Rule Changes

Application of the OCC on its own motion to amend Rule 0.1, Rule 1, Rule 2, Rule 3, Rule 7, and Rule 710 to define fresh water and produced water and to provide for protection of fresh water.

Application

To promulgate a new Rule 8 to provide for the approval of the use of lined pits or below grade tanks for disposal or storage of produced water and other oil field fluids.

Application

To amend Rule 102 to provide for notice to landowners and/or tenants prior to the staking of well locations.

Application

To amend Rules 108 and 113 to provide for notice of defective casing and/or formation damage to casing, cement, or the formation as the result of well treatment.

Case 8647 ✓

The need

Application

To delete Rule 308 in order to clarify for reporting small volumes of produced water.

Application

To amend Rule 111 to provide for operator calculation of maximum downhole displacement during drilling when the

Copies of the proposed rule changes, deletions, and new rules are available at the Oil Conservation Division offices in Santa Fe, Hobbs, Artesia, and Aztec.

STATE OF NEW MEXICO

STATE ENGINEER OFFICE

SANTA FE

S. E. REYNOLDS
STATE ENGINEER

May 15, 1985

BATAAN MEMORIAL BUILDING
STATE CAPITOL
SANTA FE, NEW MEXICO 87503

Dick Stamets
New Mexico Oil
Conservation Division
Box 2088
Santa Fe, New Mexico 87501

Dear Mr. Stamets:

In response to your letter dated March 15, 1985, this is to advise you that all underground waters in the State of New Mexico containing 10,000 milligrams/liter or less of dissolved solids is hereby designated by the State Engineer pursuant to Section 70-2-12-B. (15) NMSA, 1978. This designation supercedes all previous designations pertaining to underground water.

The water in water table lakes should not be contaminated even though they contain more than 10,000 milligrams/liter of total dissolved solids unless it can be shown that contamination of the lake will not adversely affect the underground water hydrologically connected to the lake.

The surface waters of all streams within the State of New Mexico regardless of the quality of the water within any given reach should be protected.

For your information I am attaching a memorandum dated April 10, 1967, and the map mentioned therein which shows the areas and formations in which water of 10,000 parts per million or less commonly occur. This is the same information which was submitted to your office by Frank Irby on April 13, 1967.

Sincerely,

S. E. Reynolds
State Engineer

By: M. B. Compton
M. B. Compton, Chief
Water Rights Division

BEFORE THE
CONSERVATION COMMISSION
Santa Fe, New Mexico
Case No. [illegible] Exhibit No. _____
Submitted by _____
Hearing Date MBC tray

Case 8647

April 13, 1967

Mr. A. L. Porter, Jr.
Secretary-Director
Oil Conservation Commission
Santa Fe, New Mexico

Dear Mr. Porter:

All underground water in the State of New Mexico containing 10,000 parts per million or less of dissolved solids is hereby designated by the State Engineer pursuant to Section 65-3-11.(15) N.M.S.A., 1953 Compilation; except that this designation shall not include any water for which there is no present or reasonably foreseeable beneficial use that would be impaired by contamination. This designation supercedes all previous designations pertaining to underground water.

For your information I am attaching a memorandum dated April 10, 1967 and the map mentioned therein which shows the areas and formations in which water of 10,000 parts per million or less commonly occurs.

The surface water designation previously made remains unchanged.

FEI/ma
encl.

Yours truly,

S. E. Reynolds
State Engineer

By:
Frank E. Irby
Chief
Water Rights Div.

ADDITIONAL OCD PROPOSED RULE CHANGES, OCC HEARING 7/10/85

RULE 308. PRODUCED WATER

Operators shall report monthly on Form C-115 the amount of [~~percentage of salt or sulphur~~] water produced with the oil and gas from each well [~~making 2 percent or more water~~].

RULE 313. EMULSION, BASIC SEDIMENTS, AND TANK BOTTOMS

Wells producing oil shall be operated in such a manner as will reduce as much as practicable the formation of emulsion and basic sediments. These substances and tank bottoms shall not be allowed to pollute [~~streams~~] fresh waters or cause surface damage. If tank bottoms are removed to surface pits, the pits shall be fenced and the fence shall be kept in good repair.

BEFORE THE
OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
Case No. _____ Exhibit No. _____
Submitted by _____
Hearing Date _____

GUIDELINES FOR THE DESIGN AND CONSTRUCTION OF LINED EVAPORATION PITS

(Revised 5/85)

NEW MEXICO OIL CONSERVATION DIVISION
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO

BEFORE THE
OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
Case No._____ Exhibit No._____
Submitted by:_____
Hearing Date_____

PREFACE

The following specifications shall be used as a guide to the preparation of plans and specifications for lined evaporation ponds to be used to contain those liquid discharges regulated by the Oil Conservation Division. All plans and specifications shall be submitted to the Oil Conservation Division for approval prior to construction. Designs may deviate from the following specifications if it can be shown that the design integrity is such that the construction of that pit will not affect any present or future sources of usable ground water. Please note that this guide does not take precedence over any specifications outlined in the Oil Conservation Commission's Order No. R-3221-C.

1. LOCATION

(A.) Evaporation pits shall not be located in any watercourse, lakebed, sink-hole, or other depression. Pits adjacent to any such watercourse or depression shall be located safely above the high-water level of such watercourse or depression.

2. DESIGN AND CONSTRUCTION

(A.) Evaporation pits shall be so designed and constructed to provide the minimum evaporative surface area needed for the maximum yearly volume of liquid to be discharged to the pit. This design parameter shall be based upon local climatological data. Such data and calculations used for the pit design shall be submitted with any proposed plans and specifications. Special care should be taken when calculating the pit volume to account for the decrease in the evaporation rate during the winter months.

(B.) Pits shall be located on level ground and shall be rectangular. Excavated material may be used to form levees around the pit. The levees shall rise a minimum of 18 inches above ground level.

(C.) The design freeboard allowance shall take wave action into account to prevent overtopping due to wave action. A determination of the wave type (breaking or non-breaking) shall be made to determine the forces acting upon the levee. Such calculations shall be submitted with the details for pit construction.

(D.) The pit is to be constructed so that the inside grade of the levee is no steeper than 2:1. Levees shall have an outside grade no steeper than 3:1 (See Figure 1).

(E.) The top of the levees shall be level and shall be at least 18 inches wide.

(F.) The pit shall incorporate a double liner system with a leak detection system installed between the primary (top) and secondary (bottom) liner.

3. MATERIALS

(A.) Materials used for lining evaporation pits shall be impermeable and may be rigid, semi-rigid, or flexible.

(B.) If rigid or semi-rigid materials are used, leak-proof expansion joints shall be provided, or the material shall be of sufficient thickness and strength to withstand (without cracking) expansion, contraction, and

settling movements in the underlying earth.

(C.) If flexible membrane materials are used, they shall be of at least 30 mil thickness and shall have good resistance to tears or punctures.

(D.) All materials used for lining evaporation pits shall be resistant to hydrocarbons, salts, and acidic and alkaline solutions. The liners shall also be resistant to fungus and rot. The primary liner shall be resistant to ultra-violet light or provision made to protect the material from the sun as specified in Section 6 (F).

4. LEAK DETECTION SYSTEM

(A.) A leak detection system of an approved design shall be installed between the primary and secondary liner, and shall be inspected and approved by the OCD prior to installation of the primary liner.

(B.) Leak detection systems may consist of, but are not necessarily limited to, approved fail-safe electric detection systems or drainage and sump systems.

(C.) If an electric grid detection system is used, provision must be made for adequately testing all components to ensure the system remains functional.

(D.) If the drainage and sump system is to be used, a network of slotted or perforated drainage pipes shall be installed between the primary and secondary liners. The network shall be of sufficient density so that no point in the pit-bed is more than 20 feet from such drainage pipe or lateral thereof. The material placed between the pipes and laterals shall be sufficiently permeable to allow transport of the fluids to the drainage pipe. The slope for all drainage lines and laterals shall be at least 6 inches per 50 feet. The slope of the pit-bed shall also conform to these values to assure fluid flow towards the leak detection system. The drainage pipe shall convey any fluids to a concrete or corrosion-proof sump located outside the perimeter of the pond (See Figure 2).

5. PREPARATION OF PIT-BED FOR INSTALLATION OF LINERS

(A.) The bed of the pit and inside grade of the levee shall be smooth and compacted, free of holes, rocks, stumps, clods, or any other debris which may rupture the liner. In extremely rocky areas, it will probably be necessary to cover the pit-bed with a compacted layer of sand or other suitable material.

(B.) A trench shall be excavated on the top of the levee the entire perimeter of the pit for the purpose of anchoring

flexible liners. This trench shall be located a minimum of 9 inches from the slope break and shall be a minimum of 12 inches deep. (See Fig. 3).

6. INSTALLATION OF FLEXIBLE MEMBRANE LINERS

(A.) Prior to installation of the secondary liner, the appropriate OCD district office should be notified at least 24 hours in advance of the scheduled installation to afford the opportunity for a Division representative to inspect the pit-bed and levee walls.

(B.) The pit liner shall be installed and joints sealed according to manufacturer's specifications and with approval of the Division representative.

(C.) The liner shall rest smoothly on the pit-bed and the inner face of the levees, and shall be of sufficient size to extend down to the bottom of the anchor trench and come back out a minimum of two inches from the trench on the side furthest from the pond. (See Fig. 3). In locations where temperature variations are significant, wrinkles or folds shall be placed at each corner of the pit to allow for the contraction and expansion of the membrane due to temperature variations. The membrane manufacturer should be consulted on this matter.

(D.) Certain conditions require the venting of gas that may accumulate beneath a liner. If organic matter exists in the soils under the liner, or if natural gas is present in the region, gas production is likely. When a fluctuating water table is present immediately below the pond bottom, pockets of air may also accumulate below the liner. The net result of gas or air accumulation below the liner may be the "floating" of the liner to the pond surface. Two possible vent designs are illustrated in Fig. 4. The need to vent this accumulated gas can be accomplished by providing a uniform layer of sand (which less than 5% will pass the 200 sieve) or a geotextile beneath the liners. To achieve the best results from either of these media, the slope from the lowest point of the pond to the toe of the dike must be at least 2%. The venting medium is carried across the entire bottom and up the side slopes. Vents should be located approximately one foot down from the crown of the dike. (See Figure 3).

(E.) An anchor of used pipe or other similar material shall be placed over the liner in the anchor trench and said trench back-filled. The anchor trench shall extend the entire perimeter of the pond.

(F.) If the lining material used for the primary liner is not sun-resistant, at least one inch of sand or other suitable material shall be spread uniformly to cover the liner over the floor of the pit. Gravel or other wave-resistant

material with sufficient angle of repose to remain in place shall be used to cover the sloping inner wall of the levee. A geotextile liner shall be placed beneath any gravel layer to provide protection for the membrane liner. Any gravel or sand layers used to protect the membrane liner from the sun shall extend to the anchor trench.

(G.) Any sand or gravel layers placed on top of a membrane liner shall be done so in such a manner that the risk of tearing the liner is minimized.

7. SKIMMER PONDS/TANKS

(A.) A skimmer pond or tank shall be used to separate any oil from the water prior to allowing the water to discharge to the evaporation pond, except for the following cases:

1) It can be shown that the water being discharged to the pond contains no oil or grease.

2) The discharge to the pond is from an oil or natural gas processing facility where the discharge has already passed through a skimmer basin, skimmer tank, decanter, or API Separator.

(B.) The skimmer pond/tank shall be designed to allow for a one-hour fluid residence time prior to discharge to the pond. The flow rate basis for the design volume shall be the maximum discharge to the pond in a one-hour period.

(C.) If a skimmer pond is to be used, the pond shall conform to the same specifications as the evaporation pond.

(D.) If a skimmer tank is to be used, the materials of construction and/or design shall provide for corrosion resistance.

(E.) If a skimmer pond is to be used, syphons or other suitable means shall be employed to draw water from the oil water interface for transfer to the evaporation pond. The siphon shall be located as far as possible from the inlet to the skimmer pond.

(F.) The skimmer pond/tank shall at all times be kept free of appreciable oil build-up to prevent oil flow to the evaporation pond.

(G.) Figures 5- a & b illustrate general design criteria for skimmer ponds and tanks, respectively.

8. FENCES AND SIGNS

(A.) A fence shall be constructed and maintained in good condition around the evaporation pit installation. The fences shall be

constructed so as to prevent livestock from entering the pit area. Fences shall not be constructed on the levees.

(B.) A sign not less than 12" x 24" with lettering of not less than two inches shall be posted in a conspicuous place on the fence surrounding the evaporation pit installation. The sign shall be maintained in legible condition and shall identify the operator of the evaporation system, the location of the system by quarter-quarter section, township, and range.

9. MAINTENANCE

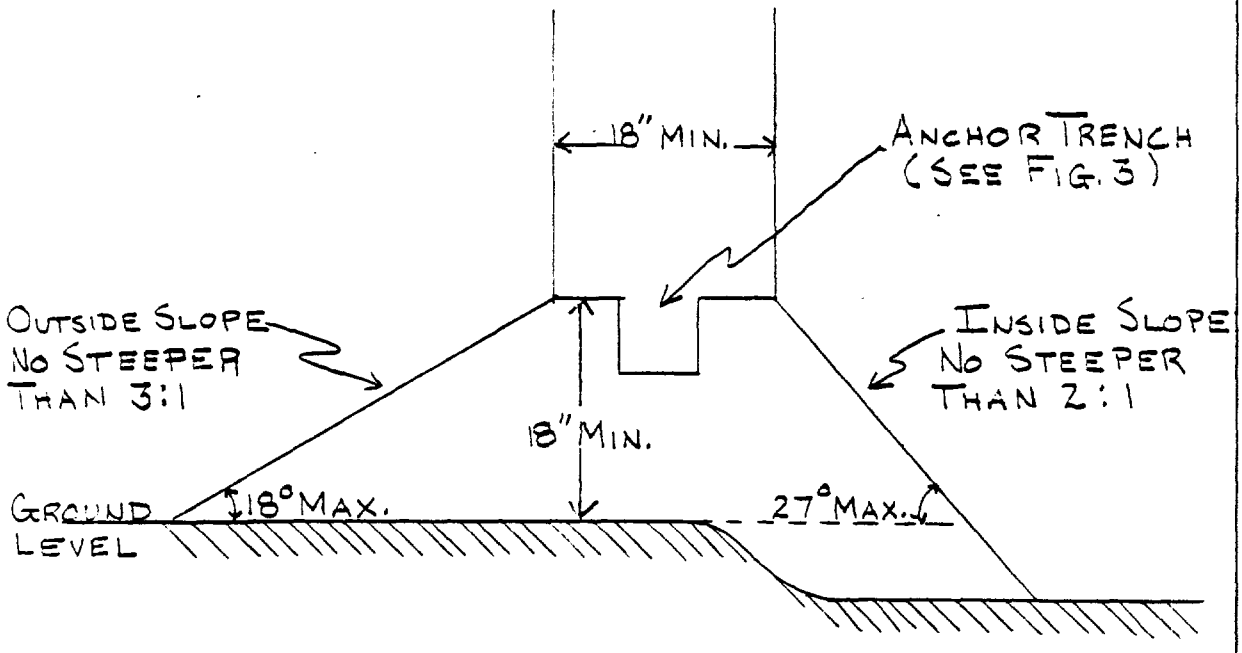
(A.) The leak detection sump shall be inspected at least weekly.

(B.) The outside walls of the levee shall be maintained in such a manner to prevent erosion. Inspections of the outside wall of the levee shall be made after any rainfall of consequence.

10. CONTINGENCY PLAN

(A.) A contingency plan in the event of a leak shall be submitted for approval along with the details for pit construction. The contingency plan will outline a procedure for making repairs to the pit in the most expeditious manner possible.

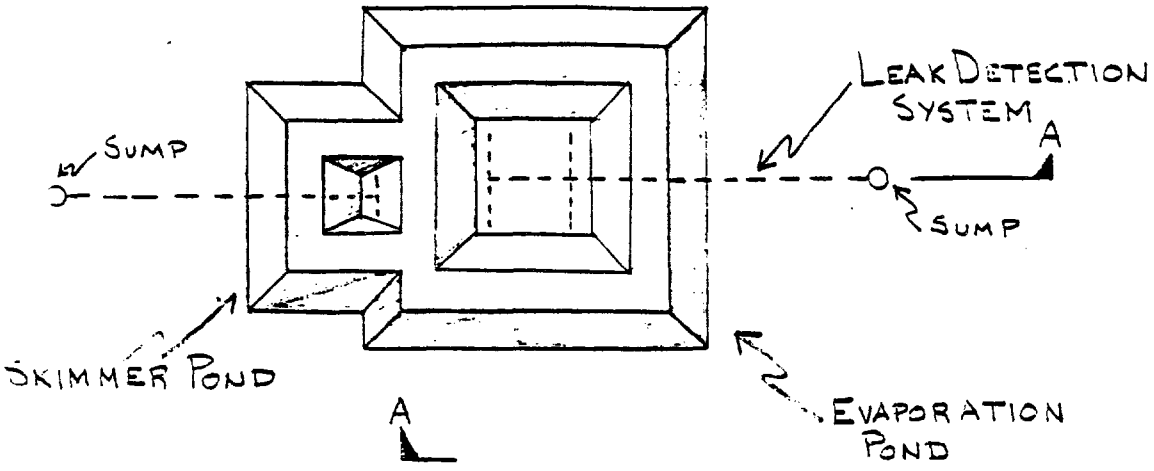
FIGURE 1- PIT CONSTRUCTION



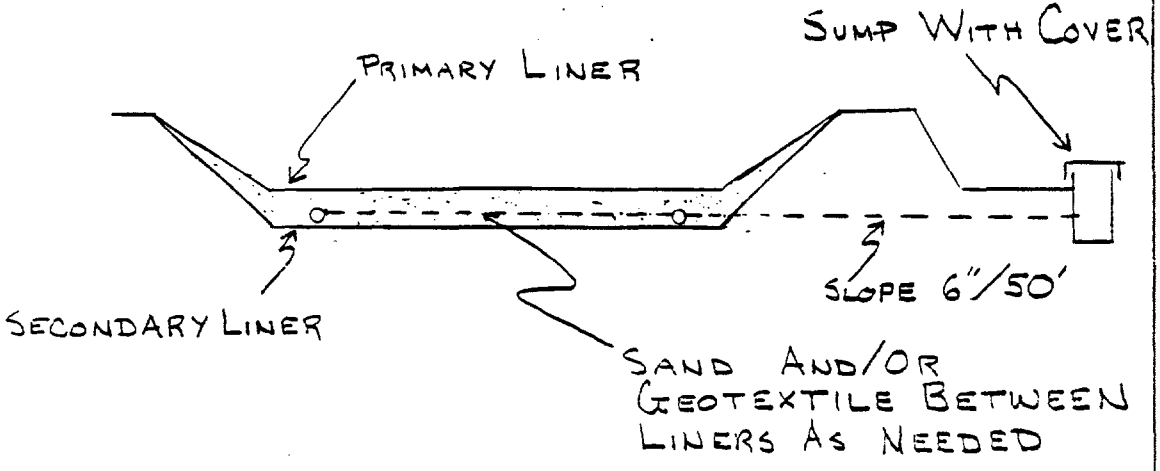
NOTE: LEVEE TO BE CONSTRUCTED IN A MANNER SUCH THAT DESIGN COMPACTION AND DIMENSIONS PROVIDE FOR A MINIMUM SAFETY FACTOR OF TWO FOR FORCES ACTING AGAINST THE LEVEE.

FIGURE 2 - LEAK DETECTION SYSTEM

PLAN



SECTION A-A



NOTE: SKIMMER POND TO HAVE SEPARATE LEAK DETECTION SYSTEM AND SUMP.

FIGURE 3 - ANCHOR TRENCH

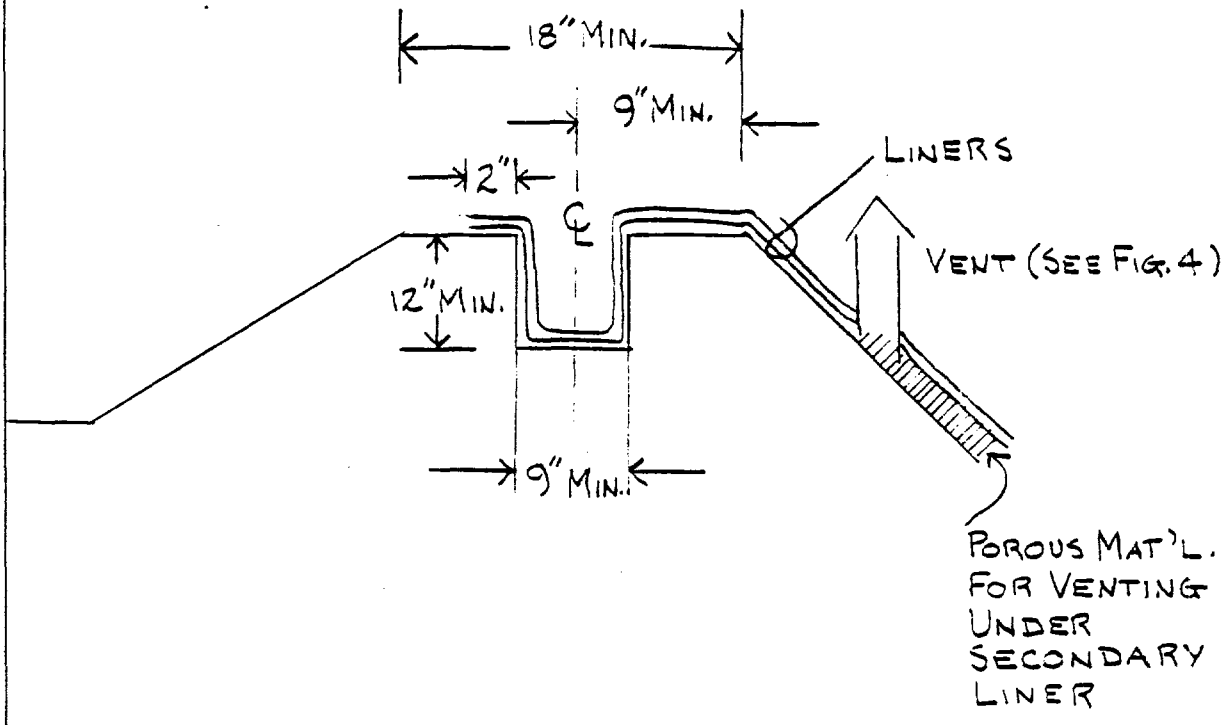
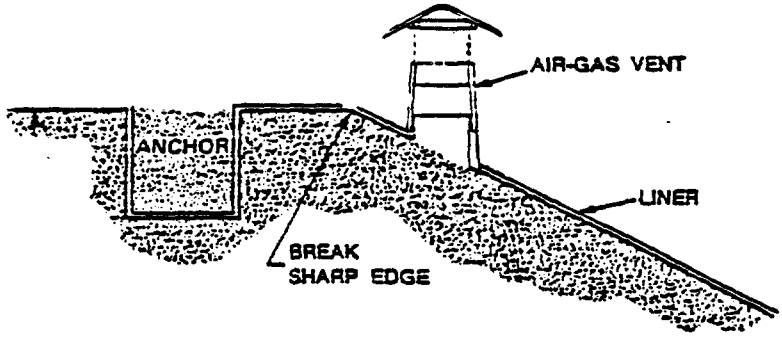


FIGURE 4 - TWO EXAMPLES OF VENT DESIGNS

SOURCE: EPA REPORT #SW-870, "LINING OF WASTE IMPOUNDMENT FACILITIES", PG. 260



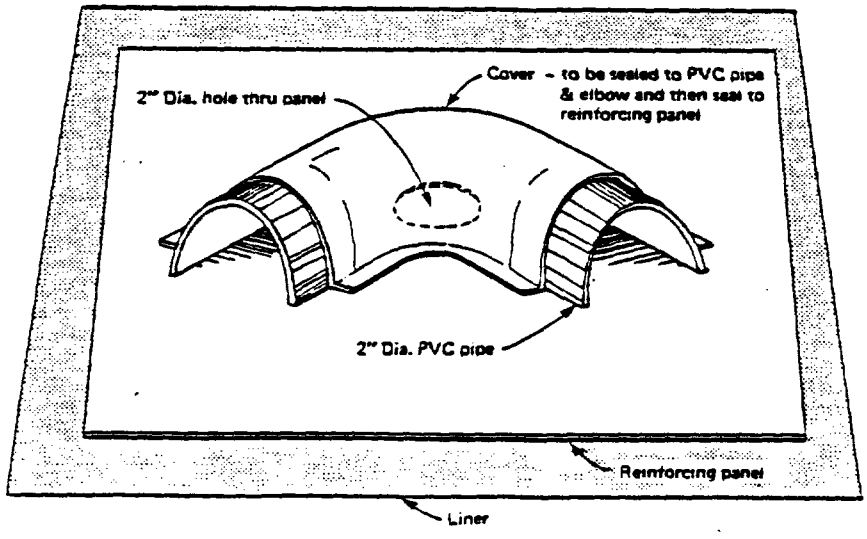
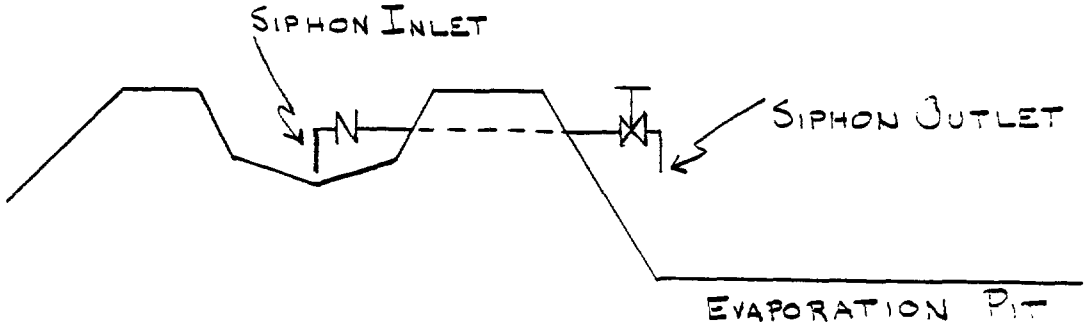
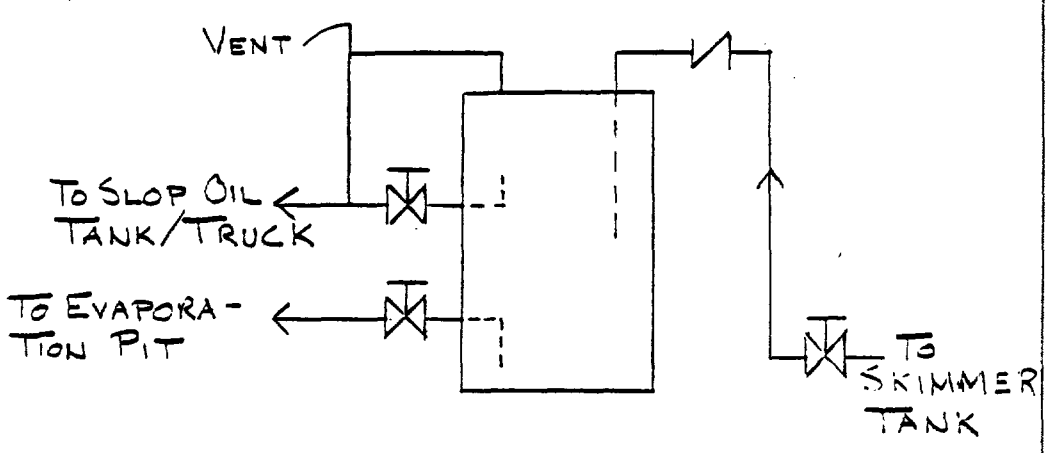


FIGURE 5: SKIMMER POND/TANK

(A.) SKIMMER POND



(B.) SKIMMER TANK



NOTE: BEFORE BEGINNING DISCHARGES TO SKIMMER POND/TANK, FILL WITH FRESH WATER TO SIPHON INLET.

GUIDELINES FOR THE SELECTION AND INSTALLATION OF BELOW GRADE PRODUCED WATER TANKS IN THE SAN JUAN BASIN'S VULNERABLE AREA

NEW MEXICO OIL CONSERVATION DIVISION
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO

(6/85)

PREFACE

The following specifications shall be used as a guide to the preparation of plans and specifications for the selection and installation of below grade tanks to be used to contain those liquid discharges regulated by the Oil Conservation Division. At this time, the following guideline applies only to below grade tanks that are affected by the Oil Conservation Commission's Order R-7940. Existing tanks installed in the vulnerable area before Order R-7940 came into effect need not comply with the following guidelines if the mechanical integrity of such installations can be shown in a manner acceptable to the Division. All plans and specifications shall be submitted to the Oil Conservation Division for approval prior to installation. Designs may deviate from the following specifications if it can be shown that the design integrity is such that the installation will not affect any present or future sources of usable ground water. If a number of tanks are to be installed in the same manner, only one set of plans and specifications need to be submitted provided that a list of all locations to be involved is included.

1. TANK SELECTION

(A.) The tank capacity shall be selected in such a manner that sufficient volume is available to contain all the water produced during periods of inclement weather when it is not possible to drain the tank on a regular schedule. If the proposed plan submitted for OCD approval is to be used at a number of sites, a list of those sites and the estimated daily discharge of produced water from each site shall be submitted with the plans and specifications.

(B.) The materials of construction selected for the tank shall exhibit strong corrosion resistance to those fluids the tank will store. If fiber reinforced plastic tanks are to be used, the material shall be resistant to sunlight and its design shall allow for expansion and contraction due to wide temperature shifts. If ferrous tanks are to be used, protective coatings and/or cathodic protection should be used to inhibit corrosion. The plans and specifications submitted for approval shall include the type of material selected and its thickness.

2. INSTALLATION

(A.) The surface upon which a tank rests shall be free of rocks and shall be level to prevent cracking or indentation of the tank bottom.

(B.) All tanks with bottoms not resting within the ground water shall have a leak detection system which may consist of an electric grid system or a drainage and sump system. If a drainage and sump system is to be used, the design shall include the following criteria listed below and illustrated by Fig. 1:

1. An impermeable layer of clay or other suitable material (e.g., synthetic) shall first be placed upon the surface that will support the tank.

2. Slotted or perforated drainage pipe shall be placed upon the impermeable layer at a slope of at least 6 inches per 50 feet.

3. The drainage pipe shall then be covered by gravel or other material with sufficient permeability to convey fluids to the drainage pipe.

4. The tank shall then be placed upon this surface and the perimeter of the tank back-filled with impermeable material to ground level.

(C.) Tanks with bottoms resting within the ground water shall also contain a leak detection system; however, the addition of an impermeable layer as described in Section 2.B and illustrated in Fig. 1 will not be required. The use of a leak detection system for such a situation will be discussed in Section 3.C.

(D.) A tank resting within the ground water shall be adequately anchored to prevent floating.

(E.) If a split tank is to be installed, the seam shall be adequately sealed to prevent leakage. The manufacturer should be consulted on this matter.

(F.) If a split tank is to be joined by the use of ferrous bolts and screws, they shall be coated to prevent corrosion.

3. MAINTENANCE

(A.) The leak detection sumps shall be inspected on a routine basis. The proposed frequency shall be included with the plans and specifications submitted for approval.

(B.) For tanks not resting in the ground water, the detection of fluid within the sump will require reporting the detection to the appropriate OCD district office, obtaining a sample of the fluid, and having the sample analyzed for benzene, toluene, the xylenes, and conductivity. A copy of the analysis shall be sent to the appropriate OCD district office. If the presence of fluid is due to a tank leak, the contingency plan shall be implemented.

(C.) For tanks resting within the ground water, the sumps shall also be checked on a routine basis using at least one of the methods described below:

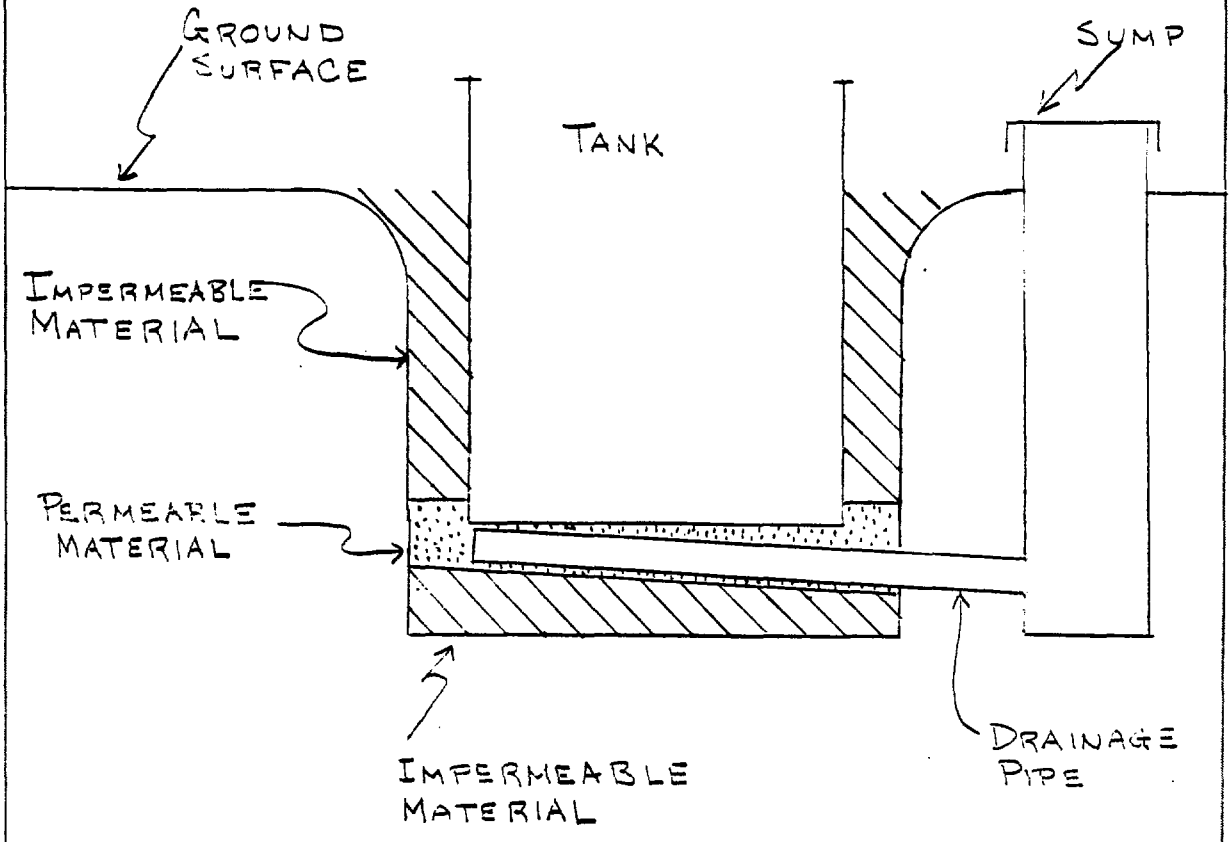
1. Obtain a water sample on a routine basis and have it analyzed for benzene, toluene, the xylenes, and conductivity. A logbook of the results shall be maintained and be available to OCD personnel. If the presence of benzene, toluene, or a xylene is detected, the appropriate OCD district office shall be notified.

2. Dye may be put into the tank each time it is pumped out and if a color change is noted in the sump during routine inspections, the appropriate OCD district office shall be notified. If this method is to be employed, the type of dye to be used shall be submitted with the plans and specifications. Methylene blue, rhodamine, or the fluorescein dyes may be considered. Contact the OCD's Environmental Bureau in Santa Fe if more information is required.

4. CONTINGENCY PLAN

(A.) A contingency plan in the event of a tank leak shall be submitted for approval along with the details for tank selection and installation. The contingency plan shall outline a procedure for making repairs to the tank in the most expeditious manner possible.

FIGURE 1: TANK INSTALLATION



6/85