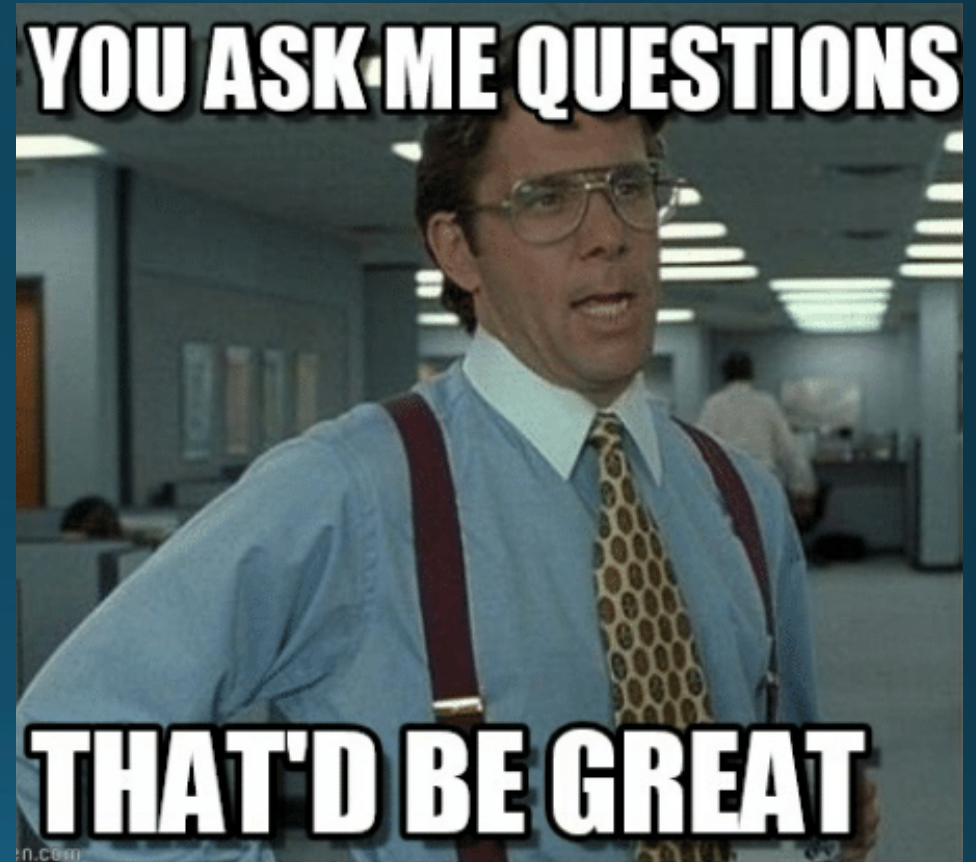


Well Decommissioning

Cassie Ahmed, Agricultural Engineer

7-20-2023

- Training will be recorded
- Mute your Mic
- At Anytime
 - Raise your hand to ask a question
 - Type your question into the chat

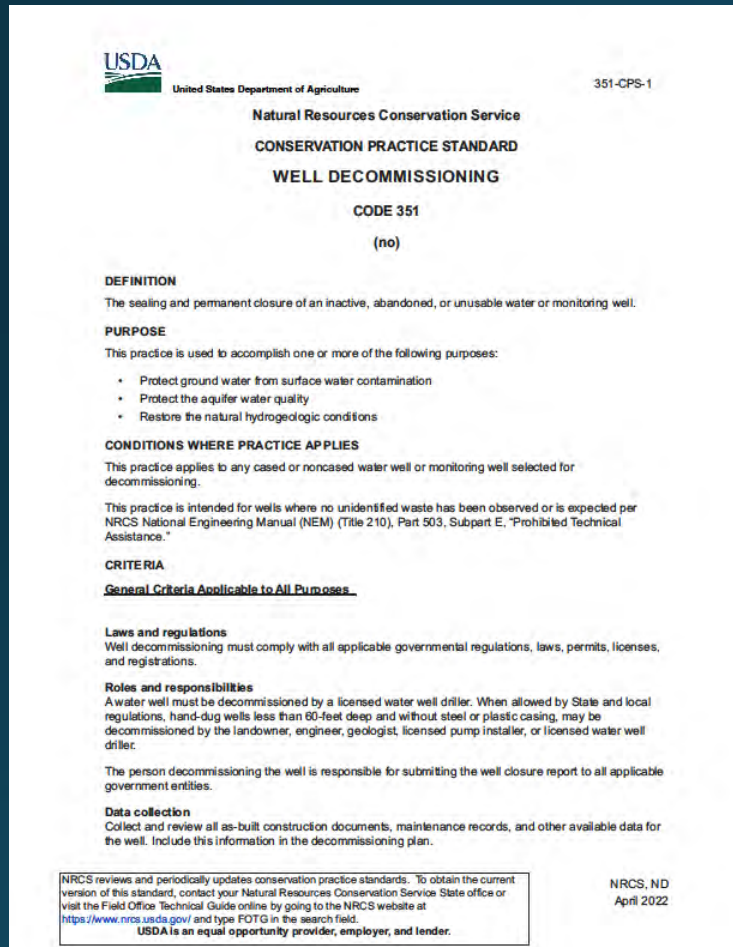


Items to be Posted

- Recording of Training
- The Well Decommissioning PowerPoint
- Updated design tool
- Design Tool Example from today



351 Well Decommissioning



Definition:

The sealing and permanent closure of an inactive, abandoned, or unusable water or monitoring well.

Purpose:

This practice is used to accomplish one or more of the following purposes:

- Protect ground water from surface water contamination
- Protect the aquifer water quality
- Restore the natural hydrogeologic conditions

Contamination Examples



351 Well Decommissioning

Roles and responsibilities

A water well must be decommissioned by a licensed water well driller. When allowed by State and local regulations, hand-dug wells less than 60-feet deep and without steel or plastic casing, may be decommissioned by the landowner, engineer, geologist, licensed pump installer, or licensed water well driller.

Disinfection

Prior to filling and/or sealing, disinfect the well with a minimum chlorine solution concentration of 50 mg/L (50 ppm), or the minimum chlorine solution concentration specified by the regulating authority, whichever one is greater. After adding the chlorine solution, agitate the well water to distribute the solution, and keep the well undisturbed for a minimum of 12 hours to allow for disinfection. **If the well is dry, disinfection will not be necessary.**

Always Read
the Practice
Standard prior
to working on a
project



351 Well Decommissioning

Well preparation

Remove all equipment, material, and debris that may obstruct access to the bottom of the well. Sound the well to verify all obstructions were removed.

Remove casing by either pulling or over drilling (over-reaming) according to ASTM D5299, "Standard Guide for Decommissioning of Groundwater Wells, Vadose Zone Monitoring Devices, Boreholes, and Other Devices for Environmental Activities," and American Society of Agricultural and Biological Engineers (ASABE), EP400.3 Section 8.0, "Designing and Constructing Irrigation Wells."

If some or all the equipment and casing resists removal by pulling or over drilling, the casing must be ripped, perforated, or cut off a minimum of **3 feet below the ground surface.**

Control of artesian pressure

In the case of an artesian well, a Certified Well Driller with experience in sealing artesian wells shall be contracted to complete the decommissioning. When a well is under artesian pressure (flowing or not flowing), pressure grout from the bottom of the well to ground surface. Procedures for balancing formation pressures during grouting operations must conform to ASTM D5299.



ND State Regulations

- Article 33.1-18-01 of the North Dakota Administrative Code
- VI. ABANDONMENT OF TEST HOLES, PARTIALLY COMPLETED WELLS, AND COMPLETED WELLS
- Abandoned wells. Any abandoned water wells, including test wells, uncompleted wells, and completed wells shall be sealed by restoring, as far as possible, the controlling geological conditions which existed before the wells were drilled. Sealing of wells results in:
 - a. Elimination of physical hazards.
 - b. Prevention of contamination of ground water.
 - c. Conserving yield and hydrostatic head of aquifers.
 - d. Prevention of intermingling of desirable and undesirable waters. Wherever feasible, the wells should be filled with concrete grout or other approved materials. (Note: recommended grouting procedures are in the appendix to this chapter.) At no time shall any sewage or other contaminated or toxic materials be discharged into an abandoned well.

Licensed Well Driller

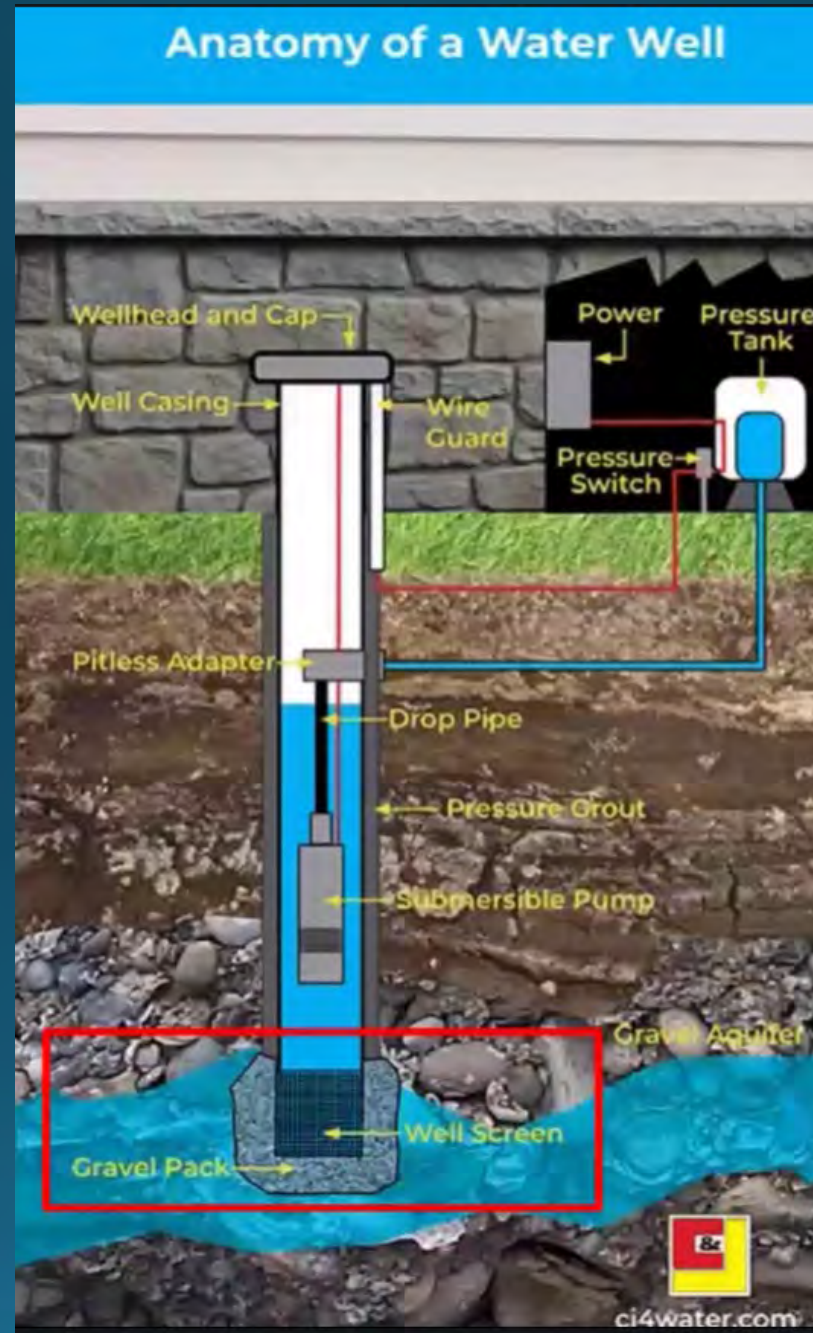
- 351 Well Decommissioning Standard

Roles and responsibilities
A water well must be decommissioned by a licensed water well driller. When allowed by State and local regulations, hand-dug wells less than 60-feet deep and without steel or plastic casing, may be decommissioned by the landowner, engineer, geologist, licensed pump installer, or licensed water well driller.

ND Board of Water Well Contractors

The screenshot shows the official portal for North Dakota State Government, specifically for the North Dakota Water Well Contractors. The page features a navigation menu on the left with the following items: Home, Renewal Forms, Water Well Contractors, Monitoring Well Contractors, Geothermal Contractors, Pump & Pitless Unit Installers, **Licensed Well Contractors** (highlighted with a red box), Private Contractors Logs Query, Contractors Logs Map Service, and Contact Information. The main content area is titled "Certified Well Drillers Query" and contains a search form with the following fields: Company (text input), Certification Type (dropdown menu set to "All"), Name (text input), and City (text input). Below the form, there are radio buttons for "Combine the criteria using: Or" and "And" (selected), and a "Query" button. A "Disclaimer" section follows, stating that the data is provided by the North Dakota State Water Commission for convenience and is provisional, with no warranty. It also provides contact information for the North Dakota State Water Commission at (701) 328-2754. The footer of the page includes the address: North Dakota Water Well Contractors, 900 East Boulevard Ave · Bismarck, ND 58505 · (701) 328-2754 or (701) 391-5120.

Drilled Wells



Drilled Well Decommissioning Done by Certified Well Driller

- **Step 1. Remove all obstructing materials from the well.** Making sure that fill materials do not slump or settle is critical; therefore, obstructions that may cause incomplete filling of the voids must be removed. Remove the pump, rods, pipes and any other equipment from the well. Floating debris, such as wood staves, also should be removed
- **Step 2. Disinfect the well by adding bleach.** All wells containing standing water must be disinfected to kill existing microorganisms.
- **Step 3. Fill the well with plugging materials.** Plugging always starts from the bottom of the well. The exact procedure for plugging will depend on the well size, depth, ect . Refer to the Well Decommissioning Construction Specification and standard drawings for details for each size of well.
- **Step 4. Remove the upper 3 feet of the well casing.** This step never should be done before the fill material is within 3 feet of the surface. Upper casing removal is particularly important if the abandoned well site is farmed.
- **Step 5. Fill the final 3 feet with topsoil and mound.** Shaping the site is necessary to prevent ponding of water over the plugged well.

Dug Wells



Dug Well Steps to Decommissioning

- **Step 1. Remove all obstructing materials from the well.** Remove the pump, rods, pipes and any other equipment from the well. Floating debris, such as wood staves, also should be removed
- **Step 2. Disinfect the well by adding bleach.** All wells containing standing water must be disinfected to kill existing microorganisms.
- **Step 3. Fill the well with plugging materials.** Plugging always starts from the bottom of the well. The exact procedure for plugging will depend on the well size, depth, ect . Refer to the Well Decommissioning Construction Specification and standard drawings for details for each size of well.
- **Step 4. Remove the upper 3 feet of the well casing.** This step never should be done before the fill material is within 3 feet of the surface. Upper casing removal is particularly important if the abandoned well site is farmed.
- **Step 5. Fill the final 3 feet with topsoil and mound.** Shaping the site is necessary to prevent ponding of water over the plugged well.

Job Approval

Code No.	Practice	Controlling Factors	Units	Job Classes					RESPONSIBILITY LIMITS		
				I	II	III	IV	V	Planning	Design	Construction
351	Well Decommissioning	Well Diameter	IN	None	≥10	≥ 4 & < 10	< 4	All			
		Well Depth	FT	None	50	100	250	All			

Example:

- Well Diameter = 4" = JC III Well Depth = 50 ft = JC II Job Class of Project = III

Exercise:

- Well Diameter = 10" Well Depth = 101 ft
- What is the Job Class of each controlling factor and what is the Project Job Class?

Well Diameter = 10" = JC II Well Depth = 101 ft = JC IV
 Job Class of Project = IV

Well Decommissioning Steps

Planning: Prior to site visit

- Look up well logs for the site
 - [ND Department of Water Resources MapService](#)
- If they aren't located on ND Department of Water Resources, check Part II of the county you need on this site
 - [Department of Water Resources \(nd.gov\)](#)

Site Visit

- Visit with producer about potential wells to decommission
- Locate well with GPS, Measure Inside Diameter Well Casing or Well Bore, Document casing material, Take Photo, Measure total well depth (some offices have a tool)

Back at the Office

- Use Well Design Tool to develop the plans
- Determine Job Approval for Planning and document on title page

Well Decommissioning Steps Continued

Preliminary Engineering Plans

- Review with the producer the Prelim Engineering plans, Construction Specifications, O&M, and EQIP Cost Share estimate

Approved Engineering Plans

- Calcs and Plans are checked and signed by checker
- Person with Job Approval reviews engineering plans and signs the ND-ENG-1
- Review w/ the producer: the approved engineering plans, construction specifications, O&M, EQIP cost share estimate, ND-ENG-1
 - producer & NRCS Representative signature required on O&M and ND-ENG-1
- If available, producer provides name of well driller to complete decommissioning
 - Verify well driller is certified

Well Decommissioning Steps Continued

Preconstruction Meeting

- Review approved engineering plans, constructions specs w/ producer & certified well driller
- If no signatures are on O&M and ND-ENG-1 have them sign

Construction

- Document materials used
- Take Photos
- Well Driller Completes Sheet 3 of the approved engineering plans (previously the second page of the ND-ENG-10 Form)

As Builts

- Verify Certified well driller if not previously done
- Inspector signs and dates Sheet 3 of the Approved Engineering Plans
- Employee completes As Builts
- Person with Job Approval signs Certification on Coversheet

Well Decommissioning Steps

Planning: Prior to site visit

- Look up well logs for the site
 - [ND Department of Water Resources MapService](#)
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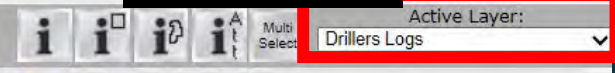
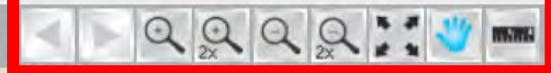
Back at the Office

- Use Well Design Tool to develop the plans
- Determine Job Approval for Planning and document in Con 6 notes

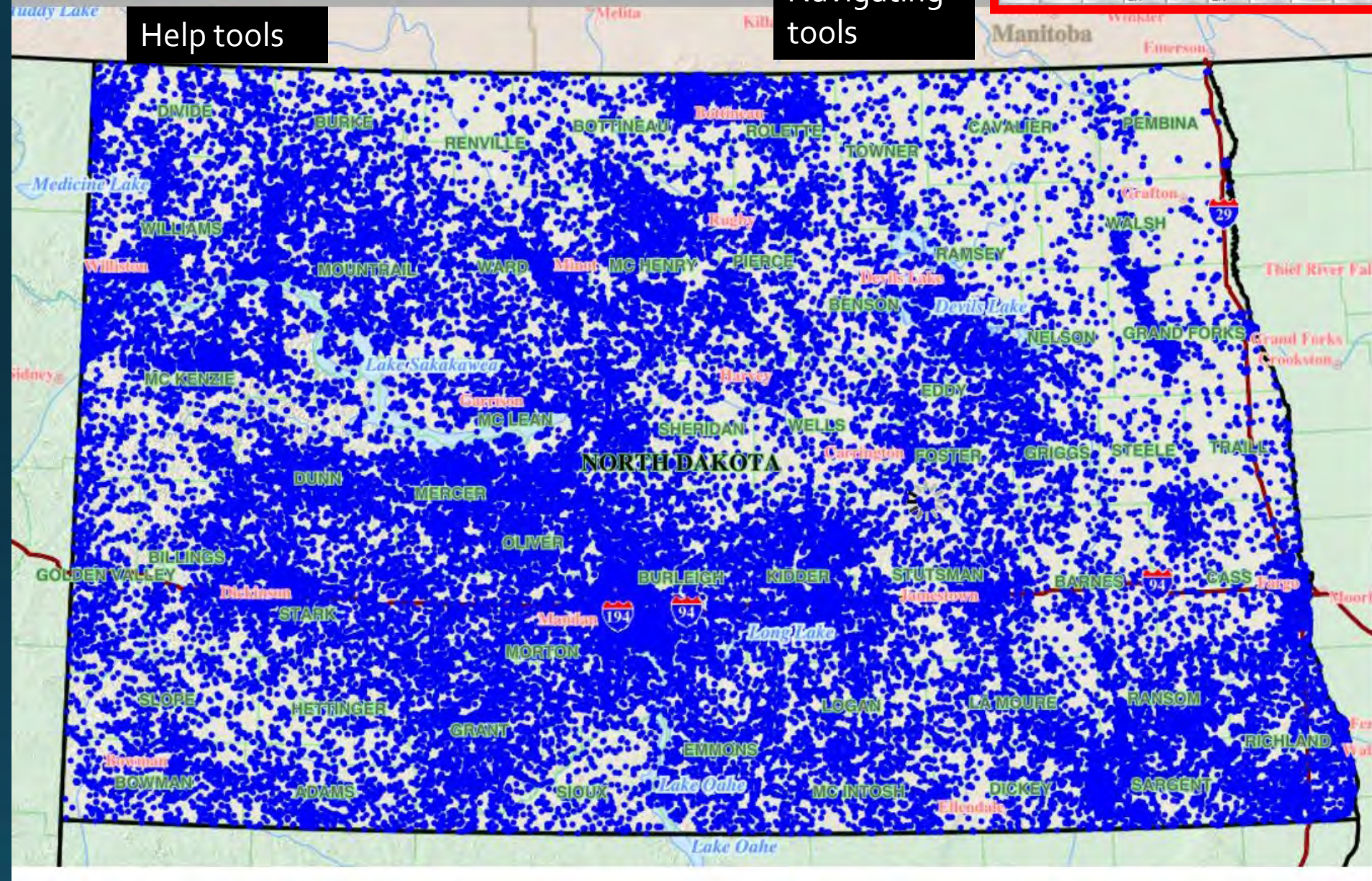
Active layer

[View Tutorial](#) [Help/Demos](#)

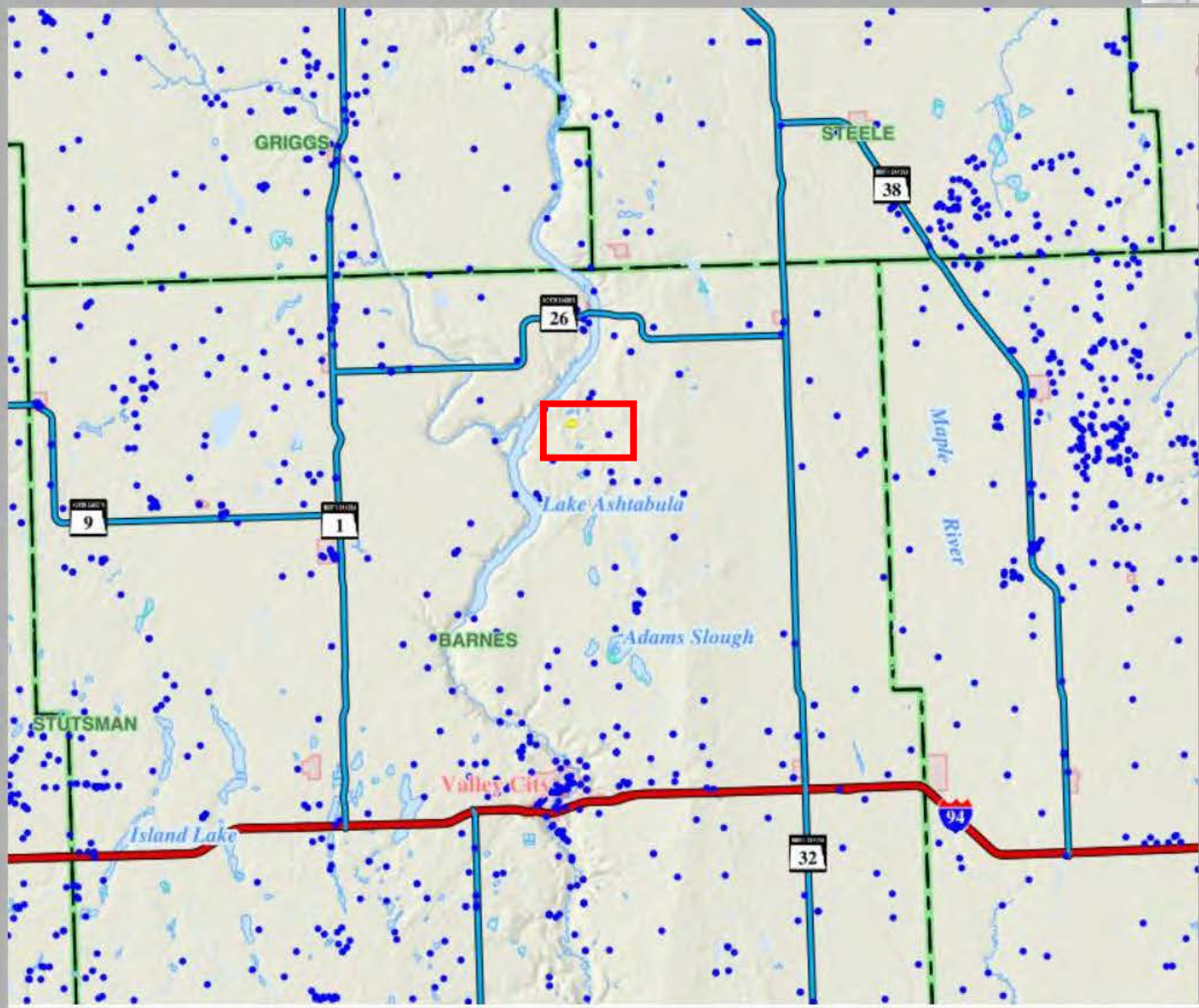
Navigating tools



Help tools



- Political Boundaries
- Public Lands
- Prohibited Areas
- Shaded Relief
- Air Photos/Imagery
- Rural Water Service Areas
- Hydrography
- Water Resources
 - Aquifers
 - Precipitation Sites
 - Drillers Logs
 - USGS Gages
 - Ground/Surface Water Sites
 - DL Outlet Monitoring Sites
 - Dams
 - Dams - by Hazard Class
 - Drains
 - Dikes
 - Diversion Structures
 - Dugouts
 - Restorations
 - Ordinary High Water Mark
 - River Miles
 - Source Water Protection Area-Co
 - Source Water Protection Area-No
- Transportation
 - Airborne Electromagnetic Surveys
 - Precipitation
 - Snow Data
 - Irrigation
 - FEMA
 - Elevation Contours
 - Water Depots
 - Water Permits
 - Water Permits-Temporary
 - Energy Resources
 - Natural Resources



Print Window Information New Window Hide Close

Search Current Selection:

Location	County	Purpose	Well Driller	Date Drilled
14205802ADC	Barnes	Test Hole	Industrial Drilling Inc.	1979-09-15
14205802ADD	Barnes	Stock	Lako Drilling	1989-03-01
14205802ADD	Barnes	Domestic	Lako Drilling	1990-08-01

Showing 1 to 3 of 3 entries

Print Window Information New Window Hide Close

Back

14205802ADD

County Barnes **Click to View PDF**


Purpose Domestic

Date Drilled 1990-08-01

Well Driller Lako Drilling

Owner Henry Berger

Long, Lat (NAD83) -97.983297, 47.147036



Size 369kB

[Get Adobe Acrobat](#)

ND Department of Water Resou... x 1101.pdf x +

https://mapservice.dwr.nd.gov/wellink/4d4q/GetLogPDF/1101/Log/1101.pdf?view=fltb

Employee Pages ND Sharepoint ND NRCS Eng eFoTG eDirectives Google Maps Webta VMT Home - Vehi... Website Login Zip File NRCS-CADD Home Other favo

Set Microsoft Edge as the default application for reading PDF files? **Set as default**

Draw Read aloud

STATE OF NORTH DAKOTA
BOARD OF WATER WELL CONTRACTORS
900 E. BOULEVARD • BISMARCK, NORTH DAKOTA 58501

WELL DRILLER'S REPORT

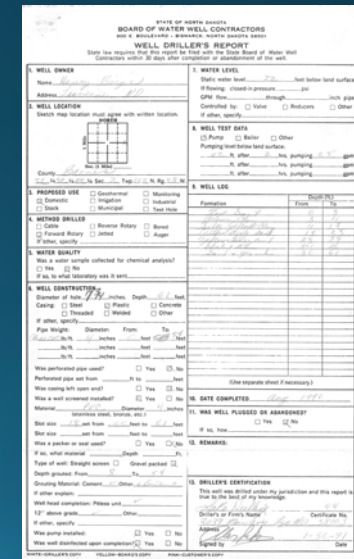
State law requires that this report be filed with the State Board of Water Well Contractors within 30 days after completion or abandonment of the well.

<p>1. WELL OWNER</p> <p>Name <u>Henry Berger</u></p> <p>Address <u>Lebanon, ND</u></p>	<p>7. WATER LEVEL</p> <p>Static water level <u>22</u> feet below land surface</p> <p>If flowing: closed-in pressure _____ psi</p> <p>GPM flow _____ through _____ inch pipe</p> <p>Controlled by: <input type="checkbox"/> Valve <input type="checkbox"/> Reducers <input type="checkbox"/> Other</p> <p>If other, specify _____</p>
<p>2. WELL LOCATION</p> <p>Sketch map location must agree with written location.</p> <p style="text-align: center;">NORTH</p>	

New window opens in web browser

Save to PDF

New Window Opens with Well information, Click to View PDF



STATE OF NORTH DAKOTA
BOARD OF WATER WELL CONTRACTORS
WELL DRILLER'S REPORT

1. WELL OWNER
Name: Henry Berger
Address: Lebanon, ND

2. WELL LOCATION
Sketch map location must agree with written location.

7. WATER LEVEL
Static water level: 22 feet below land surface

8. WELL TEST DATA
Pumping test below land surface

9. WELL USE
Purpose: Domestic

10. DATE COMPLETED
Date: 11/21/11

11. WELL PURPOSE OR ABANDONMENT
If well, Yes/No

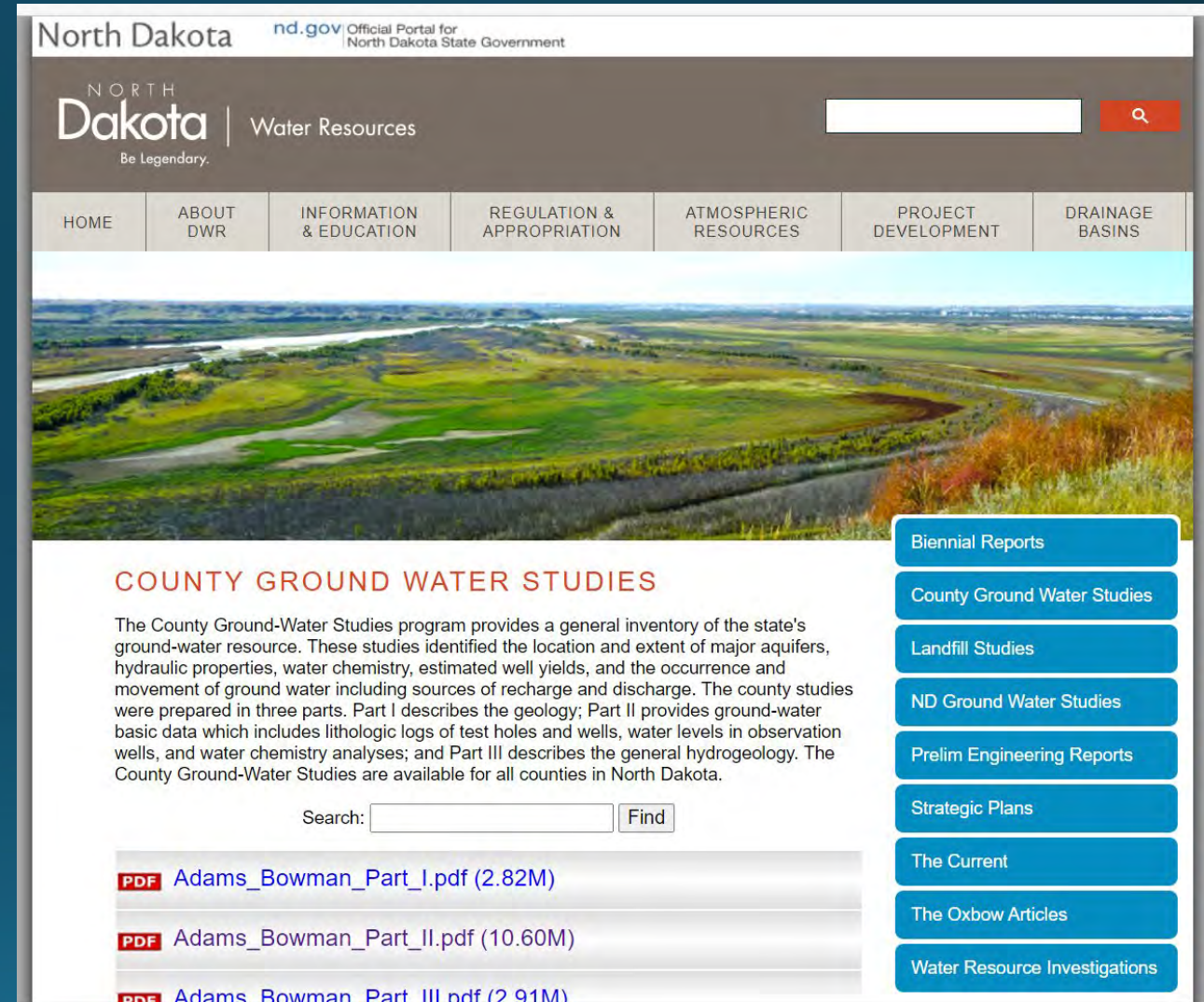
12. REMARKS

13. DRILLER'S CERTIFICATION
Signature: [Signature]

Planning

[Department of Water Resources \(nd.gov\)](http://nd.gov)

County Name - Part II



North Dakota nd.gov Official Portal for North Dakota State Government

NORTH Dakota | Water Resources Be Legendary.

HOME ABOUT DWR INFORMATION & EDUCATION REGULATION & APPROPRIATION ATMOSPHERIC RESOURCES PROJECT DEVELOPMENT DRAINAGE BASINS

COUNTY GROUND WATER STUDIES

The County Ground-Water Studies program provides a general inventory of the state's ground-water resource. These studies identified the location and extent of major aquifers, hydraulic properties, water chemistry, estimated well yields, and the occurrence and movement of ground water including sources of recharge and discharge. The county studies were prepared in three parts. Part I describes the geology; Part II provides ground-water basic data which includes lithologic logs of test holes and wells, water levels in observation wells, and water chemistry analyses; and Part III describes the general hydrogeology. The County Ground-Water Studies are available for all counties in North Dakota.

Search:

- [PDF Adams_Bowman_Part_I.pdf \(2.82M\)](#)
- [PDF Adams_Bowman_Part_II.pdf \(10.60M\)](#)
- [PDF Adams_Bowman_Part_III.pdf \(2.91M\)](#)

- Biennial Reports
- County Ground Water Studies
- Landfill Studies
- ND Ground Water Studies
- Prelim Engineering Reports
- Strategic Plans
- The Current
- The Oxbow Articles
- Water Resource Investigations

Well Decommissioning Steps

Planning: Prior to site visit

- Look up well logs for the site
 - [ND Department of Water Resources MapService](#)
- If they aren't located on ND Department of Water Resources, check Part II of the county you need on this site
 - [Department of Water Resources \(nd.gov\)](#)

Site Visit

- Visit with producer about potential wells to decommission
- Locate well with GPS, Measure Inside Diameter Well Casing or Well Bore, Document casing material , Take Photo, Measure total well depth (some offices have a tool)

Back at the Office

- Use Well Design Tool to develop the plans
- Determine Job Approval for Planning and document on title page

Site Visit

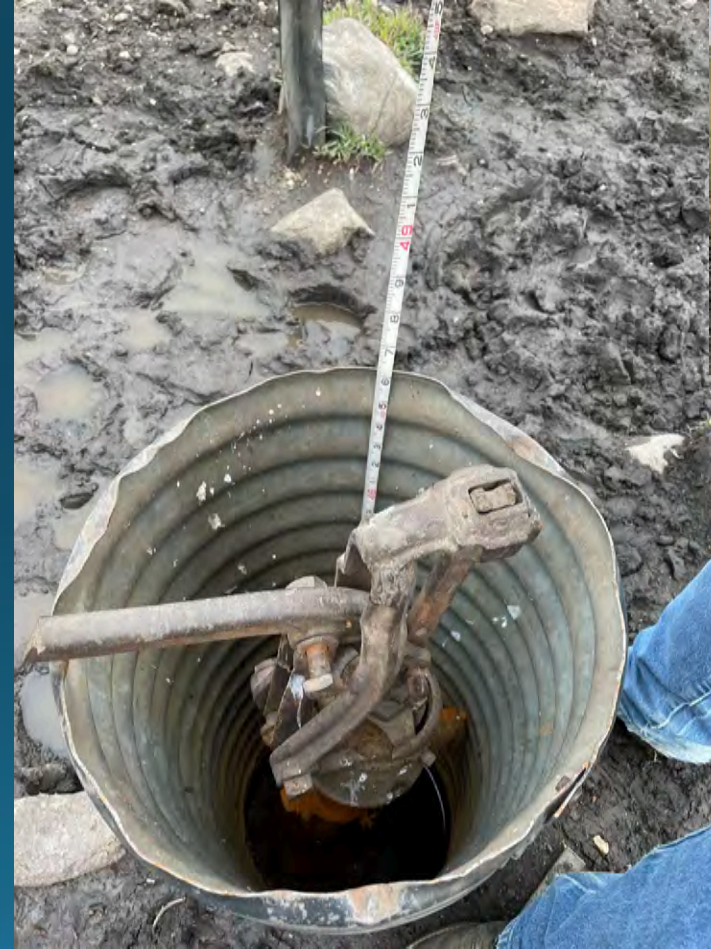
- Locate well with GPS
- Measure Inside Diameter Well Casing or Well Bore
- Document casing material
- Take Photo
- Measure total well depth
(some offices have a tool)



Site Visit Continued



Large Diameter well



Windmill Well

Well Decommissioning Steps

Planning: Prior to site visit

- Look up well logs for the site
 - [ND Department of Water Resources MapService](#)
- If they aren't located on ND Department of Water Resources, check Part II of the county you need on this site
 - [Department of Water Resources \(nd.gov\)](#)

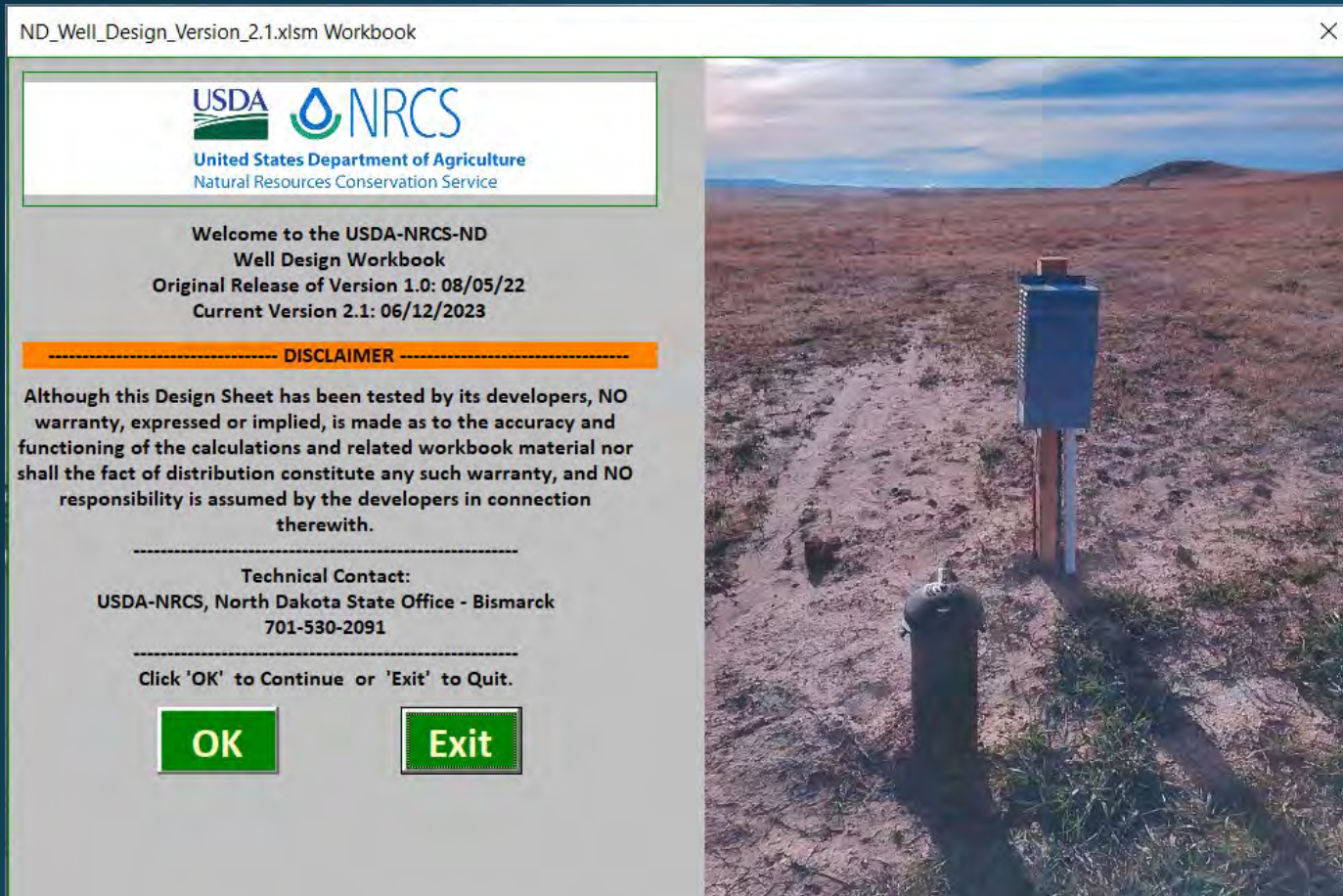
Site Visit

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Back at the Office

- Use Well Design Tool to develop the plans
- Determine Job Approval for Planning and document on title page

ND Well Design Tool



Located: [ND NRCS Website: Engineering-North Dakota, ND Engineering Design Tools: Engineering Design Tools | Natural Resources Conservation Service \(usda.gov\)](#)

Save Excel File to your computer, when you open the file this window will appear, Click OK

Well Design Tool Updates

- Well Design & Well Decommissioning Combined
- No changes to Well Design
- Standard Drawings added and automated
- Well Decommissioning ND-ENG-10 will be Archived
 - Page 1 automated and named ND-ENG-37
 - Page 2 was added to the standard drawings

Instruction Tab

Introduction:

This workbook is used in completing the design for a new well based upon user inputted data. It also has the ability to assemble a complete construction package that includes a coversheet, design plan sheet, conservation practice specifications, and O&M plans.

A knowledge well specifics and NRCS-ND Conservation Practice Standards for 642 Water Well and 351 Well Decommissioning is needed to properly use this workbook and achieve an adequate well design.

VB Code and Macros:

This is a Macro enabled workbook (xlsm) with ActiveX Control command buttons with Visual Basic Code. The workbook will not function correctly if macros are disabled. Many USDA-NRCS computers have a security feature setting that disables active content such as macros.



If the "Security Warning" is displayed upon opening the workbook, click on "Options..." and select the "Enable this content" radio button.

The Cut/Copy/Paste functions have been disabled from this workbook. These commands have shown to occasionally corrupt the workbook and cause other features not to work as intended.

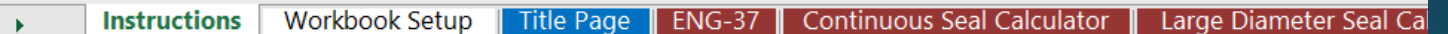
The "Workbook Setup" worksheet sets up the workbook for the ability to create a complete stockwater design package. The worksheet includes:

Make Save Folder

The **Make Save Folder** button creates a Well_Documents_Well folder in the C:\NRCS_Well_Documents that will store all the necessary PDFs documents to generate the construction package. The **Workbook Setup** button downloads, from the North Dakota NRCS Engineering website, all well PDF documents that could be included in the construction package

Workbook Setup

The "Title Page" worksheet is the place to document the information of the contract. This includes landowner/producer info, project location, designer, and field office info.



Everyone will need to go through the Workbook set up to add the updated files

Workbook Setup Tab

Workbook Setup
North Dakota Well Design Workbook
Version 2.1

Make Save Folder	NRCS_Well_Documents folder successfully made on the C:\ drive
Workbook Setup	The files found in the NRCS_Well_Documents folder are: NRCS ND Counties.zip NRCS ND Well PDFs.zip NRCS ND Well PNGs.zip

From the Instructions Tab

The "Workbook Setup" worksheet sets up the workbook for the ability to create a complete stockwater design package. The worksheet includes:

Make Save Folder	The Make Save Folder button creates a Well_Documents_Well folder in the C:\NRCS_Well_Documents that will store all the necessary PDFs documents to generate the construction package. The Workbook Setup button downloads, from the North Dakota NRCS Engineering website, all well PDF documents that could be included in the construction package
Workbook Setup	




Download Instructions:

After the initial setup of the workbook, a blank version should be saved that will include all the standard drawings. This file can then be used as a template for the development of future designs. There may be occasions when the documents will need to be replaced due to updates. When notified, this can be accomplished by selecting the "Workbook Setup" option again. During updates you will be asked about duplicate files. When asked; please select the following options.

1. Check the box in the lower left hand corner: "Do this for the next __ conflicts"
2. Click the button "Copy and Replace"

C :Drive NRCS_Well_Documents
3 Folders Created

Name

-  Counties
-  PDFs
-  PNGs



United States
Department of
Agriculture

NATURAL RESOURCES CONSERVATION SERVICE

North Dakota Well Design

Title Page Tab

WELL INSTALLATION
WELL DECOMMISSIONING

for

Three light blue input fields with red arrows on the right side.

Section:

County:

Township:

Range:

Conservation District, North Dakota

Prepared By:

Field Office



United States
Department of
Agriculture


NATURAL RESOURCES CONSERVATION SERVICE

North Dakota Well Decommissioning Design

<Design Level>
Planning of
Preliminary Design of
Final Design of
As-Built Documentation of

Title Page Tab Continued

- Planning Approved by: Must have Job Approval for Planning 351 Well Decommissioning

 **United States
Department of
Agriculture**

NATURAL RESOURCES CONSERVATION SERVICE

North Dakota Well Decommissioning Design

Final Design of

WELL DECOMMISSIONING

for

Training

Section: 2 County: Barnes

Township: 142 Range: 58

Barnes Conservation District, North Dakota

Prepared By:

Valley City Field Office

Planned By: Cassie Ahmed

Planning Approved By: Cassie Ahmed

Date: 7/19/2023

Designed By: Cassie Ahmed

Date: 7/20/2023

Checked By: Anthony Ulrich


Date: 7/20/2023

Maximum Engineering Job Class: III

Note: The individual approving the design should enter their information on the "ND_ENG_1" tab.

ND-ENG-37 Tab

- Replaces ND-ENG-10
- Same information

 United States Department of Agriculture		Clear Data	Version 2.1 North Dakota
WELL DECOMMISSIONING DESIGN DATA			
Natural Resources Conservation Service		ND-ENG-37	
Producer:		Field Office:	<Select Field Office>
Contract No.:		CIN(s):	
Location:	Section Township Range	Field(s) No.:	
Designed by:		Date:	
Checked by:		Date:	
Reason for well abandonment:			
Empty space for Reason for well abandonment			
Original Well Completion Date:	_____	Construction Report Available:	_____ ND Well Data
Construction Type:	_____	Formation Type:	_____
Total Well Depth (ft): From Ground Surface	_____ ft	Casing Diameter (in):	_____ in
Depth to Water (ft):	_____ ft	Casing Length (ft):	_____ ft
Casing Material:	_____	Was the well annular space grouted?	_____
Is the well located in a pit or basement?	_____		
Additional Design Notes:			
Empty space for Additional Design Notes			
ND-ENG-37		Printed: 6/12/2023	

SEALING ABANDONED WELLS DATA SHEET

General Information:

Present Well Owner

 Address _____

 City, State, Zip Code _____
 Reason for abandonment: _____

 Date of abandonment: _____

Well Information: (if known)

Original well construction completed on: _____
 Date (estimate if possible) _____
 Construction report available Yes No
 Construction Type:
 Drilled Driven (Sandpoint) Dug
 Other (Specify) _____

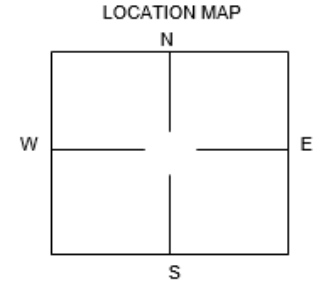
Formation Type:

Unconsolidated Formation Bedrock
 Total Well Depth (ft.) _____
 (from ground surface)
 Casing Diameter (in.) _____
 Casing Depth (ft.) _____
 Depth to Water (ft.) _____

Casing Material: Steel Plastic
 Concrete Other

Was well annular space grouted?

Yes No Unknown
 If yes, to what depth? _____ Feet



Sec. ____ T. ____ R. ____
 Farm # ____ Tract # ____ Field # ____

Mark location of sealed abandoned well
 on the square above which represents a section.
 Also indicate the section, township, and range
 location in the blanks provided.

Example

10. DATE COMPLETED Aug 1990

4. METHOD DRILLED

Cable Reverse Rotary Bored

Forward Rotary Jetted Auger

If other, specify _____

6. WELL CONSTRUCTION

Diameter of hole 4.34 inches. Depth 61 feet.

Casing: Steel Plastic Concrete

Threaded Welded Other

If other, specify _____

Pipe Weight: _____ Diameter: _____ From: _____ To: _____

Class 200 lb/ft. 4 inches 0 feet 54 feet

_____ lb/ft. _____ inches _____ feet _____ feet

_____ lb/ft. _____ inches _____ feet _____ feet

Was perforated pipe used? Yes No

Perforated pipe set from _____ ft to _____ feet

Was casing left open end? Yes No

Was a well screened installed? Yes No

Material PVC Diameter 4 inches
(stainless steel, bronze, etc.)

Slot size 18 set from 54 feet to 61 feet

Slot size _____ set from _____ feet to _____ feet

Was a packer or seal used? Yes No

If so, what material _____ Depth _____ Ft.

Type of well: Straight screen Gravel packed

Depth grouted: From 8 To 54

Grouting Material: Cement Other + Bentonite

7. WATER LEVEL

Static water level 22 feet below land surface

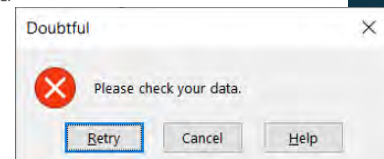
Original Well Completion Date: 8/1/1990 Construction Report Available: Yes [ND Well Data](#)

Construction Type: Drilled Formation Type: Unconsolidated Formation

Total Well Depth (ft): 61 ft Casing Diameter (in): 4.0 in

From Ground Surface
Verified during Site Visit

Well Depth
Please enter the well depth in ft. This distance is measured from the ground surface.



Depth to Water (ft): 22 ft Casing Length (ft): 54 ft

Verified during Site Visit
- likely to be different

Static Water Level
Please enter the static water level in ft. If the well is dry, enter the total well depth.

Casing Length
Please enter the casing length in ft. If the well is not cased, enter 0.

Casing Material: Plastic Was the well annular space grouted? Yes

- Steel
- Plastic**
- Concrete
- Other (Specify Below)

Is the well located in a pit or basement? No Depth of Grouting: 54 ft

Annular Space Grouting
Was the well annular space grouted, if yes, enter the depth in feet below.

9. WELL LOG

Formation	Depth (ft.)	
	From	To
Top Soil	0	3
Brown Clay	3	11
Light Yellow Clay	11	18
Yellowish sand	18	23
Yellow clay sand	23	34
Light soil	34	36
Sand + gravel	36	61

Additional Design Notes:

Continuous Seal Calculator Tab

Automatically filled in from ENG-37

Will reference this tab for Quantities

Well Diameter in Inches	4.0	Inches
Total Well Depth	61	Feet
Feet to Water from Ground	22	Feet

Amount of Casing Removed	3.0	ft
Length of Plug	3.0	ft

Quikrete: For Plug

Quikrete Needed @ 50 lbs / bag	0.70	bags
Water needed @ .5 gal / bag	0.3	gallons

Neat Cement: For Plug

Cement Needed @ 94 lbs / bag	0.20	bags
Water needed @ 6 gal / bag	1.21	gallons

Water and Chlorine:

Gallons of Chlorine or	0.05	gallons
Pounds of HTH Tablets	0.03	lbs

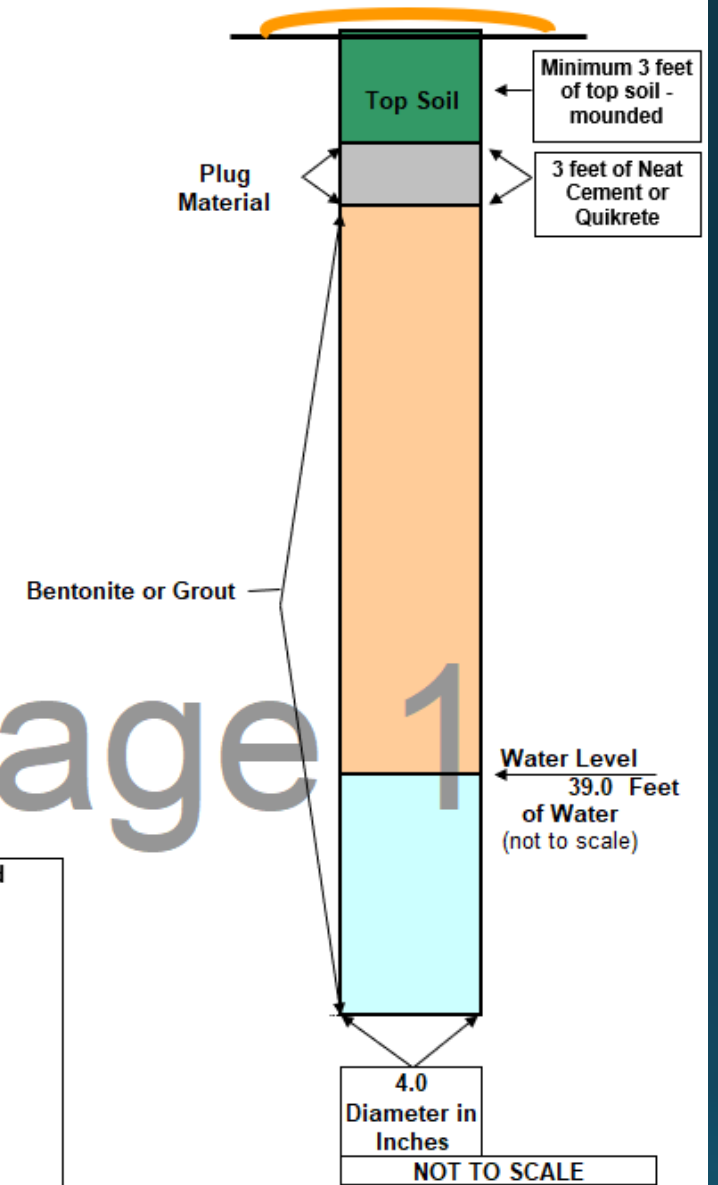
Bentonite: For Sealing

Feet of Bentonite	55.0	ft
Bags of Bentonite @ 50 lbs	6.9	bags
Water needed @ 5 gal / bag	9	gallons

Grout: For Sealing

Amount of Concrete Grout	55.0	ft
Cubic Yards of Grout	0.18	yd ³
Feet of High Solids Bentonite	55.0	ft
Cubic Yard of High Solids Bentonite	0.18	yd ³

NOTES: The casing will have to be removed 3 ft below the ground surface.



Large Dia. Seal Calculator

Well Diameter in Inches	11.0	Inches
Total Well Depth	61	Feet
Feet to Water from Ground	22	Feet

Amount of Casing Removed	3.0	ft
Length of Plug	3.0	ft

Quikrete: For Plug

Quikrete Needed @ 50 lbs / bag	5.28	bags
Water needed @ .5 gal / bag	2.6	gallons

Neat Cement: For Plug

Cement Needed @ 94 lbs / bag	1.52	bags
Water needed @ 6 gal / bag	9.14	gallons

Water and Chlorine:

Gallons of Chlorine or	0.39	gallons
Pounds of HTH Tablets	0.23	lbs

Bentonite: For Sealing

Feet of Bentonite		ft
Bags of Bentonite @ 50 lbs	0.0	bags

Grout: For Sealing

Amount of Concrete Grout		ft
Cubic Yard of Grout	0.00	yd ³
Feet of High Solids Bentonite		ft
Cubic Yard of High Solids Bentonite	0.00	yd ³

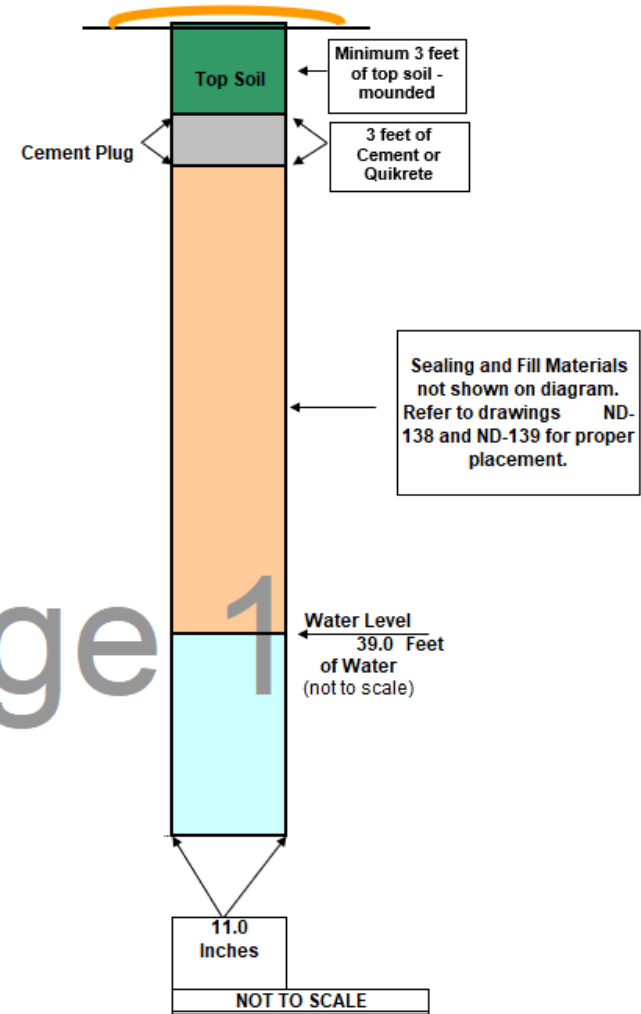
Sand: for Filling

Feet of Sand		ft
Cubic Yards of Sand	0.00	yd ³

Compacted Clay: For Fill

Feet of Clay		ft
Cubic Yards of Clay	0.00	yd ³

NOTES: The casing will have to be removed 3 ft below the ground surface.



Page 1

Continuous Seal Calc Tab

Amount of Casing Removed	3.0	ft
Length of Cement Plug	3.0	ft
Quikrete: For Plug		
Quikrete Needed @ 50 lbs / bag	0.70	bags
Water needed @ .5 gal / bag	0.3	gallons
Neat Cement: For Plug		
Cement Needed @ 94 lbs / bag	0.20	bags
Water needed @ 6 gal / bag	1.21	gallons
Water and Chlorine:		
Gallons of Chlorine or	0.05	gallons
Pounds of HTH Tablets	0.03	lbs
Bentonite: For Sealing		
Feet of Bentonite	55.0	ft
Bags of Bentonite @ 50 lbs	6.9	bags
Water needed @ 5 gal / bag	9	gallons
Grout: For Sealing		
Amount of Concrete Grout	55.0	ft
Cubic Yards of Grout	0.18	yd ³
Feet of High Solids Bentonite	55.0	ft
Cubic Yard of High Solids Bentonite	0.18	yd ³

Definitions from ND Well
Decommissioning Construction
Specification



Quikrete: forms a nearly impermeable layer when hardened. One bag of quikrete (50 lbs) is mixed with about 0.5 gallons of water.



Neat cement grout: forms a nearly impermeable layer when hardened. Neat cement is a mixture of one bag (94 pounds or 1 cubic foot) of portland cement and no more than 6 gallons of clean water. It is about the consistency of thick cream and can be pumped with special piston pumps. The mixture of one 94 pound bag of cement and six gallons of water yields a volume of approximately 1.3 cu. ft.



Bentonite Chips: Use only commercially chipped sodium montmorillonite bentonite, which swells when wet, with a particle size of 1/4 to 3/4 inch. Bentonite chips should be screened over a 1/4" mesh screen before placing in the well to remove fine particles and dust.
4" to Less than 10" Screened chipped bentonite; to be used only if well is not over 250 feet deep or there is less than 150 feet of water standing in the well.

Continuous Seal Calc Tab

Amount of Casing Removed	3.0	ft
Length of Cement Plug	3.0	ft
Quikrete: For Plug		
Quikrete Needed @ 50 lbs / bag	0.70	bags
Water needed @ .5 gal / bag	0.3	gallons
Neat Cement: For Plug		
Cement Needed @ 94 lbs / bag	0.20	bags
Water needed @ 6 gal / bag	1.21	gallons
Water and Chlorine:		
Gallons of Chlorine or	0.05	gallons
Pounds of HTH Tablets	0.03	lbs
Bentonite: For Sealing		
Feet of Bentonite	55.0	ft
Bags of Bentonite @ 50 lbs	6.9	bags
Water needed @ 5 gal / bag	9	gallons
Grout: For Sealing		
Amount of Concrete Grout	55.0	ft
Cubic Yards of Grout	0.18	yd ³
Feet of High Solids Bentonite	55.0	ft
Cubic Yard of High Solids Bentonite	0.18	yd ³

Definitions from ND Well
Decommissioning Construction
Specification

Grout For Sealing:

Concrete Grout: A mixture of cement, sand, and water in the proportion of one bag of portland cement, a cubic foot of dry, washed (not pit run) sand and 5 to 6 gallons of clean water.

High Solids Bentonite: This material is a commercially prepared blend of bentonite clays and powdered polymers when mixed with clean water forms a slurry with a minimum 20% solids by weight and a density of 9.4 lb/gal. The mixture should be prepared as directed by the manufacturer. The slurry sets to a low-permeable plastic grout that generates no heat of hydration and does not shrink during curing in the presence of moisture.

For Large Diameter Sealing:

Native Clay: This can be any moist material of local origin found below the topsoil that has a medium or loamy texture (excluding sandy loam), according to USDA Textural Classification System, or is classified a silty clay (CL-ML) or lean clay (CL) in the Unified Soil Classification System. Fat Clay (CH) material is not acceptable because of difficulty in compacting.

Continuous Seal Calc Tab

Amount of Casing Removed	3.0	ft
Length of Cement Plug	3.0	ft
Quikrete: For Plug		
Quikrete Needed @ 50 lbs / bag	0.70	bags
Water needed @ .5 gal / bag	0.3	gallons
Neat Cement: For Plug		
Cement Needed @ 94 lbs / bag	0.20	bags
Water needed @ 6 gal / bag	1.21	gallons
Water and Chlorine:		
Gallons of Chlorine or	0.05	gallons
Pounds of HTH Tablets	0.03	lbs
Bentonite: For Sealing		
Feet of Bentonite	55.0	ft
Bags of Bentonite @ 50 lbs	6.9	bags
Water needed @ 5 gal / bag	9	gallons
Grout: For Sealing		
Amount of Concrete Grout	55.0	ft
Cubic Yards of Grout	0.18	yd ³
Feet of High Solids Bentonite	55.0	ft
Cubic Yard of High Solids Bentonite	0.18	yd ³

From ND Well Decommissioning
Construction Specification

Disinfect the Well.

To bring the well to a 100 parts per million chlorine concentration, one of the following formulas can be used:

- 1 gallon 5% chlorine bleach per 500 gallons of water
- 1 pint 5% chlorine bleach per 62 gallons of water
- 1.2 pounds high-test calcium hypochlorite tablets per 1000 gallons of water

Coversheet

Prepopulated from Title Page and ENG-37:

- Sec Twp Range
- Producer Name
- County
- Job Approval
- Designed & Checked

Items to Add:

Will need to add
Location map

Update Drawing used-
populated when
Drawings Tab is updated

Once ND-ENG 1 is
populated the Approved
by will be filled in

Section 2 Town. 142 Range 58

Clip
Location
Map

**PLANS FOR THE CONSTRUCTION OF A
WELL DECOMMISSIONING**
for
Training
in
BARNE S COUNTY, NORTH DAKOTA

**PREPARED BY
U.S. DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE**

Designer	Estate Attorney	Date	Sheet
Drawn	Walter C. Johnson	Date	4/10/22
Checked	Anthony J. Joffe	Date	2/22/22
Approved		Date	

PROJECT LOCATION MAP

Scale: 1 inch = NTS Ft.

Construction Notes

1. ND Century Code 49-23 and NRCS policy requires the installer contact the ND One Call Center at 800-735-0555 at least 48 hours prior to any excavation work. The Contractor is responsible for the notification of all utility companies affected by the project.
2. The Owner is responsible for acquiring all necessary approvals, permits, and easements required for installation of the project. The Owner and Contractor are responsible for compliance with all ordinances and laws pertaining to installation of the project.
3. The producer shall notify the NRCS at least 48 business hours in advance of any staking or inspection that is required in order that such work can be properly scheduled.
4. A water well must be decommissioned by a licensed water well driller. When allowed by state and local regulations, hand-dug wells less than 60-feet deep and without steel or plastic casing, may be decommissioned by the landowner, engineer, geologist, licensed pump installer, or licensed well driller.

SHEET #	TITLE
1	COVER SHEET
2	DESIGN PLAN SHEET
3	ND-139 - Typical Well Installation

Job Class		Project	JA
Well Decommissioning	Well Depth	feet	61
	Well Diam.	inches	4.00
			MAX JA
			III

NRCS Practice Certification Statement

I certify that these practices have been installed in accordance with these construction drawings and specifications. I approve all modifications made during construction as meeting NRCS Practice Standards, and I have documented those on these as-built drawings. I have the required Construction Job Approval Authority for all practices, and hereby certify that the installed quantities I have listed are correct based on field measurements.

Construction Checkout Signature _____

Date _____

COVER SHEET

Sect. 2, Township 142 Range 58
Barne S County
North Dakota

United States Department of Agriculture
Natural Resources

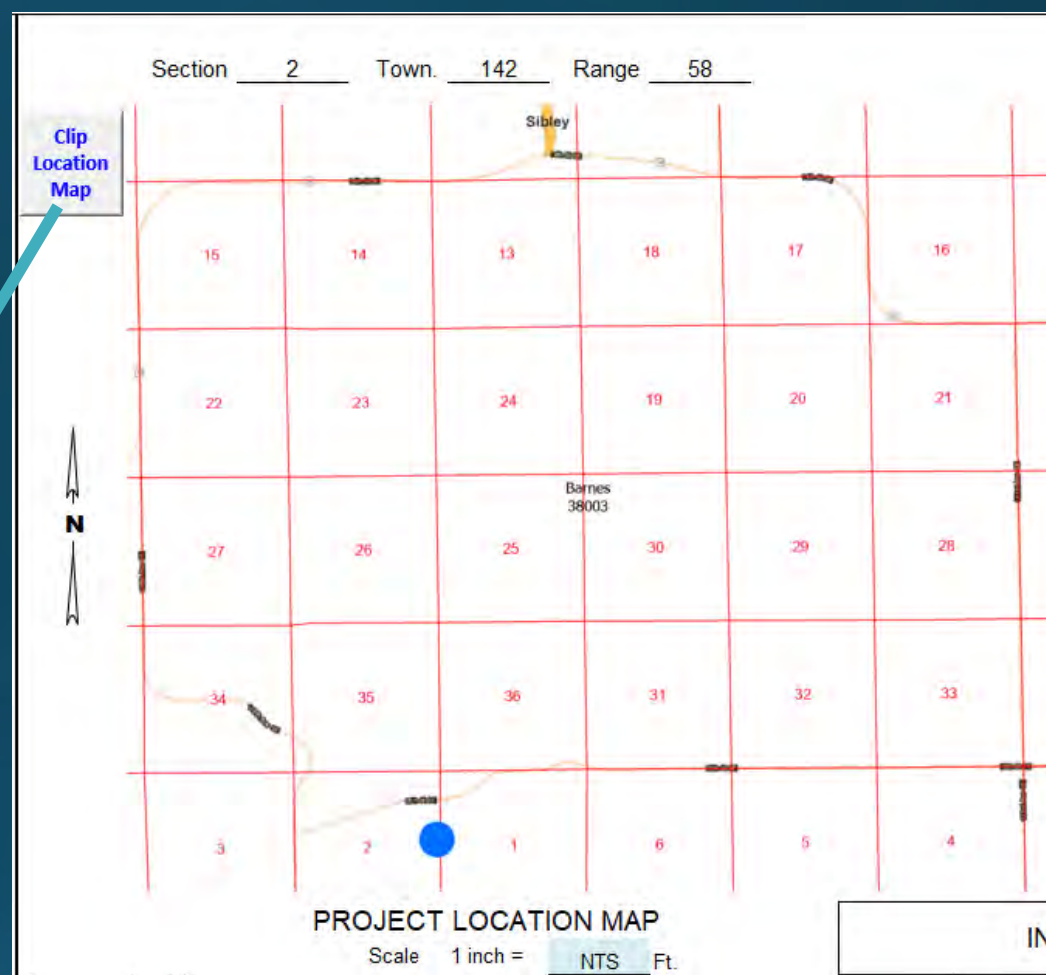
File Name
ND-23-CA-201

Date
7/19/2023

Sheet 1 of 3

Coversheet Continued

Location: This map should be zoomed out far enough so you can easily locate the site from a nearby city



Screen Clip Window Check ✕

If the application that you want to take a screen clipping from is open then click OK if not then click Cancel

The screen to clip must be open directly behind Excel

Job Class			Project	JA
Well Decommissioning	Well Depth	feet	61	III
	Well Diam	inches	4.00	III
MAX JA				III

Job Approval will Automatically populate

INDEX OF DRAWINGS	
SHEET #	TITLE
1	COVER SHEET
2	DESIGN PLAN SHEET
3	ND-130 - Typical Well Installation

The Index will update once the Drawing Tab is Updated

Design Plan Sheet

Prepopulated from Title Page and ENG-37:

- Sec Twp Range
- Producer Name
- County
- Designed & Checked

Items to Add:

Will need to add Location map

Design Data & Table of Quantities

Once ND-ENG 1 is populated the Approved by will be filled in

Design Data

Depth of Existing Well (ft)

Diameter of Well Casing (in)

Static Water Level (ft)

Table of Quantities

ITEM OR MATERIAL	UNIT	QTY	AS-BUILT

N

Import
Plan
Map

Plan View

Scale 1 inch = NTS Ft.

Designed: _____ Date: _____

Drawn: _____ Date: 4/10/23

Checked: _____ Date: _____

Approved: _____ Date: _____

Design Plan Sheet

Sect. 2 Township 142 Range 58

Barnes County

North Dakota

United States
Department of
Agriculture

Natural Resources
Conservation Service

File Name:
ND-23-CA-201

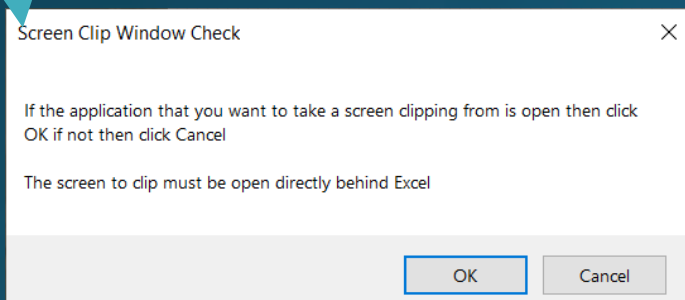
Date:
7/14/2023

Sheet 2 of 3

Design Plan Sheet Continued



- This map should be zoomed into the site so you can easily see where the well is located
- Include Imagery and Contours
- Label location of well



Design Plan Sheet Continued

Design Data

Depth of Existing Well (ft)
 Diameter of Well Casing (in)
 Static Water Level (ft)

Table of Quantities

ITEM OR MATERIAL	UNIT	QTY	AS-BUILT

Claudia Ahmed Date: 7/20/22
 A. Ulrich/NC Ahmed Date: 4/10/22
 Anthony Ulrich Date: 7/20/22
 Claudia Ahmed Date: 7/20/22



Design Data

Depth of Existing Well (ft) 61
 Diameter of Well Casing (in) 11.0
 Static Water Level (ft) 22

Table of Quantities

ITEM OR MATERIAL	UNIT	QTY	AS-BUILT
Exist Well Depth Measured from ground	ft	61	
Casing Type Plastic	in	4.0	
Casing Length	ft	54	
Sealing Material <Material>			
Fill Material <Material>			
Plug Material <Material>			
Chlorine or HTH <Liquid or Tablets>			

Claudia Ahmed Date: 7/20/22
 A. Ulrich/NC Ahmed Date: 4/10/22
 Anthony Ulrich Date: 7/20/22
 Claudia Ahmed Date: 7/20/22



Click on Populate Table of Quantities. Design data & Table of Quantities updated

Amount of Casing Removed	3.0	ft
Length of Plug	3.0	ft

Quikrete: For Plug

Quikrete Needed @ 50 lbs / bag	0.70	bags
Water needed @ .5 gal / bag	0.3	gallons

Neat Cement: For Plug

Cement Needed @ 94 lbs / bag	0.20	bags
Water needed @ 6 gal / bag	1.21	gallons

Water and Chlorine:

Gallons of Chlorine or	0.05	gallons
Pounds of HTH Tablets	0.03	lbs

Bentonite: For Sealing

Feet of Bentonite	55.0	ft
Bags of Bentonite @ 50 lbs	6.9	bags
Water needed @ 5 gal / bag	9	gallons

Grout: For Sealing

Amount of Concrete Grout	55.0	ft
Cubic Yards of Grout	0.18	yd ³
Feet of High Solids Bentonite	55.0	ft
Cubic Yard of High Solids Bentonite	0.18	yd ³

Table of Quantities

ITEM OR MATERIAL	UNIT	QTY	AS-BUILT
Exist Well Depth Measured from ground	ft	61	
Casing Type Plastic	in	4.0	
Casing Length	ft	54	
Sealing Material Bentonite	Bags	7.0	
Plug Material Quikrete	Bags	0.7	
Chlorine or HTH Liquid	Gallons	0.1	

Table of Quantities add materials and units for project into.

 Prepopulated with materials, meant to be edited for each project.

Design Plan Sheet Continued

Completed Design Plan Sheet

Design Data

Depth of Existing Well (ft)	61
Diameter of Well Casing (in)	4.0
Static Water Level (ft)	22

Table of Quantities

ITEM OR MATERIAL	UNIT	QTY	AS-BUILT
Exist Well Depth Measured from ground	ft	61	
Casing Type Plastic	in	4.0	
Casing Length	ft	54	
Sealing Material Bentonite	Bags	7.0	
Plug Material Quikrete	Bags	0.7	
Chlorine or HTH Liquid	Gallons	0.1	



Plan View Scale 1 inch = 100 Ft.

Designed: Cassie Ahmed	Date: 7/20/23	Drawn: A. Ulrich/V. Ahmed	Date: 4/10/23	Checked: Anthony Ulrich	Date: 7/20/23	Approved: Cassie Ahmed	Date: 7/20/23
------------------------	---------------	---------------------------	---------------	-------------------------	---------------	------------------------	---------------

Design Plan Sheet
 Sect. 2 Township 142, Range 50
 Barnes County
 North Dakota



File Name: ND-23-CA-201

Date: 7/18/2023

Sheet 2 of 3

Drawings Tab

DRAWINGS AND DOCUMENTS TO BE INCORPORATED INTO FINAL PACKAGE

Standard Drawings

- ND-130 - Typical Well Installation
- ND-135 - Well Decommissioning Less Than 4 Inch Dia
- ND-136 - Well Decommissioning 4 Inch To 10 Inch Dia
- ND-137 - Well Decommissioning 10 Inch Continuous Seal
- ND-138 - Well Decommissioning 10 Inch Sand Fill
- ND-139 - Well Decommissioning 10 Inch Dia Clay Fill

Construction Specifications

- ND-ENG-1 - Construction Specification Cover Sheet
- ND-CS-100 - General Requirements
- ND-CS-351 - Well Decommissioning Construction Specification
- ND-CS-642 - Water Well Construction Specification

Practice O&Ms

- ND-OM-351 - Well Decommissioning Operation & Maintenance
- ND-OM-642 - Water Well Operation & Maintenance

CONSTRUCTION PACKAGE

DESIGN/PLANNING PACKAGE

NOTE: Drawings will be made available for editing as they are selected on this sheet. Edits and data entry will need to be made to the drawings prior to generating the PDF package,

Standard Drawing – For this example 4 inch to 10 inch Dia – New Tab Opens with ND-136
Construction Specs - The 3 boxes checked will always be used for a well decommissioning
O&M – Well Decommissioning

ND-136

Once the appropriate standard drawing is selected on the drawing tab a new tab will open in the spreadsheet

This example ND-136 Tab with the standard drawing for 4" to Less than 10" Dia is open and populated

Notes

- A well must be decommissioned by a licensed well driller. The person decommissioning the well is responsible for submitting the well closure report to all applicable government entities.
- The well shall be cleaned of all foreign material, including pumping equipment, valves, pipelines, casing liners, and then sanitized. If the well is dry, disinfection will not be necessary.
- Sealing Material (circle type used and note #yds, sack sealant or volume and mix ratio)
 - Neat Cement
 - Concrete Grout
 - High Solids Bentonite Grout
The following may only be used if the well is less than 250 feet deep and has less than 150 feet of standing water.
 - Bentonite chips $\frac{1}{4}$ to $\frac{3}{4}$ inch dia. (screen to remove dust and fine particles before placing).
- If more than one sealing material is used, show depth of materials on cross section.
- Place sealing material from the bottom of the well upward using a tremie pipe to ensure continuous placement without bridging. If chips are used they may be poured in from the top slowly.
- Top with neat cement, concrete grout, or "Quikrete" equivalent a minimum of 3 feet below planned cut off point. Cut off casing 3 ft. below ground surface. If well is located in a basement or pit, casing does not have to be cut off.
- Periodically inspect to ensure the ground and adjacent areas have not settled or eroded, and maintain to prevent ponding above the site.
- In the case of an artesian well, a Certified Well Driller with experience in sealing artesian wells shall be contracted to complete the decommissioning.

DESIGN DIMENSIONS

Well Depth = 61 (ft)

Casing Diameter = 4 (in)

Casing Material Type or Schedule and Length:
Plastic 54

Static Water Level = 22 (ft)

WELL LOCATION

1/4 SECTION TOWNSHIP RANGE
2 142 58

Table 1: Sealing Material Used

Sealing Material Used	From (ft)	To (ft)	No. Yards Sack Sealant or Volume	Mix Ratio
	Surface			

Table 2: Required Method of placing material

Check	Required Method of placing material
	Conductor Pipe - Groutly
	Conductor Pipe - Pumped
	Placed in Top of Well
	Other (Explain below)

Table 3: Check for Piping and Sealing

	Yes	No	N/A
Pump & Piping removed?			
Screen removed?			
Casing left in place?			---
Was casing cut off below surface?			---
Did material settle after 24 hrs? (if known)			---
If yes, was hole resealed?			---

Comments: _____

RECORD OF WELL DECOMMISSIONING

Date of Completion _____

Name of Person or firm doing sealing work _____

Address _____

Phone Number _____

Certified Well Driller Certificate Number _____

Signature of person doing work certifying well sealing done according to specifications and state guidelines _____

NRCS Inspected By _____ Date _____

USDA United States Department of Agriculture Natural Resources Conservation Service

File Name: ND-DWG-136
Date: 7/19/2023
Sheet 3 of 3

WELL DECOMMISSIONING 4" TO LESS THAN 10" DIA.
BARNES COUNTY
Training
Barnes

ND- ENG-1

U.S. DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE
NORTH DAKOTA

CONSTRUCTION SPECIFICATIONS COVER SHEET

ND-ENG-1

Producer: Training Field Office: Valley City
 Location: Sect. 2 Township 142 Range 58 Contract #:
 Job Description:

Drawings and Specifications

Construction Drawing Number: ND-23-CA-201 Number of Sheets: 3
 Approver Signature:
 Design Approved By: Cassie Ahmed Date: 7/20/2023

Spec #	Specification Title
ND-CS-100	General Requirements
ND-CS-351	Well Decommissioning Constuction Specification
ND-OM-351	Well Decommissioning Operation & Maintenance

Additional Items

Grass/Legume Seeding Job Sheet Operation and Maintenance Plan(s)
 Design Report (Job Class IV or greater) Inspection Plan (Job Class IV or greater)
 Other:

Owner/Operator/Producer Review

I have reviewed the drawings, construction specifications, and additional items listed and I agree to construct, operate, and maintain this project in accordance with the drawings and specifications during construction will require approval from the NRCS. I will obtain all necessary permits, easements, and water rights. I will construct the project as stated in the acquired permit. I agree to take the necessary precautions to prevent accidental contact. The NRCS makes no representation for utility. Any individual(s) performing excavation work must call the NRCS Center at (1-800-795-0555) at least two working days before work begins to have all publicly owned utilities marked. If excavation has not occurred within 21 days of obtaining a One-Call excavation ticket <http://www.ndonecall.com/tic-map/>

I understand that it is my responsibility to provide the One-Call ticket number(s) to NRCS prior to any excavation.

Owner/Operator/Producer Signature: _____ Date: _____
 One-Call Ticket Number(s) Received by NRCS: _____ Reviewed by NRCS Representative: _____ Date: _____

USDA-NRCS-ND ND-ENG-1 07/11/23

Approver must have Job Approval to Design and Sign Eng-1

Design Approved by: When entered will populate the Engineering Plans for the Approver

To update ND_ENG_1 with list of practice specifications included in the construction package please select the appropriate specifications on the Drawings tab and then return to the ND_ENG_1 tab. The "Populate Contents" button can be used to refresh the list of included specs.



Design Complete

- Calcs and Plans are checked and signed by checker
- Go to Drawing Tab to Created:
 - Design Packet
 - Construction Specifications
 - Engineering Plans
 - Person with Job Approval reviews engineering plans and ND-ENG-1 and signs

Creating Design/Planning Package

DRAWINGS AND DOCUMENTS TO BE INCORPORATED INTO FINAL PACKAGE

Standard Drawings	Construction Specifications	Practice O&Ms
<input type="checkbox"/> ND-130 - Typical Well Installation	<input checked="" type="checkbox"/> ND-ENG-1 - Construction Spec Cover Sheet	<input checked="" type="checkbox"/> ND-OM-351 - Well Decommissioning Operation & Maintenance
<input type="checkbox"/> ND-135 - Well Decomm Less Than 4 Inch Dia	<input checked="" type="checkbox"/> ND-CS-100 - General Requirements	<input type="checkbox"/> ND-OM-642 - Water Well Operation & Maintenance
<input checked="" type="checkbox"/> ND-136 - Well Decomm 4 Inch To 10 Inch Dia	<input checked="" type="checkbox"/> ND-CS-351 - Well Decommissioning Construction Specification	
<input type="checkbox"/> ND-137 - Well Decomm 10 Inch Continuous Seal	<input type="checkbox"/> ND-CS-642 - Water Well Construction Specification	
<input type="checkbox"/> ND-138 - Well Decomm 10 Inch Sand Fill		
<input type="checkbox"/> ND-139 - Well Decomm 10 Inch Dia Clay Fill		

CONSTRUCTION PACKAGE

DESIGN/PLANNING PACKAGE


NOTE: Drawings will be made available for editing as they are selected on this sheet. Edits and data entry will need to be made to the drawings prior to generating the PDF package,

Instructions | Workbook Setup | Title Page | ENG-37 | Continuous Seal Calculator | Coversheet | DesignPlan | ND-136 | ND-ENG-1 | Drawings | Developer Notes

- Standard Drawing – For this example 4 inch to 10 in Dia
- Construction Specs - The 3 boxes checked will always be checked for a well decommissioning
- O&M – Well Decommissioning

Running...

Please wait while the PDF package is generated. This may take a few minutes.



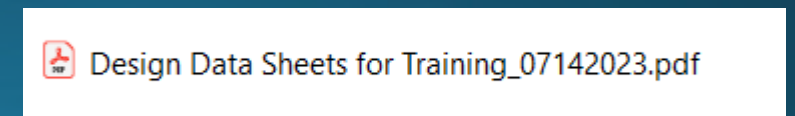
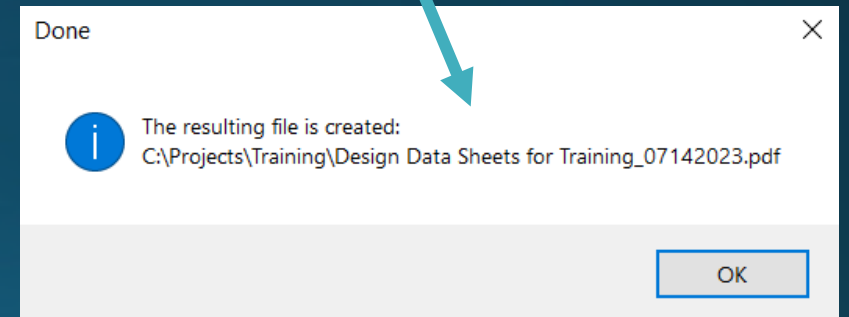
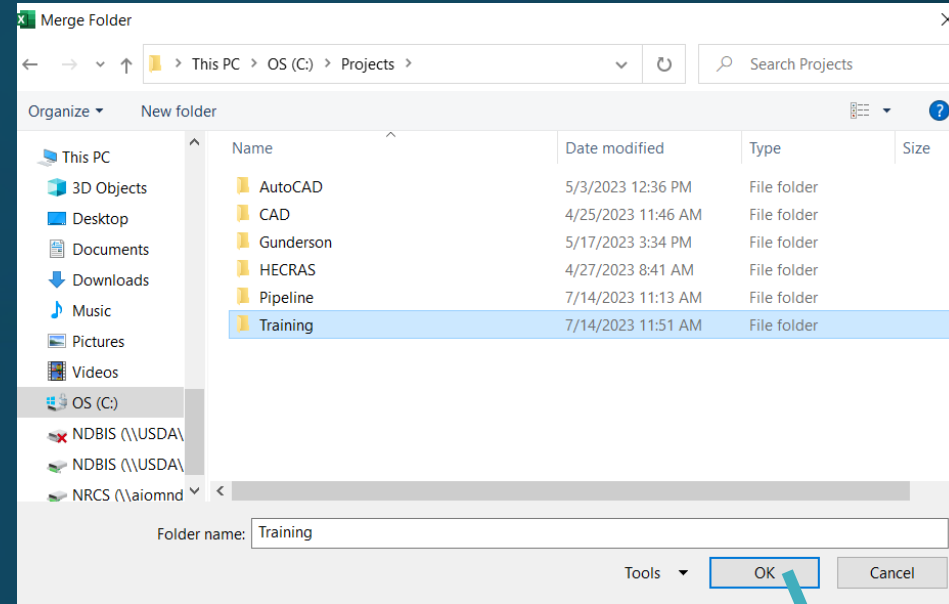
Design Status

Select the status of the project design.

A draft design will be printed with a "DRAFT" watermark.

DRAFT **FINAL**

Creating Desing/Planning Package Continued



- New Window opens, browse to location to save, Click once to select the Folder to save to, Click OK
- New widow Opens – The resulting file... Click OK
- Browse to folder on computer – PDF created.
- Naming will always be:
 - Design Data Sheets – Producer Name – Date Printed

Creating Design/Planning Package Continued



**United States
Department of
Agriculture**

NATURAL RESOURCES CONSERVATION SERVICE

North Dakota Well Decommissioning Design

Final Design of

WELL DECOMMISSIONING

for

Training

Section: 2 County: Barnes
 Township: 142 Range: 58
Barnes Conservation District, North Dakota

Prepared By:

Valley City Field Office

Planned By: Cassie Ahmed
 Planning Approved By: Cassie Ahmed
 Date: 7/20/23
 Designed By: Cassie Ahmed
 Date: 7/20/2023
 Checked By: Anthony Ulrich
 Date: 7/20/2023

Maximum Engineering Job Class: III

Design Data Sheets for Training_07142023.pdf

If Draft was selected

**Preliminary Plan
Not for Construction**

Minimum 3 feet of top soil-mounded
 Plug Material
 Bentonite or Grout
 Water Level
 39.6 Feet of Water (not to scale)
 4.0 Diameter in Inches
 1/2" = 1' SCALE

Table	Item	Quantity	Unit
Total Well Depth	61	Feet	
	Feet to Water from Ground	22	Feet
Amount of Casing Removed	3.0	ft	
	Feet of Plug	3.0	ft
Quikrete For Plug	0.70	bags	
	0.3	gallons	
Neat Cement For Plug	1.1	bags	
	1.21	gallons	
Water and Chlorine	0.05	gallons	
	0.03	lbs	
Bentonite: For Sealing	55.0	ft	
	8.9	bags	
	9	gallons	
Grout: For Sealing	0.18	ft	
	0.18	yd ³	
	0.18	yd ³	

Hole Diameter	Volume per foot of depth
(in)	(cu ft)
2	0.15
3	0.38
4	0.68
6	1.05
7	1.5
8	2.0
9	2.6
10	3.3
12	4.1
14	5.0
16	6.2
18	7.6

Final Product

Creating Construction Package Continued

DRAWINGS AND DOCUMENTS TO BE INCORPORATED INTO FINAL PACKAGE

Standard Drawings	Construction Specifications	Practice O&Ms
<input type="checkbox"/> ND-130 - Typical Well Installation	<input checked="" type="checkbox"/> ND-ENG-1 - Construction Spec Cover Sheet	<input checked="" type="checkbox"/> ND-OM-351 - Well Decommissioning Operation & Maintenance
<input type="checkbox"/> ND-135 - Well Decomm Less Than 4 Inch Dia	<input checked="" type="checkbox"/> ND-CS-100 - General Requirements	<input type="checkbox"/> ND-OM-642 - Water Well Operation & Maintenance
<input checked="" type="checkbox"/> ND-136 - Well Decomm 4 Inch To 10 Inch Dia	<input checked="" type="checkbox"/> ND-CS-351 - Well Decommissioning Constuction Specification	
<input type="checkbox"/> ND-137 - Well Decomm 10 Inch Continuous Seal	<input type="checkbox"/> ND-CS-642 - Water Well Constuction Specification	
<input type="checkbox"/> ND-138 - Well Decomm 10 Inch Sand Fill		
<input type="checkbox"/> ND-139 - Well Decomm 10 Inch Dia Clay Fill		

CONSTRUCTION PACKAGE

DESIGN/PLANNING PACKAGE

NOTE: Drawings will be made available for editing as they are selected on this sheet. Edits and data entry will need to be made to the drawings prior to generating the PDF package,

Instructions | Workbook Setup | Title Page | ENG-37 | Continuous Seal Calculator | Coversheet

- Click on Construction Package
- Click on Draft or Final

Running...

Please wait while the PDF package is generated.

This may take a few minutes.



Design Status

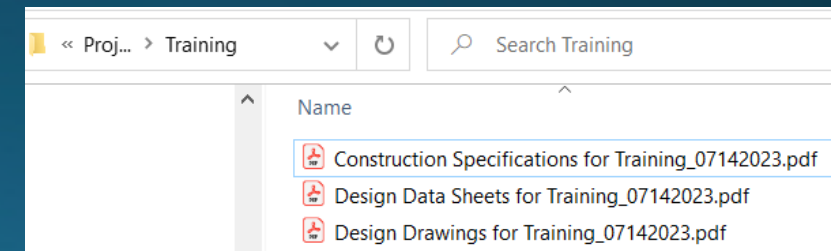
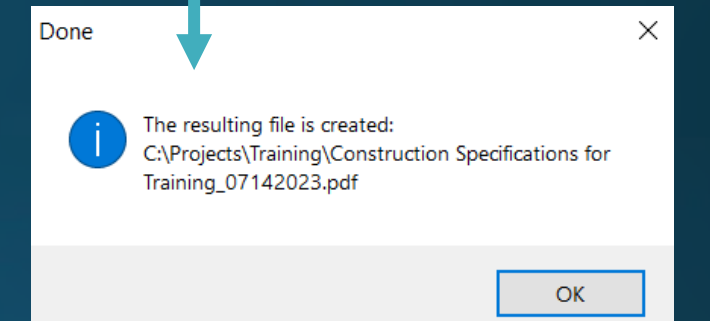
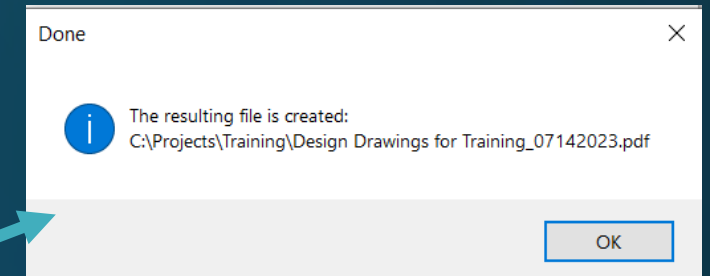
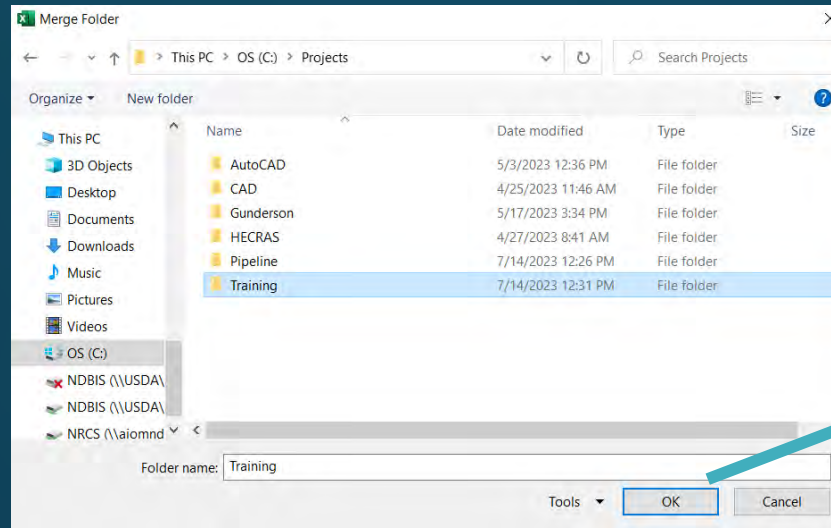
Select the status of the project design.

A draft design will be printed with a "DRAFT" watermark.

DRAFT **FINAL**

Creating Construction Package

- New window opens: Browse to folder location, Click once on Folder to choose it, Click OK
- New window Opens – The resulting file... Drawings... Click OK
- New window Opens – The resulting file... Construction Specification... Click OK
- Browse to folder on computer – PDFs created.
- Naming will always be:
 - Drawings– Producer Name – Date Printed
 - Construction Specifications – Date Printed



Creating Construction Package Continued

Signed by employee with Job Approval

* E-signed – not showing up in PowerPoint

U.S. DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE
NORTH DAKOTA
CONSTRUCTION SPECIFICATIONS COVER SHEET
ND-ENG-1

Producer: Training Field Office: Valley City
Location: Sect. 2 Township 142 Range 58 Contract #:
Job Description: Well Decommissioning

Drawings and Specifications
Construction Drawing Number: ND-23-CA-201 Number of Sheets: 3

Approver Signature: _____ Date: 7/20/2023
Design Approved By: Cassie Ahmed

Spec #	Specification Title
ND-CS-100	General Requirements
ND-CS-351	Well Decommissioning Construction Specification
ND-OM-351	Well Decommissioning Operation & Maintenance

Additional Items

Grass/Legume Seeding Job Sheet Operation and Maintenance Plan(s)
 Design Report (Job Class IV or greater) Inspection Plan (Job Class IV or greater)
 Other: _____

Owner/Operator/Producer Review

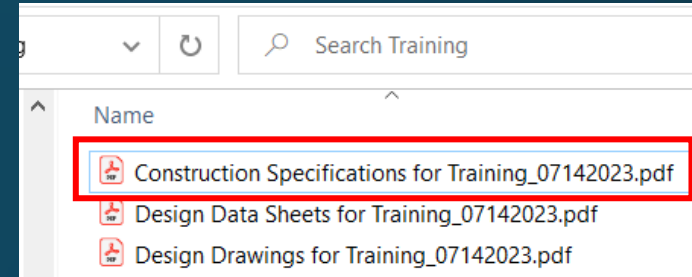
I have reviewed the drawings, construction specifications, and additional items listed and I agree to construct, operate, and maintain this project in accordance with them. I understand that modifications during construction will require approval from the NRCS prior to installation. I agree to obtain all necessary permits, easements, and water rights. I will inform the NRCS of all conditions pertaining to project construction as stated in the acquired permits. I agree to comply with all federal, state, tribal, and local laws and regulations pertaining to this construction.

I agree to take the necessary precautions to prevent personal injuries and damage to utilities from accidental contact. The NRCS makes no representation of the existence or non-existence of any utility. Any individual(s) performing excavation work is responsible for calling 811 or the ND One Call Center at (1-800-795-0553) at least two working days before work begins to have all publicly owned utilities marked. If excavation has not occurred within 21 days of obtaining a One-Call excavation ticket number, the One-Call system shall be notified and the ticket be updated. A utility locate request can also be made at the NDOC's ITC website which is available 24-hours a day:
<http://www.ndonecall.com/itic-imap/>

I understand that it is my responsibility to provide the One-Call ticket number(s) to NRCS prior to any excavation or subsurface activities.

Owner/Operator/Producer Signature _____ Date _____
One-Call Ticket Number(s) Received by NRCS _____ Reviewed by NRCS Representative _____ Date _____

USDA-NRCS-ND ND-ENG-1 07/11/23



U.S. DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE
NORTH DAKOTA
CONSTRUCTION SPECIFICATIONS COVER SHEET
ND-ENG-1

Producer: Training Field Office: Valley City
Location: Sect. 2 Township 142 Range 58 Contract #:
Job Description: Well Decommissioning

Drawings and Specifications
Construction Drawing Number: ND-23-CA-201 Number of Sheets: 3

Approver Signature: _____ Date: 7/20/2023
Design Approved By: Cassie Ahmed

Spec #	Specification Title
ND-CS-100	General Requirements
ND-CS-351	Well Decommissioning Construction Specification
ND-OM-351	Well Decommissioning Operation & Maintenance

Additional Items

Grass/Legume Seeding Job Sheet Operation and Maintenance Plan(s)
 Design Report (Job Class IV or greater) Inspection Plan (Job Class IV or greater)
 Other: _____

Preliminary Plan - Not for Construction

I have reviewed the drawings, construction specifications, and additional items listed and I agree to construct, operate, and maintain this project in accordance with them. I understand that modifications during construction will require approval from the NRCS prior to installation. I agree to obtain all necessary permits, easements, and water rights. I will inform the NRCS of all conditions pertaining to project construction as stated in the acquired permits. I agree to comply with all federal, state, tribal, and local laws and regulations pertaining to this construction.

I agree to take the necessary precautions to prevent personal injuries and damage to utilities from accidental contact. The NRCS makes no representation of the existence or non-existence of any utility. Any individual(s) performing excavation work is responsible for calling 811 or the ND One Call Center at (1-800-795-0553) at least two working days before work begins to have all publicly owned utilities marked. If excavation has not occurred within 21 days of obtaining a One-Call excavation ticket number, the One-Call system shall be notified and the ticket be updated. A utility locate request can also be made at the NDOC's ITC website which is available 24-hours a day:
<http://www.ndonecall.com/itic-imap/>

I understand that it is my responsibility to provide the One-Call ticket number(s) to NRCS prior to any excavation or subsurface activities.

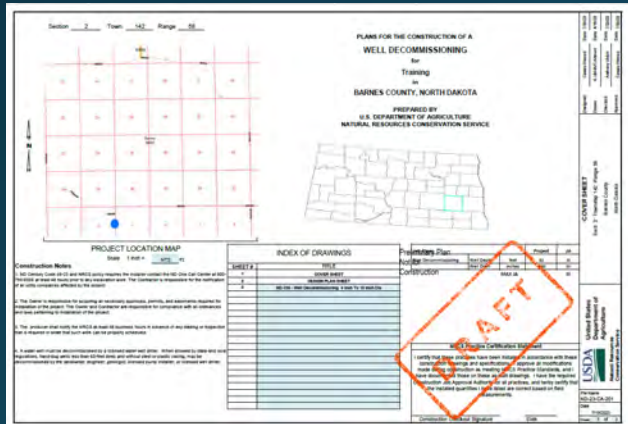
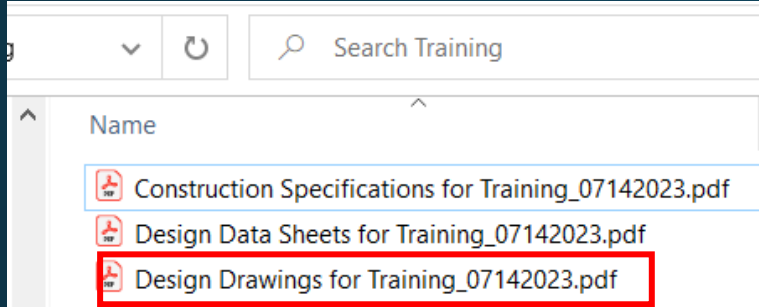
Owner/Operator/Producer Signature _____ Date _____
One-Call Ticket Number(s) Received by NRCS _____ Reviewed by NRCS Representative _____ Date _____

USDA-NRCS-ND ND-ENG-1 07/11/23

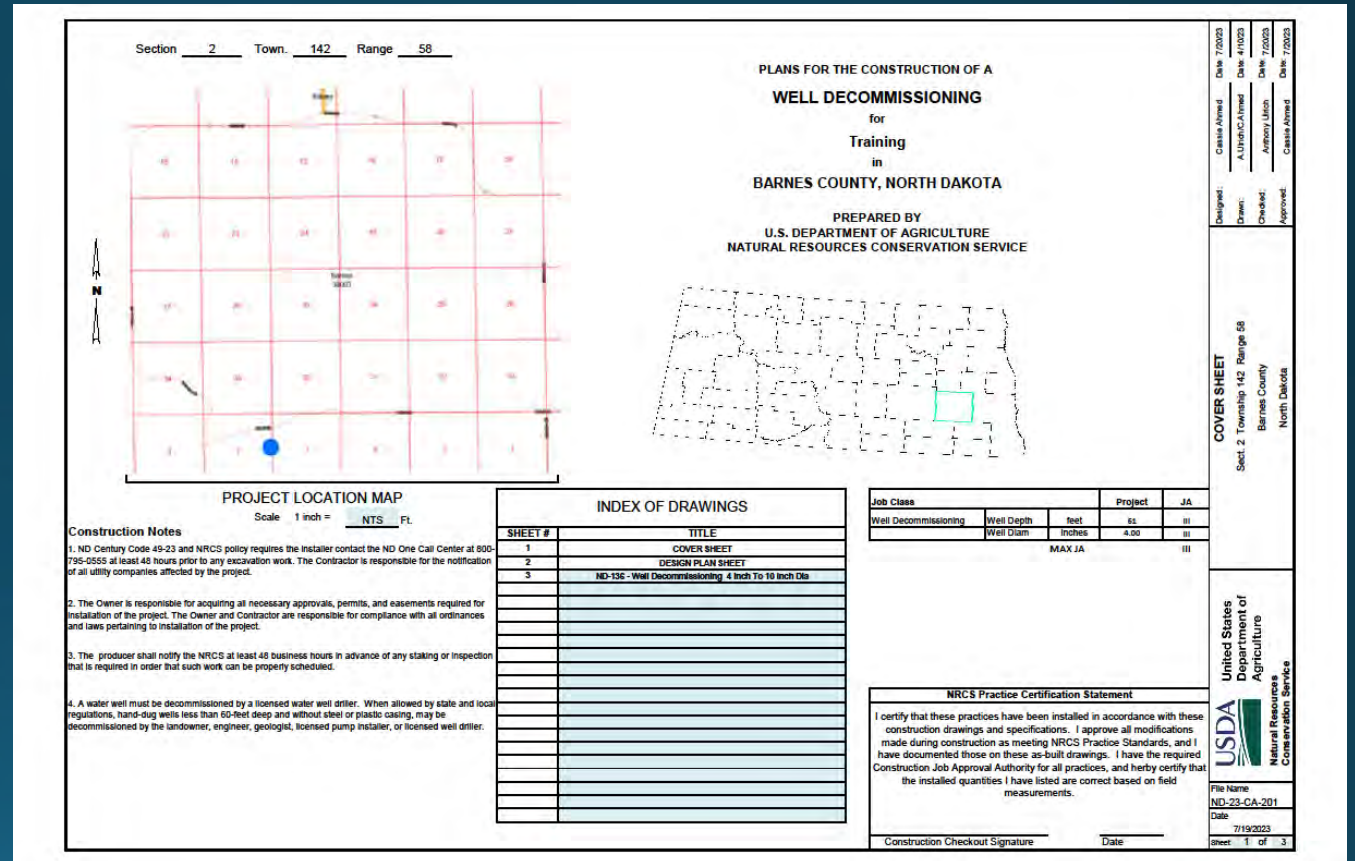
Draft option

Construction Specs
(double click image to open specs)

Creating Construction Package Continued



Draft option



Engineering Plans
(double click image to open plans)

What do you Print?

- Final Design Packet – place in producer folder
- Well Log – keep with design packet

- Final Engineering Plans
 - One copy for Producer folder
 - One copy for Producer

- Construction Specifications
 - One copy for Producer folder
 - One copy for Producer

Well Decommissioning Steps Continued

Preliminary Engineering Plans

- Review with the producer the Prelim Engineering plans, Construction Specifications, O&M, and EQIP Cost Share estimate

Approved Engineering Plans

- Calcs and Plans are checked and signed by checker
- Person with Job Approval reviews engineering plans and ND-ENG-1 and signs
- Review w/ the producer: the approved engineering plans, construction specifications, O&M, EQIP cost share estimate, ND-ENG-1
 - Producer & NRCS Representative signature required on O&M and ND-ENG-1
- If available, producer provides name of well driller to complete decommissioning
 - Verify well driller is certified

Producer Meeting

- Could be a prelim design or the final approved design
- Review w/ Producer : the engineering plans, construction specifications, O&M, EQIP cost share estimate, ND-ENG-1
 - Approved Engineering plans:
 - Owner/Operator/Producer & NRCS Representative signature required on O&M and ND-ENG-1
 - Provide a copy of all documents to the producer
- If available, producer provides name of well driller to complete decommissioning
 - Verify well driller is certified

Well Decommissioning Steps Continued

Preconstruction Meeting

- Review approved engineering plans, constructions specs w/ producer & certified well driller
- Verify signatures are on O&M and ND-ENG-1

Construction

- Document materials used
- Take Photos
- Well Driller Completes Sheet 3 of the approved engineering plans (previously the second page of the ND-ENG-10 Form)

As Builts

- Verify Certified well driller if not previously done
- Inspector signs and dates Sheet 3 of the Approved Engineering Plans
- Employee completes As Builts
- Person with Job Approval signs Certification on Coversheet

Preconstruction Meeting

- Review approved engineering plans, constructions specs w/ producer & certified well driller
- Verify signatures are on O&M and ND-ENG-1
- Document Meeting
 - When and where was the meeting
 - Who attended the meeting
 - What did you review, who received copies of engineering plans and specifications

Preconstruction Meeting Continued

8/1/2023

Documentation Examples

U.S. Department of Agriculture
Natural Resources Conservation Service

ND-ENG-7
11/02

CONSTRUCTION INSPECTION REPORT

Owner _____
District _____
Location _____ Section ____ T ____ N ____ R ____ W
Project _____
Type Structure _____
NARRATIVE: _____

Signature _____

ND-ENG-7

U.S. DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

CONSERVATOR ASSIGNMENT NOTES ND-CPA-6
12/97

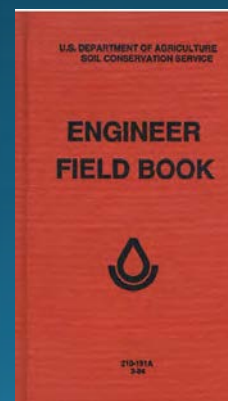
NAME _____ ADDRESS _____ PHONE _____ OCCUPATION _____

CURRENT ASSIGNMENT DATES: _____

Use possible alternative resource management systems to meet conservation goals under the best use soil disposition change. An
 effective soil conservation plan should identify and control erosion, nutrient management systems in cropland, pasture, timberland and
 other upland areas. The natural resources base and a detailed plan to provide a plan for monitoring and maintaining upland wildlife and
 riparian resources, including riparian habitat, and protection of these resources through erosion control, riparian habitat
 management, and other appropriate actions.

DATE	REVISIONS/CHANGES	NOTES

ND-CPA-6



U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SCD _____ Date _____

Field Office _____

Name _____
Individual Group Unit of Govt.
(circle one)

Job _____

Design Sur. _____ Const. Layout _____

Const. Check _____ Other _____

Ident No. _____ Field No. _____

N
↑

Scale
1" = _____

Legal Description _____
_____ Sec. _____ T _____ R _____
or

Location _____

SCS-ENG-28 Rev 5-79

[ND Forms - Engineering | Natural Resources Conservation Service \(usda.gov\)](https://www.usda.gov)

Well Decommissioning Steps Continued

Preconstruction Meeting

- Review approved engineering plans, constructions specs w/ producer & certified well driller
- Verify signatures are on O&M and ND-ENG-1

Construction

- Document materials used
- Take Photos
- Well Driller Completes Sheet 3 of the approved engineering plans (previously the second page of the ND-ENG-10 Form)

As Builts

- Verify Certified well driller if not previously done
- Inspector signs and dates Sheet 3 of the Approved Engineering Plans
- Employee completes As Builts
- Person with Job Approval signs Certification on Coversheet

Construction Continued

- Well Driller Completes Sheet 3 of the approved engineering plans (previously the second page of the ND-ENG-10 Form)
- NRCS Inspector Signs

	Yes	No	N/A	
Pump & Piping removed?				
Screen removed?				
Casing left in place?				
Was casing out off below surface?				----
Did material settle after 24 hrs? (if known)				----
If yes, was hole retapped?				

Check	Required Method of placing material
	Conductor Pipe-Gravity
	Conductor Pipe - Pumped
	Poured in Top of Well
	Other (Explain below)

Sealing Material Used	From (ft)	To (ft)	No. Yards, Sack Sealant or Volume	Mix Ratio
	Surface			

Comments: _____

RECORD OF WELL DECOMMISSIONING

Date Of Completion _____

Name of Person or firm doing sealing work _____

Address _____

Phone Number _____

Certified Well Driller Certificate Number _____

Signature of person doing work certifying well sealing done according to specifications and state guidelines

NRCS Inspected By _____	Date _____
-------------------------	------------

USDA United States Department of Agriculture	Natural Resources Conservation Service
WELL DECOMMISSIONING 4" TO LESS THAN 10" DIA. OWNER: Training Barnes COUNTY: _____	
File Name ND-DWG-136	Date 7/19/2023
Sheet 3 of 3	

Well Decommissioning Steps Continued

Preconstruction Meeting

- Review approved engineering plans, constructions specs w/ producer & certified well driller
- Verify signatures are on O&M and ND-ENG-1

Construction

- Document materials used
- Take Photos
- Well Driller Completes Sheet 3 of the approved engineering plans (previously the second page of the ND-ENG-10 Form)

As Built

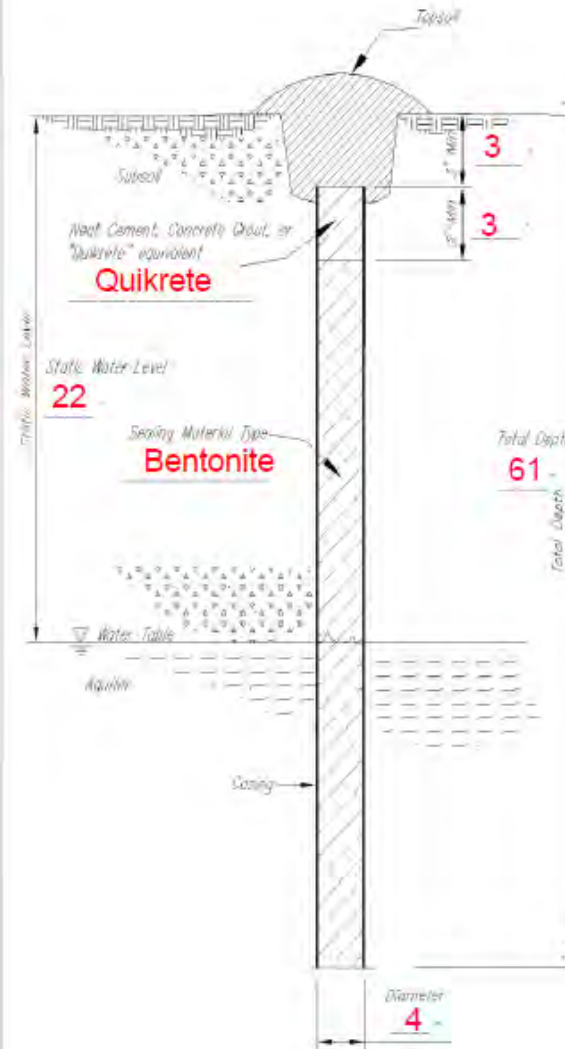
- Verify Certified well driller if not previously done
- Inspector signs and dates Sheet 3 of the Approved Engineering Plans
- Employee completes As Built
- Person with Job Approval signs Certification on Coversheet

As Builts

- Verify Certified well driller if not previously done
- Sheet 2 Fill in as built amount – on original plan in red
- Sheet 3 complete as built drawing

Table of Quantities

ITEM OR MATERIAL	UNIT	QTY	AS-BUILT
Exist Well Depth	Measured from ground	ft	61
Casing Type	Plastic	in	4.0
Casing Length		ft	54
Sealing Material	Bentonite	Bags	7.0
			7
Plug Material	Quikrete	Bags	0.7
Chlorine or HTH	Liquid	Gallons	0.1
			0.1



WATER WELL CROSS SECTION
WELL DIAMETER 4" TO LESS
THAN 10"

As Built

Notes

1. A well must be decommissioned by a licensed well driller. The person decommissioning the well is responsible for submitting the well closure report to all applicable government entities.
2. The well shall be cleared of all foreign material, including pumping equipment, valves, pipelines, casing liners, and then sanitized. If the well is dry, disinfection will not be necessary.
3. Sealing Material (circle type used and note #yd, sack content or volume and mix ratio)
 - a) Neat Cement
 - b) Concrete Grout
 - c) High Solids Bentonite Grout

The following may only be used if the well is less than 250 feet deep and has less than 150 feet of standing water.

d) Bentonite chips ¼ to ¾ inch dia. (screen to remove dust and fine particles before placing).
4. If more than one sealing material is used, show depth of materials on cross section.
5. Place sealing material from the bottom of the well upward using a tremie pipe to ensure continuous placement without bridging. If chips are used they may be poured in from the top—slowly.
6. Top with neat cement, concrete grout, or "Quikrete" equivalent a minimum of 3 feet below planned cut-off point.
7. Cut off casing 3 ft. below ground surface. If well is located in a basement or pit, casing does not have to be cut off.
8. Periodically inspect to ensure the mound and adjacent areas have not settled or eroded, and maintain to prevent ponding above the site.
9. In the case of an artesian well, a Certified Well Driller with experience in sealing artesian wells shall be contracted to complete the decommissioning.

DESIGN DIMENSIONS

Well Depth = 61 (ft)

Casing Diameter = 4 (in)

Casing Material Type or Schedule and Length:

Plastic 54

Static Water Level = 22 (ft)

WELL LOCATION

1/4 SECTION TOWNSHIP RANGE
2 142 58

THANKS FOR LISTENING



ANY QUESTIONS?

Non-Discrimination Statement

In accordance with Federal civil rights law and U.S. Department of Agriculture (USDA) civil rights regulations and policies, the USDA, its Agencies, offices, and employees, and institutions participating in or administering USDA programs are prohibited from discriminating based on race, color, national origin, religion, sex, gender identity (including gender expression), sexual orientation, disability, age, marital status, family/parental status, income derived from a public assistance program, political beliefs, or reprisal or retaliation for prior civil rights activity, in any program or activity conducted or funded by USDA (not all bases apply to all programs). Remedies and complaint filing deadlines vary by program or incident.

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To file a program discrimination complaint, complete the USDA Program Discrimination Complaint Form, AD-3027, found online at [How to File a Program Discrimination Complaint](#) and at any USDA office or write a letter addressed to USDA and provide in the letter all of the information requested in the form. To request a copy of the complaint form, call (866) 632-9992. Submit your completed form or letter to USDA by: (1) mail: U.S. Department of Agriculture, Office of the Assistant Secretary for Civil Rights, 1400 Independence Avenue, SW, Washington, D.C. 20250-9410; (2) fax: (202) 690-7442; or (3) email: program.intake@usda.gov.

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