Citation
OIL & GAS CORP.

October 26, 2006

RECEIVED
OCT 30 2006

Matt Rudolph (GEN-WR)
United States EPA Region 6
1445 Ross Ave
Dallas, TX 75202

Re: Plan of Corrective Action
West Pond Dam
Healdton IV Unit
Section 15 – T4S - R3W
Carter County, Oklahoma

Dear Mr. Rudolph:

Your email of September 26, 2006 requested that Citation Oil & Gas Corp. submit a plan of corrective actions to prevent future discharges from the Healdton IV Unit. This letter contains that plan of corrective actions.

Historical Conditions of the Healdton IV Unit

In order to fully explain Citation Oil & Gas Corp.'s reason for constructing the West Pond Dam and what our plan of corrective actions are for this pond dam, I must first review what has happened from a historical perspective to cause the current conditions at the Healdton Oilfield.

The Healdton Oilfield was discovered in 1913 with the drilling of the first commercial oil well. Initially the method used to dispose of all produced water was to let it flow down creeks. The oil companies would purchase "creek rights" from the surface owners to allow the oil companies to flush their produced water down the creeks. In cases where creek rights couldn't be purchased the alternative method was to build salt water evaporation pits. In the 1950's some produced water was disposed of in salt water disposal wells by injecting salt water into an underground reservoir. The use of salt water evaporation pits continued until the 1960's when they were forbidden by the Oklahoma Corporation Commission. Now all produced water from the Healdton IV Unit is used in waterflood operations by being re-injected underground into the producing formation. Citation Oil & Gas Corp. purchased the Healdton IV Unit from Unocal in 1993.

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Attached are four aerial photographs taken in 1938, 1956, 1993 & 2003. The reason for sending these aerial photographs is to assist you in understanding the impact that historical oilfield operations have had on the surface and groundwater of the area that encompasses the Healdton IV Unit.

In the **1939** aerial (Attachment 1) a large salt water evaporation pit identified with an arrow can be seen and it is located due east of the current "West Pond". Basically, the water in these salt water evaporation pits would slowly evaporate and the salts would precipitate out, leaving a thick layer of salts behind after the pit was filled in. Most pits were filled in during the 1960's. In the **1956** aerial (Attachment 2) additional salt water evaporation pits can be seen. In the **1993** aerial (Attachment 3) salt water scarring is readily evident from old salt water evaporation pits that had been closed and from salt water flowing across the surface. Citation Oil & Gas Corp. purchased the Healdton IV Unit in 1993. The condition of the surface with the erosion and surface water with elevated TDS is what we inherited. Citation Oil & Gas Corp. began a program in the late 1990's to remediate these sites. Part of our remediation efforts consisted of building pond dams whose purpose was too: contain the silt from the eroded sites; and contain water with elevated TDS caused by historically released saltwater. Most of these pond dams are built on top of the old salt water pits as can be seen by reviewing the **2003** aerial (Attachment 4) and comparing it to the previous aerial photographs.

The Oklahoma Corporation Commission is in the process of having the Post Oak Creek listed on their 303(d) list as a historically oil field impacted steam. This is further proof of the impact that historical operations have had on this oil field.

From the time the Healdton IV Unit was created in the early 1970's, all produced saltwater has been re-injected back into the under ground producing reservoirs. All the surface discharge from the area around the West Pond Dam flows into an un-named up-gradient branch of Post Oak Creek. The water that is flowing down the creek with elevated chlorides is a result of historical oil field operations and is not the result of produced fluids entering this creek from the Healdton IV Unit.

<u>West Pond Dam Original Construction</u>

During the construction of the West Pond Dam a problem we encountered was that the ground around the pond dam did not have sufficient grass growing to allow for a spillway to be used without causing erosion. Therefore, the West Pond Dam was constructed with an L-shaped metal culvert installed to control the level within the pond. Remediation of the surface around the pond has restored the growth of grass which will now allow for the use of a spillway.

The purpose of constructing this pond dam was: to contain the silt from the eroded sites that are located up gradient; and to contain the salts from the historically released salt water. The water in the pond dam is stratified with the fresher water being on top and the water with elevated TDS being on bottom. When the pond dam does fill up the fresh

water is released down the creek and the water with elevated TDS remains behind. The water with elevated TDS is contained in the pond dams. If this pond dam had not been constructed then larger volumes of water with elevated TDS and silt would be migrating down stream.

The groundwater is not contaminated by these pond dams. These ponds dams are built with large amounts of clay material that acts as a barrier to stop downward migration of fluids.

Plan of Corrective Action for West Pond Dam

1. The metal culvert will be removed from the west side of the West Pond Dam. Then a clay barrier will be inserted into the wall of the dam as a precaution to prevent seepage of fluids from the wall of the dam. The clay barrier will be installed by digging a trench to base rock, the trench will be perpendicular to the wall, and it will be filled with bentonite or clay. Then the earthen wall will be re-constructed around the clay barrier.

   This is the only pond dam that has had fluids leak from the wall of the dam and this is the only pond dam with a metal culvert installed in the wall of the pond dam. There is no doubt but that the metal culvert is allowing fluids to migrate along the outer walls of the metal culvert from inside the pond dam to outside the pond dam. Once the metal culvert is removed the seep will stop. However, as an added precaution the clay barrier, as previously discussed, will be installed.

2. To further prevent the migration of water with elevated TDS from this pond dam a site that is located up gradient and east of this pond dam has been selected to install an interceptor trench. This interceptor trench will remove water with elevated TDS from an old salt water evaporation pit site. A basic concept of the interceptor trench is attached as Attachment 5. It will also remove all fluids moving down gradient from other historically salt impacted sites. The interceptor trench will consist of a center point which will house a water well pump. There will be three legs radiating from its center. One leg will cut across the center of the old saltwater evaporation pit site and the other two legs will form the interceptor trench to collect all fluids moving down gradient. The fluids from the interceptor trench will be pumped to our salt water injection facility. This will greatly reduce the amount of water going to the West Pond Dam and will become very similar to other pond dams which have fresh water in them.

3. Once a month the fluids leaving the Healdton IV Unit will be tested for TDS and these readings will be furnished to the Oklahoma Corporation Commission and the EPA. Once it has been established that the water leaving the Healdton IV Unit is at acceptable TDS levels, this monitoring will be discontinued.

Sincerely,

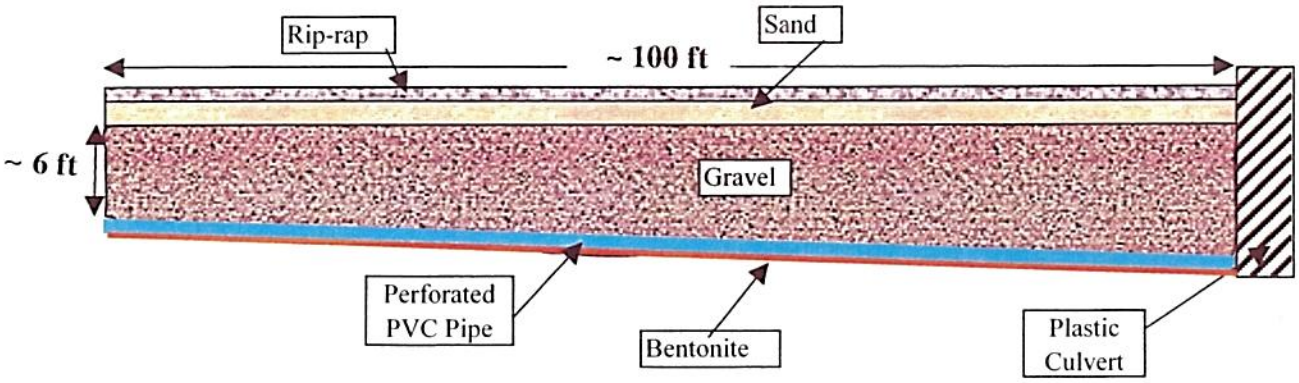
Robert T. Deiss

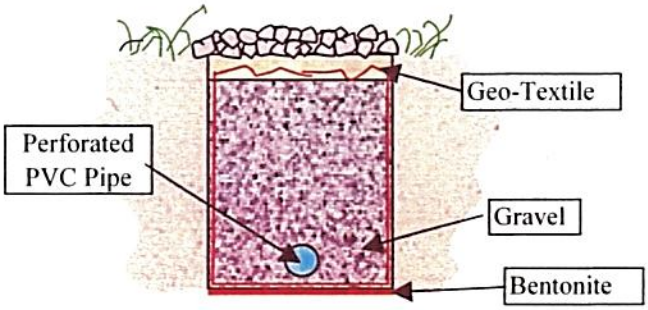
Robert T. Deiss
Administrative Engineering Manager
Citation Oil & Gas Corp.

CC: Tim Baker
Manager Pollution Abatement Department
Oklahoma Corporation Commission
Jim Thorpe Building
2101 N. Lincoln Blvd.
Oklahoma City, OK 73105

M:TDeiss/Environmental/Response To EPA West Pond

Citation Oil & Gas Corp.
Interceptor Trench
Construction Detail





Attachment 5

FORM NO. 1003 (1973)

P75- 00247

PLUGGING RECORD

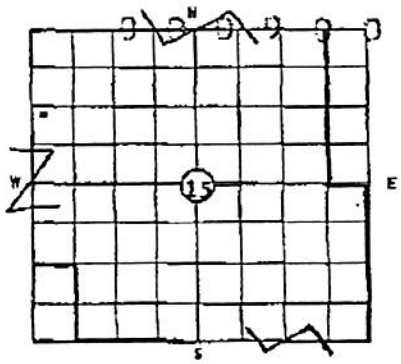
(RULE 3-405)

OKLAHOMA CORPORATION COMMISSION

Oil and Gas Conservation Division
380 Jim Thorpe Building
Oklahoma City, Oklahoma 73105

NOTICE: All questions on this form must be satisfactorily answered and mailed to applicable Conservation District Office in duplicate and within 15 days after plugging is completed.

640 Acres



Locate Well Correctly and Outline Lease

Company Operating Edwin L. Cox

Office Address Drawer 730 - Healdton, Okla. ZIP 73438

County Carter Sec. 15 Twp. 4S Range 3W

Location in Section NW NW ¼ SW ¼ NW ¼

Farm Name Healdton IV Unit Well No. MH-19 Field Healdton

Character of Well (whether oil, gas or dry) Oil

Commenced Plugging 12-9-74 Finished 12-20-74 Total Depth 1052' PBTD

Was permission obtained from the Corporation Commission or its agents before plugging was commenced Yes

Name of CC Field Inspector Mr. J.B. Surratt Perforations 660-1011'

Signature of CC District Manager [signature] C. C. District No.

Name of producing sand Healdton Depth top 660' Bottom 1011'

Show depth and thickness of all fresh water, oil and gas formations. Oklahoma Tax Commission Assigned Lease No. 019-24093 and 019-05511

SAND OR ZONE RECORDS / CASING RECORDS

Formation	Content	From	To	Size	Put In	Pulled Out
Healdton	NIL	660'	1011'	10"	475'	NONE
				8"	890'	450'
				6-5/8"	1132'	870'
				5-3/16"	19'	None

Describe in detail the manner in which the well was plugged, indicating where the mud fluid was placed and the methods used in introducing it into the hole. If cement or other plugs were used, state the character of same and depth placed: Associated Wireline Services perf. 750-752, 800-802, 850-852, 900-902, 950-952 & 1000-1002' W/4 - 90 gram charges per interval. Cut 6-5/8" csg. @ 716' & pulled. Perf. 100-102, 150-152, 200-202, 250-252, 300-302, 350-352, 400-402, 450-452, 500-502, 550-552, 600-602, 650-652, 657-660, 687-691, 700-702, 730-734, 750-752, 784-792, ~~799-802, 805-814, 822-825, 831-834, 851-853, 872-877, 900-902, 929-931, 950-952 & 975-1011' W/4~~ - 90 gram charges per interval. Ran tbg. to 1050'. Mix & pump Dowell lite wt. cement & circ. to surface W/250 sks. Pull tbg. & top out W/50 sks. Put on swage, squeeze to 200# W/115 sks. Cut off casing and weld on steel plate.

Does the above conform strictly to the oil and gas regulations? Yes

The Law requires that adjacent lease, and land-owners be notified; give their names with their addresses below:

DIVISION

DEC 31 1974

OKLAHOMA CORPORATION COMMISSION

REMARKS: Why plugged? No longer economical If abandoned oil or gas well, state amount and date of last production 6-4-71 - 2 bopd & 35 bwpd

Plugging Contractor's Name & Address Dowell - P. O. Box 21 - Tulsa, Okla. 74102 Plugging Foreman

RECEIVED
OIL AND GAS DIVISION
DEC 30 1974
OKLAHOMA CORPORATION COMMISSION
DUNCAN DISTRICT

Correspondence regarding this well should be addressed to Edwin L. Cox

Address Drawer 730 - Healdton, Oklahoma 73438

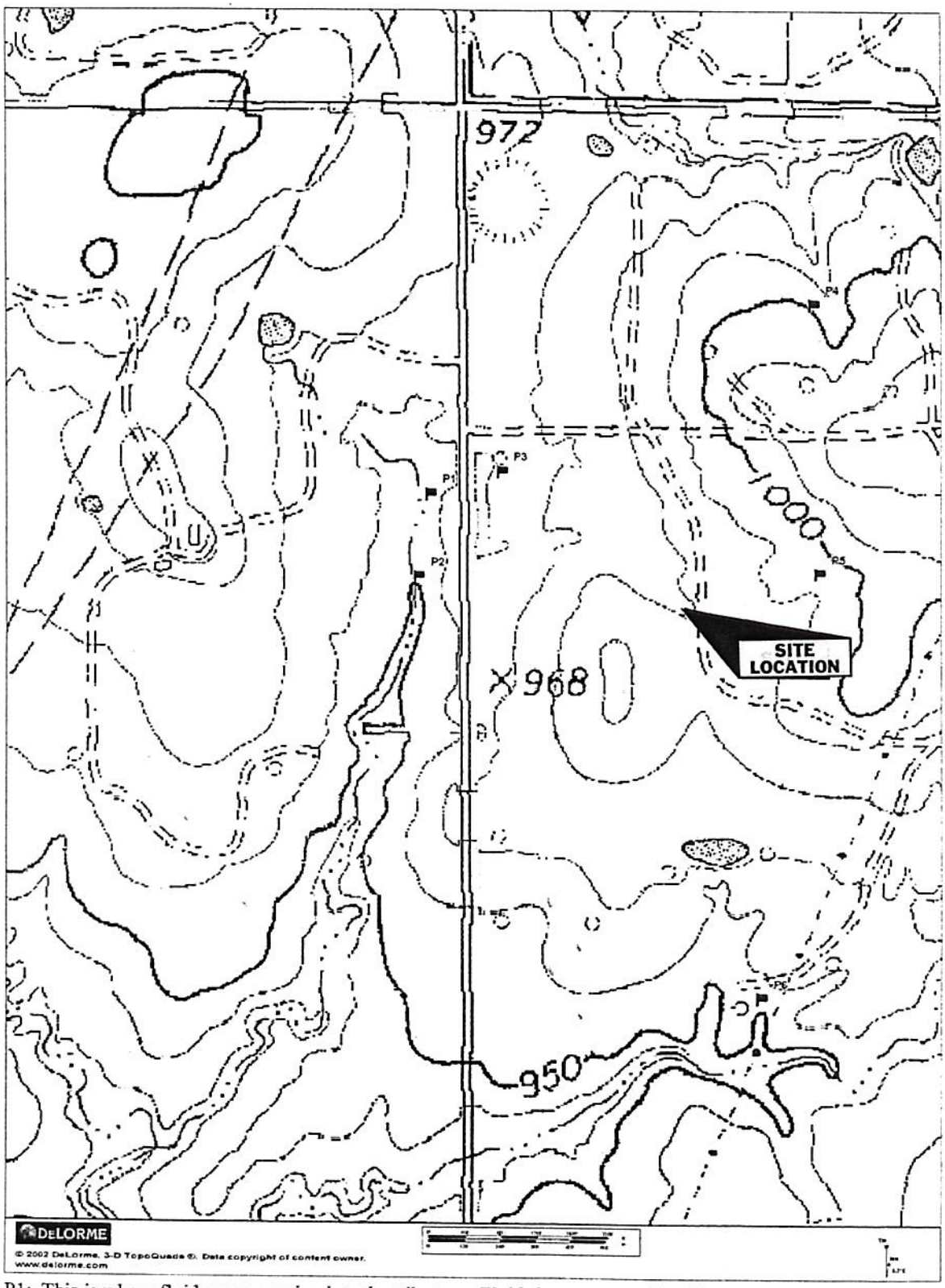
I, the undersigned, being duly sworn upon oath, state that this well record is true, correct and complete according to the records of this office and to the best of my knowledge and belief.

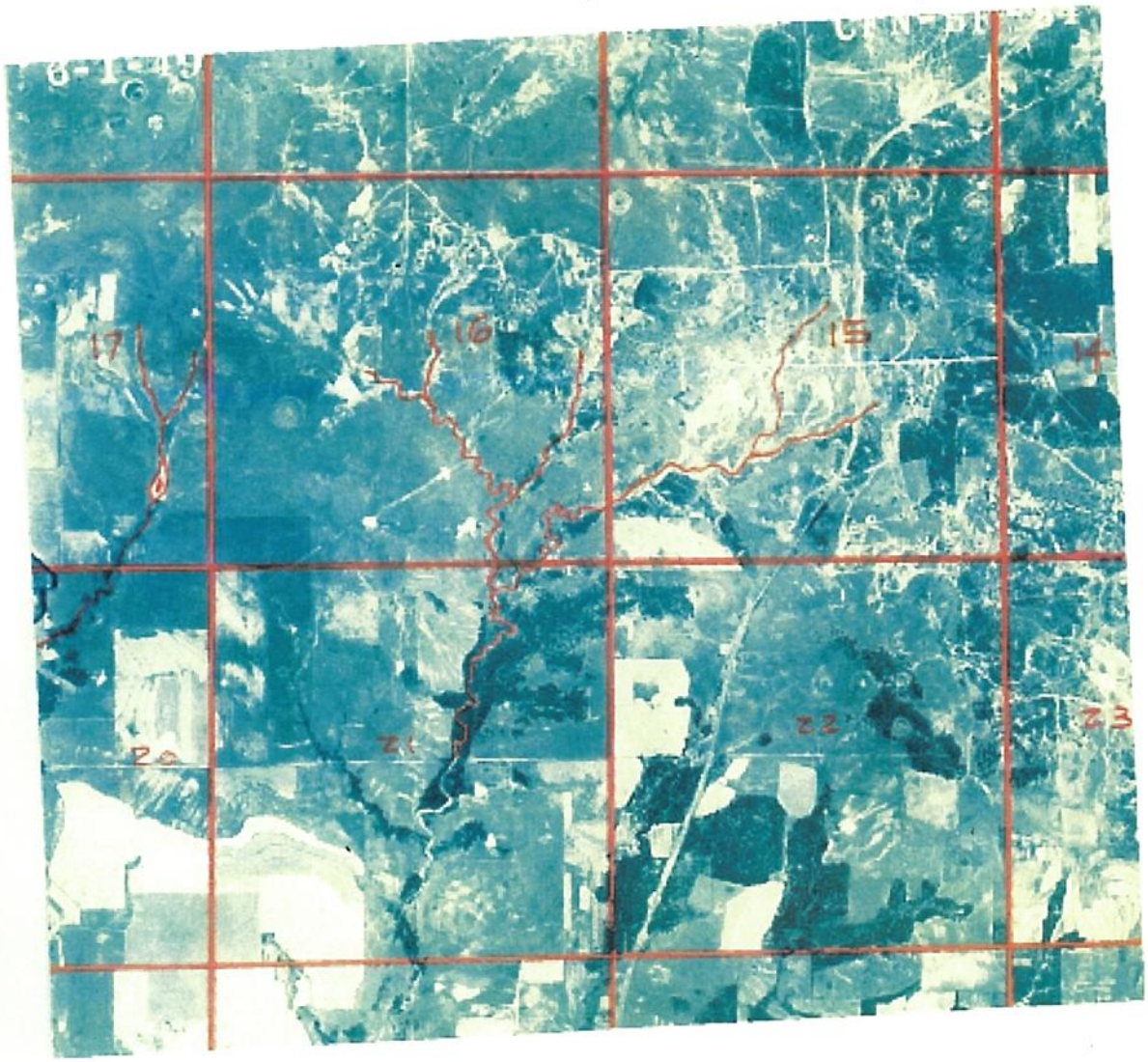
[signature]
Name and title of representative of company
W.B. Curry, Jr. Chief Clerk

Subscribed and sworn to before me this the 26th day of December, 1974

Commission expires 1-26-78

[signature]
Notary Public



P1: This is where fluids were seeping into the tributary. Fluids here measured 7,200 ppm TSS.
P2: Inside the tributary approximately 360 ft downstream of P1. Fluids here measured 6,800 ppm TSS.
P3: Pond 1 of the inspection report. Fluids located inside Pond 1 measured 12,500 ppm TSS.
P4: Pond 2 of the inspection report. Fluids located inside Pond 2 measured 3,900 ppm TSS.
P5: Pond 3 of the inspection report. Fluids located inside Pond 3 measured 1,500 ppm TSS.
P6: Pond 4 of the inspection report. Fluids located inside Pond 4 measured 800 ppm TSS.

15-4S-3W
Cadmore Co.