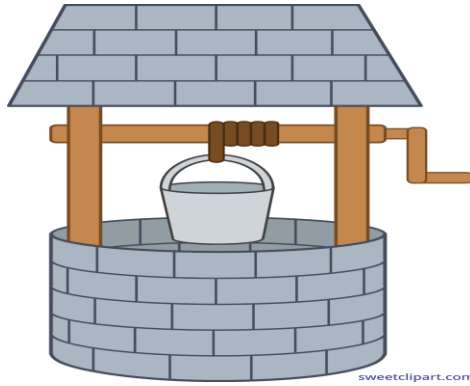


# Capstone Project

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# Proposal for Well Water Contaminant Website

Julie Odenbach  
**Dakota Well Water**  
123 2nd Street  
West Fargo, ND 58402

## Overview

The purpose of this document is to propose implementing an online website to display our well water test results. Dakota Well Water currently mails out either a hard-copy report or sends an email to customers with their well water test results.

Our online well water test results would include year-to-year aggregate test results. Customers submitting a well water sample will receive a link with instructions to access their online well water test results along with a secure key to gain access.

## Goals

Customers will always be able to access their well water test results in one place online, and they would be able to compare those results to prior results.

Dakota Well will provide more relevant information for our customers such as:

- Links to expanded explanations of contaminants found.
- Links to additional information resources, such as links to official EPA information about the Safe Drinking Water Act.
- Links to local vendors which may be of assistance in solving well water issues.

## Specifications

Dakota Well Water can better maintain ties to customers accessing our test results website. We can educate customers with quarterly updates on well water related issues in their area and reminder customers when it's time to have their well water re-tested.

By forming agreements with external vendors for water treatment solutions, we can send referrals and URL links to our customers. These additional information sources and solutions for our customers will build brand loyalty.

## Risks

Setting up a website that customers use raises the issue of cyber security.

1. Our company will take steps to provide a reliable web service to our customers.
2. Steps must be taken to prevent our test results website from being targeted for a denial of service attack
3. User logins must be kept secure.

## Milestones

1. Our first step will be to migrate information on our new Dakota Well Water website that we currently provide to our customers by email or mailed result document. Allow our customers to log in to our new website to access their water test results. We estimate that this milestone could be accomplished within six weeks.
2. Next, we will add expanded explanations concerning the level of contaminants found and which levels might be a health risk, along with adding links to additional information resources. We estimate that this milestone could be achieved within two weeks of development.
3. Finally, we will add links to local vendors that might be of assistance in solving well water issues for customers. This final milestone would likely take another two weeks of development.

## Memo



**T:O:** James Garrett  
**FROM** Julie Odenbach  
**CC:** Darrell Cook  
**SUBJECT:** Customer Survey  
**Date:** November 30, 2022

This memo addresses one strategy to improve our customer communications. An online customer survey will help Dakota Well Water know how our customers feel about our product.

The online survey will determine how customers react to our current online well water test results.

- Do the contaminants currently tested for meet your needs?
- What additional contaminants would you like to see included in our well water testing?
- Were the explanations of water contaminants clear and straightforward?
- Were the potential solutions provided for problem areas helpful to you?
- Are the icon graphics and color scheme displayed helpful in alerting you to problem contaminants?

We will survey customers about the additional resource links we provide.

- Do the additional articles and links to EPA well water websites provide information that you find useful?
- Which articles did you find to be most useful to you?

We will also survey customers about the vendor links that we provide.

- Have you utilized any of the vendor links that we provide?
- Were you satisfied with the outcome of the work performed by the vendor?

We can do this survey using Survey Monkey. We can buy their Team Premier plan for \$75 per user per month, billed annually. This would allow us to create additional surveys in the future, as needed.

Please email with your feedback on conducting this customer survey and your authorization for purchasing the Survey Monkey software.

## Meeting Notes

Dakota Well Water

# Test Result Icon Graphics for Web App 11/29

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29 NOVEMBER 2022 / 4:30 PM / Aspen Room

## ATTENDEES

Dan Patch (GUI Designer), Sarah Crumbly (Graphics Designer), Mary Harrington (Software Developer), Julie Odenbach (Technical Writer)

## AGENDA

### Last Meeting Follow-up

1. We now have a finalized list of table columns to be used for the well water test results. The team reviewed this information and it was checked into the project repository.

### New Business

- Need to develop test result graphics that meet accessibility guidelines.
- Need icon graphics to indicate result levels: Good, Questionable, Undesirable, Dangerous.
- Need to develop a color scheme for new test results website icons.

## NOTES

- Accessibility rules require the images and text we use on our website can be used by people with disabilities.
- We must provide appropriate text alternatives based on the purpose of the image.
- People using screen readers or speech input software must be able to use our website.
- Using the color green for a good test result and the color red for a bad test result does not work for those who are color blind.

## ACTION ITEMS

1. Sarah Crumbly will work on refining result icon graphics and alternative text.
2. Sarah Crumbly will work on refining and documenting the color scheme.

## NEXT WEEK'S AGENDA

Attendees will review the refined results as documented by Sarah Crumbly.

# Release Notes

## Well Water Test Results Web App 2.2

Dakota Well Water, November 30, 2022

Release: Web\_App\_Test\_Results 2.2

### New Features:

- Added a new column for the minimally accepted level of specified well water contaminant.
- Populated the new column for the minimally accepted level of specified well water contaminants.
- Added a new column for what is considered to be an unhealthy level of specified well water contaminant.
- Populated the new column for the unhealthy level of specified well water contaminants.

### Bug Fixes:

- Fixed all broken links to the EPA Drinking Water Regulations and Contaminants website.
- Fixed typo in spelling of “Diphenhydramine” in the results display table.

# Dakota Well Water

## Tutorial for Well Water Testing

### Step 1 : Obtain Dakota Well Water Test Kit

Order Dakota Well Water test kits from our website at <https://www.dakotawellwater.com>.

You may also obtain Dakota Well water test kits from participating Fleet Farm stores or from your local county extension service office.

### Step 2 : Fill Well Water Sample Tube and Seal It

Fill the supplied sample tube from your faucet and seal it with the provided cap.

### Step 3 : Apply Label to Well Water Sample Tube

Fill out your name, phone number, and email address on the provided **BLUE** sample label and apply that label to the well water sample tube.

### Step 4 : Submit Payment Online

Pay for your well water test online at <https://www.dakotawellwater.com/payment>. A receipt will be emailed or texted to you, depending on which option you indicate.

### Step 5 : Package Tube in Supplied Shipping Box

- Wrap the well water sample tube in the supply packaging and secure it with the supplied tape.
- Place your well water sample tube in its packaging in the supplied shipping box.



- Fill out the **RED** mailing label with all requested information, and place that label on your shipping box.

## **Step 6 : Ship Box With UPS**

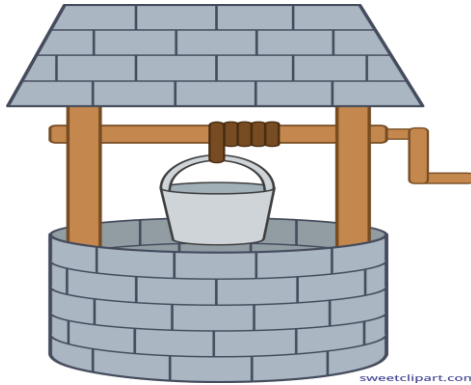
Ship your well water test sample box using UPS.

## **Step 7 : Receiving Well Water Test Results Notification**

You will receive all necessary information you need to access your well water test results online.

You should receive this result information within 7 days after submitting your well water sample. If you do not, please contact our office at 701-220-9142.

**Thank you for entrusting Dakota Well Water to ensure the safety of your drinking water.**



# Dakota Well Water FAQ

## 1. Why do I need to have my well water tested?

We all want to be assured that the water we are drinking, cooking, and brushing our teeth with is clean and safe. There are many factors that can affect the quality of your well water, and you owe it to yourself to make sure that your well water is safe for you and your family.

## 2. How often do you recommend that I have my well water tested?

We recommend that you have your well water tested at least once a year. It's best to have your well water tested during a wet weather period, such as in the Spring.

## 3. What are common well water contaminants?

- Iron - can leave red or orange stains on sinks, tubs, and toilets
- Chlorine - may cause bacteria that makes water unsafe for drinking or bathing
- Arsenic - if arsenic level is too high, you will need to use a reverse osmosis process to filter it out of your well water
- Microorganisms, bacteria, and viruses
- Dirt and sediment - can cause problems for your appliances

- Lead - can lead to serious health problems for children and can damage the brain and kidney
- Hexavalent Chromium - is a carcinogen
- Pharmaceuticals

#### 4. What is hard water and why is it such a problem?

Well water commonly contains a lot of minerals, such as calcium and magnesium. Hard water is not a health hazard, but you will want to use a water softener to limit the negative side effects of hard water. Water is considered to be hard if it has a pH level of 8 or greater.

Hard water may cause several problems in your home:

- Stains on your sinks or toilets
- Spots on your glassware and silverware
- Scale deposits in water pipes
- Damage to appliances such as dishwashers and clothes washers

Purchasing a water softener system for your home will resolve your hard water problems.

#### 5. What are common categories of well water contaminants?

- Physical contaminants include sediment and organic materials.
- Chemical contaminants can include arsenic, nitrogen, pesticides, and pharmaceuticals.
- Biological contaminants are caused by bacteria, protozoa, and parasites in the water.
- Radiological contaminants like cesium, plutonium, and uranium.
- More information can be found at [types of drinking water contaminants](#)

## Report



# Importance of Well Water Testing

## Introduction

We have all heard the horror stories of people suffering adverse health impacts from drinking contaminated well water. From lead to bacteria, pesticides, and pharmaceuticals, there seems to be no end to what affects our drinking water. Regularly testing your well water will assure that you and your family are safe.

## When To Test Your Well Water

Test your well water at least once a year. It's best to test during a wet period, such as in the Spring.

You should also re-test your well water whenever you:

- Replace any part of your well system.
- Notice a change in the taste, smell, or appearance of your water.
- Experience flooding in your area.

The table below, provided by the EPA, lists common conditions and the contaminants you need to test for. You will find additional details at

<https://www.epa.gov/privatewells/protect-your-homes-water>.

**Table1 - Contaminants to test for given specific conditions and local activities.**

Conditions or Nearby Activities:	Test for:
Recurring gastro-intestinal illness	Coliform bacteria
Household plumbing or service lines that contain lead	pH, lead, copper
Corrosion of pipes, plumbing	Corrosion, pH, lead
Nearby areas of intensive agriculture	Nitrate, nitrite, pesticides, coliform bacteria
Coal or other mining operations nearby	Metals, pH, corrosion

Gas drilling operations nearby	Chloride, sodium, barium, strontium
Objectionable taste or smell	Hydrogen sulfide, corrosion, metals
Stained plumbing fixtures, laundry	Iron, copper, manganese
Scaly residues, soaps don't lather	Hardness