

**North Dickey Lake Campground
Source Water Delineation and Assessment Report
Fortine Ranger District
Kootenai National Forest
October 3, 2003**

Public Water Supply: North Dickey Lake Campground Well (Proposed)
Lincoln County, US Hwy 93 at Dickey Lake
T34N, R25W, Sec9

Classification: Transient Non-Community

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INTRODUCTION

This Delineation and Assessment report is intended to meet the technical requirements of the Montana Source Water Protection Program and the Federal Safe Drinking Water Act amendments of 1996. Information in this report was obtained by an Engineer's physical survey and information from nearby residents, property owners and the Kootenai National Forest Geologist.

PURPOSE

The purpose of this report is to assess all current and potential contamination sources to North Dickey Lake Campground proposed new well site. Delineation is a process to identify areas that contribute water to aquifers or surface waters used for drinking water, called Source Water Protection Areas that are identified on a map. Assessment involves identifying sites in source water protection areas where contaminants may be generated, stored or transported that may be detrimental to the public water supply.

PUBLIC WATER SUPPLY HISTORY AND INFORMATION

North Dickey Campground is a developed recreation site (camping, boating, fishing and swimming) located approximately 5 miles Southeast of Fortine, Montana along US Highway 93. The current water supply source is a spring on the North side of US Highway 93 with water gravity piped from the spring to a pump house in and for the entire campground. The existing water supply is surface influenced. The proposed water supply is from a new well to be constructed in the campground with a submersible pump delivering water to the existing pump house and distribution system that will serve the seasonal campground host and recreating visitors. This new public drinking water system is classified as transient non-community because it will serve 25 or more persons per day but shall not regularly serve the same persons for more than 180 days per year. Water usage at this campground is estimated at between 1000-1500 gallons per day varying throughout the camping and swimming season.

GEOGRAPHICAL SETTING

The North Dickey Lake Campground is located lakeside in a lower valley bottom in Lincoln County between Dickey Lake and US Hwy 93. Confined aquifer recharge is believed to come from the mountains to the North. This conclusion comes from comparing the static water levels and aquifer depths of neighboring wells with each other and with the pool elevation of Dickey Lake (see attachment 3). Subdivision health reviews recorded for nearby residential subdivisions suggest this same direction of aquifer recharge. There is not exposed bedrock within the campground and near the proposed well site. A fault is mapped to exist under the campground area. Current area development consists of seasonal and permanent residential dwellings Southwest and East. All other adjacent land use is forest.

DELINEATION

From the proposed new well location, a 100-foot radius control zone and a 1 mile radius inventory zone were physically surveyed. All property within the control zone is owned and managed by the Kootenai National Forest (see attachment 1). Within this control zone, the proposed well location is 65 feet Southeast of a paved campground road and 400 feet Southwest of Dickey Lake. The campground public access and US Highway 93 are located outside of this control zone. All campground wastewater is collected in sealed vault toilets except for the host site septic tank with drainfield. There is no other on-site wastewater treatment or disposal. That is, except for the host site, all wastewater is pumped from the vaults and holding tanks and disposed of off site. The proposed well site is 110 feet Southeast from the volunteer host site 1000 gallon septic system and is 120 feet from the nearest sealed vault toilet (see attachment 2).

Dorr Skeels Campground and private development is shown on attachment 1. There are multiple residences with septic systems and wells to the Southwest and East, but no commercial or industrial development lies within the inventory zone. A large portion of Dickey Lake also lies to the North and East within the inventory zone. The remainder of North Dickey Lake Campground also lies within the inventory zone, which includes a total of six sealed vault toilets and one host site septic system. US Highway 93 and the Forest Development Road 3785 (paved access to the campground) lies directly to the West and South of the proposed well, respectively, site (see attachment 2). Animal feeding operations, sanitary sewer mains, cemeteries or any other expected urban type point sources of contaminants were not found within the inventory zone. Other land use within the inventory zone consists of residential, forest or open water.

CURRENT WATER SUPPLIES

Very limited specific geological lithology exists directly under the proposed well site, but numerous wells within the 1 mile inventory zone terminate in suitable glacial till aquifers between 100 feet and 300 feet in depth. By the estimated slope of underlying bedrock and fault lines mapped and located on the ground, it is estimated that 20 gallons per minute of confined aquifer drinking water supply is available in glacial till around 200 feet deep at the proposed well site. A confining clay layer is anticipated above this aquifer.

SUSCEPTIBILITY

The proposed well location is 65 feet and up gradient from a paved campground parking lot, and may be susceptible to nearby but very small hazardous spills from recreation traffic. The area immediately around and adjacent to the proposed well that is not paved shall be sealed to

*Glacial
Till. Aquifer
@ + 100' BGS.
SWK's +, 35
to 40' BGS.
PWK's mostly
near bottom of
wells*

protect the area next to the well. The proposed well location is visible from and in close proximity to the campground host for ongoing inspection. Although paved parking area spills should run away from the well site, the campground parking area will be monitored for spills (petroleum, formaldehyde, etc.) by Ranger District Management and the volunteer campground host. The well is planned such that the developed source is of a confined aquifer, thus direct surface influence from the nearby wetland and lake will not occur.

DISTRIBUTION SYSTEM FOR NEW WELL

The drinking water distribution system will consist of a new submersible well pump delivering to an existing pump house with two pressure tanks, controls and piping. This existing system will service five service connections. Water will be served to recreating visitors by hydrants served from the distribution system through the pump house, and the other service connection shall run from the pump house to the volunteer host campsite.

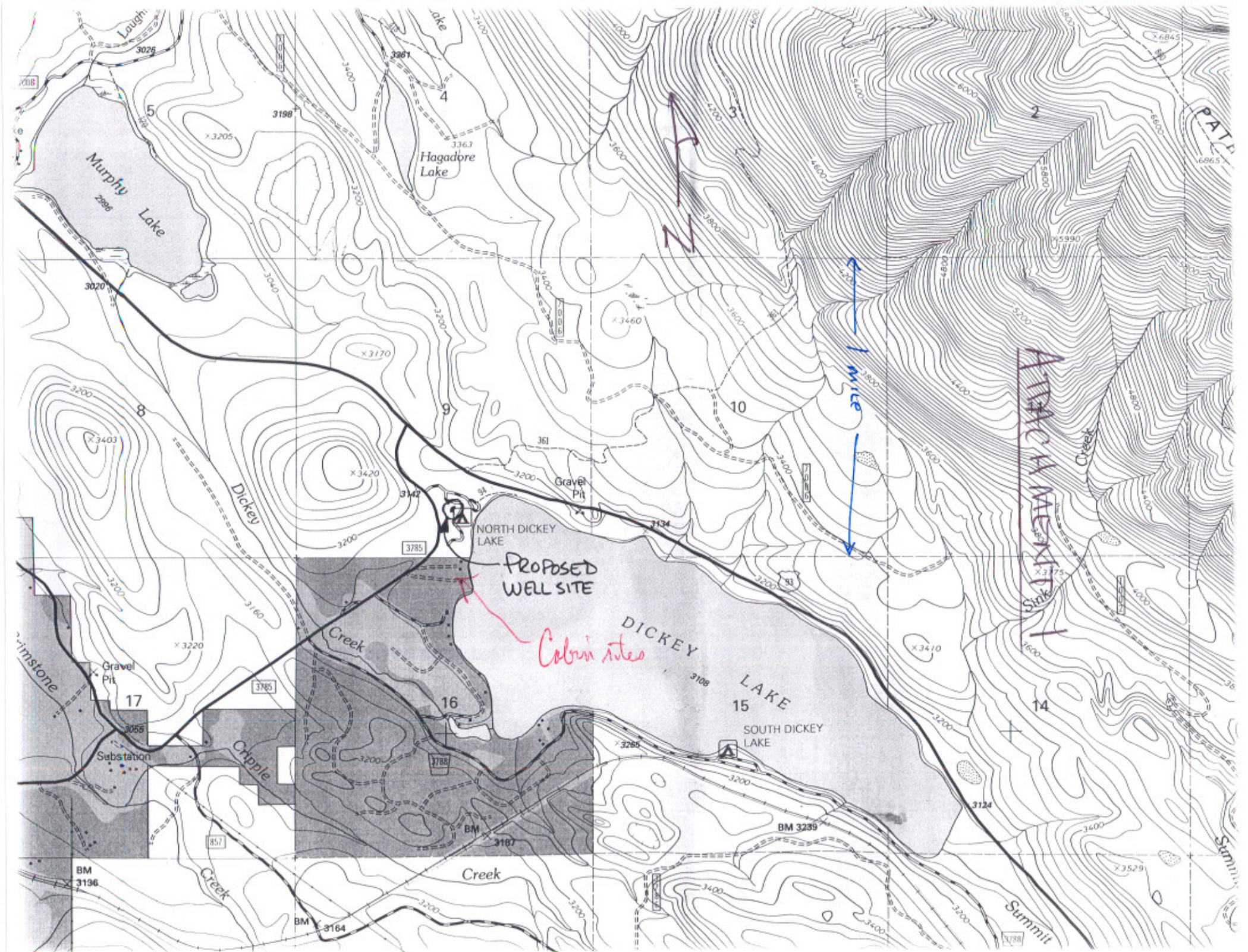
PROPOSAL

The Kootenai National Forest proposes to construct a test well at the proposed well site upon approval by the Montana Department of Environmental Quality. The test well construction shall be under the direct responsible charge of a professional engineer for analysis of encountered aquifers for public drinking water development. Test well data and analysis shall be reported to the DEQ reviewing official immediately upon completion with any further recommendations prior to development of a new source.

Scott A. Curry, PE

Scott A. Curry
Forest Facility Engineer

Barrier
Host septic is only discharge in area.
thick unsaturated zone > 100', and
deep intake > 50' below SWL



STAIL

26 DEAD DF

57 10



SCALE: 1" = 40'

84 8 L

Host Site

ATTACHMENT 2

96 + DF

90 12 L

91 C DF

96 16 DF

5.

6 DF 82

94

DRAINFIELD

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8 DF 88

FUEL WOOD

87 C DF

85 6 L

INSTALL NEW H2O & 3 POWER SERVICE

EX. PUMPHOUSE

83 8 DF CROOK

93 8 L

DF

ST

Vault

PROPOSED 3. TEST WELL

17 DF 82

100'

78 14 DF

STA. 0

77 10 DF

28 STUMP 80

77 6 DF

137 9 S

73 5 DF

H 8 DF

ST

Vault

10 L P

124 GLP

79 12 S

135 8 LP

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Ground Water Information Center Wells Report

The following data were returned from the GWIC databases for the area you requested. For a more detailed description of the data view the [GWIC Metadata report](#). If you notice data entry errors or have questions please let us know by [clicking here](#) to send us an E-mail. If you wish to view a one page report for a particular site, click the hyperlinked **Gwic Id** for that well. Scroll to the right of your screen to view all the data.

Retrieval Statistics *

Field	Max	Min	Count	Avg
Total Depth	60.40	20.30	2	40.35
Pumping Water Level	0.00	0.00	0	0.00
Static Water Level	22.00	22.00	1	22.00
Yield (gpm)	0.00	0.00	0	0.00

* These statistics do not take any geographic, topographic, or geologic factors into consideration. Negative swl values are reported for water levels that are above land surface.

Gwic Id	DNRC WR	Site Name	Location	Type	Td	Pwl	Swl	Yield	Date	Use
151813		MT DEPT OF HWYS * DICKEY LAKE 6-001-87	34N25W09	BOREHOLE	60.40		22.00		1/6/1987	UNUSED
151814		MT DEPT OF HWYS * DICKEY LAKE 6-003-87	34N25W09	BOREHOLE	20.30				1/8/1987	UNUSED

End of Report. 2 record(s) listed.

This report is restricted to site types of **WELL, BOREHOLE, SPRING, and COAL BED METHANE WELL.**

Explanation of Columns: Td = Total depth of well in feet below ground

Pwl = Pumping water level in feet below ground

Swl = Static water level in feet above/below ground - Negative values are reported for water levels that are above land surface.

Yield = Yield in gallons per minute

Date = Completion date of well/borehole

Use = Reported use of water

The preceding materials represent the contents of the GWIC databases at the Montana Bureau of Mines and Geology at the time and date of the retrieval. The information is considered unpublished and is subject to correction and review on a daily basis. The Bureau warrants the accurate transmission of the data to the original end user at the time and date of the retrieval. Retransmission of the data to other users is discouraged and the Bureau claims no responsibility if the material is retransmitted.



GWICWEBDATA V9.0.0 1998-2002

Any questions or comments can be e-mailed to GWIC WebMaster

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Retrieval Statistics *

Field	Max	Min	Count	Avg
Total Depth	244.00	107.00	11	134.45
Pumping Water Level	200.00	95.00	9	119.44
Static Water Level	80.00	15.00	10	43.60
Yield (gpm)	30.00	6.00	11	18.73

* These statistics do not take any geographic, topographic, or geologic factors into consideration. Negative swl values are reported for water levels that are above land surface.

Gwic Id	DNRC WR	Site Name	Location	Type	Td	Pwl	Swl	Yield	Date	Use
89491		PERRY WALLACE	34N25W16ABB	WELL	108.00	80.00	6.0	7/10/1953	DOMESTIC	
89493		EDDY DOUGLAS	34N25W16AC	WELL	107.00	95.0	25.00	15.0	7/24/1989	DOMESTIC
89492	065011	IVY ANDREW C	34N25W16AC	WELL	120.00	115.0	40.00	10.0	9/11/1986	DOMESTIC
121062		VREDENBURG EUREKA RANCH	34N25W16B	WELL	244.00	200.0	15.00	20.0	6/18/1984	DOMESTIC
89494		DICKINSON SALLY	34N25W16BA	WELL	107.00	100.0	12.0	9/20/1988	DOMESTIC	
146955	91109	STOKES JAMES & MARGARET	34N25W16BAA	WELL	144.00	110.0	78.00	28.0	7/15/1994	DOMESTIC
187877	C116132-00	DEAN HARLAN	34N25W16BAC	WELL	114.00	70.00	30.0	2/25/2001	DOMESTIC	
89495	064201	SHIRLEY JOAN F	34N25W16BAC	WELL	120.00	110.0	35.00	20.0	7/21/1986	DOMESTIC
89496	61950	VREDENBURG EDRIC	34N25W16BAD	WELL	120.00	115.0	40.00	15.0	8/21/1985	DOMESTIC
89497	70094	LUNDBERG BRYAN	34N25W16BBC	WELL	120.00	110.0	35.00	20.0	9/22/1988	DOMESTIC
146278	094438	DICKEY LAKE BIBLE CAMP	34N25W16DABB	WELL	175.00	120.0	18.00	30.0	8/30/1994	PUBLIC WATER SUPPLY

End of Report. 11 record(s) listed.

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