

*Unique Well Numbers  
can be  
**Easier!***

William Olsen

Dakota County Environmental  
Resources Department

*A great idea:*

Assign Unique identifiers to Wells

**1 Well  $\Leftrightarrow$  1 Unique Number**

*We want Reliable Identifiers for:*

- Public Health
- Geologic Studies
- Environmental Protection
- Well Management & *Well Owners too*

*A great idea:*

Assign Unique identifiers to Wells

**1 Well  $\Leftrightarrow$  1 Unique Number**

*We use Unique Numbers to:*

- Preserve information
- Share information
- Associate and Leverage Information

A great idea:  
with a great problem!

1 Well  $\Leftrightarrow$  many Unique Numbers

<b>RECORD</b> MINNESOTA UNIQUE WELL NO. <b>194078</b>	
<b>Monitoring Wells</b>	
PROPERTY OWNERS <b>Phoenix Inc.</b>	<b>240193</b>
ADDRESS <b>12495 E</b>	<b>PHOENIX INC.</b>
CITY <b>I. G. H</b>	MINNESOTA WELL AND BORING SEALING NO. <b>H 199783</b> MINNESOTA UNIQUE WELL NO. OR W-SERIES NO. <b>235961</b> <small>(Leave blank if not known)</small>
<b>SEALING RECORD</b> Statutes, Chapter 103I	
PROPERTY ID <b>235</b>	DATE SEALED <b>10-17-02</b>
ADDRESS <b>140'</b>	DATE WELL OR BORING CONSTRUCTED
WELL DEPTH <b>140'</b>	DEPTH BEFORE SEALING <b>140</b> ft. ORIGINAL DEPTH _____ ft.
USE <input checked="" type="checkbox"/> Home	AQUIFER(S) <input checked="" type="checkbox"/> Single Aquifer <input type="checkbox"/> Multiaquifer
<input type="checkbox"/> Other	STATIC WATER LEVEL <input checked="" type="checkbox"/> Measured <input type="checkbox"/> Estimated
WELL/BORING <input type="checkbox"/> Water Supply Well <input checked="" type="checkbox"/> Monit. Well	<b>125.5</b> ft. <input checked="" type="checkbox"/> below <input type="checkbox"/> above land surface
<input type="checkbox"/> Env. Bore Hole <input type="checkbox"/> Other _____	CASING TYPE(S)

Not a great idea:

Force the data into the wrong model

1 Well  $\Leftrightarrow$  1 Unique Number

DEMOTION

Information is also demoted

MINNESOTA UNIQUE WELL NO. 194078

Monitoring Wells

194078

Phoenix

12495

I. G. HING SEALING RECORD

Minnesota Well and Boring Sealing No. 199783

Minnesota Unique Well No. or W-series No. 235961

Statutes, Chapter 103I

235

Date Sealed 10-17-02

Date Well or Boring Constructed

Depth Before Sealing 140 ft. Original Depth

AQUIFER(S)  
 Single Aquifer  Multiaquifer

STATIC WATER LEVEL  
 Measured  Estimated

WELL/BORING  
 Water Supply Well  Monit. Well  
 Env. Bore Hole  Other

125.5 ft.  below  above land surface

CASING TYPE(S)

*A BETTER idea:*

Use a model that fits the data

**1 Well  $\langle===\rangle$  many Unique Numbers**

- Guarantee all Unique Numbers
- No demotion, no orphans
- Preserve information better
- Share well data more easily

Time for one illustration:

A recent study\* collected 274 water samples from wells in Dakota County.

Unique Numbers were discovered for 217 wells.

New Unique Numbers were created for 57 wells.

Because every well got a Unique Number, all of the data can be effectively tracked through time, and shared reliably.

**Did we make errors assigning Unique Numbers?**

\* WIISE Study. A cooperative study between MDH and Dakota County.

# Types of errors:

1. Fail to recognize well A and guess it is well B
2. Fail to recognize well A and make up well C
3. Fail to recognize well A and do nothing



# Types of errors:

1. Fail to recognize well A and guess it is well B
2. Fail to recognize well A and make up well C
3. Fail to recognize well A and do nothing

Information from well A is merged with well B, and can be very difficult to disentangle.

This is really the worst mistake to make.

# Types of errors:

1. Fail to recognize well A and guess it is well B
2. Fail to recognize well A and make up well C
3. Fail to recognize well A and do nothing

When the error is discovered, identifier C will be demoted, and information using identifier “C” will be orphaned.

# Types of errors:

1. Fail to recognize well A and guess it is well B
2. Fail to recognize well A and make up well C
3. Fail to recognize well A and do nothing

Fearful of type 1 or 2 error, do nothing.

Information gathered for the well will not persist, cannot be shared, and cannot be leveraged.

# Types of errors:

1. Fail to recognize well A and guess it is well B
2. Fail to recognize well A and make up new C
3. Fail to recognize well A and do nothing

The proposed definition recognizes multiple identifiers, so the cost of error 2 is minimized.

Errors 1 and 3 can be less frequent.

*Unique Well Numbers  
really can be  
**Easier***

*- if we build our systems to  
**Embrace the fact that:***

**1 Well**  $\Leftrightarrow$  **many** Unique Numbers