STATE OF NEW MEXICO 1 ENERGY AND MINERALS DEPARTMENT OIL CONSERVATION DIVISION 2 STATE LAND OFFICE BUILDING SANTA FE, NEW MEXICO 3 27 March 1985 4 EXAMINER HEARING 5 6 7 IN THE MATTER OF: Application of Hicks Oil & Gas, Inc. 8 CASE for salt water disposal, San Juan 9525 (\$54£ 8547,8548 County, New Mexico. 9 10 11 12 BEFORE: Michael E. Stogner, Examiner 13 14 TRANSCRIPT OF HEARING 15 16 APPEARANCES 17 18 19 For the Oil Conservation Jeff Taylor Division: Attorney at Law 20 Legal Counsel to the Division State Land Office Bldg. Santa Fe, New Mexico 87501 21 22 For the Applicant: W. Thomas Kellahin 23 Attorney at Law KELLAHIN & KELLAHIN 24 P. O. Box 2265 Santa Fe, New Mexico 87501 25

22

INDEX STATEMENT BY MR. KELLAHIN MIKE HICKS Direct Examination by Mr. Kellahin 6 Cross Examination by Mr. Stogner EXHIBITS CASE 8525 Hicks Exhibit One Notice Hicks Exhibit Two, Plat Hicks Exhibit Three, Schematic Hicks Exhibit Four, Document Hicks Exhibit Five, Tabulation Hicks Exhibit Six, Schematic Hicks Exhibit Seven, Narrative Hicks Exhibit Eight, Water Analyses

e,

1			3
2			
3		EXHIBITS	
4	CACE OF AC		
5	CHAE 0340		
6	Hicks Exhibit	One. Notice	10
7	Hicks Exhibit	Two, Plat	10
8	Hicks Exhibit	Three, Schematic	10
0	Hicks Exhibit	Four, Document	12
y	Hicks Exhibit	Five, Tabulation	14
10	Hicks Exhibit	Six, Document	14
11	Hicks Exhibit	Seven, Statement	14
12	Hicks Exhibit	Eight, Water Analyses	14
13			
14	CASE 8547		
15			
16	Hicks Exhibit	One, Notice	16
17	Hicks Exhibit	Two, Map	16
18	Hicks Exhibit	Three, Schematic	16
10	Hicks Exhibit	Four, Document	17
17	Hicks Exhibit	Five, Summary	18
20	Hicks Exhibit	Six, Tabulation	18
21	Hicks Exhibit	Seven, Schematic	18
22	Hicks Exhibit	Eight, Water Analyses	21
23			
24			
25			

1					4
2					
3			EXHIB	I T S	
4					
5	CASE 1	8548			
6	Hicks	Exhibit	One, Notice		21
7	Hicks	Exhibit	Two, Plat		21
8	Hicks	Exhibit	Three, Schematic		22
9	Hicks	Exhibit	Four, Document		22
10	Hicks	Exhibit	Five, Schematic		23
11	Hicks	Exhibit	Six, Tabulation		23
12	Hicks	Exhibit	Seven, Narrative		23
14	Hicks	Exhibit	Eight, Water Anal	yses	23
15					
14					
15					
16					
17					
18					
19					
20					
21					
22	ſ				
23					
24					
47 35					
23					

5 1 2 MR. STOGNER: We will call now 3 Case Number 8525. 4 MR. TAYLOR: The application of 5 Hicks Oil and Gas, Inc., for salt water disposal, San Juan 6 County, New Mexico. 7 MR. STOGNER: Call for appear-8 ances. 9 MR. KELLAHIN: If the Examiner please, I'm Tom Kellahin of Santa Fe, New Mexico, appearing 10 on behalf of the applicant and I have one witness to be 11 sworn. 12 MR. STOGNER: Are there anv 13 other appearances in this matter? 14 MR. KELLAHIN: Mr. Examiner, we 15 would request that for purposes of hearing that this case be 16 consolidated with Cases 8546, 8547, and 8548. 17 MR. STOGNER: Are there any objections to consolidating these cases? 18 There being none, we will now 19 call Cases Nos. 8546, 8547, and 8548. 20 MR. TAYLOR: Each of those are 21 the application of Hicks Oil and Gas, Inc., for salt water 22 disposal, San Juan County, New Mexico. 23 MR. STOGNER: Cases 8525 and 24 8546, 8547, 8548 will be consolidated for purposes of testi-25 mony today.

8 1 Will the witness please stand 2 and be sworn in? 3 4 (Witness sworn.) 5 6 MR. KELLAHIN: Mr. Examiner, so 7 that we can keep the -- so that we can keep the four cases 8 straight in terms of the wells, we've provided you with a 9 plat upon which there is a blue arrow identifying each of the four proposed disposal wells, and if you'll start in 10 Section 17 and look at Well No. 16, Well No. 16 is Case 11 8546. 12 Just to the southwest is Well 13 No. 20, and that is Case 8548. 14 And if you'll look to the east 15 and find Section 15, there's an arrow pointing towards Well 16 37. That is Case 8525. 17 And then the last well to the south is Well 34, and that's Case 8547. 18 19 MIKE HICKS, 20 being called as a witness and being duly sworn upon his 21 oath, testified as follows, to-wit: 22 23 DIRECT EXAMINATION 24 BY MR. KELLAHIN: 25 Q Mr. Hicks, for the record would you

7 1 please identify yourself and describe your employment, sir? 2 My name is Mike Hicks. A I'm employed by 3 Hicks Oil and Gas, and I am President and engineer for the 4 company. 5 Hicks, have you previously testified 0 Mr. 6 before the New Mexico Oil Conservation Division as an engin-7 eer? 8 No, sir. Α Would you describe for the Examiner what 0 9 has been your educational background, first, and then, se-10 cond, what has been your work experience as an engineer 11 working in the oil and gas industry? 12 Α Yes, sir. 13 I graduated from Texas A & M University 14 in 1973 with a degree, Bachelor of Science degree in civil 15 engineering, and have worked in the oil fields for the past 16 five years. What is the history of Eicks Oil and Gas 17 0 Company, Mr. Hicks? 18 Α It was originally started by my father. 19 I joined him after its inception and we drill and complete 20 oil and gas wells and look after production. 21 Within the area identified on Exhibit A 0 22 that shows the Southeast Cha-Cha Gallup Unit, would you de-23 scribe for the Examiner what properties the Hicks Oil and 24 Gas Company operates? 25 A We operate the Southeast Cha-Cha Unit,

 Ω 1 which is confined to the Gallup formation. 2 And how is that Cha-Cha Unit identified Q 3 on Exhibit A? 4 By the hatched lines outlining the unit Α 5 boundary. 6 Within that area what do you do as an en-Ω 7 gineer for Hicks Oil and Gas Company? 8 We have infill drilled four new wells and Α have worked over three -- two of the -- three of the old 9 producing wells, and are continuing to produce the wells to 10 their maximum. 11 0 Did you prepare and submit to the Divi-12 sion its Form C-108, which requests that waterflood approval 13 -- salt water disposal approval be granted for each of these 14 four wells? 15 A Yes, sir, I did. 16 MR. KELLAHIN: We tender Mr. Hicks as an expert witness. 17 He is so quali-MR. STOGNER: 18 fied. 19 Hicks, let me direct your attention Q Mr. 20 again to Exhibit A. You've identified for us the -- the 21 Gallup Unit. 22 would you give us some of the historical 23 background about the unit itself? 24 Yes, sir. The unit was created in the A early 1960's as a pressure maintenance project to enhance 25

9 1 the oil recovery. 2 The unit was operated by several opera-3 In approximately 1973 the injection of water tors. for 4 pressure maintenance ceased and subsequent injection of 5 water into the disposal or into the injection wells was only 6 for disposal of produced water. 7 In 1978 Hicks Oil and Gas became the unit in November of 1984 Frank Chavez of the Oil 8 operator and Commission in Aztec called concerning the two injection 9 wells that we are operating. 16 and No. No. 34 are pre-10 sently the injection wells that we are utilizing and were 11 the injection wells that were being utilized at the time we 12 acquired the unit operatorship. 13 -- he had two -- two concerns, the He 14 first being that No. 34, one of the wells that we were using 15 for disposal, had never been approved as an injection well 16 during the -- when the well -- when the project was being waterflooded, and the second thing he asked was that we get 17 34 Well approved as a salt water disposal well and the No. 18 get Well No. 16 reclassified as a salt water disposal well 19 and not a pressure maintenance. 20 Q In addition to those two wells, Mr. 21 you have a request that two other wells be Hicks, do ap-22 proved for salt water disposal? 23 Yes, No. 20 and No. 37. Ά 24 All right, sir. Let's start with No. 16, Q which will be Case 8546, and turn to the C-108 that has been 25

10 1 submitted to the Commission for that case. 2 Would you identify for us, Mr. Hicks, 3 what is marked as Exhibit One in Case 8546? 4 That's the notice. 5 А It is the notice to offset operators and 6 surface owners of this proposed disposal well. 7 All right, sir, and if you'll turn past 0 8 the notice and the Commission Form C-108, and turn to Exhibit Number Two, would you identify Exhibit Number Two for 9 us? 10 It is a copy of the plat of the area with A 11 a half mile radius circle drawn around Well No. 16. 12 Within that half mile radius, Mr. Hicks, 0 13 have you identified for us and tabulated all the wells that 14 either produced from the Gallup or have penetrated through 15 the Gallup? 16 A Yes, sir. All right. Let's turn past Exhibit Num-17 0 ber Two and have you identify Exhibit Number Three for us. 18 Exhibit Number Three is a schematic and A 19 description of the wellbore of Well No. 16. 20 Let's talk about Well No. 16 for 0 a 21 What is its current disposal rate that you're using moment. 22 now? 23 Approximately 50 barrels per day. A 24 Q And what -- how long has this well been 25 disposing of produced water at that rate?

11 1 We have operated it since 1978 as a dis-Α 2 and previous to that time it was part posal well of the 3 pressure maintenance project, and I'm really not certain 4 what -- what date it was. It was in the sixties when it was 5 converted to pressure maintenance. 6 0 Have you as operator experienced any kind 7 of difficulties with this well or the wellbore, utilizing it 8 for disposal purposes? A No, sir. 9 The water that is produced and disposed 0 10 of in Well No. 16 comes from what sources, Mr. Hicks? 11 It's produced water from the Southeast A 12 Cha-Cha Gallup Unit. 13 Does the request for this well, 0 as well 14 the request for the other three wells, involve the proas 15 posed future use of these wells for produced water from some 16 other formation other than the Gallup? Α Yes, sir. We would also like to have the 17 disposal wells approved to receive produced water from other 18 producing horizons in the San Juan Basin. 19 0 Could you identify for us the produced 20 horizons from which your -- you have attached water analyses 21 in the C-108? 22 Δ It would be the Fruitland Pictured 23 Cliffs, Mesaverde, Gallup, and Dakota. 24 All right. Let's turn past the Exhibit 0 25 Number Three, the wellbore schematic, and turn to Exhibit

12 1 Number Four, Mr. Hicks, and have you describe the informa-2 tion contained on that exhibit. 3 We basically have an answer to the gues-Α 4 that are brought up on -- or the information that tions is 5 requested on the C-108 Form. 6 0 All right, let's go through the essential 7 elements of that information, then. 8 Have you proposed a maximum injection pressure limitation that will be equal to or less than 0.2 9 psi per foot of depth? 10 Ά Yes, sir. We have specified our maximum 11 injection pressure to be 1000 psi. 12 And the well log for the well 0 is pre-13 viously filed with the Oil Conservation Division? 14 Α Yes, sir. 15 Have you been able to identify 0 in the 16 area around this wellbore any wells that produce fresh water sources? 17 There is a well within one mile of А the 18 proposed disposal well that was called the Southeast Cha-Cha 19 Unit Water Supply Well No. 1. It's a well that was origi-20 nally drilled and completed as a water source for the pres-21 sure maintenance project, and also, there is a well, or a 22 spring, the Bentley Spring Well, also within one mile. 23 All right, your exhibit identifies the 0 24 locaion of the Cha-Cha Water Supply Well. Would you show us 25 on Exhibit A, identify for the Examiner, the approximate lo-

13 1 cation of the spring? 2 It is in the north or southwest quarter Ά 3 of Section 9, in the, I guess it would be the southwest of 4 the southwest of Section 9. 5 MR. KELLAHIN: These blue areas 6 are all fresh water sources in the area. 7 This is the spring here in Sec-8 tion 9. MR. STOGNER: Thank you, 9 Mr. Kellahin. 10 In preparing your exhibits for hearing, 0 11 Mr. Hicks, and in reviewing and studying this area, have you 12 found any evidence of faulting or hydrologic connections 13 that would put the Gallup formation in communication with 14 any shallow fresh water sands or aquifers? 15 Α No, sir, I have not. 16 For this case and the other three cases, 0 17 do you have an opinion as to whether the continued use of the Gallup formation for salt water disposal poses a risk of 18 contamination to shallower fresh water aquifers? 19 A No, sir, I don't, for the reason that the 20 Gallup is overlain by a massive shale section, the Mancos 21 Shale, that we feel is a very adequate barrier to the migra-22 tion of the water upward. 23 0 Is the wellbore for Case 8546, as well as 24 wellbores and completion techniques for the other three the 25 wells, such that the water disposed of in the Gallup forma-

14 1 tion? 2 A Yes, sir, the casing is cemented across 3 the shale section and extends up to the bottom of the Mesa-4 verde in all these wells. 5 Let's turn to Exhibit Number Five in Case Q 6 Hicks, and have you describe for us the informa-8546, Mr. tion on the wellbore tabulation. 7 It's a tabulation of all the wells that Α 8 are within one-half mile radius of the proposed salt water 9 disposal well, No. 16. 10 subsequent to that tabulation And Q you 11 a schematic identified as Exhibit Number Six for have the 12 Cha-Cha Water Supply Well No. 1? 13 Α Yes, sir. 14 your review of the information for 0 In 15 Case 8546 do you find any information that either the producing wells or wells that are plugged and abandoned in the 16 area are in any way inadequately cemented or completed so as 17 they would serve as a source of contamination for water dis-18 posed of in the Gallup? 19 A No, sir. 20 Subsequent Exhibit Number Six is 0 to 21 which is simply a statement of fresh water drinking Seven, 22 sources and a geologic description of the Gallup formation? Yes, sir. 23 Α All right. And then Exhibit Number Eight 0 24 is a package of water analyses? 25

15 1 Yes, sir, and those include water anal-Α 2 yses of wells on the unit plus water from typical South San 3 Juan Basin producing wells. 4 Is the package of water analyses attached С 5 as Exhibit Eight, is this the same package that's attached 6 to all of the C-108's for all four cases? 7 Yes, sir. A 8 And those packages of water analyses in-0 clude produced water analysis from the Gallup, Pictured 9 Cliffs, Dakota, and Mesaverde? 10 А Yes, sir. 11 Okay, let's go to the C-108 for Case 0 12 Hicks, and this is the well in Section 22 that's 8547, Mr. 13 identified as Unit Well 34? Is that correct, sir? 14 Yes, sir. A 15 Would you describe for the Examiner what 0 16 is the current status and history of the Well 34 that you propose to have approved for salt water disposal? 17 The well is presently a disposal well and Α 18 has been Hicks Oil and Gas acquired the unit operatorship in 19 1978. 20 Q This is the second well that Mr. Chavez 21 asked you to have recertified for disposal purposes. 22 A Yes, sir. 23 All right, would you identify for the Ex-0 24 aminer what the current rates of disposal are in this well? 25 A Approximately 50 barrels per day.

16 1 Would you turn to Exhibit Number One Q in 2 the package of exhibits and identify this? This is the 3 what, sir? 4 Again this is the notice to surrounding А 5 offset operators and surface owners of this proposed salt 6 water disposal well. 7 All right, and would you identify Exhibit 0 8 Number Two for us? Exhibit Number Two is a map of the area A 9 surrounding Well No. 34, showing other wells and also shows 10 a radius circle drawn around Well No. 34 one-half mile. 11 All right, sir, and Exhibit Number Three? 0 12 Α Exhibit Number Three is a proposed well-13 bore schematic of the injection well. 14 And this is the way the injection well is Q 15 currently completed? 16 A Yes, sir. You used plastic lined tubing in the dis-17 0 posal well? 18 Α That I don't know. 19 All right, sir. 0 It's -- it's either 20 plastic coated steel or fiberglass tubing, one or the other? 21 I do not know. A 22 All right, sir. What is the -- have you 0 23 filled the annular space between the tubing and casing with 24 an inert fluid? 25 А We have not worked on this well since we

17 1 acquired it, and what was done prior, we have no records. 2 All right, will you make an investigation Q 3 to determine what the status is of the tubing in terms of 4 being plastic lined or fiberglass coated? 5 Yes, sir, we fully intend to pull this Α 6 well and make sure that everything is as we've shown it on 7 the schematic. 8 All right. You will also place a pres-0 sure gauge or some monitoring device at the surface to -- to 9 measure and monitor the pressure on the annular space be-10 tween the tubing and the casing? 11 A Yes, sir. 12 All right. When Well 34 is completed in Q 13 the fashion shown on the schematic, do you have an opinion 14 as to whether the use of this wellbore for disposal in the 15 Gallup will be one that will adequately isolate the Gallup 16 disposal water from any fresh water sources? 17 А Yes, sir, I do. In preparing your exhibits you have again 0 18 submitted an Exhibit Four, which is identical to the pre-19 vious exhibit in the other case, showing maximum injection 20 pressures? 21 A Yes, sir, that's correct. 22 And that's the 1000 pounds? Q 23 A Yes, sir. 24 And that's surface pressure. 0 25 Α Correct.

18 1 Q All right, let's turn to Exhibit Number 2 is again the same written summary of geologic Five. This 3 data and fresh water sources in the area? 4 Yes, sir. А 5 0 All right, and let's go now to Exhibit 6 Number Six and have you identify that for us. 7 Exhibit Number Six is a tabulation of А 8 wells within the one-half mile radius of the proposed salt water disposal Well No. 34. 9 Do you find any of the wells listed Q on 10 the tabulation on Exhibit Number Six to be completed in such 11 a fashion that they expose a risk for fresh water sources if 12 the proposed disposal well is approved as requested? 13 Α No, sir, I do not. 14 Q Let's turn to Exhibit Number Seven and 15 have you identify that. 16 A Exhibit Number Seven is a wellbore schematic of Southeast Cha-Cha Unit Well No. 32, and it shows 17 the well was originally completed in the Dakota. It shows 18 the procedure utilized to plug and abandon the Dakota inter-19 val. 20 The schematic also identifies a workover 21 attempt that was attempted on the well in April of 1971 and 22 the well was squeezed for bad casing leaks at that time. 23 0 Just a minute, let's make sure we're all 24 together. STOGNER: Which one are we 25 MR.

19 1 on now? 2 MR. KELLAHIN: We're on Exhibit 3 Number Seven for Case 8547. 4 MR. STOGNER: 8547, okay. 5 Would you identify for the Examiner where 0 6 this well is located in relation to Well 34? 7 А Yes, sir. It's to the northwest of Well 8 on the plat. It lies in the northwest quarter No. 34 of Section 22. 9 It's the well located within the square 0 10 outline? 11 Within the --Α 12 0 Identified by the well symbol that shows 13 the well --14 А Yes, right. Right. 15 -- within a square? 0 16 А Right. What's the well next to it to the south-17 0 east? 18 A That is a Pictured Cliffs gas well. 19 All right. What is the current status of 0 20 Well No. 32? 21 А The well has been shut in since 1971. As 22 I was explaining earlier, the -- in their workover their at-23 tempt to repair the casing after the well was squeezed, they 24 were attempting to drill out and in -- drill out the cement 25 plug that was in the casing and in that process they drilled

20 1 outside of the -- through the casing and drilled outside the 2 casing. 3 Q This well has been in this status since 4 approximately April of 1971? 5 Yes, sir. Α 6 And how long has the Well 34, 0 the proposed disposal well, been utilized for disposal in the Gal-7 lup? 8 At least since 1978. Α 9 In your ownership of the property, 0 Mr. 10 Hicks, have you found that Well No. 32, this plugged and 11 abandoned well, has had any difficulties in terms of having 12 waterflows on the surface or any other problems that you're 13 aware of? 14 A No, sir. 15 0 Can you re-enter this wellbore in its current condition and recement off the Gallup formation? 16 A No, sir, I feel it would be impossible. 17 0 Why? 18 Α Well, the -- they have -- they have side-19 tracked the hole, drilled outside the casing and drilled 17 20 feet and the chances of drilling back into that wellbore are 21 nearly impossible. 22 0 Notwithstanding that, Hicks, do you Mr. 23 have an opinion as to whether this well is adequately plugged and abandoned so as to avoid it being a source of con-24 tamination of fresh water sources? 25

21 1 Yes, sir, I feel it is. When -- in their А 2 front procedure to squeeze that casing there were wireline 3 plugs set in the casing that should seal the wellbore and we 4 feel that the cement outside the casing should be adequate, 5 too, to seal off the Gallup. 6 Q And, in fact, disposal has taken place in 7 close proximity to this wellbore for some five or six years 8 and there has been no problem. Α Yes, sir, that's correct. 9 All right, and again, now, Exhibit Number Q 10 are attached water analyses that we've discussed ear-Eight 11 lier. 12 Yes, sir, that's correct. A 13 All right, sir, let's go on to Case 8548. 0 14 8548 is the proposed disposal well in 15 Section 17, Well No. 20? 16 Yes, sir, that's correct. А Q All right, would you identify Exhibit 17 Number One, for me? 18 Exhibit Number One is a notice to sur-Α 19 rounding offset operators and surface owners. 20 All right, sir, and let's turn to the Ex-Q 21 hibit, then, Number Two, and have you identify the plat. 22 The plat is a plat of surrounding oil and A 23 gas wells and it has a half mile circle drawn around Well 24 No. 20. 25 Q What is the current status of Well No.

22 1 20? 2 Α Presently the well is shut in. 3 0 All right, sir, let's turn to the schema-4 tic for that well, Exhibit Number Three, and have you ident-5 ify the schematic. 6 Α This is a proposed schematic of the well-7 bore as we would plan to operate the well as an injection 8 well. It was formerly a Gallup producing well 9 Q for the pressure maintenance project? 10 Yes, sir, that's correct. It was a pro-Ά 11 ducing well. 12 And when did you stop using it as a 0 pro-13 ducing Gallup well? Do you recall approximately when? 14 The last attempt was approximately 1980. A 15 And will the method of recompletion for 0 16 disposal be one that conforms to the Commission requirements for a disposal well? 17 A Yes, sir. 18 You'll use plastic lined tubing, fill the 0 19 annular space, and have a pressure gauge at the surface? 20 Yes, sir, that's correct. Α 21 0 Let's turn to Exhibit Number Pour. Again 22 the same pressure limitation at the surface of 1000 psi? 23 Yes, sir, that is correct. A 24 Q A11 right, and do you find any fresh water sources within a mile of this well? 25

23 1 No, sir. A 2 All right, if you'll turn to Exhibit Num-0 3 ber Five and identify this schematic. 4 Well number -- or Exhibit Number Five is A 5 a schematic of the well, or Southeast Cha-Cha Well No. 26 6 that was originally drilled and completed in the Dakota and 7 the Gallup as a dual producer. 8 The Dakota is presently plugged and this schematic shows the method that was used to plug the Dakota 9 perforations. 10 Is it still producing as a Gallup well? 0 11 Α No, sir. It is shut in. 12 Q And then Exhibit Number Six, would you 13 identify that for us? 14 Exhibit Number Six is a tabulation of the Α 15 wells within a half mile radius of the proposed salt water 16 disposal well, No. 20. Do you find any of the wellbores identi-17 0 fied on Exhibit Number Six as being inadequately cemented? 18 No, sir. Α 19 All right, and Exhibit Number Q Seven, 20 is the same geologic narrative, the water, drinking then, 21 water source information? 22 A Yes, sir, that's correct. 23 And then Exhibit Number Eight are the 0 24 water analyses. 25 Α That is correct.

24 1 Q All right, sir, let's turn now to the 2 last C-108, which is for Case 8525. 3 Case 8525 is for the proposed disposal 4 well 37 in Section 15? 5 А Yes, sir, that's correct. 6 All right, sir, and what -- what's Q the 7 current status of that well? 8 Α It is presently shut in as an uneconomical producing well. 9 And it formerly produced from what forma-Q 10 tion? 11 The Gallup. Α 12 0 Would you identify Exhibit Number One for 13 Case 8525? 14 A Yes, sir, it's a notice to offset opera-15 tors and surface owners. 16 0 All right, sir, and then Exhibit Number 17 Two? A Exhibit Number Two is a plat of wells 18 surrounding Well No. 37 and it also indicates a half mile 19 radius around Well No. 37. 20 All right. Let's turn to the schematic Q 21 for the disposal well, which is Exhibit Number Three, and 22 have you identify that for us. 23 A This is a schematic of how we would pro-24 pose to operate the Well No. 37 as a salt water disposal 25 well.

26 1 Q All right, sir. Would you turn to Exhi-2 bit Number Six and identify that one, please? 3 А Exhibit Number Six is a schematic diagram 4 of the Gallegos Canyon Unit Well No. 113, which has been 5 plugged and abandoned. 6 Q And has the Gallup formation or the Gal-7 lup perforations in that plugged and abandoned well been 8 adequately covered with a cement plug? A 9 Yes, sir, 45 feet of cement plug was placed from 5300 feet to 5795 feet, covering the Gallup per-10 forations 5712 to 5780. 11 0 All right, sir. Would you turn to Exhi-12 bit Number Seven and identify that one? 13 Α Exhibit Number Seven is a narra-Okay. 14 tive of the geological information of the Cha-Cha Gallup and 15 drinking water sources in the area. 16 And Exhibit Number Eight? 0 17 Α Exhibit Number Eight is water analysis of wells on the unit and also San Juan Basin producing wells. 18 Q Can you give us an estimate, Mr. Hicks, 19 of the approximate volumes of water on a daily basis in bar-20 rels that you propose to dispose of in each of the four dis-21 posal wells? 22 Yes, sir, approximately 25 barrels Ά per 23 day in each well would be from lease sources and right now 24 we estimate that we'd be disposing of approximately 100 bar-25 rels per day from sources off of the lease and we would an-

27 1 ticipate that volume to increase. 2 Was Exhibit A and then the C-108 with the Q 3 attached exhibits for each of the four cases prepared by you 4 or compiled under your direction and supervision? 5 A Yes, sir, it was. 6 MR. KELLAHIN: We move the in-7 troduction of Exhibit A and then each of the packets of ex-8 hibits for the four respective cases, Mr. Stogner. STOGNER: All the exhibits 9 MR. will be admitted into evidence at this time. 10 MR. KELLAHIN: That concludes 11 our examination of Mr. Hicks. 12 13 CROSS EXAMINATION 14 BY MR. STOGNER: 15 0 Mr. Hicks, if you'll refer to Case Number 16 8525, Exhibit Number Two, the problem well which alluded to 17 in Case Number 8547, the Well No. 32, is that within a half mile of this one? 18 Α It appears to be right on the edge of 19 that half mile circle. 20 Now then, the proposed injection Q Okay. 21 well, Well No. 37, that has been a shut-in producing well 22 since when? 23 Α Since August, 1984. 24 I might point out that Well No. 37 is a new well that was drilled in 1980. It's relatively newer 25

1 28 than the other wells in the field and when we completed it, 2 encountered large volumes of water and it was just uneconom-3 ical to continue operating it. 4 What was done with the water before? Q 5 Α It was being injected back into Well 34. 6 0 Okay. Refer to Exhibit Number Five in 7 this packet, Robson Well No. 3. I don't believe you've 8 given me a calculated top of cement, but you said it was adequately covering the Gallup. Do you have the calculated 9 top of cement? 10 Α Yes, sir. As I explained before, using 11 -- utilizing a 30 percent excess over the theoretical hole 12 volume, I calculated top of the cement fill to 5305 feet. 13 Top of the Gallup from the electrical logs is 5393 feet. 14 Q What was the top of the Gallup again? 15 A 5393. 16 KELLAHIN: MR. What was the calculated top? 17 A 5305. 18 What is the status of that well? Q Is it 19 plugged and abandoned? 20 The Robinson Well? А 21 Q Yeah. 22 No, sir, it is still a producing gas well. Α 23 Is Hicks the operator on that? Q 24 No, sir, Southland Royalty. Α 25 Q Did you speak with them about the

29 1 calculated top of the cement? Did they have any bond logs 2 or any such items? 3 A No, sir, I have not spoken with them. 4 Okay. Refer to Exhibit Number Six. 0 That 5 is your schematic of the Well No. 13. 6 Α Yes, sir. 7 Q Do you know what the top of the cement 8 calculated is on this? You show 200 sacks. А 9 In the original, primary cement job on the casing? 10 Q Yes. 11 No, sir, I don't, do not. A 12 0 But they did run 200 sacks from 5855? 13 Yes, sir, that's correct. A 14 And what's the hole size? Do you remem-Q 15 ber? 16 Α 7-7/8ths. Is Hicks the operator of this well? 17 Q A No, sir, Southland Royalty. 18 And has it been plugged? What's its pre-0 19 sent status? 20 A It is plugged and abandoned. 21 Plugged and abandoned. Q 22 Okay, let's go to 8548, Well No. 20. You 23 said that well was shut in. How long has it been shut in? 24 A Since approximately 1980. 25 Q Is the tubing still in place?

1 30 No, sir, it is not. A 2 When was this well drilled? Q 3 Early 1960's, '61 or '62. Α 4 0 Are you aware that mechanical integrity 5 tests would have to be run on that casing to see if it's 6 adequate? 7 Yes, sir. A 8 Q Okay, let's refer to 8547, your Well No. 34. 9 Yes, sir. A 10 Q Now is this presently injecting at this 11 time? 12 Yes, sir, it is. Α 13 0 Okay, and who was the previous operator? 14 Suburban Propane was the unit operator А 15 previous to Hicks Oil and Gas. 16 And they're records do not show what size Q tubing was in this hole? 17 A No, sir. 18 Q Whether it was plastic lined or anything? 19 Is there a pressure gauge on this well 20 presently or --21 А No, sir, there's not; not on the -- not 22 on the annulus. There's one on the tubing. 23 Q What has it been injecting at or has it 24 been injecting under pressure? 25 А Yes, sir, it injects at -- it does not

31 1 exceed 600 pounds. 2 Q Okay. Has it ever exceeded 600 pounds? 3 A Not while we've operated it. 4 Refer back to Exhibit Number Seven. 0 This 5 is the so-called problem well or a pretty good problem well. 6 I didn't quite catch -- the well had been 7 sidetracked, you said? 8 A Well, in the -- they went in to prepare perform remedial work on the casing, to repair the or to 9 They squeezed, set -- set some bridge plugs in the casing. 10 casing and to squeeze the casing with, and in the process of 11 drilling out casing, or the cement in the casing, they ran 12 into -- they -- they began drilling on the casing. 13 They ran a mill and milled on the casing 14 and then went back in the hole with a bit and drilled, ac-15 tually drilled outside of the casing. 16 0 How far down did they go outside the casing? 17 17 feet. A 18 Who was the operator of that well? Q 19 At the time that that work was done? Α 20 Yes. Q 21 I believe it was Aztec Oil and Gas. А 22 Q And did they subsequently plug and aban-23 don it after the --24 А No, sir, they did not. The wellbore is 25 -- is open to 3499.

32 1 What's the present status of this well? 0 2 It is shut-in, not producing, and in our Α 3 plan of development for the unit for 1985 this well was pro-4 posed to be plugged and abandoned. 5 And so you're -- Hicks is the operator? Q 6 A Yes, sir. 7 So you propose to plug and abandon. 0 Do you propose to test any formations from that zone upwards, 8 or anything? 9 To -- as far as productivity of oil A or 10 gas? 11 Uh-huh. Q 12 No, sir. Hicks' rights are only to the A 13 Gallup. 14 Q When does Hicks propose to plug and aban-15 don it? Do you have a date set or --No, sir. A 16 Okay, let's go to Case Number 0 8546. 17 That's your Well No. 16, and this well has been injecting 18 since 1978, is that right? 19 Yes, sir, at least that long and it was Α 20 originally approved in the pressure maintenance project as 21 an injection well, and has been an injection well since the 22 1960's. 23 Do you know what order approved that Q pressure maintenance expansion? 24 No, sir, I do not. Α 25

33 1 Q Do you know if it was one of the original 2 wells that was approved for the pressure maintenance 3 project? 4 А No, sir, I don't know if it was one of 5 the original wells or if it was approved at a later date. 6 Q But you know it was approved. 7 А Yes, sir. 8 Q Is there a pressure gauge on this one? Yes, sir. A 9 How about on the annulus? 0 10 Ά NO. 11 MR. STOGNER: That's all the 12 questions I have for this witness. 13 Are there any other questions 14 of Mr. Hicks? 15 MR. KELLAHIN: No, sir. 16 MR. STOGNER: Anybody else have 17 any questions of him? If not, he may be excused. 18 Mr. Kellahin, do you have 19 anything further in these cases? 20 MR. KELLAHIN: No, sir. 21 MR. STOGNER: Does anybody else 22 have anything further in these four cases? 23 If not, Cases Numbers 8525, 24 8546, 8547, and 8548 will be taken under advisement. 25 (Hearing concluded.)

CERTIFICATE Ι, SALLY W. BOYD, C.S.R., DO HEREBY CERTIFY that the foregoing Transcript of Hearing before the Oil Conservation Division was reported by me; that the said transcript is a full, true, and correct record of the hearing, prepared by me to the best of my ability. Sally les, Boyd COR I do hereby certify that the foregoing is a commute that no of the inner adimas in the Exclusion of Explored Andrews 8546, heard Ungel March 19 9. Examiner . Oil Conservation Division