

August 17, 2001

TO: INTERESTED PARTIES

RE: Duluth/North Shore Sewer Project, St. Louis and Lake Counties

Enclosed is the Environmental Assessment Worksheet (EAW) for the proposed Duluth/North Shore Sewer Project, St. Louis and Lake Counties. The EAW was prepared by the Minnesota Pollution Control Agency (MPCA) and is being distributed for review and comment period pursuant to the Environmental Quality Board (EQB) rules. The comment period will begin the day the EAW availability notice is published in the EQB Monitor, which will likely occur in the August 20, 2001, issue. The comment period will be extended for two weeks, which would make the ending date on October 3, 2001.

Comments received on the EAW will be used by the MPCA in evaluating the potential for significant environmental effects from this project and deciding on the need for an Environmental Impact Statement (EIS).

A final decision on the need for an EIS will be made by the MPCA Commissioner after the end of the comment period. If a request for an EIS is received during the comment period, or if the Commissioner recommends the preparation of an EIS, the nine-member MPCA Citizens' Board (Board) will make the final decision. The final EIS need decision will also be made by the Board if so requested by the project proposer, other interested parties or MPCA staff and if this request is agreed to by one or more members of the Board or the MPCA Commissioner. The Board meets once a month, usually the fourth Tuesday of each month, at the MPCA office in St. Paul. Meetings are open to the public and interested persons may offer testimony on Board agenda items. A listing of Board members is available on request by calling (651) 296-7306.

Please note that comment letters submitted to the MPCA do become public documents and will be part of the official public record for this project.

If you have any questions on the EAW, please contact Craig Affeldt of my staff at (651) 296-6062.

Sincerely,

Beth G. Lockwood
District Planning Supervisor
Operations and Planning Section
North, South, and Metro Districts

BGL:gs

Enclosure

ENVIRONMENTAL ASSESSMENT WORKSHEET

Note to reviewers: The Environmental Assessment Worksheet (EAW) provides information about a project that may have the potential for significant environmental effects. This EAW was prepared by the Minnesota Pollution Control Agency (MPCA), acting as the Responsible Governmental Unit (RGU), to determine whether an Environmental Impact Statement (EIS) should be prepared. The project proposer supplied reasonably accessible data for, but did not complete the final worksheet. Comments on the EAW must be submitted to the MPCA during the 30-day comment period which begins with notice of the availability of the EAW in the *Minnesota Environmental Quality Board (EQB) Monitor*. Comments on the EAW should address the accuracy and completeness of information, potential impacts that are reasonably expected to occur that warrant further investigation, and the need for an EIS. A copy of the EAW may be obtained from the MPCA by calling (651) 296-7398. An electronic version of the completed EAW is available at the MPCA Web site www.pca.state.mn.us/news/eaw/index.html#open-eaw.

1. Project Title. Duluth/North Shore Sewer Project, St. Louis and Lake Counties

<p>2. Proposer. <u>Duluth/North Shore Sanitary District</u></p> <p>Contact Person <u>Nelson Thomas</u></p> <p>Title <u>Chair</u></p> <p>Address <u>9406 Congdon Boulevard</u> <u>Duluth, Minnesota 55804</u></p> <p>Phone <u>(218) 525-5785</u></p>	<p>3. RGU. <u>Minnesota Pollution Control Agency</u></p> <p>Contact Person <u>Craig Affeldt</u></p> <p>Title <u>Environmental Review Project Manager</u></p> <p>Address <u>520 Lafayette Road North</u> <u>St. Paul, Minnesota 55155</u></p> <p>Phone <u>(651) 296-6062</u></p> <p>Fax <u>(651) 297-2343</u></p>
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4. Reason for EAW Preparation.

EIS	Mandatory	Citizen	RGU	Proposer
Scoping	<u> </u> EAW	<u> </u> Petition	<u> </u> Discretion	<u>XX</u> Volunteered
				<u>XX</u>

If EAW or EIS is mandatory give EQB rule category subpart number and name.

5. Project Location.

Duluth/North Shore Planning Area: St. Louis County, City of Duluth, Duluth and Lakewood Townships

<u>NW</u>	<u>1/4</u>	<u>Section</u>	<u>3</u>	<u>Township</u>	<u>50N</u>	<u>Range</u>	<u>13W</u>
	<u>1/4</u>	<u>Section</u>	<u>4</u>	<u>Township</u>	<u>50N</u>	<u>Range</u>	<u>13W</u>
	<u>1/4</u>	<u>Section</u>	<u>26, 34</u>	<u>Township</u>	<u>51N</u>	<u>Range</u>	<u>13W</u>
<u>NW</u>	<u>1/4</u>	<u>Section</u>	<u>25, 35</u>	<u>Township</u>	<u>51N</u>	<u>Range</u>	<u>13W</u>
	<u>1/4</u>	<u>Section</u>	<u>1, 2, 3, 10, 17, 19</u>	<u>Township</u>	<u>51N</u>	<u>Range</u>	<u>12W</u>
<u>NW</u>	<u>1/4</u>	<u>Section</u>	<u>16, 20</u>	<u>Township</u>	<u>51N</u>	<u>Range</u>	<u>12W</u>
<u>SE</u>	<u>1/4</u>	<u>Section</u>	<u>9</u>	<u>Township</u>	<u>51N</u>	<u>Range</u>	<u>12W</u>
<u>SE</u>	<u>1/4</u>	<u>Section</u>	<u>36</u>	<u>Township</u>	<u>52N</u>	<u>Range</u>	<u>12W</u>

Knife River/Larsmont Planning Area: Lake County, unincorporated communities of Knife River and Larsmont

NW	1/4	Section	31	Township	52N	Range	11W
SE	1/4	Section	30	Township	52N	Range	11W
NW	1/4	Section	29	Township	52N	Range	11W
NW	1/4	Section	20	Township	52N	Range	11W
SE	1/4	Section	21	Township	52N	Range	11W
SE	1/4	Section	16	Township	52N	Range	11W
NW	1/4	Section	15	Township	52N	Range	11W
SE	1/4	Section	10	Township	52N	Range	11W
SW	1/4	Section	2	Township	52N	Range	11W
NE	1/4	Section	11	Township	52N	Range	11W

Tables, Figures and Appendices attached to the EAW.

- Exhibit 1. Minnesota State Map;
- Exhibit 2A. General Location Map – St. Louis County;
- Exhibit 2B. General Location Map – Western Lake Superior Sanitary District (WLSSD) Lakeside Interceptor, 1st Avenue West to 52nd Avenue East;
- Exhibit 3. Design Plan Sheets (not attached – available for review at the MPCA offices in Duluth and St. Paul);
- Exhibit 4. Mitigation Plan/Construction and Operation;
- Exhibit 5. Soil Erosion Control Plan;
- Exhibit 6. Design Flow Table;
- Exhibit 7. Meeting Minutes – Ayres Association/Department of Natural Resources, January 17, 2001; and
- Exhibit 8. North Shore Land Use Plan (draft).

6. Description.

- a. Provide a project summary of 50 words or less to be published in the *EQB Monitor*.

The Duluth/North Shore Sanitary District (DNSSD) and the Knife River/Larsmont Sanitary District (KRLSD) are proposing to construct sewer extension projects, in phases, along the North Shore of Lake Superior in St. Louis County and Lake County, respectively. The new trunk sewer line would extend from an existing gravity sewer of the Western Lake Superior Sanitary Sewer District system, located near the Lester River in Duluth, to a new pumping station to be constructed at the existing Knife River wastewater treatment facility. The new trunk sewer would be constructed within existing rights-of-way of Scenic Highway 61 and the North Shore Scenic Railroad. The sewer service area would be bounded by the U.S. Highway 61 rural expressway on the north, the Lake Superior shoreline on the south, and the eastern limit of the Knife River collection system.

- b. Give a complete description of the proposed project and related new construction. Attach additional sheets as necessary. Emphasize construction, operation methods and features that will cause physical manipulation of the environment or will produce wastes. Include modifications to existing equipment or industrial processes and significant demolition, removal or remodeling of existing structures. Indicate the timing and duration of construction activities.

GENERAL PROJECT DESCRIPTION

The proposed project is to construct a wastewater collection system to extend sewer service along the Lake Superior shoreline between Duluth and Knife River, Minnesota. The wastewater from this collection system will be discharged to the Western Lake Superior Sanitary District (WLSSD) system and be treated at the WLSSD treatment plant in Duluth. The future sewer service areas related to this project are bounded by the Lake Superior shoreline on the south, U.S. Highway 61 expressway to the north and west, and the existing collection system for the Knife River community to the east. The DNSSD manages the St. Louis County portion of the project area, and the KRLSD manages the Lake County portion of the project area. The ultimate connection to the WLSSD system will be to a gravity interceptor at the intersection of 47th Avenue East and Superior Street near the Lester River in Duluth (see Exhibits 2A and 2B). The northeastern construction boundary will be located approximately 600 feet west of Knife River in the Scenic Railroad right-of-way. The project will connect the existing Knife River collection system to the proposed system, and the Knife River wastewater treatment facility will be taken out of service. Existing tanks at the Knife River facility will be used to store wastewater during periods of high flow. An additional storage facility will be constructed at the lower end of the proposed DNSSD system. The possibility exists for the construction of a future sewer extension to the Larsmont area located to the east of Knife River. Financial assistance for a Larsmont project is not available at this time.

The project will consist of the construction of mainline and lateral sewer with extensions to residential and commercial areas and pressure sewer systems for individual connections. These systems will include approximately 359 grinder pump stations and 69 gravity sewer connections. The mainline system will have three pump stations and pipe sizes will range from six inches to 14 inches in diameter. Lateral pipe sizes will range from 1.5 inches to 4 inches in diameter. The force main pipe material will be polyethylene and the gravity sewer pipe will be polyvinylchloride. The mainline pressure system would be constructed within existing right-of-way and easements along Scenic Highway 61 and the North Shore Scenic Railroad. Branch piping would follow existing easements on several minor roads, wherever possible.

The topography of the project area is characterized by simple slopes that fall toward Lake Superior, transected by a number of surface drainage crossings. The slopes typically range from five to seven percent. The numerous drainage crossings include rivers (Lester, Talmadge, French, and Little Sucker), substantial creeks (Big Sucker and Schmidt), and numerous smaller streams. Many of these watercourses are public waters protected by the Minnesota Department of Natural Resources (DNR). Some are also designated trout streams.

CONSTRUCTION METHODS

The majority of all mainline construction activities will occur within the existing rights-of-way or easements along St. Louis County Highway 61, St. Louis County Road 61, Lake County Highway 101, and the North Shore Scenic Railroad.

Construction will utilize a combination of open-cut and directionally drilled techniques. The project will be alternately bid with both construction options. The majority of construction will use open cutting to install pipe in road right-of-way. In certain areas, shallow bedrock depths will require open-cut construction and blasting techniques. The areas that have potential for open-cut construction, based on past construction records and extensive soil borings, are discussed further in the section "Construction Technique Selection," below.

Some directional drilling will be mandated at certain watercourse crossings as indicated in the drawings and discussed below. The flexible, small-diameter pipe used in the pressure system may be installed with variable gradients conforming to the native topography.

All watercourse crossings are planned to be crossed without direct contact to the streambed. Where bridges are present, the pipe will be suspended from the bridge deck. In most cases, the pipe will be installed in the road

fill above watercourses. The installation of pipe in the road fill will be accomplished by either directional drilling or open-cut, depending on the location and sensitivity of the watercourse. Some crossings are pre-determined, based on watercourse sensitivity and subsurface conditions, to be directionally drilled. Other crossing technique selections will be determined at a later date. The areas pre-determined to be directionally drilled and the criteria used to select construction methods are discussed below.

Directional drilling at watercourse crossings will be made by starting the directional drill prior to the watercourse and drilling into the road fill that transects the watercourse. The pre-determined areas are discussed further in the following "Construction Technique Selection" section. The St. Louis County Public Works Department has reviewed and indicated approval for this crossing technique.

The directional drilling operations can install pipe lengths up to 3000 feet, depending on the terrain. Excavations will be required in conjunction with these intervals for each directional drill connection. The placement of granular material will be required in excavation and open-cut areas to support the pipe and restore the trench and adjacent disturbed lands.

The lateral piping will extend from the grinder pumps located at individual connections to the mainline connection. The lateral pipe installation will also use a combination of open-cut and directional drilling techniques. Open-cut excavations will be required for some lateral piping in areas with shallow bedrock depths. No soil borings have yet been made on private land; therefore, estimates of rock blasting and excavation were made from borings made on the mainline alignment. Excavations would be required for the grinder pump installations. The project plans and specifications do not require directional drilling for private drives and most road crossings. Directional drilling may be used in such instances, based on the selection criteria outlined below.

CONSTRUCTION TECHNIQUE SELECTION

As mentioned above, a combination of open-cut and directionally drilled construction techniques will be used. Selection of a construction technique will be based on the following criteria.

- Bid price for each respective technique
- Bedrock depth
- Location
- Pipe diameter

If open-cut construction is required due to shallow bedrock depths, a selection will be made from the following options.

- Open cut trenching with rock blasting/excavation will be used for long lengths. Bury depths will be five feet to the top of pipe for the mainline/branch pipe in these areas.
- When weathered rock deposits are present, open cut trenching with rock excavation will be used and no blasting will be needed.

Directional drilling will be required at some watercourse crossings. The directionally drilled segments are mandated for the following reasons.

- The slope of the road embankment prohibits an open-cut construction technique.
- The distance from the edge of the bituminous pavement to the point where the culvert meets the stream or drainage bed was not sufficient to establish erosion controls along an open-cut disturbance.

Directionally Drilled Areas

Based on information currently available, selections of construction techniques have been made in certain areas. The following areas are pre-determined areas for directional drilling. See Exhibit 3. The pre-determined directionally drilled segments total 3100 feet in length.

Station 433+00 – located approximately 5500 feet northeast of the intersection of Lakewood Road and Scenic Highway 61. The length of this segment is approximately 200 feet.

Station 447+00 – located approximately 6900 feet northeast of the intersection of Lakewood Road and Scenic Highway 61. The length of this segment is approximately 300 feet.

Station 454+00 – located approximately 7600 feet northeast of the intersection of Lakewood Road and Scenic Highway 61. The length of this segment is approximately 300 feet.

Station 733+00 – located approximately 3600 feet southwest of the intersection of Homestead Road and Scenic Highway 61. The length of this segment is approximately 350 feet.

Station 756+00 – located approximately 1100 feet southwest of the intersection of Homestead Road and Scenic Highway 61. The length of this segment is approximately 450 feet.

Station 825+00 – located approximately 400 feet northeast of the intersection of Alseth Road and Scenic Highway 61. The length of this segment is approximately 1200 feet.

Station 889+00 – located approximately 3600 feet northeast of the intersection of Stony Point Road and Scenic Highway 61. The length of this segment is approximately 300 feet.

Open-Cut Construction

The following areas have a higher potential for shallow bedrock depth and are therefore more suited for open-cut construction. The varying bedrock depths and consistency may require blasting in these open-cut areas. Weathered bedrock may be excavated without blasting.

Station 135+00 to 251+00 (Lester River/61st Avenue East to the 78th Avenue East/Superior Street intersection) – The piping alignment follows a route similar to a city of Duluth waterline within this segment. The record information associated with the waterline construction indicates the potential for shallow bedrock in this area. The pipe is designed with five feet of cover in this area to minimize or avoid any rock blasting that may be required.

Station 552+50 to 603+00 (Ryan Road/Scenic Highway 61 intersection to the Greenwood Road/Scenic Highway 61 intersection) – All piping in the gravity sewer portion of the project in the Greenwood Beach area will be open-cut. Soil boring information indicates that blasting will probably not be required. The open-cut technique is required in this area to maintain the pipe slopes necessary to the design.

Station 860+00 to 916+00 (Stony Point area to the St. Louis County/Lake County border) – The subsurface investigations performed in this area indicate that bedrock may be encountered. The pipe is designed with five feet of cover to minimize or avoid any rock blasting that may be required. The soil boring information indicates that, with five feet of cover, the bottom of the trench should be near the bedrock refusal depth.

Descriptions of the open-cut methods for different situations are as follows:

Pressure lateral sewer construction – The pressure lateral sewers will be installed to service localized residential and commercial development. Pressure lateral pipe varies in diameter from 1.5 – 2 inches and will be installed with seven feet of cover. Trenches could be excavated with equipment that ranges from trenchers to large excavators. Construction corridors would vary in width depending on the equipment the contractor selects for lateral construction.

Pressure mainline construction – The pressure mainline pipe varies from 6 inches to 14 inches in diameter and will be installed with a depth of cover that ranges from 5 feet (minimum) to 7 feet. Trenches would be excavated with a construction corridor of approximately 40 feet wide.

Gravity mainline construction – The mainline gravity portion of the proposed system is 12-inch diameter pipe. The trench depth varies from four feet to nine feet.

OPERATION METHODS

The proposed system will operate under a system of individual service grinder pumps that pump wastewater through small diameter pressure sewers to a series of intermediate pump stations. The grinder pumps macerate the waste during the pumping operation.

Three main pump stations will be constructed as part of this project. The main pump stations will operate in a series along the mainline alignment. No main pump stations are planned for any of the branch pipe alignments. Each main pump station will operate in conjunction with the grinder pump/pressure sewer network to convey the wastewater to the next pump station with eventual discharge to the WLSSD collection system at 47th Avenue East in Duluth.

The locations of the three proposed main pump stations are as follows:

Pump Station #1 -- This proposed station is located approximately 1000 feet southwest of the intersection of Spruce Court and Scenic Highway 61 in the Scenic Highway 61 right-of-way.

Pump Station #2 -- This station is located approximately 800 feet northeast of the intersection of Homestead Road and Scenic Highway 61 in the Scenic Highway right-of-way.

Pump Station #3 -- The station is located approximately 600 feet southwest of Knife River in the North Shore Scenic Railroad right-of-way.

OPERATIONAL SAFEGUARDS

Storage During Sewer Bypasses

A 300,000 gallon storage tank will be located near the intersection of State Highway 61 and Superior Street for storage of untreated sewage during periods when the WLSSD interceptor system, from 46th Avenue west to the WLSSD treatment facility, is bypassing due to wet weather conditions. This storage will prevent wastewater that is generated within the DNSSD from contributing to the volume of wastewater that is bypassed. The KRLSD will utilize tankage (100,000 gallons) at the existing Knife River wastewater treatment facility to provide for the storage of wastewater generated during periods of bypassing in the WLSSD system.

Emergency Power

Main Pump Stations. Pump stations #1 and #2, located in St. Louis County, are served by separate electric utilities. These stations will share a trailer-mounted generator as a source of back-up power. Pump station #1 will drive the influent flow to the DNSSD storage facility to be located near the three-way intersection at Superior Street, TH 61 and the North Shore Scenic Railroad. When a power outage occurs, the shared generator will be used for the upstream station #1 or #2 to allow them to discharge to the WLSSD system or to the storage facility. In either case, power will not be required at the storage facility until it reaches capacity or until the WLSSD system can handle the flows again. A power outage in excess of 24 hours is unlikely for the area. However, the shared generator is adequate to power the storage pumps in the event of a prolonged power outage. The agreement with the WLSSD would have a period of time, probably 24 hours, during which the storage facility could be offline after a bypass to allow the tank to be emptied.

The main pump station located in Knife River will utilize its own trailer-mounted generator.

Grinder Stations. Back-up power is not planned for the grinder pump stations. The majority of the project area has private wells. A power outage in these areas would also disable the well pump and, therefore, no wastewater removal would be required.

Some of the project area is served by the city of Duluth public water supply. In these areas, water could be used during a local power outage. To avoid a sewer backup in these areas, system users would need to restrict their water usage.

In the event of a prolonged power outage in the area served by a public water supply, an open bypass of the piping system would not occur. The sealed grinder pump would accommodate wastewater flow for approximately 24-hours. At that point, the static level of the wastewater would rise such that sinks, toilets, etc. would not have the ability to drain.

Heat-Traced Pipe

Some segments of the system, such as bridge crossings and lateral pipe road crossings with minimal cover will be heat-traced to prevent freeze ups during power outages. The heat tracing would be activated by a thermostatic switch located at the power drop. The switch would be activated by a signal from a thermal sensor located on the pipe at selected locations. A portable generator could be used to power the heat-traced sections. All heat-traced segments of the pipeline will have a back-up power outlet mounted by the meter installation for use during extended power outages.

It should be noted that the heat-traced segments are not anticipated to be powered during normal operating conditions. The steady flow of warmer wastewater will provide protection against freezing during normal operations of the pipeline.

Isolation/Protection Valves

Valves are included in the system to allow protection/isolation against sewer backups, line rupture, and line repair.

Mainline Isolation Valves. Isolation valves are located along the mainline and major branch pipe alignment to isolate sections of the pipeline. These valves are spaced approximately every 2000 feet and can be used to isolate sections of pipe for repair. Generally, isolation valves will be located on each side of a stream crossing.

Grinder Pump Check Valves. Redundant check valves are specified in the discharge piping of every grinder pump, in addition to a manually operated ball valve. The check valves are designed to operate automatically with system pressure. Two check valves are provided in case one fails. The manually operated ball valve is used to isolate the grinder pump during times of maintenance or repair. The check valves protect against sewer backups by stopping any reverse flow caused by the mainline pressure. Additionally, in the unlikely event that both of the check valves were to fail, the grinder pump has the ability to pump fluid against the mainline pressure to protect against a backup.

Curb Stops. Small diameter valves called curb stops will be located on every pressure sewer lateral connection to the mainline pipe in order to isolate the lateral during times of maintenance and repair.

Looped Segment

The pipeline will have a looped mainline segment from Station 510+50 at the intersection of McQuade Road and Scenic Highway 61 to Station 251+50. The looped segment provides additional protection to the system operability in the event of a line segment being isolated for repair.

Redundant Main Pumps

Each main pump station is designed with redundant pumps. This allows the station to remain operable in the event of a pump failure.

Pipeline Pigging

Pigging tools will be used to periodically clean the mainline pipe. Pig launching and receiving stations will be located at each main pump station and pipe transition.

Trench Dams

The trench dams are proposed at stream and drainage crossings where the pipe and trench grades fall downhill towards the watercourse. A trench dam is a clay “plug” that is used to bed the pipe in the trench in place of typical granular bedding material. The clay is installed to prevent water from traveling down the trench in the granular bedding material and escaping to the surface water at the low point of the trench at a stream crossing (where the pipe is hung from a bridge, installed in road fill, etc.). This will ensure that subsurface flow along the trench is contained on either side of the stream or drainage crossing.

The trench dam interval will vary depending on the grade towards the watercourse. In general, the steeper the grade, the closer the distance between trench dams. The trench dams will be installed such that the top of the downgrade trench dam is at the same elevation of the bottom of the upgrade trench dam.

EMERGENCY REPAIR PROCEDURE

In general, repair procedures would be as follows:

Leak Detection

A leak from a broken or ruptured pipe could be detected through the use of a system alarm on the main pump stations. This alarm could come from a drop in either static or live pressure at the pump station. The alarm will be joined to an automatic telephone notification system. The telephone notification would be directed to the sewer superintendent. Leak detection could also come from visual observation of wastewater being released.

Isolation

The area to be repaired would be isolated with system isolation valves. The valves that would be closed include mainline valves and all curb stop valves located between the mainline valves.

System Operation During Repair

The operation scenarios during a repair vary depending on where the repair is located along the pipeline. The following breakdown identifies the steps needed to maintain system operation during a repair for different repair locations:

- Repair between the 47th Avenue East discharge point and the storage facility located near the intersection of Superior Street and Expressway 61. Upstream flow can be bypassed to the storage facility while the repair is made. This scenario provides for full system operation for more than four days assuming average daily dry weather flow.
- Repair between the storage facility and the end of the looped section at Station 251+50. All flow entering the pipeline downstream of the repair would operate normally. Upstream flow would be attenuated in main and grinder pump station wetwells. All upstream main pump stations would be taken offline and all grinders would be online and able to pump to the main pump stations. Operating in this scenario would allow approximately 10 to 24 hours to complete the repair without bypassing. If repairs last longer, hauling from the main pump station wetwell by truck will allow users to continue normal operation.
- Repair within the looped section. All upstream and downstream flow, including main pump stations would operate normally. The grinders contributing directly to the repair segment would be isolated from the mainline.
- Repair between the start of the looped section at Station 510+50 and the end of the pipeline at Knife River. All downstream flow would operate normally with a discharge to 47th Avenue East. All upstream flow would be attenuated in the main and grinder pump station wetwells. All upstream main pump stations would be taken offline and all grinders would be online and able to pump to the main pump stations. Operating in this scenario would allow approximately 10 to 24 hours to complete the repair without bypassing. If repairs last longer, hauling from the main pump station wetwell by truck will allow users to continue normal operation.

COMPLETION ACTIVITIES

Areas temporarily impacted by construction would be returned to pre-construction condition so that existing hydrologic conditions, including drainage patterns, are maintained. Please refer to Item 16 of the EAW and to the Soil Erosion Control Plan (Exhibit 5). Silt fencing, straw bales, sedimentation traps or detention basins may be used depending on application requirements. Fiber blankets would be used where slopes require them. Disturbed areas would be re-graded to original contours and re-seeded to a cover crop of native grasses. All disturbed areas would be re-graded prior to any winter shutdown.

CONSTRUCTION SCHEDULE

The construction is anticipated to range over two construction seasons. The construction is anticipated to start the spring 2002 and be completed in spring 2004.

- c. Explain the project purpose; if the project will be carried out by a governmental unit, explain the need for the project and identify its beneficiaries.

The purpose of this project is to correct a serious health and safety problem arising from failing private waste systems. The benefactors of the project include homeowners, business owners, and recreational users of the North Shore and Lake Superior. Each sanitary district was created to manage the proposed wastewater collection systems in their respective service areas.

Duluth/North Shore Sanitary District (DNSSD)

Wastewater generated within the DNSSD sewer service area is treated by individual sewage treatment systems (ISTS) located on private property and dispersed to ground water (the exception is a single commercial establishment that has a small, permitted treatment system that has a surface discharge). Approximately 35 percent of the ISTSs have been permitted and constructed since 1972. A 1994 survey of ISTSs on properties in the project area found that approximately 60 percent were conventional in-ground trenches, 30 percent were mound systems, and 10 percent were of other or unknown design (WLSSD, 1994). Of the systems surveyed, 55 percent were observed to be discharging effluent to the surface of the ground, in violation of state and county code. These system failures were attributed primarily to limiting site conditions, compounded by poor construction, lack of maintenance and inappropriate use for the existing soils.

Since the WLSSD survey, state and county ISTS regulations were revised establishing a minimum unsaturated soil depth requirement of three feet below the infiltrative surface of the system. As a result, the St. Louis County Health Department has estimated that 75 percent or more of ISTSs in the study area are non-compliant and will require upgrading (St. Louis Co. Dept. of Public Health, August 2000).

The DNSSD will manage the construction of the project within St. Louis County and will be responsible for the operation of the proposed sewer system within St. Louis County. Each Board is composed of five members. DNSSD was specifically created to manage the proposed wastewater system. The DNSSD Board is comprised of five (5) members, representing each of the three (3) entities involved. There are two representatives each from Duluth Township and the city of Duluth and one representative from Lakewood Township.

Knife River/Larsmont Sanitary District (KRLSD)

The KRLSD will be responsible for the construction and ongoing operation of the portion of the proposed system located in Lake County. This component of the project will eliminate a substandard wastewater treatment facility at the city of Knife River. Presently, wastewater treatment at Knife River is provided by a mechanical treatment facility mainly constructed in 1984. The system is approaching its 20-year design life and lacks redundancy/reliability with respect to its major treatment processes. In addition, some of the treatment units are undersized and outdated based on current standards. Connection of the KRLSD to the DNSSD system will eliminate a direct discharge to Lake Superior.

The KRLSD Board is also comprised of five members; three from the Knife River community and two representing Larsmont.

- d. Are future stages of this development including development on any outlots planned or likely to happen? Yes No
If yes, briefly describe future stages, relationship to present project, timeline and plans for environmental review.

At present, the only future stage being considered is a sewer extension to connect the Larsmont community in Lake County. The Larsmont project is currently included on the 2001 Intended Use Plan in search of funding for the project. The Larsmont project would consist of approximately 140 connections. The project boundaries are Expressway 61 and Lake Superior and stretch from Knife River to Two Harbors.

Sewer extensions outside the present boundaries of the DNSSD will be prohibited by DNSSD Sewer Ordinance No. 2, Section 3. Restriction on Utility Extensions.

Other than septage disposal (as described in Ordinance No. 1 of the District) and service to the Knife River-Larsmont Sanitary District, the District will not extend Utility service to properties which are located outside of the jurisdictional boundaries of the District.

Future land development issues within the boundaries associated with the project, including the possible future expansion of the service area to include the Larsmont Subordinate Sewer District are currently being addressed by the Duluth/North Shore Advisory Planning Council. The planning process is discussed further in Items 9, 27, and 29 of the EAW and in Exhibit 8.

- e. Is this project a subsequent stage of an earlier project? Yes No
If yes, briefly describe the past development, timeline and any past environmental review.

7. Project Magnitude Data.

Total Project Length (miles) 13.9 miles of mainline piping, from 47th Avenue E. in Duluth to the St. Louis County border; thence, 0.6 miles to the Knife River WWTF.

Total Project Area (acres) Approximately 165 acres in St. Louis Co. (based on 100 percent open-cut construction, 168,000 linear feet of piping and a 40-ft construction corridor width). Approximately 3.1 acres in Lake County.

Lateral sewer construction will involve the installation of smaller amounts of pipe to serve residential and commercial connections. A corresponding amount of additional excavation and related disturbance will occur at these locations.

8. Permits and approvals required. List all known local, state and federal permits, approvals and financial assistance for the project. Include modifications of any existing permits, governmental review of plans, and all direct and indirect forms of public financial assistance including bond guarantees, Tax Increment Financing and infrastructure.

Unit of Government	Type of Application	Status
MPCA	State Disposal System permit (sewer extension)	To be submitted
MPCA	General National Pollutant Discharge Elimination System (NPDES) Permit (construction storm water)	To be submitted
Minnesota Department of Transportation (MnDOT)	Utility permit on trunk highway right-of-way	To be submitted

Unit of Government	Type of Application	Status
DNR	Utility crossing license	To be submitted
DNR	Temporary water appropriation permit (dewatering testing)	To be submitted
WLSSD	Wastewater flow and waste load allocation agreement	To be submitted
	Sewer Extension Permit	To be submitted
	Inflow & Infiltration Abatement Plan	To be submitted
City of Duluth	Special Use Permit for excavation and grading within shoreland and floodplain districts	To be submitted
	Certificate of wetland permit exemption	To be submitted
St. Louis County Public Works	Installation of utilities on county highway right-of-way	To be submitted
U.S. Army Corps of Engineers	Letter of notice for Section 404 General Permit	To be submitted

9. Land use. Describe current and recent past land use and development on the site and on adjacent lands. Discuss project compatibility with adjacent and nearby land uses. Indicate whether any potential conflicts involve environmental matters. Identify any potential environmental hazards due to past site uses, such as soil contamination or abandoned storage tanks, or proximity to nearby hazardous liquid or gas pipelines.

LAND USE AND DEVELOPMENT

The sewer service area of the Sanitary Districts includes the area from Lester River to the city of Two Harbor’s southern limits and lies between Highway 61 and the shore of Lake Superior. This corridor is approximately 18 miles long and ranges in width from less than 0.1 mile near Lester River to 1.1 miles near the city of Two Harbor’s southern limits. This planning corridor includes the Larsmont area within the Knife River-Larsmont Sanitary District (KRLSD), an area which is not proposed to be sewerred at this time, but may be in the future (see Item 6b). The four local units of government with jurisdiction in the planning corridor are: city of Duluth, Lakewood Township, Duluth Township (all within St. Louis County), and unorganized townships in Lake County. Lake County administers planning and zoning for the unincorporated communities of Knife River and Larsmont.

A map of the project area is provided in the attached draft North Shore Land Use Plan (Exhibit 8, Figure 1) prepared for the DNSSD and Lake County. The genesis of the North Shore Land Use Plan is described below in Section 9, and in more detail in Section 29 of this EAW.

Existing Development Patterns

The sewer service area (including Larsmont) is anchored on either end (east and west) by urban areas of the cities of Duluth and Two Harbors. The area itself is generally exurban or suburban in development pattern, having mostly large lot residential development, but no significant areas of working forest or agriculture more typical of rural development. The corridor does include some larger tracts of undeveloped or natural areas. The dominant development pattern is larger lot sizes, from two to ten acres. The unincorporated communities of Knife River, Larsmont, the Greenwood Beach area in Duluth Township, and some small areas in the city of Duluth comprise the highest density areas in the planning corridor, including lot sizes of less than an acre.

The primary commercial land uses are motels, resorts, campgrounds, gift shops, several restaurants, and some arts and crafts and collectibles shops located on the scenic highway or along the Superior shore. A few heavier commercial facilities (fish hatchery, construction companies, etc.) are also located in the corridor.

Population and Development Trends

Census data for the communities that include the project area is summarized below. There are no readily available demographic data specific to just the project area. The DNSSD and the KRLSD have approximately 800 addresses in their mailing list, which includes residences, businesses, and absentee landowners.

The population for the North Shore region (St. Louis, Lake, and Cook counties) has been declining since the 1980s. St. Louis County, Lake County, and the city of Duluth all lost population over the last 20 years. The townships encompassing the project have realized an increase in population over the last 20 years.

A slightly different story is seen in the change in number of households in the region. All communities have seen a net increase in the number of households since 1980, albeit some increases are quite small. For the townships, the growth in the number of households is quite substantial; the number of households in Duluth Township grew by over 24 percent, and the number in Lakewood Township by 35 percent.

The difference between population changes and household changes is notable for two reasons. First, the development pressure for housing is driven more by the increase in households than by increase in population. The 2000 Census reported owner-occupied housing vacancy rates in Lake County of 1.4 percent, Duluth Township of one percent, and Lakewood Township of only 0.3 percent.

Second, the smaller household size is related to the increase in age of householders and fewer children in households. Housing choices are different for older households than for households with younger children. The median age of the population in both Lake County and St. Louis County increased by over three years from 1990 to 2000, a slightly higher increase than seen for Minnesota as a whole. Lake County's median age was 42.9 in 2000. The median age in the two organized townships is still, however, noticeably lower than the counties; Duluth Township's median age is 40.7 and Lakewood's is 38.6. In Lake County, 20 percent of the population is over 65 years of age. In the two townships the percent of residents over 65 is much lower: 11.1 percent in Duluth Township and 10.9 percent in Lakewood Township.

In spite of population and household growth in the project area, a significant amount of land that could be developed under current septic and zoning requirements remains undeveloped. Development pressure has increased, but is not being significantly constrained by the septic system limitations in the planning area. A build-out analysis under current regulation (assuming the sewer line is completed as planned) is provided in Section 29 of this EAW.

Natural Resources and Land Cover

Land cover in the planning corridor is shown in Exhibit 8, Figure 2, the draft North Shore Land Use Plan. This includes light development and a significant amount of undeveloped land. Aspen/birch forest provides the single most significant category of land cover. The areas of higher density development, noted above, are identified on the map as rural residences. The forest cover map (Exhibit 8, Figure 3) in the North Shore Land Use Plan also shows development patterns, not distinguishing between rural residences and communities, and shows the land affected by the transportation corridors. The sewer line follows, with a few exceptions, the existing transportation corridors, lying in the disturbed soils of the scenic highway right-of-way.

Approximately 96 percent of the land is privately owned (not including transportation rights-of-way) with the balance in various forms of public ownership. The entity with the largest public ownership is the city of Duluth, which owns parkland and holds title to other lands within the project area. The city's ownership includes a number of parcels immediately along the lakeshore.

A number of watersheds run across the project area, as shown in Exhibit 8, Figure 4 of the North Shore Land Use Plan; however, the majority of these watershed areas lie outside (north of) the planning corridor for the project area. The land uses and land management outside the project area thus have substantial effects on diversity and types of natural habitat within the project area, and significantly affect the carrying capacity of the stream corridors for lower part of the watershed in which the project lies.

The U.S. EPA Region 5 has mapped environmentally and economically sensitive resources through a program called the Inland Spill Response Mapping Project. The Project's mission is to provide community planners and oil spill responders with information on resources at risk during a spill. Sensitive areas, including boat accesses, marinas, surface water intakes, sensitive species data, and special designated areas, are shown in Exhibit 8, Figure 5 of the Land Use Plan. The most significant area for sensitive species data is clustered at or near the Stony Point area in Duluth Township. The project does not directly affect any of the sensitive resources described in the EPA database.

Several places in the project area have high levels of shoreland erosion potential. These areas are also depicted in Figure 6 of the Land Use Plan (Exhibit 8). Most of the Lake Superior shoreland from the west end of the project area (the Lester River) to the Stony Point area of Duluth Township are designated as areas with high erosion potential. The project does not directly affect any of the erosion areas.

A number of designated trout streams cross the project area (designated in Exhibit 8, Figure 6). In addition to trout streams, a number of perennial streams and intermittent streams cross the project area. The trout and perennial stream maps were derived from the DNR's stream database and the intermittent stream file was a combination of the DNR and MnDOT's databases. The project's direct impacts on these resources and steps taken to mitigate the impacts are discussed in Items 6 and 11 of this EAW.

POTENTIAL CONFLICTS WITH EXISTING LAND USES

Direct Conflicts

The proposed sewer system will eliminate failing on-site treatment systems common to a majority of the area properties. The project is proposed to correct this existing environmental hazard in the project area. As noted in the above description of land uses and natural resources and in other sections of this EAW, the proposed project does not pose direct impacts on sensitive areas or important natural resources outside of the construction corridor. The project is also consistent with the existing and planned land uses in the project area.

Indirect Conflicts

While the project has no direct conflicts with existing land uses and development, it may accelerate new development in the project area, and could enable more intensive land use patterns than currently exist, or more intensive than currently planned for by local governmental bodies. The potential effect of new and more intensive land development patterns made possible by the sewer is of major concern to all parties involved with this project. To answer these concerns and to enhance public communication, the DNSSD and Lake County formed an ad hoc Planning Advisory Council to oversee the creation of a Land Use Plan for the sewer line corridor.

The Planning Advisory Council acquired a grant from the DNR Coastal Program and hired a consulting team of land use and natural resources experts to study the potential effects of new development pressure resulting from the construction of the proposed sewer line. Stakeholders with concerns about land use, development and related regulatory issues were invited to participate in the creation of the Land Use Plan. The results of this planning process, and the potential development issues are discussed in detail in Section 29 of this EAW. The most recent draft of this plan is Exhibit 8.

The Planning Advisory Council is an ad hoc body that does not have any authority to augment, modify or restrict local, county, state or federal plans or regulations. Rather, the Council’s role is strictly advisory, as is the result of any land use planning effort undertaken on its behalf. However, the planning effort does include specific implementation steps for incorporating the North Shore Land Use Plan into local plans, programs, and ordinances through the planning processes of each local community in the project area.

10. Cover Types. Estimate the acreage of the site with each of the following cover types before and after development:

	Before	After		Before	After
Types 1-8 wetlands	0	0	Lawn/landscaping	0	0
Wooded/forest	14.5	0	Impervious Surfaces	0	0.5
Brush/grassland	156	170	Other (describe)		
Cropland	0	0			
			TOTAL	170.5	170.5

Notes:

Wetlands

The National Wetland Inventory Maps (see Exhibit 5) indicate that the proposed piping alignments do not cross any wetlands. The vast majority of the piping is located in previously disturbed areas in road right-of-way. The permitting processes through the Corps of Engineers, St. Louis County, Lake County, and the city of Duluth will determine the need for wetland delineation associated with the project. St. Louis County has surveyed the proposed alignment for wetlands. The county will work with the Corps of Engineers to evaluate potential wetland disturbance and mitigation strategies.

Wooded areas

The vast majority of the mainline piping alignment was placed in existing utility easements to minimize tree removal. Certain areas of these easements do have wooded cover. The majority of this cover is classified as shrubs. Impacts will be made to these woodlands within the construction corridor. The project proposer

believes that reasonable efforts have been made to reduce the impacts to wooded areas throughout design and has indicated that these efforts will continue through the actual construction staking process. These areas have been estimated above.

Impervious Area

The total amount of new impervious area created by construction of the sewer project will be small. The areas that will be impervious after construction are the main pump stations (8-ft diameter concrete cover), adjacent road/service areas, and grinder pump stations (24 to 42-inch diameter fiberglass covers).

11. Fish, Wildlife, and Ecologically Sensitive Resources.

- a. Identify fish and wildlife resources and habitats on or near the site and describe how they would be affected by the project. Describe any measures to be taken to minimize or avoid impacts.

The project area contains many rivers, smaller streams and creeks; some are designated trout streams. The area also contains forest and wetlands that provide habitat for a variety of wildlife. A mitigation plan summarizing measures to address impacts to these resources is attached (Exhibit 4).

The construction of mainline and branch sewers will occur within road and railroad rights-of-way and easements that are mostly cleared from trees and forest habitat. This will minimize the impact on wildlife habitat in the project area. The area of woodland removal is estimated at 14.5 acres. Additionally, directional drilling techniques will be used in some areas (see Item 6b) to minimize impacts to stream habitats. Service laterals will be installed for users that are on the pressure portion of the system up to and including the grinder pump installation. Laterals will be constructed to the property line for users served by the gravity portion of the system in the Greenwood Beach area. Excavations will be required for placement of the grinder pumps, joining service lateral pipe segments and connections to the mainline. Generally, the installation of lateral sewers and other facilities related to residential and commercial services will tend not to occur in areas with significant wildlife habitat.

All river and stream crossings will be done without contact to the stream bed during construction. The engineering consultant for the project has preliminary discussions with the St. Louis County Public Works Department and the DNR concerning the proposed design and construction of the watercourse crossings. A copy of the minutes from a meeting between the consultant and the DNR are attached (Exhibit 7). Attaching the carrier pipe directly to a bridge substructure would be the technique used to cross rivers and streams that have bridges. This method and other system safeguards are discussed further in Item 6b.

Most other watercourses without bridges will be crossed by directionally drilling the carrier pipe into the road fill. This process would entail starting the directional drill in a bore pit located at the normal mainline alignment (typically a 40-ft offset from the road centerline). During the drilling process, the pipe alignment is deflected from the 40-ft offset into the road shoulder as it transects the watercourse. After passing the watercourse, the pipe alignment is then deflected back to the typical 40-ft offset and completed. This technique avoids construction contact with the stream or drainage bed. Insulation and heat tracing would not be used in these crossings. The minimum depth of cover on the mainline piping is five feet.

FOREST RESOURCES

The mainline will be located in existing easements along Scenic Highway 61 and the North Shore Scenic Railroad. The majority of the mainline alignment is located in previously cleared right-of-way areas. Trees and shrubs do exist along some of the alignment in this section. Tree and shrub removal will be necessary along these portions. The extent of removal hinges on the construction technique selected for the specific area.

The St. Louis County and Lake County Forestry Departments administers portions of these lands under their jurisdictions. Based on discussions between the project consultant and St. Louis County personnel, it has been determined that a timber removal permit will not be required.

WETLAND RESOURCES

Wetlands in the area are classified as palustrine shrub and forest wetlands. The national wetland inventory maps indicate that no wetlands appear in the mainline or branch routing.

FISHERIES RESOURCES

The following summary describes discrete segments of the proposed sewer and identifies the protected public waters located within each segment that could be potentially affected by the project.

Segment One – WLSSD Woodland Interceptor (47th Avenue East) to Pump Station One

(Section 4 - T50N, R13W and Sections 24, 25, 26, 33, 34, 35 – T51N, R13W)

Approximately 9.1 miles of trunk sewer are located in this segment (see Exhibits 2A, sheets 1-5). Pump Station One will be located in the Scenic Highway right-of-way approximately 1000 feet northeast of the intersection between Scenic Highway 61 and Greenwood Road. The mainline will follow the Scenic Highway 61 and North Shore Scenic Railroad rights-of-way to the point of discharge to the WLSSD Woodland Interceptor at 47th Avenue East in Duluth. There are 190 grinder pump connections proposed in this section.

This segment of the mainline sewer crosses the following protected public waters:

Lester River (Station 133+50) The mainline pipe crosses the Lester River, a designated trout stream, in the northern right-of-way of the Scenic Railroad. The pipe is proposed to attach to an existing 42-inch water main pipe bridge to avoid disturbance to the riverbed.

Talmadge River (Station 528+00) The mainline pipe crosses the Talmadge River, a designated trout stream, in the Scenic Highway 61 right-of-way. The pipe is proposed to attach below the Scenic Highway bridge, avoiding disturbance to the riverbed.

Unnamed Watercourse (Station 539+00) The mainline pipe crosses an unnamed watercourse located approximately 650 feet southwest of the intersection of Scenic Highway 61 and Greenwood Road. This watercourse is not classified as a designated trout stream. The crossing will be made in the Scenic Highway 61 road fill, which would not require disturbance to the streambed. It has not been determined, at this time, whether this crossing will be open-cut or directionally drilled. The construction technique selection will be based on the criteria discussed previously in Item 6 of this EAW.

Segment Two – Pump Station One to Pump Station Two

(Sections 3, 9, 10, 16, 17, 18, 19 – T51N, R12W)

Approximately 4.2 miles of trunk sewer are proposed in this segment (see Exhibit 2A, sheets 5-6). The mainline follows the Scenic Highway 61 right-of-way from Pump Station Two to Pump Station One. This area will contain 110 grinder pump connections and 66 gravity sewer connections.

This segment of the mainline sewer crosses the following protected public waters:

Unnamed Watercourse (569+00) The mainline pipe will cross an unnamed watercourse located approximately 600 feet northeast of the intersection of Scenic Highway 61 and Spruce Court. This watercourse is not a designated trout stream. The crossing will be made in the Scenic Highway 61 road fill. This method would not require disturbance to the streambed. This crossing will be open-cut as required for the installation of the gravity line in this area.

French River (Station 608+00) The mainline pipe will cross the French River, a designated trout stream, in the Scenic Highway 61 right-of-way. The pipe is proposed to attach below the Scenic Highway bridge so disturbance to the riverbed will be avoided.

Schmidt Creek (Station 625+50) The mainline pipe will cross Schmidt Creek approximately 2,000 feet northeast of the intersection of Scenic Highway 61 and the French River. This watercourse is a designated trout stream. The crossing will be made in the Scenic Highway 61 road fill; this will not require disturbance to the streambed. It has not been determined, at this time, whether this crossing will be open-cut or directionally drilled. The construction technique selection will be based on the criteria discussed previously in Item 6b of this EAW.

Unnamed Watercourse (Station 712+50) The mainline pipe will cross an unnamed watercourse located approximately 300 feet southwest of the Shorecrest Supper Club. This watercourse is not classified as a designated trout stream. This crossing will be open-cut before and after the box culvert crossing. The culvert would be crossed by boring into the granular fill material under the culvert.

Big Sucker Creek (Station 756+50) The mainline pipe will cross Big Sucker Creek, a designated trout stream, in the Scenic Highway 61 right-of-way. This crossing would be made by directionally drilling the pipe into the road fill. This method would not require disturbance to the streambed.

Segment Three – Pump Station Two to Pump Station Three (Knife River)

(Sections 1, 2 - T51N, R12W and Section 36 – T52N, R12W and Section 31 – T52N, R11W)

Approximately 3.3 miles of mainline sewer are proposed for this segment (see Exhibit 2A, sheets 6-7). The segment area contains 47 grinder pump connections. The mainline pipe alignment follows the Scenic Highway 61 and North Shore Scenic Railroad rights-of-way from Pump Station Three to Pump Station Two.

This segment of the mainline sewer crosses the following protected public waters:

Little Sucker River (Station 798+50) The mainline pipe will cross the Little Sucker River at a point approximately 3,000 feet northeast of the intersection of Scenic Highway 61 and the Homestead Road. This watercourse is not classified as a designated trout stream. The crossing will be made in the Scenic Highway 61 road fill, which would not require disturbance to the streambed. This crossing will be either directionally drilled or open-cut as outlined in the Construction Technique Selection in Item 6 of this EAW.

The proposed location for Pump Station Three is approximately 700 feet southwest of the Knife River. No new mainline, branch or lateral sewers would cross the Knife River for this project.

- b. Are any state (endangered or threatened) species, rare plant communities or other sensitive ecological resources such as native prairie habitat, colonial waterbird nesting colonies or regionally rare plant communities on or near the site? Yes No

If yes, describe the resource and how it would be affected by the project. Indicate if a site survey of the resources has been conducted and describe the results. If the DNR Natural Heritage and Nongame Research program has been contacted give the correspondence reference number. ERBD 20000542
Describe measures to minimize or avoid adverse impacts.

According to a Minnesota Natural Heritage and Nongame Research Program review, eight known occurrences of rare species or natural communities exist in the project area. The following species have been identified as rare or otherwise significant natural features in the project area:

Eleocharis nitida (neat spike-rush)
Euphrasia hudsoniana (Hudson Bay eyebright)
Polygonum viviparum (alpine bistort)
Waldsteinia fragarioides (barren strawberry)
Adoxa moschatellina (moschatell)
Haliaeetus leucocephalus (bald eagle)
Clemmys insculpta (wood turtle)
Coregonus zenithicus (shortjaw cisco)

All DNR protected public waters and any stream or drainage significant enough to show evidence of streambed erosion down to bedrock will be crossed in the road bed. Small drainage areas or culverts which are meant to drain road ditches will be crossed directly. Please refer to the Mitigation Plan in Exhibit 4 for discussion on impacts to these special concern species.

12. Physical Impacts on Water Resources. Will the project involve the physical or hydrologic alteration (dredging, filling, stream diversion, outfall structure, diking, and impoundment) of any surface waters such as a lake, pond, wetland, stream or drainage ditch? Yes No
If yes, identify water resource affected. Describe alternatives considered and proposed mitigation measures to minimize impacts. Give the DNR Protected Waters Inventory (PWI) number(s) if the water resources affected are on the PWI.

The proposed pipeline alignment transects numerous protected and non-protected streams and drainage ditches; however, no direct physical or hydrological alterations are planned for the crossing of any protected public waters. The crossing methods for all protected waters and designated trout streams are discussed in detail in Item 11.

All other sewer crossings, which do not involve protected public waters, will be located at the culvert that crosses the roadway within the easement that the mainline or branch pipe is located. These crossings would involve the installation the pipe within the road fill, either above or below the culvert that conveys flow at these drainage crossings.

13. Water Use. Will the project involve installation or abandonment of any water wells, connection to or changes in any public water supply or appropriation of any ground or surface water (including dewatering)? Yes No
If yes, as applicable, give location and purpose of any new wells; public supply affected, changes to be made, and water quantities to be used; the source, duration, quantity and purpose of any appropriations; and unique well numbers and DNR appropriation permit numbers, if known. Identify any existing and new wells on the site map. If there are no wells known on site, explain methodology used to determine.

Dewatering at rates in excess of 10,000 gallons per day (gpd) or 1,000,000 gallons per year require a DNR temporary water appropriation permit. Dewatering rates of this magnitude are not anticipated for this project. However, language will be included in the project specifications requiring that the construction contractor obtain all permits if significant dewatering is needed.

Hydrostatic testing of all mainline piping will be conducted before putting the new sewer system in operation. This will require an estimated 261,000 gallons. Lake Superior would be a likely source of this water because a well or the city of Duluth public water supply may not be able to provide this volume of water at the rate needed. This temporary water appropriation will require a permit from the DNR. The contractor performing the pipeline testing must obtain the appropriate permit and ensure compliance with permit conditions.

14. Water-related land use management districts. Does any part of the project involve a shoreland zoning district, a delineated 100-year flood plain, or a state or federally designated wild or scenic river land use district? Yes No
If yes, identify the district and discuss project compatibility with district land use restrictions.

The project would be constructed in the shoreland district of Lake Superior. The project area includes shoreland districts in Lakewood Township, Duluth Township, the city of Duluth, and Lake County. These townships use the shoreland designations prescribed in the NSMP, which guides development along Lake Superior north of the Duluth city limit. See Items 27 and 29 for a discussion of land use restrictions.

15. Water Surface Use. Will the project change the number or type of watercraft on any water body? Yes No
If yes, indicate the current and projected watercraft usage and discuss any potential overcrowding or conflicts with other uses.

16. Erosion and Sedimentation. Give the acreage to be graded or excavated and the cubic yards of soil to be moved: 165 acres; 595,000 cubic yards. Describe any steep slopes or highly erodible soils and identify them on the site map. Describe any erosion and sedimentation control measures to be used during and after project construction.

The Lake Superior shoreline is rocky with 10 to 40 foot cliffs dominant. The soils in the project area were formed in deep, clayey glacial lakebed deposits with depths ranging from rock outcrops to greater than ten feet deep. Slopes between five and seven percent are present in some shoreland areas between Scenic Highway 61 and Lake Superior. Some erosion has occurred in these areas under existing conditions. The potential for additional impacts does exist in these areas during the installation of service connections on the lakeside of Scenic Highway 61.

The remaining areas along the mainline route are fairly level and are located within the graded portions on the upper side of the road and railroad easements.

The project will incorporate measures for immediate and future erosion control. Some general erosion control techniques include:

- Protection of continuous and intermittent tributaries, especially designated trout streams, with silt fencing, sediment traps, bale traps or other similar measures.
- Prompt restoration of completed areas.
- Follow Best Management Practices for Shoreland areas.
- Regular inspection by DNSSD personnel or representatives to ensure erosion controls are put in place and are properly maintained.
- Staff from the MPCA Duluth office will conduct occasional inspections to check for compliance with the project's NPDES General Construction Storm Water permit and respond to any complaints received during the construction phase of the project.

The Duluth/North Shore Sewer Project Erosion Control and Stormwater Management Plan is Exhibit 5 of this EAW.

17. Water Quality - Surface Water Runoff.

- a. Compare the quantity and quality of site runoff before and after the project. Describe permanent controls to manage or treat runoff. Describe any storm water pollution prevention plans.

The project area consists of a mixture of woodlands and small developments with paved surfaces limited to arterial roads and some driveways. The proposed sewer pipelines will not directly affect the drainage patterns in the project area or change the volume or composition of runoff from the area. Generally, storm-water runoff from the immediate project area and the proposed sewer service area flows to the rivers, streams and ditches which are transected by roads and the railroad. The road and railroad facilities contain drainage networks of culverts that act collectively to direct runoff to Lake Superior.

During construction, runoff from storm water would be controlled as necessary with temporary erosion control measures such as silt fences and staked hay bales. Seeding and mulching would be maintained until permanent drainage and erosion control is re-established. Dewatering might be required for any excavations made for grinder pump installations, main pump station construction, bore pit excavations for the directional drilling activities and other open trench activities (see Item 13). Dewatering discharges, should they occur, would be directed toward the temporary erosion controls for filtering. If dewatering discharges could not be directed toward an existing silt fence or haybale structure, filter bags could be used to contain and filter sediment from the dewatering discharge.

Secondary development enabled by the construction of the sewer line also has the potential to affect the quality of runoff water. Indirect impacts from storm water related to secondary development are discussed in Item 29.

- b. Identify routes and receiving water bodies for runoff from the site; include major downstream water bodies as well as the immediate receiving waters. Estimate impact runoff on the quality of receiving waters.

Drainage from the project area is carried to Lake Superior by tributary streams, ditches, culverts, etc. Lake Superior is an Outstanding Resource Value Water afforded protection through several policy and regulatory mechanisms including no net increase in phosphorus exported to the lake by its watershed and nondegradation of water quality.

18. Water Quality – Wastewater.

- a. Describe sources, composition and quantities of all sanitary, municipal and industrial wastewater produced or treated at the site.

The design flow table, included as Exhibit 6 of this EAW, outlines the design basis for the sewer project as proposed. This table provides a breakdown of flow contributions from the city of Duluth, Lakewood Township, Duluth Township and the Knife River based on current estimates of sewage generation and 20-year projections. The wastewater flows for each are as follows:

	Existing Flow Conditions			20-year Flow Projection		
	Average Dry Weather (gpd)	Average Wet Weather (gpd)	Peak Hourly Wet Weather (gpd)	Average Dry Weather (gpd)	Average Wet Weather (gpd)	Peak Hourly Wet Weather (gpd)
Duluth	27,885	41,828	104,570	33,462	50,193	125,482
Lakewood Township	8,670	13,005	32,514	10,404	15,606	39,015
Duluth Township	73,830	110,745	276,863	88,596	132,894	332,235
Knife River	18,900	28,350	99,226	23,896	35,844	125,454
TOTAL	129,285	193,928	513,169	156,358	234,537	622,186

The wastewater constituent loadings for all four units are based on the projected population equivalent. The 20-year wastewater loadings for five-day biochemical oxygen demand (BOD), total suspended solids (TSS), total nitrogen (TN) and total phosphorus (TP) are as follows:

BOD	359 lbs/day
TSS	367 lbs/day
TN	65 lbs/day
TP	16 lbs/day

- b. Describe waste treatment methods or pollution prevention efforts and give estimates of composition after treatment. Identify receiving waters, including major downstream water bodies, and estimate the discharge impact on the quality of receiving waters. If the project involves on-site sewage systems, discuss the suitability of site conditions for such systems.

The proposed project would eliminate the use of on-site treatment systems in the project area. Wastewater collected by the DNSSD system will be discharged to the WLSSD treatment facility in Duluth, which discharges to St. Louis Bay.

- c. If wastes will be discharged into a publicly owned treatment facility, identify the facility, describe any pretreatment provisions and discuss the facility's ability to handle the volume and composition of wastes, identifying any improvements necessary.

The proposed collection system would discharge to the WLSSD. The NPDES Permit for the WLSSD wastewater treatment facility regulates conventional and non-conventional pollutants requiring effluent concentrations, loading rates and removal efficiencies based on a design flow of 43.6 million gallons per day (mgd).

Typically, the facility receives flows at rates averaging 38 – 40 mgd; however, during periods of wet weather and higher runoff, flows well in excess of the design flow have been received at the plant and treated to levels that comply with permit requirements. Most recently, compliance with all effluent limits was maintained during April and May 2001 when peak daily flows in the range of 60 – 70 mgd were experienced.

In general, the existing wastewater treatment plant is working well and is dependably producing a high quality effluent. The WLSSD "Effluent Quality Plan" dated April 2001 reviewed potential increased loading capabilities for the next 20 years. According to this plan, the facility is not limited hydraulically, but added capability will be needed to treat future increases in organic loading in the raw wastewater and remain in compliance with permit limits. WLSSD is currently in the process of increasing their ability to treat organic loading.

Wet weather flow volumes frequently exceed capabilities of the WLSSD and city of Duluth wastewater collection systems. WLSSD, the city of Duluth, and the MPCA are meeting monthly to resolve this issue. The

addition of the flow from the DNSSD and KRLSD is not expected to contribute significantly to this wet weather flow problem because offline storage will be required for both districts during wet weather conditions, and the volume produced by them will be relatively small (less than two percent of the total flow) on a normal basis.

The operation of the proposed storage facilities will be initiated by a capacity problem within the WLSSD system. The DNSSD storage facility will have a volume of 300,000 gallons. This design will allow for the detention period of at least 24 hours based on the 20-year average wet weather flow estimate of approximately 199,000 gallons per day plus a 1.5 safety factor. It is anticipated that the Knife River portion of the collection system will meet the 24-hour flow storage requirement by utilizing existing tankage at the wastewater treatment facility. This existing storage capacity is approximately 80,000 gallons, and the 20-year average wet weather flow projection for the Knife River system is 35,844 gallons per day. The system design does not consider pumping wastewater from the DNSSD service area in St. Louis County to the Knife River storage system.

The storage facility for the DNSSD is proposed to be an aboveground storage tank. The tank would consist of steel construction with a glass-lined interior. The tank bottom would contain a pumping sump to discharge the tank into the mainline once the WLSSD has the capacity to accept the flow or once the tank has reached capacity.

The potential for bypassing from pump stations, not unique to this project, also exists with respect to main pump stations #1 and #2. In order for either of these pump stations to bypass, approximately three hours of high (average wet weather) flow would need to enter the station before whatever is impeding the operation is corrected. For example, if a power outage occurs at pump station #1, approximately three hours would need to elapse prior to getting a generator on line at the station for a bypass to occur. Main pump station #3, to be located near the Knife River treatment plant, is not a concern for bypassing because storage capacity is available from the tankage at the plant.

- d. If the project requires disposal of liquid animal manure, describe disposal technique and location and discuss capacity to handle the volume and composition of manure. Identify any improvements necessary. Describe any required setbacks for land disposal systems.

Not applicable.

19. Geologic hazards and soil conditions.

- a. Approximate depth (in feet) to Ground water: 20 minimum; Varies average.
Bedrock: 0 minimum; 7 average.

Describe any of the following geologic site hazards to ground water and also identify them on the site map: sinkholes, shallow limestone formations or karst conditions. Describe measures to avoid or minimize environmental problems due to any of these hazards.

Sinkholes, shallow limestone formations, or karst conditions do not exist in the project area.

- b. Describe the soils on the site, giving SCS classifications, if known. Discuss soil granularity and potential for groundwater contamination from wastes or chemicals spread or spilled onto the soils. Discuss any mitigation measures to prevent such contamination.

The land of the study area is somewhat of a terrace between Lake Superior and the northern highland. It was formed from glacial and volcanic processes. Soils of the region were formed in deep, clayey glacial lakebed deposits, often below a thin, loamy, glacial till veneer. Very little variability of the soil exists within the study area. The U.S. Department of Agriculture Natural Resource Conservation Service has mapped much of the area as Ontonagon silt loam. The soil typically has a shallow (3 inches) surface horizon of silt loam with moderate

structure that overlies deep clay horizons. Structure of the clay horizons are typically strong to moderate to a depth of 28 inches, and weak to massive below. A notable portion of the clay consists of the mineral montmorillonite, which readily expands and contracts as a result of soil moisture changes.

Water movement through this soil is generally very slow. However, short-circuiting movements of water within the interface of till and clay can and likely often occur within this soil. Numerous surface and subsurface seeps that occur throughout the area are evidence of this.

Other soils mapped in the project area include Barto-Mesaba gravelly silt loams and Udorthent clays. The Barto-Mesaba soils are relatively shallow (8 to 40 inches) while the Udorthent clays have very little structure and form in the river, creek and stream erosion cut-banks.

Bedrock of the area is primarily basalt, an igneous rock of volcanic origin. Much of the slow weathering basalt is covered by Ontonagon silt loam soil. Two other types of igneous bedrock have been mapped are felsite and gabbro. The felsitic bedrock weathers easier and can be found at the western end of the project area. The gabbroic rock also weathers very slowly and can be found at the eastern end of the project area.

20. Solid Wastes, Hazardous Wastes, Storage Tanks.

- a. Describe types, amounts and compositions of solid or hazardous wastes, including solid animal manure, sludge and ash, produced during construction and operation. Identify method and location of disposal. For projects generating municipal solid waste, indicate if there is a source separation plan; describe how the project will be modified for recycling. If hazardous waste is generated, indicate if there is a hazardous waste minimization plan and routine hazardous waste reduction assessments.

A minimal amount of solid wastes would be generated from the workers during the construction phase of this project. The solid wastes would be collected near the construction areas and disposed.

- b. Identify any toxic or hazardous materials to be used or present at the site and identify measures to be used to prevent them from contaminating groundwater. If the use of toxic or hazardous materials will lead to a regulated waste, discharge or emission, discuss any alternatives considered to minimize or eliminate the waste, discharge or emission.

No toxic or hazardous materials would be used or stored on the site.

- c. Indicate the number, location, size and use of any above or below ground tanks to store petroleum products or other materials, except water. Describe any emergency response containment plans.

Petroleum fuel for operation of construction equipment would be transported to a project staging area. No above or below grade petroleum storage tanks would be allowed.

- 21. Traffic.** Parking spaces added: 0 Existing spaces (if project involves expansion): 0
Estimated total average daily traffic generated: N/A Estimated maximum peak hour traffic generated (if known) and its timing: N/A Provide an estimate of the impact on traffic congestion affected roads and describe any traffic improvements necessary. If the project is within the Twin Cities metropolitan area, discuss its impact on the regional transportation system.

Construction related traffic would be generated during the construction phases of the project. No permanent traffic increases are anticipated from the construction of this project.

The St. Louis County Public Works Department operates the majority of the arterial roads in the project area. St. Louis County staff has indicated that the following projects are in the current improvement plan:

- McQuade Road Pavement Overlay – Summer 2001
- Box Culvert installations (Scenic Highway 61 and Greenwood Road) – Summer 2001

No other transportation related projects have been identified at this time.

Significant direct impacts on traffic conditions are not expected due to construction of the project. Future increases in traffic will tend to occur in proportion to development and population growth in the service area.

22. Vehicle-related Air Emissions. Estimate the effect of the project's traffic generation on air quality, including carbon monoxide levels. Discuss the effect of traffic improvements or other mitigation measures on air quality impacts. Note: If the project involves 500 or more parking spaces, consult *EAW Guidelines* about whether a detailed air quality analysis is needed.

Air quality impacts related to the operation of construction equipment should be short term and minor.

23. Stationary Source Air Emissions. Describe the type, sources, quantities and compositions of any emissions from stationary sources of air emissions such as boilers, exhaust stacks or fugitive dust sources. Include any hazardous air pollutants (consult *EAW Guidelines* for a listing), any greenhouse gases (such as carbon dioxide, methane, and nitrous oxides), and ozone-depleting chemicals (chlorofluorocarbons, hydrofluorocarbons, perfluorocarbons or sulfur hexafluoride). Also describe any proposed pollution prevention techniques and proposed air pollution control devices. Describe the impacts on air quality.

The project will not generate stationary source emissions.

24. Odors, noise and dust. Will the project generate odors, noise or dust during construction or during operation? Yes No
If yes, describe sources, characteristics, duration, quantities or intensity and any proposed measures to mitigate adverse impacts. Also identify locations of nearby sensitive receptors and estimate impacts on them. Discuss potential impacts on human health or quality of life. (Note: fugitive dust generated by operations may be discussed at item 23 instead of here.)

The construction of the sewer system may cause temporary impacts related to noise and dust generated by construction activities. Equipment generating noise would include directional drilling rigs, backhoes, loaders, trucks and compressors. Portions of the project may involve rock excavation, which would increase noise and dust levels related to the activities.

The receptors for the project are private residences and small businesses. The generation of noise will be limited by maintaining properly muffled equipment and by limiting construction periods to Monday through Friday from 7:00 a.m. to 7:00 p.m. Limiting periods of operation and applying moisture to traveled areas wherever necessary will mitigate dusty conditions.

The conveyance and storage of domestic wastewater has the potential for production of objectionable odor from the operation of pumping, transport and storage facilities. Odor control and treatment would be a major operational feature of the proposed system. The design of odor control facilities at each main pump station is currently underway. Odor control facilities are anticipated at the following locations:

- Main pump stations #1 and #2
- Final gravity discharge location at 47th Avenue East
- Storage facility
- Pressure discharge location to gravity segment in Greenwood Beach

25. Nearby resources. Are any of the following resources on or in proximity to the site?

- Archaeological, historical, or architectural resources? Yes No
- Prime or unique farmlands or land within an agricultural preserve? Yes No
- Designated parks, recreation areas, or trails? Yes No
- Scenic views and vistas? Yes No
- Other unique resources? Yes No

If yes, describe the resource and identify any project-related impacts on the resources. Describe any measures to minimize or avoid adverse impacts.

Scenic Views and Vistas

The North Shore of Lake Superior is considered very high in aesthetic value. Scenic views and vistas are intermittently present all along the mainline route on Scenic Highway 61. All portions of the mainline along this scenic route would be constructed within road right-of-way, resulting in no permanent impact on scenic qualities.

Secondary development enabled by the project may affect scenic views and vistas. The North Shore Land Use Plan (Exhibit 8) identified land use policies that protect significant views and vistas. The secondary effects of the project on views and vistas is discussed in detail in Section 29 of this EAW.

Other Unique Resources

The trout fisheries along the project route are other unique and important natural resources. Measures to protect fisheries resources are discussed in Item 11.

Secondary development enabled by the project may affect trout fisheries. As discussed in Section 29 of this EAW, the North Shore Land Use Plan identifies designated trout fisheries in the planning corridor, and includes recommendations for regulatory priorities in trout stream watersheds.

26. Visual impacts. Will the project create adverse visual impacts during construction or operation? Such as glare from intense lights, lights visible in wilderness areas and large visible plumes from cooling towers or exhaust stacks? Yes No

If yes, explain.

Generally, construction disturbances will include vegetation removal and excavation within the construction corridor. Temporary visual impacts will occur during construction due to the presence of equipment, excavations, and other disruption. Such impacts would tend to be reduced in areas where directional drilling is used to install the pipe.

27. Compatibility with plans and land use regulations. Is the project subject to an adopted local comprehensive plan, land use plan or regulation, or other applicable land use, water, or resource management plan of a local, regional, state or federal agency? Yes No

If yes, describe the plan, discuss its compatibility with the project and explain how any conflicts will be resolved. If no, explain.

The project crosses five local jurisdictions (city of Duluth, St. Louis County, Lakewood Township, Duluth Township, Lake County), each of which has adopted a comprehensive land use plan, zoning districts, shoreland and wetland ordinances, and other land use regulation. In addition to the five local jurisdictions, other entities have some planning jurisdiction over construction and development that occurs in the planning corridor.

The project is not inconsistent with any local land use regulations. The magnitude of risk associated with secondary development enabled by the project, however, is greatly affected by the kind and type of local land use regulation (secondary development is discussed in Section 29 of this EAW). Descriptions of current local land use regulations, and proposed changes to local land use regulation, for each jurisdiction are listed below.

GOVERNMENT JURISDICTIONS

The use of land and type of development that will occur in the proposed service area of the new sewer line is ultimately determined by the individual actions of public and private landowners. Public and private decisions on land use and development are encouraged, discouraged, or regulated by governments in the following ways:

- by local governments with land use planning authority;
- by joint powers boards to whom local governments have delegated specific land use planning authority; and
- by state and federal agencies with land use, natural resource, or other planning authority granted by the legislature.

Private entities such as land trusts, non-profit organizations, and charitable foundations also encourage or discourage actions of public and private landowners through educational and promotional programs and financial incentives.

Local Governments with Authority Over Development and Land Use

- City of Duluth – Primary land use authority (zoning and other land use regulation) within city boundaries.
- Duluth Township – Secondary land use authority; land use plans and regulation must at least meet the St. Louis County minimum, but can exceed St. Louis County regulation if the township chooses.
- Lakewood Township - Secondary land use authority; land use plans and regulation must at least meet the St. Louis County minimum, but can exceed St. Louis County regulation if the township chooses.
- St. Louis County – Primary land use authority within county boundaries, except in incorporated areas.
- Lake County - Primary land use authority within county boundaries, except in incorporated areas. Lake County includes the KRLSD service territory, but is just outside the DNSSD service territory.

Joint Powers Boards or Special Districts

- Western Lake Superior Sanitary District (WLSSD) – The WLSSD service area includes the city of Duluth and the DNSSD service territory. The WLSSD has responsibility to receive and treat the wastewater from the DNSSD system and monitor surface waters within the project area. WLSSD has planning and operating authority over the regional wastewater treatment facility and the interceptor line extending to 52nd Avenue East and Superior Street.

- Duluth/North Shore Sanitary District (DNSSD) – This sanitary sewer district replaced the original joint powers board, created to address the wastewater management issues along the North Shore of Lake Superior. The DNSSD board includes representatives from the city of Duluth, Duluth Township, and Lakewood Township. The DNSSD is overseeing the construction, administration, maintenance, and operation of the new sewer line. DNSSD, along with Lake County, are the fiscal entities responsible for implementing the Coastal Zone Management Grant supporting the Comprehensive Plan process and implementation efforts in the DNSSD service territory.
- Duluth/North Shore Planning Advisory Council (PAC) – The PAC is not a formal special district or joint powers board. The original Joint Powers Board (made up of Duluth, Duluth Township, and Lakewood Township) responsible for the initial planning and organizational work on the sewer extension project created the PAC to oversee the advisory land use planning process. The Joint Powers Board was dissolved when the DNSSD was formed. The PAC, however, continues to operate as an ad hoc association overseeing the land use planning process in the DNSSD service area. The PAC is formally recognized by the entities of the former Joint Powers Board as an advisory body to the DNSSD on land use planning and regulation.
- The Knife River-Larsmont Sanitary District (KRLSD) is newly formed. It will manage wastewater systems in the unincorporated communities of Knife River and Larsmont, located in the Lake County portion of the planning corridor.
- North Shore Management Board (NSMB) – A joint powers board comprised of communities from the western edge of Lakewood Township to the eastern edge of Cook County, with legislatively granted planning and monitoring authority in the shoreland areas of Lake Superior’s North Shore. Through a joint powers agreement signed by member communities, and a Memorandum of Understanding between the DNR and the Board, the NSMB and its member communities created, adopted, and monitor compliance with the NSMP, a comprehensive land use plan and shoreland ordinance for Lake Superior’s North Shore.

State Agencies

- Minnesota Pollution Control Agency
- Minnesota Department of Natural Resources
- Minnesota Department of Transportation

EXISTING AND PROPOSED LAND USE POLICIES AND REGULATION

North Shore Management Board

Policy – The NSMB created and monitors compliance with the North Shore Management Plan (NSMP), a plan identifying appropriate land uses and development along the north shore of Lake Superior. The NSMB was formed in 1988 for the purpose of creating a north-shore-specific version of the Minnesota Shoreland Ordinance developed by the DNR. The NSMP sets comprehensive planning goals and policies to act as a general guide for local zoning authorities to use in adopting, amending, and administering local zoning ordinances. It includes the following designations and definitions:

- Protected Resource areas
- Residential areas
- Commercial-Rural areas
- Commercial –Urban areas
- Resort-Commercial areas
- Industrial areas

The NSMP identifies the DNSSD/KRLSD planning corridor as comprised of residential areas, commercial-rural areas, a commercial-urban area adjacent to the eastern end of the service area in Knife River, and a small protected resource area at the mouth of the French River. Residential areas are:

1. Areas presently zoned or developed primarily for residential uses.
2. Areas capable of supporting low to medium density residential uses and compatible uses such as small resort.
3. Areas where residential Planned Unit Developments (PUDs) could be allowed under special conditions to ensure compatibility with surrounding land uses.

Commercial – Rural areas are:

1. Unincorporated areas presently zoned or developed for commercial use.
2. Existing commercial nodes with low to medium intensity commercial use, such as grocery stores, shops, gas stations or other traditional retail, wholesale or service oriented activities.
3. Areas developed or capable of supporting planned unit commercial developments.
4. Major highway corridor intersections where commercial development should locate to provide needed services and facilities.

Regulation – The NSMP sets minimum development standards including the following:

- Zoning standards;
- Sanitary systems;
- Shoreland alterations;
- Erosion hazard areas not to be developed; and
- Planned unit development standards.

The minimum zoning standards for unsewered areas include a lot area of 40,000 square feet and a lot width of 200 feet. In areas served by a public sewer district, the minimum zoning standards include a lot area of 10,000 square feet and a lot width of 75 feet. The NSMP minimum standards also allow lot coverage by impervious surfaces of up to 30 percent, or up to 50 percent if a surface water runoff plan certified by a registered professional engineer is submitted and approved by the local zoning office. The lot area and width requirements apply to lots created after the date the local ordinance is amended to be consistent with the NSMP.

Local comprehensive plans and zoning ordinances of signatory communities should comply with the NSMP. Development in the NSMP area must be consistent with the NSMP. Variances to the NSMP can only be granted in accordance with Minnesota Chapter Statutes 394. Conditional uses allowed in local plans must similarly be consistent with the NSMP, as must new subdivisions and PUDs. Requirements more stringent than the minimum requirements may also be adopted.

City of Duluth

Policy – The city of Duluth’s Comprehensive Plan dates to 1960. Many of the plats for lots along the North Shore actually pre-date the existing Comprehensive Plan. The plan thus identifies portions of the North Shore east of the Lester River as single family urban development. The plan (and supporting documentation) also notes that portions of the North Shore are reserved for forest preserves or city parks.

The city of Duluth is in the process of creating a new Comprehensive Plan. In recent ordinances (see below) the city of Duluth explicitly recognizes the importance of updating the existing policies and land use controls in the planning corridor after completing its Comprehensive Plan. Ordinance 00-005.0 states:

The city of Duluth is presently updating its comprehensive municipal plan but has not completed land use studies in the North Shore area... It is necessary for the city of Duluth to enact a one year development moratorium in the North Shore area to allow for the completion of the (DNSSD land use study) and for the development and enactment of new land use controls when appropriate.”

The city of Duluth also passed a resolution supporting the advisory role of the PAC’s land use planning effort in the city of Duluth’s own land use planning and regulation initiatives.

Regulation – The Duluth City Council passed a moratorium (noted above) on any development in the DNSSD service territory for one year. The ordinance stated the following:

It is the purpose of this ordinance to impose a one year moratorium on development within the North Shore area of the city of Duluth to allow for the completion of land use studies and the development of appropriate land use regulations to regulate development after the sewer is available. This moratorium is necessary to prevent inappropriate development and urban sprawl on the North Shore and to prevent overall aesthetic and environmental degradation in the area.

The moratorium ordinance was later modified to allow construction of single family homes meeting the unsewered lot size and frontage requirement under existing zoning (see below), provided the land owner files a covenant that the lot will never be subdivided without the express consent of the City Council.

The planning corridor in the city of Duluth is currently zoned R-1-a, R-1-b, and S. Areas adjacent to, but outside the planning corridor are generally zoned “S.” The R-1 districts are standard single-family residential zones. The zones have separate lot size, frontage, and setback requirements for sewer and unsewered areas. For unsewered areas the minimum lot size is two acres and frontage is 200 feet. For sewer areas, the minimum is 7,000 – 14,000 square feet, and frontage is 75 feet (Zoning Ordinance 50-20.1).

The S district is Suburban, which requires a minimum of five acres lots (50-20.1). Allowed uses include single family homes, agriculture and related agriculture uses, schools, churches, and various other farm or residential uses (50-52).

Duluth also has a storm-water ordinance regulating erosion from land disturbances including construction, and ongoing storm-water management issues for some types of development.

Duluth Township

Policy – Duluth Township is in the process of updating its Comprehensive Land Use Plan and zoning ordinance. The update will likely incorporate many recommendations of the North Shore Land Use Plan.

Duluth Township is also the pilot study area for a MPCA nonpoint source watershed protection education project based on the Nonpoint Education for Municipal Officials (NEMO) first pioneered by the University of Connecticut Cooperative Extension. The NEMO project will compile GIS-based background information for conveying the relationship between land use decisions and water quality to citizens, local government staff, and elected officials. The Comprehensive Plan process and zoning update will incorporate the background work of the NEMO pilot project, and will consider the implementation tools recommended in the NEMO project.

The existing Duluth Township Comprehensive Plan (1976) designates residential development areas in the planning corridor to be “High density residential” in the existing fully developed Greenwood Beach area, and “Moderate density, wide lot, rural residential” in much of the remaining shoreland area (p. 13). The high density designation is, however, a target density of 1 acre (43,560 square feet) per dwelling unit, a density requirement intended to “encourage the consolidation of lots in Greenwood Beach” (p. 13). The plan also

states that high density development “is not to be encouraged elsewhere in the township nor even as an extension of the currently developed portions of Greenwood Beach.”

The Comprehensive Plan identifies small commercial development areas at the points of existing (in 1976) commercial businesses, and at the intersection of Homestead Road and Scenic 61.

The Comprehensive Plan recommends that sewer service be provided to the Greenwood Beach residential and commercial area in recognition of difficulties with the septic systems on small lots. The plan recommends, however, that any sewer system “be of limited capacity so that only the existing and a small amount of additional development will be accommodated” (p. 22).

The Township’s Comprehensive Plan sets clear policies regarding development impacts on all water resources, stream corridors, and the shore area. The plan states “that no development shall impair the function or quality of any significant water resource in the Town. Achieving this purpose will not necessarily mean banning development in affected areas. Instead, it demands adherence to strict regulations required to safeguard the public interest in these water resources” (p. 19).

Finally, Duluth Township passed a resolution supporting the advisory role of the Planning Advisory Council’s land use planning effort in the Township’s own land use planning and regulation initiatives.

Regulation – Duluth Township enforces its land use policies through its zoning code. The planning corridor is designated as the Lake Superior Management Area. All development must be “consistent with the intent, standards, and policies of the North Shore Management Plan” (p. 58). The corridor includes the following zones and overlay districts:

- Suburban Residential R-1 (2.5 acre lot minimum)
- Commercial (1 acre lot minimum)
- Natural Environment Lakes and Streams W-1 (2 acre lot minimum)
- Recreational Development Lakes and Streams W-2 (1 and 2 acre lot minimums)
- Lake Superior Waterfront Overlay LSO (2 acre lot minimum)

Duluth Township has enacted a moratorium on all conditional use permits in the LSO, W2, and Commercial zones in light of changes to St. Louis County zoning and the formation of the DNSSD. The moratorium states that the “Town’s current zoning ordinance may be too lax to control large-scale rapid development in the area between the north shore and the expressway, particularly if a sewer line is established. The Planning Commission also believes that potential developers should be put on notice that these studies are being conducted and that changes in current zoning may result from these studies.” (Interim Ordinance No. 51100).

Lakewood Township

Policy – Only a very small portion, the far southeast corner of Lakewood Township, lies in the planning corridor. The Lakewood Comprehensive Plan refers to this area as the Clifton area, and notes that this small area is the only area of high-density residential housing in the Township. The corner also includes one of the two commercial areas in the Township.

The Comprehensive Plan identifies the Clifton area as plan concept 1, moderate to high-density residential development, and as plan concept 5, commercial zones (pp. 44, 46). The plan recommends that the allowed intensity of residential development (plan concept 1) should be less intense than the existing development:

While there has been a degree of development on relatively small lots in this area, most of which has been platted, this concept recommends a change to larger lot requirements. The change is necessitated by the extremely poor soil conditions in the area and the subsequent

need to protect the area's water quality... It is recognized that this change will create some nonconforming lots. Any development or redevelopment on such lots will be handled through the variance procedure. [p. 44]

The plan further states, however, that in the event of construction of centralized water and wastewater facilities serving the Clifton area, that "lot sizes and frontage requirements could be relaxed." Less restrictive zoning would, furthermore, be allowed by the North Shore Management Plan. The plan also notes that commercial land uses should be allowed in residential areas as conditional uses (p. 46).

The plan's commercial-area recommendations for the corridor allow some expansion of existing commercial or new businesses, provided the expansion or new development is adequately buffered from existing residential development (p. 46). The plan also sets a policy for encouraging clustering of commercial uses and discouraging strip development (p. 40).

The Comprehensive Plan includes goals and policies for enhancing and preserving the community's natural resources (pp. 38-39) and a plan concept for the protection of hydrologic, aesthetic, and recreation functions of all rivers, streams, valleys, wetlands, and Lake Superior shoreland from adverse development impacts (p. 47).

The Township's Comprehensive Plan sets goals and policies for working with neighboring communities, non-resident stakeholders, and governmental agencies on environmental issues (p. 38), recreational opportunities (p. 41), and land use compatibility (p. 40).

Regulation – The Township's zoning ordinance largely follows the St. Louis County Zoning ordinance. Lakewood Township identifies two zoning districts in the planning corridor; RES-7 and SMU-7. The township building ordinance states that the SMU-7 is not buildable (p. 33). The RES-7 district allows single-family homes and related accessory structures and some commercial conditional uses or uses restricted by performance standards. The single-family housing is intended to provide "medium density or semi-rural living on moderate size lots in areas not expected to be served by public water and sewer" (p. 32). Minimum lot size is 1.8 acres/lot, unless septic system design requires a larger lot size. Non-conforming contiguous lots that are owned by the same party may not be considered as separate lots for the purpose of sale or development, but must be combined to meet the requirements of the ordinance.

The zoning ordinance includes a number of regulations or performance standards consistent with the NSMP, including standards for removal of vegetation, Erosion Hazard Areas, and Planned Residential Developments.

Lakewood Township's ordinances include a stormwater ordinance. The ordinance limits impervious lot coverage to 25 percent, requires (as much as possible) retention of existing natural stormwater control features of the landscape, requires sediment control in any disturbed area, and defers to the Soil and Water Conservation District advice in regard to methods, management, or engineering.

St. Louis County

Policy – St. Louis County has incorporated the comprehensive plans of individual townships, and groups of townships comprising planning areas, and the NSMB as its comprehensive plan. St. Louis County has completed several other land use planning efforts, including the Water Plan and Wetland Plan. The comprehensive plan policies affecting the planning corridor are, therefore, comprised of the policies in Duluth and Lakewood Township comprehensive plans, in addition to the NSMP.

Regulation – St. Louis County zoning sets the minimum standards for both Lakewood and Duluth townships, although these towns staff and administer their own zoning ordinance. St. Louis County's zoning follows the same description as Lakewood Township zoning, described above, including the storm-water ordinance.

However, it does allow some kinds of land uses and includes some additional language for areas away from the planning corridor that address land forms not found in along the north shore or adjacent upland areas.

St. Louis County explicitly incorporates reference to the NSMP standards for those areas outside Duluth and within the planning corridor, including erosion control, removal of vegetation, PUD standards, and zoning standards.

St. Louis County has passed a resolution supporting the advisory role of the PAC's land use planning effort in St. Louis County's own land use planning and regulation initiatives.

Lake County

Policy – Lake County is the easternmost portion of the planning corridor, and includes the area served by the KRLSD. Neither of the two communities in the Lake County portion of the planning corridor are incorporated (Knife River and Larsmont), and the townships are unorganized. Lake County therefore provides land use regulation and enforcement actions for the planning corridor.

Lake County has a County Water Plan (adopted in 1992 and updated in 1998) and has had a Comprehensive Plan in effect since 1978. Efforts to revise that Comprehensive Plan began in 1996 and are not yet complete. The Comprehensive Plan adopts the policy fundamentals of the NSMP as a guide for Lake County, while clearly deferring to local units of government where such local units have the capacity to manage land uses. Lake County's Comprehensive Plan sets out a series of tools to meet the county's policy goals, including the following:

- Environmental Review Ordinance
- ISTS Ordinance
- Zoning, subdivision, and other land use ordinances
- Active administration of state-owned tax-forfeit lands managed by the County

The Water Plan includes a considerable discussion of land use issues as they relate to surface water quality and storm-water management, and the Land Use Ordinance was amended to reflect those concerns. Goals, objectives, and tasks include a number of land use considerations and mitigation for the impacts of development (pp. 131-132). The Plan notes the problems with non-conforming wastewater systems (individual and centralized) in the Lake Superior watershed (p. 81), and describes the role of the NSMP in protecting areas along Lake Superior (p. 102).

Regulation – Lake County administers a zoning ordinance outside the incorporated areas of the county. Zoning includes several zones where residential development is a permitted use, with 10, 5, 2.5, and one-acre minimum lot sizes. The smaller lot sizes are generally allowed along the Highway 61 corridor and adjacent to the incorporated municipalities. The dominant zoning in the planning corridor allows lot sizes down to one acre. The townsite of Knife River is sewered and because of its initial platting utilizing 25 foot wide lots with about 130 feet in depth the county determined that three lots (75 feet of width and 10,000 square feet of area) would be the minimum lot size permitted within the area served by the Sanitary District with the exception of riparian properties which must default to the 200 foot width and acre size.

Lake County has a hydrology ordinance that includes storm-water provisions (Sec. 8.03 A., D.) more restrictive than the current NPDES five-acre disturbance threshold for creating a storm-water management plan. Lake County requires a plan and plan approval for any land disturbance of one acre or greater. This is consistent with the NPDES Phase II storm-water permit threshold that is scheduled to be implemented statewide on March 10, 2003. The zoning ordinance includes lawn fertilizer regulations (Sec. 8.04), management plan requirements for one acre disturbances (Sec. 8.07), and mandatory conditional use review by the Planning Commission for any development creating more than one acre of impervious surface or five acres of land disturbance (Sec 8.09).

Lake County has passed a resolution supporting the advisory role of the PAC's land use planning effort in the county's own land use planning and regulation initiatives.

Minnesota Pollution Control Agency

The MPCA has regulatory authority over a host of water and natural resource policies adopted by the State of Minnesota. The MPCA has rules, standards, and regulations for management of both wastewater and storm-water from new and existing development. Minn. R. 7001 currently require a storm-water management plan be submitted for approval for any disturbance of more than five acres. Many county and local storm-water ordinances have similarly adopted a five-acre threshold for requiring storm-water plans and mitigation efforts. The MPCA is beginning a federally mandated rulemaking process (Phase II of NPDES) targeted at lowering the five-acre threshold to one acre. The rule change, should it be approved, is scheduled to be in place in one year, and fully enforceable on March 10, 2003.

The MCA is also working on a Coastal Nonpoint Pollution Control Program for review and approval by the U.S. Environmental Protection Agency and the National Oceanic and Atmospheric Administration (NOAA) under the 1990 Coastal Zone Act Reauthorization. The Coastal Nonpoint Pollution Control Program will include an inventory and review of all local ordinances and state regulations affecting the coastal area, comparing the ordinances and regulations to NOAA's list of required management measures, and a legal review on whether Minnesota's local ordinances and regulations are enforceable to the extent needed in order to perform as NOAA's management measures. MPCA must submit its Program to NOAA by December of 2001. Approval and full program development will take place at a later time.

Minnesota Department of Natural Resources

The DNR generally has regulatory jurisdiction over activities in water bodies, or within the high-water line. DNR has administrative authority for the State Shoreland Ordinance, including the version of the Shoreland Ordinance specifically applicable to the north shore of Lake Superior (Minn. R. 6120.3900). DNR entered into a formal agreement with the NSMB to create and administer the Shoreland Ordinance along Superior's north shore, the result of which is the NSMP.

HISTORY OF CONDITIONAL USE APPROVALS, VARIANCES, AND APPROVED SUBDIVISIONS

All local jurisdictions (city of Duluth, Duluth Township, Lakewood Township, St. Louis and Lake Counties) have staff and appointed boards to ensure enforcement of local zoning and other land use ordinances. These local jurisdictions include administration and enforcement provisions in their zoning ordinances, with regular reporting to the elected officials of development activities, including applications for conditional use permits and variances. Applications for conditional use permits or variances are generally considered at a public meeting by the planning commission, board of adjustment, or town board.

Applications for subdivisions, planned unit developments, conditional use permits, or variances must be submitted to the staff of the local government (planning director, planning administrator, or other designated official). Staff makes the initial review of the application to ensure that it is in order and meets the criteria of the zoning ordinance or other regulating ordinance.

While not explicit in ordinance, staff will generally notify an applicant if the application is inconsistent with policy or ordinance. Staff play an educational role with landowners and developers in a community. They can recommend changes to, or withdrawal of, the application in order to prevent conducting a public hearing on applications that clearly cannot pass muster. While little public record can be presented to show these activities, most applications have been modified before the board or commission accepts public comment and votes. Staff should eliminate the clear violations of code or ordinance before the application is heard.

Historic Record

The NSMB monitors all subdivisions, planned unit developments, variances, and conditional use approvals within the North Shore Management Area (the entire DNSSD service district, excluding the city of Duluth). Listed below is a summary of reporting for Duluth Township, Lakewood Township, and Lake County for the years 1995-98.

<i>Subdivisions, Conditional Uses, Variances</i>				
North Shore Planning Area/DNSSD Service Area				
Year	Duluth Township	Lakewood Township	City of Duluth	Lake County (T52) only
Subdivisions (number of lots created)				
1995	0	0	0	0
1996	0	0	0	0
1997	0	0	0	0
1998	0	0	0	5
Conditional Use Permits (number granted)				
1995	1	0	0	2
1996	0	0	0	2
1997	2	0	0	1
1998	1	0	0	1
Variances (number granted)				
1995	3	0	0	2
1996	1	0	0	3
1997	2	0	0	0
1998	3	0	0	0

28. Impact on infrastructure and public services. Will new or expanded utilities, roads, other infrastructure or public services be required to serve the project? Yes No
 If yes, describe the new or additional infrastructure or services needed. (Note: any infrastructure that is a connected action with respect to the project must be assessed in the EAW; see *EAW Guidelines* for details.)

Direct Impacts

The project would require the expansion of electric utilities to serve the proposed main pump stations. The pump stations would operate on three-phase power. The pump stations would be located near arterial roads and utility extensions could occur within existing easements. Also, electrical power will be required to heat sections of the pipeline that are shallowly buried or attached to bridges. No electric utility expansion is anticipated for the individual grinder pumps.

Secondary Growth

Secondary development enabled by the project could require the construction or expansion of infrastructure and public services. Post-construction development may require electric and telephone utility extensions, driveway or minor road extensions, extension of drinking water systems or additional private wells, or creation of storm-water infrastructure. The effects of secondary development, and the North Shore Land Use Plan's

recommendations for regulating the construction of new infrastructure, are discussed in Section 29 of this EAW.

29. Cumulative impacts. Minn. R. 4410.1700, subp. 7, item B requires that the RGU consider the “cumulative potential effects of related or anticipated future projects” when determining the need for an environmental impact statement. Identify any past, present or reasonably foreseeable future projects that may interact with the project described in this EAW in such a way as to cause cumulative impacts. Describe the nature of the cumulative impacts and summarize any other available information relevant to determining whether there is potential for significant environmental effects due to cumulative impacts (or discuss each cumulative impact under appropriate item(s) elsewhere on this form).

As mentioned in Section 6d. of this EAW, Lake County is proposing a pressure sewer system for Larsmont in the corridor between U.S. Highway 61 and Lake Superior from the limits of the Knife River collection system to the Two Harbors city limits. This proposed project could discharge into the Knife River collection system for eventual treatment at the WLSSD. The Lake County project will develop and submit a separate design and permit application. The design of the DNSSD and KRLSD systems and the mitigation associated with their construction have been designed in anticipation of a future sewer extension into the Larsmont area. This area has also been included in the North Shore Land Use Plan conducted to address the potential impacts of secondary development in the sewer service areas.

SECONDARY DEVELOPMENT

The density and intensity of development that occurs in any area is the result of several factors. Market demand for housing or commercial sites is the primary determinant for the density and intensity of development. Other factors, however, constrain the amount of development regardless of the magnitude of market demand. These other factors include the following:

- Access to transportation infrastructure;
- Local preferences for development, expressed through zoning or other land use regulation;
- Regulatory protection of natural resources, including shorelands, wetlands, protected habitats, and endangered species;
- Access to drinking water; and
- Access to adequate wastewater treatment, either sewer systems or a compliant septic system.

The poor soils typical of the project area mean that a large lot, up to five acres, is needed to ensure adequate septic field size. When a sanitary sewer line is extended into an area that does not have sewer service, the septic field size limitation no longer constrains development patterns.

The project, consequently, will remove one of the constraints to residential and commercial development in the project area. A potential effect of the project would be secondary development enabled by the sewer system; that could increase the density and intensity of land uses in the project area. Such a development pattern would increase the amount of impervious surfaces within project area watersheds, expose Lake Superior and tributaries to additional nonpoint source pollution, pose additional risks to sensitive natural areas in the project area, use limited capacity of existing transportation and other public infrastructure, and potentially change the character of the area’s existing communities.

Build-Out Scenario

Quantification of the amount of secondary development enabled by the project is problematic. As noted earlier, a substantial number of undeveloped parcels could, given adequate market demand, be developed under existing regulation regardless of the installation of the sewer line. The marginal change in density and intensity attributable to the installation of the sewer line is dependent upon what assumptions one uses for the market

demand for land over the next 20 years, the type of changes to local land use regulation, the level of regulation or protection of natural resources, and the costs of expanding transportation, water and utilities in the project area.

Nevertheless, creating a build-out scenario can give some insights into the amount of risk posed from the secondary development associated with the project. The following build-out scenario estimates the development density for the project area in 20 years, assuming that development reaches the density threshold allowed by each local unit of government. A variety of different build-out scenarios can be created, depending on the development and regulatory assumptions used. Several examples are noted below:

- Under current land use regulation, and without the proposed sewer line, the area could see significant development. Development is limited primarily by the land requirements for septic systems (see discussion below);
- Under current land use regulation, and assuming a completed sewer line, a denser build-out is possible. Development is limited primarily by local regulation, such as zoning, public acquisition of land or development rights, and environmental limitations (e.g., shoreland buffers or wetland protections); and
- Finally, assuming a completed sewer line, and assuming that current land use regulation will be relaxed (allow more dense development), a much higher build-out is possible. Development is limited primarily by the capacity of infrastructure (wastewater systems, drinking water systems, transportation systems), environmental limitations, and public acquisition of land or development rights.

The chosen build-out scenario uses the following assumptions on development patterns and local regulation:

- Current zoning will remain unchanged;
- The proposed wastewater system will be completed;
- The wastewater system will be available throughout the entire Sanitary District;
- Development pressure will be sufficient to reach complete build-out;
- Existing building sites will not be significantly re-developed, although subdividing lots will be allowed;
- Commercial development will occur primarily at existing commercial locations, or will occur consistent with allowed residential densities;
- Sites with steep slopes, wetlands, or other natural feature that make it difficult to build on will remain undeveloped; and
- Tax forfeit land and existing parkland will remain in public ownership.

The build-out scenario balances between likely changes in infrastructure, development pressure in the market for new homes and businesses, and some consistency with the existing regional development pattern (a suburban or exurban area between two urban sites). Currently, the amount of land that can be developed is primarily limited by the need for adequate land for ISTS, commonly referred to as septic systems. While an area might be zoned for two-acre lots, the septic requirements can be as high as five acres for a single residential home. The thin soils and soils types in the planning corridor require large lots to ensure a functioning septic system. The current zoning limits are not, therefore, the primary limit to development pressure in most of the planning corridor.

When an area gains access to a sanitary sewer line, the septic field size limitation on lot size no longer constrains development patterns. Zoning density and environmental limitations (wetlands, erodible shoreland, and protected habitat) are then more likely to limit development. However, for some areas in the planning corridor, the allowed density under existing zoning districts changes if a sewer system is completed. For these areas (primarily the portion of the corridor that lies in the city of Duluth, but also including some areas in Lake County), the allowed density under current zoning is significantly higher for sewered areas than that allowed for unsewered areas.

Table 3 in Exhibit 8, the draft North Shore Land Use Plan, shows the estimated number of existing buildings, and the allowed number of buildings for each zoning district, assuming the construction of a sanitary sewer. Some areas, such as the LSO zone in Duluth Township and Lakewood Township, and the W-2a zone in Duluth Township, are already at full build out and would be largely unaffected by secondary development. Other areas, particularly those zones in the city of Duluth and the community of Knife River in Lake County that allow higher density with access to a sanitary sewer, could see substantial increases in density with a full build-out.

The build-out scenario estimated a maximum build-out (as measured by number of buildings) that is more than twice that of current levels, or an increase in the number of developed lots from approximately 2,000 to approximately 4,800. The zones with the greatest growth potential under the assumptions of this build-out scenario are listed below:

- 1,227 new developed lots in the two residential zones in the city of Duluth (R-1-A and R-1-B);
- 685 new lots in the community of Knife River;
- 346 new lots adjacent to Knife River (R-4 zone in Lake County);
- 303 new lots in the Manufacturing zone immediately adjacent to the city of Two Harbors;
- 173 new lots in Lake County’s Resort/Commercial zone; and
- 165 new lots in Duluth Township’s W-2b zone (large lot development).

The above estimates do not consider the whether the new development is commercial or residential and does not take into consideration the redevelopment potential of lots that are currently developed.

The greatest potential amount of secondary development in the project area is in the city of Duluth. The high number of potential new buildings is due to the city’s current R-1-A and R-1-B zoning that allows much smaller lots (7,000 and 14,000 square feet respectively) if the zones have a sanitary sewer.

The North Shore Land Use Planning Process

Most of the information on secondary development, and the plan to mitigate for risks of secondary development, was generated through the North Shore Land Use Planning Process (a copy of the draft plan is Exhibit 8). The project has three phases. During the first phase of the project, a stakeholder Steering Committee was created to guide the planning process, and information about the planning area was collected and compiled into background studies. An approximate breakdown of Steering Committee by type of stakeholder is shown below.

Residents	13
Local Government Reps	11
Regional or State Agencies	8
Environmental Organizations	5
Businesses	4
Other Organizations	3

The breakdown is approximate with some Steering Committee members representing more than one type of stakeholder group. Each Steering Committee member was counted just once.

Over the next two phases, the consultant team conducted a public and stakeholder participation process to set land use and strategic priorities. In the second phase of the project, the consultants followed the direction of the Steering Committee to prioritize issues, created alternative land use plans, and allowed residents and other stakeholders to modify the preferred alternative to suit their vision for development and land use along the North Shore. During the third phase, the Steering Committee created and approved a draft land use

management plan with action priorities for local governments, based on comments from the communities and stakeholders.

Seven public meetings and six Steering Committee meetings have been conducted to this point in the planning process. Attendance at the public meetings has totaled approximately 280 people. The public participation process also included a public survey on land development priorities. Approximately 800 surveys were sent to resident households, businesses, and stakeholder organizations, with 240 responses.

The public process was designed to facilitate a clear vision of stakeholders in the various affected communities that can be brought to bear on the land use planning processes, zoning ordinance updates, and programmatic developments currently underway in these communities. Most of the affected communities have formally recognized the advisory role of the PAC in land use matters, and are working to incorporate the results of the North Shore Land Use Plan into their own planning and ordinance development efforts.

Mitigating the Impacts of Secondary Development

The proposed sewer system would likely result in additional development within the project area. The project is designed to accommodate a 20 percent increase in flow over the next 20 years to account for development and new hookups. Most of the new development is anticipated to be residential with some small commercial businesses.

A number of options are available for mitigating other secondary development impacts associated with the project, including increased non-point pollution from inappropriately managed storm water, loss of habitat, encroachment of development on sensitive areas and erodible shoreland, and increased traffic, and noise from more intensive use of the project area. A summary of the options for mitigating risk is shown below:

- Managing access to public infrastructure (roads, drinking water, utilities);
- Limiting the intensity and density of land development through voluntary actions by land owners and developers and through land use regulation (zoning, subdivision, and other land use ordinances);
- Increasing regulatory protections on selected natural areas;
- Eliminating development risk through the use of public acquisition of land or the use of conservation easements; and
- Establishing performance standards, technology requirements, or new infrastructure that mitigates specific risks, e.g., on-site storm-water management or construction of regional storm-water infrastructure.

North Shore Land Use Plan Recommendations

The Steering Committee for the North Shore Land Use Plan recommended a number of specific steps that can be taken by local communities to mitigate against the risks associated with secondary development enabled by the sewer line. A detailed description of the goals, policies, and recommended strategies is provided in Exhibit 8, the draft North Shore Land Use Plan. A summary of the recommended strategies is shown below:

Zoning and Land Use Regulation

- Identify specific development density goals for appropriate discrete areas within each community, and set appropriate zoning, subdivision, PUD, and other land use regulation.
- Adopt and use well-defined rules and standards for enforcement of land use regulation. Set clear, well-defined standards for granting conditional uses and variances.
- Identify and adopt as Comprehensive Plan elements or amendments those areas in the community that have the highest development potential.

- Create commercial zoning districts that direct commercial development, set intensity thresholds, and limit impacts. Exclude commercial uses in residential zones and set specific conditions for conditional uses.
- Create special protection zone districts to protect water intakes and aquifer recharge areas.
- Encourage intergovernmental review and comment on commercial development priorities along the North Shore corridor, including a design review committee for commercial development to maintain community character, and the NSMB (or Joint Powers Board) to review the consistency and interdependency of land uses along the North Shore of Lake Superior.

Manage Access to Public Infrastructure

- Set regulatory standards for access management, or create capacity limits for public infrastructure to guide or phase development, such as through adequate public facilities ordinances.
- Adopt sanitary district ordinance language regulating the extension of laterals from the sewer trunk or other laterals to be consistent with density goals and mitigation of impacts from secondary development.
- Create an intergovernmental forum for discussion of investment and management priorities for regional public infrastructure.

Permanent Protection of Land from Secondary Development

- Create and promote tax incentives to encourage Transfer of Development Rights (TDR) programs and voluntary use of conservation easements to ensure long-term consistency with density goals.
- Use an intergovernmental effort to manage public areas and rights-of-way (roads, rail, and public lands).
- Prioritize sensitive areas for public management or acquisition.

Protect Natural Areas

- Conduct or update a Resources Inventory to identify, define, and prioritize viewsheds, environmentally sensitive areas, places with community or cultural identity, and economic assets.
- Create management and administration standards for Congdon Trust lands (owned by the city of Duluth), public rights-of-way, and other public lands in the Lake Superior viewshed.
- Create standards and complementary regulation to protect or enhance habitat and green infrastructure.
- Continue to fund existing and new education efforts on preserving water quality.
- Identify environmentally sensitive areas and limit high-intensity land uses.

Performance or Technology Standards and Infrastructure

- Adopt storm-water or hydrology ordinances that meet NPDES Phase II standards and address stormwater, erosion, sedimentation, wetlands and vegetative management. Consider MPCA ordinance language or other model ordinances.
- Adopt performance or development standards for lighting, noise, landscaping, and storm water.
- Develop management and performance standards for recreational events along the North Shore.
- Create educational efforts for developers, construction professionals, and landowners on design and management of infrastructure.

Ongoing Implementation Efforts

Land Use Plan -- The above recommended implementation strategies are being incorporated into the planning and regulation efforts in the project area. Three of the five communities in the project area are currently revising their Comprehensive Land Use Plans and land use ordinances. Both the city of Duluth and Duluth Township have issued development moratoriums and engaged consultants to update comprehensive plans. Both communities have indicated their recognition, in ordinance or resolution, that existing policies and regulation must be modified to address the development pressures that will accompany the sewer extension. Lake County is similarly finishing a Comprehensive Plan update and preparing to move into an implementation phase.

The intent of the Steering Committee for the North Shore Land Use Plan process is to tap into the local communities' efforts to ensure appropriate mitigation of the impact of secondary development from the sewer project. Based on recommendations from the local communities, the consultant will conduct implementation workshops with communities prepared to implement the Land Use Plan policies. The program and ordinance design workshop would assist the community in selecting preferred implementation tools to realize the community's vision of development. Tools that are being presented include the following:

- Local educational or outreach efforts for promoting the plan's goals;
- Incentives to ensure appropriate kinds of development and mitigation of development impacts, including tax incentives, development bonuses, and transfer or purchase of development rights, and programmatic efforts supported by additional grants;
- Ordinance and land use regulation changes, including zoning modifications, subdivision ordinances, design standards, and storm-water ordinances;
- Natural Resource or Environmental Overlay districts; and
- Public acquisition of property, development rights, or easements.

City of Duluth – The implementation priority for the city of Duluth is to address the potential for dramatically increased density in the planning corridor. The area is now zoned for 7,000-14,000 square foot lots after the sewer line is complete. Possible tools include rezoning, use of conservation or environmental overlay districts, acquisition of development rights, and use of performance standards for storm water or other risks associated with secondary development. The District Nine planning effort (which includes that portion of the planning corridor in the city) is preparing to consider the North Shore Land Use Plan for inclusion into the District Nine plan.

Duluth Township – Duluth Township's implementation priorities include protection of existing density in the Greenwood Beach area, preserving the rural and exurban development patterns outside Greenwood Beach, and protecting environmentally sensitive areas and erodible shorelines. The Township is currently considering incorporating the North Shore Land Use Plan recommendations into the Township's new Comprehensive Plan.

Lake County – Lake County's implementation priorities include incorporating TDR concepts into the subdivision and platting process, consistent enforcement of lot size, setback, and other zoning provisions, and tools directing development to areas with adequate infrastructure. Lake County has adopted many policies in its updated Comprehensive Plan that are similar to the North Shore Land Use Plan and is preparing to move into implementation through the North Shore Land Use Plan implementation workshops.

Lakewood Township – A fourth community, Lakewood Township, does not need to modify existing land use goals to comply with the North Shore Land Use Plan. The secondary development potential is relatively low, unless the community makes substantial changes to its zoning ordinance and Comprehensive Plan to allow for significant redevelopment. The implementation priority for Lakewood Township is to maintain the current level of land use regulation, to ensure consistent application of variance and conditional use permitting, and to work with surrounding local governments to ensure a consistent development pattern across jurisdictions.

30. Other Potential Environmental Impacts. If the project may cause any adverse environmental impacts not addressed by items 1 to 28, identify and discuss them here, along with any proposed mitigation.

None identified.

31. Summary of issues. Do not complete this section if the EAW is being done for EIS scoping; instead, address relevant issues in the draft Scoping Decision document, which must accompany the EAW. List any impacts and issues identified above that may require further investigation before the project is begun. Discuss any alternatives or mitigative measures that have been or may be considered for these impacts and issues, including those that have been or may be ordered as permit conditions.

Wastewater Collection System

Final alignment and design of the sewer systems must be completed and reviewed by the MPCA and other permitting agencies after completion of the environmental review and prior to the issuance of permits.

Stream Crossings

Wastewater pipeline crossings of streams along the proposed alignment that involve work in the streambed will be subject to DNR utility licensing.

Erosion and Sedimentation

Best management practices for erosion and sedimentation control must be incorporated into the plans for the interceptor sewer construction. This will promote compliance by the contractor since requirements can be clearly defined and allotted for in the bid. The sedimentation and erosion control plan will be required for the general NPDES Storm Water Permit issued by the MPCA.

Secondary Growth

The lands within the boundaries of the DNSSD are anticipated to develop in accordance with the applicable comprehensive plans and zoning ordinances of jurisdictions within the sewer district. Future development will be subject to review and approval by local units of government to ensure conformance with the local land use and zoning ordinances and regulations. As noted in Item 6, the DNSSD territory is bounded by U.S. Highway 61 to the north and by the Lake Superior shoreline to the south.

REFERENCES

Duluth/North Shore Sanitary District Ordinance No. 2, June 13, 2001.

North Shore Management Plan. December 1988. North Shore Management Board.

North Shore Wastewater Treatment Survey. 1994. Western Lake Superior Sanitary District.

St. Louis County ISTS Ordinance 55. August 1, 2000.

St. Louis County Water Plan. 1992.

RGU CERTIFICATION.

I hereby certify that:

The information contained in this document is accurate and complete to the best of my knowledge.

The EAW describes the complete project; there are no other projects, stages or components other than those described in this document, which are related to the project as connected actions or phased actions, as defined at Minn. R. 4410.0200, subps. 9b and 60, respectively.

Copies of this EAW are being sent to the entire EQB distribution list.

Name and Title of Signer:

**Beth G. Lockwood, District Planning Supervisor
Operations and Planning Section; North, South, and Metro Districts**

Date:

The format of the Environmental Assessment Worksheet was prepared by the staff of the Environmental Quality Board at Minnesota Planning. For additional information, worksheets or for *EAW Guidelines*, contact: Environmental Quality Board, 658 Cedar St., St. Paul, MN 55155, 651-296-8253, or at their Web site www.mnplan.state.mn.us.