

# Holstein Public Water Supply



Source Water Protection Plan

Public Water Supply # 4721054

**Prepared For**  
City of Holstein

**Prepared by**  
Bridget Durst, Source Water Community Facilitator  
Conservation Districts of Iowa  
Iowa Department of Natural Resources

**Completed**  
April 20, 2018

# Table of Contents

## **Section 1: Advocates**

Source Water Team List.....	3
Source Water Protection Planning Contributors.....	3
Source Water Protection Partnerships & Responsibilities.....	4-6
Source Water Protection Partners Contact Information.....	7-8

## **Section II: Introduction**

Source Water Protection Planning Overview .....	9
Goals and Objectives.....	9

## **Section III: Water Supply Information**

City Location.....	10
Well Location and System Information.....	10
Customers.....	10
Treatment.....	11
Water Quality.....	11
Hydrogeology and Susceptibility .....	11-12

## **Section IV: Holstein Source Water Protection Plan**

Source Water Protection Area Maps.....	13-14
Land Cover Charts.....	15-16
Potential Point-Source Contaminant/ Unused Wells Charts.....	16-21
Source Water Protection Action Plan.....	22-30
Helpful Resources.....	31
Public Water Supply Contingency/ Emergency Affidavit.....	32

## Source Water Team List

Name	Affiliation	Email	Phone Number
Bridget Durst	CDI-Iowa DNR	bridget.durst@dnr.iowa.gov	712-262-4177
Scott Niemeier	Water Operator	holsteinpw@netllc.net	712-210-5414
Kay Hanson	City Administrator	administrator@holsteiniowa.org	712-368-4898
Connie Ludvigson	Mayor		712-368-2437
Mary Gross	Council Member		712-368-4613
Denny Albers	Public Works		712-870-0725
Joel Wellendorf	Council Member		712-369-0156
Gary Brummer	Farmer		712-368-2194
Don Friedrichsen	Farmer	ldf@frontier.com	712-368-2549

## Source Water Protection Planning Contributors

Name	Affiliation	Email	Phone Number
Ed Sohm	County Sanitarian	idaedmes@longlines.com	712-364-2533
Lorne Miller	NRCS District Conservationist	lorne.miller@ia.usda.gov	712-364-2124
Drew Kistenmacher	Farmer		
Marvin Peterson	Farmer		712-368-2624
James Clausen	Farmer		712-368-2181

## **Source Water Partnerships and Responsibilities**

### **City of Holstein**

The city of Holstein is responsible for implementation of the Source Water Protection Plan. This will include maintaining community outreach, publicizing upcoming and ongoing projects, and finding resources to fund potential projects. The City of Holstein will be responsible for yearly revision of the Source Water Protection Plan. They will maintain and revise the Emergency Response Plan annually or as needed in the future. The city of Holstein will have access to resources and technical assistance regarding source water protection through various local, state, and federal organizations.

### **Ida County Supervisors**

The county supervisors will provide outreach and support. Ida County Supervisors will be asked to prioritize decisions regarding county ordinances and rules in Holstein's capture zone outside of the city limits as related to the Source Water Protection Plan. They have been asked to make the city aware of any potential funding available for source water protection projects and continue to communicate with producers in the capture zone.

### **Ida County Conservation Board**

Provide technical assistance, support and outreach. Ida County Conservation Board will serve as a resource for technical assistance during planning and constructing projects in Holstein's capture zone outside of city limits. They have been asked to make the City aware of any potential funding opportunities available for Source Water Protection projects.

### **Ida County Environmental Health Services**

The county health services staff will provide access to Grants to Counties for well plugging assistance, cistern plugging, private well testing, permitting for private wells, and septic system permits. The county sanitarian will consider the capture zone delineation when issuing private well permits and testing.

### **Galva-Holstein Community School District**

The local school system will be capable of developing Future Farmers of America (FFA) programs that encourage source water protection through conservation based farming practices. They will be able to provide space and development for assemblies to introduce students to source water protection and encourage participation among these students. They can also develop a curriculum that includes water quality and land use relationships.

### **Iowa Department of Natural Resources (Iowa DNR)**

The Iowa Department of Natural Resources Region 3 Field Office in Spencer will provide the technical resources to assist the water system facility to meet all state and federal drinking water standards. They provide on-site technical assistance and perform inspections such as sanitary surveys. The Iowa DNR Water Supply Engineering Section will update the phase 1 assessment and source water databases as needed.

### **USDA Natural Resources Conservation Service & Farm Service Agency (USDA NRCS-FSA)**

The USDA NRCS-FSA provides resources to help landowners and farmers make decisions regarding soil conservation, water quality issues, nutrient losses, and constructing natural habitat. The federal government provides funding to programs administered by the USDA NRCS-FSA. These funding programs are offered to all rural landowners and farmers that qualify. The City of Holstein has reached out to the District Conservationist of Ida County to ensure that landowners and farmers within the capture zone have priority due to the potential impact of their agricultural systems on the city's drinking water source.

### **Ida County Soil and Water Conservation District (SWCD)**

The County SWCD provides outreach, planning assistance, and cost share programs to landowners and farmers in their local districts. The focus of the SWCD is to help implement conservation practices to address soil loss and water quality. The Ida County SWCD Commissioners have agreed to prioritize applications for conservation practices from farmers within the capture zone around Holstein's wells due to the potential impact that their agricultural operations could have on the city's drinking water. They are also responsible for applying for REAP (Resource Enhancement and Protection) funding through the state.

### **Iowa Department of Ag Land Stewardship (IDALS)**

IDALS provides technical assistance, and funds to help communities install practices that preserve our soil health and water quality. They assist in writing SRF loans and a variety of other grants. IDALS will keep the City of Holstein up to date on all policies that may affect source water protection, funding, and regulation. IDALS will assist in applying for REAP funds through the state. They also employ the urban conservationist.

### **Iowa State University (ISU) Extension and Outreach: Ida County**

ISU Extension provides programs that give people access to unbiased research-based information and education to make better environmental decisions. Many of their programs are based in agronomy, economics and community involvement. ISU Extension is the organization that created the 4-H program for school aged children. ISU Extension has been asked to help create 4-H programs that teach source water protection and encourage participation in conservation based farming practices.

### **Conservation Districts of Iowa (CDI)**

Conservation Districts of Iowa informs, educates and leads Iowans through local soil and water conservation districts to promote the conservation of natural resources. Conservation Districts of Iowa supports the soil and water conservation districts through public education, commissioner development, conservation policy, on-the-ground conservation, conservation practice promotion, public events and more.

### **National Wildlife Federation (NWF)**

NWF will provide grant writing, education, outreach and technical assistance in regards to source water protection. They help create opportunities for success through communication between city government, landowners, and farmers.

### **Iowa Soybean Association (ISA)**

ISA will provide outreach and support through offering their many programs to Holstein and the farmers within the capture zone areas. They are a resource for outreach and education.

### **Iowa Corn Growers Association (ICGA)**

ICGA has provided financial support by paying for Holstein's SWP kick off meeting and furnishing RetaiN nitrate testing kits to farmers in the capture zones. They are a resource for outreach and education.

### **Iowa Source Water Agricultural Collaborative**

The Iowa Source Water Collaborative was formalized in 2016 with the goal of providing Iowans with information and resources to protect their drinking water sources. This collaborative includes CDI, Iowa DNR, ISA, USDA NRCS-FSA, NWF, Iowa Corn Growers, ISU Extension, Iowa Soybean Assoc., and IDALS.

## **Source Water Protection Partners Contact Information**

### **City of Holstein**

Kay Hanson, City Administrator  
119 South Main Street Holstein, Iowa 51025  
712-368-4898  
[administrator@holsteiniowa.org](mailto:administrator@holsteiniowa.org)

### **Galva-Holstein Community School District**

John Weibers, Superintendent  
519 East Maple Street Holstein, Iowa 51025  
712-368-4353  
[jwiebers@rvraptors.org](mailto:jwiebers@rvraptors.org)

### **Ida County Supervisors**

Rhett Leonard, Chairman  
401 Moorehead St, Ida Grove, Iowa 51445  
712-364-2220  
[rhettalanleonard@gmail.com](mailto:rhettalanleonard@gmail.com)

### **Ida County Conservation Board**

Paige Alesch, Director  
202 Jasper Ave, Ida Grove, Iowa 51445  
712-364-3300  
[idacodirector@gmail.com](mailto:idacodirector@gmail.com)

### **Ida County Environmental Health Services**

Ed Sohm, County Sanitarian  
401 Moorehead St, Ida Grove, Iowa 51445  
712-364-2533  
[idaedmes@longlines.com](mailto:idaedmes@longlines.com)

### **Iowa Department of Natural Resources (Iowa DNR)**

Julie Sievers, Environmental Specialist Senior  
1900 N. Grand Ave, Ste E17, Spencer, IA 51301  
712-262-4177  
[julie.sievers@dnr.iowa.gov](mailto:julie.sievers@dnr.iowa.gov)

Bridget Durst, Source Water  
Community Facilitator  
712-262-4177  
[bridget.durst@dnr.iowa.gov](mailto:bridget.durst@dnr.iowa.gov)

### **USDA Natural Resources Conservation Services & Farm Services Agency (USDA NRCS-FSA)**

Lorne Miller, District Conservationist, NRCS  
5973 State Highway 175 Ida Grove, Iowa 51445  
712-364-2126 ext. 3  
[lorne.miller@ia.usda.gov](mailto:lorne.miller@ia.usda.gov)



**Ida County Soil and Water Conservation District (SWCD)**

Lorne Miller, District Conservationist, NRCS  
5973 State Highway 175      Ida Grove, Iowa 51445  
712-364-2126 ext. 3  
[lorne.miller@ia.usda.gov](mailto:lorne.miller@ia.usda.gov)

**Iowa Department of Agriculture Land Stewardship (IDALS)**

Bob Waters, Regional Coordinator	Hannah Vorrie, Urban Conservationist
3302 18th Street, Suite 2 , Spirit Lake, Iowa 51360	1617 N. Lake Ave. Storm Lake, IA
515-306-7012	712-732-8216 ext. 3
<a href="mailto:Bob.Waters@iowaagriculture.gov">Bob.Waters@iowaagriculture.gov</a>	<a href="mailto:hannah.vorrie@nacdn.net">hannah.vorrie@nacdn.net</a>

**Iowa State University (ISU) Extension and Outreach: Ida County**

Kandice Tomlinson-Program Coordinator  
202 Moorehead Ave.    Ida Grove 51445  
712-364-3003  
[kandicem@iastate.edu](mailto:kandicem@iastate.edu)

**Conservation Districts of Iowa (CDI)**

Linda King- Executive Director  
315 E. 5th, Suite 134, Des Moines 50309  
515.289.8300  
[linda.king@cdiowa.org](mailto:linda.king@cdiowa.org)

**National Wildlife Federation**

Elizabeth Lillard, Agriculture Program Specialist  
734-887-7134  
[www.nwf.org](http://www.nwf.org)    [lillarde@nwf.org](mailto:lillarde@nwf.org)

**Iowa Soybean Association**

Adam Kiel, Environmental Programs & Services Operations Manager  
515-334-1022  
[AKiel@iasoybeans.com](mailto:AKiel@iasoybeans.com)

**Iowa Corn Growers Association**

Ben Gleason, Sustainable Program Manager  
[bgleason@iowacorn.org](mailto:bgleason@iowacorn.org)

**Iowa Source Water Ag Collaborative**

Linda King- Executive Director  
315 E. 5th, Suite 134, Des Moines 50309  
515.289.8300  
[linda.king@cdiowa.org](mailto:linda.king@cdiowa.org)

## **Source Water Protection Planning Overview**

Source water protection is the act of preventing contaminants from entering drinking water sources.

The purpose of source water protection planning is to unite a community in the common goal of protecting their source water. In crafting a Source Water Protection Plan (SWPP), we are working to ensure safe drinking water by addressing and preventing contamination, which in turn, reduces the costs of water treatment and possibly postpones the necessity of drilling new wells. The plan outlines practices and objectives that promote the preservation of the community's source water. The document also gives everyone a chance to contribute to the protection of their shared resources. Through collaboration on this project, community members will leave a positive legacy for future generations.

Every public community water supply in Iowa has a phase 1 assessment, available from the Iowa DNR [Source Water Protection Tracker](#) application. The phase 1 document contains basic information concerning geology, public well locations, well depths, susceptibility and nitrate levels, capture zone maps, and inventories of potential contaminant sources, wells and land use types found within the capture zones.

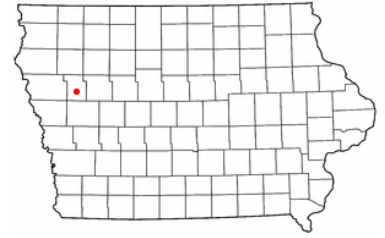
Using information from the phase 1 assessment and their knowledge of the community, the source water team members can decide which best management practices to utilize in specific areas. The practices can include anything from signs designating protected areas to implementing conservation practices in urban areas and private agricultural land. The SWPP is designed with the best interest of the community in mind. It is intended to be a living document, to be revisited annually to consider progress and to assess whether the plan needs to be updated and/or revised. Each SWPP is as unique as the community it belongs to.

### **Goals and Objectives**

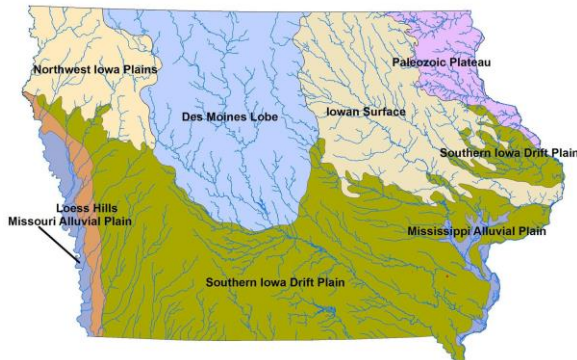
- Safeguard the health of water users being served by city wells
- Prevent financial burdens caused by contaminated drinking water
- Educate and provide awareness of the effects of drinking water contamination
- Educate landowners in the capture zones of their potential impacts on the community's drinking water supply
- Encourage the use of conservation practices that address nitrogen losses from agricultural production and urban fertilizer runoff
- Find non-traditional partners and funding resources to help implement projects related to source water protection
- Address and mitigate rising nitrate levels in the public water supply through public education, outreach, and land use changes.
- Create opportunities to install urban conservation practices within city limits

## City Location

The City of Holstein is located in Ida County at the junction of Hwy 59 and Hwy 20. Holstein is approximately 45 miles east of Sioux City.



Holstein is located in the northern edge of the Southern Iowa Drift Plain landform region. Here older glacial deposits left by ice sheets that extended far south into Missouri over 500,000 years ago dominate. These deposits were carved by deepening episodes of stream erosion so that only a horizon line of hill summits or occasional table top divides remain to mark the once-continuous glacial plain. Numerous rills, creeks, and rivers branch out across the landscape shaping the old glacial deposits into steeply rolling hills and valleys. A mantle of loess drapes the uplands and upper hill slopes.



## Well Location

The City of Holstein Public Water Supply (PWS) sources its drinking water from four shallow wells, Well #3 (1986), Well #4 (1986), Well #7 (1995), and Well #8 (1995). They also source water from one deep well, Well #1 (1937). The shallow wells are located 5 miles east of town along Highway 20. The deep well is located within city limits on the northeast part of the city.

## Customers

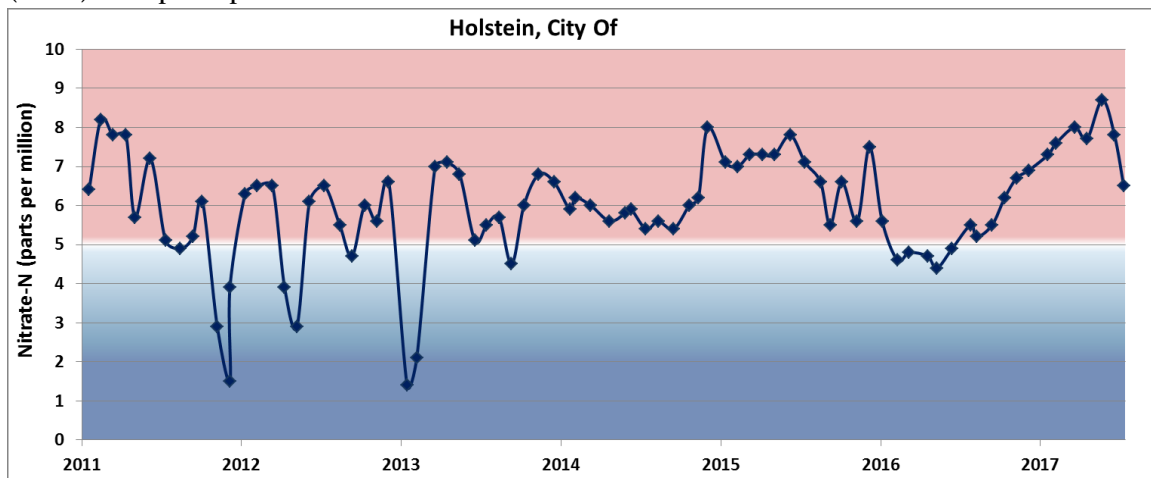
The City of Holstein PWS provides water to the citizens and businesses of Holstein. The utility provides water to a population of 1396 residents with 700 service connections. The City of Holstein distributes an average of 136,000 gallons per day and a maximum of 357,000 gallons per day.

## Treatment

The City of Holstein PWS runs all wells simultaneously. Treatment of the water from the shallow wells consists of the addition of liquid chlorine for disinfection. Treatment of the water from the deep well consists of cascade aeration for oxidation, detention, pumping from detention to four pressure filters, filtration with sand and anthracite media, and the addition of liquid chlorine for disinfection. The system blends water from the shallow wells with water from the deep well in order to maintain nitrate levels below the maximum contamination level of 10 parts per million. Finished water storage and pressure is provided by a 160,000 gallon ground storage reservoir and a 200,000 gallon elevated storage tank.

## Water Quality

The City of Holstein PWS has an average finished nitrate level of 5.9 parts per million based on 80 samples between 2011 and 2017. The EPA maximum contaminant limit (MCL) is 10 parts per million.



## Hydrogeology and Susceptibility: Alluvial Aquifer

The City of Holstein PWS sources its water from two aquifers. The shallow wells (#3, 4, 7 and 8) are located in an “alluvial aquifer”. Alluvial aquifers are generally shallow sand and gravel deposits laid down over time in a river channel or floodplain. The name “alluvial” refers to the loose, unlayered nature of the material – often silt, clay, sand, and gravel, deposited by running water in and around rivers. This aquifer has no confining layer and therefore has been determined to be highly susceptible to surface contamination.

## **Hydrogeology and Susceptibility: Dakota-Mississippian Aquifer**

Well #1 is located in the Dakota-Mississippian Aquifer. The Dakota and Mississippian Aquifers are bedrock aquifers that occur in sedimentary rock layers composed of limestone and dolomite (carbonate rocks) and sandstone, which originated as deposits in seas and rivers that occupied Iowa from 75 to 550 million years ago (Cretaceous to Cambrian age). Where aquifers are deeper, the water has been in contact with minerals longer, making the natural water quality poorer. Due to the depth and the presence of a confining layer this aquifer has been determined to have low susceptibility to contamination from the land surface.

Confining layer thickness Susceptibility designation:

<25 feet Highly susceptible  
25 to 50 feet Susceptible  
50 to 100 feet Slightly susceptible  
>100 feet Low susceptibility

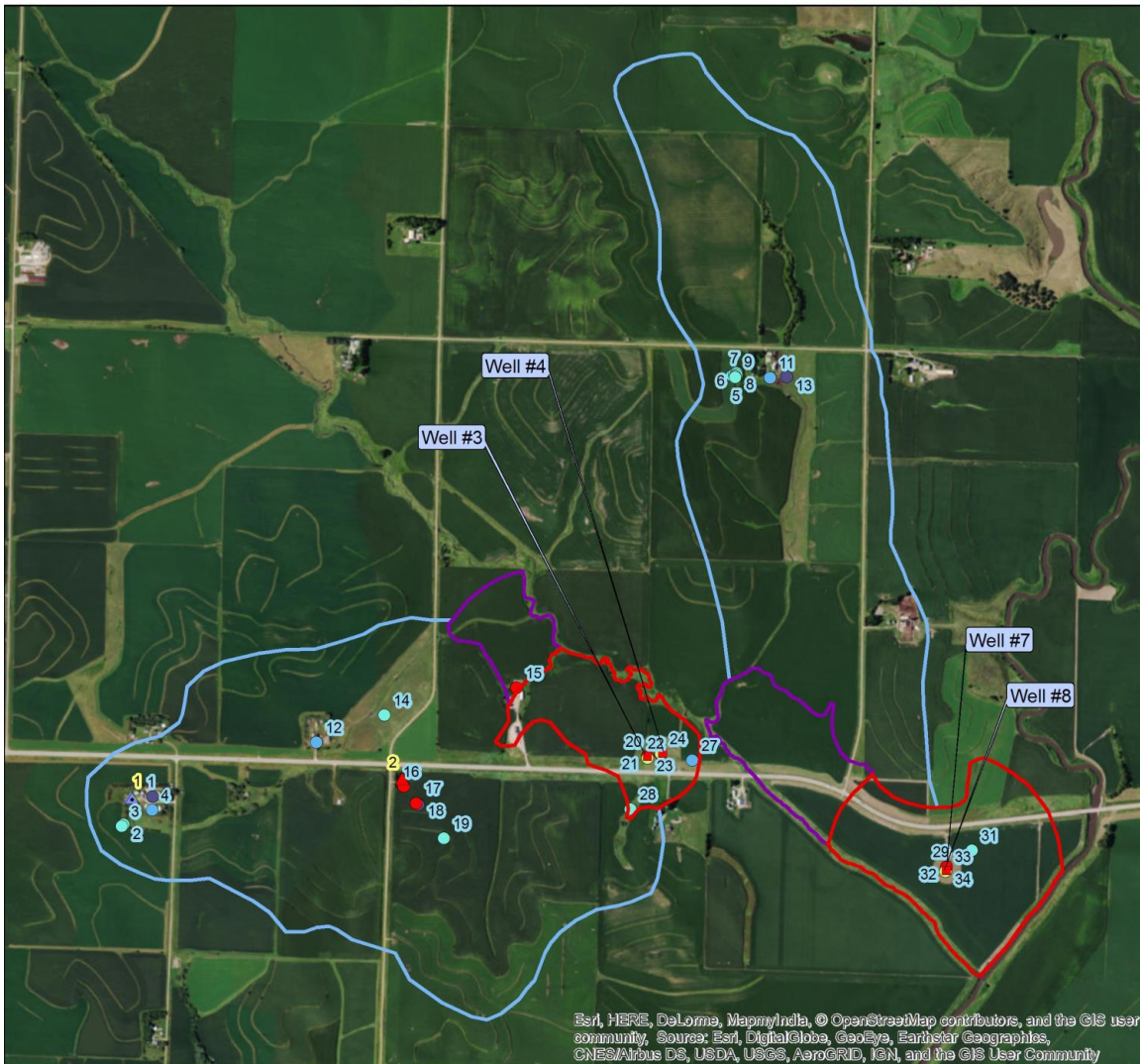
# Holstein PWSID# 4721054 Dakota-Mississippian Aquifer - Source Water Protection



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

<p><b>Public Wells</b></p> <ul style="list-style-type: none"> <li>■ Active</li> <li>■ Plugged</li> </ul> <p><b>Groundwater Capture Zones</b></p> <ul style="list-style-type: none"> <li>■ 2-Year Capture Zone</li> <li>■ 5-Year Capture Zone</li> <li>■ 10-Year Capture Zone</li> </ul>	<p><b>Contaminant Sources</b></p> <ul style="list-style-type: none"> <li>● Air Permit - Group 1 Grain Elevators</li> <li>● Air Permit - Dry Cleaner</li> <li>● Hazardous Materials Spill</li> <li>▲ Underground storage tank</li> <li>▲ Leaking USTs</li> </ul>	<p><b>Other Wells</b></p> <ul style="list-style-type: none"> <li>● IGS well database</li> <li>● Private well tracking system</li> <li>● Public water supply well</li> <li>● Registered abandoned wells</li> <li>● Water use permit wells</li> </ul>	<p>0 0.16 Miles</p>
---	---	---	---------------------

# Holstein PWSID# 4721054 Alluvial Aquifer - Source Water Protection



Esri, HERE, DeLorme, MapmyIndia, © OpenStreetMap contributors, and the GIS user community, Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

**Public Wells**

- Active
- Plugged

**Groundwater Capture Zones**

- 2-Year Capture Zone
- 5-Year Capture Zone
- Surface Runoff Area

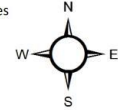
**Contaminant Sources**

- ▲ Open feedlot
- ▲ Underground storage tank

**Other Wells**

- IGS well database
- Private well tracking system
- Public water supply well
- Registered abandoned wells
- Water use permit wells
- Wells registered for testing

0 0.8 Miles



Report Created: 8/8/2017

\*Source Water Capture Zones are divided and prioritized to show “time of travel”, indicating the amount of time it takes water from that area to reach the well. Surface runoff areas are also included. Capture Zones are computer models. The information used to determine the Capture Zones includes pumping and static water levels and the geological makeup of the surrounding area. When there is not enough information to determine a contoured capture zone a fixed radius model is used. For more information on Capture Zone types and delineation please contact Bob Rowden, Iowa DNR [robert.rowden@dnr.iowa.gov](mailto:robert.rowden@dnr.iowa.gov)

### **Land Cover: Dakota-Mississippian Aquifer**

#### **2017 Summary by percentage of total:**

Total Acres of Capture Zone is 97 acres

Capture Zone	Acres in Zone	Row Crops by %	Wetlands by %	Grasslands by %	Developed Areas by %
2 Year	19	0.0	0.0	0.0	100
5 Year	28	0.0	0.0	0.0	100
10 Year	50	46.0	0.4	4.3	47.3

### **Land Cover: Alluvial Aquifer Well #3 Well #4**

#### **2017 Summary by percentage of total:**

Total Acres of Capture Zone is 553 acres

Capture Zone	Acres in Zone	Alfalfa by %	Row Crops by %	Wetlands by %	Grasslands by %	Developed Areas by %
2 Year	94	0.5	71.6	0.0	3.3	24.3
5 Year	23	0.0	94.8	0.0	0.9	0.0
Surface Runoff Area	436	0.2	86.4	0.3	8.7	4.6



## **Land Cover: Alluvial Aquifer Well #7 Well #8**

### **2017 Summary by percentage of total:**

Total Acres of Capture Zone is 576 acres

<b>Capture Zone</b>	<b>Acres in Zone</b>	<b>Alfalfa by %</b>	<b>Row Crops by %</b>	<b>Wetlands by %</b>	<b>Grasslands by %</b>	<b>Developed Areas by %</b>
2 Year	56	0.4	68.0	0.0	12.7	18.3
5 Year	46	0.5	74.2	0.0	3.4	22.3
Surface Runoff Area	474	0.4	74.7	0.3	8.8	16.2

## **Potential Contaminant Sources: Dakota-Mississippian Aquifer**

This chart gives information about potential contaminant sources found on the map on page 13. The “map #” corresponds the entry to the location on the map. For more information about ranking and links to risk factors please refer to the Phase 1 Assessment for The City of Holstein PWS #4721054.

<https://programs.iowadnr.gov/sourcewater/SystemDetail.aspx?pwsid=4721054>

### **Capture zone: 2 Year time of travel**

<b>Map #</b>	<b>Site Name</b>	<b>Site Type</b>	<b>Site Address</b>	<b>Land Use Risk</b>	<b>Risk Score</b>
4	Galva Holstein Ag, LLC Holstein	Hazardous Materials Spill	204 East 1st St Holstein Iowa 51025	1	5
5	Galva Holstein Ag, LLC Holstein	Air Permit-Group 1 Grain Elevator	204 East 1st St Holstein Iowa 51025	3	7
6	Julius Cleaners Holstein	Air Permit-Dry Cleaners	117 S. Main St Holstein Iowa 51025	3	7
7	Central Telephone Company	Underground Storage Tank	212 East 2nd St Holstein Iowa 51025	5	9
8	Ida County Public	Hazardous Materials	117 S Kiel St	1	5

	Works	spill	Holstein Iowa 51025		
9	City of Holstein	Leaking USTs	117 S. Kiel St Holstein Iowa 51025	5	9
10	City of Holstein	Underground Storage tank	117 S Kiel St Holstein Iowa 51025	5	9

**Capture Zone: 10 Year time of travel**

Map #	Site Name	Site Type	Site Address	Land Use Risk	Risk Score
1	First Cooperative Association	Hazardous Materials Spill	211 N. Main St Holstein Iowa 51025	1	3
2	First Cooperative Association	Underground Storage Tank	211 N. Main St Holstein Iowa 51025	5	7
3	First Cooperative Association	Hazardous Materials Spill	211 N. Main St Holstein Iowa 51025	1	3

**Potential Contaminant Sources: Alluvial Aquifer**

This chart gives information about potential contaminant sources found on the map on page 14. The “map #” corresponds the entry to the location on the map. For more information about ranking and links to risk factors please refer to the Phase 1 Assessment for The City of Holstein PWS #4721054.

<https://programs.iowadnr.gov/sourcewater/SystemDetail.aspx?pwsid=4721054>

Map #	Site Name	Site Type	Site Address	Land Use Risk	Risk Score
1	Gary Brummer	Open Feedlot	1609 Ivory Ave. Holstein Iowa 51025	4	9
2	Nwb/roc	Underground Storage Tank	Highway 20 Holstein Iowa 51025	5	10

## **Unused Well Inventory: Dakota-Mississippian Aquifer**

Unused wells have a potential for becoming point sources for contamination when located within a capture zone. The “map #” corresponds to the well label # on the map on page 13. For more information about risk factors please refer to the Phase 1 Assessment for The City of Holstein PWS 4721054.

<https://programs.iowadnr.gov/sourcewater/SystemDetail.aspx?pwsid=4721054>

**Key:** WUP- Water Use Permit WS- Water Supply PWS- Public Water Supply  
IGS- Iowa Geological Survey PWTS- Private Well Tracking System WRFT- Well registered for testing

### **Capture Zone 2 Year time of travel**

Map #	Well ID #	Well Owner	Well ID Source	Depth (ft)	Date drilled/permitted
3	2408931	Sharlotte’s Bake Shop	PWS well	unknown	unknown
4	36	City of Holstein	IGS database	2004	1/1/1987
5	40225	City of Holstein	IGS database	0	unknown
6	567	City of Holstein	IGS database	645	8/31/1937
7	10	City of Holstein	IGS database	2040	8/1/1923
8	40224	City of Holstein	IGS database	0	11/12/1986
9	2413011	City of Holstein	PWS well	25	12/1/1986
10	2413114	City of Holstein	PWS well	69	1/1/1989
11	2409895	City of Holstein	PWS well	644	1/1/1937
12	W634	City of Holstein	WUP well	644	8/31/1937
13	2410692	City of Holstein	PWS well	430	1/1/1951
14	5120	City of Holstein	IGS database	430	10/1/1951
15	2139144	Kay Specht	PWTS	20	1/1/1930

**Capture Zone: 5 Year time of travel**

Map #	Well ID #	Well Owner	Well ID Source	Depth (ft)	Date drilled/permited
2	6656	Vista Telephone	Registered Abandoned	20	n/a
16	2141505	Donna Bremer	PWTS	22	1/1/1930

**Capture Zone: 10 Year time of travel**

Map #	Well ID #	Well Owner	Well ID Source	Depth (ft)	Date drilled/permited
1	2141502	Steve Vohs	PWTS	35	1/1/1930

**Unused Well Inventory: Alluvial Aquifer**

Unused wells have a potential for becoming point sources for contamination when located within a capture zone. The “map #” corresponds to the well label # on the map on page 14. For more information risk factors please refer to the Phase 1 Assessment for The City of Holstein PWS 4721054.

<https://programs.iowadnr.gov/sourcewater/SystemDetail.aspx?pwsid=4721054>

**Key:** WUP- Water Use Permit WS- Water Supply PWS- Public Water Supply  
IGS- Iowa Geological Survey PWTS- Private Well Tracking System WRFT- Well registered for testing

**Capture Zone 2 Year time of travel**

Map #	Well ID #	Well Owner	Well ID Source	Depth (ft.)	Date drilled/permited
20	40222	City of Holstein	IGS database	0	11/6/1985
21	2409870	City of Holstein	PWS well	47	12/1/1986
22	W635	City of Holstein	WUP well	28	11/8/1985
23	W5491	City of Woodbine	WUP well	unknown	unknown

24	W988	City of Holstein	WUP well	53	unknown
25	2411303	City of Holstein	PWS well	35	12/1/1986
26	40223	City of Holstein	IGS database	0	11/8/1985
27	2126953	Norma Freese	PWTS	25	1/1/1940
28	16523	Travis & Becky Rohlk	WRFT	unknown	unknown
29	47722	City of Holstein	IGS database	40	11/13/1995
30	2408812	City of Holstein	PWS well	53	2/1/1996
31	2022	Marty Huenecke	WRFT	210	1985
32	2411467	City of Holstein	PWS well	58	2/1/1996
33	W762	City of Holstein	WUP well	52	11/6/1985
34	47723	City of Holstein	IGS database	45	11/1/1995

**Capture Zone: 5 Year time of travel**

Map #	Well ID #	Well Owner	Well ID Source	Depth (ft)	Date drilled/permited
15	14621	Ray Brosamle	IGS database	42	9/10/1962

**Capture Zone: 10 Year time of travel**

Map #	Well ID #	Well Owner	Well ID Source	Depth (ft)	Date drilled/permited
1	22382	Darrell Miller	Registered Abandoned	40	N/A
2	10853	Gary Brummer	WRFT	315	1975
3	10851	Gary Brummer	WRFT	315	1975
4	2173952	Lora Miller/Brummer	PWTS	315	1/1/1975
5	37185	Marvin Peterson	WRFT	16	unknown

6	37187	Marvin Peterson	WRFT	16	unknown
7	32473	Marvin Peterson	WRFT	16	unknown
8	32467	Marvin Peterson	WRFT	16	unknown
9	37182	Marvin Peterson	WRFT	16	unknown
10	37186	Marvin Peterson	WRFT	16	unknown
11	2075993	Marvin Peterson	PWTS	16	1/1/1930
12	2079778	Alan Goettsch	PWTS	40	1/1/1930
13	27262	Marvin Peterson	Registered Abandoned	16	N/A
14	47768	Chris Kiertzner	WRFT	40	unknown
16	11070	August Gerbers	IGS database	70	1/1/1959
17	12246	August Gerbers	IGS database	329	8/3/1960
18	41621	William Ullrich	Registered Abandoned	320	N/A
19	9679	Tracy Kelly Rohlk	WRFT	Unknown	unknown

## City of Holstein Public Water Supply

### Source Water Protection Action Plan

This plan contains steps that were developed by the Holstein Source Water Team in order to address the concern of rising nitrate levels in the public water supply. Steps within this plan are intended to help Holstein achieve the goals and objectives outlined on page 9. All land within each capture zone and the surface runoff area is considered a priority. This includes land within the city limits as well as land outside of city limits being used for row crop production.

Activity	Date Started	Date Finished	Responsible Personnel	% Complete	Comments
----------	--------------	---------------	-----------------------	------------	----------

1	Meet with Water Operator		7/20/2017	Bridget Durst	100%	Met with Scott Neimeier
2	Present SWP to City Council.	8/17/2017	9/5/2017	Bridget, Scott	100%	Scott and I talked to the city about how to move forward to write this plan.
3	Holstein City Council to sign "Letter of Commitment"	9/5/2017	10/13/2017	Bridget, City Council	100%	Signed, returned, and sent to supervisors (DNR, CDI)
4	Present SWP info to Ida County NRCS for support and promotion	9/5/2017	9/11/2017	Bridget Durst	100%	Lorne Miller (DC) agreed to participate
5	Collect contact information for farmers in the capture zone	08/25/2017	9/15/2017	Scott Neimeier	100%	Scott compiled a list of names and addresses for the farmers in the capture zone

6	Contact farmers in the capture zone/ surface runoff area	8/25/2017	9/15/2017	Scott Neimeier	100%	Phone numbers and addresses were obtained from face to face meetings with farmers in the area.
7	Mail out letter, overview of SWP, and land use surveys	9/16/2017		Bridget, Scott, Kay Hanson	100%	13 packets mailed to farmers/ producers in the capture zone/ runoff area and 20 sent to city to be distributed within the city
8	Invite Farmers and townspeople to public meeting	10/1/2017	10/13/2017	Bridget, Scott, Kay Hanson	100%	Invitations were sent to the farmers/producers in capture zones and to be distributed within city limits
9	Hold Public SWP meeting	10/1/2017	10/17/2017	Bridget Durst	100%	First Public SWP meeting held at the Stubbs Memorial Library
10	Hold SWP "KICK OFF"	10/17/2017	12/12/2017	Bridget Durst, City Council	100%	A lunch was provided by Iowa Corn Growers
11	Present SWP to Ida County Board of Supervisors to obtain support and promotion	10/17/2017	11/6/2017	Bridget Durst	100%	Information was given and a request for a letter of support was requested
12	Present SWP to Ida County Conservation Board to obtain support and promotion	10/17/2017	12/5/2017	Bridget Durst	100%	Information was given and a request for a letter of support was requested
13	Send Letter of Support Template to Ida County Supervisors	11/20/2017	11/20/2017	Bridget Durst	100%	Sent via email
14	Send Letter of Support Template to Ida County Conservation Board	12/5/2017	12/18/2017	Bridget Durst	100%	Received Letter of Support 2/13/2018



15	Invite Hannah Vorrie (Urban Conservationist) to tour the city for potential sites for urban conservation practices	2/08/2018	03/15/2018	Bridget Durst, City, Hannah Vorrie	100%	Hannah agreed to tour the city in March
16	Determine areas within city limits to utilize urban conservation practices	2/08/2018	03/15/2018	Hannah Vorrie, Scott Neimeier	100%	Hannah visited Holstein and was shown many areas that could be potential candidates for urban conservation practices.
17	Obtain information about various urban conservation practices	2/08/2018	03/15/2018	Hannah Vorrie	100%	Hannah distributed pamphlets describing various urban conservation practices. She also distributed information regarding the Urban Conservation grant available in December
18	Find options for the City of Holstein and urban residents for soil nitrate testing prior to lawn applications	2/08/2018	2/20/2018	Bridget Durst, City Council	100%	AgSource Laboratories out of Ellsworth provides soil nitrate tests for \$5.10 plus shipping
19	Ask Ida County SWCD Commissioners to prioritize farmers in the capture zones	2/12/2018		Lorne Miller, Team, SWCD Commissioners	50%	Having SWCD Commissioners prioritize farmers in the capture zone will ensure that they receive cost share funding for conservation practices within the capture zone. The prioritization will move farmers to the front of the line for cost share programs.

20	Apply for REAP to designate the watershed around the Capture zone as a priority area	02/21/2018		City, Team, SWCD commissioners, NRCS and IDALS	50%	This will bring more focus on protecting the surface water (Maple River) that potentially recharges the aquifer
21	City will determine Best Management Practice for city-owned land around Well #4	10/17/2017		Scott Neimeier, City Council, NRCS, Ida County SWCD	25%	This land is currently being leased to a farmer with little or no conservation practices in that area. The city has an option to take control of the land use of the city-owned land. They have options for seeding it down to natives or other land use changes.
22	Conduct Groundwater Site investigation	10/17/2017		City Council, Scott Neimeier, Iowa DNR	ongoing	The city may choose to conduct pump tests to verify capture zone model.
23	Obtain individual well nitrate readings	9/1/2017		Scott Neimeier	ongoing	this needs a timeline for frequency
24	Invite farmers to SWP planning meetings	12/12/2017		Bridget, Scott, Gary, Andy, Harold	ongoing	We will be continually inviting farmers to attend any SWP meeting we have
25	Discuss SWP with farmers in/around capture zones	9/14/2017		Bridget, Scott, Lorne Miller(NRCS)	ongoing	As more farmers become involved we will discuss options and resources with them
26	Discuss conservation opportunities and Best Management Practices with farmers in/around the capture zones	9/14/2017		Bridget, NRCS, Ida County SWCD, ISU Extension	ongoing	As it is relevant we will invite reps from these and other groups to participate and present at meetings.

27	Make Farmers in the Capture Zone aware of conservation workshops and events in the area	9/14/2017		NRCS, Ida County SWCD, ISU Extension	ongoing	As part of education and outreach farmers should be invited to events in the area regarding conservation practices
28	Utilize Grants to Counties for well plugging and private well testing. Make capture zones a priority area	12/12/2018		County Sanitarian Ed Sohm, farmers	ongoing	Ed Sohm attended the Kick off meeting and spoke about making the capture zones a priority area for Grants to Counties funding
29	Apply for Urban Conservation grant	03/15/2018		Kay Hanson, Scott Neimeier, City Council, Hannah Vorrie	This grant will be available in December of 2018	This will provide funding for urban conservation practices.
30	Encourage citizens within the city limits to conduct nitrate soil tests on their lawns	03/15/2018		City Council	ongoing	This will give urban residents a baseline of needs for fertilizer hopefully preventing the overuse of fertilizer
31	Encourage Golf Course Staff to conduct nitrate soil tests on their lawns	03/15/2018		City Council	ongoing	This will give Golf Course Staff a baseline of needs for fertilizer hopefully preventing the overuse of fertilizer
32	Encourage the use of slow release fertilizer on lawns within city limits	2/08/2018		City Council	ongoing	This option allows plants to utilize fertilizer before it leaches into groundwater.

33	Examine current city ordinances that might prevent native planting within city limits	03/15/2018		City Council	ongoing	Changing ordinances to support native plants that may be taller than what is currently allowed could be a way to support and promote the use of native plants in landscaping
34	Distribute RetainN nitrate testing kits to farmers attending the Source Water Protection meetings	12/12/2018		Bridget Durst, City Council	ongoing	These will be available to any farmer interested in testing their tile line water. RetainN Kits will be available at the city office.
35	Contact VT Industries to see if they would like to partner with the City in order to support and promote the Source Water Protection	03/15/2018		Kay Hanson, Connie Ludvigson	ongoing	VT Industries is a large manufacturer of laminate doors and countertops. The request for support and promotion would include mentioning the completion of a Source Water Protection Plan in their newsletter, promote Source Water Fundraising events through their communications department and working with the city by having input regarding urban conservation practices.
36	Conduct monthly or bi-weekly surface water tests. The surface water should be collected from the small stream that borders the city owned land in the wellfield. Possibly from the Maple River in addition	2/15/2018		City Council, Scott Neimeier	ongoing	We will use this data to help determine the need for conservation practices upstream. This data collection should be continued for 12 months.

37	Conduct monthly or bi-weekly raw water tests	2/15/2018		City Council, Scott Neimeier	ongoing	This will be a way for us to have a metric for success and a way to compare nitrate levels in the aquifer to the nitrate levels in the stream bordering the city owned land in the wellfield and possibly from the Maple River. This data collection should be continued for 12 months.
38	Involve local fundraising organizations to hold events to raise funds to help pay for projects in the capture zones	03/15/2018		Kay Hanson, City Council	ongoing	Engaging local fundraising organizations will help build community awareness of Source Water Protection and provide funding for projects.
39	Contact John Weibers , Superintendent of Galva-Holstein Comm. Schools to have the FFA integrate conservation farming into their program,	03/15/2018		Kay Hanson, Connie Ludvigson, City Council, Bridget Durst, NRCS, Ida County SWCD	ongoing	This will allow students involved in FFA to learn more about agricultural conservation practices and how they relate to Source Water Protection.
40	Contact John Weibers, Superintendent of Galva-Holstein Comm. Schools about a science curriculum that might include students doing water testing and water quality investigations.	03/15/2018		Kay Hanson, Connie Ludvigson, City Council, Bridget Durst, NRCS, Ida County SWCD, Iowa DNR	ongoing	This will allow students to become actively involved in Source Water Protection and awareness

41	Work with ISU Extension to develop a Source Water Protection program for 4-H attendees.	03/15/2018		City, ISU Ext., Ida County SWCD, NRCS	ongoing	This will encourage children involved in 4-H to explore conservation practices within farming operations in regards to Source Water Protection
42	Contact Galva-Holstein grounds keeper to encourage soil nitrate testing on school property	03/15/2018		Kay Hanson, Connie Ludvigson, City Council	ongoing	This will give the groundskeeper a baseline of needs for fertilizer hopefully preventing the overuse of fertilizer
43	Explore options within the Action Items of the Mayor Monarch Pledge and have Holstein Mayor sign on to the pledge	03/15/2018		Connie Ludvigson, Bridget Durst, National Wildlife Federation	ongoing	Action Items in the Mayor Monarch Pledge include public communication about the importance of monarch habitat, take steps to install habitat within city limits, and changing ordinances to support habitat creation. More info at <a href="http://www.nwf.org">www.nwf.org</a>
44	Apply for Sustainable Agriculture Research and Education Professional Development Program grant	02/21/2018	03/22/2018	City, Team, Farmers, Bridget Durst, Elizabeth Lillard	Application was sent on March 22nd. We are waiting to hear about approval.	This grant is for education and leadership through outreach and professional development
45	Work with National Wildlife Federation and Bridget Durst to apply for Resilient Cities Grant	2/14/2018		City, NWF, Bridget Durst	Pre-application was submitted on 2/14/2018	The NFWF Resilient Communities grant will provide project funding specific to the steps within this plan

46	Encourage citizens, farmers, and landowners to use and dispose of hazardous materials properly	2/15/2018		City Council	ongoing	The city has a pick up date for city residents. They may send out a reminder letter to farmers and landowners.
47	Run camera down well during maintenance	3/08/2018		City Council, Water Operator	ongoing	This will provide a visual assessment of the condition of the well
48	Isotope testing to determine nitrate source  Isotope testing shows the ratio of organic (manure) and chemical (chemical fertilizer) sources in the water of the aquifer. This helps determine Best Management Practices for the area.	2/15/2018		City, Water Operator, Claire Hruby (Iowa DNR)	ongoing	Isotope testing is a part of DNR's statewide ambient groundwater monitoring program. These tests can be helpful for determining nitrate sources but interpretation of the results should be done in context of other water quality information
49	Smoke blowing in sewer system	3/08/2018		City Council, Water Operator	ongoing	This will identify areas where there are leaks in the sewer system underground infrastructure
50	Identify and encourage properly maintaining septic systems	3/08/2018		City Council, Water Operator	ongoing	The city can send out a letter informing the public, urban and rural, about how to properly maintain septic systems and the potential hazards they may cause to the aquifer

51	Supply additional funding to farmers in the capture zone for cover crop seeding	02/15/2018		City Council, Farmers in capture zone	ongoing	Although there are programs available to farmers in the area for cost share programs to help with the cost of adding cover crops to a farming operation the City may be able to offer an extra incentive to farmers in the capture zone by helping to purchase seed. These funds will be acquired through grants or local fundraising events
52	Supply funding to farmers in the capture zone for educational opportunities regarding cover crops and other conservation practices (in-field and edge of field practices)	02/15/2018		City Council, Farmers in capture zone	ongoing	If farmers are willing to attend educational workshops offered by NRCS, O'Brien County SWCD, and other conservation groups the city may pay the farmers for mileage and cover costs of workshop fees. These funds will be acquired through grants or local fundraising events
53	Use local paper, radio, city website, and Facebook page to update and inform public of Source Water Protection efforts in the area	03/08/2018		City Council	ongoing	This will help to keep the public informed and educated about Source Water Protection. This will also allow the public to become involved in these efforts



## **Helpful Resources**

For more detailed information regarding system operations of Holstein Public Water Supply, wells, and aquifer data found within the Phase 1 Assessment and the Sanitary Survey conducted by and provided through the Iowa DNR please visit

- <http://www.iowadnr.gov/Environmental-Protection/Water-Quality/Source-Water-Protection>.

### **Information and resources regarding source water and source water protection**

- <https://sourcewatercollaborative.org/>

### **Information and resources regarding the use of cover crops**

- <https://www.practicalfarmers.org/member-priorities/cover-crops/>
- [https://www.nrcs.usda.gov/Internet/FSE\\_DOCUMENTS/nrcs142p2\\_005818.pdf](https://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_005818.pdf)
- <https://www.extension.iastate.edu/alternativeag/covercrops.html>
- <https://www.iowalearningfarms.org/content/cover-crop-resources>

### **Information regarding urban conservation practices**

- <https://www.iowaagriculture.gov/FieldServices/urbanConservationBMP.asp>
- [https://www.iowalearningfarms.org/files/page/files/Urban\\_conservation\\_sheet.pdf](https://www.iowalearningfarms.org/files/page/files/Urban_conservation_sheet.pdf)
- <https://www.cleanwateriowa.org/urban/>

**Public Water Supply Contingency / Emergency Plan**  
**Affidavit**

The Safe Drinking Water Act amendments of 1986 and 1996 established the concept of wellhead protection, and subsequently the Source Water Protection program. The program is currently overseen by the Iowa Department of Natural Resources (IDNR) and attempts to prevent potential contaminants from entering source waters and prepare for situations in which drinking water may be impaired through contamination, power outage and treatment or distribution system interruptions. In order to ensure a public water supply's preparedness in such events, a Contingency/Emergency Plan has been required in every approved Source Water Protection Plan (SWPP) or Wellhead Protection Plan (WHPP).

Due to recent and growing concerns over water system security and due to many systems having previously prepared such a plan under the provisions of the 2002 Bioterrorism Act, the IDNR is now allowing an affidavit in lieu of including a completed Contingency/Emergency Plan within the submitted SWPP/WHPP. Although public water supplies do not need to send IDNR completed plans, each must have an accessible and up-to-date plan in case a catastrophic event occurs within their system. It is necessary for the completed water supply Contingency/Emergency Plan to contain the following information, at a minimum:

- Contact information for the city's mayor, city clerk, water/wastewater operator.
- Contact information for the city's power company, a professional electrician, a professional plumber and an equipment repair company.
- System's critical users must be identified and a plan for immediate notification must be created. (i.e. hospitals, nursing homes, schools, etc.)
- Contact information for local media, including newspaper, radio and television.
- Contact information for a certified laboratory, local emergency contacts, state and local public health departments and the National Guard.
- Contact information for the IDNR's 24 hour emergency contact and the local IDNR field office.

I, Katherine Hanson, representing City of Holstein certify that a Contingency / Emergency Plan has been created for our public water supply system and that this information can be presented to the IDNR upon request.

Katherine Hanson  
Signature

4-2-18  
Date