

## Potential Impacts and Cascading Effects

Because of the low risk of droughts an occurrence may not have a severe impact on human life due to means of accessing water; however the economic impact on farmers would be significant. A drought would have a detrimental economic impact on the local economy due to stunting growth of agriculture crops and possible negative impacts on livestock as well. Extended drought conditions may also make an area more prone to occurrences of wildfire. Droughts can also be closely linked with insect infestation. Trees may be lost due to lack of moisture. In severe instances, a drought may cause Watonwan County wells to dry up entirely.

## Drought Gaps and Deficiencies

- Since droughts are so rare, communities may not be familiar with enacting and enforcing water restrictions on their residents.

### **ACTIONABLE MITIGATION STEPS:**

**Actionable Mitigation Steps are more elaborately explained with project, timeframe, responsible jurisdictions/staff, possible funding sources, and priority level in the Action Plan section of this document. Suggested areas of focus are denoted in parentheses.**

1. Utilization of Water Conservation Strategies (Countywide) – Water conservation provisions and use restrictions in times of drought are generally included in city ordinances. Staff of all Watonwan County cities are encouraged to periodically review these ordinances and enact them when deemed necessary.
2. Water Access (Countywide) – The County and city members of the hazard mitigation task force would work cooperatively to identify water access points should a drought occur for human and animal consumption.

## ***INFECTIOUS DISEASE***

An infectious disease is defined as an organism or matter that has the potential to spread or affect a population in adverse ways. Infectious diseases have the potential to affect any form of life at any time based on local conditions, living standards, basic hygiene, pasteurization and water treatment. Despite medical breakthroughs and technology, infectious diseases continue to pose an important public health problem. Today, the issue of emerging and re-emerging infectious diseases is at the forefront of public health concern. The very young, older adults and hospitalized and institutionalized patients are at increased risk for many infectious diseases. Changes in demographics, lifestyle, technology, land use practices, food production and distribution methods, and child care practices, as well as increasing poverty, have a role in emerging infections.

**The primary hazardous infectious diseases that have been identified by the Watonwan County Health Department include the following:**

### ***Tuberculosis***

Tuberculosis is a disease that is spread from person to person through the air. TB usually affects the lungs, but it can also affect other parts of the body, such as the brain, the kidneys or the spine. TB germs are put into the air when a person with TB of the lungs or throat coughs or sneezes. When a person inhales air that contains TB germs, he or she may become infected. People with TB infection do not feel sick and do not have any symptoms. However, they may develop TB at some time in the future. The general symptoms of TB include feeling sick or weak, weight loss, fever and night sweats. The symptoms of TB of the lungs include coughing, chest pain and coughing up blood. Other symptoms depend on the part of the body that is affected.

### ***Hepatitis A***

Hepatitis A is a transmitted viral disease that causes fever, malaise, anorexia, nausea, and abdominal discomfort, followed within a few days by jaundice. The disease ranges in clinical severity from no symptoms to a mild illness lasting one and two weeks to a severely disabling disease lasting several months. In developing countries, hepatitis A virus is usually acquired during childhood, most frequently as an asymptomatic or mild infection. Transmission can occur by direct person-to-person contact; through exposure to contaminated water, ice or shellfish harvested from sewage-contaminated water; or from fruits, vegetables, or other foods that are eaten uncooked, and which can become contaminated during harvesting or subsequent handling.

### ***West Nile Virus (WNV)***

West Nile virus is a mosquito-transmitted virus that can cause encephalitis in some people. This virus usually circulates between mosquitoes and birds in Africa and Europe. However, in 1999, an outbreak of WN encephalitis was reported in New York City. Since then the virus has spread throughout much of the eastern United States, and was found as close as Madison, Wisconsin, and east-central Iowa in 2002.

### ***Influenza (Flu)***

Influenza is a contagious disease that is caused by the influenza virus. It attacks the respiratory tract in humans (nose, throat and lungs). The flu is different from a cold. The flu usually comes on suddenly and may include these symptoms: fever, headache, tiredness (can be extreme), dry cough, sore throat, nasal congestion and body aches.

## *Chronic Wasting Disease (CWD)*

CWD naturally occurs in North American deer and Rocky Mountain Elk, however it can have rippling effects on livestock. It belongs to a group of infectious diseases known as "transmissible spongiform encephalopathies" (TSEs). It is caused by an abnormal protein called a prion that affects the animal's brain, and it is invariably fatal. Usually, months to years pass from the time an animal is infected to when it shows signs of the disease.

### **Watonwan County Infectious Disease Hazard Assessment**

<b>Hazard:</b>	<b>All Infectious Diseases</b>
<b>Location</b>	Countywide
<b>Historic Events</b>	Very limited instances of diseases over the past 50 years
<b>Likely to happen now?</b>	Unlikely
<b>How often?</b>	Infrequently
<b>Where would event occur?</b>	Any area within Watonwan County, though likely to affect certain groups of people most vulnerable (the very young or the elderly, for example), or in places with high density of persons in a smaller area (such as nursing homes or apartment complexes)
<b>Severity of event?</b>	Could be a major outbreak of life-threatening disease in a worst-case scenario
<b>When would hazard likely occur?</b>	Any time of year
<b>What other hazards could occur at the same time?</b>	Widespread panic, riots, natural hazard events
<b>Economic impacts</b>	Loss or reduction of local business, costs incurred to deal with outbreak (medical personnel, medicine/vaccines, facilities)
<b>Loss of life impacts</b>	Potentially major if a large-scale outbreak occurs
<b>Risk Level</b> VH – Very High H – High L – Limited M – Minimal	Citizens/People: VH Animals/Livestock: VH Housing: M Critical Structures: M Infrastructure: M <b>Total: H</b>
<b><i>Risk Assessment</i></b>	
Unlikely – 1 Occasional – 2 Likely – 3 Highly Likely – 4	<b><u>Frequency of Occurrence</u></b> 1
More than 12 hours – 1 6-12 hours – 2 3-6 hours – 3 Minimal-None – 4	<b><u>Warning Time</u></b> 1
Limited – 1 Minor – 2 Major – 3 Substantial – 4	<b><u>Potential Severity</u></b> 4
Minimal – 1 Limited – 2 High – 3 Very High – 4	<b><u>Risk Level</u></b> 2

(Total divided by 4) Very Low – 1 Low – 2 Moderate – 3 High – 4	<u>Overall Priority</u>  2 Low
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### **Vulnerability to Infectious Disease**

Infectious diseases are always a risk for Watonwan County, and must be taken into serious consideration to assist in mitigating their effects to a minimum if and when they do occur. Many infectious diseases are preventable and are controllable, limiting the vulnerability of Watonwan County to an epidemic so long as measures are taken. Prevention and control of infectious diseases involve collection of accurate assessment data (such as surveillance data for specific conditions), outbreak detection and investigation, and development of appropriate control strategies (both short and long term) based on specific epidemiologic data. These activities require close collaboration between clinical providers (especially infection-control practitioners within hospitals), clinical laboratories, state and local health departments, and federal agencies. Furthermore, a need exists for continued education of industry (particularly food producers and food-service industries), health-care students and providers, along with research to improve immunizations, diagnostic methods, and therapeutic modalities. Thus, the prevention of infectious diseases requires multidisciplinary interventions involving public health professionals, medical practitioners, researchers, community-based organizations, volunteer and private groups, industrial representatives, and educational systems.

### **History of Infectious Disease**

Minnesota has not had an infectious disease outbreak reach epidemic proportions in decades. However, Watonwan County has experienced individual cases of infectious diseases over the last 50 years that have been considered isolated occurrences or minor exposures.

### **Potential Impacts and Cascading Effects**

Instances of an infectious disease can have very severe impacts in a worst-case scenario, including the possibility of a large loss of life. Infectious disease can also lead to long-term sickness and bodily impairment/disabilities as well. An outbreak or epidemic could feasibly impact the ability of resources, such as medical facilities, to meet the increased demand for services. Additionally, since southern Minnesota’s economy is heavily impacted by the animal/livestock industry (which can be susceptible to infectious disease as well), implications of such an outbreak can negatively affect the local economy. In the event of a large-scale epidemic, deaths, fears, and misinformation could also trigger public panic, lawlessness, and riots.

### **Infectious Disease Gaps and Deficiencies**

There have been no program gaps or deficiencies regarding the possibility of an infectious disease hazard event identified.

### **ACTIONABLE MITIGATION STEPS:**

**Actionable Mitigation Steps are more elaborately explained with project, timeframe, responsible jurisdictions/staff, possible funding sources, and priority level in the Action Plan section of this document. Suggested areas of focus are denoted in parentheses.**

1. Safe animal handling processes and facility structure (Countywide) - Through zoning and inspections animal operations can be properly design and maintain that reduce risks of disease among livestock, which ultimately impact humans.
2. Media Outreach (Countywide) – In the event of an infectious disease outbreak, local radio, television, and print media should be utilized to ensure that proper and factual information regarding the disease event is being disseminated throughout Watonwan County communities. This may assist in calming fears that may lead to negative secondary effects, as described earlier.
3. Health education for youth and parents (Countywide) – The County and school public health nurses can provide educational material to young adults and parents on the impact of infectious diseases.
4. Health education to private businesses (Countywide) – The county public health department will provide educational material, as well as, periodic site visits to aide food establishments in being educated on safe food handling processes.
5. Cooperation with State Health Department (Countywide) – Watonwan County clinics and hospitals will continue to cooperate and share information regarding infectious disease occurrences with the Minnesota State Health Department, and information flow between the two will assist in alerting Watonwan County agencies to the possibility of an outbreak event.
6. Participation in vaccination programs (Countywide) - All Watonwan County residents (particularly children) should remain up-to-date with all required and recommended vaccinations. Programs assisting those who either do not have insurance or are unable to afford vaccinations should be identified and utilized in local jurisdictions.
7. Quarantine/Isolation Plan (Countywide) – If the need for an officially designated quarantine arises, the State is ultimately responsible for the designation and implementation of quarantine procedures.

## **PART FIVE: PRIMARY UNNATURAL HAZARDS**

The next section is concerned with man-made or technological hazards considered to be among the top three in Watonwan County.

## ***FIRE***

Urban fires are blazes spreading through structures, posing danger and destruction to property. These fires include any instance of uncontrolled burning which results in structural damage to residential, commercial, industrial, institutional or other properties in developed areas. Fires can occur in any community, and pose a threat year round.

### **Generalized Vulnerability to Fires**

All structures and buildings of every nature (residential, commercial, industrial, etc.) throughout Watonwan County are equally vulnerable to fire, and nearly every jurisdiction within the county has already experienced the effects that fire can have. Fires can occur at any time of the year, and can be particularly damaging to structures nearby or connected to one another, which makes the possibility of the fire spreading much more pronounced. Places that are frequented by the very young or the elderly are not necessarily more prone to fire, but can be more dangerous if a fire were to occur because these two groups of people are among the most frequent victims of fire.

In 2002, fire departments responded to 401,000 home fires in the United States, which claimed the lives of an estimated 2,670 people (not including firefighters) and injured another 14,050. Approximately 79% of all U.S. fire deaths occurred in homes (Karter 2003). In 2003, fires in Minnesota caused more than \$154.4 million in property damage and dollar loss in residential properties increased 13% from 2002. (2003 Preliminary Fire in Minnesota)

### **History of Fire**

Watonwan County reported 49 fire runs in 2002. The fire rate in Watonwan County was 1 fire for every 258 people. The total county dollar loss was \$2,635,440.00 with an average dollar loss per fire of \$57,292.00. Residential fires account for a majority of fire calls while commercial and industrial fires account for a greater percent of the total dollar losses.



### **Watonwan County Fire Hazard Risk Assessment**

<b>Hazard:</b>	<b>Fire</b>
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<b>Location</b>	Buildings/Structures Countywide
<b>Historic Events</b>	49 Fire Calls in 2002 (1 for every 258 county residents)
<b>Likely to happen now?</b>	Yes
<b>How often?</b>	Potential exists at all times
<b>Where would event occur?</b>	Any building/structure throughout the county
<b>Severity of event?</b>	Fire could spread and damage/destroy multiple buildings
<b>When would hazard likely occur?</b>	Any time of year
<b>What other hazards could occur at the same time?</b>	Exposure to hazardous materials, water system failure
<b>Economic impacts</b>	Could be harmful to business if damaging enough, average loss due to fire in Watonwan County in 2002 was \$57,292.00
<b>Loss of life impacts</b>	Particularly dangerous to the elderly or the very young and firefighters dispatched to resolve fires, compounded if exposure to hazardous materials were to occur
<b>Risk Level</b> VH – Very High H – High L – Limited M – Minimal	Citizens/People: H Animals/Livestock: H Housing: VH Critical Structures: H Infrastructure: L <b>Total: H</b>
<b><i>Risk Assessment</i></b>	
Unlikely – 1 Occasional – 2 Likely – 3 Highly Likely – 4	<b><u>Frequency of Occurrence</u></b> 3
More than 12 hours – 1 6-12 hours – 2 3-6 hours – 3 Minimal-None – 4	<b><u>Warning Time</u></b> 4
Limited – 1 Minor – 2 Substantial – 3 Major – 4	<b><u>Potential Severity</u></b> 1
Minimal – 1 Limited – 2 High – 3 Very High – 4	<b><u>Risk Level</u></b> 3
<b>(Total divided by 4)</b> <b>Very Low – 1</b> <b>Low – 2</b> <b>Moderate – 3</b> <b>High – 4</b>	<b><u>Overall Priority</u></b>  2.75 Low/Moderate

### **Vulnerability to Fire Hazards and Specific Areas of Concern**

All structures and buildings of every nature (residential, commercial, industrial, etc.) throughout Watonwan County are equally vulnerable to fire, and nearly every jurisdiction within the county has already experienced the effects that fire can have. Fires can occur at any time of the year, and can be particularly damaging to structures nearby or connected to one another, which makes the possibility of the fire spreading much more pronounced. Places that are frequented by the

very young or the elderly are not necessarily more prone to fire, but can be more dangerous if a fire were to occur because these two groups of people are among the most frequent victims of fire. The City of Butterfield has indicated that they are concerned with the possibility of fire hazards, primarily in the form of an event at Butterfield Foods or the public school. They have also acknowledged the possibility of an explosion and/or fire event at the city's grain elevator. The City of Darfur, the City of Odin, and the City of LaSalle have also indicated that they have concern regarding the possibility of a grain elevator explosion as well. The City of Lewisville has expressed concern over explosions and/or fires at several locations throughout the community including gas pipelines and liquid propane tank storage facilities, as well as the local co-op.

### **Potential Impacts and Cascading Effects**

Potential impacts due to fire include the loss of life, physical injuries, property and structural damage to any extent, toxicity from smoke and chemicals, and an increased strain on city water systems. Essential public facilities (such as city halls or police stations) may be damaged or destroyed, as well as critical utilities such as electric and gas lines. Damage to or destruction of community water systems may also pose a public health risk until they can be repaired or replaced.

### **Fire Gaps and Deficiencies**

- It is common in Watonwan County for buildings in downtown areas to share walls with other buildings, making the threat of a downtown fire very serious.
- The Minnesota State Building Code has yet to be adopted in some jurisdictions and without its adoption there may be buildings in Watonwan County structurally incapable of withstanding fire.

### **ACTIONABLE MITIGATION STEPS:**

**Actionable Mitigation Steps are more elaborately explained with project, timeframe, responsible jurisdictions/staff, possible funding sources, and priority level in the Action Plan section of this document. Suggested areas of focus are denoted in parentheses.**

1. Aggressively train fire department personnel to use equipment (Butterfield, LaSalle, Madelia, St. James and the County) – Cities can collaborate on efforts to train emergency response personnel and when appropriate equipment. Through mutual aid communities are more capable of reducing the damage of hazards.
2. Create and maintain Mutual Aid Agreements (Butterfield) – City administrator, fire and police departments will work with neighboring communities to establish mutual aid agreements to increase emergency response coverage.
3. Update and Maintain building codes (Countywide) – Building Inspectors working in communities that have adopted Minnesota building codes will be trained to maintain credentials for both the city and their personal license. As changes come about the inspectors will work with city administrators, zoning administrators, planning commissions and city councils to update city ordinances and plans. The building

codes will lessen the vulnerability of new buildings, because measures such as structure of walls and fire apparatuses may be addressed early.

4. Consider offering specialized training classes (Countywide) – Fire departments could offer classes for residents regarding topics which often lead to fires, such as chimney cleaning and holiday hazards.
5. Utilization of local zoning ordinances (Countywide) – Locally enacted zoning regulates density, use, bulk, and height of structures, as well as setback requirements that can assist in preventing fires from “jumping” from one structure to the next. It is recommended that all Watonwan County cities review and update their zoning ordinances so that they work towards mitigating fire hazards.

## ***HAZARDOUS MATERIALS***

For mitigation planning, hazardous materials may be defined simply as any materials that may have negative impacts on human health. That is, exposure to hazardous materials may result in injury, sickness or death. The impacts of hazardous materials may be short-term with negative effects in seconds, minutes or hours or long-term with negative effects in days, weeks, or in some cases years after exposure.

Hazardous materials vary widely in their toxicity to humans. Some hazardous materials are highly toxic so that even brief exposure to small amounts may be dangerous or fatal. Other hazardous materials are much less toxic and negative effects may occur only after exposure to large amounts over longer time periods. The technical term “toxic”, which is widely used to describe hazardous materials, is simply a synonym for the more common terms “poison” and “poisonous.”

Hazardous chemicals are widely used in heavy industry, manufacturing, agriculture, mining, the oil and gas industry, forestry and transportation as well as in medical facilities and commercial, public and residential buildings. There are literally hundreds of thousands of chemicals that may be hazardous to human health at least to some extent. A typical single family home may contain dozens of potentially hazardous materials including fuels, paints, solvents, cleaning chemicals, pesticides, herbicides, medicines and others.

However, for mitigation planning purposes, small quantities of slightly or moderately hazardous materials being used by end users are rarely the focus of interest. Rather, interest is focused primarily on larger quantities of hazardous materials in industrial use and on hazardous materials being transported, where potential for accident spills are high. Situations involving extremely hazardous materials or large quantities of hazardous materials in locations where accidents may result insignificant public health risk are of special concern for planning purposes.

For mitigation planning purposes, the toxicity of particular hazardous materials is an important measure of the potential impact of hazardous materials on affected communities, but not the only important measure. Other characteristics of hazardous materials, especially the quantity of material and the ease of dispersal of the material may be just as important, as or more important than toxicity, in governing the level of potential threat to a community. For example, a small quantity of a very toxic solid hazardous material in a research laboratory may pose a much smaller level of risk for a community than a large quantity of a less toxic gaseous material in an industrial site upwind from a populated area.

The severity of any hazardous material release incident for an affected community depends on several factors, including:

1. The toxicity of the hazard material,
2. The quantity of the hazardous material released,
3. The dispersal characteristics of the hazardous material,
4. The local conditions such as wind direction and topography, and the efficacy of response and recovery actions.

## Watonwan County Hazardous Material Risk Assessment

<b>Hazard:</b>	<b>Hazardous Materials</b>
<b>Location</b>	Specific locations throughout county
<b>Historic Events</b>	None on record
<b>Likely to happen now?</b>	Unlikely
<b>How often?</b>	Infrequently
<b>Where would event occur?</b>	Specific locations throughout county identified as having significant amounts of hazardous material, or on roads within county used for transporting hazardous materials, City of LaSalle due to identified chemical and fertilizer plants located in the city, existing risk in rural areas that may be used for clandestine methamphetamine labs.
<b>Severity of event?</b>	A major event could have a significant impact on human and animal life
<b>When would hazard likely occur?</b>	Any time of year
<b>What other hazards could occur at the same time?</b>	Fire, storm, terrorist attack
<b>Economic impacts</b>	Potential evacuation/shut down of area where spill or accident occurred, costs incurred to mitigate damages
<b>Loss of life impacts</b>	Potential for loss of life depending on specific material and degree of exposure
<b>Risk Level</b> VH – Very High H – High L – Limited M – Minimal	Citizens/People: H Animals/Livestock: VH Housing: L Critical Structures: L Infrastructure: L <b>Total: L/H</b>
<b><i>Risk Assessment</i></b>	
Unlikely – 1 Occasional – 2 Likely – 3 Highly Likely – 4	<b><u>Frequency of Occurrence</u></b> 1
More than 12 hours – 1 6-12 hours – 2 3-6 hours – 3 Minimal-None – 4	<b><u>Warning Time</u></b> 4
Limited – 1 Minor – 2 Substantial – 3 Major – 4	<b><u>Potential Severity</u></b> 2
Minimal – 1 Limited – 2 High – 3 Very High – 4	<b><u>Risk Level</u></b> 2
<b>(Total divided by 4)</b> Very Low – 1 Low – 2 Moderate – 3 High – 4	<b><u>Overall Priority</u></b>  2.25 Low

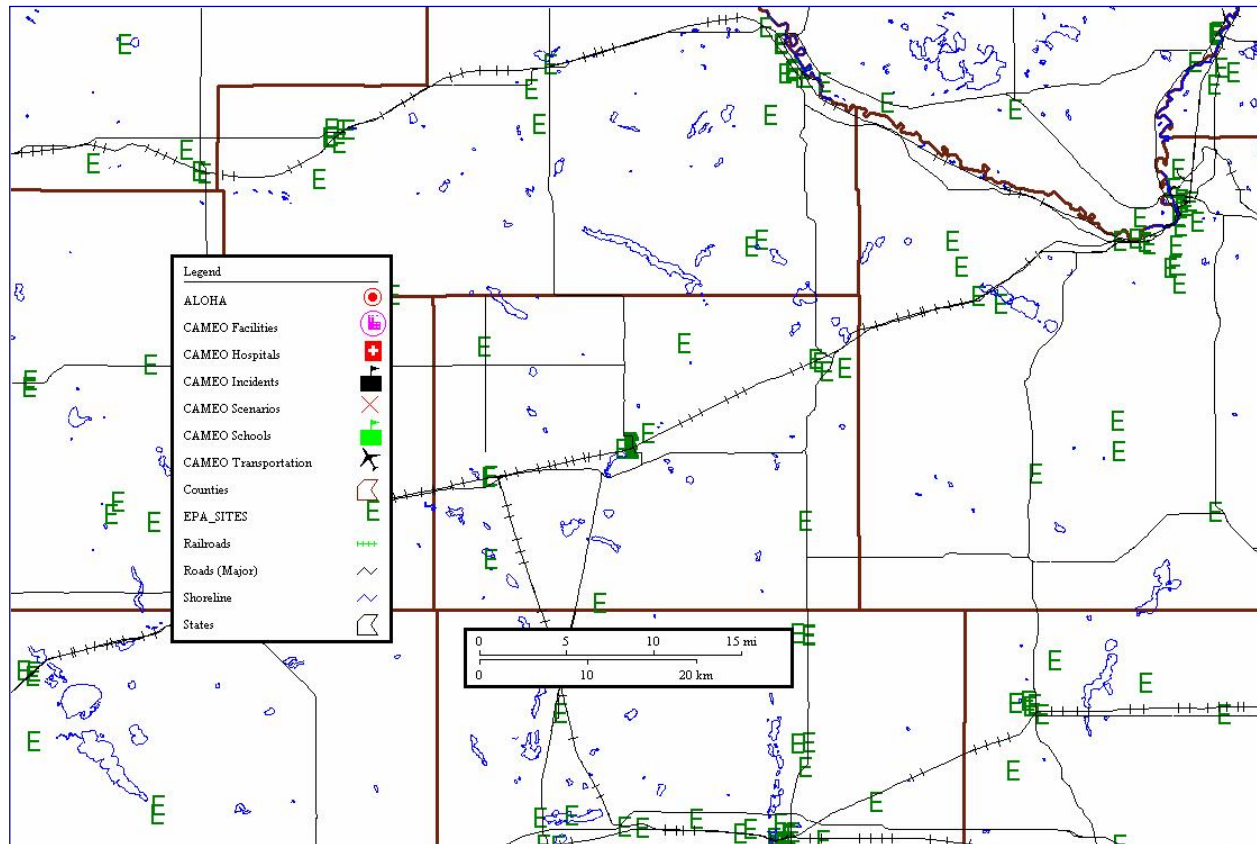
## Vulnerability and Concerns Regarding Hazardous Materials

Hazardous materials are conveyed by road, rail, aircraft and pipeline, each of which present differing levels of risk of unwanted release of the hazardous materials. Transported products include hazardous materials moving from producers to users, moving between storage and use facilities, and hazardous waste moving from generators to treatment and disposal facilities. The City of LaSalle has indicated some concern regarding a hazardous material event in the community, due to the location of a chemical plant and a fertilizer plant located in the city. The City of Lewisville has indicated concern with the possibility of a farm chemical spill, possibly at the local co-op. The City of Madelia has also expressed concern regarding the facilities within the community that house hazardous materials, as well as the proximity of the city to Highway 15 and Highway 60 (upon which hazardous materials are occasionally transported). The City of St. James has noted concern regarding Highway 4 and Highway 30 due to the fact that these roads bisect the community, as well as a railroad line that also runs through the town.

### Hazardous Materials Storage Facilities

The road and rail system in Watonwan County provides a network to transport both hazardous and non-hazardous material throughout the region and between local communities. Risk of hazardous materials events vary based on the classification of the road and its proximity to people and property. The risk of a major event is most severe in the City of St. James, due to the concentrated population. Several cities identified the risks of a chemical spill resulting from a box car derailment. Due to the location of many of the rail lines that are located within or near downtown areas the potential impact could be severe.

### Watonwan County Identified Hazardous Materials Locations



## **History of Hazardous Materials**

Watonwan County has not experienced a major hazardous materials spill or accident to date. Minor incidents have occurred but these have had little or no impact on the community at large. The likelihood of a major event is considered to be marginal, but an isolated minor accident is a constant concern.

### **Concerns of Hazardous Materials and Illegal Methamphetamine Labs**

A growing concern among rural Minnesota areas, including Watonwan County, is the manufacturing, distribution, and use of illegal methamphetamines. Aside from the dangers of the drug itself to those who use it (which are listed in the points immediately following this paragraph), the creation of methamphetamine also involves many forms of hazardous materials, many of which are not used, stored, or disposed of correctly. Therefore, exposure to these materials is a concern in its own right. A clandestine drug lab (or clan lab) is a collection of materials and ingredients used to manufacture illegal drugs. Methamphetamine is the drug most commonly made in Minnesota labs. In addition to the dangers of active drug labs and possible harm caused by lab residues in unclean, former labs, methamphetamine use and manufacture is associated with:

- Increased crime, particularly property crimes, personal violence, child abuse and endangerment
- Increased demand for medical and social services, including, foster- and short-term care, drug and psychiatric treatment, and various public health services
- Increased demands on jails and jail services, fire department and law enforcement agencies
- Additional strain on educators, parents and communities

### **Vulnerability to Methamphetamine Labs**

The production of methamphetamine is a relatively simple process and can be carried out by individuals without special knowledge or expertise in chemistry. Most of these labs (75%) were located away from the largest Minnesota cities, in rural or semi-rural areas such as those in Watonwan County.

### **History of Methamphetamine Labs**

Minnesota officials reported 475 methamphetamine labs and methamphetamine related events (dumps of methamphetamine chemicals, ammonia thefts, precursor chemical stashes and purchases) to MDH for 2003. Incidents of methamphetamine production have occurred in Watonwan County.

### **Forms of Hazardous Material Exposure Associated with Clandestine Drug Labs**

**1. Toxic Gas.** The primary toxic gases generated during the manufacture of methamphetamine are hydriodic acid vapors and phosphine gas. Hydriodic acid vapors are present during primarily the first phase of d-methamphetamine production. Unlike more sophisticated methamphetamine manufacturers, some chemists typically do not use condenser tubes, which allow vapors to cool and condense product back into the reaction vessel. Instead, they allow hydriodic acid vapors to

boil out of the reaction vessel. These vapors can also result from the simple presence of hydriodic acid. Similar to the fumes of ammonia, hydriodic acid vapors will emanate from moderate quantities of hydriodic acid. For example, hydriodic acid could remain in sink traps, open containers, or other materials or equipment, releasing toxic fumes that can cause nausea. Prolonged exposure to hydriodic acid vapors can cause internal chemical burns and permanent respiratory damage.

**2. Explosions and Chemical Fires.** In addition to the unstable properties of phosphine gas, some of the precursors used in d-methamphetamine production are flammable or reactive and can also cause explosions and chemical fires. For example, friction can ignite deposits of red phosphorous left on equipment or the surrounding area. If individuals dismantle equipment, the red phosphorous residue may not only spark but also ignite gases remaining in the reaction vessel, intensifying the problem. Explosions can result because of mislabeling or the purchase of the wrong chemicals. There is a reported case in which d-methamphetamine clandestine lab cooks were sold potassium chlorate instead of ephedrine. Since both substances are white powders and appear similar, the cooks treated the powder as if it was ephedrine. When the potassium chlorate was combined with red phosphorus the results were a violent chemical reaction that exploded. These explosions often result in chemical fires and have the potential to initiate a chain reaction of explosions and additional fires due to the proximity of precursor chemicals and other flammable materials stored at the clandestine lab site.

**3. Dump Sites.** After completion of the final d-methamphetamine production phase, clandestine lab workers are left with large quantities of hazardous waste. Five to six pounds of hazardous waste are generated for each pound of finished product.

The location of the discarded waste is referred to as a "dumpsite," which can vary from an open pit in a farm field, to a deep shaft underneath a basement, or to storage in a garage. However, many of these dumpsites have similar contents. Waste commonly found at dumpsites include the following:

- Compressed Gas Cylinders - 20-pound propane cylinders are used to transport anhydrous ammonia, ether or other pressurized bottles.
- Discarded Clothing, Shoes, Gloves - lab workers frequently discards gloves and other clothing because contaminated clothing can be used as evidence to substantiate their involvement.
- Dust Masks
- Household Products - Automobile products that contain methanol or ether, containers of alcohol, Coleman fuel, drain cleaner, lye, acetone, toluene, batteries, gun scrubber, salt, iodine.
- Coffee Filters - Used to strain out tablet residue, red phosphorous, iodine crystals and other material in the manufacturing process.
- Freon Cans and Containers - sodium hydroxide makes up the bulk of the waste at the dumpsites. Whether the liquid waste is left in containers that corrode and leak over time or simply dumped onto the ground, this contaminating liquid can both sterilize the ground soil and contaminate local water tables.
- In addition, sealed cans containing residual Freon and other hazardous fluids are commonly found at dumpsites. Freon cans often expand when temperatures exceed

## Potential Impacts and Cascading Effects

Hazardous materials can have a large variety of potential impacts, including the loss of human and animal life as well as injuries. There may also be the associated issues of necessary evacuation and/or containment of the affected area, loss of life (human and animal), and loss of property due to contamination or fire/explosion. There is also significant vulnerability of city water and sewer systems to hazardous material impacts should such materials be introduced into the systems, as well as the lowering of property values in areas either directly affected by or nearby to hazardous materials. In any event where exposure to hazardous materials occurs, the impacts will largely be determined by many variables, including: the amount of exposure, the type of hazardous materials involved and its particular qualities (whether it is a solid, liquid, or gas, if it is combustible, etc), the location of the event (i.e. proximity to people, water sources, etc.), temperature, wind speed, weather conditions, etc.

## Hazardous Materials Gaps and Deficiencies

- Many cities have no containment plan in place in the event of a hazardous waste spill.
- While cities have little control over potential highway and railway accidents information on what's being transported and good communication with rail line operators help reduce risks.
- Abandoned barns and structures throughout the county are inviting to individuals seeking to create illegal drugs, particularly methamphetamines.

### **ACTIONABLE MITIGATION STEPS:**

**Actionable Mitigation Steps are more elaborately explained with project, timeframe, responsible jurisdictions/staff, possible funding sources, and priority level in the Action Plan section of this document. Suggested areas of focus are denoted in parentheses.**

1. Rail Crossing (Butterfield, Odin, Ormsby, St. James and Madelia) – City staff (police, administration, and public works) will work rail line operators to ensure adequate lighting on all railroad crossings, which would assist with limiting accidents involving chemicals.
2. Reroute Plans (Butterfield, Odin, Ormsby, St. James and Madelia) – City administrator, public works director and city engineers will work with train operators and the Minnesota Department of Transportation to identify alternative routes for trains should a incident occur.
3. Public education about methamphetamine labs (Countywide) – City emergency responders will be provided with educational material from the State, non-profits, and other safety units to distribute to youth, communities at risk, and vulnerable people. Distribution material will be in print primarily, while city staff will be updated by video tapes and presentation. Currently, regional emergency management provides verbal presentations for emergency responders, youth groups, and elected officials.

4. Legislative Actions (Countywide) County and city staff will monitor new legislative actions that provide resources to mitigate the damage of methamphetamine labs. Recent legislation was created to limit products containing ephedrine and pseudoephedrine. In addition, Jurisdictions will need to determine methods of paying for clean-up costs (i.e. public or private property owners). The County will have a primary role in learning of such policy changes or adoptions.
5. Utilization of Emergency Warning System (Countywide) – Local radio and television stations provide Emergency Broadcast System messages. Such messages could be used if the need to warn residents of a major or dangerous hazardous material event arises.
6. Cooperation with State Agencies (Countywide) – Watonwan County will work directly with appropriate state agencies to address the needs for responding to and mitigating the impacts of a hazardous material release event.
7. Ensure proper storage of hazardous materials throughout Watonwan County (Countywide) - Proper storage, labeling, and securing of all possible hazardous materials will help to maintain safety and prohibit exposure to the materials.

## **PART SIX: SECONDARY UNNATURAL HAZARDS**

The following man-created or technological hazards are possible, but are not considered top priority in Watonwan County by the jurisdictions within. They will be summarized.

## **WASTEWATER TREATMENT FAILURE/ WATER SUPPLY CONTAMINATION**

### **Definitions**

**Wastewater Treatment Failure-** Wastewater treatment uses microbes to decompose organic matter in sewage. If too much untreated sewage or other organic matter is added to a lake or stream, dissolved oxygen levels will drop too low to support sensitive species of fish and other aquatic life. Wastewater treatment systems are designed to digest much of the organic matter before the wastewater is released so that this will not occur. The County is working with landowners to upgrade their septic systems through federal funding. This funding allows the landowner to upgrade at a lower cost, while helping to protect the Minnesota River.

**Water Supply Contamination-** Water supply contamination is the introduction of point and non-point source pollutants into public ground water and/or surface water supplies. Although minimal, water supply contamination does pose a threat in the county. Microbiological and chemical contaminants can enter water supplies. Chemicals can leach through soils from leaking underground storage tanks, feedlots and waste disposal sites. Human wastes and pesticides can also be carried to lakes and streams during heavy rains or snow melt.

### **Watowan County Wastewater Treatment Plant Failure/Water Supply Contamination Risk Assessment**

<b>Hazard:</b>	<b>Wastewater Treatment Plant Failure/Water Supply Contamination</b>
<b>Location</b>	Countywide, individual cities, point and non-point sources
<b>Historic Events</b>	None on record
<b>Likely to happen now?</b>	Unlikely
<b>How often?</b>	Infrequently
<b>Where would event occur?</b>	Any Watowan County community/municipality that utilizes such facilities
<b>Severity of event?</b>	Water supply of large population of people could be contaminated and rendered unsafe for use/drinking
<b>When would hazard likely occur?</b>	Any time of year
<b>What other hazards could occur at the same time?</b>	Infectious diseases, terrorist attack
<b>Economic impacts</b>	Expense incurred for repair or replacement of systems and provision of safe drinking water during the interim
<b>Loss of life impacts</b>	Depending on amount and type of contamination, could be life-threatening
<b>Risk Level</b> VH – Very High H – High L – Limited M – Minimal	Citizens/People: L Animals/Livestock: L Housing: M Critical Structures: L Infrastructure: L <b>Total: L</b>
<b><i>Risk Assessment</i></b>	
Unlikely – 1 Occasional – 2	<b><u>Frequency of Occurrence</u></b> 1

Likely – 3 Highly Likely – 4	
More than 12 hours – 1 6-12 hours – 2 3-6 hours – 3 Minimal-None – 4	<u>Warning Time</u> 4
Limited – 1 Minor – 2 Substantial – 3 Major – 4	<u>Potential Severity</u> 2
Minimal – 1 Limited – 2 High – 3 Very High – 4	<u>Risk Level</u> 1
(Total divided by 4) Very Low – 1 Low – 2 Moderate – 3 High – 4	<u>Overall Priority</u> 2 Low

### Vulnerabilities to Water Treatment Failure

Problems impacting Watonwan County water systems could possibly include (but are not limited to) the following:

**1. Inadequate collection systems** -- Even though they are designed to accommodate additional influx of wastewater - sometimes existing systems cannot handle the extra flow. Groundwater, for example, can enter the sewer system through leaking manhole walls, defective piping or sewer connections. Or water runoff from roofs, cellars, parking area drains, cooling water discharges from the plant itself can make the inflow too great for the treatment facility to handle.

**2. Sludge disposal** -- The end result of a well-designed and operated WWTP is both treated wastewater and a waste sludge. Waste sludge goes through a number of steps - including disinfecting -- prior to disposal in landfills, incinerators, or for re-use (such as composting).

**3. Storage, transporting, handling hazardous chemicals** -- The disinfecting process for sludge disposal involves the use of many highly toxic and explosive chemicals such as chlorine, sulfur dioxide, and bromine chlorides. Safety measures are critical for wastewater treatment plants.

**4. Storage tanks** -- Wastewater treatment plants typically maintain gasoline or fuel oil onsite that is stored in aboveground or underground storage tanks. Pumping stations often use drums, aboveground storage tanks and underground storage tanks for chemical storage.

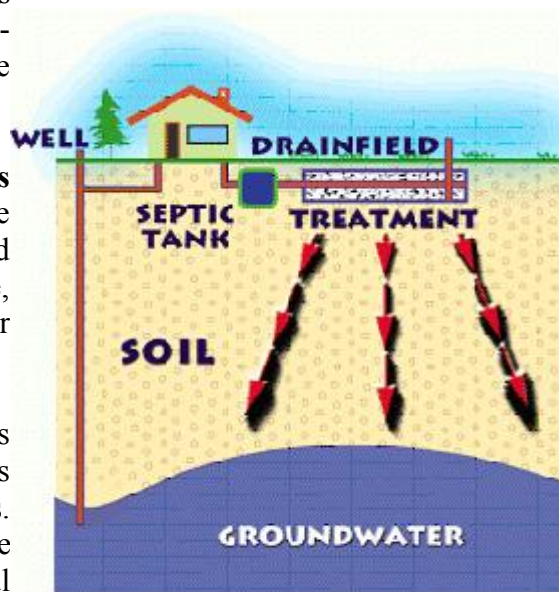


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