APPENDIX 12

Supplemental Socio-Economic Information

Environmental Assessment of

Canadian Strategic Infrastructure Funded

Upgrades to the City of Winnipeg

Water Pollution Control Centres

APPENDIX 12

Supplemental

Socio-Economic Information

Prepared by: Tetr*ES* Consultants Inc.

Environmental Assessment of
Canadian Strategic Infrastructure Funded
Upgrades to the City of Winnipeg
Water Pollution Control Centres

APPENDIX 12A

Population and Demographics

Appendix Table 12A-2
Population and Demographics Data for the Greater Winnipeg Area

Age Characteristics of the Population	Total Population	Total Males	Total Females
0-4	38,850	20,110	18,735
5-14	89,250	45,540	43,705
15-19	44,990	22,820	22,170
20-24	46,905	23,170	23,735
25-44	201,765	100,320	101,450
45-54	97,985	47,835	50,150
55-64	59,350	28,915	30,430
65-74	46,260	20,925	25,335
75-84	33,790	12,860	20,930
85 and over	12,130	3,375	8,755
Total	**671,275**	**325,870**	**345,400**

Source: Statistics Canada. 2001. Community profiles – Winnipeg (Census Metropolitan area), Manitoba

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APPENDIX 12B

Employment, Income and Economy

Appendix Table 12A-1 Population and Demographics Data for the City of Winnipeg			
Age Characteristics of the Population	**Total Population**	**Total Males**	**Total Females**
0-4	35,835	18,580	17,250
5-14	80,695	41,115	39,580
15-19	40,795	20,635	20,155
20-24	44,205	21,660	22,545
25-44	186,810	92,920	93,885
45-54	89,320	43,405	45,915
55-64	54,260	26,180	28,080
65-74	43,455	19,450	24,005
75-84	32,455	12,225	20,235
85 and over	11,710	3,245	8,645
Total	**619,545**	**229,420**	**320,125**

Source: Statistics Canada. 2001. Community profiles – Winnipeg (City), Manitoba.

Appendix Table 12B-1
Median, Person and Family Incomes in the City of Winnipeg

	City of Winnipeg	Greater Winnipeg Area
Median Total Personal Income	$22,313	$22,482
Median Family Income	$54,725	$55,634
Median Household Income	$43,385	$44,562

Source: Statistics Canada. 2001. Community profiles – Winnipeg (City) and Winnipeg (Census Metropolitan area), Manitoba.

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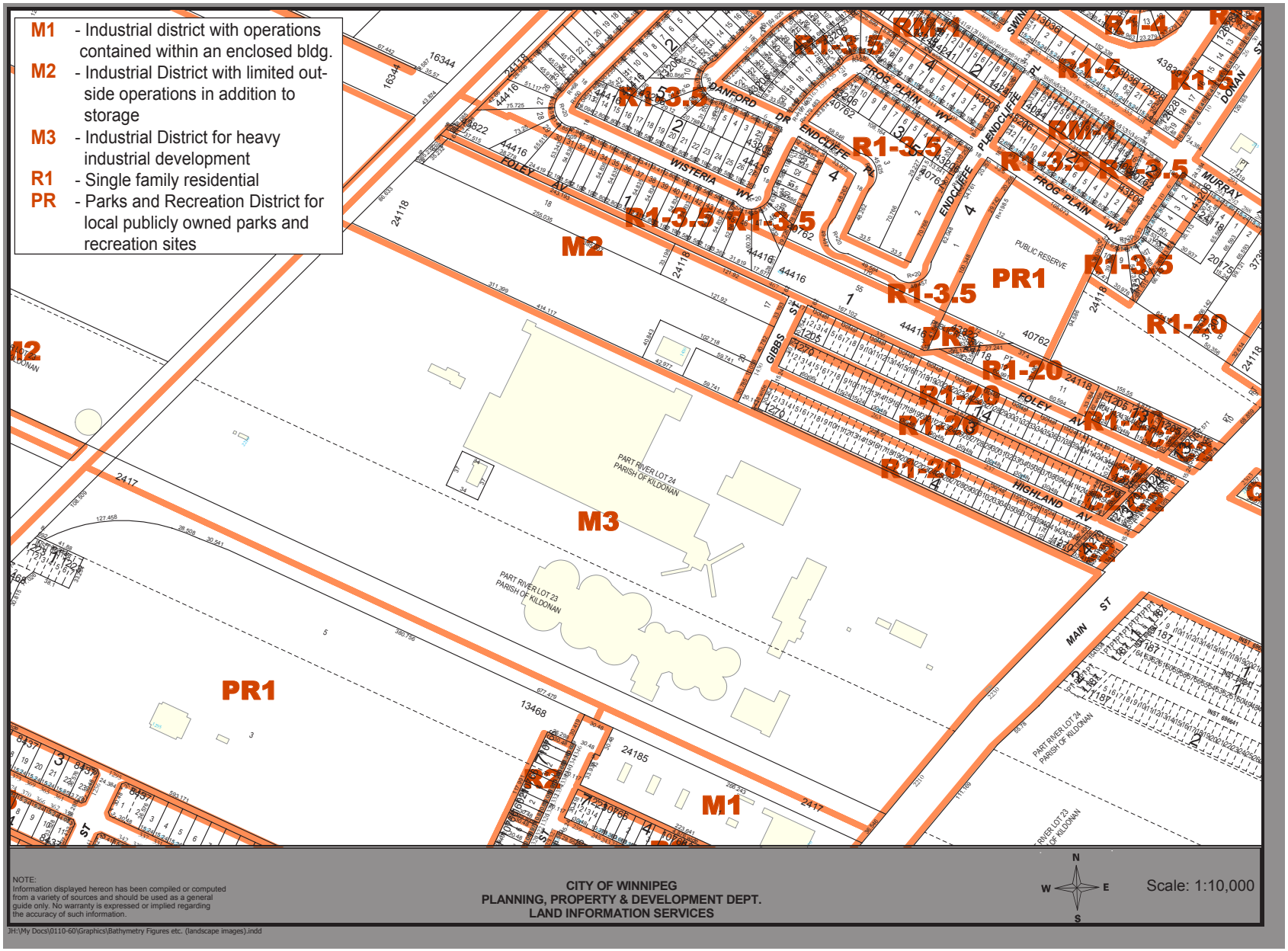
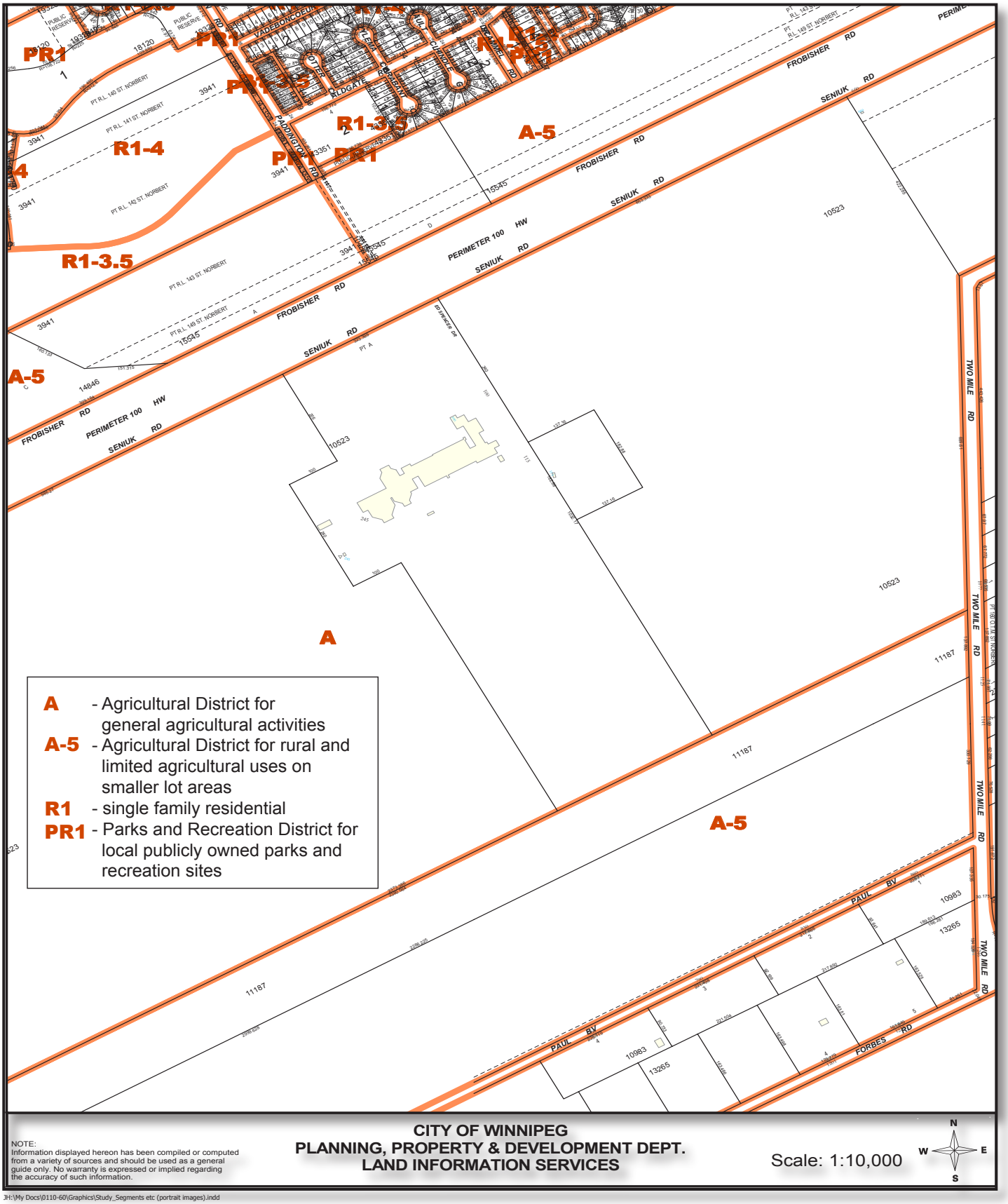
APPENDIX 12C

Land Use

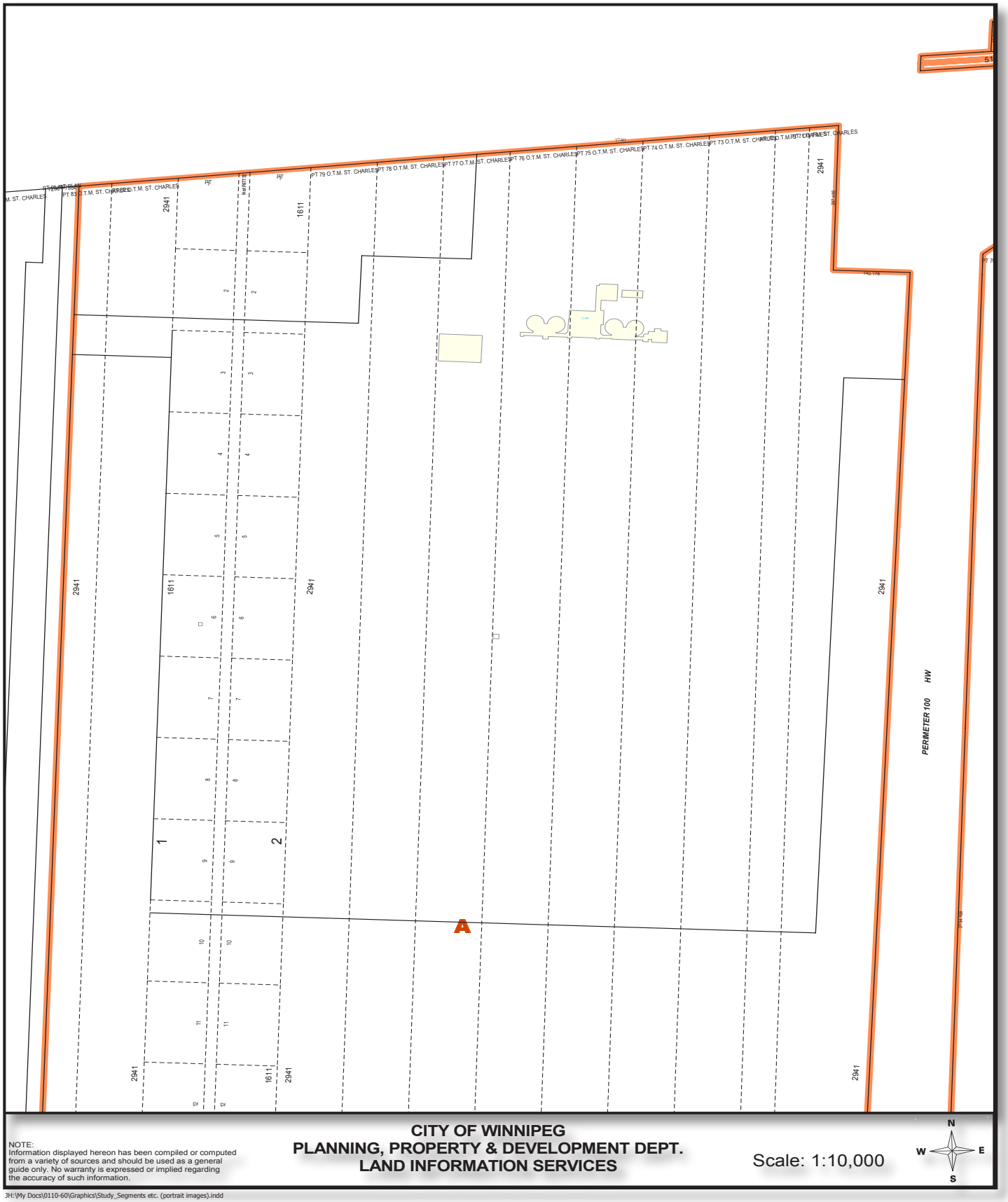


Land Use Zoning At and Around the North End Pollution Control Centre
Figure 12C-1



Land Use Zoning At and Around the South End Pollution Control Centre

Figure 12C-2



CITY OF WINNIPEG
PLANNING, PROPERTY & DEVELOPMENT DEPT.
LAND INFORMATION SERVICES

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Land Use Zoning At and Around the West End Pollution Control Centre
Figure 12C-3

Environmental Assessment of

Canadian Strategic Infrastructure Funded

Upgrades to the City of Winnipeg

Water Pollution Control Centres

APPENDIX 12D

Heritage Resources

Manitoba

Memorandum

DATE: **January 10, 2006**

TO: Margaret Zellis-Skiba
Environmental Scientist
TetrES Consultants, Inc.
603-386 Broadway Avenue
Winnipeg MB

FROM: C. Gordon Hill
Impact Assessment Archaeologist
Historic Resources Branch
Main Floor, 213 Notre Dame
Winnipeg MB

PHONE: 945-7730
FAX: 948-2384

SUBJECT: HERITAGE RESOURCES

NORTH END, SOUTH END & WEST END
POLLUTION CONTROL CENTRES
CITY WINNIPEG

In response to your memo regarding the above-noted proposed projects, I have examined Branch records for areas of potential concern. The potential to impact significant heritage resources is low, and, therefore, the Historic Resources Branch has no concerns with the projects.

If you have any questions or comments, please contact me at 945-7730.

C. Gordon Hill

Environmental Assessment of

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APPENDIX 12E

Irrigation and

River Use

1.0 INTRODUCTION

In 1992, the City of Winnipeg ("CoW") conducted a survey to determine the extent river water was used as a raw water source for year-round greenhouse operations. This survey was conducted to assist the CoW in assessing the need for seasonal or year-round disinfection at one or all three of the WPCC. During the 2006 environmental assessment process, the Canadian Environmental Assessment Agency ("CEAA") requested the CoW provide an update of the 1992 Irrigation Survey. Accordingly, a study was initiated to update the 1992 Irrigation Survey (Tetr*ES* 1992). The results of this study are presented in this report.

1.1 1992 IRRIGATION STUDY

Greenhouse operations located within the City of Winnipeg and along the Red River downstream to Lake Winnipeg were identified from information obtained from Manitoba Agriculture (Tetr*ES* 1992). Fifty-eight greenhouse operations were identified within the study area, of which, 40 were contacted by telephone and information was obtained using a standardized questionnaire. Operators unable to be contacted or identified as not operating actual greenhouses were excluded from the survey.

In 1992, 21 of the 40 greenhouse operators operated seasonal greenhouses for approximately five or six months of the year. The remaining greenhouse operators operated year-round greenhouses. In general, greenhouses within the study area were located relatively close to the Red, Assiniboine or Seine rivers.

While some greenhouse operations utilize river water for irrigation purposes, approximately 85% do not due to proximity to water sources or access restrictions created by river front developments. Seven operations were found to use river water for a portion of their operating

season (Table 1-1). Of these, only two were expected to potentially benefit from effluent disinfection at the WPCC.[1]

Table 1-1
Greenhouse Operators River Use In 1992

Greenhouse Grower/ Location	Total Months of Operation	River Used for Withdrawal	Months per Year River Utilized	Amount of River Water Utilized	Comments
Sumka Brothers	5	Seine River	5 (after ice melt in spring)	Unknown	Disinfection at any of the 3 WPCCs would not benefit this user in terms of microbiological quality since there are no discharges of treated effluent from the City of Winnipeg to the Seine River
A. R. Patterson Greenhouses	5-6	Assiniboine River	3 (after ice melt in spring)	Unknown	Disinfection of treated effluent discharges would not benefit this user with regard to microbiological quality since they are upstream of the treated effluent discharge point
E.D. Patterson Garden Centre	3.5 - 5	Assiniboine River	2-3.5 (after ice melt in spring)	70,000 gallons	Disinfection of treated effluent discharges would not benefit this user with regard to microbiological quality since they are upstream of the treated effluent discharge point
Riverside Greenhouses	12, year-round	Red River	After ice melt in spring	Unknown	Disinfection of treated effluent from the SEWPCC may potentially benefit this user
Petal Place	5	Red River	1 month in spring	Unknown	Disinfection at the NEWPCC would result in a possible benefit to this user
Shelmerdines	12	Assiniboine River	12 (store water in dugout)	1,000,000 gallons	Disinfection of treated effluent discharges would not benefit this user with regard to microbiological quality since they are upstream of the treated effluent discharge point
Paul's Greenhouses	5	Red River	1-1.5	10,000 gallons	This greenhouse operation is located upstream of the SEWPCC and therefore, disinfection of treated effluent discharges for the SEWPCC would not benefit this river user.

Source: Tetr*ES* Consultants Inc. 1992.

[1] The remaining 5 were either upstream of the WPCCs on the Red or Assiniboine Rivers or used water from the Seine River and thus, were not expected to benefit from effluent disinfection at the WPCCs.

Tetr*ES* (1992) found that greenhouse operators did not use the rivers during solid ice cover conditions and concluded that since fecal coliform counts are low in spring and typically complied with the then current Manitoba Surface Water Quality Objectives (Williamson 1998), disinfection would be needed for approximately seven months of the year - during the recreation season (May 1 to September 30) and possibly during some months in the fall until river freeze-up (November).

Greenhouse operators were also asked a series of health-related questions to determine concerns related river-water microbiology used in greenhouse operations. Operators were asked if employees experienced any illnesses, skin irritations or eye / ear infections related to watering greenhouse plants utilizing river water. No operators reported any type of illnesses, skin irritations or infections to their workers related to the use of river water in their greenhouses.

When non-river users were asked if they had no access restrictions able would they would use river water for irrigation purposes, responses were as follows:

- eleven greenhouse operators stated they would use river water in their operations because they deem the water quality to be good
- twelve operators said they would not use the river because of water quality concerns
- seven operators said they would have to do testing prior to making a decision on use of river water for irrigation

Non-river users were subsequently asked if a decision by the CoW to disinfect the effluent at the WPCCs prior to discharge into the river would affect their decision to use river water for irrigation. Twelve of the non-river greenhouse operators suggested that disinfection would not alleviate their concerns with use of river water for irrigation. Eleven and potentially eighteen of the non-river users said that they would use the river if they had access. Several greenhouse operators suggested the possibility of adverse effects to quality associated with disinfection (i.e., chlorination by-products). These comments suggested uncertainty in the benefits in disinfection of treated effluent for greenhouse operations.

2.0 2006 IRRIGATION AND RIVER USE SURVEY UPDATE

An update of the 1992 Irrigation Survey was conducted as part of the Environmental Assessment of the Upgrades to the CoW WPCCs. In addition to updating 1992 telephone survey, information on river use was also gathered from existing *Water Rights Act* (1988) licences and other sources.

2.1 *WATER RIGHTS ACT* LICENCES

Manitoba Water Stewardship Branch was contacted to identify *Water Rights Act* licence holders within the study area. Information was requested on *Water Rights Act* licence holders authorized to make withdrawals from the Red and Assiniboine rivers approximately 10-12 miles upstream of the City of Winnipeg and approximately 10-12 miles downstream to the City of Selkirk.

Currently, 23 approved licences have been issued within the study area (Table 2-1). Licence holders include golf courses and other recreational institutions, industry, the CoW, and private citizens (Romano *pers. comm.* 2006a). The most common river water use is "irrigation" followed by "industrial' and "other".

Table 2-1
Water Rights Act Licences[2]

Licence #[1]	Source River	Purpose	Maximum Annual Allocation (dam^3)
95-08	Red River	Industrial	166
93-057	Assiniboine River	Irrigation	210
92-61	Red River	Irrigation	9
89-095	Assiniboine River	Irrigation	185
89-094	Assiniboine River	Irrigation	43
89-52	Red River	Irrigation	11
88-11	Red River	Irrigation	154
87-088	Red River	Irrigation	10
87-12	Red River	Irrigation	6

Table 2-1 Water Rights Act Licences[2]			
Licence #[1]	**Source River**	**Purpose**	**Maximum Annual Allocation (dam^3)**
85-04	Red River	Irrigation	12
79-21	Red River	Other	96
77-48	Red River	Irrigation	12
75-33	Red River	Irrigation	12
64-34	Red River	Irrigation	20
62-011	Red River	Irrigation	56
62-010	Red River	Irrigation	21
6	Red River	Industrial	0
1996-033	Assiniboine River	Irrigation	6.17
2001-028	Assiniboine River	Irrigation	61.67
2001-025	Assiniboine River	Irrigation	6.17
2001-019	Assiniboine River	Irrigation	6.17
2005-093	Assiniboine River	Irrigation	74.01

Notes:
1. Issued approved licences
2. Source: Romano 2006a

In addition to the approved *Water Rights Act* licences, four licences are currently "application underway" or "awaiting results of assessment" with water use purpose indicated as "irrigation". An additional three licences are classified "recommendation submitted" with water use purpose indicated as "irrigation". Although this ranking indicates no final licence has been issued, applicants could potentially be already using water (Romano *pers. comm.* 2006b).

2.2 IRRIGATION SURVEY UPDATE

A telephone survey was conducted to update the results of the 1992 Irrigation Survey (Tetr*ES* 1992). Participants of the 1992 Irrigation Survey along with new greenhouse listings in the Winnipeg telephone book were contacted between April 20 – 27, 2006. Thirty-three of 39

greenhouse operators completed the survey[2]. The location of each of the greenhouses contacted in the 2006 survey is shown in Figure 2-1.

Of the 33 greenhouse operations that participated in the survey, seven indicated river-water as an irrigation source (Table 2-2). Four of the seven are located upstream of the WPCC outflows and thus are not expected to be effected by upgrades to the WPCCs. Two greenhouse operations, Jolly Green Thumb and the Assiniboine Park English Garden, are located downstream of the WEWPCC outflow along the Assiniboine River. The other greenhouse, Petal Place, is located on the Red River downstream of the NEWPCC outflow. All three of these greenhouse operations may potentially benefit from the upgrades to the WPCC.

Table 2-2
Greenhouse Operators River Use

Operator / Location	Months of Operation	River Source	Months per year river used	Amount of River water used	Irrigation Method	Horticultural Crop
Assiniboine Park English Gardens, Assiniboine Park	May – Oct	Assiniboine	May – Sep	Unknown	Irrigation sprinkler system	Bedding plants, trees and shrubs, other plants and flowers
Glenlea Greenhouses 2715 PTH 75	Feb - Jun	Red	Oct – Jul	Unknown	Automatic	Bedding plants, trees and shrubs, other plants and flowers, field crops, edible crops
Jolly Green Thumb 6,905 Roblin Blvd	May - Oct	Assiniboine	Jun – Sep weather dependent	Unknown	Automatic overhead	Bedding plants, other plants and flowers, edible crops
Paul's Greenhouses 10 Forbes Road	Feb - Jul	Red	Mar - Jun	~ 100,000 gallons/ season	Manual, with hoses	Bedding plants, other plants and flowers, edible crops
Petal Place 235 River Road	Mar - Jun	Red	Apr – Jun	24,000 – 25,000 gallons	Manual, with hoses	Bedding plants, other plants and flowers, edible crops
Shelmerdine's 7,800 Roblin Blvd	Year-round	Assiniboine	May - Oct	Unknown	automatic & manual application	Bedding plants, trees and shrubs, other plants and flowers, Christmas trees and exotics also brought in
T & T Seeds 7,724 Roblin Blvd	Year-round	Assiniboine	Jun – Sep	Unknown	automatic & manual application	

[2] Four of the remaining six could not be reached, one was not an actual greenhouse operation and the sixth declined to participate.

Table 2-3 shows a comparison of river water use in 1992 with river water use in 2006 among greenhouse operations. Three greenhouse operations contacted in 1992 continue to utilize river water for irrigation, while three other operations have stopped utilizing river water as irrigation water. The reason for discontinued use of river water is unclear. Interestingly, two operations (both on the Assiniboine River) that did not utilize river water in 1992 are currently utilizing river water for irrigation.

Table 2-3
Comparison Of Greenhouse Operations Utilizing River Water In 1992 And 2006

Greenhouse Operator	1992 River Water Use	2006 River Water Use	Water Source
A. R. Patterson Greenhouses	Yes	No	Assiniboine River
Assiniboine Park English Garden	No	Yes	Assiniboine River
E.D. Patterson Garden Centre	Yes	Unknown, no contact number available	Assiniboine River
Glenlea Greenhouses	Not surveyed in 1992	Yes	Red River
Jolly Green Thumb	Not surveyed in 1992	Yes	Assiniboine River
Paul's Greenhouses	Yes	Yes	Red River
Petal Place	Yes	Yes	Red River
Riverside Greenhouses	Yes	No	Red River
Shelmerdines	Yes	Yes	Assiniboine River
Sumka Brothers	Yes	No	Seine River
T & T Seeds	No	Yes	Assiniboine River

Of the two greenhouse operations expected to benefit from upgrades to the WPCC in 1992, one continues to use river water in 2006 and is still expected to benefit from upgrades to the WPCC. The other operation expected to benefit from upgrades to the WPCC in 1992, no longer used river water in2006. Two additional greenhouses utilizing river water in 2006 are located downstream of WPCC outflows and could potentially benefit from the WPCC upgrades.

2.3 CITY OF SELKIRK RED RIVER USE

Information on Selkirk's use of Red River water was obtained from the City of Selkirk. Water has not been withdrawn from the Red River by the City of Selkirk since 1995; however, infrastructure for withdrawal is still in place (Scott *pers. comm.* 2006). Furthermore, disassembly of the withdrawal infrastructure is anticipated in the near future. Accordingly, upgrades to the WPCC are not likely to have an effect on the City of Selkirk's river use.

3.0 CONCLUSIONS

Twenty-three *Water Rights Act* licences have been issued for water withdrawal from the Red and Assiniboine rivers within the designated study area and indicate that in general, water withdrawn drawn from the rivers is utilized for irrigation and industrial purposes. Licencees withdrawing water from downstream of the WPCC outflows may potentially benefit from the WPCC upgrades.

Of the 33 greenhouses contacted, only seven utilize river water of which, only three withdraw water from locations downstream of WPCC outflows and thus, could be expected to potentially benefit from upgrades to the WPCCs. In 1992, several greenhouse operators indicated that adverse effects to water quality associated with effluent disinfection were concerns and / or reasons for not utilizing river water for irrigation (e.g., chlorination by-products). Since WPCC upgrades will involve addition of an ultra violet (UV) disinfection process, rather than a chlorination disinfection process, this effect is unlikely to occur.

The City of Selkirk no longer uses water from the Red River and intends to remove the water withdrawal infrastructure in the near future. Thus, the City of Selkirk is not expected to derive a benefit from WPCC upgrades related to direct use of Red River water. The City of Selkirk may experience other indirect benefits associated with the WPCC upgrades that are discussed elsewhere within the environmental effects assessment and supporting documents.

4.0 REFERENCES

1.1 LITERATURE CITED

Tetr*ES* Consultants Inc. 1992. Preparation for Stage 2 CEC Hearings: Irrigation Survey. Draft Report to City of Winnipeg Waterworks, Waste and Disposal Department.

The Water Rights Act. 1988. CCSM c.80. Queen's Printer. Winnipeg.

Wardrop Engineering Inc. and Tetr*ES* Consultants Inc. 1998. 1997 Update: Health-risk Assessment Relating to Uses of the Red and Assiniboine Rivers in Winnipeg and Downstream. Report to City of Winnipeg Water and Waste Department.

Williamson, D.A. 1988. Manitoba surface water quality objectives. Water Standards and Studies Section, Manitoba Department of Environment.

4.1 PERSONAL COMMUNICATIONS

Romano, Shirley P. 2006a. Email correspondence between Shirley P. Ramano, Database Manager, Water Licencing Branch, Manitoba Water Stewardship and Margaret Zellis-Skiba, Environmental Scientist, Tetr*ES* Consultants Inc. re: water withdrawal information from Red and Assiniboine Rivers. April 21, 2006.

Romano, Shirley P. 2006b. Telephone conversation between Shirley P. Ramano, Database Manager, Water Licencing Branch, Manitoba Water Stewardship and Margaret Zellis-Skiba, Environmental Scientist, Tetr*ES* Consultants Inc. re: river water uses in and around Winnipeg. May 8,.2006.

Scott, Dale 2006. Telephone conversation between Scott Dale, Wastewater Treatment, City of Selkirk and Jeanette Haswell, Environmental Technologist, Tetr*ES* Consultants Inc. re: water withdrawal from the Red River. May 16, 2006.