

## Appendix B – Sanitary Sewer System Analysis

### **Background**

The following infrastructure (primarily sanitary sewer based) studies were reviewed and incorporated into the sanitary sewer analysis for the 2008 Comprehensive Plan. The purpose of this analysis is to coordinate existing sanitary sewer master plans, identify areas in need of future master planning and develop a tool to assist with future master planning updates and capacity studies.

<b>Study</b>	<b>Chief Author</b>	<b>Date Completed</b>
Northwest Area Water and Sanitary Sewer Masterplan	Zenk Read Trygstad & Associates, Inc.	January 1998
Hoeger Lane Area Sanitary Sewer Stadheim Third Subdivision (Memorandum to Paul Sparks)	City Engineer, David Olson	March 2000
Sanitary Sewer Investigation ~ Sections 7-102-21 and 12-102-22	Jones, Haugh & Smith Inc.	March 2002
Project No 0113, Report of the City Engineer—CSAH 46 and CSAH 38 Sanitary Sewer and Water Extension	City Engineer and Director of Public Works David Olson with assistance from Jones, Haugh & Smith Inc.	March 2003
Premium Pork, LLC Site Development Considerations (Memorandum to Paul Sparks)	City Engineer, Steve Jahnke	April 2003
Revised Preliminary Engineering Report- Wastewater Treatment and Collection System, Manchester, Freeborn County, MN	Ayers Associates for USDA Rural Development	April 2007
South Industrial Park Future Lift Station (Memorandum to Victoria Smith)	Public Works Director Steve Jahnke with assistance from Zenk Read Trygstad & Associates Inc.	September 2007
2007 Analysis Albert Lea East Sewer Study	Jones, Haugh & Smith Inc	December 2007

## **System Constraints**

Utilizing the above mentioned studies, a general evaluation of the current infrastructure system was completed. The evaluation considered the collection system and the treatment plant capacity. The following findings are noted:

### **Collection system (Exhibit A)**

1. The existing sanitary sewer system has main lines ranging in size from 6 inches to 36 inches in diameter.
  - a. A 10” main located along Stevens Street between Wayside Road and Prospect Avenue poses a constraint for future development in the Interchange District, located at I-35 and East Main Street (CSAH 46).
  - b. A 15” main located in the ROW of East Main Street extending from TH 65 eastward terminating just past I-35 is undersized for future development that may occur east of I-35. This main connects to the previous mentioned 10” main.
2. The City of Albert Lea currently maintains 20 lift stations. These lift stations are limited in their capacity when considering future growth potential. However future improvements can expand the capacity of a lift station depending upon the sites ability to accommodate the expansion and the cost effectiveness of such an expansion. Individual master plans mentioned above factored in future capacity for growth areas.
  - a. A central lift station located at the former WWTP site is a critical component of the Albert Lea wastewater system. This lift station collects and pumps approximately 99% of wastewater from Albert Lea to the WWTP.

### **Treatment capacity**

1. The current WWTP has a design capacity of 10.45 million gallons per day (MGD) and a peak month (wet weather) design capacity of 12.5 MGD.
2. In 2007, average daily useage was 4.1 MGD leaving approximately 6.3 MGD of future growth capacity.
3. The capacity is ample to serve all development needs for the planning horizon of the Comprehensive Plan (30 years). Should a large water user that brings significant job growth and economic opportunity to the community and region require future expansion considerations, ample space exists near the WWTP site; however, the City does not currently own or have rights to these lands.

### **Future Projected Capacity Needs**

1. The rural community of Manchester has been evaluated by the USDA Rural Development Department and has identified Albert Lea as a possible source to serve the City’s waste water needs. The 30 year growth projections would require a potential 0.014 MGD<sup>1</sup> for capacity from Albert Lea.

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<sup>1</sup> Revised Preliminary Engineering Report: Wastewater Treatment and Collection System-Manchester, Freeborn County, MN Prepared for USDA Rural Development by Ayers and Associates. April 2007

2. Through the comprehensive planning process, the City has defined an urban growth boundary which is intended to define a “planning” edge to the community whereby extension of urban infrastructure should be considered in an orderly and logical way. Land use patterns have been defined within these boundaries. Developable land areas have been defined. Sewer districts were established using past master planning efforts and a general understanding of the topographic and physical constraints of the City. Exhibit B provides a comprehensive spreadsheet tool for evaluating future development capacities and wastewater needs.
3. Full build out based on the future land use plan results in approximately 9.5 MGD in additional treatment capacity. This capacity is not anticipated to be absorbed within the typical 30 year lifetime of a Comprehensive Plan. As the City updates its Comprehensive Plan, future development analysis should continue to monitor capacity needs.

### **Growth Priorities**

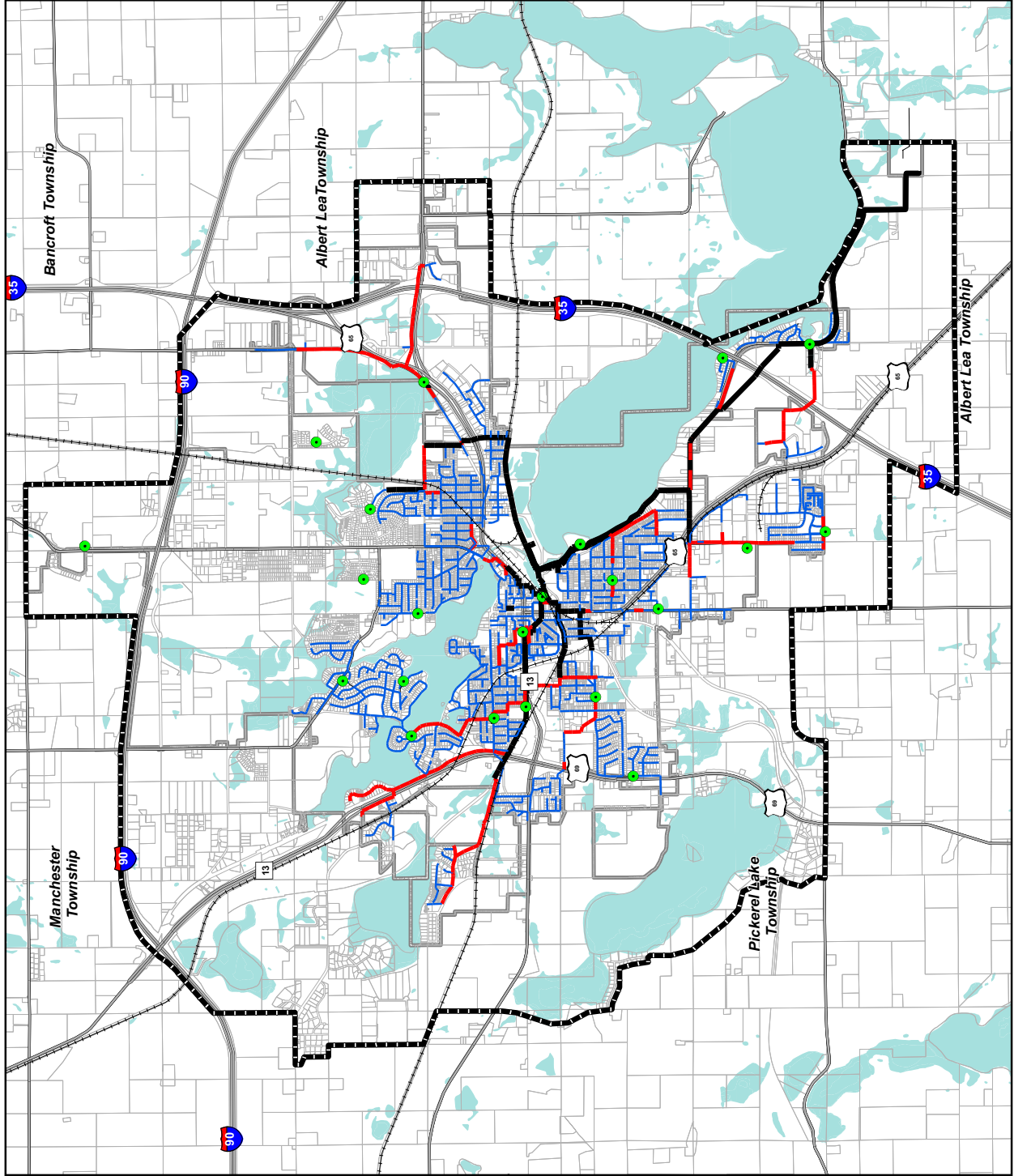
Through the comprehensive planning process, key priorities for the City’s infrastructure system emerged. These priorities can be summarized as follows:

1. Sanitary sewer infrastructure is aging and is a vital part of our economic development efforts and quality of life in Albert Lea. **A priority should be to complete a comprehensive inventory of the existing system**, identifying areas in need of replacement and upgrades and providing a funding mechanism to strengthen our existing sanitary sewer system.
2. The cost of extending our sanitary sewer system to new growth areas should be carefully considered and weighed against the need to fund improvements to downstream systems and improvements in our downtown area. **Sanitary Sewer infrastructure costs should be prioritized first to existing system improvements and out downtown.**
3. Development proposals on the edge of our community will require investment in our sanitary sewer infrastructure. Investment in trunk sanitary sewer infrastructure to serve major economic development that brings new jobs to the community and added tax base should be a function of the private sector. However, recognizing the competitive nature of economic development, **Albert Lea should prioritize sanitary sewer infrastructure investments for projects that provide a high return on job development and tax base.** Defining what qualifies as a “high return” is not within the scope of this Comprehensive Plan, but should be an outcome of Action Step #12: Develop a Means of Measuring Success.

### **System Master Plan**

Action Step #13 suggests the development of a community wide Infrastructure System Master Plan. Such a master plan would include completing the full inventory of existing systems infrastructure and updating the above mentioned master plans.

Appendix B - Exhibit A  
 Albert Lea Comprehensive Plan  
 Existing Sanitary Sewer System (2007)



**Legend**

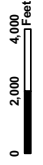
- Growth Boundary
- Railroad
- Lift Stations

**Existing Sanitary Sewer System**

- 1 - 4"
- 6 - 10"
- 12 - 16"
- 18 - 36"
- City Limits (2007)

The data in this map was provided by City Engineering Department in 2007 as a work in progress. A complete map will be prepared when the data set is completed.

DRAFT October 2008



**Exhibit B: Full Build Out Sanitary Sewer Flow Projections  
October 2008**

Land Use	Acres		Residential Units				Commercial Units (in sq ft)			
	Net Developable Area	Total Units	SF Detached	MF Attached	MF Stacked	Retail/Services	Office	Industry		
Residential	5,025	18,418	8,563	7,048	2,806	64,333	440,160	-		
Downtown	82	510	-	81	428	399,766	393,904	-		
Neighborhood Node	0	-	-	-	-	-	-	-		
Interchange	2,907	1,617	659	342	616	2,564,063	5,601,820	26,976,800		
<b>Totals</b>	8,014	20,545	9,223	7,472	3,850	3,028,163	6,435,884	26,976,800		

Total Flow Projections	Million Gal per Day	SF Detached (gpd)			MF Attached (gpd)			MF Stacked (gpd)			Retail/Services (gpd)			Office (gpd)			Industry (gpd)		
		Totals GPD	SF Detached (gpd)	MF Attached (gpd)	MF Stacked (gpd)	Totals GPD	SF Detached (gpd)	MF Attached (gpd)	MF Stacked (gpd)	Totals GPD	SF Detached (gpd)	MF Attached (gpd)	MF Stacked (gpd)	Totals GPD	SF Detached (gpd)	MF Attached (gpd)	MF Stacked (gpd)	Totals GPD	SF Detached (gpd)
Sanitary Sewer Flows	9.55	9,546,932	1,992,075	1,613,945	462,046	394,423	621,224	4,463,219											
Water Demand	12.56	12,562,197	2,490,094	2,017,431	616,061	473,307	716,797	6,248,506											



Sewer District # 1

Land Use	Acres		Residential Units				Commercial Units (in sq ft)			
	Net Developable Area	Total Units	SF Detached	MF Attached	MF Stacked	Retail/Services	Office	Industry		
Residential	119	394	322	72	-	-	-	NA		
Downtown	-	-	NA	-	-	-	-	-		
Neighborhood Node	-	-	NA	-	-	-	-	NA		
Interchange	-	-	-	-	-	-	-	-		
<b>Totals</b>	119	394	322	72	-	-	-	-		

Sewer District # 1	Million Gal per Day	SF Detached (gpd)			MF Attached (gpd)			MF Stacked (gpd)			Retail/Services (gpd)			Office (gpd)			Industry (gpd)		
		Totals GPD	SF Detached (gpd)	MF Attached (gpd)	MF Stacked (gpd)	Totals GPD	SF Detached (gpd)	MF Attached (gpd)	MF Stacked (gpd)	Totals GPD	SF Detached (gpd)	MF Attached (gpd)	MF Stacked (gpd)	Totals GPD	SF Detached (gpd)	MF Attached (gpd)	MF Stacked (gpd)	Totals GPD	SF Detached (gpd)
Sanitary Sewer Flows	0.09	85,011	69,554	15,457	-	-	-	-											
Water Demand	0.11	106,264	86,943	19,321	-	-	-	-											

Sewer District # 2

Land Use	Acres		Residential Units				Commercial Units (in sq ft)			
	Net Developable Area	Total Units	SF Detached	MF Attached	MF Stacked	Retail/Services	Office	Industry		
Residential	26	85	70	15	-	-	-	NA		
Downtown	-	-	NA	-	-	-	-	-		
Neighborhood Node	-	-	NA	-	-	-	-	NA		
Interchange	222	133	-	-	133	386,709	604,233	1,450,160		
<b>Totals</b>	248	218	70	15	133	386,709	604,233	1,450,160		

Sewer District # 2	Million Gal per Day	SF Detached (gpd)			MF Attached (gpd)			MF Stacked (gpd)			Retail/Services (gpd)			Office (gpd)			Industry (gpd)		
		Totals GPD	SF Detached (gpd)	MF Attached (gpd)	MF Stacked (gpd)	Totals GPD	SF Detached (gpd)	MF Attached (gpd)	MF Stacked (gpd)	Totals GPD	SF Detached (gpd)	MF Attached (gpd)	MF Stacked (gpd)	Totals GPD	SF Detached (gpd)	MF Attached (gpd)	MF Stacked (gpd)	Totals GPD	SF Detached (gpd)
Sanitary Sewer Flows	0.452	451,620	15,048	3,344	15,980	86,557	277,426												
Water Demand	0.596	596,485	18,810	4,180	21,306	63,919	388,396												

**Exhibit B: Full Build Out Sanitary Sewer Flow Projections  
October 2008**

Sewer District # 3

Land Use	Acres		Residential Units				Commercial Units (in sq ft)			
	0	Net Developable Area	Total Units	SF Detached	MF Attached	MF Stacked	Retail/Services	Office	Industry	
Residential		396	1,723	772	713	238	-	-	NA	
Downtown		-	-	NA	-	-	-	-	-	
Neighborhood Node		-	-	NA	-	-	-	-	NA	
Interchange		-	-	-	-	-	-	-	-	
<b>Totals</b>		396	1,723	772	713	238	-	-	-	

Sewer District # 3	Sanitary Sewer Flows	Water Demand	Million Gal per Day		Residential Units				Commercial Units (in sq ft)			
			0.349	0.439	Totals GPD	SF Detached (gpd)	MF Attached (gpd)	MF Stacked (gpd)	Retail/Services (gpd)	Office (gpd)	Industry (gpd)	
			349,286	438,984	166,802	153,971	28,513	-	-	-	-	
					208,502	192,464	38,018	-	-	-	-	

Sewer District # 4

Land Use	Acres		Residential Units				Commercial Units (in sq ft)			
	0	Net Developable Area	Total Units	SF Detached	MF Attached	MF Stacked	Retail/Services	Office	Industry	
Residential		536	1,608	804	804	-	-	-	NA	
Downtown		-	-	NA	-	-	-	-	-	
Neighborhood Node		-	-	NA	-	-	-	-	NA	
Interchange		186	-	-	-	-	-	1,013,461	1,418,845	
<b>Totals</b>		722	1,608	804	804	-	-	1,013,461	1,418,845	

Sewer District # 4	Sanitary Sewer Flows	Water Demand	Million Gal per Day		Residential Units				Commercial Units (in sq ft)			
			0.580	0.760	Totals GPD	SF Detached (gpd)	MF Attached (gpd)	MF Stacked (gpd)	Retail/Services (gpd)	Office (gpd)	Industry (gpd)	
			580,045	759,955	173,693	173,693	-	-	232,659			
					217,117	217,117	-	-	325,722			

Sewer District # 5

Land Use	Acres		Residential Units				Commercial Units (in sq ft)			
	0	Net Developable Area	Total Units	SF Detached	MF Attached	MF Stacked	Retail/Services	Office	Industry	
Residential		533	2,080	1,120	960	-	-	-	NA	
Downtown		-	-	NA	-	-	-	-	-	
Neighborhood Node		-	-	NA	-	-	-	-	NA	
Interchange		-	-	-	-	-	-	-	-	
<b>Totals</b>		533	2,080	1,120	960	-	-	-	-	

Sewer District # 5	Sanitary Sewer Flows	Water Demand	Million Gal per Day		Residential Units				Commercial Units (in sq ft)			
			0.449	0.562	Totals GPD	SF Detached (gpd)	MF Attached (gpd)	MF Stacked (gpd)	Retail/Services (gpd)	Office (gpd)	Industry (gpd)	
			449,313	561,641	241,938	207,375	-	-	-			
					302,422	259,219	-	-	-			

**Exhibit B: Full Build Out Sanitary Sewer Flow Projections  
October 2008**

Sewer District # 6

Land Use	Acres		Residential Units				Commercial Units (in sq ft)			
	0	Net Developable Area	Total Units	SF Detached	MF Attached	MF Stacked	Retail/Services	Office	Industry	
Residential		97	49	49	-	-	-	-	NA	
Downtown		-	-	NA	-	-	-	-	-	
Neighborhood Node		-	-	NA	-	-	-	-	NA	
Interchange		-	-	-	-	-	-	-	-	
<b>Totals</b>		97	49	49	-	-	-	-	-	

Sewer District # 6	Million Gal per Day		Residential Units				Commercial Units (in sq ft)			
	Totals	Sanitary Sewer Flows	Totals GPD	SF Detached (gpd)	MF Attached (gpd)	MF Stacked (gpd)	Retail/Services (gpd)	Office (gpd)	Industry (gpd)	
		0.011	10,518	10,518	-	-	-	-	-	
		0.013	13,148	13,148	-	-	-	-	-	

Sewer District # 7

Land Use	Acres		Residential Units				Commercial Units (in sq ft)			
	0	Net Developable Area	Total Units	SF Detached	MF Attached	MF Stacked	Retail/Services	Office	Industry	
Residential		600	2,251	1,351	900	-	-	-	NA	
Downtown		-	-	NA	-	-	-	-	-	
Neighborhood Node		-	-	NA	-	-	-	-	NA	
Interchange		-	-	-	-	-	-	-	-	
<b>Totals</b>		600	2,251	1,351	900	-	-	-	-	

Sewer District # 7	Million Gal per Day		Residential Units				Commercial Units (in sq ft)			
	Totals	Sanitary Sewer Flows	Totals GPD	SF Detached (gpd)	MF Attached (gpd)	MF Stacked (gpd)	Retail/Services (gpd)	Office (gpd)	Industry (gpd)	
		0.486	486,181	291,709	194,472	-	-	-	-	
		0.608	607,726	364,636	243,091	-	-	-	-	

Sewer District # 8

Land Use	Acres		Residential Units				Commercial Units (in sq ft)			
	0	Net Developable Area	Total Units	SF Detached	MF Attached	MF Stacked	Retail/Services	Office	Industry	
Residential		632	2,210	884	947	379	-	-	NA	
Downtown		-	-	NA	-	-	-	-	-	
Neighborhood Node		-	-	NA	-	-	-	-	NA	
Interchange		32	-	-	-	-	-	52,758	418,548	
<b>Totals</b>		664	2,210	884	947	379	-	52,758	418,548	

Sewer District # 8	Million Gal per Day		Residential Units				Commercial Units (in sq ft)			
	Totals	Sanitary Sewer Flows	Totals GPD	SF Detached (gpd)	MF Attached (gpd)	MF Stacked (gpd)	Retail/Services (gpd)	Office (gpd)	Industry (gpd)	
		0.510	509,717	190,985	204,627	45,473	-	-	68,632	
		0.651	651,230	238,731	255,783	60,630	-	-	96,085	

**Exhibit B: Full Build Out Sanitary Sewer Flow Projections  
October 2008**

Sewer District # 9

Land Use	Acres	Residential Units					Commercial Units (in sq ft)			
		Total Units	SF Detached	MF Attached	MF Stacked	Retail/Services	Office	Industry		
0 Net Developable Area	-	-	-	-	-	-	-	-	-	-
Residential	-	-	-	-	-	-	-	-	-	NA
Downtown	-	-	NA	-	-	-	-	-	-	-
Neighborhood Node	-	-	NA	-	-	-	-	-	-	NA
Interchange	506	-	-	-	-	220,433	1,322,597	5,786,360		
<b>Totals</b>	506	-	-	-	-	220,433	1,322,597	5,786,360		

Sewer District # 9	Million Gal per Day	Residential Units					Commercial Units (in sq ft)			
		Totals GPD	SF Detached (gpd)	MF Attached (gpd)	MF Stacked (gpd)	Retail/Services (gpd)	Office (gpd)	Industry (gpd)		
Sanitary Sewer Flows	1.029	1,028,534	-	-	-	30,363	49,339	948,832		
Water Demand	1.422	1,421,731	-	-	-	36,435	56,930	1,328,365		

Sewer District # 10

Land Use	Acres	Residential Units					Commercial Units (in sq ft)			
		Total Units	SF Detached	MF Attached	MF Stacked	Retail/Services	Office	Industry		
0 Net Developable Area	-	-	-	-	-	-	-	-	-	-
Residential	152	533	213	229	91	-	-	-	-	NA
Downtown	-	-	NA	-	-	-	-	-	-	-
Neighborhood Node	-	-	NA	-	-	-	-	-	-	NA
Interchange	1,099	659	659	-	-	957,262	1,196,577	10,051,246		
<b>Totals</b>	1,251	1,193	873	229	91	957,262	1,196,577	10,051,246		

Sewer District # 10	Million Gal per Day	Residential Units					Commercial Units (in sq ft)			
		Totals GPD	SF Detached (gpd)	MF Attached (gpd)	MF Stacked (gpd)	Retail/Services (gpd)	Office (gpd)	Industry (gpd)		
Sanitary Sewer Flows	2.243	2,243,147	188,494	49,384	10,974	131,854	214,263	1,648,178		
Water Demand	3.025	3,024,880	235,618	61,730	14,632	158,225	247,227	2,307,449		

Sewer District # 11

Land Use	Acres	Residential Units					Commercial Units (in sq ft)			
		Total Units	SF Detached	MF Attached	MF Stacked	Retail/Services	Office	Industry		
0 Net Developable Area	-	-	-	-	-	-	-	-	-	-
Residential	71	551	18	107	426	-	-	-	-	NA
Downtown	-	-	NA	-	-	-	-	-	-	-
Neighborhood Node	-	-	NA	-	-	-	-	-	-	NA
Interchange	5	-	-	-	-	-	-	-	-	-
<b>Totals</b>	76	551	18	107	426	-	-	-	-	-

Sewer District # 11	Million Gal per Day	Residential Units					Commercial Units (in sq ft)			
		Totals GPD	SF Detached (gpd)	MF Attached (gpd)	MF Stacked (gpd)	Retail/Services (gpd)	Office (gpd)	Industry (gpd)		
Sanitary Sewer Flows	0.078	78,008	3,836	23,019	51,153	-	-	-		
Water Demand	0.102	101,773	4,796	28,774	68,204	-	-	-		



**Exhibit B: Full Build Out Sanitary Sewer Flow Projections  
October 2008**

Sewer District # 12

Land Use	Acres		Residential Units				Commercial Units (in sq ft)			
	0	Net Developable Area	Total Units	SF Detached	MF Attached	MF Stacked	Retail/Services	Office	Industry	
Residential		370	1,387	832	555	-	-	-	NA	
Downtown		-	-	NA	-	-	-	-	-	
Neighborhood Node		-	-	NA	-	-	-	-	NA	
Interchange		20	-	-	-	-	-	-	298,823	
<b>Totals</b>		390	1,387	832	555	-	-	-	298,823	

Sewer District # 12	Sanitary Sewer Flows	Water Demand	Million Gal per Day	Residential Units				Commercial Units (in sq ft)			
				Totals GPD	SF Detached (gpd)	MF Attached (gpd)	MF Stacked (gpd)	Retail/Services (gpd)	Office (gpd)	Industry (gpd)	
			0.349	348,645	179,787	119,858	-	-	-	49,000	
			0.443	443,156	224,734	149,822	-	-	-	68,600	

Sewer District # 15

Land Use	Acres		Residential Units				Commercial Units (in sq ft)			
	0	Net Developable Area	Total Units	SF Detached	MF Attached	MF Stacked	Retail/Services	Office	Industry	
Residential		389	1,090	623	467	-	-	-	NA	
Downtown		-	-	NA	-	-	-	-	-	
Neighborhood Node		-	-	NA	-	-	-	-	NA	
Interchange		-	-	-	-	-	-	-	-	
<b>Totals</b>		389	1,090	623	467	-	-	-	-	

Sewer District # 15	Sanitary Sewer Flows	Water Demand	Million Gal per Day	Residential Units				Commercial Units (in sq ft)			
				Totals GPD	SF Detached (gpd)	MF Attached (gpd)	MF Stacked (gpd)	Retail/Services (gpd)	Office (gpd)	Industry (gpd)	
			0.235	235,398	134,513	100,885	-	-	-	-	
			0.294	294,247	168,141	126,106	-	-	-	-	

Sewer District # 16

Land Use	Acres		Residential Units				Commercial Units (in sq ft)			
	0	Net Developable Area	Total Units	SF Detached	MF Attached	MF Stacked	Retail/Services	Office	Industry	
Residential		14	50	20	21	9	-	-	NA	
Downtown		-	-	NA	-	-	-	-	-	
Neighborhood Node		-	-	NA	-	-	-	-	NA	
Interchange		-	-	-	-	-	-	-	-	
<b>Totals</b>		14	50	20	21	9	-	-	-	

Sewer District # 16	Sanitary Sewer Flows	Water Demand	Million Gal per Day	Residential Units				Commercial Units (in sq ft)			
				Totals GPD	SF Detached (gpd)	MF Attached (gpd)	MF Stacked (gpd)	Retail/Services (gpd)	Office (gpd)	Industry (gpd)	
			0.010	9,910	4,291	4,597	1,022	-	-	-	
			0.012	12,473	5,364	5,747	1,362	-	-	-	

**Exhibit B: Full Build Out Sanitary Sewer Flow Projections  
October 2008**

Sewer District # 17

Land Use	Acres		Residential Units				Commercial Units (in sq ft)			
	0	Net Developable Area	Total Units	SF Detached	MF Attached	MF Stacked	Retail/Services	Office	Industry	
Residential		57	325	85	103	137	-	-	NA	
Downtown		-	-	NA	-	-	-	-	-	
Neighborhood Node		-	-	NA	-	-	-	-	NA	
Interchange		117	140	-	-	140	355,669	317,562	533,504	
<b>Totals</b>		174	465	85	103	277	355,669	317,562	533,504	

Sewer District # 17	Million Gal per Day		SF Detached (gpd)				MF Attached (gpd)				Retail/Services (gpd)				Office (gpd)		Industry (gpd)	
	0.290	0.368	289,901	18,460	22,153	33,206	48,990	79,609	87,483									
Sanitary Sewer Flows			368,162	23,076	27,691	44,275	58,788	91,857	122,476									
Water Demand																		

Sewer District # 18

Land Use	Acres		Residential Units				Commercial Units (in sq ft)			
	0	Net Developable Area	Total Units	SF Detached	MF Attached	MF Stacked	Retail/Services	Office	Industry	
Residential		8	28	19	9	-	-	-	NA	
Downtown		-	-	NA	-	-	-	-	-	
Neighborhood Node		-	-	NA	-	-	-	-	NA	
Interchange		-	-	-	-	-	-	-	-	
<b>Totals</b>		8	28	19	9	-	-	-	-	

Sewer District # 18	Million Gal per Day		SF Detached (gpd)				MF Attached (gpd)				Retail/Services (gpd)				Office (gpd)		Industry (gpd)	
	0.006	0.008	6,155	4,104	2,052	-	-	-	-									
Sanitary Sewer Flows			7,694	5,129	2,565	-	-	-	-									
Water Demand																		

Sewer District # 19

Land Use	Acres		Residential Units				Commercial Units (in sq ft)			
	0	Net Developable Area	Total Units	SF Detached	MF Attached	MF Stacked	Retail/Services	Office	Industry	
Residential		7	26	19	7	-	-	-	NA	
Downtown		-	-	NA	-	-	-	-	-	
Neighborhood Node		-	-	NA	-	-	-	-	NA	
Interchange		-	-	-	-	-	-	-	-	
<b>Totals</b>		7	26	19	7	-	-	-	-	

Sewer District # 19	Million Gal per Day		SF Detached (gpd)				MF Attached (gpd)				Retail/Services (gpd)				Office (gpd)		Industry (gpd)	
	0.006	0.007	5,567	4,114	1,452	-	-	-	-									
Sanitary Sewer Flows			6,958	5,143	1,815	-	-	-	-									
Water Demand																		

**Exhibit B: Full Build Out Sanitary Sewer Flow Projections  
October 2008**

Sewer District # 20

Land Use	Acres		Residential Units				Commercial Units (in sq ft)			
	0	Net Developable Area	Total Units	SF Detached	MF Attached	MF Stacked	Retail/Services	Office	Industry	
Residential		6	15	4	11	-	16,532	16,532	NA	
Downtown		-	-	NA	-	-	-	-	-	
Neighborhood Node		-	-	NA	-	-	-	-	NA	
Interchange		-	-	-	-	-	-	-	-	
<b>Totals</b>		6	15	4	11	-	16,532	16,532	-	

Sewer District # 20	Million Gal per Day	Residential Units				Commercial Units (in sq ft)			
		Totals GPD	SF Detached (gpd)	MF Attached (gpd)	MF Stacked (gpd)	Retail/Services (gpd)	Office (gpd)	Industry (gpd)	
Sanitary Sewer Flows	0.009	8,689	787	2,361	-	2,581	2,960	-	
Water Demand	0.010	10,448	984	2,951	-	3,097	3,416	-	

Sewer District # 22

Land Use	Acres		Residential Units				Commercial Units (in sq ft)			
	0	Net Developable Area	Total Units	SF Detached	MF Attached	MF Stacked	Retail/Services	Office	Industry	
Residential		21	174	16	32	126	-	-	NA	
Downtown		-	-	NA	-	-	-	-	-	
Neighborhood Node		0	-	NA	-	-	-	-	NA	
Interchange		-	-	-	-	-	-	-	-	
<b>Totals</b>		21	174	16	32	126	-	-	-	

Sewer District # 22	Million Gal per Day	Residential Units				Commercial Units (in sq ft)			
		Totals GPD	SF Detached (gpd)	MF Attached (gpd)	MF Stacked (gpd)	Retail/Services (gpd)	Office (gpd)	Industry (gpd)	
Sanitary Sewer Flows	0.025	25,410	3,413	6,827	15,170	-	-	-	
Water Demand	0.033	33,027	4,267	8,533	20,227	-	-	-	

Sewer District # 23

Land Use	Acres		Residential Units				Commercial Units (in sq ft)			
	0	Net Developable Area	Total Units	SF Detached	MF Attached	MF Stacked	Retail/Services	Office	Industry	
Residential		15	15	15	-	-	-	-	NA	
Downtown		-	-	NA	-	-	-	-	-	
Neighborhood Node		-	-	NA	-	-	-	-	NA	
Interchange		-	-	-	-	-	-	-	-	
<b>Totals</b>		15	15	15	-	-	-	-	-	

Sewer District # 23	Million Gal per Day	Residential Units				Commercial Units (in sq ft)			
		Totals GPD	SF Detached (gpd)	MF Attached (gpd)	MF Stacked (gpd)	Retail/Services (gpd)	Office (gpd)	Industry (gpd)	
Sanitary Sewer Flows	0.003	3,184	3,184	-	-	-	-	-	
Water Demand	0.004	3,980	3,980	-	-	-	-	-	

**Exhibit B: Full Build Out Sanitary Sewer Flow Projections  
October 2008**

Sewer District # 24

Land Use	Acres		Residential Units				Commercial Units (in sq ft)			
	Net Developable Area	Total Units	SF Detached	MF Attached	MF Stacked	Retail/Services	Office	Industry		
Residential	690	2,899	828	828	1,242	-	375,827	NA		
Downtown	51	435	NA	77	358	390,230	250,862	-		
Neighborhood Node	-	-	NA	-	-	-	-	NA		
Interchange	149	-	-	-	-	389,360	162,233	1,362,760		
<b>Totals</b>	890	3,334	828	905	1,601	779,590	788,922	1,362,760		

Sewer District # 24	Million Gal per Day	Residential Units				Commercial Units (in sq ft)			
		Totals GPD	SF Detached (gpd)	MF Attached (gpd)	MF Stacked (gpd)	Retail/Services (gpd)	Office (gpd)	Industry (gpd)	
Sanitary Sewer Flows	0.996	996,126	178,906	195,492	192,089	84,090	122,088	223,462	
Water Demand	1.279	1,278,740	223,632	244,365	256,118	100,908	140,871	312,847	

Sewer District # 27

Land Use	Acres		Residential Units				Commercial Units (in sq ft)			
	Net Developable Area	Total Units	SF Detached	MF Attached	MF Stacked	Retail/Services	Office	Industry		
Residential	88	421	132	132	158	47,801	47,801	NA		
Downtown	22	-	NA	-	-	-	-	-		
Neighborhood Node	-	-	NA	-	-	-	-	NA		
Interchange	1	-	-	-	-	5,991	-	-		
<b>Totals</b>	110	421	132	132	158	53,792	47,801	-		

Sewer District # 27	Million Gal per Day	Residential Units				Commercial Units (in sq ft)			
		Totals GPD	SF Detached (gpd)	MF Attached (gpd)	MF Stacked (gpd)	Retail/Services (gpd)	Office (gpd)	Industry (gpd)	
Sanitary Sewer Flows	0.094	94,038	28,444	28,444	18,962	8,287	9,900	-	
Water Demand	0.118	117,761	35,555	35,555	25,283	9,945	11,424	-	

Sewer District # 28

Land Use	Acres		Residential Units				Commercial Units (in sq ft)			
	Net Developable Area	Total Units	SF Detached	MF Attached	MF Stacked	Retail/Services	Office	Industry		
Residential	1	2	2	-	-	-	-	NA		
Downtown	9	74	NA	4	70	9,536	143,041	-		
Neighborhood Node	-	-	NA	-	-	-	-	NA		
Interchange	-	-	-	-	-	-	-	-		
<b>Totals</b>	9	77	2	4	70	9,536	143,041	-		

Sewer District # 28	Million Gal per Day	Residential Units				Commercial Units (in sq ft)			
		Totals GPD	SF Detached (gpd)	MF Attached (gpd)	MF Stacked (gpd)	Retail/Services (gpd)	Office (gpd)	Industry (gpd)	
Sanitary Sewer Flows	0.011	11,399	449	946	8,406	744	854	-	
Water Demand	0.015	14,831	561	1,182	11,209	893	985	-	

**Exhibit B: Full Build Out Sanitary Sewer Flow Projections  
October 2008**

Sewer District # 29

Land Use	Acres		Residential Units				Commercial Units (in sq ft)		
	Net Developable Area	Total Units	SF Detached	MF Attached	MF Stacked	Retail/Services	Office	Industry	
Residential	24	89	53	35	-	-	-	NA	
Downtown	0	-	NA	-	-	-	-	-	
Neighborhood Node	-	-	NA	-	-	-	-	NA	
Interchange	-	-	-	-	-	-	-	-	
<b>Totals</b>	24	89	53	35	-	-	-	-	

Sewer District # 29	Million Gal per Day	Residential Units				Commercial Units (in sq ft)		
		Totals GPD	SF Detached (gpd)	MF Attached (gpd)	MF Stacked (gpd)	Retail/Services (gpd)	Office (gpd)	Industry (gpd)
Sanitary Sewer Flows	0.019	19,132	11,479	7,653	-	-	-	
Water Demand	0.024	23,915	14,349	9,566	-	-	-	

Sewer District # 30

Land Use	Acres		Residential Units				Commercial Units (in sq ft)		
	Net Developable Area	Total Units	SF Detached	MF Attached	MF Stacked	Retail/Services	Office	Industry	
Residential	0	-	-	-	-	-	-	NA	
Downtown	-	-	NA	-	-	-	-	-	
Neighborhood Node	-	-	NA	-	-	-	-	NA	
Interchange	-	-	-	-	-	-	-	-	
<b>Totals</b>	0	-	-	-	-	-	-	-	

Sewer District # 30	Million Gal per Day	Residential Units				Commercial Units (in sq ft)		
		Totals GPD	SF Detached (gpd)	MF Attached (gpd)	MF Stacked (gpd)	Retail/Services (gpd)	Office (gpd)	Industry (gpd)
Sanitary Sewer Flows	0.000	-	-	-	-	-	-	
Water Demand	0.000	-	-	-	-	-	-	

Sewer District # 35

Land Use	Acres		Residential Units				Commercial Units (in sq ft)		
	Net Developable Area	Total Units	SF Detached	MF Attached	MF Stacked	Retail/Services	Office	Industry	
Residential	169	406	304	101	-	-	-	NA	
Downtown	-	-	NA	-	-	-	-	-	
Neighborhood Node	-	-	NA	-	-	-	-	NA	
Interchange	571	685	-	342	342	248,640	932,399	5,656,555	
<b>Totals</b>	740	1,091	304	444	342	248,640	932,399	5,656,555	

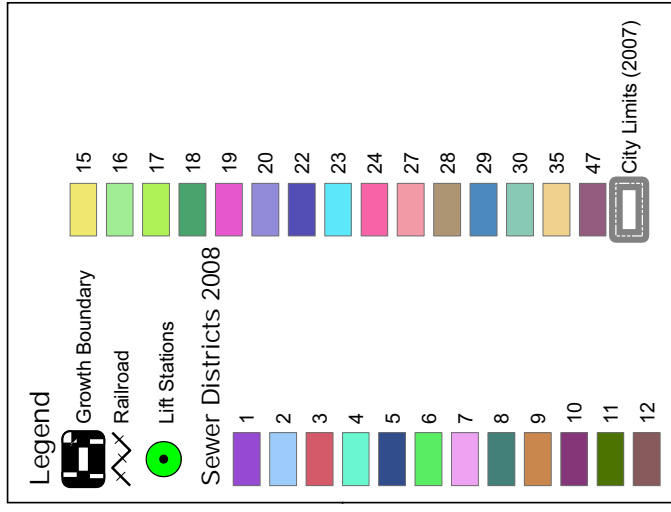
Sewer District # 35	Million Gal per Day	Residential Units				Commercial Units (in sq ft)		
		Totals GPD	SF Detached (gpd)	MF Attached (gpd)	MF Stacked (gpd)	Retail/Services (gpd)	Office (gpd)	Industry (gpd)
Sanitary Sewer Flows	1.220	1,220,159	65,728	95,885	41,097	34,248	55,653	927,547
Water Demand	1.661	1,660,692	82,161	119,856	54,797	41,097	64,215	1,298,566

**Exhibit B: Full Build Out Sanitary Sewer Flow Projections  
October 2008**

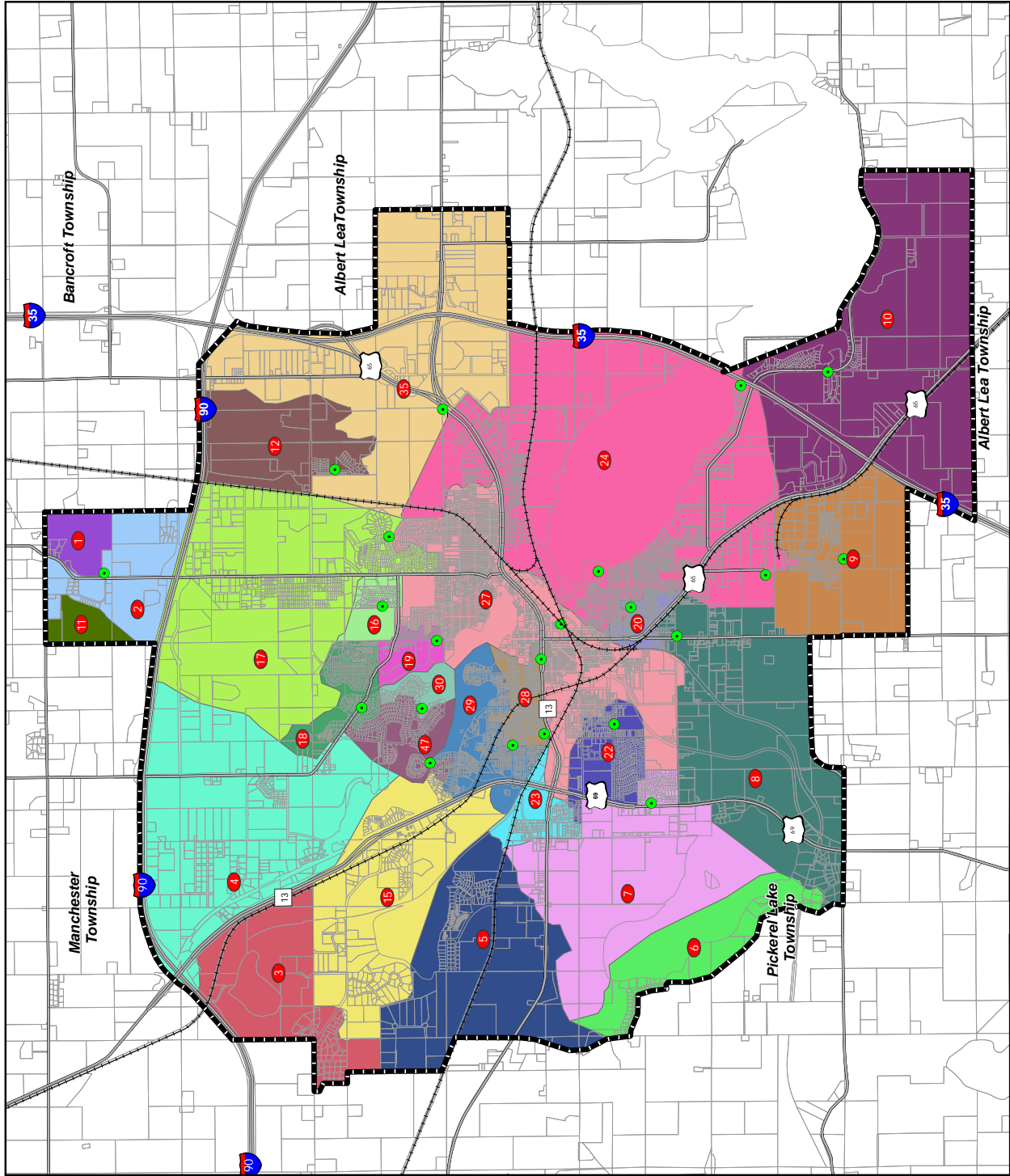
Sewer District # 47

Land Use	Acres		Residential Units				Commercial Units (in sq ft)			
	0	Net Developable Area	Total Units	SF Detached	MF Attached	MF Stacked	Retail/Services	Office	Industry	
Residential		3	9	9	-	-	-	-	NA	
Downtown		-	-	NA	-	-	-	-	-	
Neighborhood Node		-	-	NA	-	-	-	-	NA	
Interchange		-	-	-	-	-	-	-	-	
<b>Totals</b>		3	9	9	-	-	-	-	-	
Sewer District # 47	Million Gal per Day	0.002	Totals GPD	SF Detached (gpd)	MF Attached (gpd)	MF Stacked (gpd)	Retail/Services (gpd)	Office (gpd)	Industry (gpd)	
Sanitary Sewer Flows			1,838	1,838	-	-	-	-	-	
Water Demand		0.002	2,297	2,297	-	-	-	-	-	

# Appendix B - Exhibit C Albert Lea Comprehensive Plan Sanitary Sewer Districts



The data in this map was provided by City Engineering Department in 2007 as a work in progress. A complete map will be prepared when the data set is completed.



DRAFT October 2008

