# PERMIT APPROVAL SPECIFICATIONS

**Sanders County Environmental Health Department**
**1111 Main St. Thompson Falls, MT, 59873 * 406.827.6961**

Owner information:

| | |
|---|---|
| Jason Van Voast | 9 26N 33W |
| Name | S T R |
| 2500 Irvine Flats | 7/01/05 |
| Mailing address | Date Submitted |
| Polson, MT 59860 | 7/11/05 |
| City | Date Approved |
| 06-11 | 7/11/06 |
| Permit Number | Expiration Date |

Permit Specifications:

This permit is approved with the following specifications:

1000 size of septic tank

125 lineal feet of drainfield

(250 square feet of drainfield)

List design specifications:

**Install a Standard Absorption Trench System. Remember to keep the trenches no deeper than 24 inches. Install laterals in 2 trenches, each trench 62.5 feet in length and 2 feet wide. Please follow all county wastewater regulations & the state regulations as outlined in Circular DEQ 4 2002 edition. Install the system exactly as per approved lot layout. Pre-notification is mandatory before backfilling system.**

Barbara Woodbury RS

Sanders County Sanitarian

8/15/05 Jim Wist called Inspections OK 2 lots @ 47 ft - BW

**AS-BUILT SKETCH**
**AND**
**STATEMENT OF ACCURACY OF INSTALLATION**

Land owner's name JASON VAN VOAST

Permit number 06-11

I, JIM HILT, as the licensed installer or landowner for the following system have constructed or altered the septic system on the parcel referenced by the permit number above.

I do hereby declare that the EXACT specifications of the approved permit have been followed. Accompanying this statement is a copy of the county approved lot layout and my as-built sketch. My as-built sketch is included on another sheet of paper. **I understand that it is my responsibility to submit the above within 10 days of the completion of the system.**

Installer's Signature Jim Hilt

Installer's License Number LINX02

Completion Date of System 8-19-05

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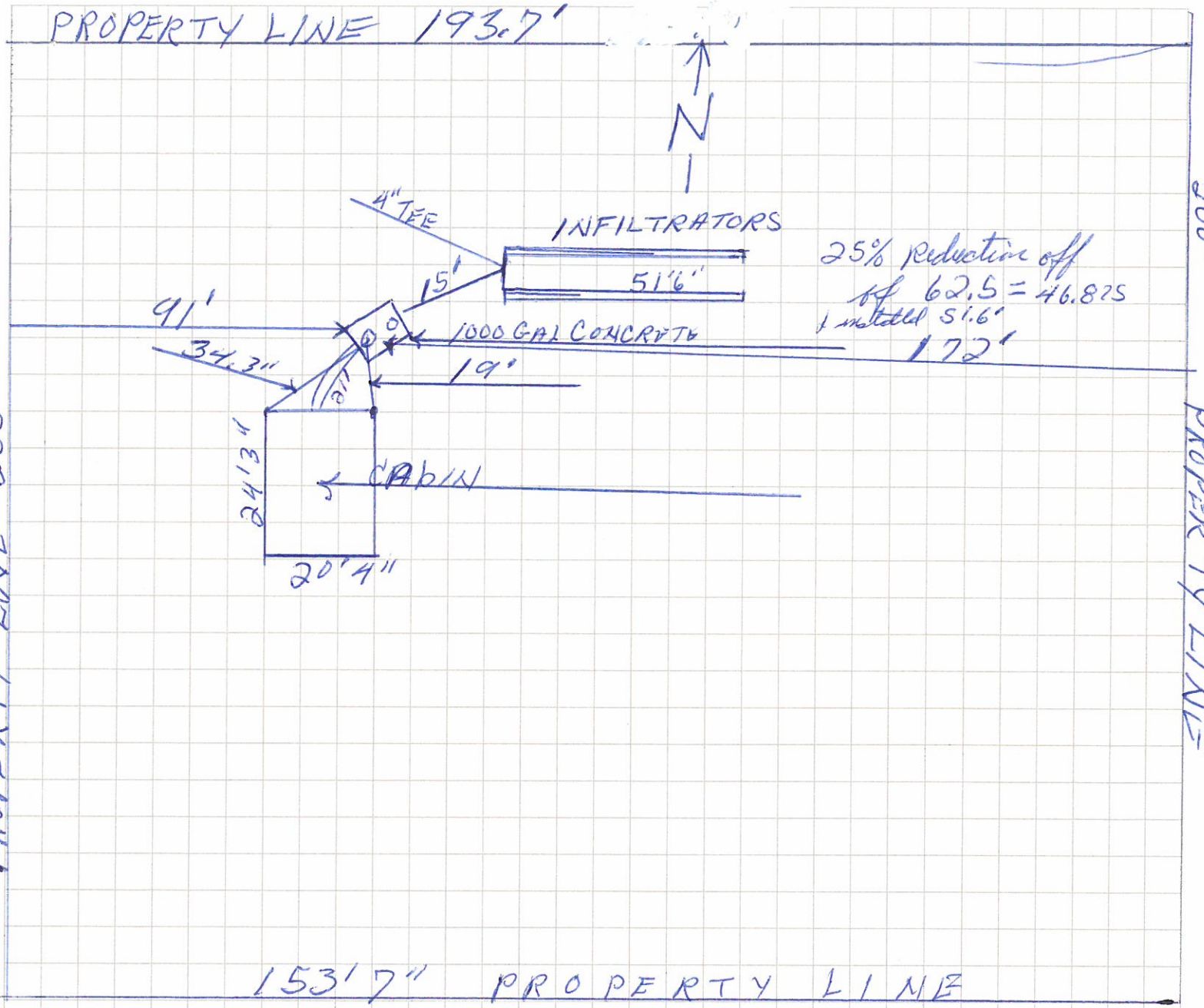
Checklist of as-built sketch:

- ✓ North Arrow
- ✓ Triangular measurements from two corners of house to tank access lid
- ✓ Measurement of pipe from tank to D-box or manifold
- ✓ **All parcel boundaries**
- ✓ Distance between the system and at least two parcel boundaries

Additional information needed (fill the blanks in with quantitative data):

51.6 length of drainfield laterals Infiltrator
2 number of drainfield laterals
1000 volume of septic tank

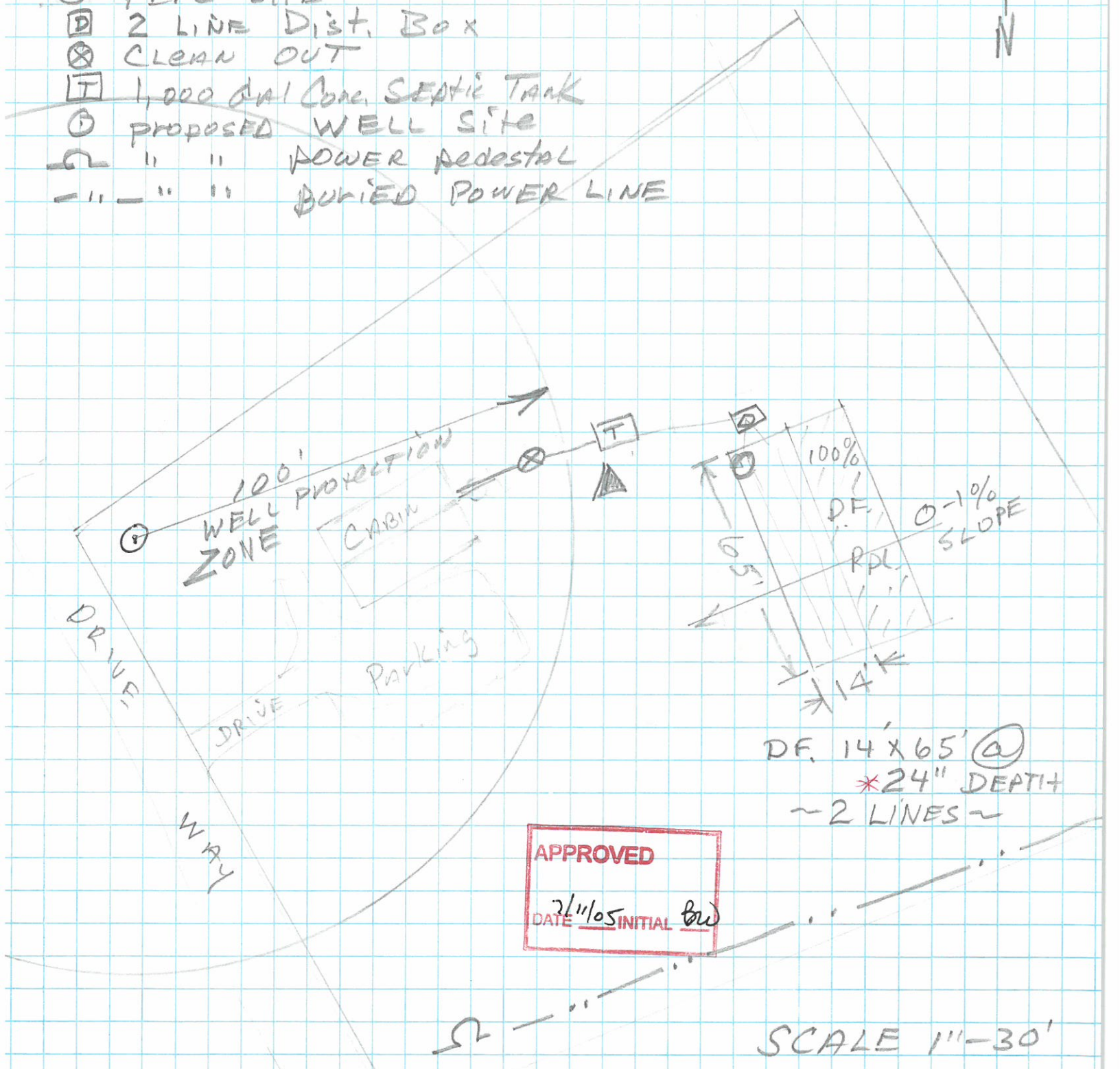



As Built

APPROVED
8/31/05 INITIAL

LEGEND

- SOIL PROFILE
- PERC SITE
- 2 LINE DIST. BOX
- CLEAN OUT
- 1,000 GAL CONC. SEPTIC TANK
- PROPOSED WELL SITE
- " " POWER PEDESTAL
- " " " BURIED POWER LINE




D.F. 14 X 65' @ *24" DEPTH
~2 LINES~

APPROVED
DATE 7/11/05 INITIAL BW

SCALE 1"=30'

S.H. BABB
L&E. NX20
6/24/05

**MONTANA DEPARTMENT OF ENVIRONMENTAL QUALITY**
**PERCOLATION TEST FORM**

Owner Name JASON VAN VOAST

Project Name 1 Room CABIN

Lot of Tract Number _____ Test Number 1

Diameter of Test Hole 6" Depth of Test Hole 24"

Date and Time Soak Period Began 5:42A 5/31/05 Ended 6:22A 5/31/05

Date Test Began 5/31/05

Distance of the reference point above the bottom of the hole 24 3/4" (BOARD)

**Test Results**

| Start Time of Day | End Time of Day | Time Interval (Minutes) | Initial Distance Below Reference Point | Final Distance Below Reference Point | Drop in Water Level (inches) | Percolation Rate (minutes/inch) |
|---|---|---|---|---|---|---|
| 6:22 | 6:32 | 10 | 18 3/4" | 21 3/4" | 3 | 3.3 |
| 6:32 | 6:44 | 12 | 18 3/4 | 22" | 3 1/4" | 3.6 |
| 6:44 | 6:54 | 10 | 18 3/4" | 21 1/4 | 2 1/2 | 4.0 |
| 6:54 | 7:04 | 10 | 18 3/4" | 21 1/8" | 2 3/8" | 4.2 |
| 7:04 | 7:14 | 10 | 18 3/4" | 21" | 2 1/4 | 4.4 |
| 7:14 | 7:24 | 10 | 18 3/4" | 21" | 2 1/4 | 4.4 |
| | | | | | | |
| | | | | | | |

I certify that this percolation test was done in accordance with DEQ-4, Appendix A. 4:4 MPI

Steven H. BABB — Name (printed)

Signature

6/7/05 — Date

LSE NX 20 — Company

# NITRATE ANALYSIS EQUATION

Project No. Van Voast
Date 6/24/05
By S 14, T3AR13

Tract or Lot No. 10

## VARIABLES

| | | | |
|---|---|---|---|
| K = | 50,134 | ft/day | Hydraulic conductivity 250÷.1=2500 x1500 = 3,750,000 ÷ 7.48 = 501,337. ÷ 10 = 50,134 |
| i = | .026 | ft/ft | Hydraulic gradient |
| d = | 16.4 | ft. | Mixing zone thickness (standard is 16.4 ft; site (source) specific can be less) |
| w = | 65 | ft. | Width of primary drainfield (measured perpendicular to ground-water flow direction) |
| l = | 100 | ft. | Length of mixing zone |
| $N_g$ = | .07 | ppm | Nitrate (as nitrogen) in background groundwater |
| $N_r$ = | 1.0 | ppm | Nitrate (as nitrogen) in recharge water |
| $N_e$ = | 50 | ppm | Nitrate (as nitrogen) in drainfield effluent (50 ppm for standard drainfield; 24 ppm for level II treatment) |
| f = | 1 | | No. of single family homes using treatment system |
| $Q_f$ = | 26.7 | $ft^3$/day | Effluent discharge (default is 26.7* for single family home) |
| p = | .01 | ft/day** | Precipitation (based on local average) |
| I = | 0.20 | | Percent of precipitation that reaches groundwater (0.10 for slopes >15%) |

## EQUATIONS

| | | | | | |
|---|---|---|---|---|---|
| W | = | (0.175)(l)+w | = 82.5 | ft | Mixing zone width at downgradient end of mixing zone |
| $A_m$ | = | (W)(d) | = 1,066 | $ft^2$ | Mixing zone area |
| $A_s$ | = | (W)(l) | = 6500 | $ft^2$ | Mixing zone surface area |
| $Q_g$ | = | (K)(i)($A_m$) | = 1,389,513 | $ft^3$/day | Groundwater volumetric rate |
| $Q_r$ | = | ($A_s$)(p)(I) | = 13 | $ft^3$/day | Precipitation volumetric rate |
| $Q_e$ | = | (f)($Q_f$) | = 26.7 | $ft^3$/day | Effluent volumetric rate |
| $Q_t$ | = | $Q_g + Q_r + Q_e$ | = 1,389,552 | $ft^3$/day | Total water volumetric rate |

80
75

$$N_t = \frac{(N_g)(Q_g) + (N_r)(Q_r) + (N_e)(Q_e)}{Q_t}$$

97,265 + 13 + 1335 = 98,614 ÷ 1,389,513

**Nitrate (as nitrogen) concentration at end of mixing zone.**

= .07 ppm **(with standard drainfield)**

**or**

= _____ ppm **(with level II treatment)**

Looks OK BW

## NOTES:

* 26.7 $ft^3$/day is equal to 200 gallons per day.

** Multiply precipitation rate in inches/year by conversion factor of 0.00023 to get precipitation in ft/day.

# MONTANA DEPARTMENT OF ENVIRONMENTAL QUALITY

## PHOSPHOROUS BREAKTHROUGH ANALYSIS

**SITE NAME:** Van Voast
**COUNTY:** Sanders
**LOT #:** 10
**NOTES:**

| VARIABLES | DESCRIPTION | VALUE | UNITS |
|---|---|---|---|
| Lg | Length of Primary Drainfield as Measured Perpendicular to Ground Water Flow | 65 | ft |
| L | Length of Primary Drainfield's Long Axis | 65 | ft |
| W | Width of Primary Drainfield's Short Axis | 14 | ft |
| B | Depth to Ground Water from Bottom of Drainfield Laterals* | 6' | ft |
| D | Distance from Drainfield to Surface Water | 700' | ft |
| T | Phosphorous Mixing Depth in Ground Water (0.5 ft for coarse soils; 1.0 ft for fine soils)** | .5 | ft |
| Sw | Soil Weight (usually constant) | 100.0 | lb/ft3 |
| Pa | Phosphorous Adsorption Capacity of Soil (usually constant) | 200.0 | ppm |
| #l | Number of Single Family Homes on the Drainfield | 1 | |

**CONSTANTS**

| | | | |
|---|---|---|---|
| Pl | Phosphorous Load per Single Family Home (constant) | 6.44 | lbs/yr |
| X | Conversion Factor for ppm to percentage | 1.0E+06 | |

**EQUATIONS**

| | | | |
|---|---|---|---|
| Pt | Total Phosphorous Load = (Pl)(#l) | 6.44 | lbs/yr |
| W1 | Soil Weight under Drainfield = (L)(W)(B)(Sw) | 546,000 | lbs |
| W2 | Soil Weight from Drainfield to Surface Water = (Lg)(D)(T)(Sw) | 2,275,000 | lbs |
| P | Total Phosphorous Adsorption by Soils = (W1 + W2)((Pa)/(X)) | ~~564~~ 564.2 | lbs |

**SOLUTION**

| | | | |
|---|---|---|---|
| BT | **Breakthrough Time to Surface Water = P / Pt** | 87.6 | **years** |

BY: S.M.B ABB
DATE: 6/24/05

Looks OK BW

***NOTES:*** ** Depth to shallow water is typically based on depth to water in a test pit or bottom of a dry test pit minus two feet to account for burial depth of standard drainfield laterals.*
*** Material type is usually based on test pit. A soil that contains more than 35% silt and clay sized particles is considered fine grained.*

Revised checklist for non-deg review — Rev 8-10-99

1. Well log

| | | | |
|---|---|---|---|
| 250 | A. | Q=pumping rate | (N=Q) |
| .1 | B. | s=drawdown (SWL-PWL) | (N=s) |
| 1500 | C. | Confined (2000) vs. Unconfined (1500) | (N=factor) |
| 10 | D. | Aquifer thickness | (N=B) |

2. Review site eval-soils

| | | | |
|---|---|---|---|
| 8' | A. | Depth of soil profile | (P=B) |
| .5 | B. | Soil type (1.0 fine; 0.5 coarse) | (P=T) |

3. Lot layout

| | | | |
|---|---|---|---|
| 65' | A. | Length of drainfield (Perpendicular to gw flow) | (N=w) (P=Lg,L) |
| 14' | B. | Width of drainfield | (P=W) |
| S | C. | Configuration of drainfield | |
| >100' | D. | Drainfield to surface water | (P=D) |

4. Hydraulic gradient

| | | | |
|---|---|---|---|
| ✓ | A. | How was it calculated | |
| ✓ | B. | Topo map, if required | |
| 20 | C. | Scale of topo map | |
| .026 | D. | Hydraulic gradient (conservative 0.001) | (N=i) |

5. Misc

| | | | |
|---|---|---|---|
| .07 | A. | Background nitrates | (N=Ng) |
| 100 | B. | Mixing zone | (N=L) |
| .01 | C. | Precip from chart (feet/day) | (N=P) |
| 1 | D. | Number of families on system | (N=#1) (P=#1) |

**Montana Bureau of Mines and Geology**
**Ground-Water Information Center Site Report**
**CABINET GORGE CAMPGROUND**

**Plot this site on a topographic map**

## Location Information

GWIC Id: 80049
Location (TRS): 26N 33W 09 ACAB
County (MT): SANDERS
DNRC Water Right: W130324-00
PWS Id: 02058002
Block:
Lot:
Addition:

Source of Data: LOG
Latitude (dd): 48.0281
Longitude (dd): -115.8489
Geomethod: MAP
Datum: NAD27
Altitude (feet): 2290.00
Certificate of Survey:
Type of Site: WELL

## Well Construction and Performance Data

Total Depth (ft): 315.00
Static Water Level (ft): 50.00
Pumping Water Level (ft): 50.00
Yield (gpm): 250.00
Test Type:
Test Duration: 16.00
Drill Stem Setting (ft):
Recovery Water Level (ft):
Recovery Time (hrs):
Well Notes:

How Drilled: ROTARY
Driller's Name: DEMMING
Driller License:
Completion Date (m/d/y): 1/1/1950
Special Conditions:
Is Well Flowing?:
Shut-In Pressure:
Geology/Aquifer: Not Reported
Well/Water Use: PUBLIC WATER SUPPLY

### Hole Diameter Information

No Hole Diameter Records currently in GWIC.

### Casing Information[1]

| From | To | Dia | Wall Thickness | Pressure Rating | Joint | Type |
|---|---|---|---|---|---|---|
| 0.0 | 0.0 | 6.0 | | | | |

### Annular Seal Information

No Seal Records currently in GWIC.

### Completion Information[1]

No Completion Records currently in GWIC.

### Lithology Information

| From | To | Description |
|---|---|---|
| 0.0 | 2.0 | TOP SOIL |
| 2.0 | 20.0 | COARSE GRAVEL |
| 20.0 | 310.0 | FINE GRAY SILT |
| 310.0 | 315.0 | COARSE GRAVEL |

[1] - All diameters reported are **inside** diameter of the casing.

# ANALYTICAL REPORT

## Montana Environmental Laboratory LLC

Van Voast Rdw.

**Prepared for:**

Steven Babb
P. O. Box 1551
Noxon, MT 59853

**ORDER#: G0504676**

**Location:** Van Voast
**PWS ID:**
**Lab ID:** 0504676-01

**Matrix:** DRINKING WATER

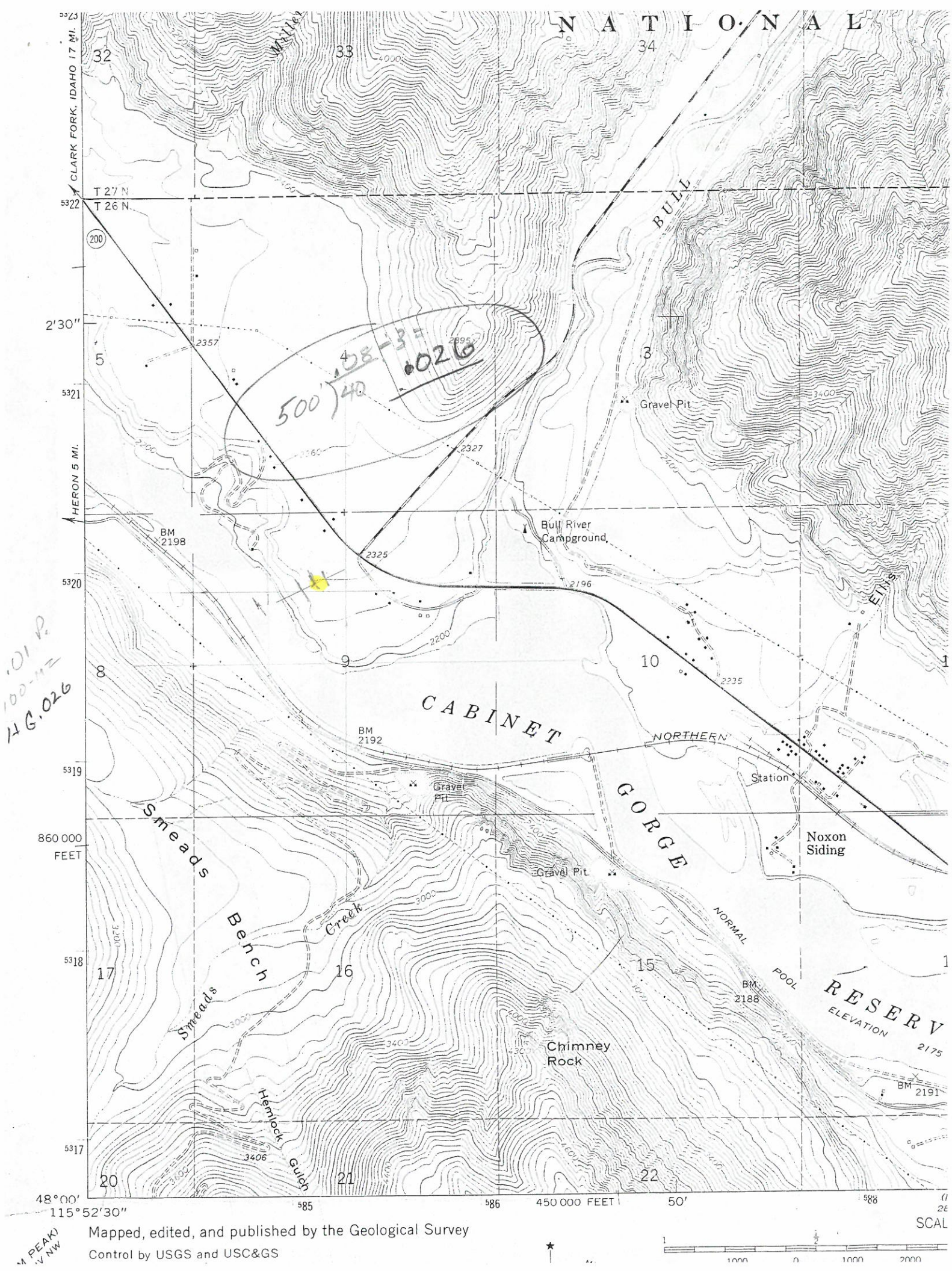
**Date Collected:** 06/09/2005
**Date Received:** 06/10/2005

*Test Parameters*

| Parameter | Result | Units | MDL | MCL | Method | Date Analyzed | Analyst |
|---|---|---|---|---|---|---|---|
| Nitrate | 0.07 | mg/L | 0.01 | 10 | 353.2 | 06/14/2005 | JWH |

MCL = Maximum Contaminant Limit
MDL = Minimum Detection Limit
ND = Not Detected
NR = Not Regulated

**MEL REVIEW:** JMC


N A T I O N A L
CLARK FORK, IDAHO 17 MI.
HERON 5 MI.
T 27 N
T 26 N
BULL
Gravel Pit
Bull River Campground
BM 2198
BM 2192
CABINET
GORGE
NORTHERN
Station
Noxon Siding
Gravel Pit
Gravel Pit
Smeads Bench
Smeads Creek
Hemlock Gulch
NORMAL POOL ELEVATION 2175
RESERV
BM 2188
BM 2191
Chimney Rock
500' 08-37 026
860 000 FEET
48°00'
115°52'30"
450 000 FEET
Mapped, edited, and published by the Geological Survey
Control by USGS and USC&GS
SCAL