

Inventory of Wisconsin's Springs

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Appendix D – Springs Inventory Data CD Data Dictionary

This database provides largely historic information on springs in Wisconsin.

Data Sources:

Wisconsin Land Economic Inventory Maps (Bordner Survey). Project done from 1927 to 1947 to inventory the land resources of Wisconsin. Maps were not done for Lincoln, Manitowoc, Milwaukee and Sheboygan Counties, and some areas covered by Native American reservations and national forests were not surveyed. Gives location of springs, however, no information on physicochemical characteristics.

Wisconsin Conservation Department (WCD) "Springs Survey." Surveys completed from 1956 to 1962 for the purpose of trout management. Based on late 1800s federal surveys, the Bordner Survey, and interviews with local landowners. The survey covers western and southern Wisconsin counties. Gives springs locations and other characteristics such as flow measurements, surrounding land use, and landowner information. Historic locations of springs were found to be quite accurate, though flow measurements were found to be varying in accuracy.

Surface Water Resources. From 1961 to 1985, the Wisconsin Department of Natural Resources (DNR) conducted a county-by-county inventory of surface waters. Data was collected primarily on lakes and streams, but large springs and the source waters of surface waters are also included. Locations of springs and other physicochemical characteristics are available and rarely spring flow rate estimates.

Recent research that has provided data to this inventory include:

Fermanich, K., Zorn, M., Stieglitz, R., Waltman, C. 10/31/2006. Mapping and Characterization of Springs in Brown and Calumet Counties. UW Project No. 144-NS04, University of Wisconsin Green Bay.

Grote, Katherine. 2007. Identification and Characterization of Springs in West-Central Wisconsin. University of Wisconsin, Eau Claire.

Swanson, Susan K, Kenneth R. Bradbury, David J Hart. 2007. Assessing the Ecological Status and Vulnerability of Springs in Wisconsin. WGNHS Open File Report 2007-04, pp. 15.

A small number of other spring locations were obtained by personal communications with county conservationists and private landowners and from USGS topographic maps.

Data Dictionary

This data dictionary defines the fields found in the shapefile “wisconsin_springs_loc.shp” and the database file “wi_springs_data.dbf.” Data field definitions for the recent surveys can be found in their respective reports. Quoted texts are from definitions as described in the WCD surveys.

Note: Values of <NULL> indicate no data was available. Values of “0” (zero) may indicate a value of zero, no single numeric value available, or no data available. Flow notes and general comments often clarify what the “0” represents.

The definitions are given as follows:

Name of data field (Historic Source)

Recommended alias (if offered)

Definition

Definitions of the data fields in the shapefile wisconsin_springs_loc.shp:

FID

Numeric ID assigned by ArcGIS.

Shape

Shape descriptions assigned by ArcGIS.

ID

Spring ID

A unique number assigned to each spring. Data field to be used when creating joins and relates. The first two digits are the county code of the county in which the spring is located. The second four digits are sequential per county in the order the springs were entered into the database.

Cnt_ID

of records

The number of records found for the spring. For example, 2 would indicate the spring was recorded in two different surveys.

Max_CFS

Maximum recorded CFS

The maximum recorded flow rate in cubic feet per second (CFS).

Last_FLOW_

Flow note

A note that describes the spring flow. If a flow measurement was not made, a comment was usually made on the condition of the spring, such as “frozen” or “trickle.” This also includes ranges of discharge rates, for example “10-15 gpm.”

Last_REMAR (WCD)*General comments*

General comments made by surveyors on spring condition, weather, landowners, etc.

NAD83_X*NAD83_X*

The x-coordinate of the spring, in meters, in the NAD 1983 HARN Transverse Mercator.

NAD83_Y*NAD83_Y*

The y-coordinate of the spring, in meters, in the NAD 1983 HARN Transverse Mercator.

Definitions of the data fields in the database file wi_springs_data.dbf:**OID**

Numeric ID assigned by ArcGIS software

ID*Spring ID*

A unique number assigned to each spring. Data field to be used when creating joins and relates. The first two digits are the county code of the county in which the spring is located. The second four digits are sequential per county in the order the springs were entered into the database.

WTM91_X*WTM91_X*

The x-coordinate of the spring, in meters, in the NAD 1983 HARN Transverse Mercator.

WTM91_Y*WTM91_Y*

The y-coordinate of the spring, in meters, in the NAD 1983 HARN Transverse Mercator.

COUNTY*County*

The county in which the spring is located

SURVEY*Survey*

A number representing the survey from which the data was collected. See above for descriptions.

1 – WCD “Springs Survey”

2 – Surface Water Inventories

3 – Bordner Survey

4 – Identified during this study

5 – Fermanich et al., 2007

6 – Grote, 2007

7 – Swanson et al., 2007

NUM (WCD)*WCD Reference #*

A number assigned to the spring in the WCD survey. There was little correlation in the assignment of the numbers between counties. Some surveyors numbered springs by township, others by county, and some did not number the springs.

DATE_*Date of Investigation*

The date of data collection or of publication of the data.

NAME (WCD, DNR)*Name*

The name of a spring, generally a local name.

T**T_D****R****R_****S****Q****Q1****Q2****Q3****Q4**

PLSS locational data.

T_D – township direction (N for all)

R_D – range direction (E or W)

Q1, Q2, ... – quarter section, quarter-quarter section, ...

FEET**FEET2****IN2****YD2****ACRE (WCD)**

Not defined well in WCD surveys – “The area the spring covers.” Wide range of different values among different counties.

DEPTH_FT (WCD)*Spring pond depth*

The depth of the spring pond.

BOTTOM (WCD)*Bottom type*

“Bottom Type: Included the composition of the bottom of the spring itself and usually the spring stream unless the stream was of a type completely different from the spring area.”

MUCK_PER (WCD)

Littoral zone %muck

The percentage of the littoral zone made up of “muck”

OUTLET_IN**OUTLET_FT (WCD)**

The size of the spring outlet in inches or feet. Not a consistent measurement – some measured outlet of spring pond, others measured spring orifice.

SECCHI_FT (DNR)

Secchi disk (ft)

Secchi disk measurement, depth in feet.

WTR_COLOR (DNR)

Water color

The color of the spring water. Data from the Surface Water Resources

c – clear

lb – light brown

mb – medium brown

etc.

ALK_PPM (DNR)

Alkalinity (ppm)

Total Alkalinity of the spring water in parts per million.

COND_77DEG (DNR)

Conductivity ($\mu\text{S}/\text{cm}$)

The conductivity of the spring water at 77 degrees Fahrenheit in micro-Semens per centimeter ($\mu\text{S}/\text{cm}$).

PH (DNR)

pH

The pH of the spring water

GPM (WCD, DNR)

Flow rate (GPM)

Flow rate measurement in gallons per minute (GPM). Sometimes converted from cubic feet per second (CFS) using 1 GPM = 0.00223 CFS

CFS (WCD, DNR)

Flow rate (CFS)

Flow rate measurement in cubic feet per second. Sometimes converted from GPM using 1 CFS = 448.833 GPM

FLOW_NOTE (WCD)

Flow note

A note that describes the spring flow. If a flow measurement was not made, a comment was usually made on the condition of the spring, such as “frozen” or “trickle.” This also includes ranges of discharge rates.

POND_T (WCD)

Pond Temperature (deg. F)

SPR_T (WCD)

Spring Temperature (deg. F)

STR_T (WCD)

Stream Temperature (deg. F)

Temperature of the waters as noted. Location of measurement was not recorded.

DRAIN_ACRE (WCD)

“The land that would drain into spring area at present time; and not necessarily the drainage into a pond which might be constructed, although in all cases the difference would be slight unless state in the remarks that drainage might cause difficulty.”

SHORE_MI (DNR)

Total miles of shoreline.

PUBSHORE_M (DNR)

Miles of shoreline in public ownership.

WETLAND_AC (DNR)

Acres of surrounding wetlands.

WATERSHED_ (DNR)

Area of the immediate watershed of the spring in square miles.

WATERSHED (DNR)

Name of the major watershed the spring belongs to.

COVER_TYPE (WCD)

Land cover around spring area. “Included the spring area and the cover behind a spring for at least 500 yards.

LAND_USE (WCD)

“Concerned the land in 400 yards in any direction from the spring.

FISH (WCD)

Fish species present in or near the spring.

FISH_PRESS (WCD)

Fishing pressure in the vicinity of the spring

OLD**NEW (WCD)**

Check box on WCD survey to identify if the spring was historically known or new-found at the time.

ACCESS_TYP (WCD)

Type of Access to the spring. Not very consistent in WCD surveys. Ranged from land ownership (public or private) method of access (walk, drive, boat) or ease of access (difficult, easy).

OWNER (WCD)*Ownership*

Whether the spring is on public or private land.

OWNER_NAME (WCD)

The name of the landowner at the time of investigation.

DEV_POSS (WCD)

The possibility of developing the spring into a trout pond or farm. “Based on spring flow, location, accessibility, etc.

REMARKS (WCD)*General comments*

General comments made by surveyors on spring condition, weather, landowners, etc.

TDS_MG_L*Total Dissolved Solids (mg/L)*

Measurement of Total Dissolved Solids.

DO_MG_L*Dissolved Oxygen (mg/L)*

Measurement of dissolved oxygen.