

**DOS GRIEGOS SUBDIVISION**

**LIQUID WASTE MANAGEMENT  
AND DISPOSAL PLAN**

**TABLE OF CONTENTS**

- A. Liquid Waste Management Plan
- B. Engineering Report

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## LIQUID WASTE MANAGEMENT PLAN FOR DOS GRIEGOS SUBDIVISION

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The liquid waste system designed by Dos Griegos is a community maintained advanced waste treatment system. This system is overdesigned and all precautions have been taken to make it environmentally conscious, water conserving and odorless.

### PROCESS

The design of this system is disclosed herein. As sewage runs out of the house and into the system it enters an initial septic tank where sludge is collected. This tank shall be periodically pumped as needed. The remaining effluent then runs through a waste treatment tank and is re-circulated and processed.

Finally, the remaining effluent which at this point is relatively clean water, is chlorinated in another septic tank and can then be used for irrigation.

### SOLUTIONS

The biggest problems with any sewage system are maintenance and water discharge. Thus, we have designed a system which addresses both concerns.

#### Maintenance

The waste treatment system will be maintained by contract by the Dos Griegos Grant County Homeowners' Association II. The recommended design of the system shall be given to a lot purchaser and all pertinent information will be disclosed to him/her in the Disclosure Statement and the Subdivision Covenants. Prior to construction, the lot owner must seek and obtain approval of the system from the Architectural Review Board, Grant County, the local office of the New Mexico Environmental Department before it is installed, and a licensed engineer. The Association will be responsible to maintain every system within the subdivision by hiring a Level One licensed inspector to maintain, test and enforce the liquid waste disposal requirements. Lot owners will be assessed on a quarterly basis for the contracting of this professional. Thus, ultimate responsibility of the environmental safety of the system lies with the Homeowners' Association. Any equipment shall be paid for by the lot owner. Likewise, in the event of any liquid waste disposal negligence on the part of a lot owner, the Association shall have recourse over the lot owner by the ability to levy fines and/or liens against his property. The Association shall also have the right to repair a problem and seek reimbursement from the lot owner in the event said owner does not comply.

#### Water Discharge

Any remaining water running out of the system must be used for irrigation on each particular lot and cannot be released onto another lot or into the arroyos.

#### Additional Benefits

**WATER CONSERVATION:** Because all lot owners will be required to use the water for irrigation within their lot, a substantial amount of water will be saved from the present system. Especially in a desert climate such as ours, the decreased level of consumption is an extremely valuable water conservation tool.

**LESS TERRAIN DESTRUCTION:** By building each system within a particular lot near the building site of a house, the amount of terrain destruction will be greatly reduced as compared to installing piping throughout the subdivision and collecting the water in a central location. Said water collection creates a water disposal problem instead of a water irrigation solution as our system would accomplish.

Since this community maintained system will not burden the present collection system of any municipality, a provision addressing its maintenance, supervision, operation and reconstruction has been made by trust agreement in the deed restrictions, covenants and the disclosure statement.

## DISCLOSURE STATEMENT

With regards to the disclosure statement, the following language is incorporated:

29. A community maintained underground waste treatment system must be installed by a lot owner prior to construction on a lot within the Dos Griegos Subdivision. The design of this system is described herein and must be followed. Prior to construction a lot owner must submit to the Architectural Review Board, established as per the covenants of the Homeowner Association, all plans for the structure, including but not limited to, the liquid waste system described therein. All submissions and approvals will be made pursuant to the covenants of the Association set forth therein. In addition, the lot owner must contact and receive approval from the New Mexico Environmental Department, Grant County, and from a licensed engineer. Once the system is approved and installed, the owner stipulates and agrees that the Homeowners' Association will assume the maintenance of the system. The owner shall provide for an easement to operator for maintenance. A level one licensed inspector will be contracted with by the Association to maintain, inspect and repair the system. The normal maintenance charges associated with the system shall be billed to the Association and paid for through a quarterly assessment fee charged to each homeowner in addition to a 15% management fee. Any replacement of equipment will be billed to each particular homeowner and be due within 30 days from receipt of said invoice. In the event a homeowner does not timely pay said invoice, the Homeowners' Association may levy a late fee in the maximum amount allowed by law, pay such invoice and exercise its rights to collect from the homeowner through any and all remedies available at law or in equity including but not limited to any lien and foreclosure rights which shall include fees and costs associated therewith.

The rules and covenants regarding this system are not to be amended by the Homeowners' Association without the express approval of the Grant County Board of Commissioners. The subdivider has also placed as security with the county a \$10,000.00 escrow for the sole purpose of guaranteeing the maintenance of the individual system in the event of default on the part of the Homeowners' Association. This security does not release the Homeowners' Association or individual owners from their obligations stated herein.

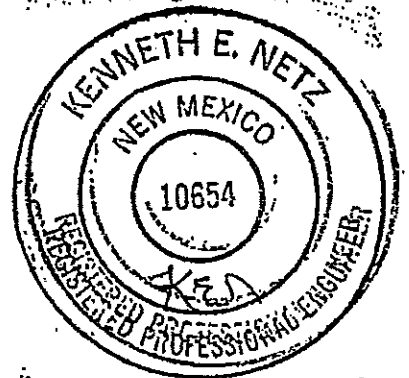
## SUMMARY

Conventional individual liquid waste systems generally are insufficient in two areas, maintenance and water discharge. Since this community maintained liquid disposal system places the burden of maintenance onto a central and strong Homeowners' Association, negligence on the part of an individual homeowner will be thwarted. Also, since a licensed Level One inspector will be maintaining the system, treatment and water disposal will be left in the hands of an expert. In using this system, the owners within the Dos Griegos Subdivision will be contributing to a cleaner and safer environment as well as protecting the terrain and conserving water.

ENGINEERING REPORT  
ON-SITE SEWAGE TREATMENT  
&  
WASTEWATER DISPOSAL RECOMMENDATIONS

for  
Dos Griegos Subdivision

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12-10-95

Overview

This document identifies the required parameters and design of a residential onsite sewage treatment facility. The system shall meet all requirements of the New Mexico Environment Department (NMED) for lot sizes 3/4 acre and larger. All systems shall be approved by NMED (local representative Rocky Vanderly phone 388-1934). The proposed system is an Aerobic - Chlorination - Irrigation system that contains the following components:

- 1) Initial Treatment - The initial treatment is a suitably sized septic tank to remove, and anaerobically digest solids.
- 2) Oxidation - Oxidation may be achieved by oxidation pumps or by wetlands (see wetland calculations).
- 3) Chlorination - Chlorination is achieved by maintaining the exiting water in contact with chlorine tablets.
- 4) Application - The water shall be applied to the land for irrigation.

Each of the components shall be constructed using the following design criteria:

Volume flow per 3 bedroom house = 375 gallons/day plus an additional 75 gallons/day/additional bedroom

Initial Treatment - The septic tank size required for single family units under the Uniform Building Code (UPC) and the NMED are:

SINGLE FAMILY				
BEDROOMS	0-2	3	4	5-6
FIXTURES	>15	16-20	21-25	26-33
TANK SIZE (gal.)	750	1000	1200	1500

All tanks shall be sized in accordance with this requirement but shall be minimally sized at 1100 gallons.

Oxidation - Oxidation may be achieved by pumping oxygen into the oxidation chamber by means of an aeration pump until the wetlands are established. See WETLANDS CALCULATIONS for nitrogen treatment.

3) Chlorination - Chlorination is achieved by maintaining the exiting water in contact with chlorine tablets for a minimum of 15 minutes in the chlorination chamber (see plans).

4) Application - The water shall be applied to the land for irrigation as provided for in the WETLANDS CALCULATIONS.

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**WETLANDS WATER BALANCE**

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**Site Name:** AERATION - PRETREATMENT INDIVIDUAL WETLANDS  
**Location:** DOS GRIEGOS

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**Hydraulic Load:**

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1 No. OF 3-BR Units/Site  
375 Gal/Day per 3-BR Unit  
375.0 Total Gal/Day Design Flow  
11,250.0 Total Gal/Month Design Flow  
50.1 Total CF/Day

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**Organic Load:**

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5 Persons/HH  
0.1 BOD/Person/Day (Lbs)  
0.5 BOD/HH/Day (Lbs)  
0.5 Total BOD/Day (Lbs)  
5.9 Required Cross Sectional Area (SF using Darcy's)  
10.0 Required Cell Cross Sectional Area (SF per 0.05 Lb BOD/SF)  
7.9 Average Required Cross Sectional Area (SF)

Cell Design:

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- 1 Number of Cells
- 1.5 Average Depth/Cell (Ft)
- 7.9 Required Average Cross Sectional Area per Cell (SF)
- 5.3 Required Cell Width - Min>(FT)
- 10.0 DESIGN CELL WIDTH (FT)
- 0.0515 Hydraulic Loading Criteria (Ft/D) MODIFIED FOR 50%
- 973.5 Required Total Cell Bottom Area for Hydraulic Loading (SF)
- 973.5 Required Cell Bottom Area per Cell (SF)
- 97.3 Required Cell Length (FT)
- 30.0 DESIGN CELL LENGTH (FT)
- 300.0 BOTTOM AREA / CELL
- 300.0 TOTAL BOTTOM AREA (SQ.FT.)
- 450.0 TOTAL VOLUME (CU.FT.)

Retention Time:

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- 450 Total Cell Volume (CF)
- 28 Percent Voids
- 126.0 Total Cell Voids (CF)
- 50.1 Total CF/Day
- 2.5 Retention Time (Days)

Cell ET (evapotranspiration):

- 14.19 Annual Rainfall (Inches/Yr)
- 53.03 Lake Evaporation (Inches/Yr)
- 50.1 Average Daily Flow (CF/Day)
- 300.0 Total Cell Bottom Area (SF)
- 38.84 Net Water Reduction from Cells (Inches/Yr)
- 2.7 Average Daily Water Reduction from Cells (CF/Day)
- 47.5 Average Daily Excess Water for Disposal (CF/Day)

Month	Rainfall, In/Mo	Lake Evap, In/Mo	Cell Net Removal, In/Mo	Cell Net Removal, CF/Mo	Cell Net Inflow, CF/Mo	Cell Net Excess, CF/Mo
January	0.80	1.61	0.81	20.2	1,554.1	1,533.9
February	0.55	2.27	1.72	43.0	1,416.3	1,373.3
March	0.58	3.66	3.08	77.0	1,554.1	1,477.1
April	0.22	4.83	4.61	115.3	1,504.0	1,388.8
May	0.35	6.60	6.25	156.2	1,554.1	1,397.9
June	0.77	7.25	6.48	162.0	1,504.0	1,342.0
July	3.21	7.25	4.04	101.0	1,554.1	1,453.1
August	3.10	6.60	3.50	87.5	1,554.1	1,466.6
September	2.00	5.05	3.05	76.3	1,504.0	1,427.8
October	1.20	3.88	2.68	67.0	1,554.1	1,487.1
November	0.53	2.42	1.89	47.3	1,554.1	1,506.9
December	0.88	1.61	0.73	18.2	1,554.1	1,535.9
Yearly Total	14.19	53.03	38.84	921.0	18,561.5	17,390.5

Nitrogen Loading:

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- 375.0 Total Hydraulic Load (Gal/Day )
  - 50.1 Total Hydraulic Load (CF/Day)
  - 1,417.5 Total Hydraulic Load (Liters/Day)
  - 40 Incoming Nitrogen Concentration (MG/Liter)
  - 13 Outgoing Nitrogen Concentration (MG/Liter) Assumes 42% Removed by Cattail:
  - 18.14 Outgoing Nitrogen Load (Grams/Day)
  - 0.04 Outgoing Nitrogen Load (Lbs/Day)
  - 14.60 Outgoing Nitrogen Load (Lbs/Year)
  - 200.00 ALLOWABLE DISCHARGE/ACRE
  - 0.07 REQUIRED DISCHARGE ACREAGE
  - 3180 REQUIRED DISCHARGE AREA (SQ.FT.)
  
  - 40 Incoming Nitrogen Concentration (MG/Liter)
  - 40 Outgoing Nitrogen Concentration (MG/Liter) Assumes NONE REMOVED
  - 56.70 Outgoing Nitrogen Load (Grams/Day)
  - 0.13 Outgoing Nitrogen Load (Lbs/Day)
  - 45.63 Outgoing Nitrogen Load (Lbs/Year)
  - 200.00 ALLOWABLE DISCHARGE/ACRE
  - 0.23 REQUIRED DISCHARGE ACREAGE
  - 9937 REQUIRED DISCHARGE AREA (SQ.FT.)