Lincoln-Lancaster County Health Department
Environmental Public Health Division
3140 N Street • Lincoln NE 68510-1514
Phone: 402-441-8643

AUG 05 2014

A

Permit Number
HS000943

Onsite Wastewater Treatment System
Request for Site Clearance and Permit

Include Form B and C. Submit correct fee with this Application

3 acres or more required for: ☐ Septic System ☐ Lagoon ☒ Other (Refer to Form C)

The undersigned hereby requests site clearance and permit to construct a Wastewater Treatment System in conformance with appropriate regulations.

PLEASE PRINT OR TYPE

A. Onsite System Location

Address 1300 Olive Creek Rd City Martell , NE Zip 68404
(no rural route)

Legal Description 12 7 6 8
1/4 1/4 Section Township Range Subdivison Addition Block Lot

PID 07-12-300-002-000

B. Owner

Name Judy + Jay Fitzgerald Signature

Address 1300 Olive Creek Rd City/State/Zip Martell NE 68404

Home Phone Work Phone

C. Certified Installer

Name: Jason Kubik Signature

Address 105 Locust St City/State/Zip Hickman NE 68372

Work Phone

D. Engineer

☒ Check and complete if engineer designed system P.E. License Number:

Designer Name Jeremy Williams Firm Design Associates Work Phone

E. This system will serve a

☒ Residential Dwelling Number of Bedrooms 5 Whirlpool Bathtub? ☐ Yes ☐ No Total Acres 1.05
Garbage Grinder? ☐ Yes ☐ No

☐ Commercial Establishment/Other Facility Specify Design flow in gallons per day

Type of Wastewater ☐ Domestic ☐ Non-Domestic

DO NOT WRITE BELOW THIS LINE

Approval Process ☐ Municipal Code 24.38 ☐ County Resolution No. 02-30

1. Health Department ACTION ☐ Approved ☐ Disapproved
Site visits Date rec'd Signature
Date frwd
Comments

2. Supt. Bldg. Insp. or Village Clerk ACTION ☐ Approved ☐ Disapproved
Comments Date rec'd Signature
Date frwd

3. City or County Engineer ACTION ☐ Approved ☐ Disapproved
Comments Date rec'd Signature
Date frwd

Installation Final Written Approval
By
Date

Business Office Use Only
Date Received 8-5-14 Amount Paid 365.00
Received By SB Cash/Check No. CK. 2119

White - Health Department Yellow - Engineer Pink - Building & Safety

Form A Updated: 1/13

Lincoln-Lancaster County Health Department
Environmental Public Health Division (402) 441-8027
3140 N Street Lincoln, Nebraska 68510-1514

ON-SITE WASTE WATER SYSTEM
CONSTRUCTION - INSTALLATION PERMIT
No. HS000943

System Type: Standard

Situs: 1300 OLIVE CREEK RD, RURAL, NE

Issued: 8/7/2014

Expires: 8/7/2015

Description: S12, T7, R6, 6th Principal Meridian, LOT 8 SW EX S33' FOR ROAD

Owner: FITZGERALD, JUDY A LIVING TRUST
1300 OLIVE CREEK RD
MARTELL, NE 68404

Judith A Halstead
Judith A. Halstead, MS, Health Director

Dear Applicant:

The above document is your permit to construct a new On-site Waste Water System at the location listed. Please contact this office once the sytem is complete in order to schedule a final inspection before use.

Judith A Halstead
Judith A. Halstead, MS
Health Director

SOUTHWICK LIQUID WASTE
105 LOCUST ST
HICKMAN, NE 68372

LINCOLN-LANCASTER COUNTY HEALTH DEPARTMENT
LAGOON/SEPTIC INSPECTION REPORT

Permit No. HS000943 Certified Installer: Engineered – Blaine Johnson

Address: 1300 Olive Creek

Circle compliance status for each item. **IN = in compliance OUT = not in compliance NA = not applicable NO = not observed**

LAGOON SETBACKS

				Item	MIN. SETBACK DISTANCE – FT. (METERS)
IN	OUT	NA	NO	Surface Wtr. Distance from Wtr. Mark	50 ft. (15.2 m)
IN	OUT	NA	NO	Private Drinking Water Wells	100 ft. (30.5 m)
IN	OUT	NA	NO	Public Drinking Water Supply Wells:	
IN	OUT	NA	NO	Non-Community	100 ft. (30.5 m)
IN	OUT	NA	NO	Community	Evaluated by a professional engineer for potential impact on the well and submitted to the Dept. for approval l if less than 1000 ft. (304.8 m)
IN	OUT	NA	NO	All Other Water Wells	100 ft. (152.4 m)
IN	OUT	NA	NO	Water Lines:	
IN	OUT	NA	NO	Pressure Main	25 ft. (7.6 m)
IN	OUT	NA	NO	Pressure-Service Connection	25 ft. (7.6 m)
IN	OUT	NA	NO	Suction Line	100 ft. (30.5 m)
IN	OUT	NA	NO	Property Lines	50 ft. (15.2 m)
IN	OUT	NA	NO	Trees and Brush	50 ft. (15.2 m)
IN	OUT	NA	NO	Foundations: (see definition above)	
IN	OUT	NA	NO	Except Neighbor's Foundation:	
IN	OUT	NA	NO	Class 1	100 ft. (30.5 m)
IN	OUT	NA	NO	Class 2	100 ft. (30.5 m)
IN	OUT	NA	NO	Class 3	50 ft. (15.2 m)
IN	OUT	NA	NO	Neighbor's Foundation:	
IN	OUT	NA	NO	Class 1	200 ft. (61.0 m)
IN	OUT	NA	NO	Class 2	200 ft. (61.0 m)
IN	OUT	NA	NO	Class 3	100 ft. (30.5 m)

COMMENTS

Lagoon Dimensions:

TANK AND SOIL ABSORPTION SYSTEM SETBACKS

				Item	MIN. SETBACK DISTANCE – FT. (METERS) Tanks	Absorption, Infiltrative & Evaporative Systems
IN	OUT	NA	NO	Surface Water	50 ft. (15.2 m)	50 ft. (15.2 m)
IN	OUT	NA	NO	Private Drinking Water Wells	50 ft. (15.2 m)	100 ft. (30.5 m)
IN	OUT	NA	NO	Public Drinking Water Supply Wells:		
IN	OUT	NA	NO	Non-Community System	50 ft. (15.2 m)	100 ft. (30.5 m)
IN	OUT	NA	NO	Community System	500 ft. (152.4 m)	500 ft. (152. 4 m)
IN	OUT	NA	NO	Community System when a septic system or soil absorption system of > 1000 gpd is proposed	500 ft. (152.4 m)	Evaluated by professional engineer for potential impact on the well and submitted to the Depart. for approval if less than 1000 ft.
IN	OUT	NA	NO	All Other Water Wells	50 ft. (15.2 m)	100 ft. (30.5 m)
IN	OUT	NA	NO	Water Lines:		
IN	OUT	NA	NO	Pressure-Main	10 ft. (3.1 m)	25 ft. (7.6 m)
IN	OUT	NA	NO	Pressure-Service – Connection	10 ft. (3.1 m)	25 ft. (7.6 m)
IN	OUT	NA	NO	Suction Lines	50 ft. (15.2 m)	100 ft. (30.5 m)
IN	OUT	NA	NO	Property Lines	5 ft. (1.5 m)	5 ft. (1.5 m)
IN	OUT	NA	NO	Parking area, driveway, sidewalk or other impermeable surface or cover	5 ft. (1.5 m)	5 ft. (1.5 m)
IN	OUT	NA	NO	Foundations: (see definitions above)		
IN	OUT	NA	NO	Except Neighbor's Foundation:		
IN	OUT	NA	NO	Class 1	15 ft. (4.6 m)	30 ft. (9.1 m)
IN	OUT	NA	NO	Class 2	10 ft. (3.1 m)	20 ft. (6.1 m)
IN	OUT	NA	NO	Class 3	7 ft. (2.1 m)	10 ft. (3.1 m)
IN	OUT	NA	NO	Neighbor's Foundation:		
IN	OUT	NA	NO	Class 1	25 ft. (7.6 m)	40 ft. (12.2 m)
IN	OUT	NA	NO	Class 2	20 ft. (6.1 m)	30 ft. (9.1 m)
IN	OUT	NA	NO	Class 3	15 ft. (4.6 m)	20 ft. (6.1 m)

COMMENTS

– System Complete + covered when inspected – visible components consistent w/ engineered plan

Septic Tank Size:

Lateral Sq. Footage:

Inspected By: Doug Ahrs **Date:** 8/12/14

SCANNED

Lincoln-Lancaster County Health Department
Environmental Public Health Division
3140 N Street • Lincoln NE 68510-1514
Phone: 402-441-8643

AUG 05 2014

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Home Phone Work Phone

C. Certified Installer

Name: Jason Kubik Signature

Address 105 Locust St City/State/Zip Hickman NE 68372

Work Phone

D. Engineer

☒ Check and complete if engineer designed system P.E. License Number:

Designer Name Jeremy Williams Firm Design Associates Work Phone

E. This system will serve a

☒ Residential Dwelling Number of Bedrooms 5 Whirlpool Bathtub? ☐ Yes ☐ No Total Acres 1.05

Garbage Grinder? ☐ Yes ☐ No

☐ Commercial Establishment/Other Facility Specify Design flow in gallons per day

Type of Wastewater ☐ Domestic ☐ Non-Domestic

DO NOT WRITE BELOW THIS LINE

Approval Process ☐ Municipal Code 24.38 ☒ County Resolution No. 02-30

1. Health Department

Site visits 8/12/14 Date rec'd 8/13/14

= System covered + compliant Date frwd 8/13/14

Comments

ACTION ☒ Approved ☐ Disapproved

Signature

2. Supt. Bldg. Insp. or Village Clerk

Comments Date rec'd

Date frwd

ACTION ☐ Approved ☐ Disapproved

Signature

3. City or County Engineer

Comments Date rec'd

Date frwd

ACTION ☐ Approved ☐ Disapproved

Signature

Installation Final Written Approval

By

Date 8/13/14

Business Office Use Only
Date Received 8-5-14 Amount Paid 365.00
Received By SB Cash/Check No. CK. 2119

White - Health Department Yellow - Engineer Pink - Building & Safety

Form A Updated: 1/13

COPY

Nebraska Department of Environmental Quality

Construction Permit No. 13OWT056

is hereby issued to

Jay Fitzgerald

for the

750 Gallon Per Day On-site Wastewater Treatment Mound System

Description:

New 1500 gallon septic tank with 1/16th inch effluent filter followed by an audio and visual alarmed 1500 gallon dosing tank equipped with a submersible pump and 2-inch force main plumbed to a center fed dual 1½- inch x 81-foot lateral line network which includes access boxes at each end and top ¼-inch diameter orifice holes with shields spaced at 3-feet on center bedded in a 12-inch thick x 7½-foot wide washed rock bed encased in clean sand and 3½-feet tall from grade to the topsoil cap.

located at

1300 Olive Creek Road
SW ¼, SW ¼, Sec. 12, T07N, R6E
Lancaster County

Pursuant to a Delegation Memorandum dated January 12, 1999, and signed by the Director, the undersigned hereby executes this document on behalf of the Director.

Signed 25 February 2014

Marty Link

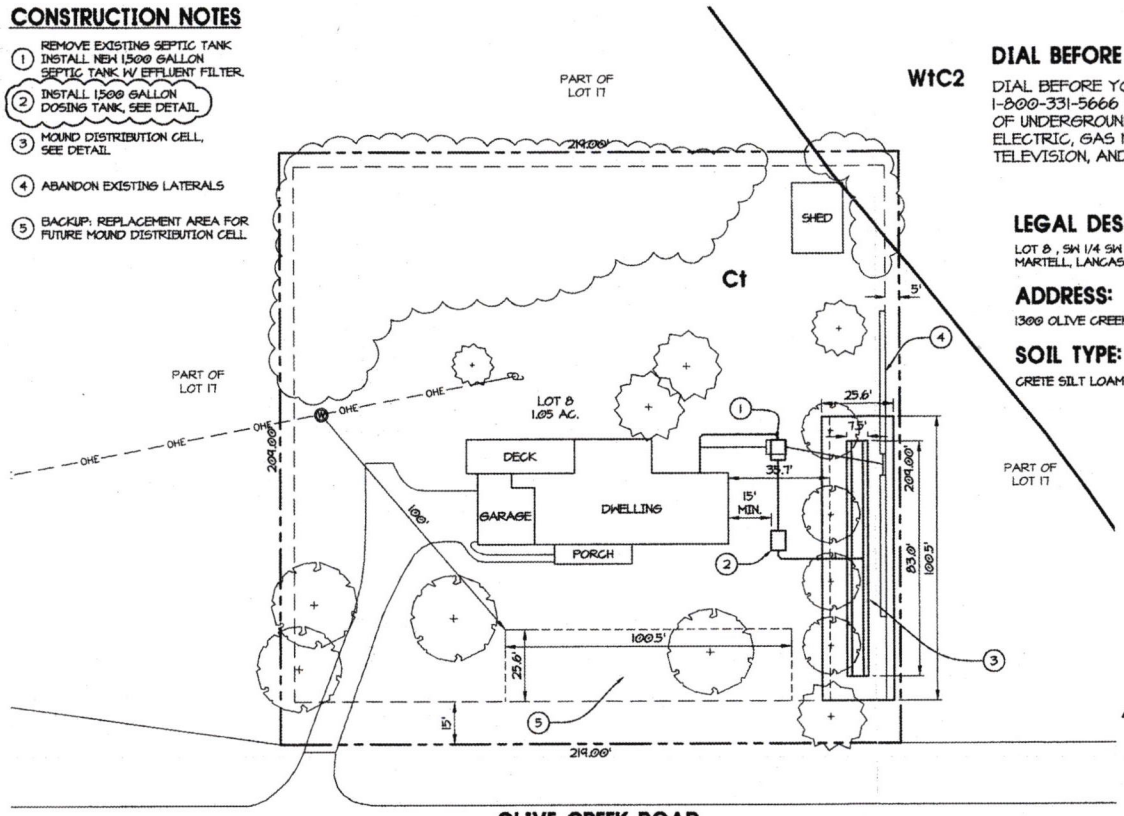
Marty Link, Acting Water Quality Division Administrator

Suite 400, The Atrium, 1200 "N" Street, P. O. Box 98922, Lincoln, Nebraska, 68509-8922
Phone (402) 471-2186, Fax (402) 471-2909, e-mail Pubinfo@mail.deq.state.ne.us

20140004333

CONSTRUCTION NOTES

1. REMOVE EXISTING SEPTIC TANK INSTALL NEW 1,500 GALLON SEPTIC TANK W/ EFFLUENT FILTER.
2. INSTALL 1,500 GALLON DOSING TANK, SEE DETAIL
3. MOUND DISTRIBUTION CELL, SEE DETAIL
4. ABANDON EXISTING LATERALS
5. BACKUP: REPLACEMENT AREA FOR FUTURE MOUND DISTRIBUTION CELL



SITE PLAN
SCALE: 1" = 30'

DIAL BEFORE YOU DIG

DIAL BEFORE YOU DIG. CALL 1-800-331-5666 FOR LOCATION OF UNDERGROUND TELEPHONE, ELECTRIC, GAS MAINS, CABLE TELEVISION, AND CITY UTILITIES.

LEGAL DESCRIPTION:

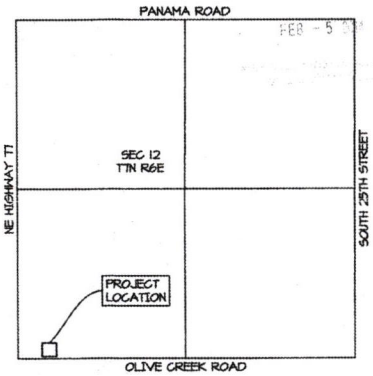
LOT 8 , SW 1/4 SW 1/4 SECTION 12 T7N R6E MARTELL, LANCASTER COUNTY, NEBRASKA

ADDRESS:

1300 OLIVE CREEK ROAD

SOIL TYPE:

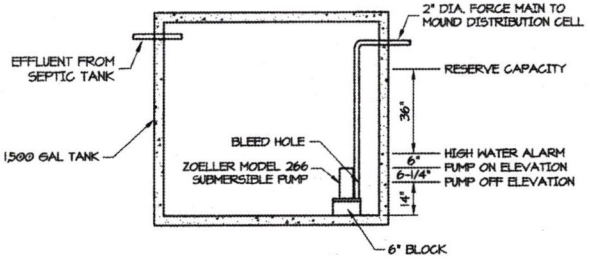
CRETE SILT LOAM (Ct)



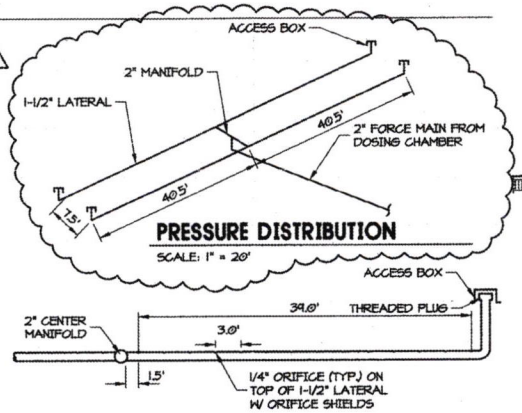
VICINITY MAP
NOT TO SCALE

GENERAL NOTES:

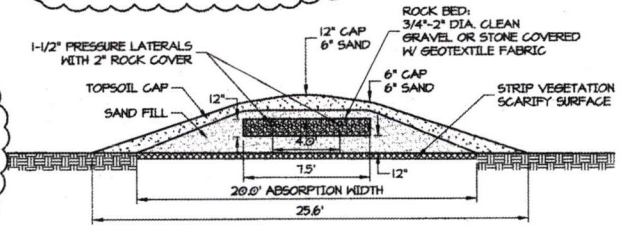
1. ALL WORK SHALL CONFORM TO TITLE 124 - NEBRASKA DEPARTMENT OF ENVIRONMENTAL QUALITY, RULES AND REGULATIONS FOR THE DESIGN, OPERATIONS AND MAINTENANCE OF WASTEWATER ON-SITE WASTEWATER TREATMENT SYSTEMS.
2. THE ON-SITE WASTEWATER TREATMENT SYSTEM SHALL BE INSTALLED BY A CERTIFIED ON-SITE WASTEWATER PROFESSIONAL.
3. ALL GRAVITY DISTRIBUTION LINES SHALL BE 4" PVC, SCHEDULE 40 AND SHALL HAVE A GRADE OF NOT LESS THAN 1/8" PER FOOT. ALL LINES SHALL BE EQUIPPED WITH CLEAN-OUTS WITH TIGHT FITTING CAPS, AT EVERY SEVENTY-FIVE FEET OR LESS, OR WHERE ANGLES GREATER THAN 45 DEGREES ARE ENCOUNTERED.
4. ALL PRESSURE DISTRIBUTION LINES SHALL BE PVC, SDR-26 OR APPROVED EQUIVALENT.
5. DOSING PUMP SHALL BE A ZOELLER MODEL 266 OR APPROVED EQUIVALENT. PUMP SHALL BE RATED FOR 45 GPM AND 13.5 TOTAL DYNAMIC HEAD.
6. THE EFFLUENT FILTER IN THE SEPTIC TANK SHALL HAVE MAXIMUM OPENINGS OF ONE-SIXTEENTH INCH.
7. THE PUMP CONTROL PANEL SHALL INCLUDE EXTERNALLY MOUNTED VISIBLE AND AUDIBLE ALARMS.
8. THE PUMP ELECTRICAL POWER SHALL BE PROVIDED ON A SEPERATE ELECTRICAL CIRCUIT THAT THAT OF THE ALARM SYSTEM.
9. THE PUMP SHALL BE RENOVABLE, AND THE LEVEL CONTROL AND ALARM SWITCHES SHALL BE LOCATED WHERE THEY ARE VISIBLE FROM THE GROUND AND ACCESSABLE FOR CLEANING AND ADJUSTMENT WITHOUT REQUIRING HUMAN ENTRY INTO THE DIOSING TANK.
10. IT IS RECOMMENDED THAT A WATER METER BE INSTALLED ON THE WATER SUPPLY LINE SO THAT THE OWNER CAN MONITOR WATER USAGE AND ENSURE THAT NO MORE THAN 750 GALLONS PER DAY IS BEING USED.



DOSING CHAMBER
SCALE: 1" = 3'



1-1/2" LATERAL
SCALE: 1" = 10'



MOUND CROSS SECTION
SCALE: 1" = 5'

Pollution Control Project
130WT056
APPROVED
Nebraska DEQ
2-25-2014

PROFESSIONAL CIVIL ENGINEER
JEREMY WILLIAMS
E-10277
STATE OF NEBRASKA

FEB - 5

12 NOV 2013
4 FEB 14

1300 OLIVE CREEK ROAD
ONSITE WASTEWATER TREATMENT SYSTEM
MARTELL, NEBRASKA

SITE PLAN

Design Associates
ARCHITECTS • ENGINEERS • PLANNERS
PERSHING SQUARE, 1908 "K" STREET LINCOLN, NEBRASKA, 68508
Voice 402-474-3000 office@DesAssLincoln.com Fax 402-474-4045

1 OF 1

MOUND DESIGN SPREADSHEET
(For Flows up to 1200 gpd)

RECEIVED
NOV 13 2013
Nebraska Dept of Environmental Quality
By: DREW 005

Legend

	Indicates value to be enterd by the user
	Indicates value to be calculated by program

A. FLOW

Enter Number of Bedrooms	5
Total Sewage Flow (gallons per day)	750 gpd

B. SEPTIC TANK LIQUID VOLUMES

Enter Septic Tank Volume (gallons)	1,500 g

C. SOILS

1. Enter Depth to restricting Layer (inches)	36 in
2. Enter Depth of Percolation Tests (inches)	36 in
3. Enter Percolation Rate (minutes per inch)	60 mpi
4. Enter Land Slope (%)	0.5 %

D. ROCK LAYER DIMENSIONS

1. Enter number of rock layers	1
2. Required Area of Rock Layer	622.5 ft^2
3. Enter width of Rock Layer (10 feet or less)	7.50 ft
4. Length of Rock Layer	83 ft

Rock Bed



Width = 7.5 ft

Length = 83 ft

E. ROCK VOLUME

1. Rock Volume	23.05556 yd^3
2. Rock Weight	32.27778 tons

Pollution Control Project
130WT056 DHB
APPROVED
Nebraska DEQ
2-25-2014

F. ADSORPTION WIDTH

1. Percolation rate	60 mpi
2. Enter Allowable Soil Loading Rate (from Table 1)	0.45 gpd/ft^2
3. Adsorption Width Ratio	2.666667
4. Required Adsorption Width	20 ft

Table 1

Percolation Rate	Soil Texture	gal/day/ft^2	Rockbed width absorption width
>0.1	Coarse Sand	1.2	1
0.1 to 5	Sand	1.2	1
0.1 to 5	Fine Sand*	0.6	2
6 to 15	Sandy Loam	0.79	1.52
16 to 30	Loam	0.6	2
31 to 45	Silt Loam	0.5	2.4
46 to 60	Clay Loam	0.45	2.67
61 to 120	Clay	0.24	5
< 120	Clay	--	--

* Soil having 50% or more of fine or very fine sand

PROFESSIONAL CIVIL ENGINEER
JEREMY J. WILLIAMS
E-10521
STATE OF NEBRASKA
11/13

20130073086

G. DOWNSLOPE DIKE WIDTH

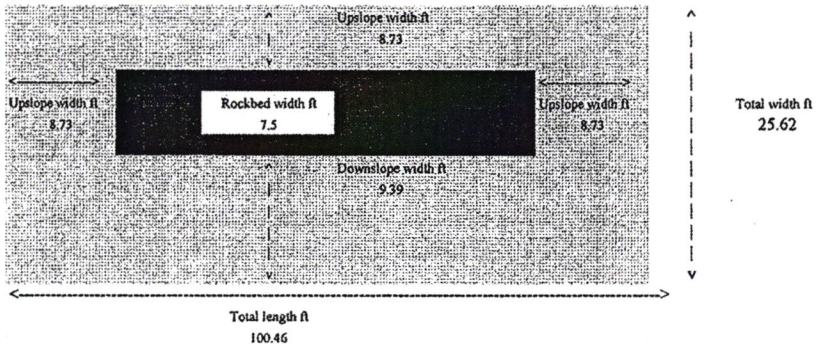
1. If landslope is **1.0% or less** adsorption width includes both upslope and downslope widths
2. Calculate Minimum mouns size:

a. Enter depth of sand fill at upslope edge of rock layer	1.00 ft	
b. Slope difference	0.04 ft	
c. Mound height at upslope edge of rock layer	3.00 ft	
d. Enter upslope dike multiplier (from Table 2)	2.91	
e. Upslope dike width	8.73 ft	
f. Downslope height	3.04 ft	
g. Enter downslope dike multiplier (from Table 2)	3.09	
h. Downslope dike width	9.39 ft	
i. Minimum mound width	25.62 ft	
j. Additional required width (ignore if < 0)	-5.62 ft	
k. Minimum required mound width	25.62 ft	use this for mound width
l. Minimum Required mound length	100.46 ft	

Table 2

	Downslope					Upslope					
	3:1	4:1	5:1	6:1	7:1	3:1	4:1	5:1	6:1	7:1	8:1
% slope											
0	3	4	5	6	7	3	4	5	6	7	8
1	3.09	4.17	5.26	6.38	7.53	2.91	3.85	4.76	5.66	6.54	7.41
2	3.19	4.35	5.56	6.82	8.14	2.83	3.7	4.54	5.36	6.14	6.9
3	3.3	4.54	5.88	7.32	8.86	2.75	3.57	4.35	5.08	5.79	6.45
4	3.41	4.76	6.25	7.89	9.72	2.68	3.45	4.17	4.84	5.46	6.06
5	3.53	5	6.67	8.57	10.77	2.61	3.33	4	4.62	5.19	5.71
6	3.66	5.26	7.14	9.38	12.07	2.54	3.23	3.85	4.41	4.93	5.41
7	3.8	5.56	7.69	10.34	13.73	2.48	3.12	3.7	4.23	4.7	5.13
8	3.95	5.88	8.33	11.54	15.91	2.42	3.03	3.57	4.05	4.49	4.88
9	4.11	6.25	9.09	13.04	18.92	2.36	2.94	3.45	3.9	4.3	4.65
10	4.29	6.67	10	15	23.33	2.31	2.86	3.33	3.75	4.12	4.44
11	4.48	7.14	11.11	17.65	30.43	2.26	2.78	3.23	3.61	3.95	4.26
12	4.69	7.69	12.5	21.43	43.75	2.21	2.7	3.12	3.49	3.8	4.08

Note: The product of the multiplier and the height results in the horizontal distance to where the berm meets the original landslope. Example: Height at upper edge of rock layer is 3 feet, rock layer is 10 feet wide, land slope is 6% and berm slope ratio is 4:1. Upslope berm width is 3.23*3.0 = 9.7 ft; height at lower edge of rock layer is 3.0 + 10 * 0.6 = 3.6 feet, and downslope berm width is 5.26*3.6 = 18.9 ft.





PRESSURE DISTRIBUTION SYSTEM

1. Enter number of perforated laterlas	2
2. Enter perforation spacing	3 ft
3. Number of spaces between perforations	27
4. Number of perforations per lateral	28
5. Total number of perforations	56
6. Enter required perforation discharge (Table 3)	0.74
7. Required flow rate	41.44 gpm

8. If laterals are connected to header pipe, to select minimum required lateral diameter, enter Table 4 with perforation spacing and number of perforations per lateral. Select minimum diameter diameter for perforated lateral = in

9. If perforated lateral system is attached to manifold pipe near the center, perforated lateral length and number of perforations per per lateral will be approximately one half of that in step 8. Using these values, select minimum diameter for perforated lateral = 1.5 in

Table 3

Required perforation discharge (gpm)

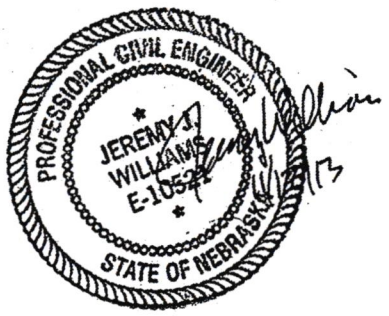
Head	Perforation Diameter (in)	
	7/32	1/4
1a	0.56	0.74
1.5	0.69	0.9
2b	0.8	1.04
2.5	0.89	1.17
3	0.98	1.28
4	1.13	1.47
5	1.26	1.65

a use 1.0 foot head for residentail systems
b use 2.o foot head for other establishments

Table 4

Maximum number of 1/4 inch perforations to guarantee < 10% discharge variation

spacing	1 1/4	1 1/2	2
2.5	14	18	28
3	13	17	26
3.3	12	16	25
4	11	15	23
5	10	14	22



SIZING OF PUMPING STATION

1. Determine shape of pumping station		
a. If rectangular enter 1, if circular enter 2		1
b. If rectangular enter length and width	L =	7.5 ft
	W =	4.5 ft
c. If circular enter radius	R =	ft
d. Surface area of station		33.75 ft^2
e. Gallons per inch		21.09 gal/inch
3. Enter pump height		12 in
4. Gallons to cover pump		295.3125 gal
5. Total pumpout volume		
a. Enter pump operations per day		6
b. Gallons per dose		125.00 gal per dose
c. Enter pipe length (from pump station to mound)		34 ft
d. Enter liquid volume of pipe per 100 ft (see Table 5)		17.43 gal per 100 ft
e. Drainback quantity		5.9262 gal
f. Total pump out volume		130.9262 gal
6. Volume for alarm (6")		126.5625 gal
7. Reserve capacity		750.00 gal
8. Total gallons		1302.801 gal
9. Total depth		61.76 inch
10. Float separation distance		6.21 inch

Table 5

Pipe Diameter	gal/100 ft
1	4.49
1.25	7.77
1.5	10.58
2	17.43
2.5	24.87
3	38.4
4	66.1

v	reserve capacity
v	alarm
v	pump on
v	pump off
	pump height



PUMP SELECTION PROCEDURE

a. Enter number of perforated laterlas	2
b. Enter perforation spacing	3 ft
c. Number of spaces between perforations	27
d. Number of perforations per lateral	28
e. Total number of perforations	56
f. Enter required perforation discharge (Table 3)	0.74
g. Required flow rate	41.44 gpm
SELECT PUMP CAPACITY	45 gpm

DETERMINE HEAD REQUIREMENTS

1. Enter rise between pump & point of discharge	7 ft
2. If pumping to a pressure system, 5 feet for pressure feet for required at manifold, if gravity system enter 0	5 ft

3. Friction loss

a. Enter friction loss (see Table 6)	3.28 ft/100 ft pipe
b. Equivalent pipe length	42.5 ft
c. Total friction loss	1.39 ft

4. Total head required	13.39 ft

5. Pump selection criteria:

Capacity =	45 gpm
Total head =	13.39 ft

6. Enter pump model selected	Zoeller model 266

Table 6

	1.5 in	2.0 in	3.0 in
gpm	Friction loss per 100 ft of pipe		
10	0.69	0.2	
12	0.96	0.28	
14	1.28	0.38	
16	1.63	0.48	
18	2.03	0.6	
20	2.47	0.73	0.11
25	3.73	1.11	0.16
30	5.23	1.55	0.23
35	7.9	2.06	0.3
40	11.07	2.64	0.39
45	14.73	3.28	0.48
50		3.99	0.58
55		4.76	0.7
60		5.6	0.82

