawmill and the river. No evidence of hydrocarbon impacts was noted on the surface near the sawmill. In addition, although the roof of the sawmill probably leaks to some extent, the cover provided by the roof will have minimised runoff from around the diesel engine area. The concrete bunding will contain any minor product spills and prevent runoff from impacted soil in the future.

6.4 Protection of Human Health

The maximum TPH concentrations measured in the soil samples, taken from around the diesel engine and Mobil tank, were within the soil acceptance criteria in the Oil Industry Guidelines (Table 1). The criteria are protective of human health and, for the commercial or industrial site use, assume a largely unpaved surface where workers may come in direct contact with the soil. The concrete floor around the engine and storage tank provides an effective barrier to worker contact with the underlying soil, reducing any potential health risks.

In addition, the Oil Industry Guidelines recommend averaging soil sample results over the typical area in which a person may spend most of their time. In this case the area may assumed to be the bunded area. Average concentrations are likely to be lower than the peak concentration in the soil sample taken from beneath the diesel engine.

7.0 CONCLUSIONS

- The information shows that there is no health risk exists associated with the hydrocarbon impacted soil in the vicinity of the diesel engine and Mobil storage tank in the northwestern end of the sawmill.

- Since migration of the petroleum residues in the soil is unlikely, no environmental risk is considered to exist.

8.0 RECOMMENDATIONS

No additional investigation is recommended.

9.0 REFERENCES

OIEWG, 1996, *Draft Guidelines for the Assessment and Management of Petroleum Hydrocarbon Contaminated Sites*, October 1996, Oil Industry Environmental Working Group.

Mobil, 1996, *Tank Removal Report, Kowhai Sawmill, Matakana Road, Matakana*, April 1996, Mobil Oil NZ Limited.

B.N.Thompson, 1961, *Geological Map of New Zealand, Sheet 2A, Whangarei*, 1:250,000, DSIR, Wellington, New Zealand.

Table 1: Soil Sample Results

TPHs	Sample Location				Soil Acceptance Criteria ²				
	Tankpit	Tankpit	Sawmill	Sawmill	Heavy Fraction TPH (Commercial) ⁴ <i>All Petroleum</i>	Inhalation Pathway ⁵		Protective of Groundwater ⁶	
						Indoor	Outdoor	GW 2m	GW 4m
C ₆ - C ₉ (Hexane)	<15	<15	<15	<15	- 8800	180	NA NA	59 710	NA
C ₁₀ - C ₁₄ (Nonane)	<15	<15	30	1,378	1,800 1900	3,500	NA NA	560 1500	NA
C ₁₅ - C ₃₆ (Eicosane)	<15	<15	1,670	22,922	>10,000 NA	NA NA	NA NA	NA	-
Total	<15	<15	1,700	24,300	-	-	-	-	-

Note: 1. All results in mg/kg.

- Criteria from Guidelines for Assessment and Management of Petroleum Hydrocarbon Contaminated Sites (OIEWG, 1996).
- All criteria assume an Industrial/Commercial site use, silty clay soil type and contamination depth <1m.
- Based on heavy fraction TPH associated with diesel.
- Route specific soil acceptance criteria through inhalation pathway.
- Soil screening criteria to indicate the potential for adverse impacts on groundwater quality.
- NA indicates contaminant is not limiting as health based criterion is significantly higher than may be encountered on site.

↑ Table 4-20
Surface contamination
GW 2m
Silty clay

APPENDIX

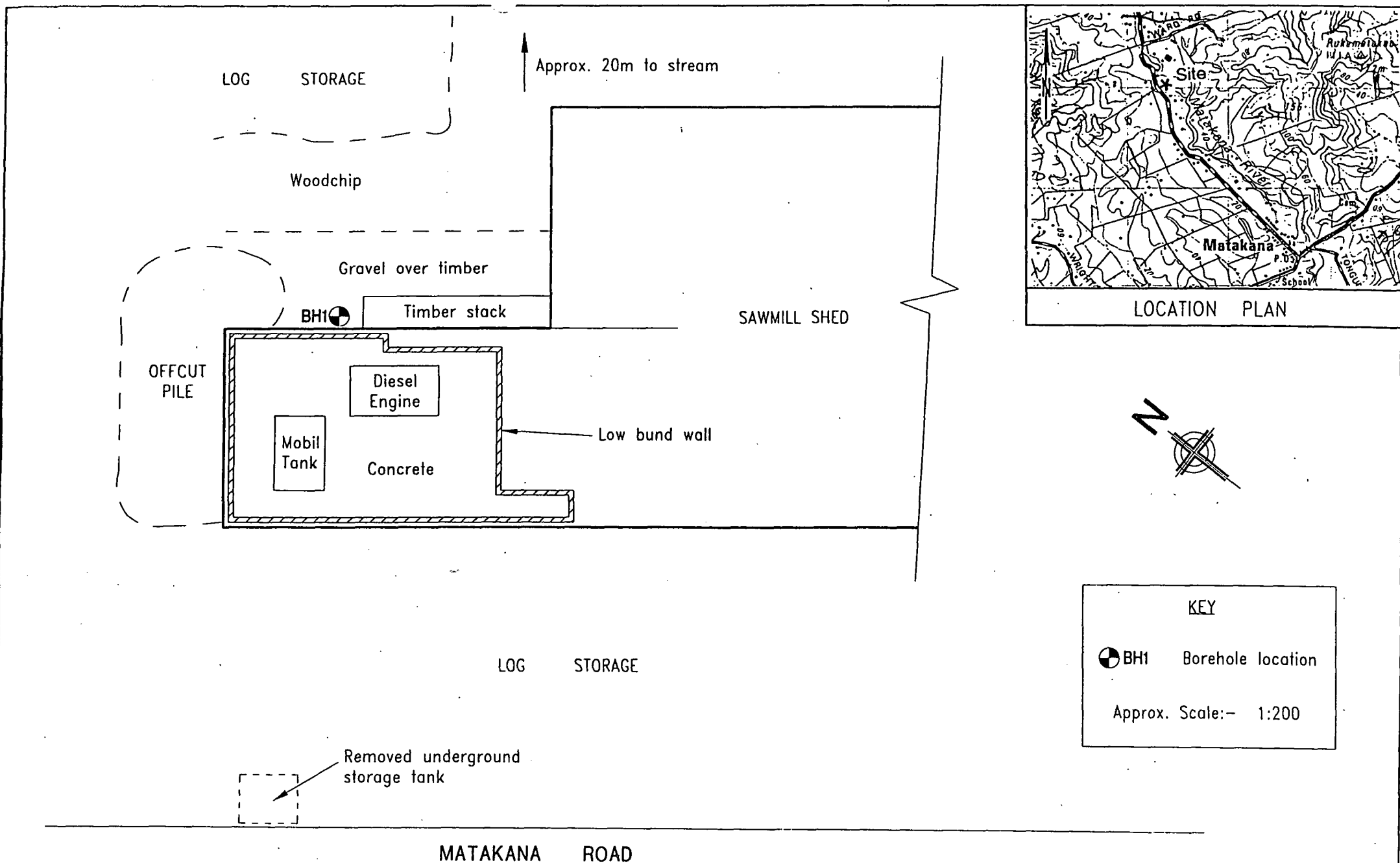


Figure 1 : SITE PLAN



LOG OF BOREHOLE

HOLE NO. BH1

LOCATION: Kauhai Timbers Ltd., Matakana.

JOB NO: A497

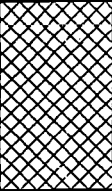
DATE: 26/5/97

RL GROUND: --

RL TOP OF CASING: --

LOGGED BY: M.C.

METHOD: Hand Auger

DESCRIPTION OF SOIL	GRAPHIC LOG	DEPTH (m)	SAMPLE DETAILS	WATER LEVEL	INSTALLATION
GRAVEL and WOODCHIP mix. (FILL)		0.1			
SILT, clayey, soft, grey, slight odour		0.2	● SS1		
SILT, clayey, firm, yellow brown, with grey areas, some rootlets.		0.3			
		0.4	● SS2		
End of borehole at 0.5m. Unable to auger further.		0.5			
		0.6			
		0.7			
		0.8			
REMARKS: SS1 and SS2 grab samples not suitable for analysis	Pattle Delamore Partners Limited				

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CONSULTING LABORATORIES

A C ASPELL, MSc (Hons), PhD

FILE DETAILS		
	No.	Date
Report no.	L13215	11/04/97
Associated fax	F13215	11/04/97
Invoice	A9169	11/04/97

SAMPLE CUSTODY		
	No.	Date
Received		08/04/97
Receipt advice	R	
Disposal		25/04/97

SAMPLE DETAILS		
Type	No.	
Soil		4

CLIENT
Mobil Oil (NZ) Ltd P O Box 1709 AUCKLAND Attention: Marcus Bird

PROJECT DETAILS	
Order no.	
Project no.	97/05
Sample collection by	M Bird
Collection date	08/04/97

CERTIFICATE OF ANALYSIS

ANALYSIS OF SOIL SAMPLES: KOWHAI MILL MATAKANA

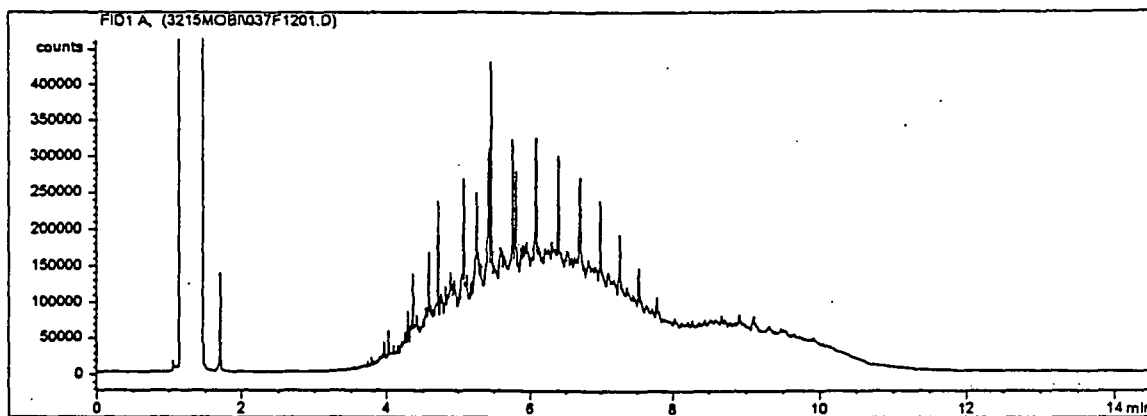
Sample: Soil	C ₆ - C ₉ (mg/kg dry weight)	C ₁₀ - C ₁₄ (mg/kg dry weight)	C ₁₅ - C ₂₄ (mg/kg dry weight)	TPH (mg/kg dry weight)
#1	<15	<15	<15	<15
#2	<15	<15	<15	<15
#3	<15	1378	22922	24300
#4	<15	30	1670	1700

Method(s) of analysis
TPH

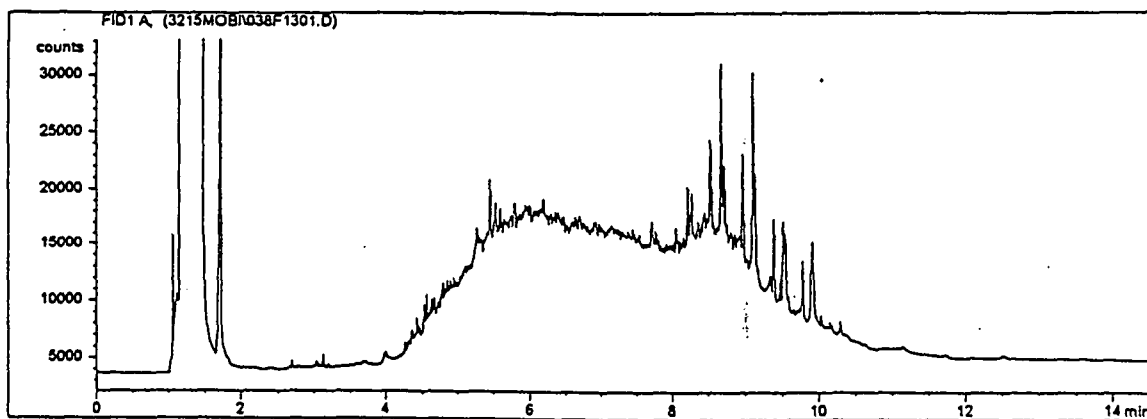
Super-critical fluid extraction [USEPA method 3560].
GC-FID [USEPA method 8015 mod].



A C ASPELL



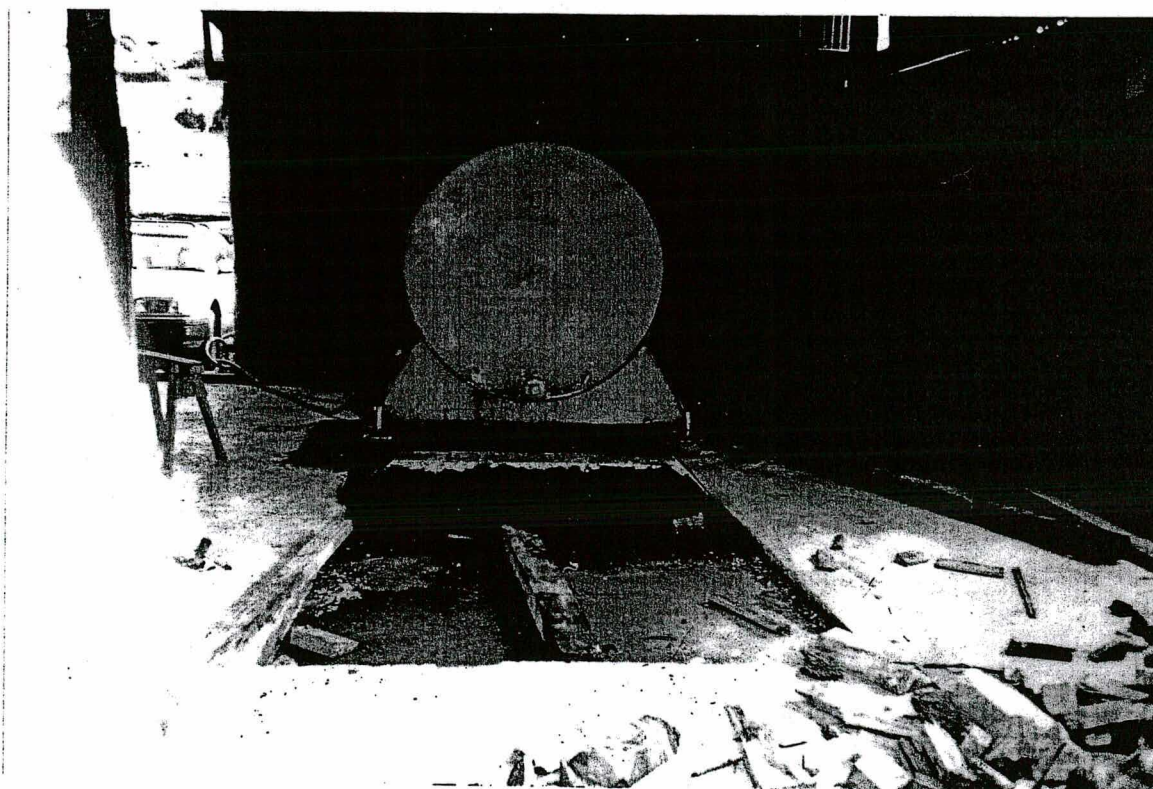
Sample : 3



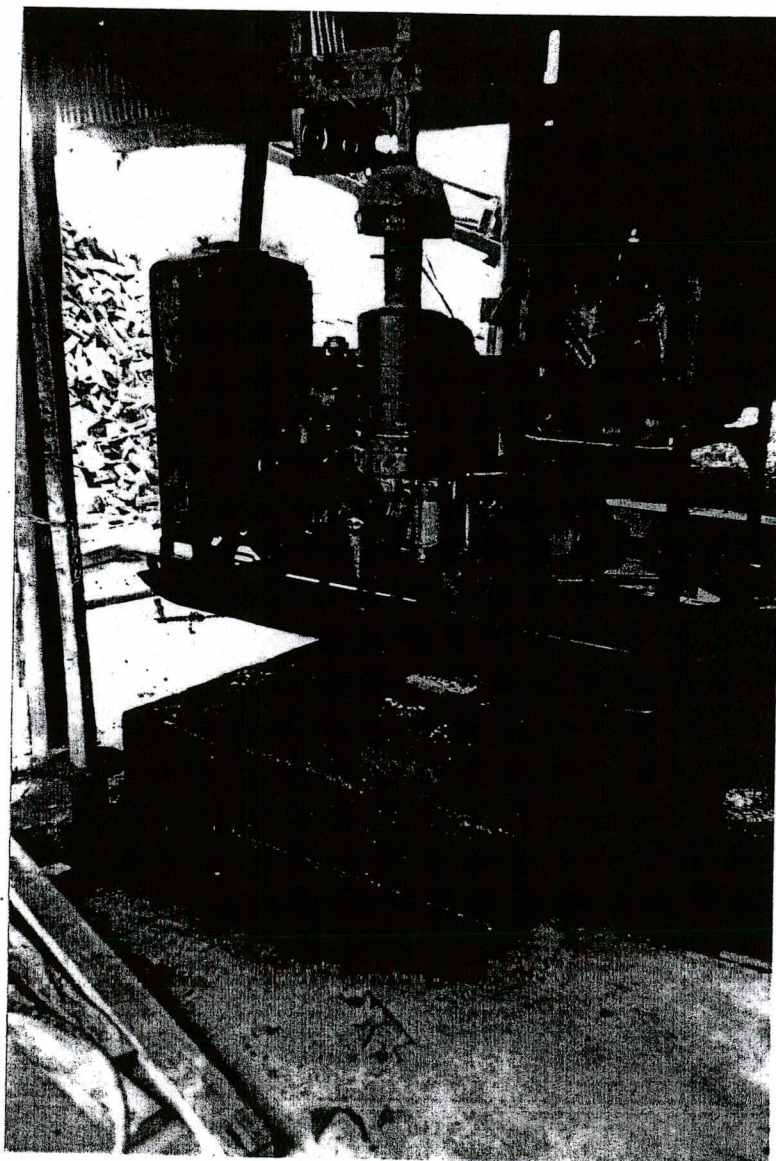
Sample : 4



Photograph 1: Sawmill Shed Facing East.



Photograph 2: Storage Tank in Sawmill.



Photograph 3: Diesel Engine in Sawmill.



Photograph 4: Rear of Sawmill Shed and Matakana River.

Oct 03.

MOBIL REPORT IN RESPECT OF THE KOWHAI TIMBER SITE AT MATAKANA

Although reference is made in two places to "Mobil, 1996, Tank Removal Report, Kowhai Sawmill, Matakana Road, Matakana, April 1996" in the report it is more likely that the date should be 1997. — *confirm!*

On 09 April 1997 an underground storage tank and 13 m³ of soil from beneath a diesel AST and diesel engine from within a shed were removed from the site. Two base samples were taken from each of the two excavations. The excavation within the shed was backfilled with gravel and concreted over.

PDP visited the site on 26 May 1997 to "validate" the two removal sites. A hand auger was used to put a boring (BH1) down to 0.5 m where the stiffness of the silty clay prevented further penetration.

The report concludes that:

- The information shows that there is no health risk associated with the hydrocarbon impacted soil in the vicinity of the diesel engine and Mobil storage tank in the north-western end of the sawmill.
- Since migration of the petroleum residues in the soil is unlikely, no environmental risk is considered to exist.

The request to the Council from Mobil is that "Mobil therefore seeks documented acceptance of the report and project closure with Auckland Regional Council."

The guidelines used for the 1997 assessment are the precursor to the current oil industry guidelines. Should the current guidelines be used the results, in mg/kg, would appear as follows.

Fraction	Sample location				Soil acceptance criteria				
	Tank pit	Tank pit	Saw mill	Saw mill	All pathways	Inhalation pathway		Groundwater protection	
						In-door	Out-door	GW 2 m	GW 4 m
C ₆ -C ₉	<15	<15	<15	<15	8,800	8,800	NA	710	NA
C ₁₀ -C ₁₄	<15	<15	30	1,378	1,900	10,000	NA	1,500	NA
C ₁₅ -C ₃₈	<15	<15	1,670	22,922	NA	NA	NA	NA	NA
Total	<15	<15	1,700	24,300					

Note that there are some small differences in the chain lengths of the criteria in use today and those used in this report.

It is not possible to accept the report against the current guidelines since the required number of samples was not taken at the time of the removal. Five samples, one from each wall and one base sample are required from an underground tank pit.

However, the following may be acceptable.