

Water System User's Guide Update April 2020



Environmental Quality



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Introduction

The purpose of this Water System User's Guide is to assist public water systems in implementing the voluntary elements of the Source Water Protection Program. The Source Water Protection Program began as the Wellhead Protection Program, which was created by the Safe Drinking Water Act amendments of 1986. The role of the North Dakota Department of Environmental Quality (NDDEQ) is to guide development of source water protection programs and provide education to public groundwater systems in implementing system elements. The local government or public water system board of directors is responsible for the implementation of the voluntary elements.





Further amendments to the Safe Drinking Water Act in 1996 required a source water assessment for all public water systems that obtain source water from surface water intakes or groundwater wells. The Source Water Assessment Strategic Plan that was approved by the U.S. Environmental Protection Agency (EPA) in 1999 to obtain primacy of the program. Primacy approval was renewed in 2018 when the North Dakota Department of Health Environmental Health Section became the North Dakota Department of Environmental Quality. The NDDEQ completes the mandatory elements of the Source Water Protection Program: the delineation of the source water protection area, a potential contaminant source invento-

ry and a susceptibility analysis of the system. Although the NDDEQ completes these mandatory elements for the public water system, the voluntary elements are still the heart of the program: management strategies, contingency plan, new wells and public participation. This user's guide provides information to public water system personnel on how to implement the voluntary items of the Source Water Protection Program. Each program element, whether mandatory or voluntary, will be addressed to explain its purpose and how it can be implemented. More information on North Dakota water quality protection can be found in Appendix A.

NDDEQ Mandatory Elements

Source Water Area Delineation - Groundwater Systems

A source water delineation area is defined as the surface and subsurface area surrounding a groundwater well or surface water intake which supplies a public water system and through which contaminants are likely to move toward and reach the groundwater well or intake. Each public water system is unique, so the methods used to delineate the source water areas will vary. The selection of a delineation method will be made after assessing the type of water supply source and the hydrogeologic data available. In some cases the methods may be combined to provide a hybrid delineation.



Groundwater Source Area Delineation Methods

- Arbitrary Fixed Radius
- Calculated Fixed Radius
- Zone of Contribution
- Hydrogeologic Mapping





Calculated Fixed Radius

To use the calculated fixed radius method, site-specific information about the aquifer The aquifer specific and well is needed. yield or porosity is needed as well as the volume pumped out of the well and the well screen length. The time of travel used is a minimum of 15 years.



Arbitrary Fixed Radius

The simplest delineation method is the arbitrary fixed radius method. This delineation defines a protective circular area, with a given radius, around a specific public water system wellhead. A minimum radius of 1,200 feet is typically used.



Zone of Contribution

This is a uniform flow analytical method that attempts to approximate the actual aquifer area that contributes water to the well. Data required to apply this method include well pumping rates, specific yield or effective porosity, saturated aquifer thickness, hydraulic conductivity and hydraulic gradient of the aguifer. In the case of numerous wells, a envelope is drawn around all zones of contributions.

Hydrogeologic Mapping

There are several elements of the local environment that can act as groundwater divides and impact groundwater flow direction in that area. These include natural boundaries such as impermeable strata and rivers, and manmade boundaries such as dams and pumping The hydrogeologic mapping method wells. takes into account these natural boundaries.



NDDEQ Mandatory Elements

Source Water Area Delineation - Surface Water Systems

Surface Water Source Area Delineations

- Surface water from natural lakes or man-made reservoirs
- Surface water from rivers and streams

Surface water from natural lakes or man-made reservoirs

A critical buffer zone of 1,000 feet from the high water elevation is delineated for areas around natural lakes or man made reservoirs. However, there are a few exceptions for specific water bodies in the state of North Dakota.

Specific delineation methods were used for the man-made reservoirs of Mulberry Creek Reservoir and Mt. Carmel Dam. Due to the lack of specific point sources of contamination and large volumes of water, a default critical zone of 1,000 feet was included around the entire water body of each reservoir, as measured from the highest recorded water elevation established by the U.S. Geological Survey. Distances less than 1,000 feet will be considered where natural topography/geology, width of the alluvial aquifer system, or proximity of contaminants justify a decrease in the critical zone.

An alternative method was also implemented for Lake Sakakawea, which encompasses 368,231 acres and has 1,600 miles of shoreline. The large size of Lake Sakakawea makes the delineation of the entire lake unmanageable when attempting to implement source water assessment pro-

visions. A 1,000-foot critical zone as measured from the highest recorded lake elevation will be extended a minimum distance of 3 miles on either side of the public water system intake structure. Due to the natural size of the lake, dilution is expected to occur in the case of catastrophic release of contaminant into the lake.



Source water from rivers and streams

The primary source water area delineation method for rivers and streams in North Dakota is referred to as the default stream/critical zone method. This method will be applied to stream and river systems from which limited or no applicable site-specific information is available. This method includes the identification of a stream stretch bounded on each side by a buffer or critical zone area. Using this method, the default stream assessment area for a stream segment using this method is defined as a fixed distance starting from the public water system intake and ending at a predetermined point upstream of the intake. For river/stream systems in North Dakota, a minimum delineated distance of 15 valley miles upstream of the intake source is used. Other inputs into the main surface water supply, such as natural named tributaries will be delineated with a minimum distance of 15 valley miles as measured from the public water system intake structure. The critical zone assessment component is defined as a horizontal distance perpendicular from the bank full elevation stage. This horizontal distance will be a minimum of 1,000 feet on both sides of the river/stream. A distance less than 1,000 feet may be considered where the natural topography/geology, width of the alluvial aquifer system or proximity of contaminants of concern justify a decreased critical zone size.

The second source water area delineation method for stream/river systems utilizes site-specific historical information for the stream/river. Data obtained from routine stream gaging completed by the U.S. Geological Survey, provides the long-term information on stream/river flow for the major surface water systems in North Dakota. With a given stream velocity and a chosen response time, an assessment area for a stream segment can be determined. To identify a source water area delineation size, the NDDEQ will use streamflow data consistent with the



bank full stage at a specific stream gaging station. The NDDEQ typically uses data collected from a gauging station located as near upstream of the public water system intake as possible. This data is used in combination with a 12-hour response time to define the upstream boundary of the critical assessment area. The stream/river segment will also have a critical zone of 1,000 feet, measured from the bank full elevation, on both sides of the stream to the full length of the delineation. Once again, named tributaries will be delineated with a minimum distance of 15 valley miles upstream as measured from the public water system intake.

NDDEQ Mandatory Elements

Contaminant Source Inventory

An essential component of a comprehensive source water assessment is the identification of potential threats to water quality. The objective of the contaminant source inventory is to obtain site-specific information concerning past and present activities that have a potential to impact groundwater quality within the source water protection area. These potential sources are both point source and nonpoint source.

- Point Source any single identifiable source of pollution from which pollutants are dis charged.
- Nonpoint Source diffused pollution that occurs over a wide area.

The most common contaminants of concern fall into four categories: agricultural, commercial/ industrial, residential, and public water system owner. The table on the next page shows the most common activities under those four categories.







Categories of Sources and Activities that may Impact Water Quality

Agricultural

- Feedlots
- Manure piles
- Chemical application/ storage
- Fertilizer application/ storage
- Grain bins for fumigation



Residential

- Septic tanks/drain fields
- Domestic wells
- Storage tanks
- Chemical storage
- Abandoned wells



Public Water Systems

- Storm sewer impoundment/ discharge
- Sanitary sewer
- Lift stations
- Water/wastewater treatment
- Industrial waste disposal
- Landfills (active and inactive)
- Hazardous waste sites

Commercial/Industrial

- Gas/service stations/auto
 repair
- Truck terminals
- Rust proofers
- Small engine repair
- Machine shops
- Auto body shops
- Auto/chemical supplies
- Dry cleaners
- Printers
- Metal platers
- Painters/finishers
- Furniture strippers
- Wood preservers
- Heat treaters/smelters
- Annealers/descalers
- Laundromats
- Car washes
- Beauty salons
- Medical/dental/veterinary
 offices
- Mortuaries/funeral homes
- Research laboratories
- Photo processers
- Painting supplies
- Junk/salvage yards
- Nurseries
- Grain elevators
- Food processors
- Slaughterhouses
- Meat packing plants

- Oil pipelines/reserve pits
- Mines: coal/sand/gravel
- Coal gasification plant
- Concrete/asphalt/tar plants
- Fuel oil distributors
- Injection wells
- Oil wells
- Geothermal wells
- Water supply wells
- Exploration wells
- Abandoned wells
- Seismic shot holes
- Monitoring wells
- Power plants
- Construction sites



- Herbicide wholesalers/ retailers
- Pesticide wholesalers/ retailers
- Fertilizer wholesalers/ retailers
- Salts and piles
- Snow cleanups
- Urban runoff
- Golf course/parks
- Cemeteries
- Animal burial
- Roads
- Railroads
- Airports



NDDEQ Mandatory Elements

Susceptibility Analysis

Susceptibility of a system is defined as the likelihood of a drinking water contaminant occurring or being detected at the water intake structure. Certain physical events must occur in such a sequence that the source water of a public water system contains levels of a contaminant that would pose a concern for the public water system operators and the public. First, a release of the contaminant of concern must occur. Second, the contaminant must follow a pathway between the point of release and the source water intake. Third, the concentration of the contaminant in the source water depends upon the quantity released, the ability to attenuate, and the dilution and depletion of the contaminant along the pathway. The following elements are considered in a susceptibility determination: the structural integrity of the source water intake, the environment governing the transport of contaminants to the intake, and the results of the contaminant source inventory.

Groundwater Susceptibility Worksheet

Surface Water Susceptibility Worksheet

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Management Strategy

A management strategy is a document outlining the actions the public water system can initiate to protect the quality of the water in the delineated source water protection area. The purpose of the Source Water Protection Program is to protect water quality. The degree of protection provided will depend on the management methods employed. North Dakota Century Code Section 40-05-01 states that municipalities have the power to protect a public water supply within 1 mile of the limits of the municipality. This law gives municipalities the authority to protect any existing water supply within their jurisdiction. The responsibilities of the water resource districts with respect to water quality protection are described in North Dakota Century Code Section 61-16.1-09. North Dakota Century Code Section 61-16.1 gives water resource boards clear authority to adopt rules to protect water supplies within their jurisdictions. More information on these regulations is included in Appendix A and example documents are in Appendix B. Public water systems may request the help of the NDDEQ or ND Rural Water to assist with developing management strategies.

Management Strategy Actions-Municipality

- Rezone undeveloped areas within the source water protection area. For example, an area zoned industrial may be rezoned residential prior to development to limit industries from locating within the source water protection area.
- Purchase the land within the source water protection area for maximum control of activities.
- Implement rules relating to the possible future annexation of property currently outside city limits but inside a protection area. Avoid zoning these areas as industrial or commercial. The municipality still retains the right to allow industrial facilities within the protection area if it so chooses.
- Require newly constructed or existing non-sewered facilities located within the protection area and the boundaries of the municipal utilities be connected to the sanitary sewer collection system.
- Keep on file a complete and current list of active and abandoned USTs or wells.
- Consider moratoria on underground storage tanks (USTs), septic systems, or other specific land uses known to impact water quality.
- Monitor groundwater in areas down-gradient from particular potential contaminant sources for early detection of a leak or accident.
- Require any new developers to provide complete assessments of the hydrogeology at construction sites (at their own expense) and require specific design/construction standards if they intend to conduct potentially hazardous



Management Strategy

- Install highway signs to identify the source water protection area. The design for these signs has been established by the NDDEQ and the Department of Transportation. The color of the sign background is green, and the foreground is reflective white. These signs are to be purchased, installed, and maintained by the public water system owner. Signs can be ordered through Rough Rider Industries.
- Establish conservancy zones. Conservancy zones protect one or a number of sensitive environmental lands. In these zones, only light uses such as recreation or conservation are permitted.
- Have agreements or memorandums of understanding with private landholders within the source water protection area, to ensure discussion before any development or activities take place on private land.
- Conduct a household hazardous waste collection days campaign, sponsored by a local organization.
- Report spills or suspicious activity within the source water protection area. You can contact State Radio at 1.800.472.2121.



Contingency Plan

What would you do if your water supply was interrupted or threatened by contamination? Proper planning can help to prevent this type of event from creating a disaster. Public water systems should develop a contingency plan to remain on file for use during an emergency. This plan should include site-specific information about your public water system, including short-and long-term solutions to the temporary or permanent loss of you public water supply source. An example can be found in Appendix B. The NDDEQ and ND Rural Water can provide assistance in creating a contingency plan for you system.

Contingency Plan Elements

- Information such as population, number of service connections, fire hydrants, average daily water usage, and the names and contact information of the water system operators, fire chief, and chief of police. Other site-specific information to include are well numbers or names, location, depth, diameter, status, and maximum pumping rate.
- A list of potential contaminant sources and their locations.
- A description of the local hydrogeology, geography, geology and source water protection area.
- Fire-fighting plans for specific sites. If your source inventory lists specific facilities which store substances posing an extraordinary threat to water quality, fire-fighting plans should be developed for particular sites and included in the contingency plan. The fire department should be aware of the contingency plan and locations of the substances of concern.



- A list of equipment and supplies needed during an emergency, along with their storage locations.
- Short-term emergency water supply options.
- Long-term alternative water supply options, including sources of funding for replacement.
- Become a member of NDWARN. NDWARN is a statewide Water/Wastewater Agency Response Network (WARN) of utilities helping utilities to prepare for the next natural or human-caused emergency. <u>http://www.ndwarn.org/</u>



New Groundwater Wells or Surface Water Intakes

Administrative Code Article 33.1-17 (Public Water Supply Systems of the State of North Dakota) requires that the locating of new wells (Section 33.1-17-01-16) be conducted so as to limit the potential for contamination of the water supply. This issue is also addressed in Administrative Code Article 33-18 (Water Well Construction and Water Pump Installation); in Sections 33.1-18-01-04 and 33.1-18-01-05 describe water well location and protection of groundwater sources are described. All public water systems planning to construct a new well or intake should implement the appropriate source water protection procedures prior to initiation of any well drilling activities. More information can be found in Appendix A.

Plans and specifications must be submitted to the NDDEQ - Division of Municipal Facilities for review and approval, prior to construction of a new public water supply well.

Public Participation

Successful source water protection area programs are driven by public participation. Keep the consumers informed and encourage public interest and involvement. One way to inform the consumers is through the media. The goal is to inform citizens in your community about their drinking water sources and how their activities can affect drinking water quality.







Contact Information

North Dakota Department of Environmental Quality Division of Water Quality Source Water Protection 918 East Divide Ave Bismarck, ND 58501-1947 701.328.5210 https://deq.nd.gov/WQ/1 Groundwater/1 SW.aspx



North Dakota Department of Environmental Quality Division of Municipal Facilities 918 East Divide Ave Bismarck, ND 58501-1947 701-328-5211 https://deq.nd.gov/MF/



Environmental Quality

North Dakota Rural Water Systems Association 2718 Gateway Ave Suite #201 Bismarck, ND 58503-0585 701-258-9249 www.ndrw.org



Appendix A

North Dakota Law and Source Water Protection

Current Water Quality Protection Programs

The existing North Dakota water quality protection programs are source orientated and are designed to control potential sources of contamination. This control is accomplished by contaminant source permit programs, effluent limitations, performance and design standards, and best management practices for nonpoint contaminant sources. Since water can be contaminated by a wide variety of sources, the water quality protection programs in North Dakota involve many federal and state agencies, each with legislative authority and rules to protect water quality.

Although all federal water quality protection regulations are applicable in North Dakota, the state has retained primacy regulatory control of most contaminant sources. Authority for enforcement of most of the federal laws has been delegated to the state by incorporation of federal statutory requirements into state law and through memorandums of agreement between the state and the Environmental Protection Agency (EPA).

Federal Legislation and Programs

The federal government oversees a broad range of water quality protection programs primarily through the EPA and secondarily, through the Department of Interior, the Department of Agriculture, and other federal agencies. These federal programs provide research, technical assistance, funding and regulation for a number of water quality protection programs. Although, the federal programs do not provide a comprehensive approach to water quality protection, they do make a number of resources available to strengthen North Dakota's Protection activities.

The EPA administers six federal programs which provide the bulk of the federal water quality protection legislation. These include the Safe Drinking Water Act (SDWA), Resource Conservation and Liability Act (RCRA), Comprehensive Environmental Response Compensation and Liability Act (CERCLA, usually called Superfund), Clean Water Act (CWA), Toxic Substance Control Act (TSCA) and Federal Insecticide, Fungicide and Rodenticide Act (FIRFA).

State Legislation and Programs

The State of North Dakota has primacy of a number of the federal programs listed above. The following table is a summary of North Dakota water quality protection statues, which includes federal programs as well as state rules and programs.

Relevant North Dakota Laws for Public Water Systems

North Dakota Century Code (NDCC)

Ground Water Protection NDCC 23.1-33

Municipal Government NDCC 40-05

• <u>40-05-01.61</u>

Operation of Water Resource Districts NDCC 61-16.1

• <u>61-16.1-09</u>

North Dakota Administrative Code (NDAC)

Public Water Supply Systems NDAC 33.1-17

- 33.1-17-01-16
- 33.1-17-01-17
- 33.1-17-01-19

Water Well Contractors NDAC 33.1-18

- 33.1-18-01-04
- 33.1-18-01-05

General Performance Standards NDAC 33.1-20-04.1

Appendix B Public Water System Example Documents and Guides

Chapter XX

WELL HEAD PROTECTION DISTRICT

CITY of XXX, ND ORDINANCES

As adopted by City Commissioners 1992

PURPOSE AND INTENT

The City Commission recognizes (1) that residents of the City of XXX rely exclusively on ground water for a safe drinking water supply and (2) that certain land uses in McHenry County can contaminate ground water particularly in shallow/surficial aquifers.

The purpose of the Wellhead Protection District is to protect public health and safety by minimizing contamination of the shallow/surficial aquifers of XXX County. It is the intent to accomplish this, as much as possible, by public education and securing public cooperation.

Appropriate land use regulations will be imposed, however, which are in addition to these imposed in the underlying zoning districts or in other county regulations. It is not the intent to grandfather in existing land uses which pose a serious threat to public health through potential contamination of public water supply wellheads areas.

Section 20.0101 DEFINITIONS

1. AQUIFER

A geological formation, group of formations, or part of a formation capable of storing and yielding ground water to wells and springs.

2. BEST MANAGEMENT PRACTICES

Measures, either managerial or structural, that are determined to be the most effective, practical means of preventing or reducing pollution inputs from nonpoint sources to water bodies.

3. BUFFER ZONE

An area outside and adjacent to Zone A that has been delineated to account for possible changes in the boundaries of Zone A due to effects of irrigation pumping.

4. CHEMIGATION

The process of applying agricultural chemicals (fertilizer or pesticides) using an irrigation system by injecting the chemicals into the water.

5. CONTAMINATION

The process of making impure, unclean, inferior, or unfit for use by introduction of undesirable elements.

6. CONTINGENCY PLANS

Detailed plans for control, containment, recovery, and clean-up of hazardous materials released during fires, equipment failures, leaks, and spills.

7. DEVELOPMENT

The carrying out of any construction, reconstruction, alteration of surface or structure or change of land use or intensity of use.

8. FACILITY

Something that is built, installed, or established for a particular purpose.

9. FEEDLOT

A parcel of land whereon there is contained an operation of feeding or raising animals in excess of one hundred (100) animal units per acre or in excess of five hundred (500) animal units per parcel of land. One animal unit is equivalent to one beef cow, steer, feeder or fat beef animal; one horse; 0.7 airy cow; 1.7 swine; 6.7 sheep; 33 hens, cockerels, capons, broiler or ducks; and 10 geese or turkeys.

10. GRAY WATER

All domestic wastewater except toilet discharge water.

11. HAZARDOUS MATERIAL

A material which is defined in one or more of the following categories:

- (a) Ignitable: A gas, liquid or solid which may cause fires through friction, absorption of moisture, or which has low flash points. Examples: white phosphorus and gasoline.
- (b) Carcinogenic: A gas, liquid or solid which is normally considered to be cancer causing or mutagenic. Examples: PCB's in some waste oils.
- (c) Explosive: A reactive gas, liquid or solid which will vigorously and energetically react uncontrollably if exposed to heat, shock, pressure or combinations thereof. Examples: dynamite, organic peroxides and ammonium nitrate.
- (d) Highly Toxic: A gas, liquid, or solid so dangerous to man as to afford an unusual hazard to life. Examples: parathion and chlorine gas.
- (e) Moderately Toxic: A gas, liquid or solid which through repeated exposure or in a single large dose can be hazardous to man. Example: atrazine.
- (f) Corrosive: Any material, whether acid or alkaline, which will cause severe damage to human tissue, or in case of leakage might damage or destroy other containers of hazardous materials and cause the release of their contents. Examples: battery acid and phosphoric acid.

12. MANURE STORAGE AREA

An area for the containment of animal manure in excess of 8,000 pounds or 1,000 gallons.

13. LEAKS AND SPILLS

Any unplanned or improper discharge of a potential contaminant including any discharge of a hazardous material.

14. PASTURE

A field that provides continuous forage to animals without depletion of forage matter.

15. PRIMARY CONTAINMENT FACILITY

A tank, pit, container, pipe or vessel of first containment of a liquid or chemical.

16. SECONDARY CONTAINMENT FACILITY

A second tank, catchment pit, pipe, or vessel that limits and contains liquid or chemical leaking or leaching from a primary containment area; monitoring and recovery are required.

17. SHALLOW/SURFICIAL AQUIFER

An aquifer in which the permeable media (sand and gravel) starts at the land surface or immediately below the soil profile.

18. TEN YEAR TIME OF TRAVEL DISTANCE

The distance that ground water will travel in ten years. This distance is a function of the permeability and slope of the aquifer.

19. ZONE OF CONTRIBUTION

The entire area around a well or well field that is recharging or contributing water to the well or well field.

Section 20.0201 ZONES

1. ZONE A - AQUIFER CRITICAL IMPACT ZONES

Zone A, the wellhead protection area, is the zone of contribution mapped around all public water supply wells or well fields and includes land up gradient to the ten year time of travel boundary plus contributing drainage areas.

- (a) Permitted uses provided they meet appropriate performance standards outlined for aquifer protection overlay zones:
 - 1. Agriculture
 - 2. Horticulture
 - 3. Park, greenways or publicly owned recreational areas
 - 4. Necessary public utilities/facilities designed so as to prevent contamination of ground water.
- (b) Special exceptions: The following uses are permitted only under the terms of a special exception and must conform to provisions of the underlying zoning district and meet the Performance Standards outlined for the Aquifer Protection Overlay Zones.
 - 1. Expansion of existing nonconforming uses to the extent allowed by the underlining district. The Commission shall not grant approval unless it finds such expansion does not pose greater potential contamination to ground water than the existing use.

(c) Prohibited uses:

- 1. New feedlots installed after adoption of this ordinance;
- 2. Disposal of solid waste except spreading of manure;
- 3. Outside unenclosed storage of road salt;
- 4. Disposal of snow containing deicing chemicals;
- 5. Processing and storage of PCB containing oils;
- 6. Car washes;
- 7. Auto service, repair or painting facilities and junk or salvage yards;
- 8. Disposal of radioactive waste;
- 9. Graveyards or animal burial sites;
- 10. Open burning and detonation sites;
- 11. All other facilities involving the collection, handling, manufacture, use, storage, transfer or disposal of any solid or liquid material or waste having potentially harmful impact on ground water quality;
- 12. All uses not permitted or not permitted as special exceptions;
- 13. Fall application of nitrogen fertilizer except spreading of manure;
- 14. Weed sprays used must conform to county standards.
- 15. Disposal of waste oil, oil filters, tires and all other petroleum products.

- 2. ZONE B Zone B is established as the remainder of the shallow/surficial aquifer not included in Zone A.
 - (a) Permitted uses:
 - 1. All uses permitted in the underlying zoning districts provided that they can meet the Performance Standards as outlined for the Aquifer Protection Overlay Zones.
 - (b) Special exceptions:
 - 1. All special exceptions allowed in underlying districts may be approved by the City Commission provided they can meet Performance Standards outlined for the Aquifer Protection Overlay Zones.
 - (c) Prohibited uses:
 - 1. Fall application of nitrogen fertilizer except spreading of manure.
 - 2. Weed Sprays that do not conform to county standards.
 - (d) Performance standards:

The following standards shall apply to land uses in Zone A and B of the Aquifer Protection Overlay Districts:

- 1. New or replacement septic tanks and associated drain fields for containment of human or animal wastes must conform with regulations established by the North Dakota State Department of Health.
- 2. Any Facility involving the collection, handling, manufacture, use, storage, transfer or disposal of any solid or liquid material or wastes, except for spreading of manure, in excess of 1000 pounds and or 100 gallons which has the potential to contaminate ground water must have a secondary containment system which are easily inspected and whose purpose is to intercept any leak or discharge from the primary containment vessel or structure. Underground tanks or buried pipes carrying such materials must have double walls and inspectable sumps. Pipes installed to carry diluted chemicals for chemigation are exempted and storage of liquid fertilizer for chemigation is allowed as long as a secondary containment system is used. Secondary containment for tanks used for chemigation must be in place by July 1, 1990.
- 3. Open liquid ponds containing materials referred to in (2) above will not be permitted without a secondary containment system except for community wastewater lagoons. Agricultural waste storage ponds are permitted under certain conditions as approved by the City Commission.
- 4. Storage of petroleum products in quantities exceeding fifty-five (55) gallons at one locality in one tank or series of tanks must be in elevated tanks; such tanks must have a secondary containment system noted in (2) above where it is deemed necessary by the City Commission.
- 5. Discharge of industrial process water on site is prohibited without City Commission approval.
- 6. Owners/operators of active or abandoned feedlots shall handle and dispose of manure in accordance with regulations set by the City Commission.
- 7. Auto service, repair, or painting facilities and junk or salvage yards in Zone B shall meet all Federal and State standards for storage, handling and disposal of petroleum products and shall properly dispose of all potentially hazardous waste materials.

- 8. An acceptable contingency plan for all permitted facilities must be prepared and on file in the City Auditor's office for preventing hazardous materials from contaminating the shallow/surficial aquifer should flood, fire and other natural catastrophes or equipment failure occur:
 - 1. For flood control, all underground facilities shall include but not be limited to a monitoring system and secondary standpipe above the 100 year flood control level, for monitoring and recovery. For above ground facilities, an impervious, dike, above the 100 year flood level and capable of containing 100 percent of the largest volume of storage will be provided with an overflow recovery catchment area (sump).
 - For fire control, plans shall include but not be limited to a Safe fire fighting procedure, a fire retardant system, and provide for dealing safely with both health and technical hazards that may be encountered by disaster control personnel in combating fire. Hazards to be considered are overhead and buried electrical lines, pipes, liquids, chemicals or open flames in the immediate vicinity.
 - 3. For equipment failures, plans shall include but not be limited to:
 - (a) Below ground level, removal and replacement of leaking parts, a leak detection system with monitoring, and an overflow protection system.
 - (b) Above ground level, liquid and leaching monitoring of primary containment systems, their replacement or repair and cleanup and/or repair of the impervious surface.
 - 4. For any other natural or man-caused disasters occurring, the owner and or operator shall report all incidents involving liquid or chemical material in an endangerment of the health and /or safety of either disaster personnel and/or public in general. Agricultural operations are exempted from this section unless they store chemicals that are on the Superfund Amendments and Reauthorization Act of 1986 (SARA Title III) extremely hazardous substance list over the threshold planning quantity at anyone time. The City Inspector shall be informed within 24 hours of all leaks and spills of materials that might potentially contaminate the water.
- 9. Since it is known that improperly abandoned wells can become a direct conduit for contamination of ground water by surface water, all abandoned wells should be plugged.

Section 20.0301 SCOPE

The provisions of this article shall apply to all wells or other openings greater than fifteen (15) feet in depth. Furthermore, the owner of any proposed well shall be required to apply and receive from the City Commission a permit to construct such a well or opening, the application for which shall supply all the information required under Section 20.0501, and for such permit the Council shall charge and receive the fee hereinafter provided for.

Section 20.0401 PERMIT

- 1. A permit shall be granted when the City Inspector has examined the application and determined that the proposed use, activity, or development meets the performance standards.
- 2. In securing a use permit, the owner/developer must make future improvements which may become necessary to prevent contamination of shallow/surficial aquifers and the owner/developer must allow City personnel to inspect any improvements to verify they meet the performance standards.
- 3. Whenever any person has obtained a permit and thereafter desires alteration of the authorized us, such persons shall apply for a new permit. The owner may appeal a City Inspector's decision to modify or deny a requested permit.
- 4. It shall be unlawful for any person to drill or otherwise construct, repair, correct, abandon or plug a well, or to engage upon such work, within the limits of the area, or to employ anyone else to engage in such work, without first applying for and securing a permit from the City Commission or a duly authorized agent thereof. Such permit may be granted with the approval of the City Commission the application hereinafter required, and complies with all other provisions of this article applicable to him.

Section 20.501 APPLICATION

1. Every application for a permit for the drilling, construction, repair and correction, abandonment of plugging of a well, shall state the name and address of the owner thereof, the purpose for which the permit is desired, which shall be done or more of the acts above-mentioned; the definite location of the well or proposed well; its approximate depth; and if the permit for the drilling or construction or repair and correction of a water well, the estimated amount of water to be, or which is pumped daily, monthly or annually, and the use or uses for which the water will be or is required; if for a permit for the drilling or construction or or the repair and correction of a well, the proposed method of drilling or construction, or the proposed method of repair and correction, and the kind of equipment to be used, and in all cases, the name of the contractor(s), and the license number issued by the City Commission, if done through a contractor, whom the owner desires to drill or construct, repair and correct, or do the work pursuant to an abandonment of a well in compliance with this article.

Section 20.0601 CITY LIABILITY

1. Nothing in this ordinance shall be construed to imply that the <u>XXX</u> City Commission, by issuing a permit, has accepted any of an owner/developer's liability if a permitted development contaminates. water in shallow/superficial aquifers.

SECTION 20.0701 ENFORCEMENT

- 1. CIVIL ENFORCEMENT:
 - (a) Any person may submit to the city a verbal or written complaint alleging a violation of this ordinance.
 - (b) Upon receipt of a complaint, the city shall conduct an investigation of the substances of the complaint. The investigation shall include a meeting with the landowner involved and an inspection of the animal feedlot and/or manure storage area to which the complaint pertains.

- (c) Based upon the determination that there is a violation of this ordinance, the City shall conduct an informal reconciliation with the violator. As part of such informal reconciliation, the city shall;
 - 1. Notify the violator by mail of the violation of this ordinance and a desire of the city to correct the violation through informal reconciliation. The statement shall also indicate that should the violator refuse to follow the recommended corrective actions within the time set forth by the city, the city may take action to correct the violation and bill the violator for the cost of taking the corrective action.
 - 2. Make a good faith effort to meet with the violator and resolve the correction of the violation.
- (d) If after taking the steps above and after a period of ninety (90) days following the mailing of the notice of the violation, the city in good faith determines that the violator is unwilling to participate in informal reconciliation and take the corrective action ns prescribed, the city shall notify the violator by mail of the termination of the informal reconciliation.
- (e) The city make take the corrective action prescribed above following thirty (30) days after notifying violator by mail of the notice of termination of the informal reconciliation, and bill the violator for the reasonable cost of such action.
- 2. CRIMINAL ENFORCEMENT:
 - (a) In lieu of proceeding under Section 2D.070l, a person who is alleged to have violated Sections (c) and (d) may be prosecuted for the commission of a crime Violation of Section (c) and (d) is a misdemeanor and may be punished by imprisonment of not more than ninety (90) days or imposition of a fine of not more than \$700.00 or both.

SECTION 20.0801 SAVING CLAUSE

1. Should any section or provision of this ordinance be declared invalid, such decision shall not affect the validity of the ordinance as a whole or any other part thereof.

CITY OF TUTTLE KIDDER COUNTY, NORTH DAKOTA



MANAGEMENT - CONTINGENCY PLANS NORTH DKOTA WELLHEAD PROTECTION PROGRAM

I. - MANAGEMENT PLAN

- Statement of Policy

II. - CONTINGENCY PLAN

- Short Term Emergency Water Supply Options
- Long Term Alternative Water Supply Options
- Existing Potential Ground-Water Contamination Sources
- Zoning Requirements
- Emergency Procedures
- ND Environmental Emergency Response Contact List
- National Emergency Telephone Response Guide

III. - PUBLIC AWARENESS MATERIALS

CITY OF TUTTLE WELLHEAD PROTECTION PROGRAM MANAGEMENT PLAN - STATEMENT OF POLICY

- 1. The Tuttle city council recognizes that residents of the city of Tuttle rely on groundwater for a safe drinking water supply and that certain land uses within, and bounding, the delineated wellhead protection area can contaminate the groundwater.
- 2. The purpose of the Wellhead Protection Program is to protect public health and safety by minimizing contamination of the shallow sand and deep bedrock aquifers supplying drinking water to the city of Tuttle.
- 3. Tuttle is a community of approximately 160 residents; thus, the city council chooses <u>not</u> to enact additional city ordinances to protect our groundwater-derived municipal water supply at the present time. It is the intent to accomplish this, as much as possible, through existing ordinances and by public education and securing public cooperation.
- 4. At least once each year, a brief city program will be conducted to address proper handling and disposal of all potentially hazardous material generally found in the area.
- 5. The city will, every six months, prepare a public service announcement which can be aired on radio or newspapers, reminding residents of the importance of public cooperation. An example is:

NOTICE TO AREA RESIDENTS

Groundwater contamination is a serious matter. All residents are asked to help maintain Tuttle's drinking water supply. Don't dump or spill anything outside if it may cause harm to the environment.

Help protect Tuttle's groundwater supply. It's all there is!

WELLHEAD PROTECTION PROGRAM CONTINGENCY PLAN

CITY OF TUTTLE KIDDER COUNTY, NORTH DAKOTA

GENERAL INFORMATION:

Population - 160 Water Service Connections -Fire Hydrants -Average Daily Use -

Total Water Usage in 1992 -Storage Capacity - _____ gallons(cistern) Treatment -

SHORT TERM EMERGENCY WATER SUPPLY OPTIONS;

- 1. Acquire water from adjacent cities.
- Rural water system could provide normal potable consumption requirements.

LONG TERM ALTERNATIVE WATER SUPPLY OPTIONS:

- Development of new well or wellfield in a hydraulically distinct aquifer.
- Construction of a more technical treatment facility which may remove contaminant.
- 3. Connection to rural water system.

EXISTING POTENTIAL GROUND-WATER CONTAMINATION SOURCES:

- Underground storage tanks. All known underground fuel storage tanks are identified on the attached General Layout Map. All newly buried and existing tanks must meet State and Federal regulations.
- Above ground storage tanks (locations on attached map). All above ground storage tanks must be protected from leaks or accidental spills.
- 3. Abandoned water wells (locations on attached map). These wells should be properly abandoned.
- 4. Runoff from land-applied herbicides, pesticides, and fertilizers. Can be controlled through Best Management Practices (BMP's) as

recommended by local Soil Conservation Services.

- 5. Bacterial seepage from the municipal sewer system or from abandoned septic tanks. Control sewer system through routine, scheduled public works maintenance. Abandoned, private septic tanks are unregulated but can be cleaned and filled with sand.
- 6. Gravel pits. Access can be controlled and the gravel pits can be posted no dumping.
- 7. Commercial waste seepage from any one or more of the following:
 - used motor oil
 - solvents
 - accidental fuel spills
 - paint and paint thinner spills
 - weed killers
 - fertilizers
 - asphalt
 - antifreeze
 - lubricants
 - pesticides
 - anhydrous ammonia

ZONING REQUIREMENTS:

All existing ordinances shall apply.

EMERGENCY PROCEDURES:

Notify immediately:

Mayor -Public Works Superintendent -Fire -Police -

North Dakota Division of Emergency Management - 1-800-472-2121 EPA - 1-800-424-8802

Attached is the National Emergency Telephone Response Guide.

Decide what immediate action is required.

- 1. Notification of residents.
- 2. Evacuation of residents, if necessary.
- 3. Determination of severity of problem causing emergency.
- 4. Public notification.
- 5. What special emergency equipment will be required?
- 6. Determine what, if any, public works is affected.
- 7. Organize a designated group (i.e., Fire, Police, etc.) to oversee the emergency operations.

April 1, 1993 Date: April 1, 1993 Date: April 1, 1993 TOXIC & HAZARDOUS MATERIALS pesticides, insecticides Work phone no.: 221-5166 Home phone no.: 258-1418 Work phone no.: 221-5166 Home phone no.: 224-0096 Work phone no.: 221-5166 Home phone no.: 258-3479 Work phone no.: 221-5166 Home phone no.: 224-0708 North Dakota State Department of Health & Consolidated Laboratories Environmental Health Section Steven Tillotson **Meil Knatterud Curt Erickson** Chris Roob Approved by: <u>Chief, Env/ronmental Health Section</u> ponse Koordinator North Dakota State Department of Health & Consolidated Laboratories CLAND Work phone no.: 221-5188 Home phone no.: 222-8275 Ken Wangler Work phone no.: 221-5188 Home phone no.: 223-3290 Work phone no.: 221-5188 Home phone no.: 224-0665 Work phone no.: 221-5188 Nome phone no.: 224-0053 <u>RADIATION</u> radioactive materials James Killingbeck 10 Environmental Emergency Response Contacts List **Warren Freier** Greg Krause P.O. Box 5520 Bismarck, ND 58502-5520 **1200 Missouri Avenue** Approved by: Emerged • PRIMARY CONTACTS Work phone no.: 221-5188 Home phone no.: 222-3849 Gary Helbling Work phone no.: 221-5188 Home phone no.: 663-5202 Work phone no.: 221-5188 Home phone no.: 223-0895 Work phone no.: 221-5188 Home phone no.: 258-1574 1 1 Terry 0'Clair AIR POLLUTION gases, vapors Tom Bachman . Lee Nuber 1 1 I 1 221-5188 223-6735 Work phone no.: 221-5150 Home phone no.: 223-4204 Work phone no.: 221-5150 Home phone no.: 258-7206 1st Alternative Contact 2nd Alternative Contact Dama Nount 3rd Alternative Contact Francis Schulndt Jeff Burgess Work phone no.: Nome phone no.: phone no.: 221-5210 phone no.: 223-9399 Work phone no.: 221-5210 Home phone no.: 255-4707 Work phone no.: 221-5210 Home phone no.: 255-6391 Work phone no.: 221-5210 Home phone no.: 663-0191 Dennis Feuless WATER POLLUTION of spills Dave Glatt Jeff Hauge Gary Reed : 1 1 Hork Home

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State Radio: 1-800-472-2121

	In the event of any of the following, call the DOT at	1-800-424-8802 Immediately: A Any Incallori where a	1. A person is killed continuing dauger exists	2. A person is hospitalized 5. Any release of radioactive 3. Property Damage in materials excess of \$50,000	In the event of an accidental or intentional release of "Hazardous Substance" in a "REPORTABLE QUANTITY" amount the person	in charge of the releases or incloent shall minimute outery mount. I.S. COAST GUARD	NATIONAL RESPONSE CENTER 800-424-8802 (District of Columbia - 202-426-2675)	§ *** EMERCENCY/POLICE TELEPHONE NETWORK OR	When Blological Materials are accidentally released, notify: Director, CDC. Attanta, GA 404-633-5313	•	In the event of a loss or theft of the explosiven lintext compages 25 - 27, notify the following agency or its replacement: BUREAU OF ALCOHOL, TOBACCO & FIREARMS Toll Free - 800-424-9555	WHEN A SARATITLE III REGULATED "RO" DISCHARGE	1AKES PLACE IN TRANSPORTATION OF ON-SITE, FACILITIES ARE RECUTIRED TO NOTIFY STATE AND LOCAL EMERGENCY	PLANNING COMMITTEES, WHILE CARRIERS/TRANSPORTERS	Are regulated to notify the emergency statement or local fire/police department. This regularment	TO NOTIFY UNDER SARATITLE III DOES NOT MITIGALE ADDITIONAL REPORTING REQUIREMENTS UNDER STATE	AND FEDERAL REGULATIONS.	HAZARDOUS WASTE SPILLS Notify NATIONAL RESPONSE CENTER at 800-424-8802 If a hazarchous waste discharge from a facility threatens human health or the environment, outside the facility.	
North Dakota State Radio 1-800-472-2121	Bureau of Explosives, Association of American Railroads 24-hour EMERGENCY number: 1-202-639-2222	Assistance for nazartoous matchais incluents involving rainways, when compared through CHEMTREC.	CHEMTREC: 1-000-424-9300	24-hour EMERGENCY phone to the Chemical Transportation Emergency Center operated as a public service by the Chemical Manufacturers Association. Identification of unknown chemicals. advice on proper initial response methods and procedures for specific chemicals and situation, assistance in establishing contact with shippers/	carriers/Manufacturers/spectal product response reams such as Critician with the Pesticide Safety Team Network as necessary and appropriate. Desticide Safety Team Network as necessary and appropriate.	(Provides informational assistance pertaining to the federal regulations for transportation of hazardous materials, CFR-49.)	Texas Tech University Pesticide HOTLINE: 1-600-856-7378 The National Pesticide Telecommunications Network provides information on pesticide-related health/toxicity/minor cleanup to physicians, veterinarians, fire	E.P.A. Chemical Emergency Preparedness Program HOTLINE: 1-800-535-0202	For communities to call to obtain 140-page interim guidelines regarding "Acutely Toxic Chemicals" which cover Organizing A Community, Developing A Chemical Contingency Plan, Gathering Site-Specific Information; also provided is a list of 400- plus "Acutely Toxic Chemicals." Guideline document may be used to obtain Material Safety Data Sheets for such chemicals.	E.P.A. RCHA HOTLINE: 1-800-424-9346	To respond to any citizen's request for specific information, and to clear up confusion. regarding RCRA and "Superfund" regulations: also, to respond to requests for certain documents printed in the Federal Register for which this telephone number is given as a contact point. In addition, in response to policy questions from the regulated communities and state/local governments, personnel will attempt to seek out correct person to provide guidance.	E.P.A. Smail Business HOTLINE: 1-800-368-5886	To respond with advice and information to problems encountered by small quantity generators of hazardous waste.)	Hazardous Materials Newsletter INFORMATION LINE: 1-802-478-2307	To respond to any first responder — public safety agency, industrial, commercial , who needs to obtain information/advice relative to hazardous materials tools/	equipment/materials. planning. protocols. methods. strategies. factics. training and research sources and resources.	National Animal Poison Control Center of the University of Illinois:	Provides 24-hour consultation in diagnosis and treatment of suspected or actual animal poisonings or chemical contamination, staffs an emergency response team to rapidly investigate such incidents in North America, and performs laboratory unalysis of feeds/ animal specimens/environmental materials for toxicants and chemical contaminants.	

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EMERGENCY TELEPHONE RESPONSE GUIDE

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Assistance for hazardous materials incidents involving railroads; often contacted through CHEMTREC. CHEMTREC (800) 424-9300	24-hour emergency phone to the Chemical Transportation Emer- gency Center operated as a public service by the Chemical Manu- facturers Association. Identification of unknown chemicals, advice on proper initial response methods and procedures for advice on proper initial response methods and procedures for specific chemicals and situations, assistance in establishing specific chemicals and situations, assistance in establishing specific seams such as CHLOREP or the Pesticide Safety Team Network as necessary and appropriate.	DOT INFORMATION Hegulations & Standards (202) 366-4488 Exemptions (202) 366-4535 Technical Department (202) 368-4545 EDA & DOT INFORMATION LINE	Washington, D.C. (800) PLAN-FOR Provides Informational assistance pertaining to the federal regulations for transportation of hazardous materials, (CFR-49).	Texas Tech University Pesticide Hotline (800) 858-7378 The National Pesticide Telecommunications Network provides Information on pesticide-related health/toxicity/minor cleanup to physicians, veterinarians, fire departments, government agency personnel and the general public.	E.P.A. Chemical Emergency Preparedness Program Hotline (800) 535-0202	For communities to call to obtain 140-page interim guidelines regarding "Acutely Toxic Chemicals" which cover Organizing A community, Developing A Chemical Contingency Plan, Gathering Site-Specific Information: also provided is a list of 400-plus "Acutely Toxic Chemicals." Guideline document may be used to obtain Material Safety Data Sheets for such chemicals.	E.P.A. RCHA Holline (800) 424-9346 To respond to any citizen's request for specific information, and to clear up confusion, regarding RCHA and "Superfund" regula to clear up confusion, regarding RCHA and "Superfund" regula flons; also, to respond to requests for certain documents printed in the Federal Register for which this telephone number is given as in the Federal Register for which this telephone number is given as a contact point. In addition, in response to policy questions from the regulated communities and state/local governments, person the regulated communities and state/local governments, person and will attempt to seek out correct person to provide guidance	
Solid and Hazardous Waste (RCRA) and Superfund Hotline (202) 382-3000	Chemical Emergency Preparedness Program (including Com- munity Right-To-Know, Title III Sections 311, 312, and 313) Information on reporting hazardous substances for community planning purposes (800) 535-0202 Hotiline (202) 479-2449	Toxic Substance Control Act (1504) 1704 and Hotline (202) 554-1404 Asbestos Technical Information and Referral (including bulk as- bestos identification sampling, analysis, and regulation program) Hotline (202) 554-1404	Safe Drinking Water (Public Water Supply Program, Safe Drinking Water Act, Policy, Technical, and Regulatory questions) Hotline (202) 382-5533	National Pesticide Telecommunications Network (NPTN) for Information concerning pesticides (split handling, disposal, clean-up, and health effects) Holline	Interagency Assistance: National response comerces in splits and hazardous substance's releases) Hotline (800) 424-8802 Hotline (200) 267-2675	Office of Hazardous Materials Transportation Research and Special Programs Administration U. S. Department of Transportation 400 7th Street S.W. Washington, D.C. 20590	Office of the Director (202) 368-0656 Alan I. Robert, Director (202) 368-0656 Deputy Director (202) 368-0656 Elaine Economides (202) 368-0656 Bureau of Explosives, Association of American Railroads 24-hour Emergency number (202) 639-2222	Ð

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NOTICE TO AREA RESIDENTS

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Help protect Tuttle's ground-water supply. It's all there is!

