



PROVINCE OF  
BRITISH COLUMBIA

WHEN REPLYING PLEASE REFER TO  
C-413  
FILE NO.....

DEPARTMENT OF MINES AND PETROLEUM RESOURCES  
VICTORIA

September 7, 1971

Wainoco Oil and Chemicals Limited  
312 - 4th Avenue, S.W.  
Calgary 1, Alberta

Attention: Mr. A.F. Griffith

Dear Sir:

Re: Application for Disposal of Produced  
water from Halfway Mine, Wilder Field  
into Nikanassin in 7-30-83-19

We have reviewed your recent application to dispose of Halfway water produced from gas wells in the Wilder Field into the Nikanassin formation in 7-30-83-19. This is to advise that the application is approved, effective immediately subject to future modification if deemed necessary by the Chief of the Petroleum and Natural Gas Branch.

Yours truly,

J. D. Lincham  
Chief

FSA:1hh

cc Mr. D. L. Johnson

bcc Approvals Catalogue ✓

*1982 converted  
to Halfway Gas, disposal  
zone closed-off*

*WA 2773*



**MEMORANDUM**

4	7	8	0	0	0	2				
3	5	0	0	9	4	5	0			

TO Mr. J.D. Lineham  
 Chief  
 Petroleum & Natural Gas Branch

FROM THE

DEPARTMENT OF MINES  
AND PETROLEUM RESOURCES

VICTORIA, B.C., September 7, 1971

WHEN REPLYING PLEASE REFER  
TO FILE No. U-2-41-W13

Re: Wainoco's Application for Disposal of  
 Produced Water from Halfway Zone, Wilder  
 Field into Nikanassin in 7-30-83-19

WA #02773

The subject application has been reviewed and approval is recommended. Attached is a letter of approval to Wainoco for your signature.

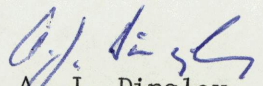
Analysed water samples from Cadomin-Nikanassin zone indicate dissolved solid contents greater than 2500 ppm rendering this water useless for domestic or agricultural use. Water produced with gas from the Halfway in 7-30 and 10-19-83-19 has been analysed at over 120,000 ppm.

DST recoveries from Nikanassin indicate only the presence of sulphurous water, therefore the chances of gas or oil recoveries are considered nil within the Wilder Field area.

The Nikanassin aquifer has an areal extent of at least 20 square miles and out-crops at about 50 miles to the west. The gross porous interval is about 300 feet thick but water disposal is planned into the lower 30 feet which is separated by a thin shale. On the assumption of a 20 square miles area with thickness of 30 feet, this zone contains some 2 billion barrels of water. If, however, a one foot thick zone is considered, then the zone contains some 12 million barrels of water.

Three cases with producing WGR's of 6, 11 and 26 BW/MMSCF were considered. It was noted that with the maximum case WGR of 26 BW/MMSCF\* and the most probable disposal zone thickness of 30 feet, the "flooded" area will be about 90 acres. The increase in pressure by the disposal of water for this case will be only 19 psi. The attached Table summarises the data for all cases examined.

Based on our review, it is recommended that Wainoco be granted permission to dispose of produced Halfway water into the Nikanassin as requested.

  
 A. J. Dingley  
 Senior Reservoir Engineer

PSA:lh

\* This assumes that the maximum daily contract rate of 9 MMSCF/D is produced from 10-19 only.

TABLE 1

Effects on Nikanassin Aquifer After Disposal of Produced Water from Halfway

Established raw gas reserves, BSCF						10
Producing WGR, BW/MMSCF	6		11			26
Cumulative Water Production, MBW	60		110			260
Thickness of receiving aquifer, -ft	1	30	1	30	1	30
Areal extent of flooded zone after disposal - Acres	64	2.15	118	3.94	279	93
Volume of aquifer - MMBbls	11.9	2007	11.9	2007	11.9	2007
Volume of disposal water as % aquifer volumes	0.453	0.0027	0.830	0.0049	2.18	0.013
Pressure increase in aquifer, if sealed, psi	660	3.9	1210	7	3180	19