



**A CANADA GOOSE MANAGEMENT PLAN FOR
St Paul Regional Water Services**

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1. Saint Paul Regional Water Services Context and Goose Management Concerns

1.1. Canada Goose Management History

Saint Paul Regional Water Services (SPRWS) is the drinking water utility for the Greater Saint Paul Area and provides drinking water to roughly 425,000 customers. The source water for the utility is drawn from the Mississippi River at Fridley, MN and transported through a series of large conduits, canals, and a chain of lakes to the drinking water treatment plant in Maplewood. The chain of lakes consists of four lakes with mostly undeveloped or low density residential shoreline. Two developed locations along this course have consistently been heavily populated by Canada geese (Appendix A).

The first location, Vadnais-Sucker Lake Regional Park Picnic Area (VSLRPPA) (4500 Rice St, Vadnais Heights, MN 55127) is a small park situated on the north side of Sucker Lake that provides open spaces for family gatherings, fishing, and general recreation. The park is adjacent to the creek that connects the conduit from Pleasant Lake to Sucker Lake.

The second site, Vadnais Station (85 E Vadnais Blvd, Vadnais Heights, MN 55127) is both the location of the Vadnais lake drinking water intake and the satellite office and staging area for SPRWS maintenance staff. The Vadnais intake represents the last above ground point before the source water enters the treatment plant.

Both locations have historically had large numbers of Canada geese that populate the open spaces during the both the flightless stage and the traveling flock stage. The majority of the nesting areas are located in the adjacent undeveloped habitats. Each summer the high amount of goose excrement at both locations poses a health concern for both visitors to the park and the staff of Vadnais Station.

Previous attempts at managing the Canada goose population have included placing streamers at random locations on the properties, allowing shoreline woody vegetation to grow, maintaining natural grass buffers (three foot width) adjacent to the shore, installing temporary wire fences between shorelines and mowed grasses, and up until 2015, contracting with Canada Goose Management Inc. to provide goose removal during the flightless period. The management techniques besides goose removal were largely not used at VSLRPPA because of their interference with both fishing access to the adjacent creek and the recreational activities the picnic area was originally designed for.

1.2. Canada Goose Habitat Use and Population Estimate

VSLRPPA is roughly seven acres and includes the land covers open development with sparse hardwood vegetation and mowed grasses, hardwood forest, paved surfaces, including sidewalks and parking lot, and creek and lake shoreline with mowed grass (access for fishing) interspersed with natural vegetation and rip rap (Appendix B, Figure 1 and Figure 2). In the near future a handicap accessible paved fishing platform will be installed along the north end of the creek by the conduit outlet and the creek and shoreline downstream will be restored to a more natural habitat. The Canada geese use various areas of the park including the creek shoreline, the mowed grass, and the paved parking lot (presumably for the warm surfaces during the day). Nesting occurs primarily along the surrounding wetland shoreline of the creek and the nearby pond (Appendix C, Figure 1). Newly hatched broods tend to loaf and feed throughout the mowed grass regions and the paved surfaces. After their flightless period, the Canada geese are more mobile and frequently move between the natural wetland habitats and littoral zone of Sucker Lake to the mowed and paved areas of the picnic area. The Canada goose population in the vicinity of these areas is roughly 40 individuals. During the late spring and early summer months, when adult geese pair and build nests, approximately 7-8 breeding pairs are typically present in the surrounding wetland habitats. In mid-summer, as many as 45 young and adult geese are found in these same areas,

depending on reproductive success. Later in the summer, (late July through September) flocks exceeding 45 individuals are observed in area, due to birds flying into the vicinity from surrounding areas.

Vadnais Station is a roughly 8.5 acre campus composed of mowed grasses, shoreline with mixed woody vegetation, pilings, riprap and grasses, and some coniferous forest. The area also has a significant amount of impervious surface composed of buildings, gravel work areas and paved sidewalks and parking lots (Appendix B, Figure 3 and Figure 4). The station is also adjacent to the Vadnais-Snail Lakes Regional Park Trail which is largely composed of vegetated shoreline and a paved trail. While some nesting does occur along the vegetated shoreline west of the Vadnais intake, the majority of nesting occurs at the wetland southwest of the campus (Appendix C Figure 2). Newly hatched broods tend to loaf and feed in the vegetated shorelines, littoral zone, mowed grass, and the paved and gravel surfaces. After their flightless period, the Canada geese frequently move between the Vadnais lake littoral zone to the adjacent mowed grass and impervious surfaces.

During the late spring and early summer months, when adult geese pair and build nests, approximately 8 breeding pairs are typically present. In mid-summer, as many as 36 young and adult geese are found in these same areas, depending on reproductive success. Later in the summer, (late July through September) flocks exceeding 40 individuals are observed in the area, due to birds flying into the vicinity from surrounding areas.

1.3. Visitation and Recreation Areas

The VSLRPPA is an open space recreational setting in which park users can be found occupying picnic areas, a small playground, lake and creek shoreline, and parking lots. The open lawn provides space for lawn games or playing catch while mowed shoreline allows easy access for fishing.

The Vadnais Station is an open space work setting where staff regularly tread across much of the area for tasks including working on equipment and accessing storage buildings. As mentioned previously, Vadnais station is adjacent to the Vadnais-Snail Lake Regional Park Trail, which provides recreation areas suitable for biking, walking, fishing, and picnicking.

1.4. Concentrated Habitat Use and Human Use Conflicts

The primary concern for both locations listed above is the health and human safety with regard to E. coli exposure.

Over the course of the summer, mowed regions of VSLRPPA receive large amounts of goose excrement. Because the park caters to family recreation there is a significant risk of E. coli exposure through:

1. Outdoor games or sporting equipment coming in contact with feces.
2. Tracking feces to the nearby playground.
3. Possible contact between food and feces at picnic tables.
4. Tracking the feces into cars.

Similar to the picnic area, the Vadnais Station campus receives large amounts of goose excrement during the summer months. The nature of the work at Vadnais Station requires workers to both work outside in the open spaces and in the office. This results in excrement coming in contact with worker's clothes and hands and also being tracked into their offices.

We are also concerned about the real and unnecessary hazard of E. coli entering the Vadnais intake. In addition to geese congregating around the intake, excrement is also inadvertently brought into the intake gatehouse by staff that periodically clean the intake screens.

1.4.1. Proximity Sensitive Areas

Both the Sucker and Vadnais lake shoreline and surrounding watersheds are largely undeveloped. Deterrents would likely result in geese moving to a different location around the lakes or neighboring wetlands. However, there is the possibility that displaced geese could move to the neighboring properties. North of the VSLRPPA is the North Oaks Golf Course which has suitable habitats for goose nesting and rearing (Appendix D, Figure 1).

Vadnais Station is also largely isolated from other properties. Deterrents could cause geese to move north along the Vadnais-Sucker Lakes trail. There is also the Academy of Sciences and Agriculture High School and the Five Star Mobile Estates Park just south of Vadnais Station. However, both of these locations have limited or no access to water bodies (Appendix D, Figure 2).

With both proposed Canada goose control locations, there is the possibility that deterrents could encourage goose populations to move to neighboring lake communities.

1.4.2. Water Quality Impacts

Swimming is not permitted at either goose management location. Water quality samples are not collected at the Vadnais-Sucker Lakes Regional Park Picnic area. Water quality samples are collected at the water intake at Vadnais Station. Because the Vadnais intake represents the immediate source water for the greater St Paul area, there is a general concern for ensuring that this water is as safe and of as high quality as feasible.

1.4.3. Water Quality Sampling

At the Vadnais intake, water samples are collected and analyzed by SPRWS staff for both nutrients and total coliform and E. coli on a bi-monthly basis. These samples are collected as part of our bi-monthly source water monitoring protocol and are for informational purposes only. The E. coli concentration is generally low. From January 1, 2016, to the present there were 23 times that the E. coli concentration exceeded 1 MPN/100 ml with 28 MPN/100 ml being the highest level recorded. It is important to note that the sampling frequency likely would not catch random E. coli spikes during the summer.

2. Canada Goose Management Recommendations

2.1. Goals and Measures

Canada goose management goals for SPRWS fall into spring and early summer population reduction and localized redistribution in goose activity throughout the summer at the VSLRPPA and Vadnais Station. The nesting areas for both goose management locations (Appendix C, Figure 1 and Figure 2) largely fall outside of the management areas and consequently management goals will emphasize reducing loafing on and near the mowed and impervious areas. The ongoing goal for brood reduction is no more than 2 successful broods. This will be an ongoing goal to prevent all significant use of these areas at Vadnais-Sucker Lakes Regional Park Picnic area and Vadnais Station by Canada geese during the summer months (May through September).

2.2. Geographic Scope

The population reduction and concentrated use reduction goals are focused on two distinct areas for each goose control site listed above. The 5.5 acres and 8 acres of mowed grasses and impervious surfaces at VSLRPPA and Vadnais Station respectively would be suitable for population reduction and are visible in areal images in Appendix B. These areas are attractive to Canada geese because they are nearby the wetland nesting areas and large water bodies and are also ideal for noticing and fleeing predators. It will be these areas where management techniques focusing on geese removal and redistribution will be focused. Goose management activities are not planned for the ~1.5 acres of hardwood and coniferous

forest at VSLRPPA (west side and south east corner) and the ~0.5 acre of coniferous forest at Vadnais Station. It should be noted that areas owned by other entities within or adjacent to the management area boundaries lie outside the scope of this plan and, as such, may be impacted by goose management activities. The adjacent park areas at both VSLRPPA and Vadnais Station are part of the Vadnais-Sucker Lake Regional Park and are owned by Ramsey County.

2.3. Management Techniques

The proposed techniques for Canada goose management at SPRWS are varied in type and geographic area. Meeting the goals as outlined will require the implementation of a broad set of techniques. Any one management technique used alone will likely be ineffective for any significant length of time, since tolerance and habituation will likely occur. As a result, we propose the use of an integrated management approach, where a number of techniques will be applied in varying ways, times and locations.

2.3.1. Recording/Tracking Management Activities for Future Adjustments

All management activities will be documented on the Management Activity Tracking Form in Appendix E and submitted to area wildlife manager by September 10 of each year. SPRWS will keep a copy of this on file to help facilitate future management activities that might need adjustments or improvements.

2.3.2. Habitat Modification

The areas with mowed vegetation both receive the most goose excrement and the highest visitor traffic making these areas the likeliest point of contact with E. coli. To reduce the site suitability for loafing and brooding Canada geese SPRWS will continue to avoid cutting vegetation and allowing brush and other woody vegetation to colonize the shoreline areas. SPRWS will attempt to increase the buffer of natural un-mowed grasses adjacent to the shoreline at both VSLRPPA and Vadnais Station in order to deter geese from moving through these areas from the shoreline.

2.3.3. Temporary Physical Barriers

Previous attempts by SPRWS at strategically placing fences at areas with high Canada goose activity proved challenging. At the Vadnais-Sucker Lakes Regional Park Picnic area it is difficult to place fencing without reducing the aesthetics and public enjoyment of the park. If recommended by the wildlife manager, SPRWS will use temporary woven wire fencing that limits Canada goose access to the shoreline around the Vadnais intake and shoreline near high human traffic areas at Vadnais Station, from spring to late summer. The fencing will be established in a manner that prevents geese from entering the fenced off area from the water or from the adjacent upland areas.

2.3.4. Permanent Physical Barriers

If the temporary fences prove effective, the use of permanent fencing would be considered. Any fencing that is installed would be approved by the Area Wildlife Manager and will be established in a manner that prevents geese from entering the fenced off area from the water or from the adjacent upland area. Routine inspection of the fence will be done on a monthly basis.

2.3.5. Redistribution Techniques

Preventing Canada geese from loafing on the shoreline and adjacent areas will be an ongoing activity during the summer months. We anticipate using a number of techniques to redistribute the geese to other areas around Sucker and Vadnais Lakes. Additionally, we plan to use multiple techniques at varied times and with subtle shifts in methods so that the geese do not become habituated to any one technique or get accustomed to a particular schedule of activity. All of the methods will have some degree of impact on the visitor experience, and mitigating this disruption will be a priority. Some redistribution techniques require specific training, personal protective equipment and adherence to policies and procedures for their safe use. While some of these visitor impacts and safety considerations are mentioned alongside each

technique, a thorough examination of these and other issues should be conducted prior to employing a particular redistribution technique. Depending on the methods used, notification placards will be displayed.

2.3.5.1. Human and mechanical disruption

We intend to periodically disturb loafing and feeding Canada geese by individuals on foot so geese can be moved from the mowed and impervious surface areas to locations off property.

2.3.5.2. Predator decoys

The use of 2D or 3D coyote/dog decoys on the shoreline area to discourage use by geese is a management option. Decoys that are placed intermittently and exhibit periodic motion due to wind gusts can be effective at deterring geese. The decoys would need to be moved weekly or biweekly to prevent habituation of the geese.

2.3.6. Excrement Removal

SPRWS will continue to remove excrement on paved surfaces with a street sweeper. An effective method of removing excrement from the mowed grasses has not been found.

2.3.7. Population Reduction

Population reduction methods recommended by the MNDNR include nesting management, trapping and removal, and goose harvesting through hunting.

2.3.7.1. Nesting Management

The majority of nesting habitat falls outside of the SPRWS property. At this time SPRWS does not wish to use nesting management techniques as part of their management strategy. If nesting management is deemed an effective option it might be considered in the future.

2.3.7.2. Trapping and Removal (During Flightless Period)

Capture and removal of flightless, mixed age groups of geese during the summer flightless period is an effective way to reduce the localized geese populations. The use of contractors or trained staff (if permitted) to capture, remove and dispose of geese from VSLRPPA and Vadnais Station is a management option. Such removal would need to be detailed as part of a removal permit application through the DNR Fish & Wildlife Division, and goose removal and disposition would need to be conducted according to the permit conditions.

2.3.7.3. Goose Harvest

SPRWS is only interested in the trapping and removal of Canada geese during the springtime flightless period. Hunting is not an option because of local city ordinances.

2.4. Public Information

Informing the public and users about Canada goose management activities is an integral part of a successful goose management plan. Information and signage detailing some of the methods being used will be developed to provide users with background information. Signage or posted notices may be developed for certain activities. Additionally, individual users will be notified of pending activities that might be considered alarming had they not received prior notice and explanation. All persons performing management activities should provide users with accurate and thorough information about our goose management objectives, and also inform users how the particular management activity being conducted fits into the larger Canada goose management plan. Additionally, they must be able to provide a copy of the removal permit to all users upon request.

2.5. Partner Relationships and Permit Requirements

SPRWS plans to closely coordinate with the Minnesota Department of Natural Resources during all stages of the Canada goose management process including population monitoring and permitting, dates/conditions for permits, permit in possession while conducting activities, and notification and involvement of CO's and the Area Wildlife Manager of the effectiveness and possible improvements to the management plan.

Appendix-A.

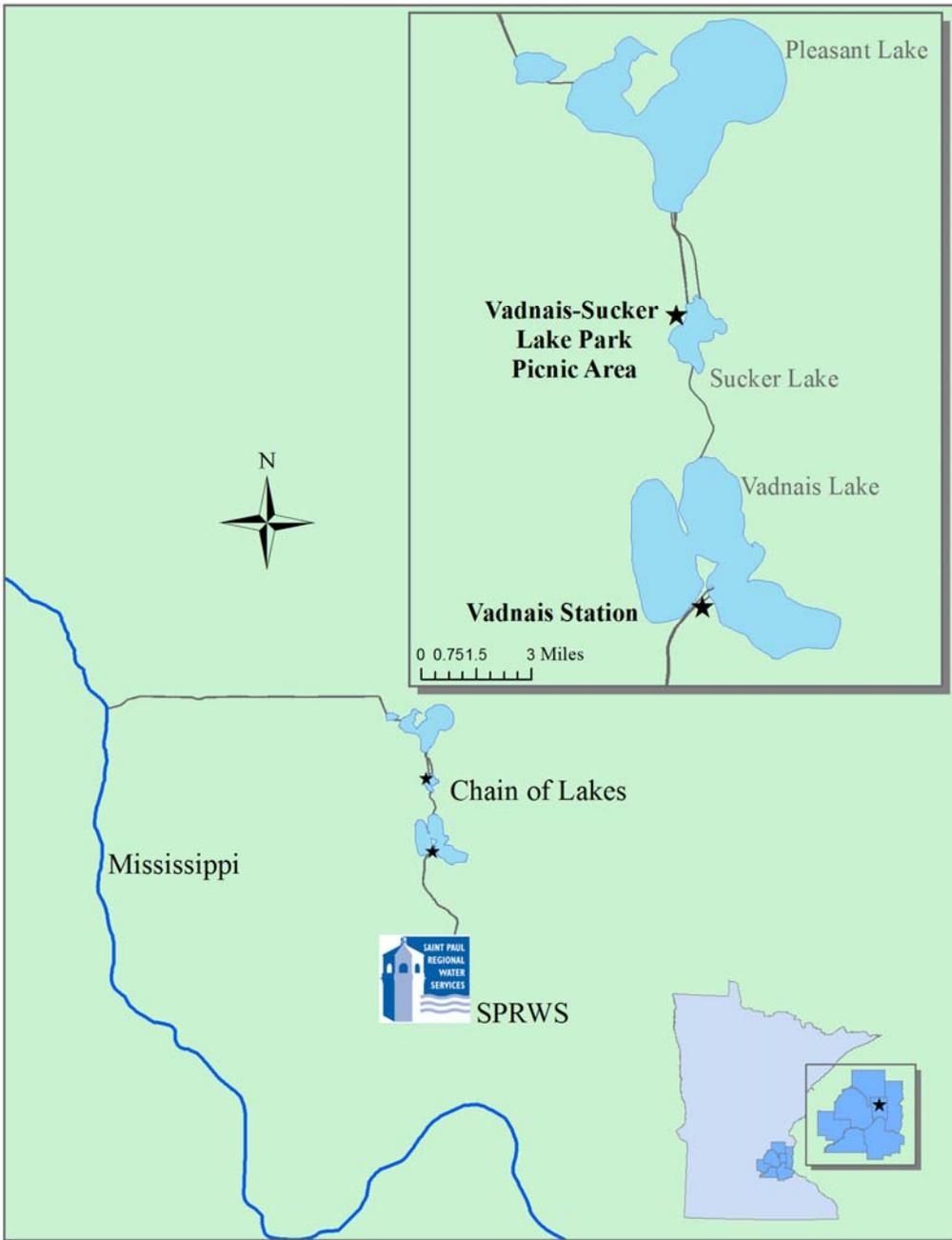


Figure 1. Overview of the SPRWS source water flow path from the Mississippi at Fridley, MN to the drinking water treatment plant. The Canada goose management locations are located in Ramsey County which is part of the seven county metro area. SPRWS source water is pumped from the Mississippi River at Fridley and transported through large underground conduits, canals, and a chain of lakes to the drinking water treatment plant. The two management locations SVLPPA and Vadnais station are located adjacent to two of the lakes in the chain (represented by stars).

Appendix-B.



Figure 1. Areal image of VSLRPPA. The VSLRPPA is a small recreational area where visitors can fish, picnic, and relax. The park is located where the conduit exits into a canal and then Sucker Lake. From the image one can see that the landscape is largely mowed grasses with some hardwood trees. The shoreline is composed of natural grass and woody vegetation and some stabilizing rip rap and cement. In addition, there is impervious surface in the form of a parking lot and visitor trail. From the areal image one can see the Canada goose problem areas including the mowed areas with some hardwood trees and the paved parking lot. The surrounding hardwood forests are not problem areas. The picnic area is part of the larger Vadnais-Sucker Lake Regional Park which has trails, a playground area, and large picnic pavilions.

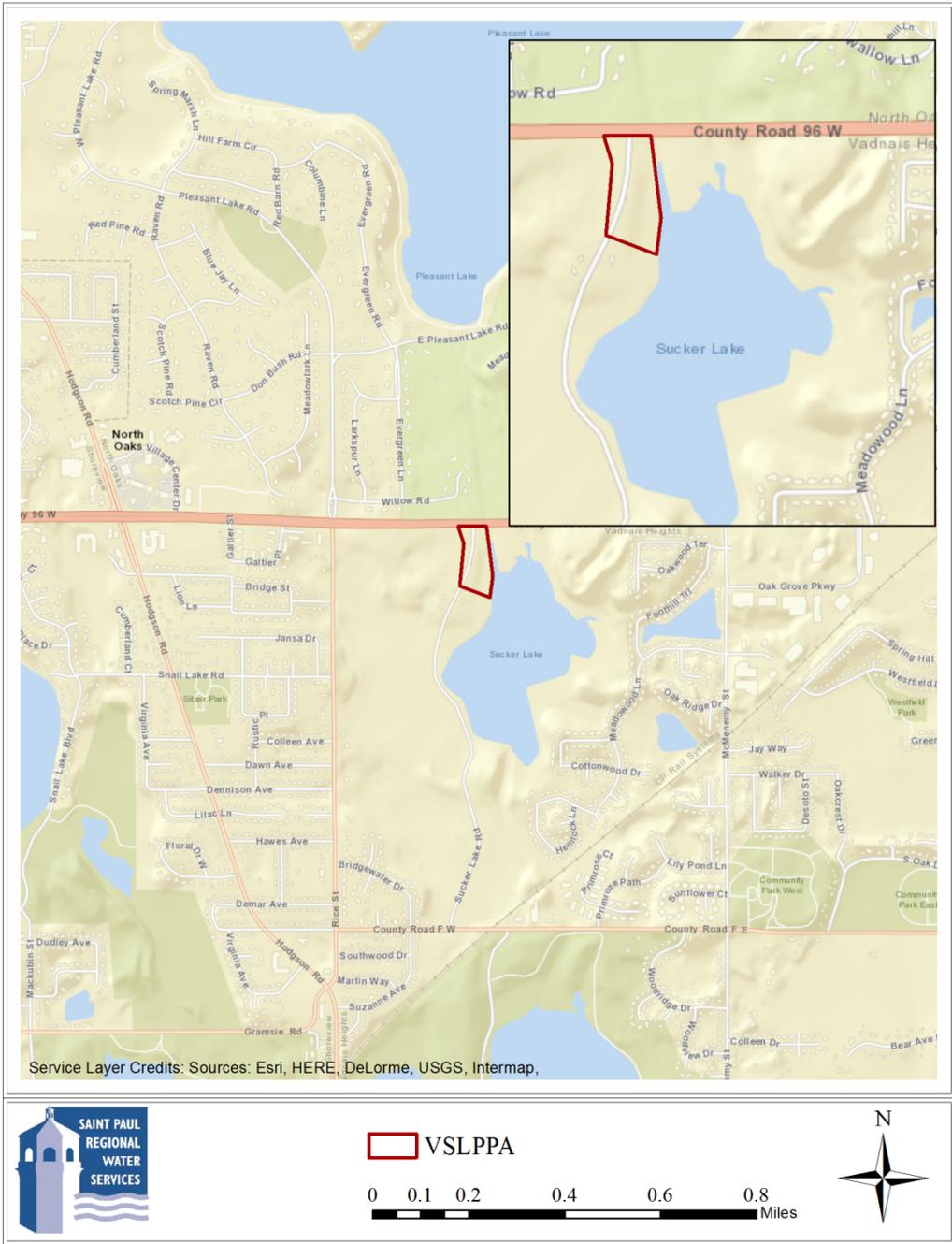


Figure 2. General accessibility to the VSLRPPA goose management location.



Figure 3. Areal image of Vadnais Station. The land cover is composed of mowed grasses, shoreline with mixed woody vegetation, pilings, riprap and grasses, and some coniferous forest. The area also has a significant amount of impervious surface composed of buildings, gravel work areas and paved sidewalks and parking lots. From the areal image one can see the Canada goose problem areas including the mowed, paved and gravel areas. The coniferous forest on the south end is not a problem area and not part of the management plan.



Figure 4. General accessibility to Vadnais Station.

Appendix-C.



Figure 1. Canada goose nesting locations around VSLRPPA. The majority of the nesting locations are outside of the management area. The wetland east of the management area is largely inaccessible because of the soft, mucky ground.

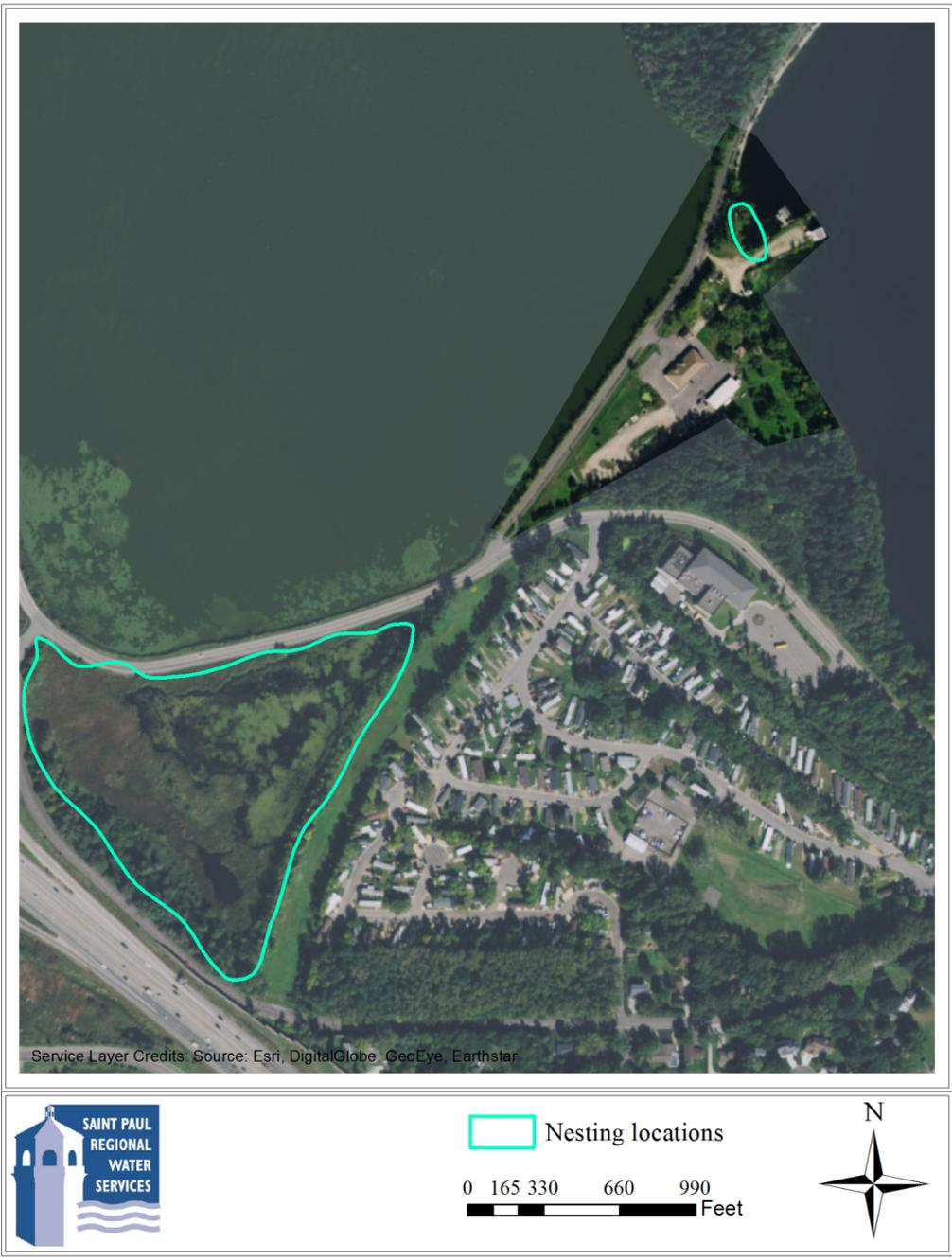


Figure 2. Canada goose nesting locations near the Vadnais Station management area. Aside from the small nesting habitat west of the Vadnais intake gatehouse the majority of nesting geese can be found in the large wetland west of the trailer park.

Appendix-D.



Figure 1. Aerial image of the neighboring properties near VSLRPPA. The picnic area is part of a larger regional park and consequently relatively isolated from neighboring properties. The North Oaks Golf Course north of the VSLRPPA does have habitats that could attract Canada geese displaced by SPRWS.

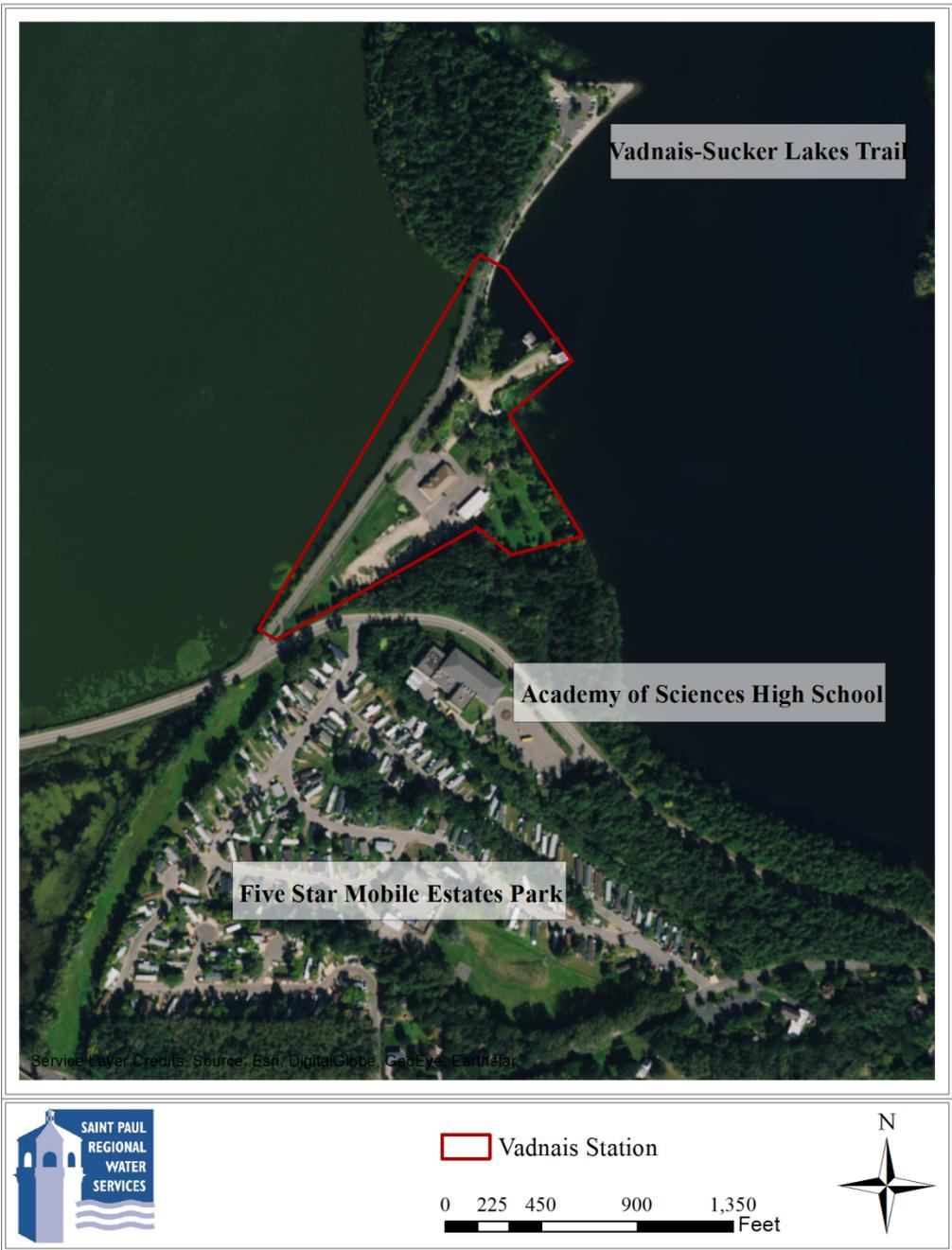


Figure 2. Areal image of the neighboring properties of Vadnais Station.

