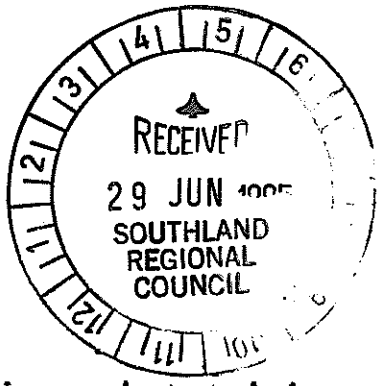
Southgas Joint Venture.
7 McLagan Street.
Ohai.

Southland Regional Council.
Attention Ian Welsh.



Southgas Joint Venture

Dear Ian,

Southgas are proceeding with their coalbed demethanation project at ohai. Up to the present the use of water as a carrier for the quartz sand proppant has only been partially successful. To make the stimulation process more effective Halliburton are proposing to add gel and other minor ingredients to the carrier water.

According to the Safety Sheets these materials are environmentally benign (a brief summary sheeet is attached).

We therefore request approval to use these materials for the 3 remaining treatments in the TP6 well. The first treatment of which is planned to commence early tomorrow.

Any surplus fluid will be carted to the Beaumont opencast for disposal.

We will fax copies of the safety sheets shortly.

Thank you,

John Barry

Carrier Fluid Additives			
Additive	**Composition**	**Hazard**	**Concentration**
WG 11 Gelling Agent	guar gum derivative	Non hazardous, readily degradable	2.4 kg/m3
HYG3	Fumaric acid	Non hazardous in low concentrations	0 12 kg/m3
K34	Sodium bicarbonate	Non hazardous in low concentrations	0.12 kg/m3
GBW30	Cellulase enzyme carbohydrate	Non hazardous	0.006 kg/m3

SOUTHLAND REGIONAL COUNCIL

Cnr North Rd and Price St
Private Bag 90116,
Invercargill
Southland, New Zealand
Phone 03-215 6197
Fax 03-215 8081

FAX Transmission Cover / Memorandum

To: SOUTHGAS JOINT VENTURE, ATTENTION: John Barry

Fax No. 03 225 4075. Date: 29-06-95 Our Ref: A1202.

From: I-K. Welsh Water Quality Officer Ext:

Subject: CARRIER WATER INGREDIENTS

No. of Pages including this cover: 1

Message:

John,

Materials outlined as per your fax may be used subject to the following

① the GUARANTEE of nil discharge to surface waters -

② provision of structures and contingency measures to avoid discharge to surface water in the event of an emergency discharge eg, additional ponding areas

③ bulk chemicals to be stored and mixed in areas remote from surface water and any drainage to surface water.

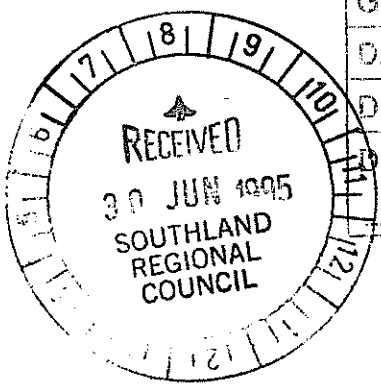
④ some form of written approval from Brian Small Coal Corp that he is happy to accept new wastes as per earlier arrangements.

⑤ the chemicals are to be used on TP6 well only

Managing Your Environment

Regards
Ian Welsh.

PLEASE CONFIRM RECEIPT



File ref	Actioned Initial
A1202	
Chair	
Gen Man	
D.P. & RM	
D. Corp. S.	
D. Ops IKW	Ian

Southgas Joint Venture.
7 McLagan Street.
Ohai.
29/06/95

Water Quality Officer
Southland Regional Council
(Attention Mr Ian Welsh)
Fax 03 215 8081

Dear Ian,

Here are the safety sheets for:

	Conc in Carrier Fluid
WG11 - gelling agent	**2.4 kg/m3**
HY93	**0.12 kg/m3**
K34	**0.12 kg/m3**
GBW30	**0.006 kg/m3**

Regards,

John Barry

IDENTIFICATION

SUPPLIER

Company Name : Halliburton Australia Pty. Ltd.
Address: 44 Churchill Road
: Dry Creek
: SA 5094
: Australia
Telephone No : (08) 349 4588
:
Emergency Tel : (008) 039 008
: (405)251-3569/251-3565USA
Fax : (08) 349 4774

Duncan
Oklahoma 73536
USA

TRADE NAMES

MATERIAL DETAILS

CAS No(s)	None		
NIOSH No	None	POISON SCHEDULE	None
UN No	None	HAZCHEM	None
DANGEROUS G. CLASS	None	SUBCLASS	None
PACKAGING GROUP	None	EPG	None
IMO CLASS	None	IMDG PAGE	None

LABEL No class label assigned

SHIPPING NAME
None.

PHYSICAL PROPERTIES

Molecular Weight	Not applicable.	Vapour Pressure(kPa)	Not applicable
Boiling Range(C)	Decomposes.	Volatile Component(%Vol)	Not available.
Melting Range (C)	Not available.	Relative Vapour Density*2	Not applicable
Specific Gravity*1	2.16	Flash Point (C)	Not applicable
Water Solubility	Soluble.	Lower Explosive Limit (%)	Not applicable
pH(as supplied)	Not applicable	Upper Explosive Limit (%)	Not applicable
pH(1% Solution)	8.3	Autoignition Temp(C)	Not applicable
Evaporation Rate	Not applicable	Decomposition Temp(C)	Not available.
State	Divided solid		

*1 Water=1 *2 Air =1

-continued-

IDENTIFICATION continued..

APPEARANCE

Free flowing, odourless, white powder; soluble in water.

INGREDIENT(S)

CHEMICAL ENTITIES	CAS NO	PROPORTION %
sodium bicarbonate	144-55-8	> 60

No other ingredients disclosed by manufacturer.

USE

Used as buffer for water treatment for concrete mixing.

SYNONYMS

Sodium bicarbonate buffer
Sodium bicarbonate water control agent
Part No. 70.15186

HEALTH HAZARD

ACUTE HEALTH EFFECTS

SWALLOWED

The solid may be irritating to the gastro-intestinal tract.
Considered an unlikely route of entry in industrial/commercial environments.

EYE

The dust is mildly irritating to the eyes.

SKIN

The solid/dust is mildly irritating to the skin.

INHALED

The dust is mildly irritating to the upper respiratory tract.

-continued-

HEALTH HAZARD continued..

ADVICE TO DOCTOR

Treat symptomatically.

TOXICITY AND IRRITATION

<< Halliburton K-34 (HLX-155C, 166C, 171B) >>

TOXICITY
product:
Oral (rat) LD50: 4220 mg/kg

IRRITATION
Skin (human): 30 mg/3d/I mild
[Manufacturer]

<< sodium bicarbonate *>
TOXICITY
Oral (human-infant) TDLo :1260 mg/kg
Oral (rat) LD50 : 4220 mg/kg

IRRITATION
Skin (human): 30 mg/3d-I-mild
Eye (rabbit): 100 mg rinse - mild
[RTECS]

PRECAUTIONS FOR USE

EXPOSURE STANDARDS

<< Halliburton K-34 (HLX-155C, 166C, 171B) >>
REL TWA: 10 mg/m3 (nuisance dust)
[Manufacturer]
<< sodium bicarbonate *>
None assigned.

ENGINEERING CONTROLS

General exhaust is adequate under normal operating conditions.
If inhalation risk of overexposure exists, wear SAA approved dust respirator.
Provide adequate ventilation in warehouse or closed storage areas.

PERSONAL PROTECTION

EYE

Safety glasses with side shields.
Full face shield.
Contact lenses pose a special hazard; soft lenses may absorb irritants and

-continued-

PRECAUTIONS FOR USE continued..

all lenses concentrate them.

HANDS/FEET

Impervious gloves. Protective footwear.

OTHER

Overalls.
Barrier cream.
Eyewash unit.
Equipment should be kept clean and in working-order.
The local concentration of material, quantity and conditions of use determin the type of personal protective equipment required. For further information, consult site specific CHEMWATCH data (if available), or your Occupational alth and Safety Advisor.

HANDLING PROCEDURES

Use good occupational work practice. Observe manufacturer's storing and handling recommendations.
Atmospheres should be regularly checked against established exposure standard to ensure safe working conditions are maintained.
Avoid all personal contact, including inhalation
Avoid generating and breathing dust.
Wear protective clothing when risk of overexposure occurs.
Use in a well-ventilated area.
Avoid contact with incompatible materials.
When handling, DO NOT eat, drink or smoke.
Keep containers securely sealed when not in use
Avoid physical damage to containers.
Always wash hands with soap and water after handling. Work clothes should be undered separately.

CONDITION CONTRIBUTING TO INSTABILITY

Presence of incompatible materials
Storage in unsealed containers
Long term storage
Product is considered stable under normal handling conditions
Stable under normal storage conditions
Hazardous polymerisation will not occur.

SAFE HANDLING

STORAGE

SUITABLE CONTAINER

Packaging as recommended by manufacturer.
Check that containers are clearly labelled.
Paper bag with sealed plastic liner
M ti-ply woven plastic or paper bag with sealed plastic liner.

STORAGE INCOMPATIBILITY

Avoid storage with acids.

STORAGE REQUIREMENT

Observe manufacturer's storing and handling recommendations.
Store in original containers.
Keep containers securely sealed
Keep dry
Store in a well-ventilated area.
DO NOT store near acids
Protect containers against physical damage
Check regularly for spills and leaks.

TRANSPORTATION

No restrictions known.

SPILLS

MINOR SPILLS

Clean up all spills immediately.
Avoid contact with skin and eyes.
Wear impervious gloves and safety glasses.
Use dry clean up procedures and avoid generating dust.
Place spilled material in clean, dry, sealable, labelled container.

MAJOR SPILLS

Clear area of personnel.
Alert Fire Brigade and tell them location and nature of hazard.
Minor hazard
Wear protective clothing, impervious gloves, safety glasses and dust respirator.
Prevent, by any means available, spillage from entering drains or water courses.
Stop leak if safe to do so.
Use dry clean up procedures and avoid generating dust.
Collect recoverable product into labelled containers for recycling
Collect residues and place in labelled polyethylene bag

-continued-

SAFE HANDLING continued..

Wash spill area with large quantities of water.
After clean up operations, decontaminate and launder all protective clothing and equipment before storing and re-using.
If contamination of drains or waterways occurs as a result of the above actions, advise emergency services.

DISPOSAL

Recycle wherever possible.
Consult manufacturer for recycling options.
Consult State Land Waste Management Authority for disposal.
Bury residue in an authorised landfill.
Decontaminate empty containers.
Recycle containers wherever possible, otherwise dispose of in an authorised landfill.

FIRE FIGHTERS REPORT

EXTINGUISHING MEDIA

There is no restriction on the type of extinguisher which may be used.

FIRE FIGHTING

Alert Fire Brigade and tell them location and nature of hazard.
Wear breathing apparatus plus protective gloves for fire only. Prevent, by any means available, spillage from entering drains or water courses.
Use fire fighting procedures suitable for surrounding area.
Cool fire exposed containers with water spray from a protected location.
Do not approach containers suspected to be hot.
If safe to do so, remove containers from path of fire.

FIRE/EXPLOSION HAZARD

Non-combustible.
Not considered to be a significant fire risk.
Heating may cause expansion and decomposition leading to violent rupture of containers.
Decomposes on heating and produces toxic fumes of carbon dioxide (CO_2) and sodium carbonate.

FIRE INCOMPATIBILITY

Avoid contact with acids.

CONTACT

End of Report
Date of preparation :12/6/92
Date of printing :Thu 9-Jul-1992

IDENTIFICATION

SUPPLIER

Company Name : Halliburton Australia Pty. Ltd.
Address: 44 Churchill Road
: Dry Creek
: SA 5094
: Australia
Duncan
Oklahoma 73536
USA
Telephone No : (08) 349 4588
:
Emergency Tel : (008) 039 008
: (405)251-3569/251-3565USA
Fax : (08) 349 4774

TRADE NAMES

WG-11 Gelling Agent

MATERIAL DETAILS

CAS No(s)	None		
NIOSH No	None	POISON SCHEDULE	None
UN No	None	HAZCHEM	None
DANGEROUS G. CLASS	None	SUBCLASS	None
PACKAGING GROUP	None	EPG	None
IMO CLASS	None	IMDG PAGE	None

LABEL No class label assigned
SHIPPING NAME
NONE

PHYSICAL PROPERTIES

Molecular Weight	Not applicable.	Vapour Pressure(kPa)	Not applicable
Boiling Range(C)	Not available.	Volatile Component(%Vol)	Not applicable
Melting Range (C)	Not available.	Relative Vapour Density*2	Not available
Specific Gravity*1	1.30	Flash Point (C)	Not applicable
Water Solubility		Lower Explosive Limit (%)	Not available.
pH(as supplied)		Upper Explosive Limit (%)	Not available
pH(1% Solution)	8.6	Autoignition Temp(C)	Not available.
Evaporation Rate		Decomposition Temp(C)	Not available.
State			

*1 Water=1 *2 Air =1

-continued-

IDENTIFICATION continued..

APPEARANCE

Off-white to yellow solid powder, odorless, forms solution with water
Readily biodegradable.

INGREDIENT(S)

CHEMICAL ENTITIES	CAS NO	PROPORTI %
guar gum derivative		> 60

No other ingredient information disclosed.

USE

Gelling agent in fracturing processes.

SYNONYMS

guar gum derivative
Part Number 70.15331

HEALTH HAZARD

ACUTE HEALTH EFFECTS

SWALLOWED
The material may be slightly irritating to the gastro-intestinal tract
Considered an unlikely route of entry in commercial/industrial environments.
EYE
The dust is highly irritating to the eyes.
SKIN
The material may be slightly irritating to the skin.
INHALED
The dust is slightly irritating to the upper respiratory tract.

-continued-

HEALTH HAZARD continued..

HEALTH COMMENTS

Principal routes of exposure are usually by inhalation of dust and skin/eye contact.
Inhalation may cause nose and throat irritation, coughing and chest discomfort.
No irritation is likely after brief skin contact but the material may be irritating after prolonged contact.
May cause allergic respiratory reaction in susceptible individuals.
Inhalation may aggravate asthma and inflammatory or fibrotic pulmonary disease.

FIRST AID

SWALLOWED

DO NOT induce vomiting.
If conscious, give water (or milk) to rinse out mouth and drink.
Provide liquid slowly but as much as casualty will drink.
Seek medical advice.

EYE

If this product comes in contact with the eyes:
Immediately hold the eyes open and wash with fresh running water.
Ensure irrigation under the eyelids by occasionally lifting upper and lower lids.
If pain persists or recurs seek medical attention.
Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.

SKIN

If product comes in contact with the skin:
Wash affected areas thoroughly with water (and soap if available).
Seek medical attention in event of irritation.

INHALED

If fumes or combustion products are inhaled:
Remove to fresh air.
Lay patient down. Keep warm and rested.
Other measures are usually unnecessary.

FIRST AID FACILITIES

-continued-

HEALTH HAZARD continued..

ADVICE TO DOCTOR

Treat symptomatically.

TOXICITY AND IRRITATION

<< Halliburton WG-11 Gelling Agent >>
TOXICITY IRRITATION
product:
Oral (rat) LD50: 9400 mg/kg
guar gum derivate:
Oral (rat) LD50: 9100 mg/kg
[Manufacture

PRECAUTIONS FOR USE

EXPOSURE STANDARDS

<< Halliburton WG-11 Gelling Agent >>
REL TWA: 10 mg/m3 Nuisance particulates. [Manufacturer]
guar gum derivative:
ES & TLV TWA: 10 mg/m3 as nuisance particulates

ENGINEERING CONTROLS

General exhaust is adequate under normal operating conditions.
If inhalation risk of overexposure exists, wear SAA approved dust respirator.
Correct fit is essential to obtain adequate protection.

PERSONAL PROTECTION

EYE

Safety glasses with side shields.
Chemical goggles.
Contact lenses pose a special hazard; soft lenses may absorb irritants and all lenses concentrate them.

-continued-

PRECAUTIONS FOR USE continued..

HANDS/FEET

Impervious gloves. Protective footwear.

OTHER

Overalls.
Barrier cream.
Eyewash unit.
Equipment should be kept clean and in working-order.
The local concentration of material, quantity and conditions of use determir the type of personal protective equipment required. For further information, consult site specific CHEMWATCH data (if available), or your Occupational Health and Safety Advisor.

HANDLING PROCEDURES

Use good occupational work practice. Observe manufacturer's storing and handling recommendations.
Atmosphere should be regularly checked against established exposure standard to ensure safe working conditions are maintained.
Avoid all personal contact, including inhalation
Avoid generating and breathing dust.
Wear protective clothing when risk of overexposure occurs.
Avoid smoking, naked lights or ignition sources.
Use spark-free tools when handling.
Local exhaust ventilation required
Avoid contact with incompatible materials.
When handling, DO NOT eat, drink or smoke.
Keep containers securely sealed when not in use
Avoid physical damage to containers.
Always wash hands with soap and water after handling. Work clothes should be laundered separately.

CONDITION CONTRIBUTING TO INSTABILITY

Presence of incompatible materials.
Product is considered stable.
Hazardous polymerisation will not occur.

SAFE HANDLING

STORAGE

SUITABLE CONTAINER

Packaging as recommended by manufacturer.
Check that containers are clearly labelled.
Paper bag with sealed plastic liner
Multi-ply woven plastic or paper bag with sealed plastic liner.

STORAGE INCOMPATIBILITY

Avoid storage with oxidisers.

STORAGE REQUIREMENT

Observe manufacturer's storing and handling recommendations.
Store in original containers.
Keep containers securely sealed
No smoking, naked lights or ignition sources.
Store in a cool, dry place.
Keep dry
Store in a well-ventilated area.
Store away from oxidising materials.
Keep storage area free of debris, waste and combustibles.
Protect containers against physical damage
Check regularly for spills and leaks.

TRANSPORTATION

No restrictions.

SPILLS

MINOR SPILLS

Clean up all spills immediately.
Avoid contact with skin and eyes.
Wear impervious gloves and safety glasses.
Remove all ignition sources.
Use dry clean up procedures and avoid generating dust.
Place spilled material in clean, dry, sealable, labelled container.

MAJOR SPILLS

Remove all ignition sources.
Minor hazard.
Clear area of personnel and move upwind.
Alert Fire Brigade and tell them location and nature of hazard.
Control personal contact by using protective equipment and dust respirator if risk of overexposure exists.
Prevent, by any means available, spillage from entering drains or water

-continued-

SAFE HANDLING continued..

courses.
Recover product wherever possible.
Wet with water to prevent dusting. Avoid generating dust.
Vacuum/shovel up.
Bag residues and place in labelled plastic bags or other suitable containers for disposal.
Wash area down with large quantities of water and prevent runoff into drains or waterways.
If contamination of drains or waterways occurs, advise emergency services.

DISPOSAL

Recycle wherever possible.
Consult manufacturer for recycling options.
Consult State Land Waste Management Authority for disposal.
Bury residue in an authorised landfill.
Recycle containers wherever possible, otherwise dispose of in an authorised landfill.

FIRE FIGHTERS REPORT

EXTINGUISHING MEDIA

Water spray or fog.
Foam.
Dry chemical powder.
Carbon dioxide.

FIRE FIGHTING

Alert Fire Brigade and tell them location and nature of hazard.
Wear breathing apparatus plus protective gloves. Prevent, by any means available, spillage from entering drains or water courses.
Cool fire exposed containers with water spray from a protected location.
Do not approach containers suspected to be hot.
If safe to do so, remove containers from path of fire.

FIRE/EXPLOSION HAZARD

Combustible.
Slight fire hazard when exposed to heat or flame.
Heating may cause expansion or decomposition leading to violent rupture of containers.
On combustion, may emit toxic fumes of carbon monoxide (CO).
May emit acrid smoke.
Other combustion products include carbon dioxide (CO2)
Avoid creating dust - may present explosion hazard.

-continued-

SAFE HANDLING continued..

FIRE INCOMPATIBILITY

Avoid reaction with oxidising agents.

CONTACT

End of Report
Date of preparation :16/12/91
Date of printing :Fri 10-Jul-1992

IDENTIFICATION

SUPPLIER

Company Name : Halliburton Australia Pty. Ltd.
Address: 44 Churchill Road
: Dry Creek
: SA 5094
: Australia
Duncan
Oklahoma 73536
USA
Telephone No : (08) 349 4588
:
Emergency Tel : (008) 039 008
: (405)251-3569/251-3565USA
Fax : (08) 349 4774

TRADE NAMES

MATERIAL DETAILS

CAS No(s)	110-17-8		
NIOSH No	LS 9625000	POISON SCHEDULE	None
UN No	None	HAZCHEM	None
DANGEROUS G. CLASS	None	SUBCLASS	None
PACKAGING GROUP	None	EPG	None
IMO CLASS	None	IMDG PAGE	None

LABEL No class label assigned

SHIPPING NAME
None

PHYSICAL PROPERTIES

lecular Weight	Not applicable.	Vapour Pressure(kPa)	1.3 @ OC
Boiling Range(C)	290 decomposes.	Volatile Component(%Vol)	Not available
Melting Range (C)	287 sealed tube.	Relative Vapour Density*2	Not available
Specific Gravity*1	1.64	Flash Point (C)	148 (TOC)
Water Solubility	Soluble.	Lower Explosive Limit (%)	3 kg/m3 (dust
pH(as supplied)	Not applicable	Upper Explosive Limit (%)	40 kg/m3 (dus
pH(1% Solution)	Not available.	Autoignition Temp(C)	393
Evaporation Rate	Not applicable	Decomposition Temp(C)	230 open vess
State	Divided solid		

*1 Water=1 *2 Air =1

-continued-

IDENTIFICATION continued..

APPEARANCE

Colourless, white powder or crystals, soluble in water (0.63g/100 g @ 25C), alcohol (5.76 g/100 g @ 30C), acetone (1.72 g/100 g @ 30C, and ether (0.72g/100 g @ 25C). Insoluble in olive oil, chloroform, carbon tetrachloride, benzene, xylene, camphor, and ammonia. Sublimes above 200C. Readily biodegradable.

INGREDIENT(S)

CHEMICAL ENTITIES	CAS NO	PROPORTION %
fumaric acid	110-17-8	> 60

No other ingredients disclosed by manufacturer.

USE

Used as a buffer.

SYNONYMS

Fumaric acid buffer
Part No. 70.15266

HEALTH HAZARD

ACUTE HEALTH EFFECTS

SWALLOWED

The material is irritating to the gastrointestinal tract if ingested in large quantities.
Considered an unlikely route of entry into commercial/industrial environments.

EYE

The material is irritating to the eyes.

SKIN

The material is irritating to the skin.

-continued-

HEALTH HAZARD continued..

INHALED

The solid/dust is irritating to the upper respiratory tract and lungs.

HEALTH COMMENTS

Principal routes of exposure are eye and skin contact, inhalation, and ingestion.
The solid is irritating to the eyes and skin due to the acidic nature of the compound resulting in redness, and pain.
Inhalation of the dust will produce coughing, sneezing, and breathing difficulty.
Ingestion of large amounts may produce nausea, vomiting, and diahorrea.
[Mallinckrodt product information]

FIRST AID

SWALLOWED

DO NOT induce vomiting.
If conscious, give water (or milk) to rinse out mouth and drink.
Provide liquid slowly but as much as casualty will drink.
Transport to hospital or doctor without delay.

EYE

If this product comes in contact with the eyes:
Immediately hold the eyes open and wash continuously for at least 15 minutes with fresh running water.
Ensure irrigation under eyelids by occasionally lifting the upper and lower lids.
Transport to hospital or doctor without delay.
Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.

SKIN

If product comes in contact with the skin:
Immediately remove all contaminated clothing, including footwear (after r sing with water).
Wash affected areas thoroughly with water (and soap if available).
Seek medical attention in event of irritation.

INHALED

If fumes or combustion products are inhaled:
Remove to fresh air.
Lay patient down. Keep warm and rested.
If breathing is shallow or has stopped, ensure clear airway and apply resuscitation.
Transport to hospital, or doctor.

-continued-

HEALTH HAZARD continued..

FIRST AID FACILITIES

ADVICE TO DOCTOR

Treat symptomatically.

TOXICITY AND IRRITATION

<< Halliburton HYG-3 >>
Oral (rat)LD50: 10700 mg/kg (fumaric acid)
Dermal (rabbit)LD50: 20000 mg/kg (fumaric acid)
Irritation
Skin (rabbit): 500 mg/24 h - Mild (fumaric acid)
Eye (rabbit): 100 mg/24 h - Moderate (fumaric acid) [RTECS]
<* fumaric acid *>
Oral (rat)LD50: 10700 mg/kg
Dermal (rabbit)LD50: 20000 mg/kg
Irritation
Skin (rabbit): 500 mg/24 h - Mild
Eye (rabbit): 100 mg/24 h - Moderate [RTECS]

PRECAUTIONS FOR USE

EXPOSURE STANDARDS

<< Halliburton HYG-3 >>
REL TWA: 10 mg/m3 (nuisance particulates)
<* fumaric acid *>
TLV TWA: 10 mg/m3 (nuisance particulates) [ACGIH 1988-89]

ENGINEERING CONTROLS

If inhalation risk of overexposure exists, wear SAA approved dust respirator.
Correct respirator fit is essential to obtain adequate protection.
In confined spaces where there is inadequate ventilation, wear full-face air supplied breathing apparatus
Provide adequate ventilation in warehouse or closed storage areas.

-continued-

PRECAUTIONS FOR USE continued..

PERSONAL PROTECTION

EYE

Safety glasses.
Safety glasses with side shields.
Chemical goggles.
Contact lenses pose a special hazard; soft lenses may absorb irritants and all lenses concentrate them.

HANDS/FEET

Impervious gloves
PVC gloves
Protective footwear.

OTHER

C ralls.
Acid-resistant overalls.
Eyewash unit.
Ensure there is ready access to a safety shower.
The local concentration of material, quantity and conditions of use determin
The type of personal protective equipment required. For further information, consult site specific CHEMWATCH data (if available), or your Occupational Health and Safety Advisor.

HANDLING PROCEDURES

Use good occupational work practice. Observe manufacturer's storing and handling recommendations.
Atmosphere should be regularly checked against established exposure standard to ensure safe working conditions are maintained.
Avoid all personal contact, including inhalation
Avoid generating and breathing dust.
Wear protective clothing when risk of overexposure occurs.
Avoid smoking, naked lights, heat or ignition sources
Avoid contact with incompatible materials.
When handling, DO NOT eat, drink or smoke.
Avoid physical damage to containers.
Always wash hands with soap and water after handling. Work clothes should be laundered separately.

-continued-

PRECAUTIONS FOR USE continued..

CONDITION CONTRIBUTING TO INSTABILITY

Contact with alkaline material liberates heat
Extremely high temperatures.
Presence of an ignition source
Presence of incompatible materials
Product is considered stable under normal handling conditions
Hazardous polymerisation will not occur.

SAFE HANDLING

STORAGE

SUITABLE CONTAINER

Packaging as recommended by manufacturer.
Check that containers are clearly labelled.
Glass container
Paper bag with sealed plastic liner
Multi-wall paper container
Multi-ply woven plastic or paper bag with sealed plastic liner.

STORAGE INCOMPATIBILITY

Do not store with alkalis or their solutions, strong reducing agents, carbonates, cyanides,sulphides, hypochlorites, and chlorites.

STORAGE REQUIREMENT

Observe manufacturer's storing and handling recommendations.
Store in original containers.
Keep containers securely sealed
No smoking, naked lights, heat or ignition sources.
Store in a cool, dry place.
Store away from incompatible materials.
DO NOT store near alkalis
Protect containers against physical damage
Check regularly for spills and leaks.

TRANSPORTATION

No restrictions known.

-continued-

SAFE HANDLING continued..

SPILLS

MINOR SPILLS

Clean up all spills immediately.
Avoid contact with skin and eyes.
Wear impervious gloves and safety glasses.
Use dry clean up procedures and avoid generating dust.
Vacuum up or sweep up.
Place spilled material in clean, dry, sealable, labelled container.

MAJOR SPILLS

Clear area of personnel.
Alert Fire Brigade and tell them location and nature of hazard.
Minor hazard
Wear full body protective clothing with breathing apparatus. Prevent, by any means available, spillage from entering drains or water courses.
No smoking, naked lights or ignition sources.
Stop leak if safe to do so.
Avoid generating dust.
Contain spill with sand, earth or vermiculite.
Collect recoverable product into labelled containers for recycling
Collect residues and seal in labelled drums for disposal
Wash area down with large quantities of water and prevent runoff into drains or waterways.
After clean up operations, decontaminate and launder all protective clothing and equipment before storing and re-using.
If contamination of drains or waterways occurs as a result of the above actions, advise emergency services.

DISPOSAL

Recycle wherever possible.
Consult manufacturer for recycling options.
Consult State Land Waste Management Authority for disposal.
Treat and neutralise at an effluent treatment plant.
Bury residue in an authorised landfill.
Decontaminate empty containers with a lime slurry.
Recycle containers wherever possible, otherwise dispose of in an authorised landfill.

FIRE FIGHTERS REPORT

-continued-

SAFE HANDLING continued..

EXTINGUISHING MEDIA

Water spray or fog.
Dry chemical powder.
Foam.
Bromochlorodifluoromethane (BCF) (where regulations permit).
Carbon dioxide.

FIRE FIGHTING

Alert Fire Brigade and tell them location and nature of hazard.
Wear full body protective clothing with breathing apparatus. Prevent, by any means available, spillage from entering drains or water courses.
Cool fire exposed containers with water spray from a protected location.
Do not approach containers suspected to be hot.
If safe to do so, remove containers from path of fire.
Equipment should be thoroughly decontaminated after use.

FIRE/EXPLOSION HAZARD

Combustible.
Slight fire hazard when exposed to heat or flame.
Moderate explosion hazard, in the form of dust, when exposed to flame.
Irritating fumes of maleic anhydride may form in fires.
Combustion products include carbon monoxide (CO), and carbon dioxide (CO2).

FIRE INCOMPATIBILITY

Avoid reaction with alkalis, strong reducing agents, carbonates, cyanides, sulphides, hypochlorites, and chlorites.

CONTACT

End of Report
Date of preparation :11/6/92
Date of printing :Tue 7-Jul-1992

GBW-30 BREAKER PAGE 1

MATERIAL SAFETY DATA SHEET DATE: 06-28-95
HALLIBURTON ENERGY SERVICES REVISED DATE 04-06-93
DUNCAN, OKLAHOMA 73536

EMERGENCY TELEPHONE: 405/251-4689 OR 405/251-3569
AFTER HOURS: 405/251-3760

* * * * * * * * * * * SECTION I - PRODUCT DESCRIPTION * * * * * * * * * * * * *

CHEMICAL CODE: GBW-30 BREAKER PART NUMBER: 516001460
PKG QTY: 10 LBS APPLICATION: BREAKER
SERVICE USED: FRACTURING

* * * * * * * * * * * SECTION II - COMPONENT INFORMATION * * * * * * * * * * *

COMPONENTS	PERCENT	TLV	PEL
CELLULASE ENZYME	11-30 %	10 MG/M3	15 MG/M3
CARBOHYDRATE	> 60 %	10 MG/M3	15 MG/M3

* * * * * * * * * * * * * SECTION III - PHYSICAL DATA * * * * * * * * * * * * * *

PROPERTY	MEASUREMENT
APPEARANCE	WHITE SOLID, POWDER
ODOR	ODORLESS
SPECIFIC GRAVITY (H2O=1)	1.580
BULK DENSITY	27.20 LB/CU.FT.
PH	NOT DETERMINED
SOLUBILITY IN WATER AT 20 DEG C. GMS/100ML H2O	COMPLETE
BIODEGRADABILITY	READILY
PERCENT VOLATILES	N/A
EVAPORATION RATE(BUTYL ACETATE=1)	N/A
VAPOR DENSITY	N/A
VAPOR PRESSURE (MMHG)	N/A
BOILING POINT(760 MMHG)	N/A
POUR POINT	N/A
FREEZE POINT	N/A
SOLUBILITY IN SEAWATER	21 GRAMS/100ML
PARTITION COEF (OCTANOL IN WATER)	NOT EVALUATED

* * * * * * * * * * SECTION IV - FIRE AND EXPLOSION DATA * * * * * * * * * * *

NFPA(704) RATING:
HEALTH 1 FLAMMABILITY 1 REACTIVITY 0 SPECIAL NONE
FLASH POINT N/D
AUTOIGNITION TEMPERATURE ND F / ND C
FLAMMABLE LIMITS (OZ. PER CU. FT.) LOWER N/D UPPER N/D

EXTINGUISHING MEDIA:
USE WATER SPRAY, FOAM, DRY CHEMICAL, OR CARBON DIOXIDE.
SPECIAL FIRE FIGHTING PROCEDURES:
AVOID CREATING DUST CLOUDS WITH EXTINGUISHERS.
FULL PROTECTIVE CLOTHING AND NIOSH/MSHA APPROVED SELF-CONTAINED BREATHING APPARATUS REQUIRED FOR FIRE FIGHTING PERSONNEL.
UNUSUAL FIRE AND EXPLOSION HAZARDS:
INCOMPLETE THERMAL DECOMPOSITION MAY PRODUCE CARBON DIOXIDE AND CARBON MONOXIDE.

ORGANIC DUST IN THE PRESENCE OF A SOURCE OF IGNITION CARRIES A POTENTIAL

EXPLOSION HAZARD IF THE CONCENTRATION IN THE AIR IS TOO HIGH. GOOD HOUSEKEEPING PROCEDURES ARE REQUIRED TO MINIMIZE THIS POTENTIAL HAZARD. DO NOT SPREAD WITH WATER. MATERIAL IS VERY SLIPPERY.

* * * * * * * * * * * * SECTION V - HEALTH HAZARD DATA * * * * * * * * * * * *

CALIFORNIA PROPOSITION 65:
PRODUCT OR PRODUCT COMPONENTS ARE NOT REGULATED UNDER CALIF. PROPOSITION 65.

CARCINOGENIC DETERMINATION:
PRODUCT OR COMPONENTS ARE NOT LISTED AS A POTENTIAL CARCINOGEN
ACCORDING TO : "NTP, IARC, OSHA, OR, ACIGH".

PRODUCT TOXICITY DATA: AQU TLM96: >3300 PPM (BROWN SHRIMP)
ECOTOXICITY:
THIS PRODUCT WAS EVALUATED FOR VARIOUS PCB'S AND FOUND TO HAVE A CONTENT OF LESS THAN 100 PPB.
THIS PRODUCT WAS EVALUATED FOR VARIOUS CHLOROPHENOLS AND FOUND TO HAVE A CONTENT OF LESS THAN 100 PPB.
PRODUCT EVALUATION OF: CYANIDE < 10 PPM AND ORGANO-PHOSPHOROUS < 0.1 PPM.

PRODUCT TLV: 10 MG/M3 (T); 5 MG/M3 (R)

---------- EFFECTS OF EXPOSURE ----------

ROUTES OF EXPOSURE:
EYE OR SKIN CONTACT, INHALATION.
EYE:
MAY CAUSE MILD IRRITATION.
SKIN:
ESSENTIALLY NON-IRRITATING.
INHALATION:
MAY CAUSE ALLERGIC RESPIRATORY REACTION IN SUSCEPTIBLE INDIVIDUALS.
MAY BE IRRITATING.
INGESTION:
NO DATA AVAILABLE
CHRONIC EFFECTS:
NO CHRONIC EFFECTS EXPECTED.
OTHER SYMPTOMS AFFECTED:
A REVIEW OF AVAILABLE DATA DOES NOT IDENTIFY ANY CONDITIONS WORSENED BY EXPOSURE TO THIS PRODUCT.

---------- EMERGENCY AND FIRST AID PROCEDURES ----------

EYE:
IMMEDIATELY FLUSH EYES WITH PLENTY OF WATER FOR AT LEAST 15 MINUTES. IF IRRITATION PERSISTS, SEEK PROMPT MEDICAL ATTENTION.
SKIN:
PROMPTLY WASH SKIN WITH SOAP AND WATER. WASH CLOTHING BEFORE REUSE. IF IRRITAION DEVELOPS, SEEK PROMPT MEDICAL ATTENTION.
INHALATION:
REMOVE TO FRESH AIR. IF IRRITATION PERSISTS, SEEK MEDICAL ATTENTION.
INGESTION:
DO NOT INDUCE VOMITING! IN GENERAL, NO TREATMENT IS NECESSARY UNLESS LARGE QUANTITIES ARE INGESTED. HOWEVER, MEDICAL ADVICE SHOULD BE OBTAINED.

* * * * * * * * * * * * SECTION VI - REACTIVITY DATA * * * * * * * * * * * *

STABILITY: STABLE
CONDITIONS TO AVOID:

NOT APPLICABLE.
INCOMPATIBILITY (MATERIALS TO AVOID):
STRONG OXIDIZERS.

HAZARDOUS DECOMPOSITION PRODUCTS:
CARBON MONOXIDE AND/OR CARBON DIOXIDE.
HAZARD POLYMERIZATION: WON"T OCCUR
CONDITIONS TO AVOID:
NOT APPLICABLE.

* * * * * * * * * SECTION VII - SPILL OR LEAK PROCEDURES * * * * * * * * * *

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED:
USE PROTECTIVE EQUIPMENT. SWEEP UP AND REMOVE. AVOID CREATING OR INHALING DUST.
WASTE DISPOSAL METHOD:
IF NOT CONTAMINATED, REUSE PRODUCT.
GET APPROVAL FROM LANDFILL OPERATOR AND TRANSPORT TO SANITARY LANDFILL.

* * * * * * * * SECTION VIII - SPECIAL PROTECTION INFORMATION * * * * * * * *

RESPIRATORY PROTECTION (USE NIOSH/MSHA APPROVED EQUIPMENT):
TOXIC DUST/MIST RESPIRATOR.
VENTILATION:
USE ONLY WITH ADEQUATE VENTILATION.
USE ONLY WITH ADEQUATE VENTILATION. LOCAL EXHAUST VENTILATION SHOULD BE USED IN DUSTY ENVIRONMENTS.
PROTECTIVE GLOVES:
NORMAL WORK GLOVES.
EYE PROTECTION:
GOGGLES OR SAFETY GLASSES.
OTHER PROTECTIVE EQUIPMENT:
NORMAL WORK COVERALLS.

* * * * * * * * * * * * SECTION IX - SPECIAL PRECAUTIONS * * * * * * * * * * *

PRECAUTIONARY LABELING CBW-30 BREAKER 516.001460

WARNING!
MAY CAUSE ALLERGIC RESPIRATORY REACTION IN SUSCEPTIBLE INDIVIDUALS.
IRRITATING TO THE EYES, SKIN AND RESPIRATORY SYSTEM.
AIRBORNE DUST MAY BE EXPLOSIVE!
PRODUCT IS VERY SLIPPERY WHEN WET! DO NOT SPREAD WITH WATER.
FOR PRECAUTIONARY STATEMENTS, REFER TO SECTIONS IV-VIII.
OTHER HANDLING AND STORAGE CONDITIONS:
STORE AWAY FROM OXIDIZERS.
STORE IN DRY LOCATION TO PROTECT PRODUCT QUALITY. REQUIRES COVERED STORAGE.
KEEP FROM HEAT, SPARKS, AND OPEN FLAME.
AVOID CREATING OR INHALING DUST.
CONTAINER DISPOSITION:
EMPTY CONTAINER COMPLETELY. TRANSPORT CONTAINER WITH ALL CLOSURES IN PLACE. RETURN FOR REUSE OR DISPOSE IN A SANITARY LANDFILL BY FIRST OBTAINING LANDFILL OPERATOR'S AUTHORIZATION.

* * * * * * * * * * SECTION X - TRANSPORTATION INFORMATION * * * * * * * * * *

DOT SHIPPING DESCRIPTION:
NOT RESTRICTED

* * * * * * * * * SECTION XI - ENVIRONMENTAL EVALUATION * * * * * * * * *

[illegible] (CONT) SECTION III - HAZARD CLASSIFICATION & ASSOCIATED INFORMATION

FIRE: N PRESSURE: N REACTIVE: N ACUTE (IMMEDIATE): Y
CHRONIC (DELAYED): N MIXTURE OR PURE MATERIAL: MIX

B. EPA - CERCLA/SUPERFUND, 40 CFR 302 (REPORTABLE SPILL QUANTITY)
N/A

C. EPA - SARA TITLE III, CFR 355 (EXTREMELY HAZARDOUS SUBSTANCES)
PRODUCT CONTAINS NO EXTREMELY HAZARDOUS COMPONENTS

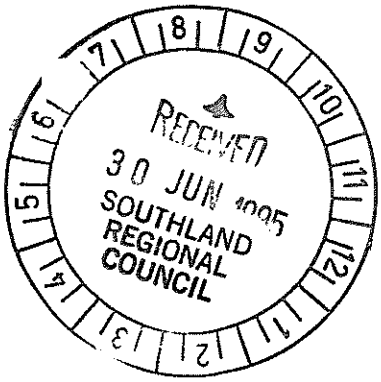
D. EPA - SARA TITLE III, 40 CFR 372 (LIST OF TOXIC CHEMICALS)
CHEMICAL CONTAINS NO TOXIC INGREDIENTS

E. COMPONENTS LISTED ON FOLLOWING CHEMICAL INVENTORIES
TSCA YES CEPA NE EEC N/D ACOIN N/D NPR NE DRSM NE

H. EPA - RCRA (HAZARDOUS WASTE), 40 CFR 261

IF PRODUCT BECOMES A WASTE, IT DOES NOT MEET THE CRITERIA OF A HAZARDOUS WASTE

* *



File ref	Action Initial
A1202	
[illegible]	
[illegible]	
[illegible]	
D. Corp. S.	
D. Ops I.K.W	

Southgas Joint Venture.
7 Mc Lagan Street.
Ohai.
29/06/95

Water Quality Officer.
Southland Regional Council.
(Attention Mr Ian Welsh)

Southgas Joint Venture
Carrier Water Ingredients

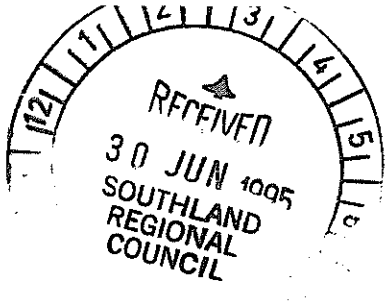
Dear Ian,

We appreciate your prompt reply to our proposal and undertake to comply with the provisions set out in your fax (Ref A1202 29/06/95). As directed we will obtain the approval of Brian Small before disposing of waste fluid in the Beaumont Opencast.

Thank you,

John Barry

File ref A1202	Actioned Initial
Chair	
Gen Man	
D.P & RM	
D. Corp. S.	
D. Ops	



Southgas Joint Venture.
7 Mc Lagan Street.
Ohai.
30/06/95

Water Quality Officer.
Southland Regional Council.
(Attention Ian Welsh)

Southgas Joint Venture
Carrier Water Disposal

Dear Ian,

We have spoken to Brian Small about releasing surplus carrier fluid into the Beaumont Opencast. As the water holding capacity of the workings is estimated to be in excess of 1 million cubic metres Mr Small is willing to give verbal approval for the fluid to be released. Although there appears to be little likehood of contamination Mr Small is not in a position to provide a written guarantee that opencast water does not leak into the surface drainage system. To enable Southgas to proceed we would be grateful if would be satisified with verbal rather than written permission.

Regards,

John Barry

KINGETT MITCHELL AND ASSOCIATES LTD.

ENVIRONMENTAL CONSULTANTS

Asda Plaza, Fred Thomas Drive,
PO Box 33-849, Takapuna, Auckland, New Zealand.
Telephone (09) 486-8068, Fax (09) 486-8072.

NZOZ

Seen & OK. ✓ IKW

FACSIMILE TRANSMISSION COVER SHEET

SEND TO:	Mr I Welsh	NO. OF PAGES	3
	Southland Regional Council	DATE	30 June, 1995
	INVERCARGILL	SENDER	S Short
FAX NO.	03 218 9469	PROJECT NO.	75010

URGENT/STANDARD

MESSAGE

Please refer the attached.

KINGETT MITCHELL & ASSOCIATES LTD.
ENVIRONMENTAL CONSULTANTS

Our Ref: 75910

30 June, 1995

Water Quality Officer
Southland Regional Council
Private Bag 90116
INVERCARGILL

Attention: Mr I Welsh

Dear Ian

RE: SOUTHGAS JOINT VENTURE : USE OF GELLING AGENT FOR FRACCING WATER

Mr John Barry, consulting geologist to the Southgas Joint Venture has asked me to comment directly to you regarding the environmental implications of use of a gelling agent formulation in the carrier fluid for the fraccing trials. Halliburton Australia Pty Limited have supplied copies of their inhouse compound safety data sheets to John and he has forwarded these to me.

The carrier fluid additives constituting the gelling agent and their final concentrations in the carrier fluid would be as follows:

Carrier Fluid Additives

Addidve	Composition	Hazard	Concentration (g m^{-3})
WG 11	guar gum derivative	None	2400
HYG 3	fumaric acid	None at low concentration	120
K 34	sodium bicarbonate	None at low concentration	120
GBW 30	cellulase enzyme carbohydrate	None	6

Guar gum derivatives are complex mucopolysaccharides which are used widely in the pharmaceutical industry including in orally ingested pills and syrups. They are non toxic and would be readily biodegraded in the aquatic environment. Fumaric acid is a weak, low molecular weight organic acid which appears in a wide variety of environmental contexts

ASIA PLAZA,
FRED THOMAS DRIVE,
P.O. BOX 33-867, TAKAPUNA,
AUCKLAND, NEW ZEALAND.
TELEPHONE (09) 486 8068 FAX (09) 486-8072

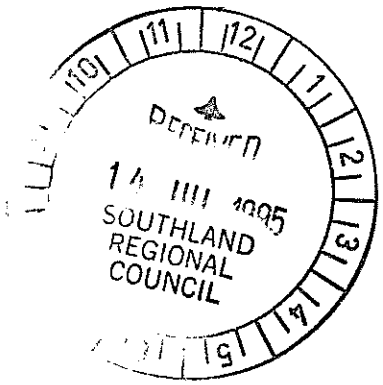
(e.g., landfill leachate). It is non-toxic, non corrosive and readily biodegraded. Sodium bicarbonate is a weakly alkaline inorganic salt which, in such dilute solution, poses no environmental hazard. The cellulase enzyme (a carbohydrate) would be non-toxic and non-corrosive at these very low concentrations and is also likely to be readily biodegraded in the environment. I am further advised by Mr Bill Farraley of Halliburton that the final pH of the carrier fluid after addition of these compounds lies in the range 6 - 7.

It is my opinion that inclusion of these additives in the fracing fluid adds no increased environmental risk from accidental discharge to the environment of carrier fluid or from the later planned, gradual discharge of back-extracted fluid and coal seam formation water to Oraniea Stream.

Please call me if you have any further queries regarding this matter.

Yours sincerely,
KINGETT MITCHELL & ASSOCIATES LTD

DR S A SHORT



Southgas Joint Venture.
7 McLagan Street.
Ohai.
12/07/95.

File ref	Actioned Initial
91202	
Chief	
Gen. Man	
D.P. & RM	
D. Corp. S.	
D. Ops JKW	

The Water Quality Officer.
(Attention Mr Ian Welsh)
Southland Regional Council.

Southgas Joint Venture
Carrier Water Disposal

Dear Ian,

Southgas will complete the hydraulic stimulation of coalbed demethanation well TP5 at the end of the week. In contrast to well TP6 in which water was used as the carier fluid Southgas obtained conditional permission from the Regional Council to employ a light weight gel in well TP5.

Upon completion of the treatment programme surplus gel and some of the fluid produced during well flowback will require disposal. Providing the Council and Coalcorp agree it is our intention to release this fluid into the abandoned Beaumont Opencast.

Initially Coalcorp gave verbal approval for the disposal of the fluid. However Mr Brian Small (Mine Manager), was reluctant to give the written approval requested by the Regional Council as he could not guarantee that opencast water would not leak into the surface drainage system. Coalcorp's local Business Manager, Mr John Dyer, has now reassessed the companys position and has indicated that Southgas will now require the written consent of the Council before Coalcorp will allow surplus fluid to be released into the old workings.

As reported by Kingett, Mitchell & Associates the gell fluid is environmentally benign and consists of the following additives:

Additive	Composition	Hazard	Conc (gm m-3)
WG11	Guar gum derivative	none	2400
HY93	Fumaric acid	none at low conc	120
K34	Sodium bicarbonate	None at low conc	120
GBW30	Cellulase enzyme carbohydrate	None	6

Kingett Mitchell & associates are of the opinion that inclusion of the above additives adds no increased environmental risk from accidental discharge to the environment of the carrier fluid or from the later planned, gradual discharge of back extracted fluid and coal seam formation water to Orauea Stream.

In view of the fact that the additives, already present in low concentrations, will be further diluted when released into the Beaumont opencast which is estimated to contain approximately 1 million m^3 of water, we would appreciate written consent from the council to dispose of up to 300 m^3 of surplus fraccing fluid into the old workings.

As a meeting has been arranged with Coalcorp on Monday we would welcome your respose beforehand.

Operations at Ohai are proceeding to plan and the Halliburton well stimulation programme should conclude this weekend.

Yours faithfully,

John Barry.

Corner Price St and North Rd
Invercargill,
New Zealand

SOUTHLAND REGIONAL COUNCIL

Private Bag
Invercargill
Telephone (03) 215-6197
Fax (03) 215-8081

Our reference: A1202
Refer to: I Welsh

17 July 1995

Southgas Joint Venture
7 McLagan Street
Ohai

Attention: John Barry

Dear Sir

Southgas Joint Venture: Carrier Water Disposal

I refer to your letter dated 12 July 1995 regarding the above.

Based on the Kingett Mitchell assessments supplied by you I have no problem with a one off discharge of up to 300m^3 of surplus fraccing fluid into the old workings. If the discharge were to become a regular requirement you will need to seek a variation to your consents.

Yours faithfully

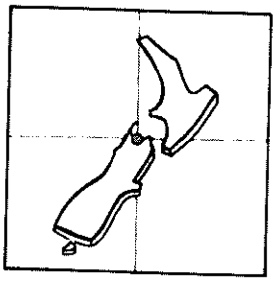
J F Engel
Consents Manager

IKW:EKL

Geosearch

Independent Geological Consultants

P.O. Box 3360
RICHMOND, Nelson.
72 Oxford Street
Richmond, Nelson
Fax/Ph: 0-3-544 5102



A1202

D. Ops
IKN

The Consents Manager.
(Attention Mr Ian Welsh)
Southland Regional Council
Private Bag 90116
Invercargill.
27/07/95

John

Dear Ian,

Southgas Joint Venture:

Disposal of Production Water

Southgas have approval from the Council to discharge up to $36m^3$ of formation water into Orauea Stream. The water is to be pumped from two coalbed demethanation wells (TP5 & TP6) situated on J. F. & C. J Levetts property at Ohai.

It is proposed to discharge the water from on-site holding tanks into small streams which form part of the farm drainage system. Discharge from the holding tanks (2 x $22m^3$) will be via a 3 inch dia,. alkathene pipeline. As the streams are thoroughly vegetated there will be no bank erosion problems. The approximate position of the two pipelines in relation to the local drainage system is shown on the attached plan.

Southgas would appreciate written approval for this method of water disposal during the test production phase.

Changed now. More water than thought. Consent being applied for.

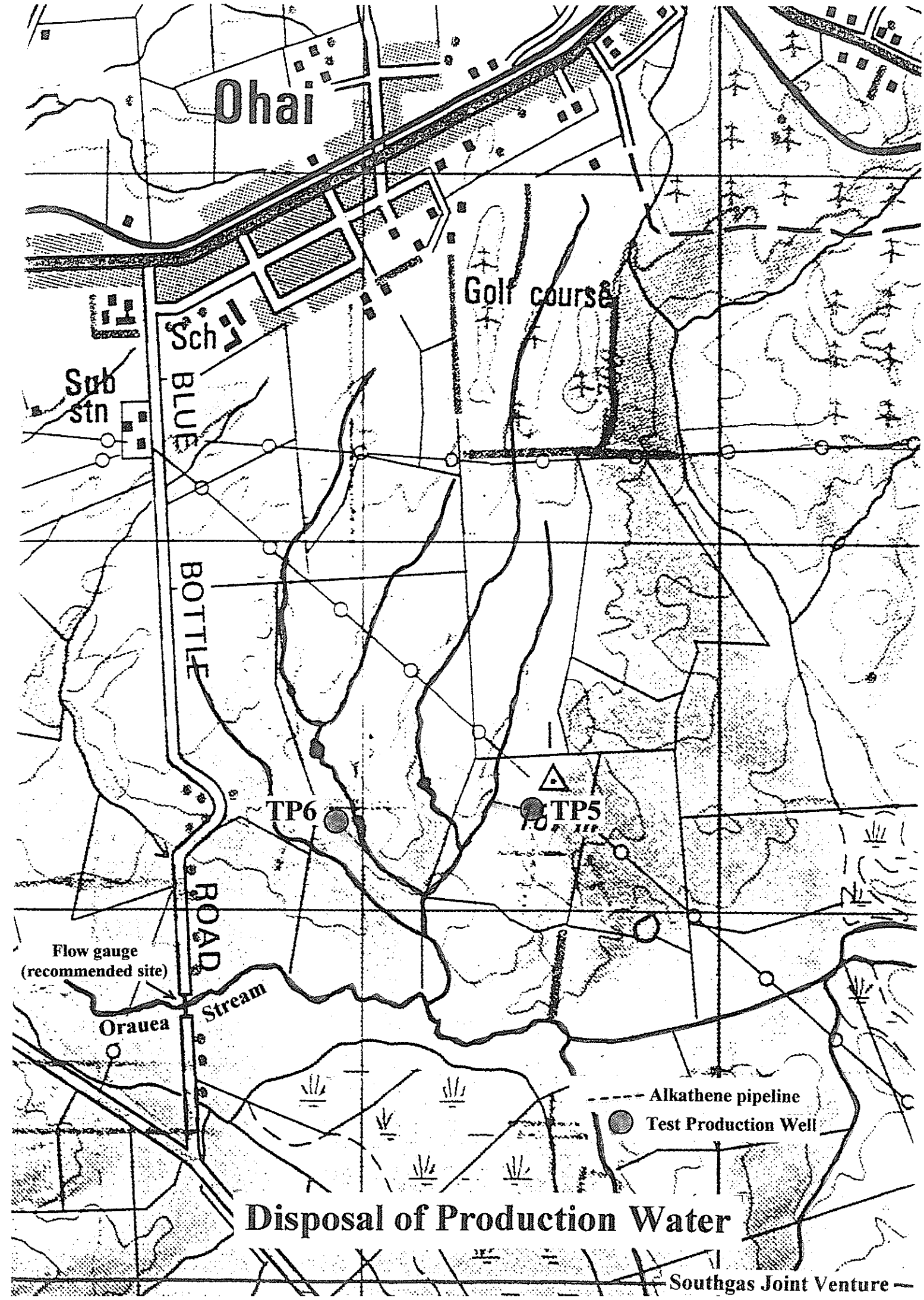
Water flow gauge on Orauea Stream

The installation of a flow gauge on Orauea Stream on the Bluebottle Road Bridge has been discussed with the SRC hydrologist. To fulfil our Resource Consent conditions Southgas wish the SRC to proceed with with the installation and calibration of the staff

Yours faithfully,

John Barry

John Barry


Ohai
Golf course
Sch
Sub stn
BLUE
BOTTLE
ROAD
TP6
TP5
Flow gauge (recommended site)
Stream
Orauea
Alkathene pipeline
Test Production Well
Disposal of Production Water
Southgas Joint Venture

COMMERCE
MINISTRY OF COMMERCE
Te Manatū Tauhokohoko

28 July 1995

Mr R C Macdonald
Macdonald Investments Limited
PO Box 1201
WELLINGTON

Dear Mr Macdonald

PROPOSED FLARING OF GAS AT OHAI

I refer to your letter of 17 May 1995, in which you request my consent to the flaring of gas, for a period of more than 45 days, during well testing operations within Petroleum Mining Licence 38136.

I advise that I hereby give my consent to the flaring of petroleum other than for emergency shutdown procedures and equipment outages, from Petroleum Mining Licence 38136, for a period of well testing of more than 45 days. Such flaring activities may continue for a maximum period of six months from the commencement of production testing operations. This consent is conditional upon the licensees supplying the information referred to in the attached draft petroleum regulations to the Development Unit of the Crown Minerals Operations Group. This information will be utilised in the monitoring of the proposed production testing operations.

Should the licensees wish to continue flaring beyond this six month period, it will be necessary for them to reapply for my consent.

Yours sincerely

Kathryn Anne Smith
Acting Secretary of Commerce

ENERGY & RESOURCES DIVISION
Head Office, Ministry of Commerce Building, 33 Bowen Street, Wellington, New Zealand. P.O. Box 1473. Telephone 0-4-472 0030. Fax NZ 0-4-473 9930

K.C. Macdonald
CHAIRMAN

23 August 1995 Ref: 643/50

Kathryn Anne Smith
Acting Secretary of Commerce
Ministry of Commerce
PO Box 1473
WELLINGTON

Dear Kathryn

FLARING OF GAS AT OHAI PML 38136

For the past few weeks I have been involved in the Southgas Phase III Work Programme at Ohai and this is my first opportunity to acknowledge and thank you for your letter of 28 July giving consent to the flaring of gas for up to six months from commencement of production testing operations.

We note that approval is conditional upon the licensee supplying the information referred to in the Draft Petroleum Regulations and accordingly we propose to report monthly and quarterly on Southgas' activities within the Draft Regulations which apply to our permit for Coalbed Demethanation.

I am pleased to advise that production commenced at TP6 on Saturday, August 19th since when gas has been flared. As recorded in Daily Operations Reports, initial production is small but is expected to increase as hydrostatic pressure is progressively reduced during the next six months.

The results of injection fall-out tests at TP6 are encouraging and exceed initial forecasts. Some technical problems at both wells have yet to be resolved and it may be some weeks before production commences at TP5.

At TP5 injection fall-out tests are now being analysed and given the results are comparable with those from TP6, planning for further development of the field can proceed with added confidence.

NZI House, 25-33 Victoria Street, Wellington, New Zealand. P.O. Box 1201.
Telephone 0-4-472 4924. Facsimile 0-4-499 1654. Telex NZ 3369.
Christchurch Office. Fendons Canterbury. Securities House, P.O. Box 13-049.

We appreciate the Ministry's continuing support for this project which is attracting wide interest and encouragement throughout Southland.

Sincerely
MACDONALD INVESTMENTS LIMITED

Ron Macdonald
CHAIRMAN

TELEPHONE & CALLER LOG

FILE: A1202
DATE: 21 Aug 95
~~pm~~ am.

WHO PHONED OR CALLED? Dana Wilder
Southyarn, Ohen
Phone/Fax 032254075
Mobile ?03 / 025 495117.

WHO TOOK IT? I.K. Welsh

WHAT WAS IT ABOUT? ① Discharging wastewater mainly fracing liquid. Quality will change in next 1-2 weeks sampling would then be appropriate
② . Discharging 36 m³ in one well - permeabilities are significantly higher than expected. May need to discharge at higher rates to bring wells into production
③ . If more discharge required looking at neighbouring mounded peat swamp. (New permit)

JFE. GJM.

WHAT HAVE YOU DONE ABOUT IT? ① Advised JFE GJM
② Advised caller to seek new permit and consultant advice.
③ Advised caller not to exceed maximum pumping rate until appropriate variation or permit in place

ANY FOLLOW UP? Graeme to contact Dana and arrange sampling as per permit (Artn & Subhurt)

I.K. Welsh

SOUTHLAND REGIONAL COUNCIL

Cnr North Rd and Price St
Private Bag 90116,
Invercargill
Southland, New Zealand
Phone 03-215 6197
Fax 03-215 8081

FAX Transmission Cover / Memorandum

To: Southgas.

Fax No. 03 225 4075. Date: 21 Aug 95. Our Ref: A1202.

From: Ian Welsh. Ext:

Subject: Permit Conditions re Maximum discharge rate.

No. of Pages - including this cover: 1

Thanks for your info
Ian.

Message:

Dana,

- Have reviewed current conditions

Site A – 18 m^3/day maximum.

Site B – 18 m^3/day maximum

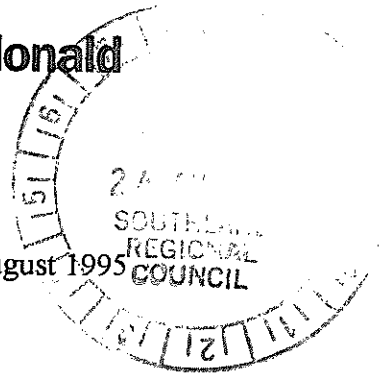
- technically to discharge 36 m^3/day from only one site is in breach of the consent
- I have spoken to our Laboratory Manager Graeme McKenzie and have asked him to coordinate any sampling with you.
- Please call me if you require more information.

Regards
Ian Welsh.

Managing Your Environment

CONFIRMATION OF FAX

R.C. Macdonald
CHAIRMAN



22 August 1995

Ref: 641/50

	Actioned Initial
A1202	
Chair	
Gen Man	
D.P & E.M	
D Corp S	
P Ops TKW	@

The Consents Manager
Southland Regional Council
Private bag 90116
INVERCARGILL

Attention: Mr Ian Welsh

JFE where to from here? Ian

Dear Ian

RE SOUTHGAS COALBED DEMETHANATION PROJECT
RESOURCE CONSENT A1202 - VARIATION

Resource Consent A1202 issued by Southland Regional Council on 2 February 1995 authorises discharges into the water and the air from the two Southgas Joint Venture Test Wells, subject to various conditions. In relation to the discharge of water we have approval from the Council to discharge up to 18m³ of formation water from each well into the Orauea Stream.

A primary function of the current Two Well Test Programme is to carry out injection fall off tests in each well to establish the permeability of the coal seams at the well locations. A high permeability measurement is good news for the project whereby a permeability of 3 md would be acceptable and anything above 10 md exceptional.

Injection fall off tests have been carried out on TP6 and a permeability measurement of minimum 10 md and a maximum of 30 md has been calculated from the Well Test data.

The higher than expected permeability encountered, while a promising result for the project, does have the effect of releasing a far greater amount of formation water than originally anticipated. We understand that the current discharge permit is the maximum that could be permitted for the Orauea Stream and therefore we need to explore the options and gain consents to dispose of the additional water production that will flow when both wells are producing.

Macdonald Investments Ltd

NZI House, 25-33 Victoria Street, Wellington, New Zealand. P.O. Box 1201.
Telephone 0-4-472 4924, Facsimile 0-4-499 1654. Telex NZ 3369.

Christchurch Office, Kendons Canterbury, Securities House, P.O. Box 13-049,
Armagh, Christchurch. Telephone (03) 794-245. Facsimile (03) 656-342

Lying to the south-east of our well locations, on the property of JFG & CJ Levett and crossing over to the adjoining property of R & J Powell, is a large peat swamp which would act as a natural sump and filter for the surplus water produced from our two Test Production Wells over and above that allowed under the existing permit. We are seeking written approval from these two landowners to dispose of up to an additional 72 m^3 of formation water into this peat swamp and wish to apply to the Council for a variation to the existing Consent.

We would propose that the minimum standards for the water set in Condition 6 of our existing Consent is maintained and that your Laboratory Manager, Mr Graeme McKenzie is engaged to coordinate with us the required sampling and flow monitoring procedures.

Please advise any additional information required for the Council to consider granting a variation to the existing Non-Notified Consent to allow the discharge of up to an additional 72 m^3 of formation water into the peat swamp herein identified.

Your early response will be much appreciated.

Yours faithfully
MACDONALD INVESTMENTS LIMITED

Ron Macdonald
CHAIRMAN

SOUTHLAND REGIONAL COUNCIL

Cnr North Rd and Price St
Private Bag 90116,
Invercargill
Southland, New Zealand
Phone: +64 (3) 215-6197
Fax :+64 (3) 215-8081

FAXED
24/8/95 1136

FAX Transmission Cover / Memorandum

To: Mr R Macdonald, Macdonald Investments Ltd.

Fax No. 04 499 1654 Date: 24 August, 1995 Our Ref: A1202

From: John Engel

Subject: Disposal of formation water

No. of Pages - including this cover: 1

In reply to your letter dated 22 August 1995, I must advise that what you are proposing requires a new consent. It is a different means of disposal, into a different receiving environment, than was advertised and processed earlier.

It is therefore necessary to lodge a new application with an assessment of environmental effects.

What you are proposing appears quite reasonable and could possibly be done without notification (I don't give any undertaking to using the non-notified procedure in advance of receiving the application), however it cannot be considered an amendment to an existing consent.

If non-notification were to be considered, you would need to obtain approvals from :

Southland District Council
Department of Conservation
Southland Fish & Game Council
Iwi
JFG & CJ Levett
R & J Powell
any other landowners or adjoining landowners who could be affected.

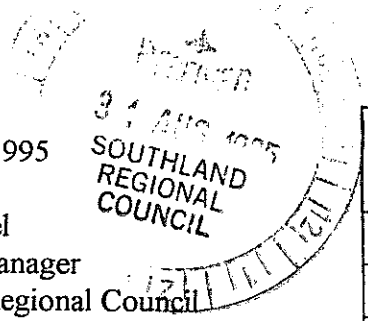
If you wish to discuss this matter further, please contact me.

Yours faithfully,

John Engel
Consents Manager

Managing Your Environment

R.C. Macdonald
CHAIRMAN



File ref	Actioned Initial
A1202	
Chair	
Gen Man	
D.P & RM	
D. Corp. S.	
D. Ops JFE.	JFE.

29 August 1995

Ref: 675/50

Mr J F Engel
Consents Manager
Southland Regional Council
Private Bag 90116
INVERCARGILL

Dear John

A1202, for info + file.

COUNCIL DECISION ON RESOURCE CONSENT APPLICATION A1202
FLARING OF GAS PML LICENCE 38136, OHAI - SOUTHGAS

Following on your letter of 2 February 1995 I am pleased to inform you that Southgas has commenced test production at its TP6 Well at Ohai and will be exercising the consents granted by the Regional Council for water and air discharges.

As you will note from the attached correspondence, the Ministry of Commerce gave its formal consent to the flaring of gas at Ohai on 28 July 1995 as a result of which TP6 Well has now commenced production. Initial production will be small but is expected to increase as hydrostatic pressure is progressively reduced during the next six months.

For your information Southgas will, in terms of the Draft Petroleum Regulations, supply information concerning production and flaring operations to the Ministry on a monthly and quarterly basis.

The results of injection fall-out tests at TP6 were encouraging. Some technical problems at both wells have yet to be resolved and it may be some weeks before production and flaring commences at TP5.

This testing and monitoring phase is expected to continue for perhaps a further three months, however we hope that you are encouraged as we are with these initial indications of future productivity.

Sincerely
MACDONALD INVESTMENTS LIMITED

Ron Macdonald
OPERATOR

Macdonald Investments Ltd

NZI House, 25-33 Victoria Street, Wellington, New Zealand. P.O. Box 1201.
Telephone 0-4-472 4924, Facsimile 0-4-499 1654. Telex NZ 3369.

Christchurch Office, Kendons Canterbury, Securities House, P.O. Box 13-049, Armagh, Christchurch. Telephone (03) 794-245. Facsimile (03) 656-342

ALLAN ASPELL & ASSOCIATES LTD *Phone* *(09) 478 - 4970*

34, CONSTELLATION DRIVE, MAIRANGI BAY, NORTH SHORE CITY. *Fax* *(09) 478 - 4971*

FACSIMILE TRANSMISSION

FACSIMILE DETAILS	SAMPLE DETAILS	RESULTS DETAILS
Date 29.8.95		
Fax ref.	Laboratory ref.	Final ☐
No. pages 3	Order no.	Interim ☐
Sent by A C ASPELL	Date received	Checked by

CLIENT DETAILS

Company SOUTHLAND REGIONAL COUNCIL

Fax.no.

ATTENTION GRAHAM McKENZIE

MESSAGE

Graham:

Excerpts from:

"Australian Water Quality Guidelines for Fresh & Marine Waters" as published by:

Australian & New Zealand Environment & Conservation Council, Nov. 1992.

As you will see, from an environmental protection perspective, 2ppb H_2S is a justifiable WQ maximum condition.

Please call me if I can assist further.

Regards

Allan.

Table 2.1: Summary guidelines for protection of aquatic ecosystems

Indicator	Units	Fresh waters	Marine waters
Biological		It is premature to recommend specific values for these indicators. The need for biological evaluation is recognised, and these indicators are identified as important characteristics of ecosystem function (Section 2.2)	
Physico-chemical			
Colour & clarity		< 10% change in euphotic depth[1]	< 10% change in euphotic depth
Dissolved oxygen[2]	mg/L	> 6 (> 80–90% saturation)	> 6 (> 80–90% saturation)
Nutrients/nuisance growths		(Section 2.3.3)	(Section 2.3.3)
pH		6.5–9.0	< 0.2 pH unit change
Salinity	mg/L	< 1000 (about 1,500 µS/cm)	
Suspended particulate matter/turbidity		< 10% change seasonal mean concentration	< 10% change seasonal mean concentration
		(see also colour & clarity)	(see also colour & clarity)
Temperature[3]		< 2°C increase	< 2°C increase
Toxicants			
Inorganic toxicants	all µg/L		
Aluminium		< 5.0 (if pH < = 6.5) < 100.0 (if pH > 6.5)	NR
Ammonia		20.0–30.0 (Table 2.3)	NR
Antimony		30.0	500.0
Arsenic		50.0	50.0
Beryllium		4.0[4]	NR
Cadmium		0.2–2.0[5]	2.0
Chromium		10.0	50.0
Copper		2.0–5.0[5]	5.0
Cyanide		5.0	5.0
Iron		1,000.0[6]	NR
Lead		1.0–5.0[5]	5.0
Mercury		0.1	0.1
Nickel		15.0–150.0[5]	15.0
Selenium		5.0	70.0
Silver		0.1	1.0
Sulfide		2.0	2.0
Thallium		4.0	20.0
Tin (tributyltin)		0.008	0.002
Zinc		5.0–50.0[6]	50.0
Organic toxicants			
Acrylonitrile		NR	NR
Benzidine		NR	NR
Dichlorobenzidine		NR	NR
Diphenylhydrazine		NR	NR
Halogenated aliphatic compounds			
Hexachlorobutadiene		0.1	0.3

a test with rainbow trouts and fathead minnows, the values being 0.2 µg/L and 0.5 µg/L respectively (USEPA 1987b). Bioconcentration factors in fresh waters ranged from not detectable to 150. CCREM (1991) and USEPA (1987b) recommended criteria for the protection of freshwater aquatic life of 0.1 µg/L and 0.12 µg/L (four-day average) respectively.

USEPA (1987b) compiled a data base of acute toxicity values for silver exposure to twenty-one species of saltwater animals. The concentrations ranged from 3 µg/L for the eastern oyster to greater than 100,000 µg/L for the mummichog fish. Chronic toxicity has been determined in five life-cycle tests with the saltwater mysid. Decreases in reproduction occur at concentrations of 15 µg/L to 88 µg/L (McKenney 1982). USEPA (1987b) recommended a criterion of 0.92 µg/L (four-day average) for the protection of marine aquatic life.

Sulfide—hydrogen sulfide

The concentration of undissociated hydrogen sulfide in fresh and marine waters should not exceed 2 µg/L.

Sulfides are present in many industrial wastes, such as those from tanneries, paper mills, chemical plants and gas works. A major source of hydrogen sulfide in aquatic systems is anaerobic decomposition of sewage, sludge, algae and other naturally deposited organic materials (USEPA 1986). The most toxic form is H_2S, which is the predominant form (99%) at pH 5, whereas sulfide (HS^-) concentrations increase with higher pH values (USEPA 1986).

The toxicity of sulfide to aquatic animals is dependent on the temperature, pH and dissolved oxygen concentration (USEPA 1986). Fish usually exhibit a strong avoidance reaction to sulfide (Jones 1964). Safe levels for walleyes and fathead minnows were found to vary from 2.9 µg/L to 12 µg/L, with eggs being the least sensitive and juveniles the most sensitive in short-term tests (Smith 1971). On the basis of chronic tests evaluating growth and survival, the safe H_2S concentration for bluegill (*Lepomis macrochirus*) juveniles and adults was 2 µg/L (USEPA 1986). According to USEPA (1986), water containing 2 µg/L undissociated H_2S would not be hazardous to most fish and other aquatic wildlife.

Thallium

The concentration of total thallium in fresh waters should not exceed 4 µg/L.

The concentration of total thallium in marine waters should not exceed 20 µg/L.

Thallium is introduced into the environment by natural weathering and as waste from the production of other metals (CCREM 1991), and is present in trace amounts in fresh waters (McNeely et al. 1979). Thallium (I) is the predominant form of thallium in most aerobic waters; however, in waters with high oxygen content some thallium (III) may be present (USEPA 1979a). In reducing environments, thallium may be precipitated in the elemental form or as the insoluble sulfide if sulfur is present (Lee 1971; Magorion et al. 1974). Thallium has been reported to exhibit chronic toxicity to freshwater aquatic life at concentrations of 40 µg/L (USEPA 1986). The guideline value for fresh waters has been derived by multiplying this chronic toxicity value by 0.1. According to USEPA (1986), acute toxicity to saltwater aquatic life occurred at concentrations of 2,130 µg/L, and would probably occur at lower concentrations among species that are more sensitive than those tested.

SOUTHLAND REGIONAL COUNCIL

Cnr North Rd and Price St
Private Bag 90116,
Invercargill
Southland, New Zealand
Phone 03-215 6197
Fax 03-215 8081

FAX Transmission Cover / Memorandum

To: Doreen Carter RJ Hill laboratories

Fax No. 07 854 9886 Date: 8-9-95 Our Ref:

From: G J McKenzie Ext::

Subject:

No. of Pages including this cover: 2

FAXED 1.27 8.9.95

Message: As discussed could you please analyse both samples for as many of the tests listed as possible. (As well as those already requested)

My "Wish list"

Boron
Sulphate
Fluoride
Calcium
Magnesium
Potassium
Barium
Sodium
Total oxidised nitrogen
~~Dissolved and Total~~

Dissolved - iron
- manganese
- aluminium

Total - Copper
- Zn
- Cr
- Ni
- Pb
- Cd
- As
- Se

I will send up as much of the samples that I can on Monday ie

95/1279	250 mL	HNO_3 preserved
	100 mL	no preservative
95/1280	100 mL	HNO_3 preserved
	50 mL	no preservative

If I can sent them up today please let me know otherwise I will refrigerate the samples over the weekend

Thank you

Graeme

In the first paragraph I refer to "both samples" I mean 95/1279 and 95/1280 that I have already sent to you.

SOUTHLAND REGIONAL COUNCIL

Cnr North Rd and Price St
Private Bag 90116,
Invercargill
Southland, New Zealand
Phone 03-215 6197
Fax 03-215 8081

FAX Transmission Cover / Memorandum

To: Ian Kennedy RC Macdonald Ltd

Fax No. (04) 4726 581 Date: 19-9-95 Our Ref:

From: G J McKenzie Ext::

Subject: Provisional Analytical Results

No. of Pages - including this cover: 3

FAXED 19.9.95 5.28pm Comp.

Message: Attached are the PROVISIONAL results that are available to date from the samples collected on 7-9-95

95/1279 Discharge from TP6

95/1280 Peat Bog ringdrain trib to Drawer Stm.

PROVISIONAL RESULTS

Test	Units	Discharge from TP6	Peat Bog ring drain trib to Drumeq
		95/1279	95/1280
pH	–	8.3	6.5
temperature	°C		
Conductivity	mS/cm @25°C	7.29	0.068
Suspended Solids	g/m^3	8.8	–
Ammonia-N	g/m^3	3.2	<0.010
Dissolved Reactive Phosphorus	g/m^3	<0.005	0.018

R I Hill Laboratories Limited

incorporating Analytical Services Laboratory

25 Te Aroha Street,
P O Box 4048,
Hamilton, New Zealand

Telephone: +64 (7) 855-2266
Facsimile: +64 (7) 854-9886
Internet/Email: rjh@rjhill.co.nz

INTERIM: *Results in this interim report may be subject to change in our final verification steps. Confirmation of results will be by a printed and signed report.*

Client: Southland Regional Council
Address: Private Bag 90116
INVERCARGILL
Contact: Graeme McKenzie

Laboratory No: 95329
Date Registered: 12/9/95
Date Completed:
Page Number: 1 of 3

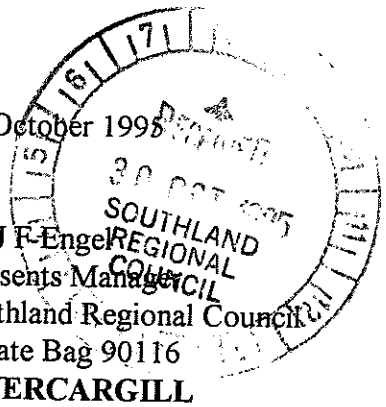
The results for the analyses you requested are as follows:

Sample Type: Water, Dirty

Sample Name		95/1279 07/09/95	95/1280 07/09/95
Lab No		95329/1	95329/2
Calcium	(g.m-3)	12.2	#
Magnesium	(g.m-3)	6.00	#
Sodium	(g.m-3)	#	#
Potassium	(g.m-3)	11.2	#
Ammonium-N	(g.m-3)	#	#
Total Kjeldahl Nitrogen (TKN)	(g.m-3)	#	#
Total Organic Nitrogen (TON)	(g.m-3)	#	#
Fluoride	(g.m-3)	#	#
Sulphate	(g.m-3)	7	#
Total Sulphide*	(g.m-3)	#	#
Total Boron*	(g.m-3)	0.14	< 0.01
Soluble Iron*	(g.m-3)	< 0.5	0.62
Soluble Manganese*	(g.m-3)	0.088	0.0111
Soluble Aluminium*	(g.m-3)	0.05	0.759
Total Arsenic*	(g.m-3)	< 0.02	< 0.004
Total Barium*	(g.m-3)	0.406	0.0106
Total Cadmium*	(g.m-3)	< 0.0005	0.0002
Soluble Chromium*	(g.m-3)	0.010	0.0013
Total Chromium*	(g.m-3)	0.031	0.002
Total Copper*	(g.m-3)	< 0.005	0.009
Total Nickel*	(g.m-3)	0.02	0.007
Total Lead*	(g.m-3)	0.002	0.0003
Total Selenium*	(g.m-3)	< 0.05	< 0.01
Total Zinc*	(g.m-3)	0.05	0.011

These tests still in progress. * This test is not Telarc Registered.

R.C. Macdonald
CHAIRMAN



File ref	Actioned Initial
A1202	
Chief	
Gen Man	
C.P. & RM	
Corp. S.	
Ops	JFE JFE.

Discussed by phone.

26 October 1995

Ref: 898/50

Mr J F Engel
Consents Manager
Southland Regional Council
Private Bag 90116
INVERCARGILL

Dear Mr Engel

As you are aware during the past seven months Southgas has constructed two experimental Test Production Wells at Ohai.

Although some technical problems have been encountered which will require design changes before further wells are constructed, the feasibility work carried out to date has established that the gas-bearing coal measures intercepted in Wells TP5 and TP6 are in line with forecasts and that the gas currently being flared is a clean burning, non-pollutant fuel.

To date water discharged into the Orauea Stream has been within permissible limits and water quality has been checked on a regular basis supervised by your Laboratory Manager, Graeme McKenzie.

The initial Southgas proposal and application to the Southland Regional Council in December 1994 resulted in the granting of Resource Consent A1202 on 2 February 1995 for discharge of production water and combustibles to the atmosphere. In furtherance of this approval, Southgas has worked closely with those concerned to ensure compliance with the Council's conditions.

A good working relationship has also been established with the landowners as well as local residents and businesses who have been appreciative of the benefits to the community and given the project their willing support.

In the supporting document which accompanied the December 1994 application it was noted that "if the results of this assessment are favourable, then a further initial investigation would proceed.

We can now advise that during November Southgas' consultants will visit the site and complete a detailed report on Phase III operations which we believe could lead to a recommendation that feasibility work should be completed. Instead of the two additional sites shown as C and D in the original application, we anticipate that the consultants will recommend the construction of up to three wells to complete a "5 spot" configuration

Macdonald Investments Ltd

NZI House, 25-33 Victoria Street, Wellington, New Zealand. P.O. Box 1201.
Telephone 0-4-472 4924, Facsimile 0-4-499 1654. Telex NZ 3369.

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designed to achieve better communication between the wells and correspondingly, better access to the reservoir.

It is expected that all three additional wells will be drilled at or close to the locations marked on the original application, however final site locations could be dependent upon the consultants' recommendations.

The possibility of changes to well sites was anticipated when Southgas obtained a "Written Approval to a Resource Consent" from 11 landowners, Iwi and the Southland Fish and Game Council to support applications to drill, stimulate and test up to five Test Production Wells.

The purpose of this letter is to seek Southland Regional Council's approval in principal for non-notifiable consent to cover an additional three wells to complete feasibility work in order that planning work can proceed in the weeks immediately following the conclusion of the testing of TP5 and TP6.

Such approval, if granted, would also enable further well construction to be planned and carried out during the summer months since we are anxious to avoid, if possible, the rigorous operating conditions encountered during the recent winter and spring weather.

Should you wish to have further information please let us know.

Regards.

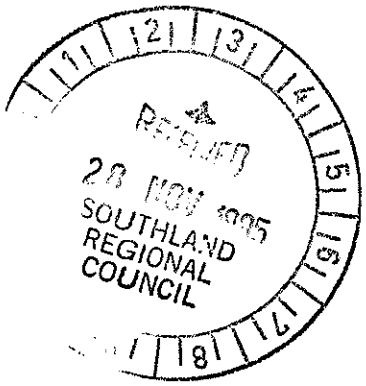
Sincerely
MACDONALD INVESTMENTS LIMITED

Ron Macdonald
CHAIRMAN

R.C. Macdonald Ltd

NZI HOUSE, 25-33 VICTORIA STREET, WELLINGTON, NEW ZEALAND, P.O. BOX 1201,
TELEX: NZ 3369, TELEPHONE: (4) 472-4924, TELEFAX: (4) 472-6581

DATE:	28 November 1995	**REF:**	**243/50**
TO:	Southland Regional Council 03 215 8081	**PAGES:**	1 of 2
ATTENTION:	Mr Ian Welsh Water Quality officer Mr J F Engel Consents Manager		
FROM:	Ron Macdonald		



For your information we enclos of our letter which was sent on 27 November to Mr Ken Murray, Department o ion and to Mr Maurice Rodway, Southland Fish & Game Council.

Regards.

Ron Macdonald

File ref A1202	Actioned Initial
Chair	
Gen Man	
D.P. & RM	
D. Corp. S.	
D. Ops IKW	

John, does the existing consent cover this proposal? Ian W.

R.C. Macdonald
CHAIRMAN

27 November 1995 **Ref: 222/50**

Mr Maurice Rodway
Statutory Manager
Southland Fish & Game Council
235 Dee Street
INVERCARGILL

Dear Mr Rodway

DISCHARGE OF WATER

Southgas Joint Venture is currently planning the construction of up to three additional Test Production Wells at Ohai and seeks your approval to discharge a maximum of 300 m^3/day of production water from the Demethanation of Coal to the Orauea Stream or to the adjacent peat bog.

As you will recall the original application provided for the construction of up to four wells subject to satisfactory results from the first two wells which are currently undergoing production tests. At that time the necessary consents were obtained including permissions from adjoining landowners for a period of five years.

Since that time Southgas has worked with the Water Quality Officer of Southland Regional Council to carry out regular water quality tests and to ensure compliance with requirements.

The exact location of the additional well sites, which will be in proximity to the existing sites, will depend upon further geological studies which will not be completed for several weeks, however we are particularly keen to secure approval to this request in order that site works can be completed as soon as possible before the onset of the severe winter and spring conditions experienced this year.

For this purpose we will welcome your reply which, if affirmative, will enable us to lodge our formal applications to the Southland Regional and District Councils which could enable planning to proceed before the end of this year.

Any further information you require will receive our prompt attention.

Sincerely
MACDONALD INVESTMENTS LIMITED

Ian Kennedy

Macdonald Investments Ltd

NZI House, 25-33 Victoria Street, Wellington, New Zealand. P.O. Box 1201.
Telephone 0-4-472 4924, Facsimile 0-4-499 1654. Telex NZ 3369.

Christchurch Office, Kendons Cantorbury, Securities House, P.O. Box 13-049,
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