

**STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION DIVISION**

**IN THE MATTER OF THE HEARING
CALLED BY THE OIL CONSERVATION
DIVISION FOR THE PURPOSES OF
CONSIDERING:**

**APPLICATION OF MELROSE OPERATING COMPANY
TO EXPAND ITS ARTESIA UNIT WATERFLOOD
PROJECT AND AMEND DIVISION ADMINISTRATIVE
ORDER WFX-768, EDDY COUNTY, NEW MEXICO**

CASE 12709

**MELROSE OPERATING COMPANY'S
PROPOSED
ORDER OF THE DIVISION**

BY THE DIVISION:

This cause came on for hearing at 8:15 a.m. on September 6, 2001, at Santa Fe, New Mexico, before Examiner David R. Catanach.

NOW, on this ____ day of September, 2001, the Division Director, having considered the testimony, the record, and the recommendations of the Examiner, and being fully advised in the premises,

FINDS THAT:

(1) Due public notice having been given as required by law, the Division has jurisdiction of this cause and the subject matter thereof.

(2) Melrose is the current operator of the Artesia Unit Waterflood Project which is approved by the Division for water injection into the Queen, Grayburg and San Andres formations of the Artesia Queen-Grayburg-San Andres Pool.

(3) The Project Area contains approximately 2240 acres with approximately 16 injection wells and approximately 35 producing wells within portions of Sections 25, 26 34, 35, 36 of Township 17 South, Range 28 East and Sections 2 and 3 of Township 18 South, Range 28 East, NMPM.

(4) Melrose seeks to expand its Artesia Unit Waterflood project and amend Division Administrative Order WFX-768, Eddy County, New Mexico. Applicant, pursuant to Division Rule 701(G) seeks authority to expand its waterflood project by injection of water into the Queen, Grayburg and San Andres formations of the Artesia Queen-Grayburg-San Andres Pool in the following injection wells:

Unit Well No. 2. 330 feet FSL & 330 feet FWL, Section 26, T17S, R28E
Unit Well No. 3. 330 feet FSL & 1750 feet FWL, Section 26, T17S, R28E
Unit Well No. 10. 330 feet FNL & 1950 feet FWL, Section 35, T17S, R28E
Unit Well No. 11. 360 feet FNL & 360 feet FWL, Section 35, T17S, R28E
Unit Well No. 12. 1980 feet FNL & 660 feet FWL, Section 35, T17S, R28E
Unit Well No. 13. 1980 feet FNL & 1980 feet FWL, Section 35, T17S, R28E
Unit Well No. 16. 1980 feet FNL & 660 feet FWL, Section 36, T17S, R28E
Unit Well No. 18. 1980 feet FSL & 1980 feet FWL, Section 36, T17S, R28E
Unit Well No. 19. 1980 feet FSL & 660 feet FWL, Section 36, T17S, R28E
Unit Well No. 22. 1980 feet FSL & 1980 feet FWL, Section 35, T17S, R28E
Unit Well No. 23. 1980 feet FSL & 660 feet FWL, Section 35, T17S, R28E
Unit Well No. 28. 990 feet FEL & 330 feet FSL, Section 35, T17S, R28E
Unit Well No. 44. 1980 feet FNL & 1070 feet FWL, Section 3, T17S, R28E
Unit Well No. 46. 2310 feet FNL & 2267 feet FWL, Section 3, T18S, R28E
Unit Well No. 54. 1654 feet FSL & 2272 feet FWL, Section 3, T18S, R28E
Unit Well No. 57. 1570 feet FSL & 1070 feet FWL, Section 3, T18S, R28E

(5) The Division orders applicable in the project area are as follows:

Artesia Unit:

OCD Order R-2869 dated February 11, 1965
OCD Order R-2876 dated March 5, 1965
OCD Order R-3311 dated September 11, 1967
OCD Order R-3494 dated September 12, 1968
OCD Order R-4027 dated September 10, 1970
OCD Administrative Order WFX-733 dated March 4, 1998
OCD Administrative Order WFX-768 dated November 28, 2000

(6) Melrose's proposed expansion of the Artesia Unit waterflood project is estimated to cost 13.54 million dollars and includes 16 additional injection wells, the drilling of 35 producers and the conversion of 41 wells to injectors

(7) Melrose estimates that 4.069 million barrels of additional oil may be recovered by this expansion project.

(8) In accordance with Division Rule 701, Melrose submitted satisfactory evidence on Division Form C-108 in compliance with Division Rule 701.

(9) Within the one-half mile "Area of Review" there are approximately 215 wells which have penetrated to or through the Queen, Grayburg and San Andres formations of the Artesia Queen-Grayburg-San Andres Pool including 35 plugged and abandoned wells, 19 open hole completion wells, 79 wells with production casing, 76 wells with deep producing casing, well with deep production liner with intermediate casing, and 5 wells with no Division data available.

plugged wellbores

(10) Melrose has submitted schematic diagrams of the 35 plugged and abandoned wellbores within the Area of Review and testified that 34 were cased, cemented and plugged in such a manner to preclude the migration of fluid from the proposed injection interval into fresh water strata or potentially productive zones above or below the injection zone. Melrose also testified that, with one exception, these wells have been plugged and abandoned in a manner acceptable to the Division at the time they were plugged.

(11) Melrose identified one potential problem well from the group of plugged and abandoned wellbores:

(a) the Maloney-Chambers State Well No. 1 (API #30-015-02559), Unit H, Section 4, T18S, R28E which was drilled on December 15, 1925 and then plugged for which there is no plugging report on file with the Division. Melrose demonstrated that the injection interval is not currently productive nor is it expected to be productive within one-half mile of this wellbore; that this well is in an area where the reservoir is non-productive because of low permeability; and that producers will be drilled between this wellbore and proposed injection wells.

old wellbores without data

(12) Melrose identified 19 potential problem wells that are captioned ("old wells") which were drilled in the 1920's for which there is no available data on file at the Division. **See Exhibit "A"**. Seven of these wells are plugged and are addressed under the "Plugged Well" category. For the remaining 12 wells, Melrose recommends that before injection take place within 1/2 mile radius of any of these wells that Melrose will run a cement bond log and determine the actual top of cement in each well and if the cement does not cover the injection zone, the well will be squeezed with sufficient cement to cover the injection interval.

wells without surface pipe

(13) Melrose identified 8 potential problem wells that are captioned ("wells without surface pipe") for which there is no available data on file at the Division concerning the depth of the surface casing. **See Exhibit "B"**. Three of these wells have adequate cement to protect fresh water. Two wells are adequately plugged to protect fresh water. This leaves three wells that need to be addressed. Melrose recommends that before injection take place within 1/2 mile radius of any of these wells, that Melrose will dig up the wellhead to determine if surface pipe is present and if present then fresh water is protected, but if not, then a cement bond log will be run to determine the actual bottom of cement in each well and if the cement does not protect fresh water to a depth of 300 feet, the wells will be squeezed with sufficient cement to protect the fresh water to a depth of 300 feet.

unplugged wellbores

(14) Melrose submitted well construction and cementing data for 174 unplugged wells within the Area of Review and testified that all such wells were constructed in such a manner to preclude the migration of fluid from the proposed injection interval in the Artesia Queen-Grayburg-San Andres Pool into freshwater strata or potentially productive zones above or below the proposed injection zone.

wellbores using 50% vs 25% excess calculations

(15) Melrose submitted adequate data to demonstrate that, with the exception of 7 "potential problem wells" (See **Exhibit C**) all unplugged wellbores, either by measurement or by calculation, had adequate cement such that the interval from the top to the base of the injection interval is protected using the following Division guideline: cement bond logs or temperature surveys for all wellbores with measured top of cement and if measured tops of cement were not available, then to calculate the top of cement by using a yield of 1.32 cf/sk plus a 50% excess such that the top of cement is to or above the Grayburg formation.

(16) Melrose presented data to demonstrate that when an 88% efficiency factor is applied to an analysis of 9 wellbores with actual measured tops of cement within the Artesia Unit, the calculated tops of cement were adequate to reach the top of the Grayburg formation

(17) Based upon this analysis, Melrose demonstrated that Division's 50% excess guideline can be reduced to 25% excess for the wellbores listed on Exhibit C which is sufficient under these circumstances to preclude the migration of fluid from the proposed injection interval in the Artesia Queen-Grayburg-San Andres Pool into freshwater strata or potentially productive zones above or below the proposed injection zone.

(18) The Division should not require corrective or remedial action for wells listed on Exhibit C.

**HYS 400 cement
wellbores using 50% vs 36% excess calculations**

(19) Melrose, with the assistance of BP Amoco, provided wellbore data for 16 potential problem wells operated by BP Amoco in its Empire Abo Unit which were cemented with HYS 400 cement. **See Exhibit D.**

(20) Of these wells, the cement top in the BP Amoco Empire Abo Unit Well No. E-39, Unit B, Section 35, T17S, R28E is calculated to be adequate to reach to or above the top of the Grayburg formation if a 36% excess is used in the calculation.

(21) Melrose presented data to demonstrate that when a 64% efficiency factor is applied to an analysis of 5 wellbores with actual measured tops of cement within the Empire Abo Unit, the calculated tops of cement were adequate to reach the top of the Grayburg formation.

(22) Based upon this analysis, Melrose demonstrated that Division's 50 % excess guideline can be reduced to 36 % excess for the wellbores listed on Exhibit D without risk to potentially productive zones above or below the injection interval.

(23) Melrose presented data to demonstrate that the use of HYS 400 cement by Arco (now BP Amoco) in cementing of the wells listed on Exhibit D is sufficient under these circumstances to preclude the migration of fluid from the proposed injection interval in the Artesia Queen-Grayburg-San Andres Pool into freshwater strata or potentially productive zones above or below the proposed injection zone.

(24) The Division should not require corrective or remedial action for wells listed on Exhibit D.

Administrative Order WFX-768

(25) Melrose demonstrated that it has satisfied the conditions of Division Administrative Order WFX-768 by satisfactory remedial work on the Artesia Unit Well No. 12, Unit E Section 35, T17S, R28E and on the Artesia Unit Well No. 13, Unit F Section 35, T17S, R28E and by demonstrating the top of cement in the Empire Abo Unit G Well No. 38, Unit K, Section 35, T17S, R28E has been recalculated such that no require remedial work is now required on this wellbore.

IT IS THEREFORE ORDERED THAT:

(1) The applicant, Melrose Operating Company is hereby granted authority to expand its Artesia Unit Waterflood project and to inject water into the Queen, Grayburg and San Andres formations of the Artesia Queen-Grayburg-San Andres Pool in the injection wells listed in Finding (2) above.

(2) Division Administrative Order WFX-768 is hereby amended to conform to this order.

(3) Injection into these wells shall be accomplished through fiberglass lined tubing installed in a packer set approximately 100 feet from the uppermost injection perforation or casing shoe; the casing-tubing annulus shall be filled with an inert fluid and a gauge or approved leak-detection device shall be attached to the annulus in order to determine leakage in the casing, tubing or packer.

(4) Prior to commencing injection operations within one-half mile of any well listed on **Exhibit "A"** Melrose shall a run cement bond log and determine the actual top of cement in each well and if the cement does not cover the injection zone, the well will be squeezed with sufficient cement to cover the injection interval.

(5) Prior to commencing injection operations within one-half mile of any well listed on **Exhibit "B"** Melrose shall dig up the wellhead to determine if surface pipe is present and if present then fresh water is protected, but if not, then to run a cement bond log and determine the actual bottom of cement in each well and if the cement does is below 300 feet, then fresh water is protected, and if not, then the well will be cemented to protect fresh water down to a depth of 300 feet.

(6) The operator shall give advance notification to the supervisor of the Artesia District Office of the Division of the date and time of the installation of injection equipment, the conductance of remedial cement operations, and of the mechanical integrity pressure tests, in order that the same may be witnessed.

(7) The applicant shall immediately notify the supervisor of the Artesia District Office of the Division of the failure of the tubing, casing or packer in any of the injection wells, the leakage of water or oil from or around any producing well, or the leakage of water or oil from any plugged and abandoned well within the project area, and shall take such steps as may be timely and necessary to correct such failure or leakage.

(8) Jurisdiction of this case is retained for the entry of such further orders as the Division may deem necessary.

DONE at Santa Fe, New Mexico, on the day and year designated above.

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION

LORI WROTENBERY
Director

S E A L

These are wells drilled in the 1920's and have no data available on them.											
Well and Location	Type	Status	Perforations	Casing Size	Depth	No. Sacks	Meas. TOC	Calc. TOC	Date Drilled	API Number	TD
T-17-S R-28-E Section 35											
Welch	P&A			Unk.		Unk.			9/9/26	30-015-01729	2710
State #1									P&A 8/14/34		
2310 FNL & 250 FWL (E)											
T-18-S, R-28-E, Section 3											
Melrose Energy	Oil	Inactive	2313-2345	10 1/2	370	Unk.			1/1/27	30-015-01799	2365
Artesia Unit #40				8 1/4	520	Unk.					
1070 FNL & 1570 FWL (C)				5 3/16	2260	Unk.					
Melrose Energy	Oil	Inactive	2282-2326	Unk.	Unk.	Unk.			6/15/28	30-015-01790	2366
Artesia Unit #43											
1980 FNL & 250 FWL (E)											
Melrose Energy	Oil	Inactive	2390-2400	10	305	Unk.			1927	30-015-01775	2965
Artesia Unit #45				8 1/4	518	Unk.					
2390 FNL & 1570 FEL (F)											
Melrose Energy	Oil	Inactive	2400-2420	Unk.	Unk.	Unk.			7/11/26	30-015-01798	2442
Artesia Unit #55											
2390 FSI & 1570 FWI (K)											
Melrose Energy	Oil	Inactive	2072-2442	7	2072	Unk.			3/28/26	30-015-01797	2442
Artesia Unit #56											
1570 FSL & 1570 FWL (K)											
Melrose Energy	Oil	P&A	2320-2432	8 1/4	682	Unk.			8/23/27	30-015-01795	2438
Artesia Unit #57				7	619	Unk.					
1570 FSI & 1070 FWL (L)											
Melrose Energy	Oil	Active	2403-2418	10	324	Unk.			1/30/26	30-015-01791	2445
Artesia Unit #58				8 1/4	635	Unk.					
1070 FSL & 250 FWL (M)											

EXHIBIT

A

Melrose Energy	Oil	Inactive	2403-2443	10	354	Ukn.				2/23/26	30-015-01792	2474
Artesia Unit # 59				8 1/4	807	Ukn.						
330 FSL & 330 FWL (M)				4 1/2	2362	200	1425			Temp Survey		
Flynn Welch	P&A			10	328	Unk.						
State 647 #42				8 1/4	723	Unk.				5/13/26	30-015-01794	2432
2390 FSL & 1070 FWL (L)												
Flynn Welch	P&A			10	374	Unk.						
State 647 #41				8 1/4	715	Unk.				5/7/26	30-015-01793	2428
1570 FSL & 250 FWL (L)												
T-18-S, R-28-E, Section 4												
Melrose Energy	Oil	Inactive	2040-2344	10	310	Ukn.						
Levers State #1				8 1/4	600	Ukn.				9/16/25	30-015-02580	2344
1070 FSL & 1070 FEL (P)				6 5/8	2040	Ukn.						
Melrose Energy	Oil	Inactive	2270-2402	8 1/4	520	Ukn.						
Levers State #2				5 1/2	2310	25		2167		11/29/25	30-015-02581	2402
250 FSL & 1070 FEL (P)												
Melrose Energy	Oil	Inactive	2353-2400	8 1/4	500	Ukn.						
Levers State #3				6 5/8	2151	Ukn.				12/26/25	30-015-02582	2400
250 FSL & 250 FEL (P)												
Melrose Energy	Oil	Inactive	2047-2393	8 1/4	515	Ukn.						
Levers State #4				6 5/8	2148	Ukn.				12/4/25	30-015-02583	2417
1070 FSL & 250 FEL (P)												
Fina	Oil	P&A	2414-2416	10	535	Unk.						
Levers State #5				8 1/4	850	Unk.				12/1/25	30-015-02573	2416
1070 FSL & 1570 FEL (O)				6 5/8	869	Unk.						
				4 1/2	244	Unk.						
Maloney-Chambers	P&A											
State #1										12/15/25	30-015-02559	2500
2390 FNL & 1070 FEL (H)												
Frontier Petroleum	P&A											
McQuigg #5										12/23/25	30-015-02565	2408
1570 FSL & 1570 FEL (J)												

[illegible]

Wells Without Surf pipe

Well and Location	Type	Status	Locator	Comment	Recommended Action
Marbob Energy N.G. Phillips #5 1650 FSL & 1650 FEL (J)	Oil	P&A	Page 3	P & A	No action fresh water protected
Marbob Energy Walker State #2 330 FSL & 1650 FEL (O)	Oil	Active	Page 3	Cement to surf	No action fresh water protected
Melrose Energy Artesia Unit #11 360 FNL & 360 FW1 (D)	Oil	Inactive	Page 9	Calc TOC (@ 919 ft)	No action fresh water protected
Melrose Energy Artesia Unit #44 2310 FNL & 990 FWL (E)	Oil	Inactive WTW	PAGE 17		No action fresh water protected
Melrose Energy Artesia Unit #43 1980 FNL & 250 FWL (E)	Oil	Inactive	Page 17		Dig out well head If surface is present fresh water protected
Melrose Energy Artesia Unit #56 1570 FSL & 1570 FWL (K)	Oil	Inactive	Page 18		Dig out well head If surface is present fresh water protected
Melrose Energy Artesia Unit #55 2390 FSL & 1570 FW1 (K)	Oil	Inactive	Page 18		Dig out well head If surface is present fresh water protected
Melrose Energy Artesia Unit #61 660 FSL & 2310 FEL (O)	Oil	P&A	Page 18		Well Plugged fresh water protected

EXHIBIT

B

On wells with unknow surface casing the proposed procedure is as follows:

- 1) Dig up wellhead to determine if surface pipe is present/ if present fresh water is protected
- 2) If surface pipe is not present/ run CBL to determine cement tops on Production pipe
 - If cement is above injection zone fresh water is protected
 - If cement is below injection zone well will be squeezed cemented to protect fresh water

WELLS WITHOUT SUFFICIENT CEMENT IF 50 % EFF. FACTOR USED	
Well Name	Reference page # of 1/2 mile radius data
Larue, C.E. & Muncy B.M. Moore State #1 1650 FNL & 330 FEL (H)	page 6
Melrose Energy Artesia Unit # 7 480 FNL & 330 FWL (D)	page 15
Melrose Energy Artesia Unit #53 1650 FSI & 1650 FEL (J)	Page 18
Melrose Energy Artesia Unit # 33 330 FSL & 1631 FWL (N)	Page 15
Melrose Energy Artesia Unit #35 330 FNL & 1650 FWL (C)	Page 16
Melrose Energy Artesia Unit #37 990 FNL & 990 FEL (A)	Page 17
Melrose Energy Artesia Unit #54 1654 FSI & 2272 FWL (K)	Page 18

EXHIBIT

C

cplc

Well and Location	Type	Status	Perforations	Casing Size	Depth	No. Sacks	REPT'D TOC	Meas. FOC	Date Drilled	API Number	TD
T-17-S R-28-E Section 25											
BP Amoco	Oil	Inactive	6300-6316	8 5/8	738	375		surface	8/20/60	30-015-01537	6392
Empire Abo Unit D 42				5 1/2	6383	320*		1550			
660 FSL & 1980 FWL (N)				*5 1/2 cmt'd w/	170 sx HYS & 150 sx 4% Incor			55% Eff.			
T-17-S R-28-E Section 26											
BP Amoco	Oil	Active	6152-6172	8 5/8	720	350		surface	7/22/60	30-015-01554	6326
Empire Abo Unit #39				5 1/2	6326	320*		1493			
1650 FSL & 1980 FEL (J)				*5 1/2 cmt'd w/	170 sx HYS & 150 sx 4% Incor			55% Eff.			
BP Amoco	Oil	P&A	6198-6224	8 5/8	720	375		surface	7/8/60	30-015-01553	6310
Empire Abo Unit C #38				5 1/2	6310	340*		1014			
1650 FSL & 1980 FWL (K)				*5 1/2 cmt'd w/	190 sx HYS & 150 sx 4% Incor			55% Eff.			
BP Amoco	Oil	Active	6060-6080	8 5/8	738	350		surface	8/27/60	30-015-01557	6280
Empire Unit #37				5 1/2	6226	320*		1393			
1650 FSL & 990 FWL (L)				*5 1/2 cmt'd w/	170 sx HYS & 150 sx 4% Incor			55% Eff.			
BP Amoco	Oil	Active	6080-6100	8 5/8	739	300		surface	6/3/60	30-015-01551	6220
Empire Abo Unit D #37				5 1/2	6218	275*	Circ.	2428	Circulate to surface after squeeze job		
550 FSL & 820 FWL (M)				*5 1/2 cmt'd w/	125 sx HYS & 150 sx 4% Incor			55% Eff.			
BP Amoco	Oil	Inactive	6158-6170	8 5/8	739	300			6/18/60	30-015-01550	6435
Empire Abo Unit D # 38				5 1/2	6435	312*	Circ.	688			
330 FSL & 2310 FWL (N)				*5 1/2 cmt'd w/	162 sx HYS & 150 sx 4% Incor						
BP Amoco	Oil	Active	6208-6222	8 5/8	732	300			7/1/60	30-015-01552	6332
Empire Abo Unit #39				5 1/2	6332	320*	Circ.	1535			
330 FSL & 1980 FEL (O)				*5 1/2 cmt'd w/	170 sx HYS & 150 sx 4% Incor						
BP Amoco	Oil	Active	6199-6219	8 5/8	714	375		surface	7/25/60	30-015-01555	6330
Empire Abo Unit #40				5 1/2	6330	320*		1497			
660 FSL & 660 FEL (P)				*5 1/2 cmt'd w/	170 sx HYS & 150 sx 4% Incor			55% Eff.			
T-17-S R-28-E Section 35											
BP Amoco	Oil	Inactive	6297-6315	8 5/8	750	300					
Empire Abo Unit E #40				5 1/2	6405	320*	Circ.	1467	6/19/60	30-015-01737	6405
660 FNL & 660 FEL (A)				*5 1/2 cmt'd w/	170 sx HYS & 150 sx 4% Incor						

EXHIBIT

P

Well and Location	Type	Status	Perforations	Casing Size	Depth	No. Sacks	REPT'D TOC	Meas. TOC	Date Drilled	API Number	TD
BP Amoco Empire Abo Unit E #39 660 FNL & 1980 FEL (B)	Oil	Inactive	6210-6324	8 5/8 5 1/2 *5 1/2 cmt'd w/ 125 sx HYS & 150 sx 4% Incor	750 6350	275 275*	Circ.	1939' 64% Eff.	6/1/60	30-015-01735	6350
BP Amoco Empire Abo Unit F #38 1650 FNL & 1650 FWL (F)	Oil	Inactive	6246-6254	8 5/8 5 1/2 *5 1/2 cmt'd w/ 125 sx HYS & 150 sx 4% Incor	720 6404	250 275*	Circ. 64		5/15/60 ¹	30-015-01733	6404
BP Amoco Empire Abo Unit F #39 11650 FNL & 2310 FEL (G)	Oil	Inactive	6200-6210	8 5/8 5 1/2 *5 1/2 cmt'd w/ 200 sx HYS & 150 sx 4% Incor	708 6350	350 350*		surface 822 55% Eff.	7/13/60	30-015-01738	6350
BP Amoco Empire Abo Unit F #40 1650 FNL & 990 FEL (H)	Oil	Inactive	6274-6284	8 5/8 5 1/2 *5 1/2 cmt'd w/ 190 sx HYS & 150 sx 4% Incor	857 6421	375 340*		surface 1125 55% Eff.	9/8/61	30-015-01740	6421
BP Amoco Empire Abo Unit G #38 2310 FSL & 1650 FWL (K)	Oil	Inactive	6243-6308	8 5/8 5 1/2 *5 1/2 cmt'd w/ 170 sx HYS & 150 sx 4% Incor	757 6378	350 320*		surface 1545 55% Eff.	8/23/61	30-015-01739	6378
BP Amoco Empire Abo Unit G #37 2310 FSL & 330 FWL (L)	Oil	Inactive	6226-6238	8 5/8 5 1/2 *5 1/2 cmt'd w/ 170 sx HYS & 150 sx 4% Incor	720 6351	300 320*	1935	surface	6/25/60	30-015-01734	6351
T-17-S, R-28-E, Section 36 BP Amoco Empire Abo Unit E #41 330 FNL & 330 FWL (D)	Oil	Inactive	6238-6252	8 5/8 5 1/2 *5 1/2 cmt'd w/ 170 sx HYS & 150 sx 4% Incor	748 6400	350 320*		surface 1567 55% Eff.	10/7/61	30-015-05760	6400
RECOMMENDATION:											
No recommended action at this time because the tops appear sufficient to protect the injection interval and any fresh water zones.											