HYDROLOGY

F13/D4

DIETZ FARM PATIO
PLACE "D"

F13-D4

3 PLANS

McINTIRE
&
QUIROS
SOUTHWEST

LAND PLANNING
CIVIL ENGINEERING
SURVEYING

DRAINAGE RECOMMENDATIONS

DIETZ FARM

PATIO PLACE

RIO GRANDE BOULEVARD N.W.

ALBUQUERQUE, NEW MEXICO

MAY 1974

The proposed method for disposing of run-off in this development will be by two (2) pits located in the vicinity of test boring #1 and #3 with Central Common Area as ponding. These pits shall be six (6) foot square, excavated to the underlying sand stratum. The probable depth will be eight (8) to ten (10) feet, thereafter the pits will be backfilled with clean masonry sand. See attached drilling logs obtained from Sergent, Hausheins and Beckwith for an adjacent site.

The surface of these pits should remain open, possibly using them as sand traps adjacent to a putting green. Periodic raking and shaping would maintain an open surface. It is estimated that all ponded water will infiltrate within two (2) to four (4) hours.

This letter supersedes the one submitted with the original report signed by W. J. McDermott.

Samuel L. Gray

S. L. Gray
P.E. 4301

REGISTERED PROFESSIONAL ENGINEER
STATE OF NEW MEXICO
NO. 4301
SAMUEL L. GRAY

Enclosures:

Drill Logs
Percolation Test

PROJECT DIETZ FARM PLACE, UNIT NO. 1

JOB NO. F73-1023 DATE 3-23-73

LOG OF TEST BORING NO. 1

RIG TYPE CME-55

BORING TYPE 6¼" HOLLOW STEM AUGER

SURFACE ELEV.

DATUM

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows per foot 140 lb. 30" free-fall drop hammer	Dry Density Lbs. per cu. ft.	Moisture Content Per Cent of Dry Wt.	Unified Soil Classification	REMARKS	VISUAL CLASSIFICATION
0									FIRM	SANDY SILT, NONPLASTIC, BROWN
				S	24		6	ML		
5				S	35		5			
									MEDIUM DENSE	SAND, SOME SILT, PREDOMINANTLY FINE TO MEDIUM, NONPLASTIC, BROWN
10				S	12		2			
								SP-SM		
15				S	13		3			NOTE: TRACE OF GRAVEL OCCURRING AT 18'
									MEDIUM STIFF	SILTY CLAY, LOW TO MEDIUM PLASTICITY, REDDISH-BROWN
20				S	9		16	CL		
										STOPPED AUGER AT 19½' STOPPED SAMPLER AT 21'
25										

GROUND WATER

DEPTH	HOUR	DATE

SAMPLE TYPE

A – Auger cuttings. B – Block sample.
S – 2" O.D. 1.51" I.D. tube sample.
U – 3" O.D. 2.42" I.D. tube sample.

SERGENT, HAUSKINS & BECKWITH

PROJECT Dietz Farm Place, Unit No. 1

JOB NO. E73-1023 DATE 3-23-73

LOG OF TEST BORING NO. 2

RIG TYPE CME-55

BORING TYPE 6½" Hollow Stem Auger

SURFACE ELEV.

DATUM

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows per foot 140 lb. 30" free-fall drop hammer	Dry Density Lbs. per cu. ft.	Moisture Content Per Cent of Dry Wt.	Unified Soil Classification	REMARKS	VISUAL CLASSIFICATION
0									MEDIUM DENSE TO DENSE	SILTY SAND, PREDOMINANTLY FINE, NONPLASTIC, BROWN
			X	S	28		4	SM		
5			X	U	41	103	6			
									MEDIUM DENSE	SAND, SOME SILT, PREDOMINANTLY MEDIUM TO FINE, NONPLASTIC, BROWN
10			X	S	14		1			
								SP-SM		
15			X	S	17		2			
										STOPPED AUGER AT 14½' STOPPED SAMPLER AT 16'
20										

GROUND WATER

DEPTH	HOUR	DATE
	DRILLER	

SAMPLE TYPE

A – Auger cuttings. B – Block sample

S – 2" O.D. 1.50" I.D. tube sample.

U – 3" O.D. [illegible]

SERGENT, HAUSKINS & BECKWITH

PROJECT Dietz Farm Place, Unit No. 1

JOB NO. F73-1023 DATE 2-23-73

LOG OF TEST BORING NO. 3

RIG TYPE CME-55

BORING TYPE 6½" Hollow Stem Auger

SURFACE ELEV.

DATUM

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows per foot 140 lb. 30" free-fall drop hammer	Dry Density Lbs. per cu. ft.	Moisture Content Per Cent of Dry Wt.	Unified Soil Classification	REMARKS	VISUAL CLASSIFICATION
0			X	U	52	98	5	SM	DENSE	SILTY SAND, PREDOMINANTLY FINE, NONPLASTIC, BROWN
5			X	S	27		13	CL	SLIGHTLY MOIST FIRM	SILTY CLAY, MEDIUM PLASTICITY, BROWN
10			X	S	12		9	SP-SM	MOIST MEDIUM DENSE	SAND, SOME SILT, PREDOMINANTLY MEDIUM TO FINE, NONPLASTIC, BROWN
15			X	S	17		3			
20			X	S	10		41	CL	MEDIUM STIFF	SILTY CLAY, MEDIUM PLASTICITY, BROWN
										STOPPED AUGER AT 19½' STOPPED SAMPLER AT 21'

GROUND WATER

DEPTH	HOUR	DATE

SAMPLE TYPE

A – Auger cuttings. B – Block sample

S – 2" O.D. 1.37" I.D. tube sample.

SERGENT, HAUSKINS & BECKWITH

McMillan & Associates, Inc.

Consulting Materials Engineers
Laboratory Testing and Field Investigation

Benny E. McMillan, P.E.
President

Telephone (505) 345-3681

2501 Candelaria Road, N.E.
Albuquerque, New Mexico 87107

May 6, 1974

Dale Bellamah Corporation
P. O. Box 3325
Albuquerque, New Mexico 87110

Attention: Micheal J. Harrold

Re: Patio Place
Surface Water Percolation Tests

Gentlemen:

As requested by Mr. Harrold, we performed percolation tests in the designated ponding area of the subject project for the purpose of evaluating the infiltration rate of ponded surface water.

Three open pits, 2 to 3 feet deep, were dug with a backhoe. After presoaking, the pits were filled with water and the drop in water level was measured over a 2 hour period. The soils at the test locations were silty clays of low to medium plasticity. Attached are curves showing graphically the percolation rate of each test and a site plan showing the locations of the test pits.

Based on these tests, performed in a pit having side contact with the water, we estimate that 2 feet of ponded water would

require approximately 55 to 60 hours to completely percolate into the ground.

Ponding water within 20 feet of the foundations of the structures should be avoided. The clay soils have a mild expansion potential and are composed of grain sizes which can attract moisture by capillary action. Moisture increase beneath lightly loaded footings could cause detrimental structural movement.

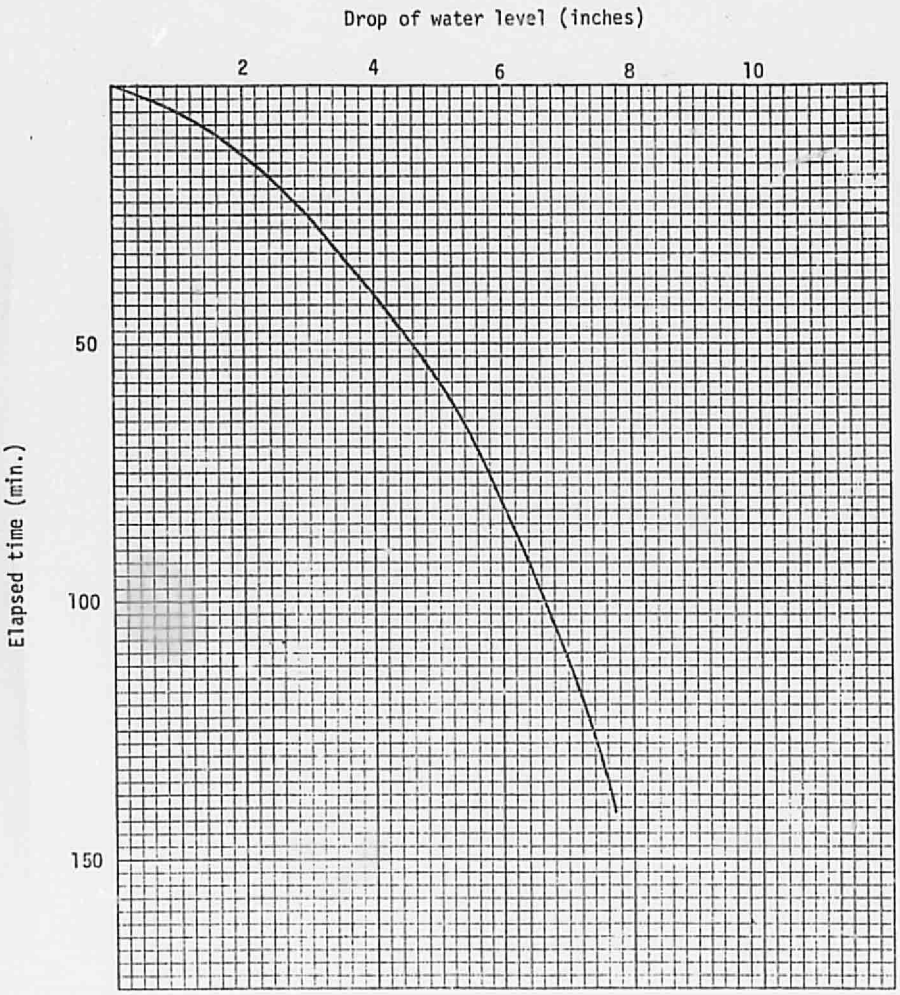
If there are any questions concerning this report, we would be pleased to discuss them with you.

Very truly yours,

Benny E. McMillan, P.E.

jem

Patio Place
Surface Water Percolation Tests
Test Pit #1



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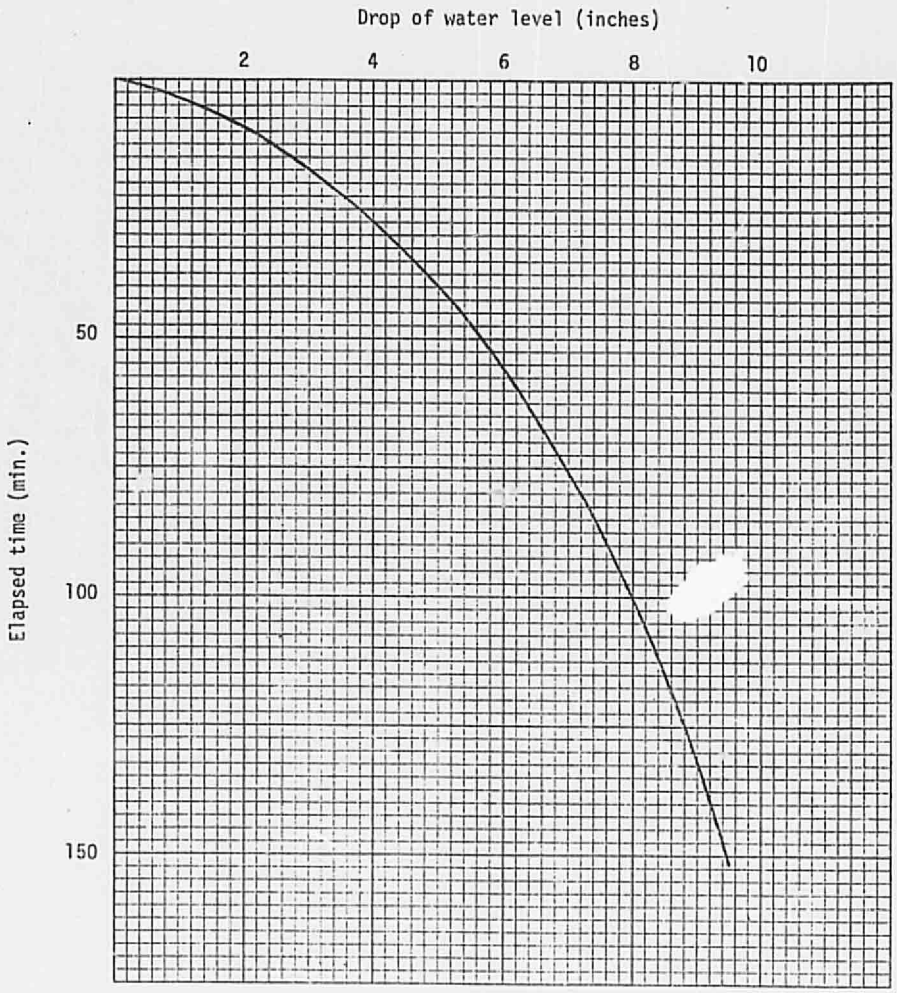
Consulting Materials Engineers

Patio Place
Surface Water Percolation Tests
Test Pit #2



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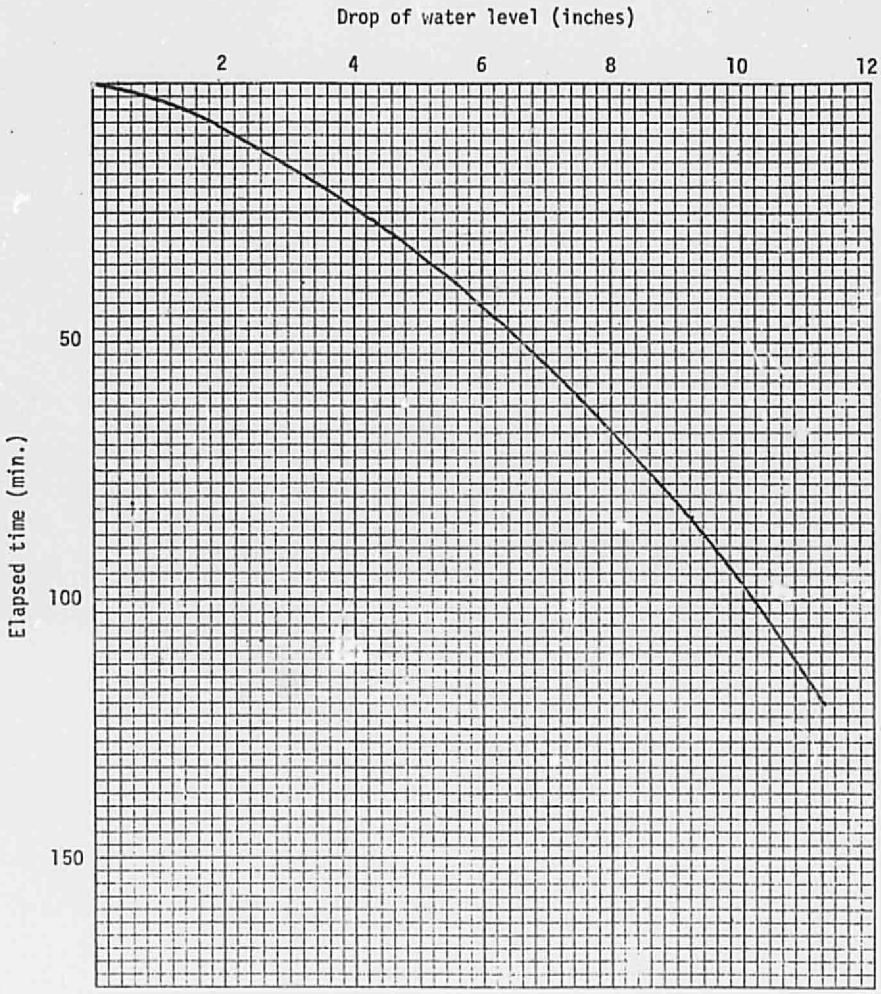
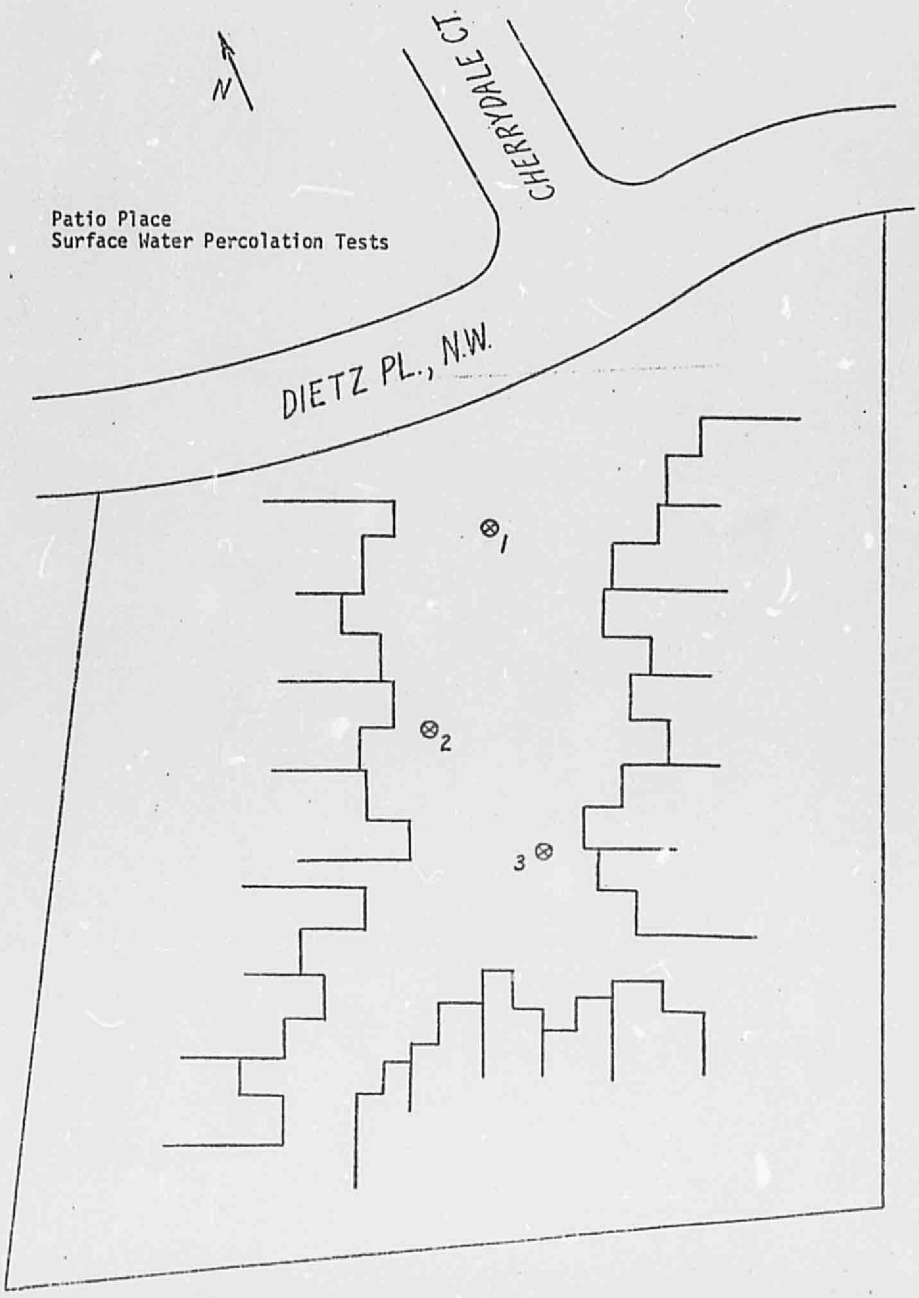
Consulting Materials Engineers

Patio Place
Surface Water Percolation Tests
Test Pit #3



McMillan & Associates, Inc.
Consulting Materials Engineers

SITE PLAN


N
CHERRYDALE CT.
Patio Place
Surface Water Percolation Tests
DIETZ PL., N.W.
1
2
3

DRAINAGE REPORT

UNIT NO. 1-A

DIETZ FARM PLACE

PREPARED BY: GEBB ENGINEERING, INC.
4100 SILVER AVE., S.E.
SUITE F
ALBUQUERQUE, NEW MEXICO
87108

DATE PREPARED: SEPTEMBER 20, 1972

CARL E. SERNA
REGISTRATED PROFESSIONAL ENGINEER
AND LAND SURVEYOR
NEW MEXICO CERTIFICATE NO. 4256

THIS MICROIMAGE IS THE BEST POSSIBLE
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DRAINAGE REPORT
UNIT NO. 1-A
DIETZ FARM PLACE

GENERAL:

This report consists of a hydrologic study of drainage affecting the subdivision Unit No. 1-A, Dietz Farm Place, situated in the southwest quarter, Section 31, Township 11 North, Range 3 East, N.M.P.M. in the City of Albuquerque, New Mexico. Said subdivision is located on the south side by Dietz Place Northwest having a frontage of 411.08 feet and adjacent on the east by the Griegos Drain.

SPECIFIC:

The drainage area consists of approximately 3.5 acres, the terrain is extremely flat with no apparent slope. Therefore, it is intended to use the ponding method throughout the subdivision, due to the characteristics of this terrain. A personal on site inspection was made by the engineer and no land grading, filling, or excavation has occurred since preparation of the contour map.

OFF-SITE DRAINAGE AREAS:

Due to the flat terrain and to the past drainage methods used in the overall Dietz Farm Subdivision to dispose of storm water in this area it's apparent that there is very little off site drainage.

The drainage methods employed in the past has been to use wide swales along both sides of the paved roadway areas with very

little or no slope. These areas are used for ponding the storm water.

ON-SITE DRAINAGE:

The amount of storm water is computed by using a 100-year storm this being a storm consisting of 100-year 6 hours precipitation as shown by the Rainfall Frequency Maps for New Mexico, June 1967, published by the Special Studies Branch, Office of Hydrology, United States Weather Bureau.

The 100-year 6 hour precipitation factor is 3.0 inches

CALCULATIONS:

3.0 inches = 0.25 feet

$$0.25 \text{ feet} \times 3.5 \text{ Acres} \times \frac{43,560 \text{ sq.ft.}}{\text{ACRE}} = 38,115 \text{ cu.ft.}$$

This is the total amount of storm water that will be disposed of by ponding into two different areas as is shown on the drainage map. Area No. 1 contains about 2.5 acres of land and about 27,125 cu.ft. of storm water which will drain to the park area. The park area will be graded 2.5 feet below the street surface and will have a surface area of approximately 12,000 sq.ft. The front half of all of the lots will drain to the streets and the streets will drain to the park area. The other half of all the lots will drain to the rear portion of the lots, this being Area No. 2 as is shown on the drainage map. Each individual lot will have a ponding area capable of retaining this portion of runoff.

AREA NO. 1

Total Area	2.5 Acres
Runoff	27,125 cu.ft.
Total Ponding Area	12,000 sq.ft.
Ponding Depth	2.5 ft.
Max. Ponding Capacity	30,000 cu.ft.

AREA NO. 2

Total Area	1.0 acre
Runoff	10,890 cu.ft.
Ponding Area/Lot	30 ft. x 20 ft. = 600 sq.ft.
Total Ponding Area	22 lots x 600 sq.ft. = 13,200 sq.ft.
Ponding Depth	0.5 ft.
Max. Ponding Capacity	6,600 cu.ft.

The above calculations for areas No. 1 and No. 2 indicate that the runoff will be contained and be allowed to percolate adaquately.

PERCOLATION TEST:

These percolation tests were taken on said property in order to obtain the percolation rate of the soil. The soil was found to be silty clay. The test holes were 12 inch square holes and were excavated to a depth of 3 feet. The percolation rate computed produced the following results:

The average 6 hour percolation rate for the three holes was

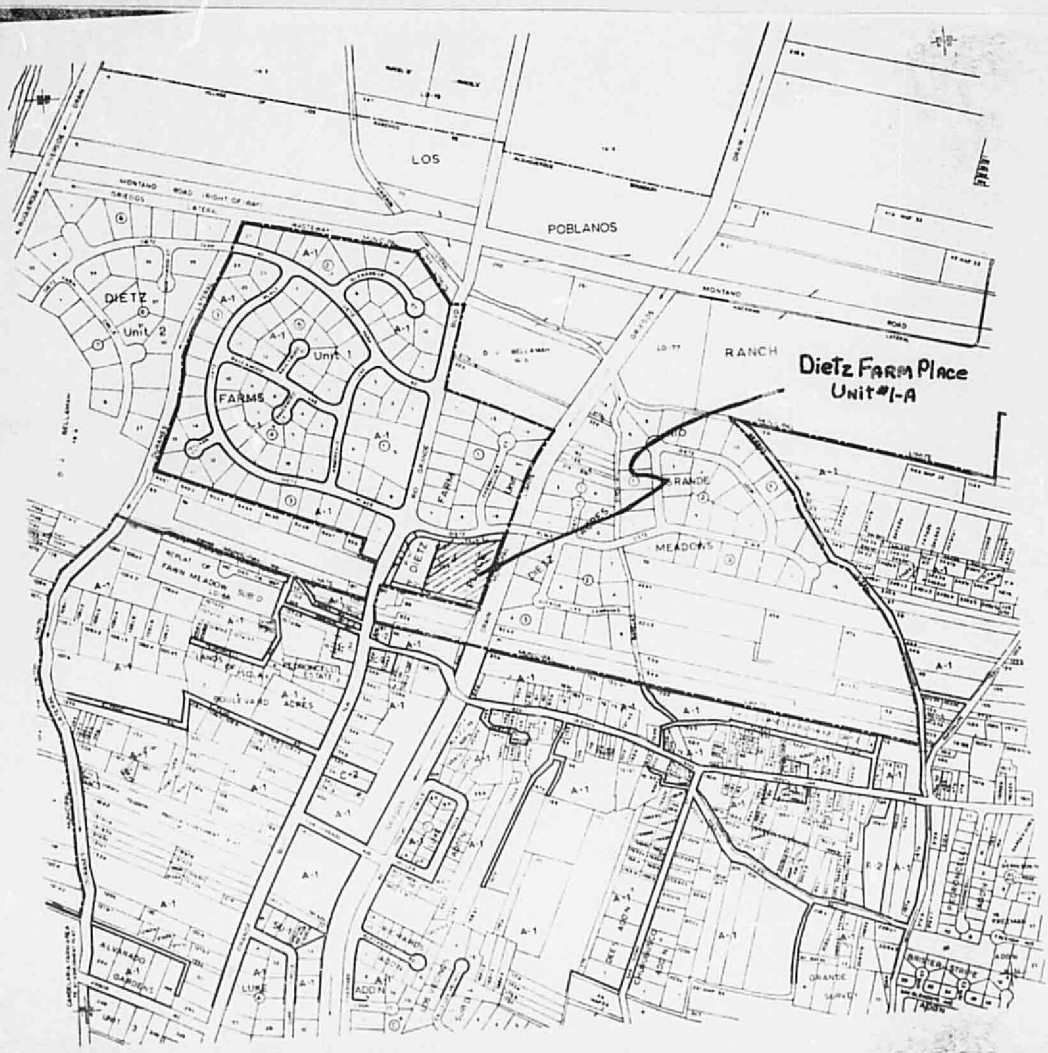
Test Hole No. 1	17.00 inches
Test Hole No. 2	20.75 inches
Test Hole No. 3	20.25 inches
Average Total	57.00 inches

Mean Percolation Rate $\frac{57.00 \text{ inches}}{3}$ = 19.00 inches

Based on the above findings it is evident that the soil has the capabilities of percolating the on-site runoff produced by this subdivision.

RECOMMENDATIONS:

Since the soil in said subdivision was found to be silty clay and has the capabilities of being non porous it is recommended that the park area be excavated to include a layer of about 1.0 foot of 2 inch to 3 inch rock material to increase the percolation rate for ponding Area No. 1 as shown on the detail sheet.


LOS
POBLANOS
RANCH
DIETZ
Unit 2
Unit 1
FARMS
Dietz Farm Place
Unit #1-A
RANCH
MEADOWS
DIETZ
FARM
A-1

F-13-Z

DRAINAGE REPORT
UNIT NO. 2
DIETZ FARM PLACE
ALBUQUERQUE, NEW MEXICO

PREPARED FOR: TOM MUCHMORE AND ASSOCIATES
20 FIRST PLAZA N.W.
ALBUQUERQUE, NEW MEXICO 87102
247-4161

PREPARED BY: RALPH K. HICKS AND ASSOCIATES
3939-C SUITE 5 SAN PEDRO DRIVE N.E.
ALBUQUERQUE, NEW MEXICO 87110
881-0012

DRAINAGE REPORT
UNIT NO. 2
DIETZ FARM PLACE
ALBUQUERQUE, NEW MEXICO

GENERAL:

THIS REPORT CONSISTS OF A HYDROLOGIC STUDY OF DRAINAGE AFFECTING THE SUBDIVISION UNIT NO. 2, DIETZ FARM PLACE, SITUATED IN THE SOUTHWEST QUARTER, SECTION 31, TOWNSHIP 11 NORTH, RANGE 3 EAST, N.M.P.M. IN THE CITY OF ALUBUQUERQUE, NEW MEXICO. SAID SUBDIVISION IS LOCATED ON THE SOUTH SIDE BY DIETZ PLACE N.W. HAVING A FRONTAGE OF 411.08 FEET AND ADJACENT ON THE EAST BY THE GRIEGOS DRAIN.

SPECIFIC:

THE DRAINAGE AREA CONSISTS OF 3.5340 ACRES, THE TERRAIN IS EXTREMELY FLAT WITH NO APPARENT SLOPE. THEREFORE, IT IS INTENDED TO USE THE PONDING METHOD THROUGHOUT THE SUBDIVISION, DUE TO THE CHARACTERISTICS OF THIS TERRAIN. A PERSONAL ON SITE INSPECTION WAS MADE BY THE SURVEYOR AND NO LAND GRADING, FILLING, OR EXCAVATION HAS OCCURRRED SINCE PREPARATION OF THE CONTOUR MAP.

OFF-SITE DRAINAGE AREAS:

DUE TO THE FLAT TERRAIN AND TO THE PAST DRAINAGE METHODS USED IN THE OVERALL DIETZ FARM SUBDIVISION TO DISPOSE OF STORM WATER IN THIS AREA IT IS APPARENT THAT THERE IS NO OFF SITE DRAINAGE, OR EXTERNAL DRAINAGE INFLUENCE IN THE SUBDIVISION. THE DRAINAGE METHODS EMPLOYED IN THE PAST HAS BEEN TO USE WIDE SWALES ALONG BOTH SIDES OF THE PAVED ROADWAY AREAS WITH VERY LITTLE OR NO SLOPE. THESE AREAS ARE USED FOR PONDING THE STORM WATER. DRIVEWAYS OF CONCRETE, WITH NO CULVERT, WILL ACT AS CHECK DAMS TO PREVENT WATER MOVEMENT IN THE BOTTOM OF THE SWALE.

ON-SITE DRAINAGE:

THE AMOUNT OF STORM WATER IS COMPUTED BY USING A 100-YEAR STORM THIS BEING A STORM CONSISTING OF 100-YEAR 6 HOURS PRECIPITATION AS SHOWN BY THE RAINFALL FREQUENCY MAPS FOR NEW MEXICO, JUNE, 1967, PUBLISHED BY THE SPECIAL STUDIES BRANCH, OFFICE OF HYDROLOGY, UNITED STATES WEATHER BUREAU.

THE 100-YEAR 6 HOUR PRECIPITATION FACTOR IS 3.0 INCHES.

CALCULATIONS:

3.0 INCHES = 0.25 FEET

$$0.25 \text{ FEET} \times 3.5340 \text{ ACRES} \times \frac{43{,}560 \text{ SQ. FT.}}{\text{ACRE}} = 38{,}485 \text{ CU.FT.}$$

THIS IS THE TOTAL AMOUNT OF STORM WATER THAT WILL BE DISPOSED OF BY PONDING INTO THE FRONT, SIDE AND REAR DRAINAGE SWALES AS SHOWN ON THE GRADING PLAN AND ATTACHED TO AND MADE A PART OF THIS REPORT.

COMPUTATIONS FOR VOLUMES OF FRONT, SIDE AND REAR SWALES ARE AS FOLLOWS:

FRONT:

LEVEL WITH THE CROWN OF THE PAVING AS SHOWN ON SECTION A-A ON A LEVEL LINE TOWARD THE RESIDENCE HAS A CROSS SECTION OF AREA OF 28.25 SQUARE FEET. THIS POINT OF ELEVATION WILL BE 4.13 FEET FROM THE DWELLING BUILDING LINE AND 0.58 FEET BELOW THE FINISH GRADE OF THE DWELLING AND 1.25 FEET BELOW THE FINISH FLOOR OF THE DWELLING. THE FRONT YARD SWALE LENGTH IS 1249 LINEAL FEET; HENCE THE VOLUME OF WATER STORAGE CREATED WITH THE ABOVE PARAMETERS IS 35,284 CUBIC FEET.

REAR:

LEVEL WITH THE REAR YARD FINISH GRADE AS SHOWN ON SECITON A-A WITH A 0.50 FOOT MAXIMUM DEPTH OF POND. THIS CROSS SECTION EQUALS 5.00 SQUARE FEET. THIS POINT OF ELEVATION WILL BE 15.00 FEET FROM THE REAR OF THE DWELLING AND 1.50 FEET BELOW THE DWELLING FINISH GRADE AND 2.17 FEET BELOW THE DWELLING FINISH FLOOR. THE REAR YARD SWALE LENGTH IS 1,612 LINEAL FEET; HENCE THE VOLUME OF WATER STORAGE CREATED WITH THE ABOVE PARAMETERS IS 8,060 CUBIC FEET.

SIDE:

1.00 FEET BELOW DWELLING FINISH GRADE OF LOT. (SEE SECTION A-A) VOLUME OF SWALE UNDETERMINED BECAUSE SIDE SWALES DRAIN TO FRONT AND REAR SWALES.

PERCOLATION TESTS:

THESE PERCOLATION TESTS WERE TAKEN ON SAID PROPERTY IN ORDER TO OBTAIN THE PERCOLATION RATE OF THE SOIL. THE SOIL WAS FOUND TO BE SILTY CLAY. THE TEST HOLES WERE 12 INCH SQUARE HOLES AND WERE EXCAVATED TO A DEPTH OF 3 FEET. THE PERCOLATION RATE COMPUTED PRODUCED THE FOLLOWING RESULTS:

THE AVERAGE 6 HOUR PERCOLATION RATE FOR THE THREE HOLES WAS:

TEST HOLE NO. 1	16.00 INCHES
TEST HOLE NO. 2	20.75 INCHES
TEST HOLE NO. 3	20.25 INCHES
AVERAGE TOTAL	57.00 INCHES

MEAN PERCOLATION RATE $\frac{57.00 \text{ INCHES}}{3}$ = 19.00 INCHES

BASED ON THE ABOVE FINDINGS IT IS EVIDENT THAT THE SOIL HAS THE CAPABILITIES OF PERCOLATING THE ON-SITE RUNOFF PRODUCED BY THIS SUBDIVISION.

CONCLUSIONS AND RECOMMENDATIONS:

SINCE THE FRONT, REAR AND SIDE SWALES HAVE A COMPUTED VOLUME OF 43,344 CUBIC FEET USING THE REAR YARD POND ELEVATION OF 4970.00 FEET LOTS 4, 5, 6, 8, 9, 10 AND 11 WERE REVISED TO LOWER THE REAR YARD POND ELEVATION TO SATISFY THE PONDING REQUIREMENTS OF R-1 RESIDENTIAL LOTS, THAT IS, EACH LOT MUST CONTAIN ITS OWN RUNOFF. THE REAR YARDS WERE LOWERED BECAUSE THE AFOREMENTIONED LOTS ARE CUL-DE-SAC LOTS WITH SMALL FRONT YARDS AND LARGE REAR YARDS.

THE FOLLOWING TABULATION OF LOT AREAS, VOLUMES OF POND NEEDED AND ACTUAL PONDING CAPABILITY ARE AS SHOWN ON THE SCHEDULE BELOW:

LOT	AREA SQ.FT. (INCL. ST.)	VOLUME OF POND NEEDED	ACTUAL PONDING CAPABILITY
1	11,044	2761	5670
2	8,845	2211	2494
3	8,819	2205	2495
4	8,581	2145	2565
5	14,310	3578	3922
6	10,578	2645	2650
7	8,312	2078	2750
8	11,964	2991	4233
9	12,057	3014	4516
10	11,130	2785	4179
11	7,996	1999	2710
12	9,822	2456	5407
13	11,603	2901	6122
14	9,334	2334	2516
15	9,444	2361	2412

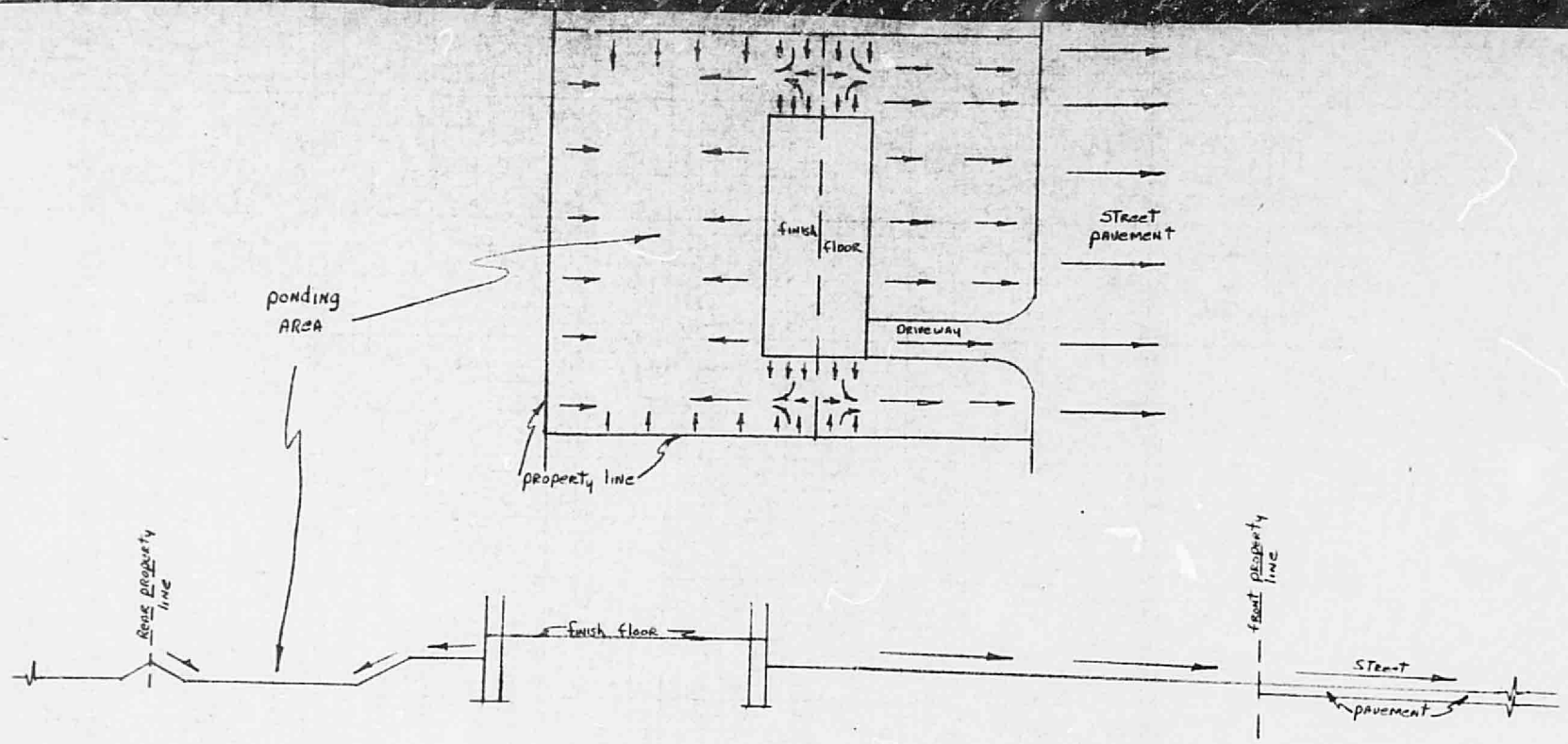
I HEREBY CERT[illegible] THAT IF THE FINISH GRADES, AND FINISH FLOOR GRADES AND PONDING ELEVATIONS ARE CONSTRUCTED AS TO THE ATTACHED GRADING PLAN, NO FLOOD DAMAGE WILL OCCUR TO THE DWELLINGS OF UNIT NO. 2 DIETZ PLACE N.W. NO CONSIDERATION WAS GIVEN TO PERCOLATION RATES WHICH WOULD HOLD THIS SUBDIVISION HARMLESS IN ITS OWN MERIT.

Ralph K. Hicks

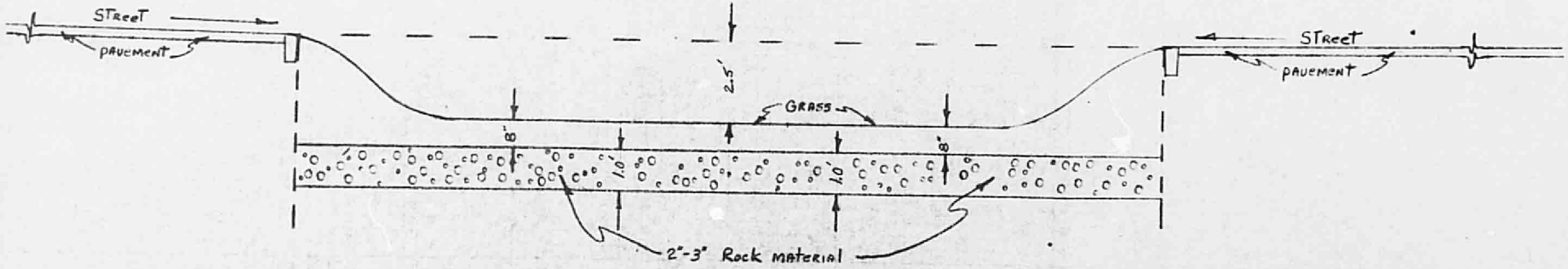
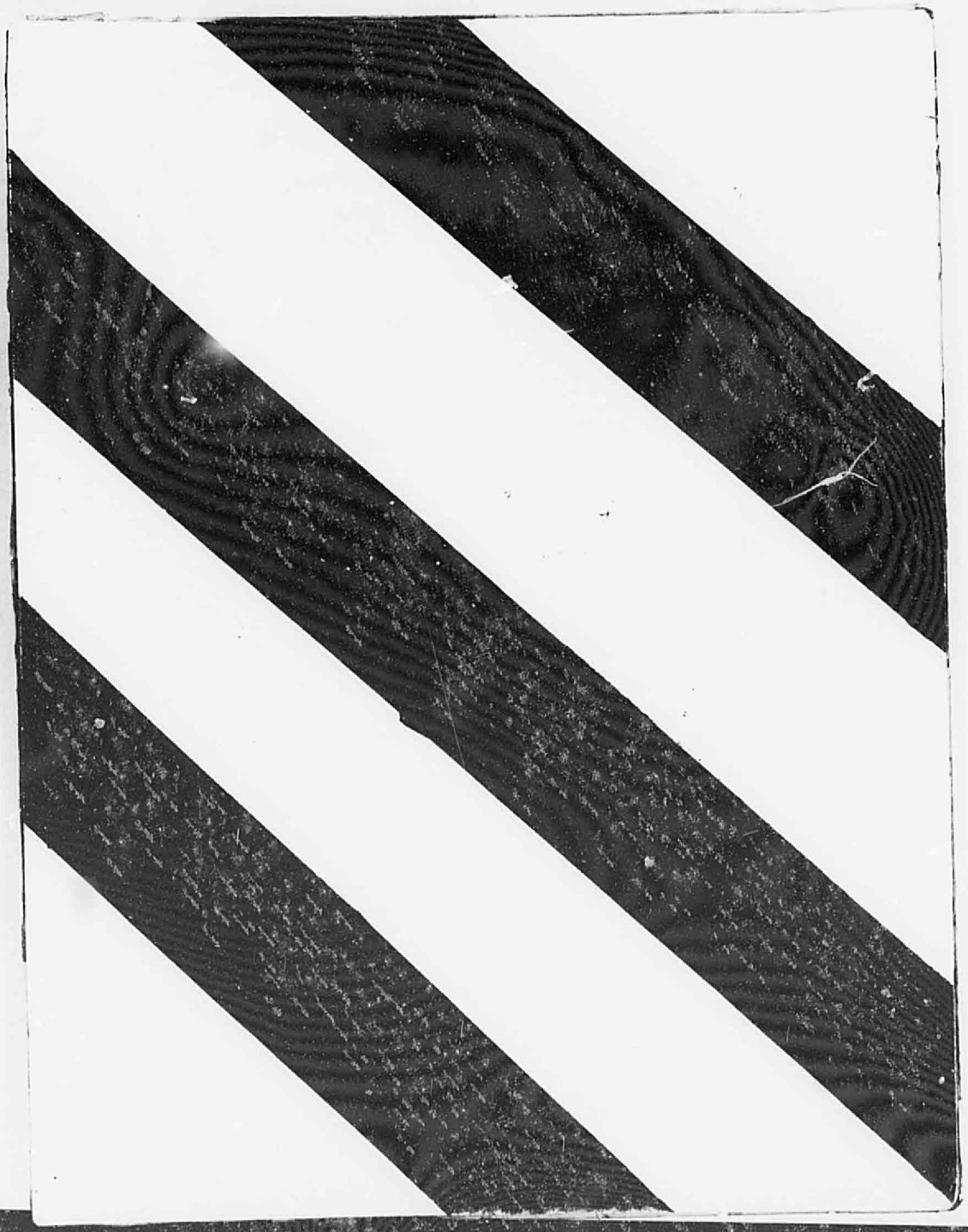
RALPH K. HICKS, N.M.L.S. NO. 3307

DECEMBER 23, 1977

JANUARY 13, 1978 REVISED



TYPICAL LOT PONDING PLAN



PARK AREA