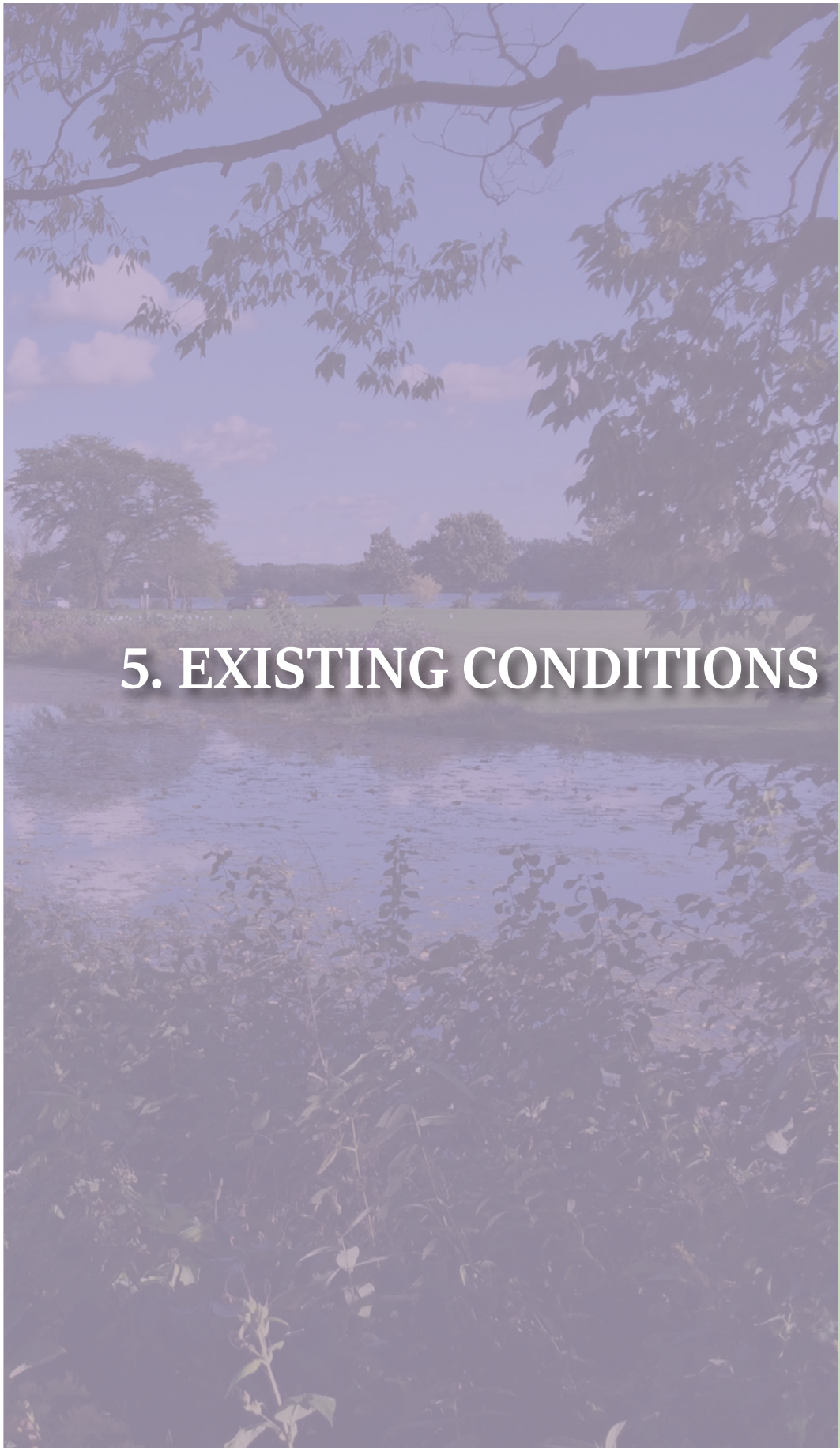


5. EXISTING CONDITIONS

CURRENT USE ANALYSIS

The current use analysis provides an overview of the current conditions of facilities at Vilas Park. These uses are examined in these sub-section; Structures, Playgrounds and Other Activities, Drinking Fountains, Historic Stonework, Annie Stewart Fountain, Roads and Parking, Bridges, Paths, Signs and Wayfinding, Edible Landscape, and Children's Memorial Benches. Some of these facilities are at the end of their expected life and should be considered for repair or replacement and others are in good condition and may last for some time. This analysis is based on visual inspection coupled with background information provided by the City.

For the current condition of pavement, the City of Madison rates asphalt through the University of Wisconsin-Madison Transportation Information Center manual called the Pavement Surface Evaluation Rating (PASER).[57] The PASER Asphalt Manual rating is a 10-point system[58] as follows:

- Rating 9 & 10 – Not maintenance required
- Rating 8 – Little or no maintenance
- Rating 7 – Routine maintenance, crack sealing and minor patching
- Rating 5 & 6 – Preservation treatments (sealcoating)
- Rating 3 & 4 – Structural improvement and leveling (overlay or recycling)
- Rating 1 & 2 - Reconstruction

The City evaluated Vilas Park pavement in 2018 and those ratings are listed in each section of the current use analysis where asphalt pavement exist.[59] This includes Vilas Park Drive, parking lots, basketball courts and all asphalt walks.

The current use analysis for Vilas Park is as follows:

STRUCTURES

Main Park Shelter

The main shelter building was constructed in 1951 and has been repaired through the years to address varying levels of structural issues. The building is constructed of brick and wood on a concrete slab (Figure 5.1). The brick work has been tuckpointed including several large cracks (Figure 5.2). The foundation slab extends past the exterior columns on the lagoon side and consist of concrete steps which have several large cracks (Figure 5.3).

57 University of Wisconsin-Madison Transportation Information Center, www.apa-mi.org/docs/Asphalt-PASERManual.pdf
58 PASER Asphalt Road Manual, page 14
59 Data from the City of Madison Parks Division

Figure 5.1. Main Shelter

Figure 5.2. Shelter Tuck Pointing

Figure 5.3. Steps at Shelter

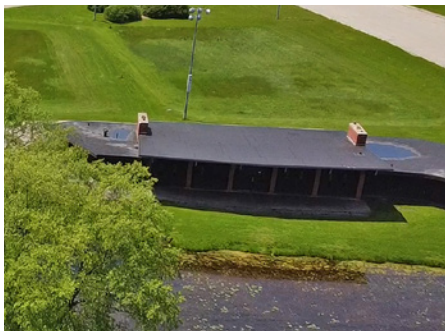


Figure 5.4. Water Ponding on Roof

Figure 5.5. Hockey Rink near Shelter

Figure 5.6. Inside Shelter as Warming House

Ponding of rainwater is evident from aerial views of the building (Figure 5.4). The roof will need replacement in 3 to 5 years. The building provides a covered open-air picnic and gathering space in the warm months and a warming house in winter for ice-skating on the neighboring lagoon (Figure 5.5). Temporary wood doors are placed between columns in the winter to create an enclosed space. The doors need replacement. There is a concession stand within the building that is only open in the winter (Figure 5.6). There are old restroom facilities and two unused fireplaces in the building. The shelter has electrical, water and wastewater services as well as access to propane from an adjacent tank. The electrical system could be updated to be more efficient. There have been requests for improved lighting in the building. The plumbing fixtures and pipes are well past useful life but functioning. Fixtures are not water saving models. The building has HVAC which needs frequent repair and will need full replacement soon. The surrounding pavement connects to paths and the parking lot. The asphalt has been patched and is cracked, a PASER of 6.

Bathhouse

The original beach bathhouse was built around 1956 or 1957 on an area of fill that was once Lake Wingra. The original building was replaced with the current structure around 1979 along with a matching bathhouse at Tenney Park (Figure 5.7). Both buildings have a triangular shaped footprint and consist of restrooms with open-air outdoor changing areas that have shower heads (Figure 5.8). There is storage and small concessions maintained by lifeguards on the side of the building facing the beach (Figure 5.9). The concessions area of the building can be closed and locked with two metal garage doors. The building is mainly constructed of

Figure 5.7. Beach Bathhouse and Beach

Figure 5.8. Beach Bathhouse

Figure 5.9. Bathhouse from Beach

Figure 5.10. Access to Beach

wood and is in relatively good shape structurally, however functionally the facility does not meet the needs of the current beach operations. Overall, the roof, doors, electrical and plumbing are in good condition. The bathhouse is connected to Vilas Park Drive and to parking with an asphalt path (Figure 5.10). There are potential accessibility concerns. The remainder of the site has bike parking racks on a concrete pad on the north side of the building and beach access on the Lake Wingra side.

Figure 5.11. Pump House in Winter

Figure 5.12. Pump House in Summer

Pump House

The pump house was built in the 1990's to provide a water source for winter maintenance of the lagoon for ice-skating. The structure was recently replaced with a new building (Figure 5.11). The pump house is wood clad, on a concrete slab and is in good condition. The building is connected to the asphalt path running north-south through the park (Figure 5.12).

PLAYGROUNDS AND OTHER ACTIVITIES

Playgrounds

There are three playgrounds in Vilas Park. The west playground is near the multi-use trail and is connected to it by an asphalt path (Figures 5.13 and 5.14). The surface material is rubber mulch over a gravel base. This playground was manufactured by Miracle[60] and placed in 1994.

A small playground is located near the mounds in the upper park along Erin Street. This playground is known as the "Dinosaur Playground" due to the dinosaur-themed equipment (Figure 5.15). The equipment is Landscape Structures[61] and was also installed in 1994. The surface is rubber mulch over gravel with no connection to the surrounding walkways. The equipment is not compliant with current ADA guidelines.

Figure 5.13. West Playground

Figure 5.14. West Playground

Figure 5.15. Dinosaur Playground

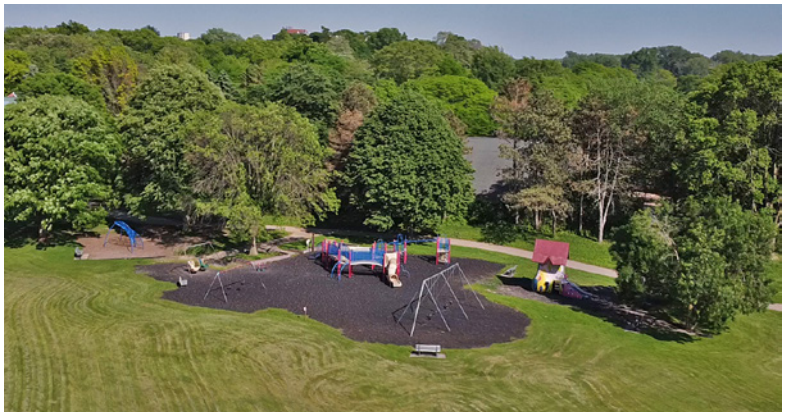


Figure 5.16. Shoe Playground

Figure 5.17. Old Woman in a Shoe

60 www.miracle-recreation.com
61 www.playlsi.com

A large playground is across the meadow from the west playground and is the location of the "Old Woman in the Shoe" (Figures 5.16 and 5.17). The shoe is on a concrete slab and in good condition. As with the other playgrounds, this equipment was installed in 1994 and was manufactured by Game Time.[62] The surface is rubber mulch over gravel as well with access to the path from the north parking lot. The surface is also rubber mulch over gravel with access to a path from the north parking lot.

In accordance with City of Madison Parks typical maintenance practices, replacement of equipment generally occurs between 20 and 25 years after installation. This replacement schedule is in part to difficulty in obtaining replacement parts and general wear and tear. All of the Vilas Park playground equipment is past due (26 years old) but is scheduled to be replaced as early as 2021/2022.[63] At 26 years old the equipment is past the end of its serviceable life.

Tennis Court

The tennis courts were an early addition to Vilas Park. The tennis courts are in the lower area of the park which was originally a bog. Initially, only four courts were built. A 1937 aerial photo of the site appears to show they were constructed with grass turf.[64] An additional two courts were added in 1977. Once paved, the courts have been resurfaced six times. Filling cracks and surfacing typically occurs every 7 to 8 years, after which a mill/overlay is required.[65] The last repair of the courts occurred in 2017 and they are already showing cracks in 2020. The foundation of the courts continues to settle causing the surface to form puddles and crack easily (Figure 5.18). The surrounding fence shows areas of rust with the mesh still taught between post (Figure 5.19). Access is not compliant with ADA guidelines. The courts stand alone in a meadow and are not directly connected to any accessible route or trail system in the park. There are also no bike parking areas which causes players use the fence to secure bikes during play.

Figure 5.18. Tennis Courts

Figure 5.19. Tennis Courts and Fence

62 www.gametime.com
63 Information provided by the City of Madison Parks Division
64 Data from Dane County GIS 1937 aerial photography
65 Data from the City of Madison Parks Division

Basketball Court

The basketball court was added to the park sometime in the 1980's. The court is also in the meadow and has no connection to any accessible route or trail system (Figure 5.20). The basketball court is asphalt with some minor cracking and the paint markings are heavily faded, but it has a PASER of 8. The backboards are metal and are attached to metal posts which are in fairly good shape with some minor rusting and peeling paint (Figure 5.21).

Figure 5.20. Basketball Court

Figure 5.21. Backboard

Backstops

Baseball has been an amenity in the park since the early 1900's. The original backstops were fences with wood framing. Over time, they were replaced with metal fence backstops. The park once had four ballfields[66] that have since been reduced to two. Both existing fields are informal areas of lawn with no infields. The existing backstops are in fair condition. The east backstop is near the path connecting to the north pedestrian bridge and is just south of the shoe play structure (Figure 5.22). The west backstop is near the west playground and is in the meadow near the multi-use trail (Figure 5.23).

Figure 5.22. East Backstop

Figure 5.23. West Backstop

66 1937 Aerial Photo - Dane County Land and Information Office

DRINKING FOUNTAINS

There are three drinking fountains in the park. A fountain is located between the basketball and tennis courts (Figure 5.24). Another fountain is located near the north zoo entrance along the parking lot which exists to Drake Street (Figure 5.25). The third is on the north side of the beach bathhouse (Figure 5.26). All three fountains are concrete with exposed aggregate surface and are in fair condition. They lack the high-low configuration required by current ADA guidelines. The fountain near the basketball court is on a concrete pad in the lawn and not connected to the multi-use trail. The other fountains have direct access to paths.

Figure 5.24. Fountain at Tennis

Figure 5.25. Fountain at North Zoo Entry

Figure 5.26. Fountain at Beach

HISTORIC STONEWORK

There are a few remnant stonework elements from the initial construction of Vilas Park. The John L. Burke drinking fountain is a limestone fountain that was constructed in 1931 (Figure 5.27). It is located near the basketball court and is not operational, but the stone is in good condition. Near the Burke fountain is a stone step system (Figure 5.28). These located west of the tennis courts along the woodland edge near the multi-use trail. The stone is in good condition, but the steps have shifted and become uneven. Vegetation is also overgrowing the steps which creates unsafe conditions.

Figure 5.27. Historic Drinking Fountain

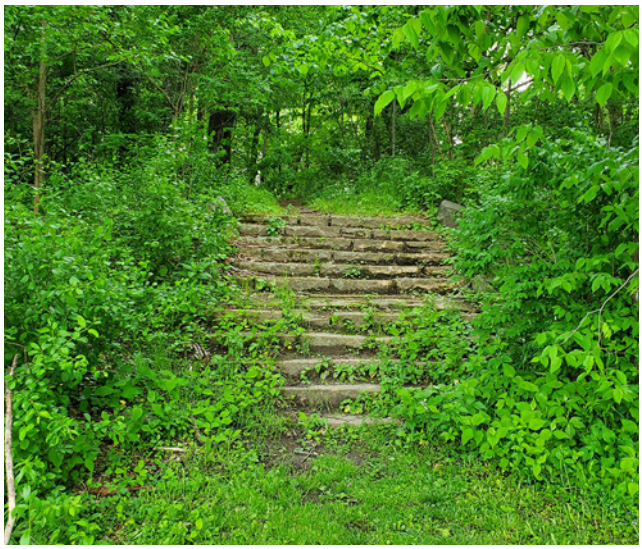


Figure 5.28. Stone Seat Wall/Steps

ANNIE STEWART FOUNTAIN

The Annie Stewart Fountain was completed in 1925 for the pedestrian entrance to the park addition at Erin Street. The fountain was heavily vandalized in 1931. The fountain is constructed of marble and concrete and has significantly deteriorated (Figure 5.29 and 5.30). The fountain has not had flowing water for most of its existence. The fountain is connected to the park and city walk system in the Greenbush Neighborhood. A preservation report was completed in 2017[67] that outlines the steps needed to preserve the fountain. The report noted much of the fountain needs to be replaced and it is unexpected that it will ever function as a fountain again. The City has started a separate planning effort to determine the future of the fountain.

Figure 5.29. Anne Stewart Fountain in Summer

Figure 5.30. Anne Stewart Fountain in Winter

ROADS AND PARKING

Roads

Vilas Park Drive extends most of the length of the park along Lake Wingra. There is a short segment of Edgewood Drive that enters the park and intersects with Vilas Park Drive. The pavement of Edgewood Drive is in fair condition and the City does not have a PASER for that road segment. The Vilas Park Drive asphalt is cracked and patched (Figure 5.31). The entire length of Vilas Park Drive received a 2 to 4 PASER in 2018, meaning potential reconstruction. The asphalt surface drains to lawn areas, asphalt trenches leading to Lake Wingra and some storm sewer pipes (Figures 5.32, 5.33, and 5.34). The edge of the road has a segmented concrete curb that has shifted in places or has been removed altogether (Figure 5.35). Overall, the curb is in poor condition (Figure 5.36).

As Vilas Park Drive extends eastward toward the zoo and beach, there are linear parking lots where parked vehicles must back directly into the drive lane when exiting the parking space. The asphalt continues to show longitudinal and transverse cracks with asphalt patches. Ponding of stormwater is found along Vilas Park

67 Insite Consulting Architects - 2017 Annie C. Stewart Memorial Fountain Conservation/Preservation Plan

Figure 5.31. Longitudinal Cracks

Figure 5.32. Drain Trench to Lake

Figure 5.33. Shoreline along VPD

Figure 5.34. Storm Drain at VPD

Figure 5.35. VPD Curb

Figure 5.36. VPD Curb

Drive near the south parking lot and zoo edge. The profile of Vilas Park Drive is flat with significant rutting and has drainage issues during winter snow removal and freeze/thaw conditions (Figure 5.37).

There is a pinch point along Vilas Park Drive at the zoo where the cross section of the road leaves little space for pedestrians. The curb and pavement show damage from heavy vehicles using the zoo service entries along Vilas Park Drive. The pavement is showing signs of transverse, longitudinal and slippage cracks and the asphalt pavement and curb are in poor condition extending to the intersection of Orchard Street and the edge of the park (Figures 5.38 and 5.39).

Figure 5.37. VPD in Winter

Figure 5.38. Transverse Cracks

Figure 5.39. Slippage and Longitudinal

Parking Lots

The analysis of parking lots begins on the north end of the park going counterclockwise around the site. The north parking lot and the north parking entry drive, mainly utilized by zoo visitors, is in fair condition with cracks and patches (Figures 5.40 and 5.41). The lot has a PASER of 6. The exit road returning to Drake Street has alligator cracks (Figure 5.42). Like Vilas Park Drive, the curb has segments that are cracked and separated.

Figure 5.40. North Entry to Parking Lot

Figure 5.41. North Parking Lot

Figure 5.42. Parking on Exit to Drake

The west parking lot near the tennis courts is in fair condition with a PASER of 7.5 (Figure 5.43). The are no major cracks. The parking lot is connected to the multi-use trail but does not have any paved connections to the tennis courts. There is no curb at this parking lot and runoff flows south directly to the lawn toward the lagoon.

The main shelter parking lot is in fair condition with a PASER of 5.5 to 6 (Figure 5.44). There are longitudinal and transverse cracks. The lot has curbing around all sides except for the north end where there is paved access to the lagoons for the weed cutter and ice grooming equipment.

There are three linear parking lots on Vilas Park Drive. A lot on the north side of Vilas Park Drive has angled stalls accessed directly from the road (Figure 5.45). Another linear lot is along the Lake Wingra shoreline with connections to the accessible pier. This lot is separated by a landscape island from Vilas Park Drive (Figure 5.46). The third lot serves the beach bathhouse and has direct access to Vilas Park Drive (Figure 5.47). All 3 lots have cracks and poor curbing. The lots have a PASER of 3 and need replacement.

Figure 5.43. West Parking Lot

Figure 5.44. Main Shelter Parking Lot

Figure 5.45. VPD North Linear Lot

Figure 5.46. VPD South Linear Lot

Figure 5.47. Beach Linear Parking

Figure 5.48. Drainage issues at South Lot

The parking lot near the south entrance to the zoo is in poor condition (Figure 5.48 & 5.49). The pavement has many patches and is oversized for a typical parking lot design (Figure 5.50). The parking lot received a very low PASER of 2. The lot near Orchard Street is also in poor condition with cracking and has a PASER of 4 (Figure 5.51). Both parking lots have failing curbing along most edges. Both lots also have connections to walks.

Figure 5.49. VPD South Parking Lot

Figure 5.50. South Parking Lot

Figure 5.51. Parking Lot at Orchard

BRIDGES

A structural load rating analysis for the historic bridge at the west end of Vilas Park Drive was performed by Strand Associates in 2012. The bridge was constructed in 1915 and has a wood pile foundation (Figure 5.52). The Strand analysis estimated a load capacity of approximately 11.1 tons (capable of safely supporting a bus) for the bridge. The stone façade of the bridge is in good condition, but the masonry joints need tuck pointing (Figure 5.53). The concrete arch support has several cracks and gaps also in need of masonry work (Figure 5.54).

Figure 5.52. Historic Bridge

Figure 5.53. Stonework of Bridge

Figure 5.54. Bridge Structure

The City of Madison recently replace the two pedestrian bridges that cross to the island located in the lagoon (Figures 5.55 and 5.56). The bridges are prefabricated steel structures with a concrete walking surface. The abutments are large glacier stones and riprap. The paths leading up to the bridges were repaved in asphalt and are in good condition. The slope of the paths to the bridges meet current ADA accessibility guidelines.

Figure 5.55. Pedestrian Bridge

Figure 5.56. Bridge Concrete Surfacing

PATHS

There are four trail and path systems in Vilas Park. There are walks which parallel Drake Street and the exit road from the north lot. There is a multi-use trail that runs the extent of the west boundary of the park. There is also a north-south connection through the center of the park that extends from the north parking lot to Vilas Park Drive over the pedestrian bridges and island. And, there are walks connecting the upper park mounds and Annie Stewart Fountain to the lower park.

The sidewalk in the Drake Street right-of-way was recently added (Figure 5.57). From the Drake Street sidewalk, there is a connection to a walk that extends along the entry road to the north parking lot (Figures 5.58 and 5.59). All the concrete is in good condition and maintained in the winter. The asphalt path that is parallel to the exit road from the north parking lot to the intersection of Grant and Drake Streets is also in good condition with a PASER of 8 (Figure 5.60).

The asphalt path that is parallel to the exit road from the north parking lot to the intersection of Grant and Drake Streets is in good condition (Figure 5.60). The PASER is an 8 for this walk.

The multi-use trail extends from the Grant and Drake Street intersection along the west boundary of the park to Edgewood Drive (Figures 5.61, 5.62 and 5.63). The asphalt pavement has a PASER of 8 and is in good condition. The trail is the widest paved pedestrian path in the park at 10 feet. The multi-use path is plowed regularly during the winter as a heavily used commuter route (Figure 5.64). There are connections to Vilas

Figure 5.57. Drake Street Walk

Figure 5.58. Connecting Walk

Figure 5.59. Walk along Park Engtry Road

Avenue along the route. The main connection is directly across from the Van Buren Street intersection with Vilas Avenue. There are also several informal connections through the woodland edge of Vilas Avenue to the multi-use trail (Figure 5.65). These connections range from asphalt to dirt paths. They are in poor condition and mostly non-ADA compliant.

The main north to south path through the park begins at the north parking lot running near the west fence line of the zoo to the pedestrian bridges to just east of the main shelter to Vilas Park Drive (Figures 5.66 to 5.70). The path is heavily used and is accessible along its entire length. The pavement is asphalt and is in varying conditions. The path from the north parking lot to the east backstop has a PASER of 5. There is rutting, ponding and cracking in the pavement (Figure 5.67). From the backstop to Vilas Park Drive, the asphalt has a PASER of 10 since that portion was installed with the new pedestrian bridges in 2017. There is a

Figure 5.60. Path along North Exit Road

Figure 5.61. North Multi-Use Trail

Figure 5.62. Central Mult-Use Trail

Figure 5.63. South Multi-Use Trail

Figure 5.64. Multi-Use Trail in Winter

Figure 5.65. Informal Path Example

short connection to the former west entrance to the zoo which is poor condition and is no longer used (Figure 5.68). The path on the island extending to Vilas Park Drive also serves as an access for park maintenance (Figures 5.69 and 5.70). The entire length of the path is cleared of snow in the winter.

Once the central path terminates at Vilas Park Drive there are no paved connections east or west other than the road. There is a worn dirt foot path along the lagoon shoreline to the south entrance of the zoo (Figures 5.71 and 5.72).

Figure 5.66. Path near Shoe Playground

Figure 5.67. Path at Backstop

Figure 5.68. Path to Closed Zoo Gate

Figure 5.69. Path on Island

Figure 5.70. Path at Vilas Park Drive

There are three short asphalt paths connecting the south zoo entrance, the beach and the kayak launch to Vilas Park Drive (Figures 5.73 to 5.75). These paths provide accessible connections to use areas but are in poor condition. There has not been a formal assessment of these paths. The south zoo connection is the only link maintained in the winter.

There are no pedestrian walkways along a narrow corridor of Vilas Park Drive where the south zoo fence is near the Lake Wingra shoreline (there is only 44.5 feet from the fence to the top of the shoreline slope). There are worn footpaths on both sides of Vilas Park Drive here. The north side dirt path is adjacent to the zoo fence (Figure 5.76). On the south side, there are two worn paths between the curb and rip-rap shoreline (Figure 5.77). The corridor is used by people on foot during the winter and is hazardous (Figure 5.78).

Figure 5.71. Dirt Path along Lagoon

Figure 5.72. Dirt Path along Vilas Park Drive

Figure 5.73. Path to Zoo Entrance

Figure 5.74. Path at Beach

Figure 5.75. Path to Kayak Launch

At the upper park along Erin Street there are concrete walks connecting to the City walk system and down to the lower park (Figure 5.79). The concrete is in good condition, but the walks exceed an 8% slope in several locations, especially from the top of the hill down to Randall Avenue (Figure 5.80). This condition is not compliant with ADA guidelines. Handrails and landings every 30-feet would need to be added to meet minimum compliance. The walks are cleared in the winter (Figure 5.81). Due to the sensitivity of the mounds, any improvements to the walks are subject to review by the State Archaeologist.

Figure 5.76. Dirt Path at Zoo Fence

Figure 5.77. Dirt Path at Lake Wingra

Figure 5.78. Corridor in Winter

Figure 5.79. Walks at Mounds

Figure 5.80. Walk down to Randall

Figure 5.81. Walk in the Winter

SIGNS AND WAYFINDING

Vilas Park does not have a park sign identifying the facility typical of other parks in the system. There are Henry Vilas Zoo signs at the entrance to the north parking lot and another at the south entry to the zoo (Figure 5.82). There is an information kiosk in the center of the park near the north pedestrian bridge at the lagoon that offers a map with amenities and information on other events and public notices (Figure 5.83). Once in the park, there are several wayfinding signs in parking lots and along Vilas Park Drive (Figure 5.85). These are typical road signs but are difficult to read from cars even though patrons in cars are the intended users. There is primarily vehicle related information and the signs are utilitarian in appearance.

Figure 5.82. Zoo Sign at the Entrance to Vilas Park and the Norht Parking Lot

Figure 5.83. Park Kiosk

There is a sign with photographs and information about the history of Vilas Park near the shoe playground along the zoo west fence (Figure 5.85). The sign is in good condition and has information that users may find interesting. There is also a plaque about William Vilas and his role in creating the park on a stone near the main shelter (Figure 5.86).

Figure 5.84. Vehiclular Wayfinding Signs

There are several signs and plaques throughout the park that honor, dedicate and inform park users of significant events and causes that have occurred in the park. The plaques are on stone and in good condition. There is a sign made of recycled plastic dedicated to supporters of the park that flanks the stone with the William Vilas plaque (Figure 5.87). Nearby, there are two signs honoring the Olympic Speed Skaters from

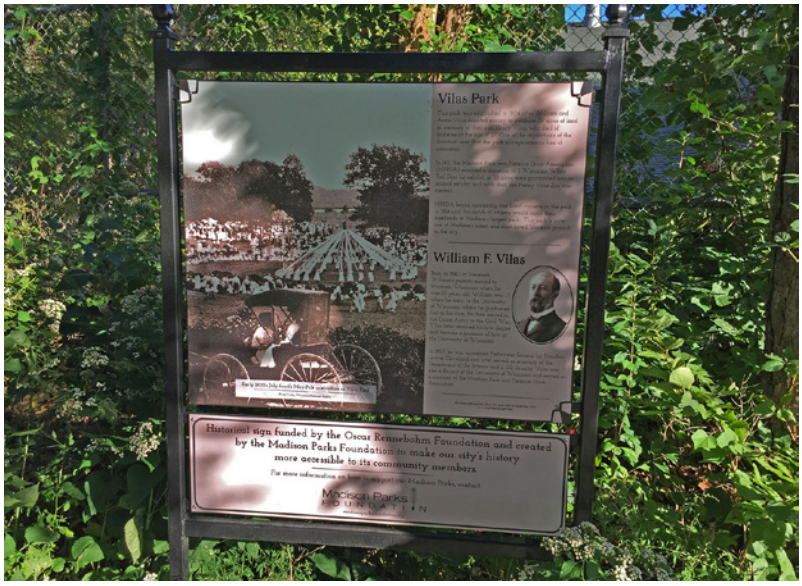


Figure 5.85. Vilas Park History Sign

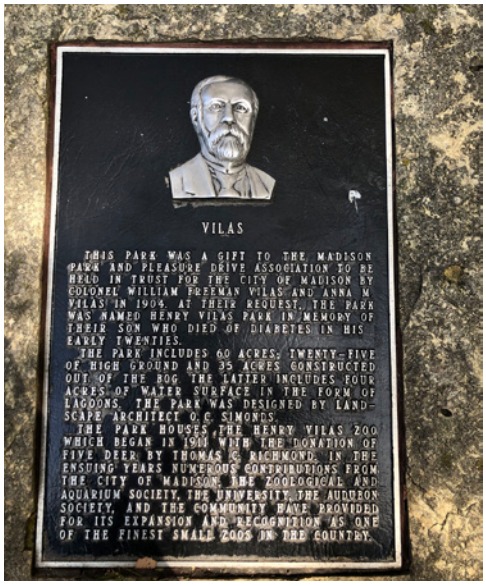


Figure 5.86. William Vilas Plaque

Madison whose use of the lagoon was instrumental in their learning to skate. The names of skaters are on both the plaque and a wood sign (Figures 5.88 and 5.89). A second plaque was added as more skaters participated in the Olympics.

There is a plaque near a grove of trees dedicated to the leaders of the National Woman's Relief Guard to the Grand Army of the Republic (Figure 5.90). The stone marker is located near the basketball court and grove of trees. Another plaque in proximity to the grove is dedicated to Alma and Karl Taeuber and their relationship with Regent Soccer and Madison Areas Youth Soccer Association (MAYSA) (Figure 5.91). The plaque is in

Figure 5.87. Park Supporters Sign

Figure 5.88. Olympians

Figure 5.89. Olympic Speed Skaters Sign

the center of the landscape island between the connections of the multi-use trail and Vilas Avenue at Van Buren Street. Finally, there is a plaque at the foot of the mound complex at Erin Street describing the Native American mound system and village site at Vilas Park (Figure 5.92). All the plaques on stone are in good condition and well maintained.

The Henry Vilas Zoo is a shared space with the park and has north and south entrance features. Even though the park and zoo are separate entities, these entrances are important to the relationship of both facilities. The existing signs are dated, and the zoo is currently conducting a master plan which includes their replacement.

Figure 5.90. Nat'l Woman's Relief Plaque

Figure 5.91. Taeuber Plaque

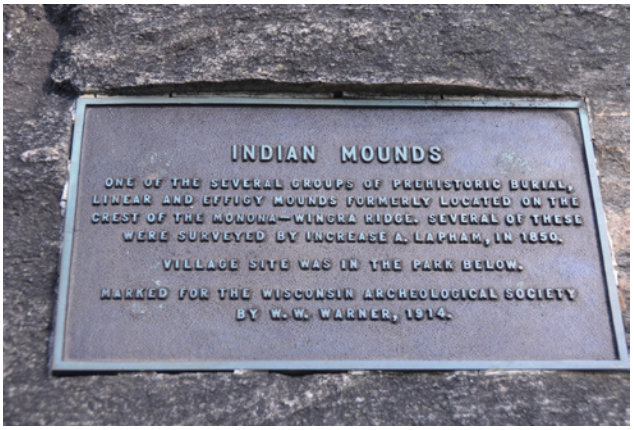


Figure 5.92. Indian Mounds Plaque

The north sign is a gateway structure which will be replaced and relocated to align with the entry road from the Drake Street and Randall Avenue intersection (Figure 5.93). The south zoo entrance is the former east historic bridge which was built in 1915 as a companion to the park bridge on Vilas Park Drive (Figure 5.94). The bridge walls were extended, and columns were added many years ago to create a gateway into the zoo. There is a small remnant of the lagoon system that provides a pool of water for a garden at that entrance. The bridge and garden are maintained by the zoo.

Figure 5.93. North Zoo Gateway

Figure 5.94. South Zoo Entrance and Bridge

EDIBLE LANDSCAPE

There is a small area that is dedicated to an edible landscape along the path connection from the central path to the former west zoo entrance (Figure 5.95). There are trees along the north shoreline of the lagoon. This location is a good area for expansion of the garden due to being somewhat secluded from the main thoroughfare. The space is triangular and can be easily identified as a garden. The ground is near the lagoon with good access to groundwater for plants.

Figure 5.95. Fruit Trees Along the Lagoon at the Former West Zoo Entrance

CHILDREN'S MEMORIAL BENCHES

The Madison Area Chapter of The Compassionate Friends (TCF) has memory benches in and around the "Old Woman in the Shoe" playground. (Figures 5.96 and 5.97). The benches are not placed on an ADA accessible route. The benches are metal frames with recycled plastic slats. Custom memorial plaques are fastened to the slats. According to the Compassionate Friends Website[68] "Since 1994, almost 900 names of beloved children have been added to these memory benches."

Figure 5.96. Memory Bench at "Old Woman in the Shoe"

Figure 5.97. Memory Benches Around Playground

68 The Compassionate Friends Madison Chapter

TRAFFIC AND PARKING ANALYSIS

TRAFFIC DATA COLLECTION

MSA Professional Services, Inc. collected turning movement counts at five intersection locations (Figure 5.1) surrounding Vilas Park to evaluate existing traffic conditions on perimeter roads to the park. Count dates were April 24, 2019 and June 29, 2019 to capture a typical weekday with school in session and on a weekend with pleasant weather. Morning and afternoon peak hours, between 6-9 a.m. and 3-6 p.m., were counted during the week; and on the weekend, the 14 hours from 6 a.m.-8 p.m. were counted. Vehicle classification for the count data includes passenger vehicles, buses, motorcycles, articulated trucks, single-unit trucks, pedestrians, and on-street and off-street bicycle traffic. The following intersections were used for the analysis (Figure 5.98):

1. South Randall Ave. & Drake St., including primary zoo parking access
2. Drake St. and Grant St. including the zoo Exit
3. Edgewood Ave. and the multimodal Path intersection
4. South Orchard St. and Vilas Park Dr.
5. North Wingra Dr. and South Mills St./North Wingra Dr.

In addition to turning movement counts, the City of Madison Traffic Engineering Division and MSA collected information about the number of vehicles entering and exiting the park and summarized vehicle speeds at three locations along Vilas Park Dr. to determine the speed profile of vehicles using this section of roadway through the park. Speed data was collected during two time periods, once during the summer on August 12, 2019, and the other during the fall on November 7, 2019 – again to capture data while school was both in- and out-of-session.

Figure 5.98. Aerial Photo of Vilas Park with Data Collection Points (Google Maps)

Figure 5.99. Intersection of Drake Street and Randall Avenue 1

Figure 5.100. Intersection of Drake Street and Grant Street 2

Figure 5.101. Intersection of Edgewood Avenue and Multimodel Path 3

Figure 5.102. Intersection of Orchard Street and Vilas Park Drive 4

The total number of vehicles using Vilas Park Dr. during this period of study falls around 1,300 to 1,700 a day on weekdays and slightly less on weekends. City of Madison Traffic Engineering maintains a web-based traffic count application.[69] The app obtains a daily average for certain street locations in the City. As a comparison, for the intersection of Drake St. and Randall Ave., the daily average is 4,600 vehicles utilizing Drake St. and 1,600 utilizing Randall Ave.[70] At the intersection of Vilas Park Dr. and Mills St.,[71] the average is 4,450 at Mills St., but there is no historical data for Vilas Park Dr.

TRAFFIC ANALYSIS

Peak hours at the study intersections were found to be 7:30-8:30 a.m. and 4:00-5:00 p.m. during the week and 9:00-10:00 a.m. and 2:00-3:00 p.m. during the weekend. Pedestrian and bicycle traffic were counted separately from vehicles at the intersections to show heavily used crosswalks around the park. Pedestrian activity was the highest during the weekend, with the greatest number of pedestrians utilizing the multi-use path at Edgewood Dr. and Vilas Park Dr., at Vilas Park Dr. and Orchard St., and at the zoo entrance at Drake St. and Grant St. A summary of peak-hour vehicle and pedestrian traffic movements at the five study intersections can be found in the weekday (Figure 5.104) and weekend (Figure 5.105) intersection activity diagrams, Figure 5.103 provides a description of the activity diagram content.

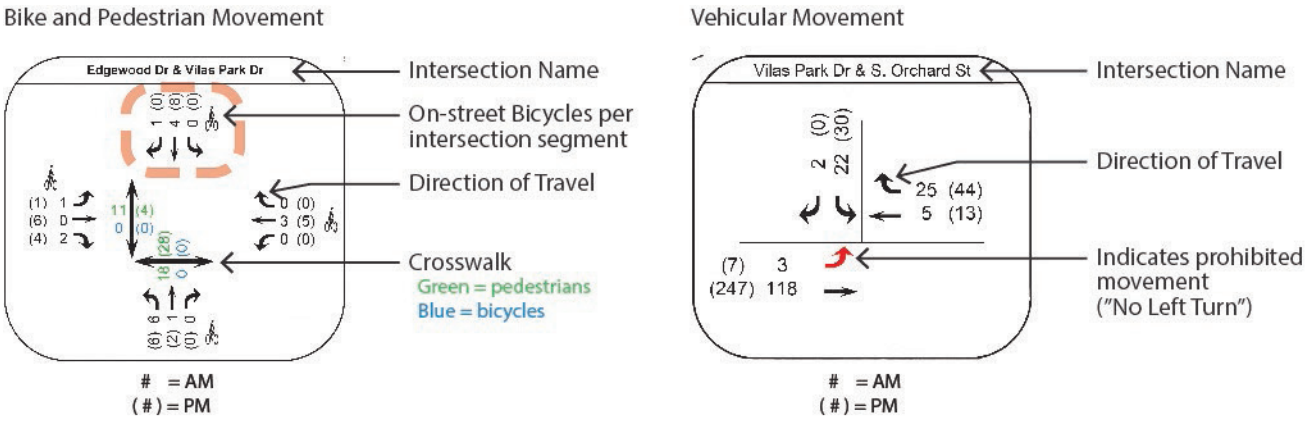
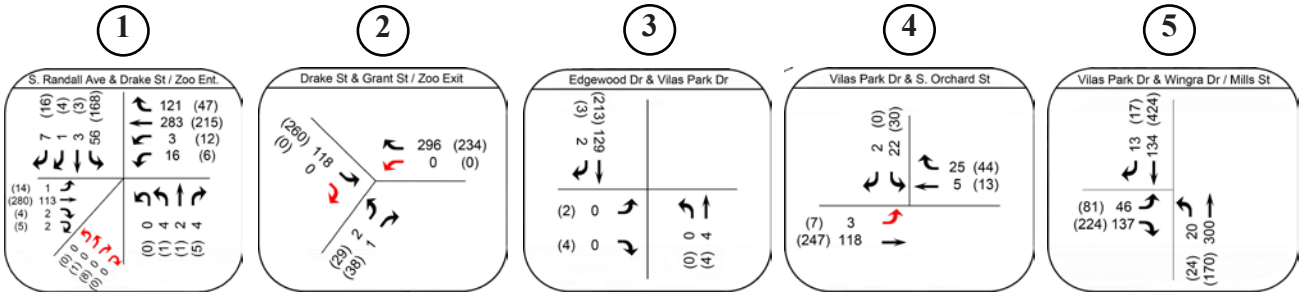
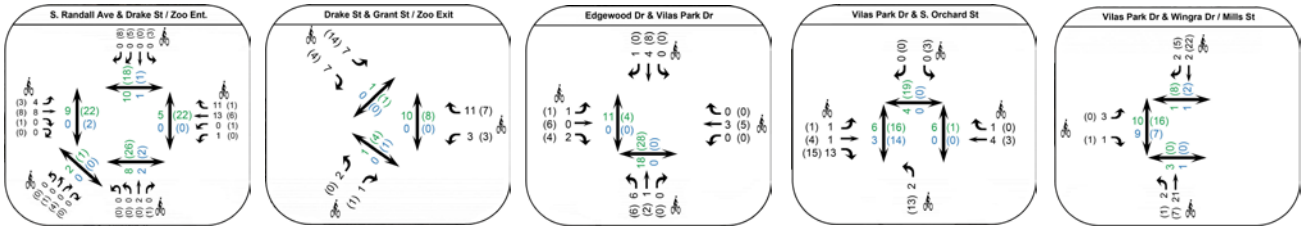


Figure 5.103. Intersection Activity Diagram Description

69 City of Madison Traffic Engineering, www.cityofmadison.maps.arcgis.com/apps/webappviewer
70 For the year 2017
71 For the year 2015

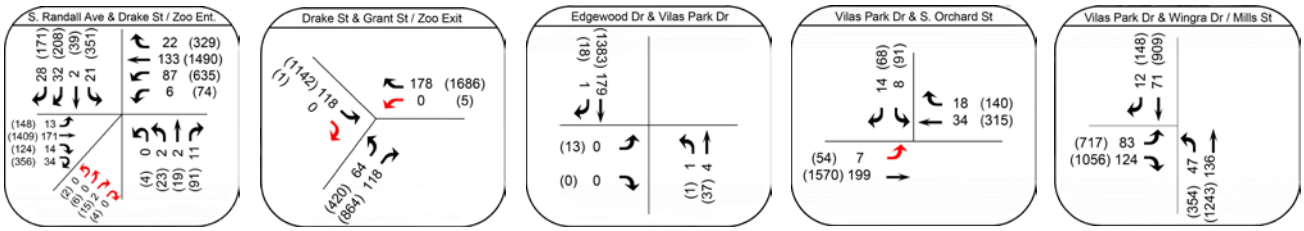


Vehicles (Red Indicates One-Way Do Not Enter)

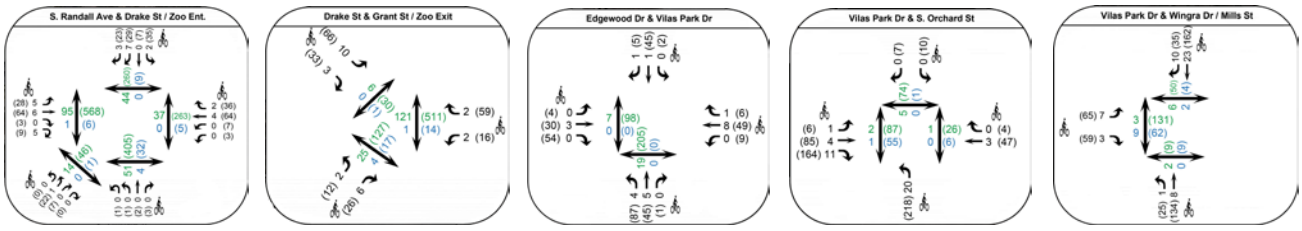


Bike/Pedestrian (Blue Indicates Pedestrian, Green Bikes)

Figure 5.104. Weekday Intersection Activity



Vehicles (Red Indicates One-Way Do Not Enter)



Bike/Pedestrian (Blue Indicates Pedestrian, Green Bikes)

Figure 5.105. Weekend Intersection Activity

Analysis of the intersections data also indicates that Vilas Park Dr. may be serving as a shortcut through-route for drivers leaving Edgewood and Monroe Street area, from the west going east. In addition, the lack of east-west transportation routes in this part of the city may contribute to pass-through traffic for destinations on S Park St. or Fish Hatchery Rd. as well. Vilas Park Dr. is one-way from the intersection with Edgewood Ave., eastbound, to the parking lot near the southern entrance to the zoo. The turning movement counts, all collected on the same day, provide a conceptual estimate of the number of pass-through trips that may be occurring. The data (Tables 5.1 and 5.2) is used to estimate the number of pass-through trips by taking the difference between the number of vehicles entering Vilas Park from the west at Edgewood Ave. and the

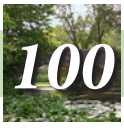
number of vehicles exiting to the east at Orchard Ave. for each of the 15-minute intervals counted. The assumption is that vehicles intending to visit the park and enter from the east at Orchard St. are likely staying at the park for longer than 15 minutes.

Table 5.1 illustrates the estimated number of commuter vehicles using Vilas Park Dr. without parking or stopping to use park facilities during a weekday. The Table 1, "Trip Difference" column, shows a larger negative trip difference (more vehicles leaving the park to the east than arriving from the west on Vilas Park Dr.) in the later afternoon; specifically, between 3:15-4:30 p.m. (Figure 5.106). This could be due to a combination of students using the Vilas Park parking lots during the school day and exiting the park in the afternoon, as well as zoo guests exiting the zoo parking lot. After school hours, the data shows a small jump in potential pass-through trips around 3:15 p.m. The traffic count data suggests that there is a significant number of vehicles traveling on Vilas Park Dr. that are utilizing the route as a pass-through bypassing the park.

Table 1 - Weekday Calculated Vehicle Pass through Trips on Vilas Park Drive

Time	Edgewood Ave & Vilas Park Dr	Orchard St & Vilas Park Dr	Estimated Pass Through Trips	Trip Difference	Estimated Pass Through Trip %
AM	EB Vehicles Enter	EB Vehicles Exit	EB Vehicles	Vehicles	
6:00 AM	4	4	4	0	100%
6:15 AM	11	11	11	0	100%
6:30 AM	11	8	8	3	73%
6:45 AM	14	15	14	-1	100%
7:00 AM	24	24	24	0	100%
7:15 AM	26	25	25	1	96%
7:30 AM	39	37	37	2	95%
7:45 AM	48	42	42	6	88%
8:00 AM	25	27	25	-2	100%
8:15 AM	19	15	15	4	79%
8:30 AM	26	25	25	1	96%
8:45 AM	23	24	23	-1	100%
PM					
3:00 PM	44	51	44	-7	100%
3:15 PM	43	57	43	-14	100%
3:30 PM	50	66	50	-16	100%
3:45 PM	51	58	51	-7	100%
4:00 PM	53	62	53	-9	100%
4:15 PM	57	70	57	-13	100%
4:30 PM	52	68	52	-16	100%
4:45 PM	57	54	54	3	95%
5:00 PM	61	66	61	-5	100%
5:15 PM	57	52	52	5	91%
5:30 PM	53	45	45	8	85%
5:45 PM	47	45	45	2	96%

Notes: Intersection Counts Completed 4/24/19
Trips include vehicles only, does not account for bikes on road
Assume westbound vehicles entering/existing Vilas Park are staying longer than 15 minutes
- Occupants are either parking and walking to Edgewood, or parking and using Vilas Park and Zoo



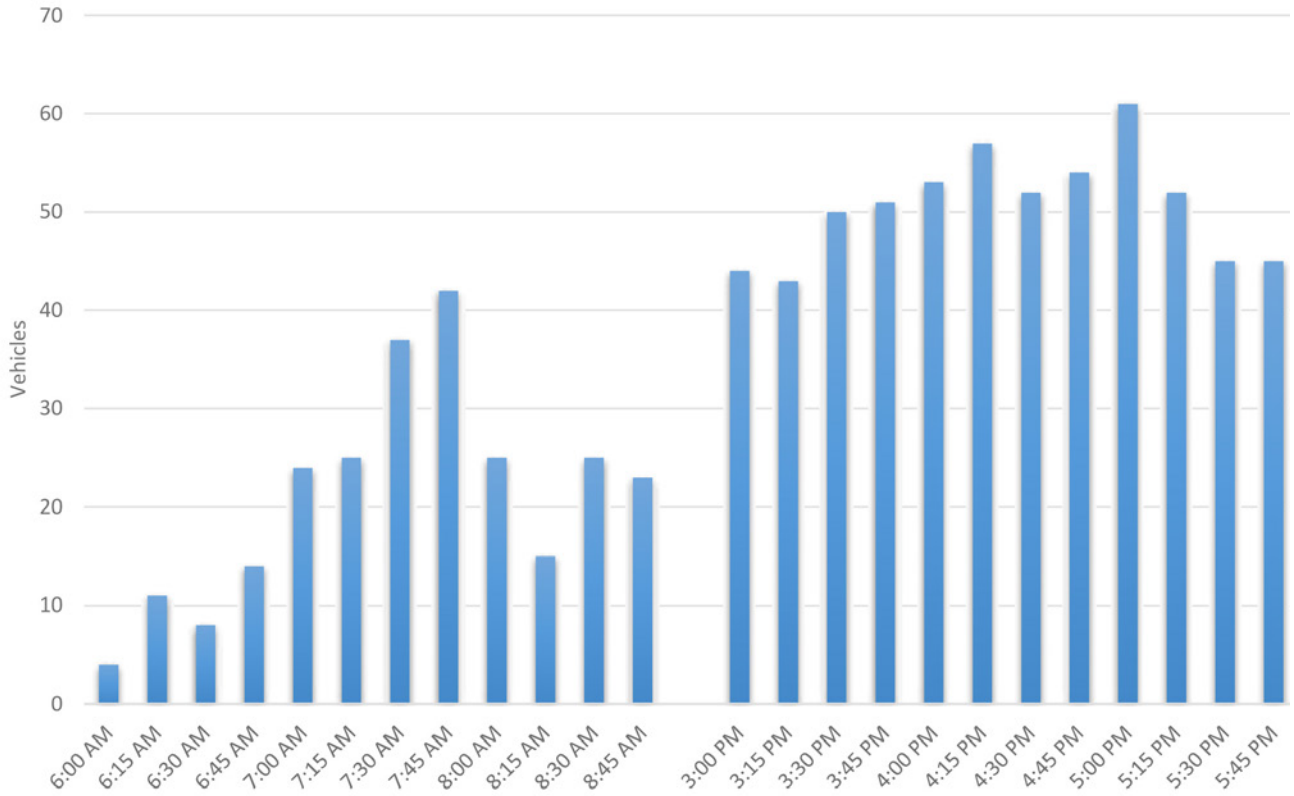


Figure 5.106. Graph of Weekday Calculated Vehicle Pass through Trips on Vilas Park Drive (MSA)

SPEED STUDY AND ANALYSIS

There is currently no posted speed limit on Vilas Park Dr. through Vilas Park. Vilas Park Dr., within the park property boundary, is considered a "pleasure drive" and does not fall within a city street right-of-way. Collection of speed data from three locations (shown in Figure 5.107) along Vilas Park Dr. from August and November 2019 provides information on the speeds of vehicles using this road. Speed data was obtained by City of Madison Traffic Engineering from August 12 to August 18, 2019. The fastest speeds during that study period occurred outside of the park, at the entrance to Vilas Park on Edgewood Ave. (location 9107 on Figure 5.5). The 85th percentile speed at this location was 31 mph. This location also saw the largest percentage of drivers, 22%, traveling over 30 mph when compared to the other locations in the park. Speeds at the two other locations (9108 and 9109) fell between 24 and 26 mph.

MSA conducted a second speed study from November 7 to November 15, 2019. During that study period, the road tubes were cut by snowplows midway through data collection. Data that was affected by this incident was removed from the study. The results of this study showed that 85th percentile speeds were relatively consistent at the three sites, at approximately 29, 30 and 27 mph, respectively. Only 10% or fewer of the vehicles were observed to be traveling greater than 30 mph through the park. Figure 5.111 shows the speed data from both the August and November data collections.

Figure 5.107. Aerial Photo of Vilas Park with Tube Count Locations (Google Maps)

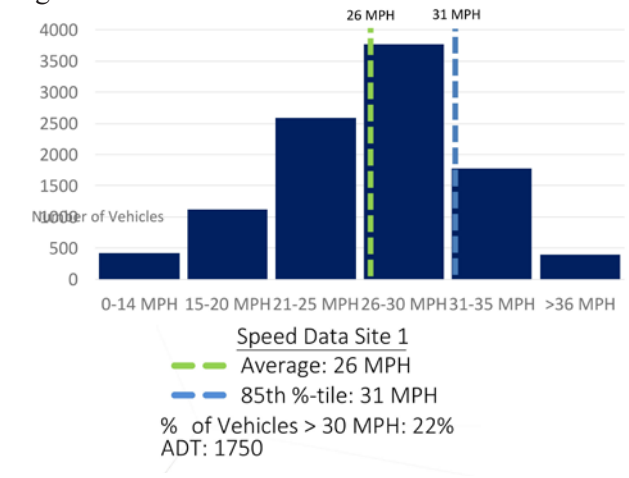
Figure 5.108. Site 9107 Edgewood Avenue

Figure 5.109. Site 9108 Vilas Park Drive on Peninsula

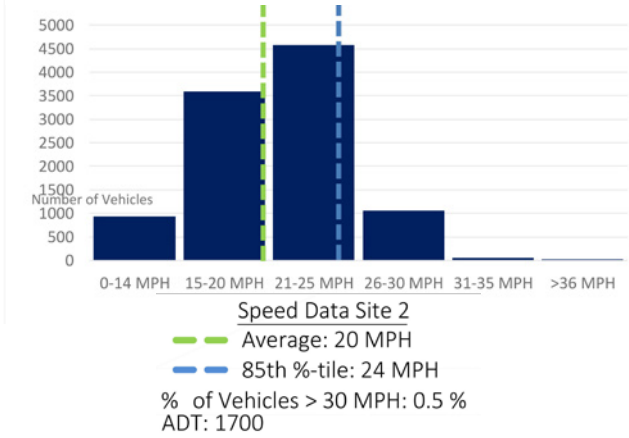
Figure 5.110. Site 9109 Vilas Park Drive at Zoo

AUGUST 2019

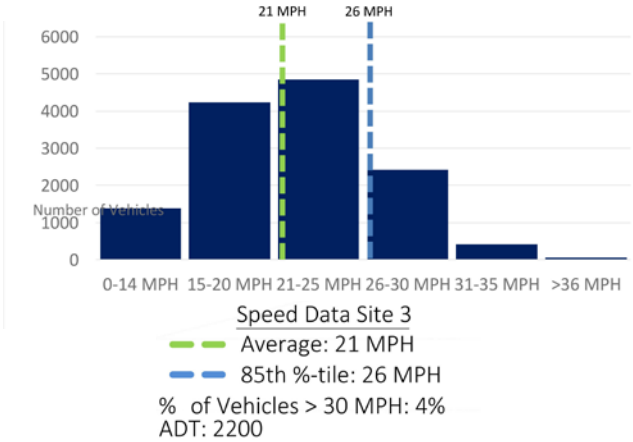
Edgewood Avenue: Site 9107



Vilas Park Drive: Site 9108

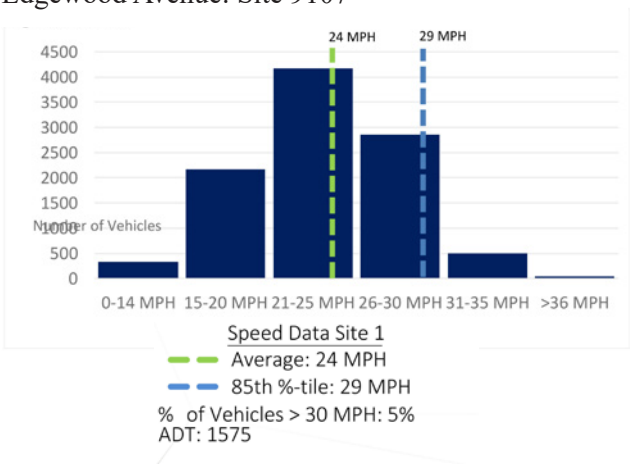


Vilas Park Drive: Site 9109

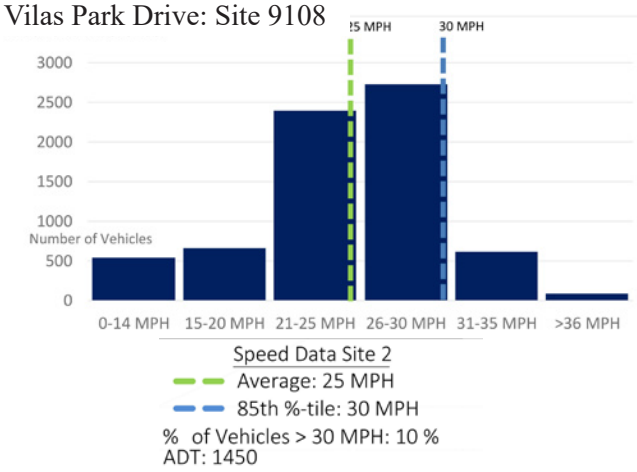


NOVEMBER 2019

Edgewood Avenue: Site 9107



Vilas Park Drive: Site 9108



Vilas Park Drive: Site 9109

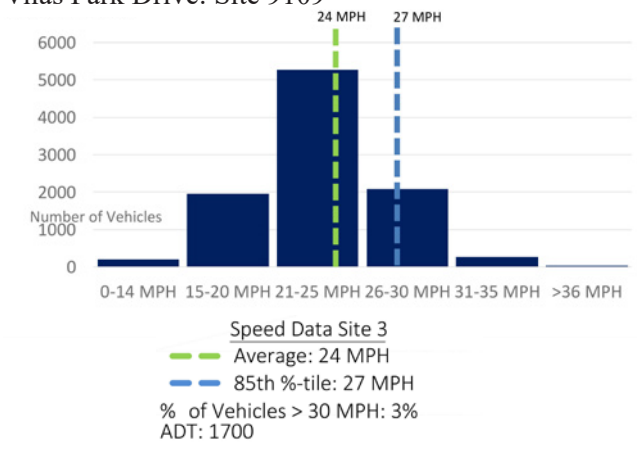


Figure 5.111. Speed Data for Edgewood Avenue through Vilas Park Drive to Orchard Street Intersection

PARKING COUNTS

Counting of parked vehicles in all of the park's lots occurred in conjunction with site observations to provide a snapshot of the number of users arriving by vehicle during differing times, days and seasons. The park was subdivided into ten smaller study areas for a more manageable site observation and parking count (Figure 5.112). Not all ten areas of study identified in the park have off-street parking lots. The city streets that border the park were also included in the study to account for potential utilization of those opportune spaces that have direct access to the park.

The parking lots and bordering street spaces are as follows in these study areas.

- Area 1 includes the small lot just west of the tennis courts and on-street parking along Vilas Ave.
- Area 4 includes parallel parking on Drake St. and Randall Ave. and three northern parking lots.
- Area 7 includes parallel parking on Erin St. in the upper area of Vilas Park at the Annie Stewart Fountain.
- Area 8 includes parallel parking on Vilas Park Dr. just east of the historic bridge and west of the park shelter lot.
- Area 9 includes angled parking on Vilas Park Dr. between the shelter an beach and the fishing pier.
- Area 10 includes angled parking north of the beach house, the south lot at the zoo entrance and the small lot at the intersection of Vilas Park Dr. and Orchard St.

Note: There are no parking lots in areas 2, 3,5 and 6.

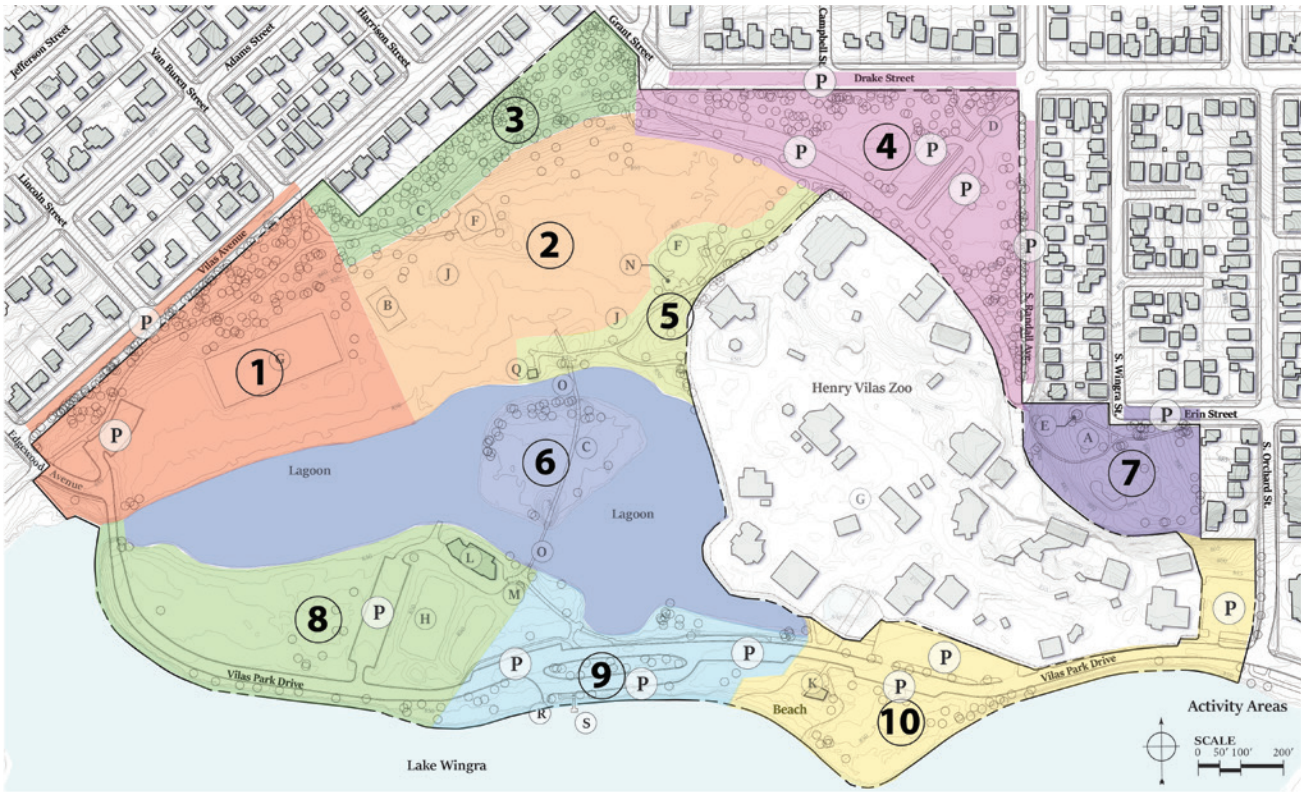


Figure 5.112. Site Observation Study Areas with Parking (P) Identified

Figure 5.113. Parking along Vilas Park Drive

Figure 5.114. Area 1 - Tennis Courts

Figure 5.115. Area 1 - Vilas Park Drive Closed to Traffic

Figure 5.116. Area 8 - Vilas Park Drive Parallel Parking

Figure 5.117. Area 8 - Vilas Park Drive Parallel Parking

Figure 5.118. Area 8 - Shelter Parking

Figure 5.119. Area 8 - Shelter Parking

Figure 5.120. Area 9 - Vilas Park Drive Angled Parking (North)

Figure 5.121. Area 9 - Vilas Park Drive Angled Parking (South)

Figure 5.122. Area 9 - Vilas Park Drive Linear Parking Lot

Figure 5.123. Area 10 - South Parking Lot at Zoo Entrance

Figure 5.124. Area 10 - Parking Lot at Orchard and VPD

Figure 5.125. Area 7 - Erin Street Parking

Figure 5.1206 Area 4 - North Parking Lot at Zoo

Figure 5.127. Area 4 - North Parking Lot at Zoo

Figure 5.128. Area 4 - Parking along Exit Road

As the master plan project was beginning in earnest, Parks expressed interest in generally maintaining the existing amount of parking spaces within the park – in recognition that it would be unreasonable to expect that the park's parking capacity could grow – especially to attempt to accommodate peak zoo visitorship – and that greatly reducing the count would, in turn, shift the burden to accommodate additional spaces to the adjacent residential streets. Additionally, more efficient layout of parking would help reduce the overall amount of pavement within the park.

There are 395 parking stalls within Vilas Park including the 8 parallel spaces on Erin St. (Table 5.2). Erin St. is the only street with on-street parking that is specifically identified and signed as Vilas Park parking. The parking counts shown in Table 5.3 are from a 12-month study of Vilas Park-associated parking demand. The table lists the date, time, weather conditions and temperature to give a sense of how the parking demand varies throughout the year. The percentage of spaces utilized provides another perspective as to how full parking lots and streets are at differing times.

Table 5.2 - Total Amount of Parking Stalls in each of the Areas with Parking Identified on the Site Plan

Vilas Park Total Parking Stalls per Area

Area 4	Drake St	4A	4B	4C	Randall	Total	Max	Percent used
Total Stalls	32	28	30	30	17	137	137	100%
Area 1	Vilas Ave	1A				Total	Max	Percent used
Total Stalls	40	25				65	65	100%
Area 8	VPD	8A				Total	Max	Percent used
Total Stalls	28	56				84	84	100%
Area 9	9A	9B	9C			Total	Max	Percent used
Total Stalls	21	21	17			59	59	100%
Area 10	10A	10B	10C	10D		Total	Max	Percent used
Total Stalls	55	18	22	36		131	131	100%
Area 7	Erin St					Total	Max	Percent used
Total Stalls	8					8	8	100%

Table 5.3 - Parking Counts on Date and Time with Weather Conditions

Vilas Park Parking Counts 6/20/2019

Thursday Partly Cloudy Temp 74

Area 4	Drake St	4A	4B	4C	Randall	Total	Max	Percent used
12:00:00 PM	22	20	29	30	25	126	137	92%
Area 1	Vilas Ave	1A				Total	Max	Percent used
12:00:00 PM	0	11				11	65	17%
Area 8	VPD	8A				Total	Max	Percent used
12:00:00 PM	0	16				16	84	19%
Area 9	9A	9B	9C			Total	Max	Percent used
12:00:00 PM	14	19	17			50	59	85%
Area 10	10A	10B	10C	10D		Total	Max	Percent used
12:00:00 PM	52	16	20	33		121	131	92%
Area 7	Erin St					Total	Max	Percent used
12:00:00 PM	8					8	8	100%

Vilas Park Parking Counts 6/28/2019

Friday Rain Temp 67

Area 4	Drake St	4A	4B	4C	Randall	Total	Max	Percent used
7:30:00 AM	0	0	0	3	14	17	137	12%
8:30:00 AM	0	1	1	3	13	18	137	13%

Area 1	Vilas Ave	1A				Total	Max	Percent used
7:30:00 AM	0	4				4	65	6%
8:30:00 AM	0	5				5	65	8%

Area 8	VPD	8A				Total	Max	Percent used
7:30:00 AM	0	20				20	84	24%
8:30:00 AM	0	37				37	84	44%

Area 9	9A	9B	9C			Total	Max	Percent used
7:30:00 AM	0	2	0			2	59	3%
8:30:00 AM	0	2	0			2	59	3%

Area 10	10A	10B	10C	10D		Total	Max	Percent used
7:30:00 AM	0	0	0	1		1	131	1%
8:30:00 AM	4	0	0	1		5	131	4%

Area 7	Erin St					Total	Max	Percent used
7:30:00 AM	2					2	8	25%
8:30:00 AM	1					1	8	13%

Vilas Park Parking Counts 7/11/2019

Thursday Sun Temp 81

Area 4	Drake St	4A	4B	4C	Randall	Total	Max	Percent used
4:30:00 PM	11	9	17	5	8	50	137	36%
6:00:00 PM	1	4	0	3	6	14	137	10%

Area 1	Vilas Ave	1A				Total	Max	Percent used
4:30:00 PM	0	11				11	65	17%
6:00:00 PM	0	15				15	65	23%

Area 8	VPD	8A				Total	Max	Percent used
4:30:00 PM	3	12				15	84	18%
6:00:00 PM	2	37				39	84	46%

Area 9	9A	9B	9C			Total	Max	Percent used
4:30:00 PM	1	5	6			12	59	20%
6:00:00 PM	3	3	5			11	59	19%

Area 10	10A	10B	10C	10D		Total	Max	Percent used
4:30:00 PM	30	9	2	9		50	131	38%
6:00:00 PM	9	7	0	4		20	131	15%

Area 7	Erin St					Total	Max	Percent used
4:30:00 PM	2					2	8	25%
6:00:00 PM	2					2	8	25%

Vilas Park Parking Counts 8/6/2019

Tuesday Sun Temp 76

Area 4	Drake St	4A	4B	4C	Randall	Total	Max	Percent used
7:00:00 AM	0	0	1	2	14	17	137	12%
8:30:00 AM	1	0	0	2	16	19	137	14%

Area 1	Vilas Ave	1A				Total	Max	Percent used
7:00:00 AM	0	10				10	65	15%
8:30:00 AM	0	7				7	65	11%

Area 8	VPD	8A				Total	Max	Percent used
7:00:00 AM	0	1				1	84	1%
8:30:00 AM	0	2				2	84	2%

Area 9	9A	9B	9C			Total	Max	Percent used
7:00:00 AM	0	0	1			1	59	2%
8:30:00 AM	0	0	1			1	59	2%

Area 10	10A	10B	10C	10D		Total	Max	Percent used
7:00:00 AM	1	0	0	2		3	131	2%
8:30:00 AM	6	0	0	0		6	131	5%

Area 7	Erin St					Total	Max	Percent used
7:00:00 AM	0					0	8	0%
8:30:00 AM	0					0	8	0%

Vilas Park Parking Counts 8/28/2019

Wednesday Sunny Temp 78

Area 4	Drake St	4A	4B	4C	Randall	Total	Max	Percent used
12:00:00 PM	28	29	30	29	24	140	137	102%
Area 1	Vilas Ave	1A				Total	Max	Percent used
12:00:00 PM	0	20				20	65	31%
Area 8	VPD	8A				Total	Max	Percent used
12:00:00 PM	0	21				21	84	25%
Area 9	9A	9B	9C			Total	Max	Percent used
12:00:00 PM	14	18	1			33	59	56%
Area 10	10A	10B	10C	10D		Total	Max	Percent used
12:00:00 PM	52	15	18	30		115	131	88%
Area 7	Erin St					Total	Max	Percent used
12:00:00 PM	5					5	8	63%

Vilas Park Parking Counts 9/27/2019

Friday Rain Temp 66

Area 4	Drake St	4A	4B	4C	Randall	Total	Max	Percent used
4:00:00 PM	2	4	1	14	3	24	137	18%
6:00:00 PM	0	7	0	6	3	16	137	12%
Area 1	Vilas Ave	1A				Total	Max	Percent used
4:00:00 PM	0	8				8	65	12%
6:00:00 PM	0	6				6	65	9%
Area 8	VPD	8A				Total	Max	Percent used
4:00:00 PM	1	2				3	84	4%
6:00:00 PM	0	2				2	84	2%
Area 9	9A	9B	9C			Total	Max	Percent used
4:00:00 PM	0	1	1			2	59	3%
6:00:00 PM	0	0	1			1	59	2%
Area 10	10A	10B	10C	10D		Total	Max	Percent used
4:00:00 PM	8	1	4	0		13	131	10%
6:00:00 PM	11	1	2	0		14	131	11%
Area 7	Erin St					Total	Max	Percent used
4:00:00 PM	2					2	8	25%
6:00:00 PM	2					2	8	25%

Vilas Park Parking Counts 11/5/2019

Tuesday Partly Cloudy Temp 30

Area 4	Drake St	4A	4B	4C	Randall	Total	Max	Percent used
12:00:00 PM	22	0	11	1	23	57	137	42%
Area 1	Vilas Ave	1A				Total	Max	Percent used
12:00:00 PM	0	15				15	65	23%
Area 8	VPD	8A				Total	Max	Percent used
12:00:00 PM	2	2				4	84	5%
Area 9	9A	9B	9C			Total	Max	Percent used
12:00:00 PM	0	2	1			3	59	5%
Area 10	10A	10B	10C	10D		Total	Max	Percent used
12:00:00 PM	5	0	0	0		5	131	4%
Area 7	Erin St					Total	Max	Percent used
12:00:00 PM	0					0	8	0%

Vilas Park Parking Counts 11/22/2019

Friday Cloudy Temp 34

Area 4	Drake St	4A	4B	4C	Randall	Total	Max	Percent used
4:00:00 PM	0	0	6	5	14	25	137	18%
5:30:00 PM	0	0	3	0	13	16	137	12%
Area 1	Vilas Ave	1A				Total	Max	Percent used
4:00:00 PM	0	4				4	65	6%
5:30:00 PM	0	4				4	65	6%
Area 8	VPD	8A				Total	Max	Percent used
4:00:00 PM	0	0				0	84	0%
5:30:00 PM	0	0				0	84	0%
Area 9	9A	9B	9C			Total	Max	Percent used
4:00:00 PM	0	1	1			2	59	3%
5:30:00 PM	0	0	0			0	59	0%
Area 10	10A	10B	10C	10D		Total	Max	Percent used
4:00:00 PM	0	0	0	0		0	131	0%
5:30:00 PM	0	0	0	0		0	131	0%
Area 7	Erin St					Total	Max	Percent used
4:00:00 PM	0					0	8	0%
5:30:00 PM	0					0	8	0%

Vilas Park Parking Counts 12/7/2019

Saturday Cloudy Temp 30

Area 4	Drake St	4A	4B	4C	Randall	Total	Max	Percent used
7:00:00 AM	0	0	1	0	15	16	137	12%
8:30:00 AM	0	0	1	2	14	17	137	12%
Area 1	Vilas Ave	1A				Total	Max	Percent used
7:00:00 AM	0	3				3	65	5%
8:30:00 AM	0	3				3	65	5%
Area 8	VPD	8A				Total	Max	Percent used
7:00:00 AM	0	0				0	84	0%
8:30:00 AM	0	0				0	84	0%
Area 9	9A	9B	9C			Total	Max	Percent used
7:00:00 AM	0	0	0			0	59	0%
8:30:00 AM	0	1	0			1	59	2%
Area 10	10A	10B	10C	10D		Total	Max	Percent used
7:00:00 AM	0	1	0	0		1	131	1%
8:30:00 AM	0	0	0	0		0	131	0%
Area 7	Erin St					Total	Max	Percent used
7:00:00 AM	1					1	8	13%
8:30:00 AM	0					0	8	0%

Vilas Park Parking Counts 2/26/2020

Sunday Partly Cloudy Temp - 26

Area 4	Drake St	4A	4B	4C	Randall	Total	Max	Percent used
10:30:00 AM	4	16	27	0	6	53	137	39%
1:00:00 PM	4	20	29	0	4	57	137	42%
Area 1	Vilas Ave	1A				Total	Max	Percent used
10:45:00 AM	0	3				3	65	5%
1:15:00 PM	0	6				6	65	9%
Area 8	VPD	8A				Total	Max	Percent used
10:45:00 AM	0	32				32	84	38%
1:20:00 PM	0	40				40	84	48%
Area 9	9A	9B	9C			Total	Max	Percent used
11:00:00 AM	1	3	0			4	59	7%
1:40:00 PM	0	4	0			4	59	7%
Area 10	10A	10B	10C	10D		Total	Max	Percent used
11:30:00 AM	28	0	0	0		28	131	21%
1:50:00 PM	36	0	1	0		37	131	28%
Area 7	Erin St					Total	Max	Percent used
11:45:00 AM	0					0	8	0%
2:00:00 PM	0					0	8	0%

Vilas Park Parking Counts 3/31/2020

Sunday Partly Cloudy Temp - 26

Area 4	Drake St	4A	4B	4C	Randall	Total	Max	Percent used
10:30:00 AM	12	0	0	0	6	18	137	13%
1:00:00 PM	10	0	0	1	4	15	137	11%
Area 1	Vilas Ave	1A				Total	Max	Percent used
10:45:00 AM	6	3				9	65	14%
1:15:00 PM	6	4				10	65	15%
Area 8	VPD	8A				Total	Max	Percent used
10:45:00 AM	1	8				9	84	11%
1:20:00 PM	3	2				5	84	6%
Area 9	9A	9B	9C			Total	Max	Percent used
11:00:00 AM	0	2	0			2	59	3%
1:40:00 PM	0	0	0			0	59	0%
Area 10	10A	10B	10C	10D		Total	Max	Percent used
11:30:00 AM	0	2	0	0		2	131	2%
1:50:00 PM	0	2	0	0		2	131	2%
Area 7	Erin St					Total	Max	Percent used
11:45:00 AM	4					4	8	50%
2:00:00 PM	4					4	8	50%

Vilas Park Parking Counts 4/11/2020

Sunday Partly Cloudy Temp - 26

Area 4	Drake St	4A	4B	4C	Randall	Total	Max	Percent used
2:05:00 PM	0	2	3	5	8	18	137	13%
3:00:00 PM	0	2	1	6	8	17	137	12%
Area 1	Vilas Ave	1A				Total	Max	Percent used
2:25:00 PM	3	9				12	65	18%
3:10:00 PM	2	12				14	65	22%
Area 8	VPD	8A				Total	Max	Percent used
2:35:00 PM	5	4				9	84	11%
3:25:00 PM	7	8				15	84	18%
Area 9	9A	9B	9C			Total	Max	Percent used
2:40:00 PM	0	6	3			9	59	15%
3:30:00 PM	0	4	2			6	59	10%
Area 10	10A	10B	10C	10D		Total	Max	Percent used
2:50:00 PM	0	2	0	0		2	131	2%
3:40:00 PM	0	3	0	0		3	131	2%
Area 7	Erin St					Total	Max	Percent used
3:00:00 PM	1					1	8	13%
3:50:00 PM	1					1	8	13%

Vilas Park Parking Counts 5/25/2020 - Memorial Day

Note: Some parking closed for use due to COVID-19

Monday Sunny Temp - 76

Area 4	Drake St	4A	4B	4C	Randall	Total	Max	Percent used
2:15:00 PM	9	10	3	3	8	33	137	24%
						0	137	0%
Area 1	Vilas Ave	1A				Total	Max	Percent used
2:35:00 PM	2	31				33	65	51%
						0	65	0%
Area 8	VPD	8A				Total	Max	Percent used
2:55:00 PM	N/A	N/A				0	84	0%
						0	84	0%
Area 9	9A	9B	9C			Total	Max	Percent used
3:15:00 PM	N/A	N/A	N/A			0	59	0%
						0	59	0%
Area 10	10A	10B	10C	10D		Total	Max	Percent used
3:30:00 PM	N/A	N/A	N/A	24		24	131	18%
						0	131	0%
Area 7	Erin St					Total	Max	Percent used
3:40:00 PM	4					4	8	50%
						0	8	0%

Vilas Park Parking Counts **5/29/2020** Note: Some parking closed for use due to COVID-19

Friday Partly Cloudy Temp - 64

Area 4	Drake St	4A	4B	4C	Randall	Total	Max	Percent used
11:45:00 AM	1	4	6	0	2	13	137	9%
						0	137	0%
Area 1	**Vilas Ave**	**1A**				**Total**	**Max**	**Percent used**
12:05:00 PM	16	1				17	65	26%
						0	65	0%
Area 8	**VPD**	**8A**				**Total**	**Max**	**Percent used**
	N/A	N/A				0	84	0%
						0	84	0%
Area 9	**9A**	**9B**	**9C**			**Total**	**Max**	**Percent used**
	N/A	N/A	N/A			0	59	0%
						0	59	0%
Area 10	**10A**	**10B**	**10C**	**10D**		**Total**	**Max**	**Percent used**
12:55:00 PM	N/A	N/A	N/A	2		2	131	2%
						0	131	0%
Area 7	**Erin St**					**Total**	**Max**	**Percent used**
1:00:00 PM	2					2	8	25%
						0	8	0%

Vilas Park Parking Counts **6/6/2020** Note: Some parking closed for use due to COVID-19

Saturday Clear Skies Temp 73

Area 4	Drake St	4A	4B	4C	Randall	Total	Max	Percent used
12:00:00 PM	5	9	4	0	8	26	137	19%
						0	137	0%
Area 1	**Vilas Ave**	**1A**				**Total**	**Max**	**Percent used**
12:00:00 PM	10	27				37	65	57%
						0	65	0%
Area 8	**VPD**	**8A**				**Total**	**Max**	**Percent used**
12:00:00 PM	N/A	N/A				0	84	0%
						0	84	0%
Area 9	**9A**	**9B**	**9C**			**Total**	**Max**	**Percent used**
12:00:00 PM	N/A	N/A	N/A			0	59	0%
						0	59	0%
Area 10	**10A**	**10B**	**10C**	**10D**		**Total**	**Max**	**Percent used**
12:50:00 PM	N/A	N/A	N/A	16		16	131	12%
						0	131	0%
Area 7	**Erin St**					**Total**	**Max**	**Percent used**
1:00:00 PM	2					2	8	25%
						0	8	0%

For example, daytime use is higher in the park than along adjacent streets, but this use shifts as the zoo closes; parking demand shifts from the park lots to on-street parking as residents return home from work. Figure 5.129 demonstrates parking changes that occur during these morning and evening transitions.

The noon-hour parking counts are shown in a seasonal format to demonstrate the fluctuation of park use by people arriving by vehicle in differing weather conditions (Figure 5.130). The parking averages change significantly as the "shoulder seasons" arrive. "Shoulder seasons" are the months that see lower usage due to weather changes, such as more rain and colder temps, that are less conducive to being in the park or going to the zoo (Figure 5.131). Once winter begins to offer favorable snow and ice conditions, park use climbs again for activities such as ice skating at the lagoon, and ice fishing and cross-country skiing at Lake Wingra. Zoo usage also picks up during favorable weather.

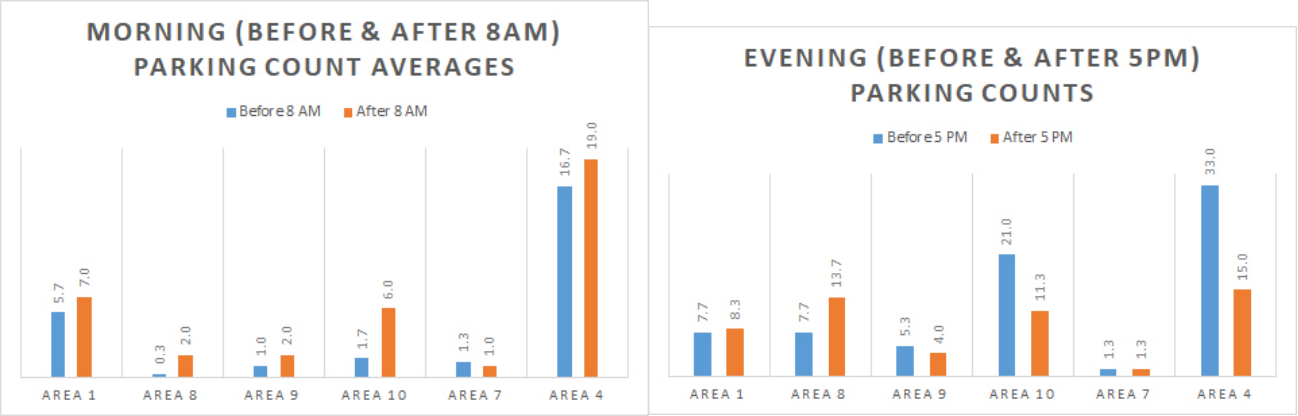


Figure 5.129. Morning and Evening Parking Counts before and after 8:00 AM and 5:00 PM

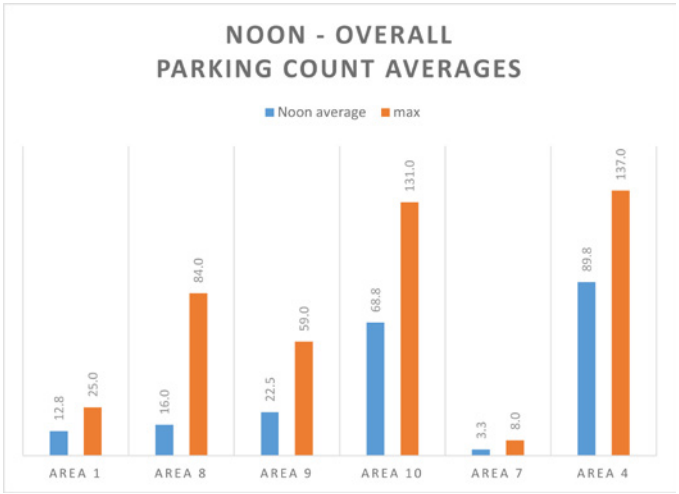


Figure 5.130. Overall Parking Count Averages during the Noon Hour

Figure 5.131. Parking Count Averages during Seasonal Observations

EFFECTS OF CORONAVIRUS PANDEMIC (COVID-19) ON TRAFFIC AND PARKING

The Spring of 2020 saw the unprecedented closure of most of Madison's public park facilities, including park shelters, courts, playgrounds due to COVID-19 public health and safety requirements. The temporary closure of Vilas Park Drive was part of the changes to accommodate the increased trail usage across the city of Madison (Figure 5.131).

The closures due to the pandemic also extended to the Henry Vilas Zoo which was closed to visitors from March 14, 2020 through June 18, 2020. The closure correlated with reduced use of the parking lots in Areas 4, The north lot at drake and Randall, as well as the Area 10, the southern lot by the zoo entrance. Similar warm weather weekends in 2019 shows 90% or more parking usage, while during the closure usage percentage was in the mid-teens. This data further confirms the well-established understanding that a majority of the parking serves zoo users.

With the closure of Vilas Park Drive (Figure 5.132), the western lot, Area 1, by the tennis courts saw an increase in use, with vehicles even seen parking along the driveway during peak use (Figure 5.133). This condition was not observed even during the highest use in 2019 season visits. From site observations, the use of the parks internal trail system remained high during the COVID closures of the shelters, playgrounds and other features.

Figure 5.132. Vilas Park Drive during COVID closure, May 2020

Figure 5.133. Parking Area 1 during COVID closure, May 2020

ENVIRONMENTAL ASSESSMENT

An environmental assessment of Vilas Park provides an evaluation of positive and negative impacts from environmental factors. For the Master Plan, this environmental assessment is a broad view of known factors and is not a federal Environmental Assessment (EA) or Environmental Impact Study (EIS). This section of the site analysis refers to information collected from previous studies and guides to determine potential impacts to the planning effort.

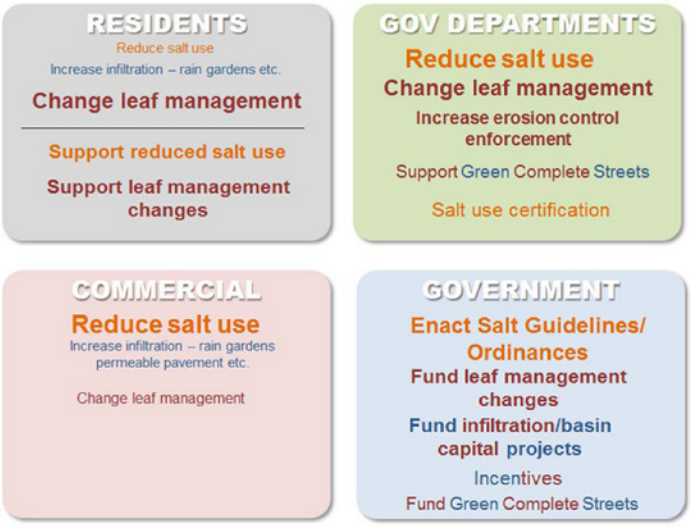


Figure 5.134. Critical Actions, Responsible Entities, and Effectiveness (Lake Wingra Watershed Management Plan, Strand, CoM, FoLW, 2015)

LAKE WINGRA WATERSHED

Vilas Park makes up part of the northern section of the Lake Wingra Watershed. In 2015, a team led by Strand Associates, Inc. prepared the Lake Wingra Watershed Management Plan for the City of Madison (Figure 5.135).[72] The plan identified one storm sewer outlet discharging into the lagoons at Vilas Park (Figure 5.136). This line drains a portion of the Vilas Neighborhood primarily to the east and north of the park along Vilas Avenue.

Within the Vilas Park sub-watershed, Edgewood Ave., Drake St., Grant St., Adams St. and Randall Ave. are on City of Madison road salt application routes. Of those, only a limited portion of Edgewood Ave. drains into the Vilas Park lagoons via storm sewer. Although limited, reducing the level of salt can be achieved by less use on streets and/or draining into a sediment basin prior to directly in the lagoon.

Tests performed on samples taken during the development of the Watershed Management Plan found Phosphorous levels of 0.7 lbs./acre in discharge within the Vilas Park sub-watershed, a moderate level. Sources

72 Lake Wingra Watershed Management Plan, Strand, CoM, FoLW, 2015

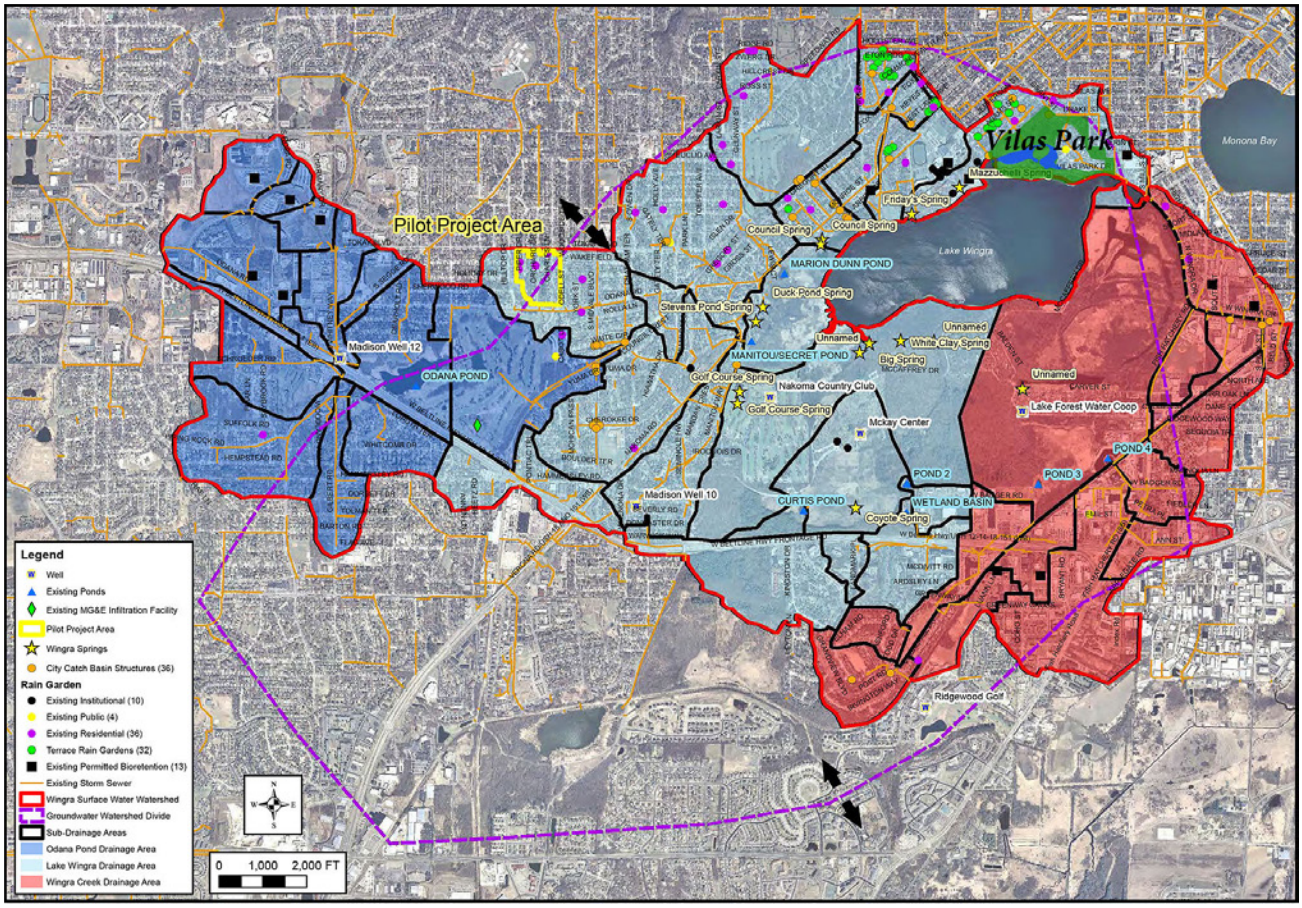


Figure 5.135. Lake Wingra Watershed Map (Vilas Park shown in green)
(Lake Wingra Watershed Management Plan, Strand, CoM, FoLW, 2015)

Figure 5.136. Lake Wingra Drainage around Vilas Park
(Lake Wingra Watershed Management Plan, Strand, CoM, FoLW, 2015)

of phosphorus include organic matter such as leaves, grass clippings, fertilizer, soil, waterfowl, waste erosion etc.. Phosphorous decreases water quality by increasing the levels of nutrients. The reduction in water quality directly effects the beach and lagoons at Vilas Park.

As part of ongoing management efforts, modeling shows the City of Madison street sweeping program provides a reduction of 2.9% of Total Phosphorous (TP) and 16.7% in Total Suspended Solids (TSS) in the Vilas Park sub-watershed. An additional recommendation from the Lake Wingra Watershed Management Plan included permeable pavement:

> Permeable Pavement: Advocate for a porous pavement pilot project on a City-owned property (government-sponsored discretionary capital project). Parking lot pavements within Vilas Park or the zoo could serve as pilot projects and are within the watershed.

LAKE WINGRA

The southern border of Vilas Park consists of the shoreline of Lake Wingra. According to the Wisconsin Department of Natural Resources (WI DNR), Lake Wingra is 336 acres in size and has a maximum depth of 14 feet. It is a eutrophic lake, which means there are high levels of biological productivity, such as rich nutrient levels of nitrogen and phosphorus. Invasive species include curly-leaf pondweed, Eurasian water-milfoil, hybrid Eurasian/northern water-milfoil and purple loosestrife. Fish species in Lake Wingra include musky, panfish, largemouth bass, northern pike and walleye.

An existing boat launch, which is made of wood planking and is in poor condition, is centrally located along Vilas Park Drive next to the fishing pier. Canoe and kayak storage racks are also located near the boat launch. In accordance with the local boating ordinance, Section 9-2-9(f) of the Town of Madison Code of Ordinances, Lake Wingra regulation of boats is as follows:

(f) Regulation of boats on Lake Wingra and Part of Wingra Lock.

1. No person shall operate a motor driven boat on Saturdays, Sundays and holidays on Lake Wingra or on Wingra Creek between Wingra locks and the John Nolen Drive bridge over Wingra Creek, except that any person possessing a physician's statement indicating that the person is not capable of rowing or paddling a boat or canoe may operate a battery powered electronic motor at a slow-no-wake speed not exceeding five (5) miles per hour.
2. On days when all motor driven boats are permitted, they must be operated at a slow-no-wake speed not exceeding five (5) miles per hour.

3. Paragraphs 1 and 2 above shall not apply to boats operated by the appropriate local, state or federal government employees or their agents for lake control or to persons operating motor driven boats used for officiating or for furnishing support or safety services for any sporting event authorized by the Town.[73]

Based on aerial photography and the 1955 A.L. Johnson Plan for Vilas Park, filling of Lake Wingra occurred in the location of the lawn (east of the beach) and parking lot at the south entrance of the Henry Vilas Zoo between the years 1955 and 1957. The origin of the fill material, whether local or transported from another location, is unknown.[74]

The shoreline of Lake Wingra at Vilas Park, excepting the beach, is eroded and protected to varying degrees. Some areas are vegetated with native plants, others with invasive species, and others with stone rip-rap. The largest concentration of wetland vegetation in the park is located near the kayak/canoe storage rack at the beach and is in the fill area of 1955-57.

Figure 5.137. ADA Pier on Lake Wingra at Vilas Park

Figure 5.138. Vilas Park Beach on Lake Wingra

Figure 5.139. Lake Wingra in the Winter

Figure 5.140. Bench viewing Lake Wingra near Beach

73 Town Board of the Town of Madison Section 9-2-9 Regulation of Boats and Boating of the Code of Ordinances, 1995.
74 Dane County GIS, www.dcimapapps.countyofdane.com, 2020.

LAGOON

As part of the 1906 O.C. Simonds Master Plan for Vilas Park, the lagoon was utilized to build land for park uses. The La Crosse Dredging Company created a lagoon with one island named Wild Rice. In the period between the original 1906 dredging and the creation of a City Map of 1914, the lagoon was expanded to create a second, much larger island. There are no records to indicate when the lagoon was expanded. The result was a lagoon with two islands. This lasted until 1955-57 when Lake Wingra was filled and the smaller island was removed. This filling is documented in aerial photographs taken during that time period.

In 2019, the City of Madison contracted with CGC, Inc. of Madison to probe the lagoon to determine the depth of the water and the amount of lose sediment at the bottom.[75] The findings show the lagoon is shallow, with a maximum water depth of 3.75 feet. The depth of sediment to firm bottom has a range of 0.75 feet to 4.5 feet. The data shows the lagoon system does not have the depth to reduce vegetation growth, which may factor into the continued seasonal plant growth in the lagoon. The soil profile consists of dark gray organic silt; medium stiff to stiff, gray lean clay with occasional thin seams of silt; little to some clay and sand partings; dark gray organic silt with trace sand, clay and shell fragments; stiff, brown to gray lean clay; and trace sand.[76]

The original lagoon had two connection points with Lake Wingra. This resulted in the creation of an island where the current park shelter is. Access to the island at both entry points was provided by the construction of bridges. Funding for the bridges was donated by the Vilas family. The west bridge crosses the remaining connection of the lagoon to Lake Wingra, whereas the east bridge is now within the zoo's boundary fence. The 1955-57 filling of Lake Wingra closed this second open-water connection and turned the island into a peninsula. In 2012, Lauren V. Brown, a community fellow at Edgewood College[77] suggested in her work that a secondary connection be reopened near the existing boat launch.

75 CGC Inc., Probe Location Plan, January 2019.
76 CGC Inc., Log of Sediment Core, March 2019.
77 Vilas Park/Lake Wingra Shoreline Vision, Sustainability Leadership Graduate Certificate Program, Edgewood College, 2012.

Figure 5.141. Lagoon in Summer

Figure 5.142. Lagoon in Fall

Figure 5.143. Lagoon in Fall with Event in the Meadow

Figure 5.144. Lagoon in Winter (Skating)

Figure 5.145. Lagoon in Spring

WETLANDS

In 2016, the City of Madison retained Baxter and Woodman Consulting Engineers to conduct a Wetland Delineation of Vilas Park. Their findings were in accordance with the Corps of Engineers Wetland Delineation Manual and Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region (Version 2.0).[78] There were four areas within the park found to meet the designation as wetlands (Figure 5.146).[79]

These identified wetlands and description are:

Lake Wingra Shoreline Wetland (Wetland 1)

A fringe wetland (Wetland 1) occurs along the shoreline of Lake Wingra. Within the Survey Area, most of the shoreline is fortified with large rock riprap. Wetland plants are able to grow within the spaces between the rocks. Also, wetland plants occur on shallow terraces next to the lake.

Vilas Park Lagoon Shoreline Wetland (Wetland 2)

A fringe wetland (Wetland 2) occurs along the shoreline of the Vilas Park Lagoon. The shoreline includes naturalized areas restored with native plants, turf grass areas, and areas stabilized with rock. Wetland plants are able to grow within the spaces between the rocks. The lagoon is relatively shallow and covered with a variety of emergent and submergent plants (e.g., water lilies, coontail, Eurasian water milfoil).

Wetland 3

Wetland 3 is a narrow wetland located next to the tennis courts. It receives stormwater runoff from the tennis courts and surrounding area…Wetland 3 can be considered a less susceptible wetland per NR 151.

Wetland 4

Wetland 4 is a seasonally-wet basin located near the north parking lot for the zoo. It is mowed when it is dry… Wetland 4 can be considered a less susceptible wetland per NR 151.[80]

NR 151 is environmental protection of wetlands administered by the WI DNR to establish performance standards for limiting nonpoint runoff pollutants to achieve a water quality standard.[81]

78 City of Madison Parks Division Wetland Delineation – Vilas Park, Baxter and Woodman Consulting Engineers, 2016
79 City of Madison Parks Division Wetland Delineation – Vilas Park, Wetland Boundary Map, Baxter and Woodman Consulting Engineers, 2016
80 City of Madison Parks Division Wetland Delineation – Vilas Park, Baxter and Woodman Consulting Engineers, 2016
81 Chapter NR 151, Department of Natural Resources, www.docs.legis.wisconsin.gov/code/admin_code/nr/100/151

Figure 5.146. Wetland Boundary Map
(Wetland Delineation of Vilas Park - Baxter and Woodman Consulting Engineers, 2016)

Figure 5.147. Fringe Wetlands at Lagoon

MOUND GROUP

There are several burial mounds located in the upper Vilas Park area near Erin St. A survey from 2007 shows the Vilas Park mounds location (Figure 5.148). In April of 2010, the City of Madison Parks Division made a request to the Wisconsin Historical Society (WHS) to disturb catalogued and uncatalogued portions of a human burial site at Vilas Park Mound Group (WHS project number DA-0148 and BDA-0270). More recently, The Vilas Park Investigation Study of Potential Archeological Adverse Effects, was completed in 2018 by a team of Cardno environmental consultants and is the most current study of the Vilas Park mounds.[82]

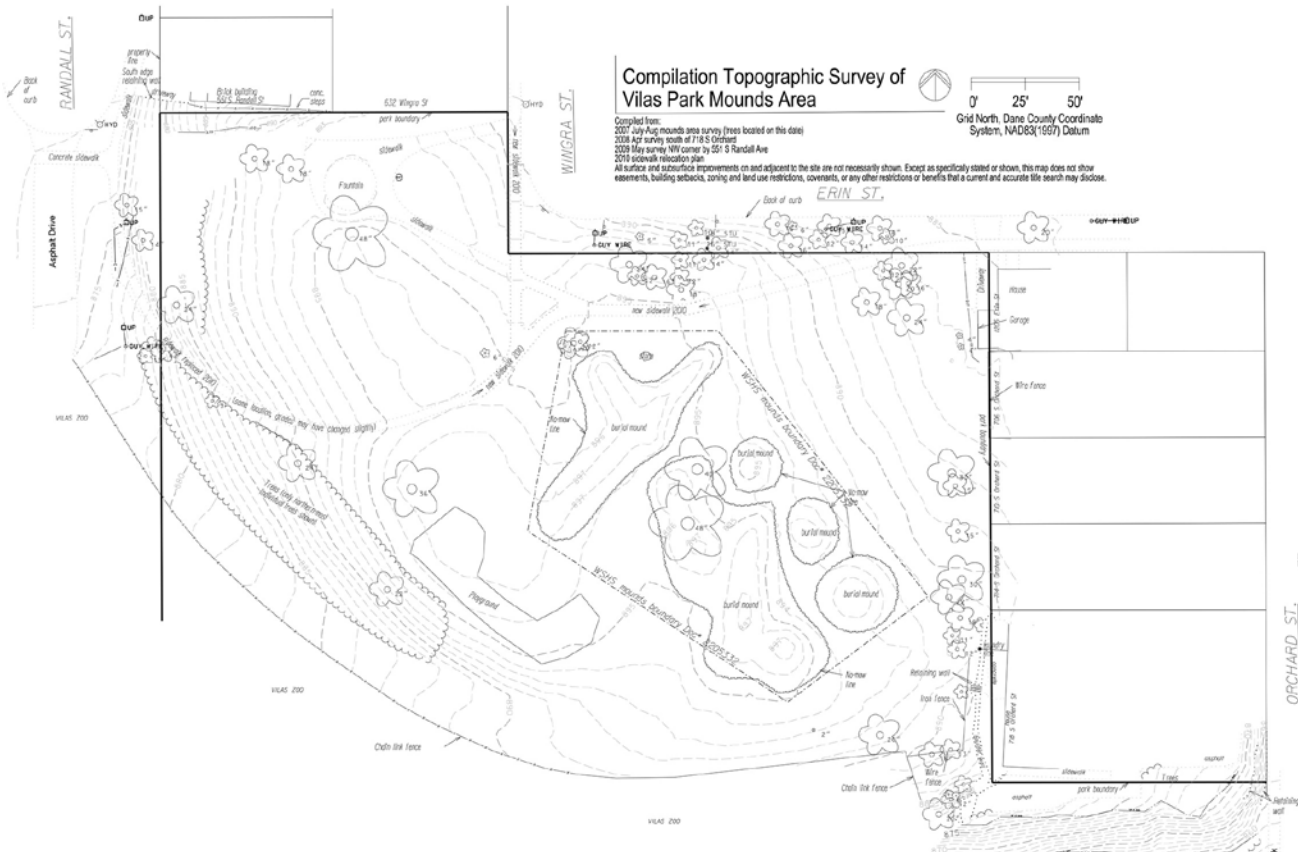


Figure 5.148. Compilation Topographic Survey of Vilas Park Mounds Area (City of Madison - 2018)

According to the September 1915 addition of the The Wisconsin Archeologist[83] there were several more mounds prevalent in the Vilas Park addition. Charles Brown was the Secretary and Curator for the Wisconsin Archeological Society and well respected for his work in identifying mounds. In the document there were several features in the Vilas Park Group. Those were the Vilas Park Mound, Village Site and Lewis Effigy.

Increase A. Lapham initially surveyed the mounds in Vilas Park in the 1859. A significant amount of mounds in what is identified as the Dividing Ridge (Figure 5.149), between Lake Monona and Lake Wingra were

82 Vilas Park Investigation – Study of Potential Archeological Adverse Effects, Cardno, October 2018.
83 The Wisconsin Archaeologist - Lake Wingra, Wisconsin Archeological Society, Milwaukee, WI, September 1915

evident. For the 1915 report, W. W. Warner marked the mounds using Lapham's original maps for reference (See Figure 5.150).

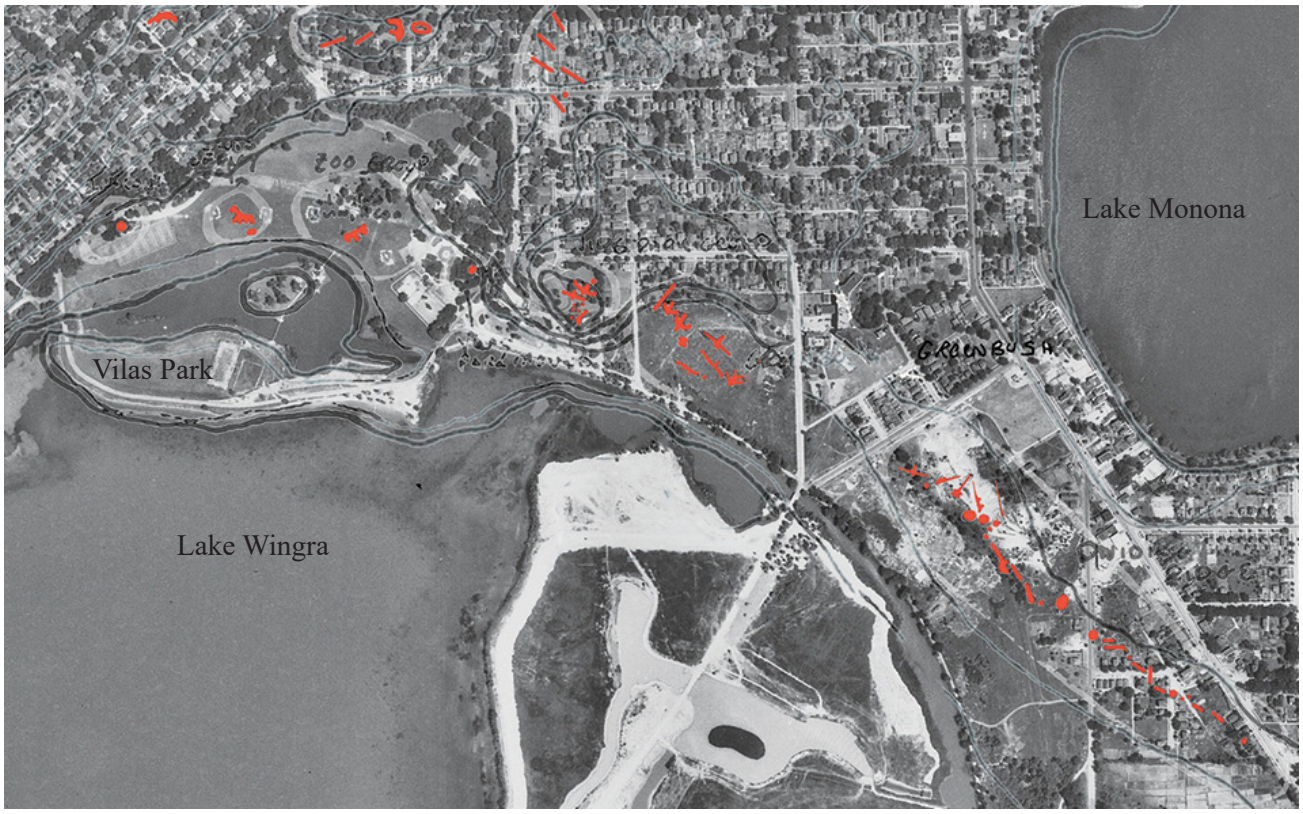


Figure 5.149. Location of the Mounds in the Dividing Ridge from Prof. Robert A. Birmingham's The Effigy Mound Landscape of Madison and the Four Lakes, Dec 2009

According to the document the Vilas Park Group:

> *"On top of a hill, the northern terminus of the Dividing Ridge, at the northeast corner of Lake Wingra, raising just above the Vilas Park Zoo and giving a fine view of the lake and its shorelines, is a rather compact group of Indian earthworks.*
>
> *The preservation of the mounds now remaining was secured through the purchase by the City of Madison, in the years 1910 and 1913 of the hill-top and adjoining lower land. As may be noted from the accompanying plate there originally were in this group a total of eleven mounds. Eight of these were conical (burial), one linear ant two effigy mounds. One of the burial mounds was destroyed and several of the other mounds mutilated in past years by the erection of several dwelling houses, the cultivation of garden patches and the cutting of a road across the land. Portions of the wings of both of the bird effigies were thus removed. The former pasturing of cattle on the hill-top has also caused deformations of their wings and bodies. Of the burial mounds now obliterated considerable portions could still be seen when the writer first viewed these earthworks in 1908."* [84]

84 The Wisconsin Archeologist - Lake Wingra, Charles Brown, Page 91, September 1915

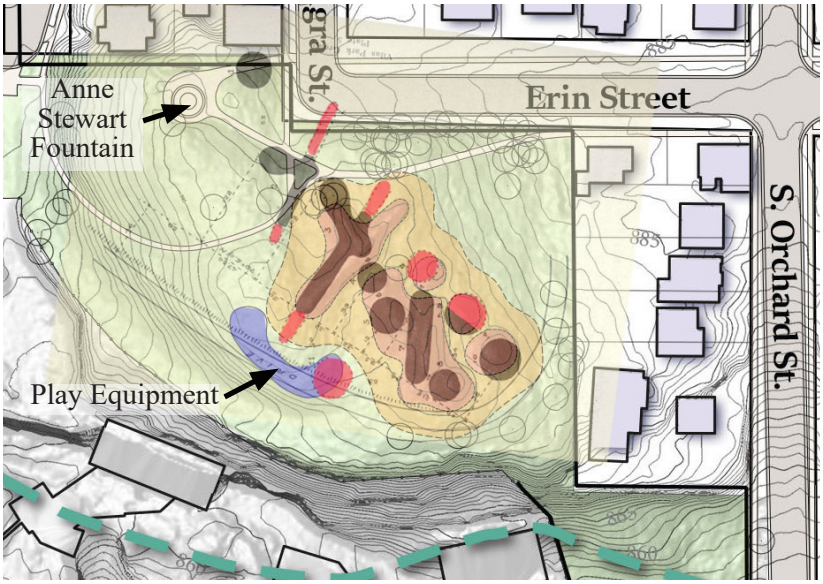


Figure 5.150. Vilas Park Mound Group with 1915 W. W. Warner Diagram

Figure 5.151. Dividing Ridge
Wisconsin Historical Society - WHi-38942

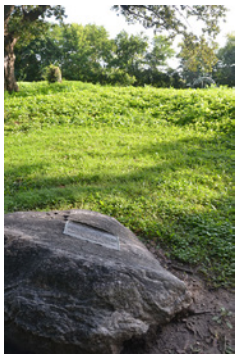
The describes the Village Site and the Lewis Effigy mound as being located at the base of the hill in what is now the Henry Vilas Zoo.

The plaque that is at the mounds was dedicated in October 1914. The events of the day are describe in The Wisconsin Archaeologist as follows:

> "On the afternoon of October 7, following a luncheon tendered them at Lathrop Hall, the members of the Society of American Indians, then in Conference at Madison, were taken by the University reception committee on an automobile drive over the University grounds and through the City parks. At Henry Vilas Park a stop was mad to permit of the unveiling of a descriptive metal tablet in honor of the occasion on the group of Indian earthworks here described. The tablet was placed on the top of the most southerly of the burial mounds. It is 12 inches by 18 inches in size, is mounted on a concrete block and bears the following legend."[85]

The concrete block has since been replaced with a stone and the tablet been moved off of the mound.

Figure 5.152. Tablet on Concrete Block, 1914
Wisconsin Historical Society - WHi-51985



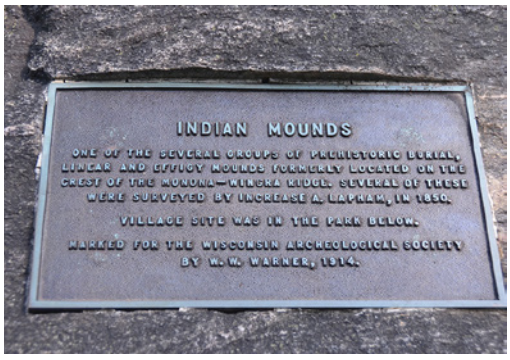


Figure 5.153. Tablet on Stone, 2019

85 The Wisconsin Archeologist - Lake Wingra, Charles Brown, Page 91 and 92, September 1915

In 2019, the City of Madison Parks Division, in consultation with the Ho-Chunk Nation, developed a policy[86] for maintenance of burial mounds in parks. The Ho-Chunk Tribal Historic Preservation Officer oversees the policy and its impacts on the planning effort for Vilas Park in this Master Plan. The policy is as follows:

AUTHORIZATION

The Madison Board of Park Commissioners is the approving authority for determining the appropriateness and acceptance of a maintenance plan for Burial Mounds in Madison Parks. The Parks Division has received direction from the representatives of the Ho-Chunk Nation as to the proper maintenance of individual mound systems and incorporated the information into this policy. The policy is intended to clearly outline a maintenance plan for the Burial Mounds located in the Madison Parks system. It provides procedures and guidelines to assure that the mounds are treated with the utmost respect and responsibly managed in a manner that protects the integrity of the mounds at all times.

DEFINITIONS: Protection of earth works and burial markers are protected by Wisconsin State Statute 157.70. It stipulates that there may be no disturbance of the burial mound or within the legal buffer of 10 feet from the perimeter. Madison Parks maintains a buffer of no soil disturbance of 20 feet total from the mound perimeter.

Burial Mounds in Madison Parks:

- *Conservation Parks: Elvehjem Sanctuary, Cherokee Marsh North Unit, Edna Taylor*
- *General Parks: Hudson, Burrows, Vilas, Bear Mound*
- *Edgewood Park and Pleasure Drive*

PROCEDURE

1. *Burial mounds will be inspected on a regular basis*
2. *Prescribed management plans will be established for individual mounds based on site conditions to manage vegetative materials.*
3. *Established trees growing on the surrounding mounds will be inspected regularly and managed to prevent damage to the mounds.*
4. *Regular maintenance will ensure proper air flow and prevent establishment of plan materials that may threaten the integrity of the mound.*
5. *No signage, trails or other obstructions will be placed within 20 feet of the base of the mound.*
6. *If a mound is ever disturbed, staff will follow outlined protocol regarding soil disturbance from tree*

86 Statements of Policies and Guidelines for a Maintenance Plan for Burial Mounds in Madison Parks, Approved by Park Commission on October 2, 2019.

limbs (cur flush and remove brush) and animals (remove and fill hole by hand with soil). Outreach to Burial Sites Preservation staff as needed.

GUIDELINES FOR THE MAINTENANCE OF MADISON PARKS BURIAL MOUNDS

1. *Mound inspection:*
   a. *Visual inspection of the mounds when doing routine mowing in the surrounding parkland, approximately every 2 weeks.*
   b. *Inspect for downed limbs or any damage to the mounds and report back to the Supervisor if any damages are noted.*
   c. *Inspect for animal burrows. Remove animals from area, replace soil into the hole and compress by hand.*
2. *Manage invasive species to prevent degradation of the mounds and to promote establishment of native plants:*
   a. *Conduct prescribed burns on an annual/semi-annual basis on all burial mounds according to individual mound plans.*
   b. *Hand cutting and removal of any woody growth and weeds, treat directly with an herbicide as needed.*
   c. *Introduce native forbs and grasses as seeds by hand only.*
   d. *Ensure that there is no soil disturbance.*
3. *Tree care:*
   a. *Assess tree health on and with driplines within mound area on a regular basis.*
   b. *Trim and thin out deadwood in trees in close proximity to the mounds in order to prevent limbs dropping and allow more sunlight to promote healthy turf growth.*
   c. *Remove all established trees growing on or within the buffer area footprint of the mounds that are 14 inches in diameter at breast height or (dbh) or less by hand and treat with an herbicide.*
   d. *Remove dying or severely damaged trees proactively before they uproot and disturb the integrity of the mound.*
   e. *Cut stumps flush with the ground, grubbing is never allowed.*
   f. *Care will be taken to avoid dropping large limbs on the mound which could cause damage to the mound surface.*
   g. *Remove trees that endanger the mounds during the latter winter months only when the ground is frozen and there is plenty of frost and snow cover to protect them.*
   h. *No heavy equipment is allowed within the mounds and its buffer area.*

4. *Mowing operations performed according to restoration plans for individual mound systems:*

   a. Bi-monthly mowing will be done with a walk behind brush type mower set high to prevent scalping of the ground and to limit woody plant growth. This will reduce soil compaction and disruption.

   b. The vegetation on the mound will be allowed to grow taller than managed turf areas, to discourage human foot traffic.

5. *Trails maintenance:*

   a. Document sites where trails and sidewalks are in conflict due to proximity with the preservation of the mounds with pictures and written documentation to be kept in the Parks PA Common folder under Burial Mound Maintenance.

   b. Move existing trails 20 feet away from the mounds.

   c. Work with the Burial Sites Preservation staff in the Wisconsin Historical Society to comply with State statutes.

   d. Install education signage with a cultural component to redirect foot traffic at trail heads in order to redirect foot traffic.

6. *Signs within the 20 foot buffer zone will be removed.*

   a. The WI State Historical Society will assist to determine if the mound site has been cataloged and will need to be considered if a request to disturb permit is required.

   b. A State qualified Archeologist must be on site for sign removals and other soil disturbance activities in conformance of Wisc. Stat. 157.70.

Figure 5.154 Vilas Park Mound Group

TREE SURVEY

In 2019, MSA Professional Services, Inc. conducted an inventory of all trees with a diameter of 10 inches or greater (Map 5.1). The survey identified 724 trees within the park, made up of 44 unique species (See Figure 155). The most common species was oak, at 146, or approximately 20%. Oak subspecies inventoried were white, red, swamp white and bur oak. The largest tree recorded was a bur oak at 52 inches in diameter on the northwest corner of the site. The National Arborist Association and International Association of Arboriculture noted this bur oak to have been living at the time of the signing of the U.S. Constitution per a plaque placed by the Wisconsin Arborist Association in 1987. Details of the tree inventory are below.

Top 5 Species:

- Red Oak (53)
- White Pine (42)
- Bur Oak (41)
- Elm (34)
- White Oak (27)

Top 5 Undesirable Species:

- Ash, Green and White (27)
- Alder (19)
- Norway Maple (19)
- Black Locust (18)
- Amur Maple (2)

The "undesirable" classification is based on one of three things: (1) the trees are on the WI DNR's invasive species list,[87] (2) the trees are threatened by the Emerald Ash Borer (EAB), or (3) the trees threaten native oak woodlands. Categorization as "undesirable" is meant to provide guidance for future park improvements. Current city policy is to treat ash trees, which are greater than 10 inches in diameter and are otherwise in good health, for EAB.

As the City of Madison continues to manage the threat of EAB, future species diversity is necessary to reduce the risk of a mass decline in tree populations. The City of Madison Streets Division - Forestry Section has adopted a policy of buying and planting no more than 10 percent of a single genus for their street tree program. The city is applying a similar policy to park lands. Future management of the Vilas Park canopy should include steps to manage and protect existing oaks, while considering diversity in future plantings.

87 Wisconsin CH. NR 40 Invasive Species List, May 1, 2015.

TREE FAMILIES

at Vilas Park

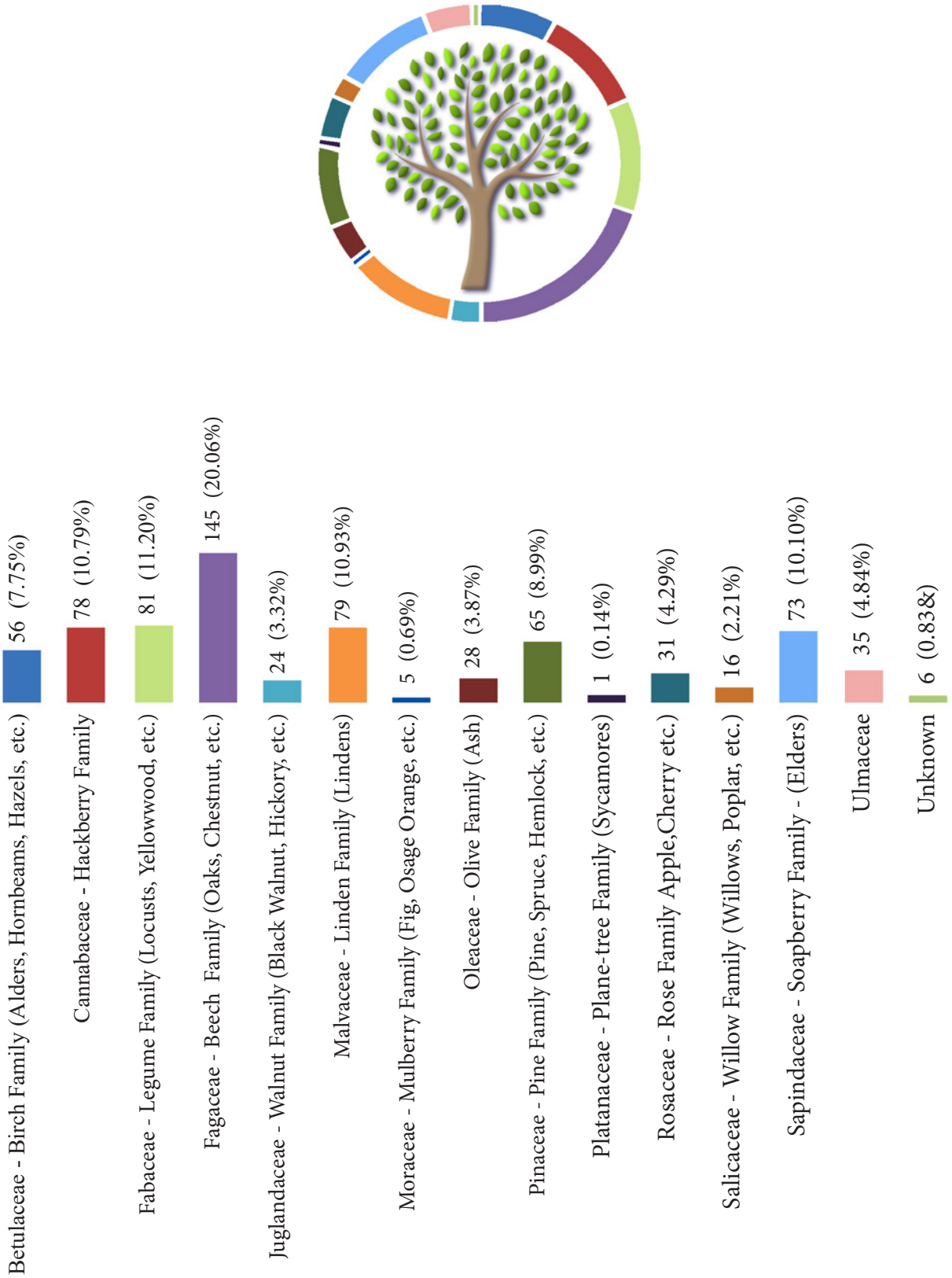


Figure 5.155. Vilas Park Tree Families (Diameter 10" or larger)

Tree species and quantity at Vilas Park. The trees list of undesirable species meets classification as mentioned.

DESIRABLE LIST - 88% of Canopy
(Indicated in green on the diagram)

SPECIES	(QTY)
Red Oak	53
White Pine	42
Bur Oak	41
Elm	34
White Oak	27
Norway Maple	26
Swamp White Oak	22
Basswood	13
Hawthorn	8
Linden	7
Black Cherry	6
Hackberry	6
Crabapple	5
Cedar	4
Hickory	4
Norway Spruce	4
Ironwood	3
Red Pine	3
River Birch	3
Silver Maple	3
Spruce	3
White Birch	3
Black Walnut	2
Cottonwood	2
Horsechestnut	2
Shagbark Hickory	2
Thornless Honeylocust	2
White Spruce	2
American Elm	1
Apple	1
Blue Spruce	1
Concolor Fir	1
Fir	1
Planetree	1
Red Maple	1
Tamarack	1
Willow	1
Basswood	1

UNDESIRABLE LIST - 12% of Canopy
(Indicated in red on the diagram)

SPECIES	(QTY)
Alder	19
Norway Maple	19
Black Locust	18
White Ash	17
Green Ash	10
Amur Maple	2
Black Alder	1
Mulberry	1

Map 5.1. Vilas Park Tree Survey

RELEVANT PLANNING DOCUMENTS

The following documents are neighborhood plans and relevant reports. Only the applicable discussions concerning Vilas Park are shown for each document. The documents are listed chronologically.

1989 – BRITTINGHAM-VILAS NEIGHBORHOOD PLAN (City of Madison Department of Planning and Development)

Although limited in recommendations specific to the park property, the plan is the one of the earliest neighborhood plans to directly address Vilas Park. The plan provides a short history of the park's founding and the development of Henry Vilas Zoo. The neighborhood plan provides a single recommendation for improvements to Vilas Park:

> *"Improve City clean-up activities in the neighborhood, especially after athletic or social events at Camp Randall, Henry Vilas Park and Zoo, and Brittingham Park."*

2003 – WISCONSIN DEPARTMENT OF NATURAL RESOURCES LAKE MANAGEMENT PROTECTION GRANT APPLICATION: LAKE WINGRA SHORELINE HABITAT RESTORATION[88] (Edgewood College)

The grant application describes the Lake Wingra lagoon shoreline:

> *The Lake Wingra lagoons located in Vilas Park were originally part of the littoral zone of a Lake Wingra that was about twice the size of the current one.[89] The lagoons, and most of the park itself, were created through extensive filling and dredging in the early 1900s. Presently the lagoons are 3.6 hectares (8.8 acres) in size, and less than 1 meter in depth. The aquatic vegetation is dominated by invasive Eurasian milfoil. There are about 1,550 meters (5,100 feet) of shoreline, and the shore is riprapped with gravel below the waterline. The grass turf of the park is maintained and mowed right up to the waterline, so that essentially no native vegetation is present.*
>
> *While Eurasian milfoil has declined in Lake Wingra itself, it still forms massive monotypic stands in the Vilas Lagoon systems that are connected by a narrow channel to the lake proper. In other area lakes, declines in milfoil have been linked to a native weevil that targets Eurasian milfoil. It is known that in systems where milfoil is not harvested weevil populations build up especially if a buffer zone of natural vegetation surrounds the lake shoreline affording critical overwintering habitat for the weevil. The Vilas lagoons currently have no such habitat since the park lawn is mowed right to the water's edge,*

88 Collaborative effort by Dane County, City of Madison, Wisconsin Department of Natural Resources, Friends of Lake Wingra, Edgewood College, University of Wisconsin, and varied neighborhood associations, 2003.

89 Baumann, P.C., J.F. Kitchell, J.J. Magnuson, and T.B. Kayes. 1974. Lake Wingra, 1873-1973: A case history of human impact. Transactions of the Wisconsin Academy of Sciences, Arts, and Letter. 62: 57-94.

and macrophytes in the lagoons are regularly harvested thus removing nascent weevil populations. Developing a natural riparian zone around the lagoons coupled with the elimination of routine harvesting of the lagoons could provide a natural biological control of the excessive milfoil growths.

In the Madison area, including the Lake Wingra watershed, the numbers of resident and wintering geese have increased dramatically since the 1980s. The number of resident (locally nesting) giant Canada geese have also increased during this time: in the summer of 2002, there were an estimated 23 adult geese resident in Vilas Park, producing about 33 young.12 During the fall, 100-700 geese are regularly present in Vilas Park during this migrating season. An average of 12 g/m2, or about 100 lbs. per acre, dry weight feces was determined by sampling in November 2002 within the grassy areas of Vilas Park heavily populated by geese. This is equivalent to about 600 lbs. per acre wet (as collected)

Recommendations from the grant application :

- *With Friends of Lake Wingra (FoLW) group, compile project information and prepare for display on kiosks at Vilas Park and Wingra Park.*
- *Discourage nuisance geese from the playgrounds and playing fields in Vilas Park*

2004 – PARK STREET CORRIDOR: MAIN STREET FOR THE SOUTHSIDE URBAN DESIGN GUIDELINES: FOR PRIVATE PROPERTY IMPROVEMENTS AND PUBLIC STREETSCAPE DESIGN (Schreiber/Anderson Associates)

While the plan does not specifically address Vilas Park, the Park St. corridor serves as the primary public transit route and is the main eastern vehicular connection through Vilas Park Dr., Drake St. and Mills St. The plan discusses improvements in wayfinding signage, multi-modal transportation and pedestrian safety improvements.

2007 – MONROE STREET COMMERCIAL DISTRICT PLAN (Planning and Design Institute, Inc.)

The plan identifies Vilas Park as significant to the overall neighborhood character as it is within walking distance of Monroe St. businesses. The Grant St. and Drake St. corridor serves as a thoroughfare for users moving from Monroe St. to east and south Madison. The plan also states that, on busy days, users of both the Monroe St. corridor and Vilas Park and the zoo utilize on-street parking in the surrounding residential neighborhoods.

Recommendations from the plan:

- *Preserve and enhance the residential character of the neighborhoods around the commercial districts.*

- *Preserve public amenities such as the library, Dudgeon Center, Park and Pleasure Drive, Lake Wingra and parks.*
- *Support the community quality of the Edgewood Campus and the UW Arboretum.*

2008 – REGENT STREET-SOUTH CAMPUS NEIGHBORHOOD PLAN (Vierbicher Associates, Inc. and Potter Lawson, Inc.)

While outside of the neighborhood boundary, the plan identifies Vilas Park as a major destination for residents and students. At the time the plan was written, the neighborhood contained very little greenspace. The plan outlines nine future parks or open spaces to be provided either by the City or University of Wisconsin within the neighborhood boundary.

2009 – LAKE WINGRA: A VISION FOR THE FUTURE (Friends of Lake Wingra)

The document states:

> *During the early 1900s a levee was built (now McCaffery Drive in the UW Arboretum) isolating Gardner Marsh from the Lake. Wingra Dam and lock were built to control the water level, and dredged sand from the lake bottom provided fill for Vilas Park and the Lake Forest Development. Cut off from its wetland outlet, the now 340-acre lake began to receive storm water runoff from the new neighborhoods along Monroe Street, and later from all the neighborhoods in the watershed…*
>
> *…In Lake Wingra, algae growth depends on phosphorus. One pound of phosphorus entering the lake can produce up to 500 pounds of algae! Common sources of phosphorus include fertilizers, eroded topsoil, decaying leaves, and goose and pet feces. Excessive phosphorus encourages blue-green algae that can be toxic to fish, pets and people.*

The document identifies four goals:

1. *Clean, clear water.*
2. *Restored spring flow.*
3. *Abundant native plants and animals.*
4. *Stewardship and enjoyment.*

It also identifies actions neighborhood residents can take to help achieve the goals:

- *Keep leaves and yard clippings out of streets and storm drains.*

Relative Abundance	Aquatic Plants		Fish	
Abundant	Eurasian water-milfoil* coontail		bluegill	
Common	Illinois pondweed muskgrass sago pondweed slender naiad	water stargrass wild celery white water lily	brook silverside golden shiner	largemouth bass carp*
Medium/Low	common bladderwort clasping-leaf pondweed flat-stemmed pondweed	northern water-milfoil small duckweed spatterdock	black crappie bluntnose minnow pumpkinseed yellow perch	muskellunge* white crappie* walleye*?
Rare	common waterweed curly-leaf pondweed* floating-leaf pondweed Fries' pondweed great duckweed	long-leaf pondweed small pondweed variable pondweed white-stemmed pondweed	bigmouth buffalo black & yellow bullheads blackchin & common shiners brook stickleback bowfin central mudminnow fathead minnow	green sunfish longnose gar northern pike freshwater drum* yellow* & warmouth* bass white sucker*? spotfin shiner*?

Figure 5.156. Sampling Efforts Conducted for the Lake Wingra: A Vision for the Future (FoLW - 2012)

- *Direct roof downspouts toward the lawn or garden, or into a rain barrel.*
- *Build a "rain garden" to absorb runoff from roofs and other surfaces.*
- *Water by hand where practical, to minimize use of sprinklers.*
- *Reduce your use of de-icing salt during the winter.*
- *Clean up after your pets, and don't feed the waterfowl.*

thoroughfare both for pedestrians and vehicles (west to east through traffic), and that many conflicts exist between park users, commuting bicyclists, and vehicles.

2010 – GREENBUSH NEIGHBORHOOD PLAN (SCHREIBER ANDERSON & ASSOCIATES, 2008; AMENDED 2010)

The Greenbush Neighborhood is adjacent to Vilas Park, SSM Health St. Mary's Hospital and Meriter Hospital. Vilas Park and Vilas Zoo visitors, along with employees, patients and visitors of the hospitals, contribute to significant traffic volumes on Drake St. and Mills St. To help promote pedestrian safety and improve traffic flow, the plan identifies the following:

> *Designated bicycle routes exist on Drake and South Mills Streets and Vilas Park Drive. The Bicycle Transportation Plan for the Madison Urban Area and Dane County classifies Randall Avenue and Erin Streets as through streets suitable for most bicyclists, meaning that there are no formal bicycle lanes, but the speed and volume of traffic and street connectivity is appropriate for most bicyclists.*

The plan identifies Orchard St. to Vilas Park Dr. as a "major access point" and notes that it should be maintained. The plan also notes that this and other access points are not clearly identified, and additional signage should be added to identify the boundary of the neighborhood as well as wayfinding to key destinations.

Mills St., Vilas Park Dr. and Wingra Dr. are identified in the plan as "gateways", and "important entrances that may contain high traffic volumes (pedestrian, automobile, bus or bicycle). The plan also mentions that Vilas Park Dr. is the major east-west thoroughfare for pedestrians, bicyclists and vehicles and, as such, is central to the future planning of Vilas Park. The plan also mentions that many conflicts exist between park users, commuting bicyclists and vehicles.

The neighborhood plan made the following recommendations:

- *Improve wayfinding signage or strategies (i.e. brochures) to direct Vilas Zoo patrons to overflow parking lots near the Wingra Drive entrance of the zoo.*
- *Improve parking and transit options at Vilas Park and Zoo, such as advertising bus access to the zoo or running a trolley down Randall Avenue from Regent Street to the zoo during special events.*
- *Support planning by the Friends of Lake Wingra to improve water quality in Lake Wingra.*
- *Explore the use of the hillside on South Orchard Street (the area located behind the parking lot) or other suitable areas of Vilas Park, for either a dog exercise area or as space for community gardening.*
- *Develop a model water-quality improvement practice such as rain gardening and the use of porous pavement and promote in the Greenbush Neighborhood.*
- *Explore and promote non-car transit alternatives to the park, e.g. buses or shuttles.*

2011 – GROUNDWATERSHED STATUS REPORT (Maribeth Kniffin, Edgewood College - Student Project)

While the report does not directly address Vilas Park, recommendations are made that could have potential implications for improvements and management of the park:

- *Identify areas of opportunity for recharge projects (southeast marsh and the Arbor Hills greenway)*
- *Install permeable surfaces throughout the watershed*
- *Develop of infiltration standards*
- *Incorporate green infrastructure into the Wingra Watershed Management Plan*
- *Encourage the city to distribute grants for on-site stormwater management*
- *Give citations to property owners that create excessive runoff*

2012 – SOURCES OF CHLORIDE TO LAKE WINGRA (Roger Bannerman, Environmental Specialist - WIDNR, retired)

While the document does not directly address Vilas Park, its recommendations for reduction of the use of road salts are relevant for managing ice and snow within the park.

2012 – VILAS PARK AND LAKE WINGRA SHORELINE VISION PLAN (Lauren Brown, Edgewood College - Student Project)

An Edgewood College student developed a conceptual plan for the Vilas Park shoreline through the use of public engagement and planning. The plan calls for the development of natural shorelines with native plantings and a second opening to the lagoons from Lake Wingra (Figure 5.157).

Figure 5.157. Vilas Park and Lake Wingra Shoreline Vision Plan (Lauren Brown - 2012)

2012 – VILAS PARK/WINGRA CREEK SHORELINE DESIGN AND RESTORATION (Kurt J. Schmidt, UW Madison - Student Project)

This student project identifies key design features that can be used to improve the ecology, user safety and aesthetics of the park.

Project recommendations:

- *Bicycle and Pedestrian Circulation Improvements*
- *Boating Circulation – reopen the eastern connection between the lagoons and Lake Wingra.*
- *Fishing Nodes*
- *Site Lighting*
- *Sculpture Nodes*

- *Vegetation Plans – modify shoreline to increase native vegetation buffer. Reduces velocity and improves quality of runoff into Lake Wingra by filtering debris and contaminants. This is partly achieved by reducing the open lawn adjacent to the Lake which should reduce the Goose population.*

2013 – WINGRA WATERSHED: A MODEL FOR GREEN INFRASTRUCTURE DESIGN AND IMPLEMENTATION (Janet Gassman, Diana Huepenbecker, Ashley Kuehl, and Hannah Mog, UW Madison - Student Project)

This report analyses the "Vision for the Future" document put together by the Friends of Lake Wingra group alongside the action steps in the Madison Sustainability Plan found within the City of Madison

Conclusions from the report:

A future step that may be taken in the interest of implementing sustainable practices within the pilot project locations would be to identify "low hanging fruit", or relatively simple actions that may be accomplished in a short period of time. Community meetings, educational information regarding the watershed, and environmental art are all actions that can be executed without significant financial investment. With the right leadership, these steps would encourage community buy-in and promote stakeholder feedback. The concept of sustainability must be made approachable throughout these discussions, and inclusive techniques must be employed, particularly with regard to any improvements to Vilas Park. As the park serves the entire Madison community, and not simply the Vilas Neighborhood, efforts must be made to ensure that everyone has a voice in the future of this community asset.

2014 – VILAS PARK SHORELINE: A VIBRANT VISION FOR THE FUTURE REPORT (Catie Rafferty, Emily Fuger, Jacquie Ptacek, Peter Riddle, and Yasi Rezai, Edgewood College - Student Project)

This is a student project through Edgewood College's Sustainable Development course, in partnership with the Nelson Institute's Environmental Conservation Professional Master's program at UW Madison. The report was prepared in conjunction with the 2012 "Vilas Park and Lake Wingra Shoreline Vision Plan" by Lauren Brown (Figure 5.158).

Project Vision:

…this group sees a Vilas Shoreline of the future where equity prevails in both human and natural aspects. One where safety is a priority and ecosystem health receives a first-class ticket and front seat towards progress. We envision a community park with a diverse group of people and an improved user experiences including picnicking, swimming, fishing, boating, walking, and community gardening. The park will stimulate

community involvement and bring together different groups of people to work together and enjoy this precious city resource. We envision a future with a functioning ecosystem with diverse species. We envision one of Madison's most beautiful and historic beaches once again regaining its place at the top… We see enhanced community connectivity, enhanced public health, and improved overall well-being… Part of our vision is that the Vilas Park Shoreline should be a sustainable, socially diverse, and ecologically healthy park that fosters wellness in the community.

Goals Included:

- *Spur interest in Vilas Shoreline redesign*
- *Update Stakeholder Contact List*
  - *Make initial contact with stakeholders*
  - *Create brochure and poster to distribute to stakeholders*
  - *Align this plan with various other sustainability plans*
  - *Tool kit (how to move forward)*

The product of the Vilas Park Shoreline Report was a set of recommendations for further action:

- *Develop a tool kit to further education stakeholders about the Park and planning process.*
- *Develop a comprehensive plan for all of Vilas Park, not just the shoreline.*
- *Fundraising for additional research and planning.*

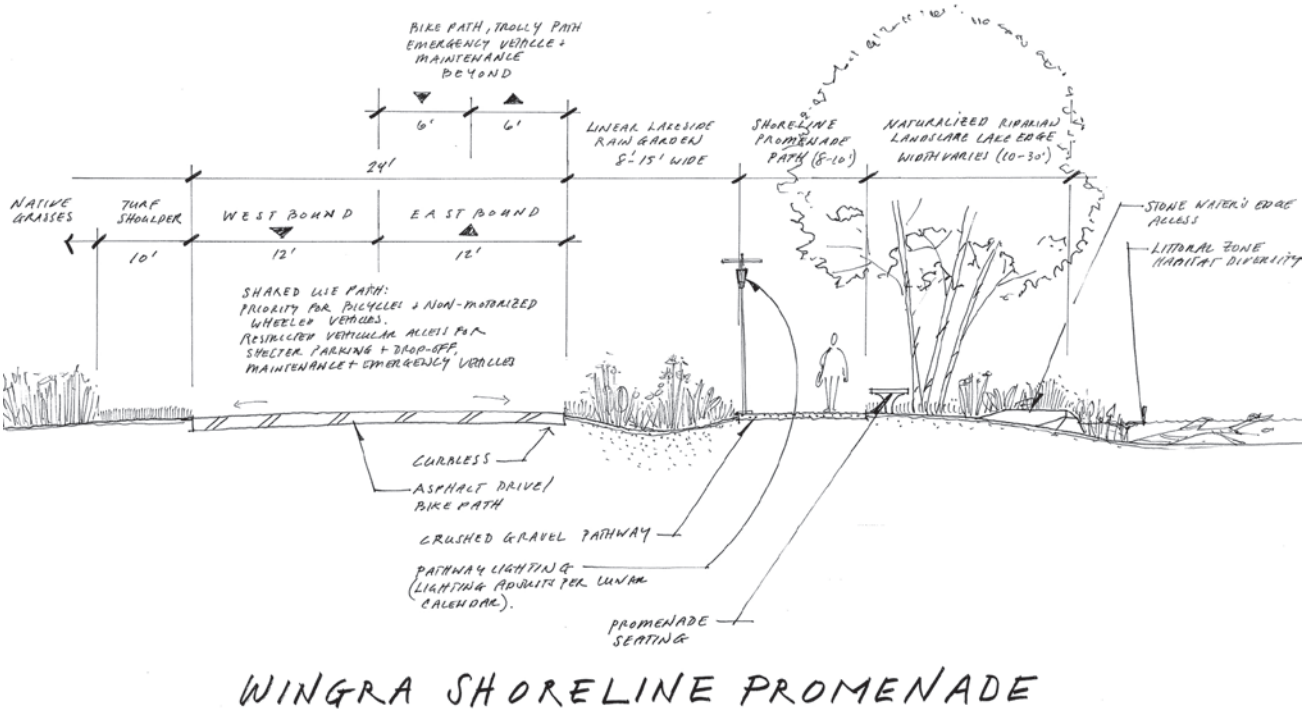


Figure 5.158. Vilas Park and Lake Wingra Shoreline Vision Plan - Cross Section of Vilas Park Drive (Lauren Brown 2012)

2015 - LAKE WINGRA WATERSHED MANAGEMENT PLAN (Strand Associates, Inc.)

From this report came general recommendations for achieving Lake Wingra watershed management goals:

- *Chlorides – Work toward changing the Lake Wingra chloride concentration from 120 mg/L to 40 mg/L that existed in the early 1970s.*
- *Infiltration – Recover 10 percent of the 742 million gallons of lost infiltration because of development in the Lake Wingra Watershed.*
- *Phosphorus – Of the 1,900 pounds of phosphorus generated in the watershed each year, reduce the phosphorus load reaching Lake Wingra by 50 percent compared to no controls.*

2017 – ANNIE C. STEWART MEMORIAL FOUNTAIN CONSERVATION/PRESERVATION PLAN (InSite Consulting Architects)

The city will be pursuing specific conservation and preservation options as described in the 2017 plan for the Annie Stewart Memorial Fountain. The 2017 plan determined the existing limestone base is beyond repair and needs to be replaced, while the marble statuary must be cataloged and preserved. Due to the high cost of annual maintenance, the city does not expect that a working fountain will be the final product of the restoration. The specific restorative actions the city will take have not been determined as of the writing of the Vilas Park Master Plan 2020.

2018 – CITY OF MADISON PARK AND OPEN SPACE PLAN 2018-2023 (City of Madison Park Division)

Vilas Park is identified as a Community Park, due to its size and the types of amenities offered at the park, including a heated shelter with restrooms, playgrounds, open space, athletic fields, Lake Wingra waterfront, a beach, hockey and ice skating, tennis courts and paved walking paths.

Vilas Park Highlights:

- Vilas Park was tied with Tenney Park for the sixth most shelter reservations in 2017, at 111.
- Due to the often-wet state of the park's field space, it is not regularly used for scheduled athletic events. Because of this, it does not fall into the top twenty parks based on number of athletic field reservations.
- The plan identifies that more than 5,000 residents live within a half-mile of Vilas Park, which makes it third in surrounding population density. Brittingham Park is number one, at over 15,000 residents, and James Madison Park is second, at over 10,000 residents within a half-mile
- Vilas Park was the eighth most reserved park for non-athletic events in 2017, hosting the equivalent of 25 days of events including 'Let's Eat Out' and numerous runs/walks.

The Park and Open Space Plan also outlines recent improvements to Vilas Park:

- *2016 – A sidewalk was added along Drake St. to provide safe access for on-street parking.*
- *2017 – The tennis courts were resurfaced, and a new abutment was constructed for an accessible fishing pier.*
- *2018 – The pedestrian bridges over the lagoons were replaced and upgraded to ADA standards.*

2018 - VILAS PARK INVESTIGATION – STUDY OF POTENTIAL ARCHAEOLOGICAL ADVERSE EFFECTS (Cardno)

According to this report, six archeological sites have been identified within the boundary of Vilas Park. Five of the six sites have been extensively disturbed. Further disturbance within these zones needs to be monitored pursuant to State Statute 157.70. The report states that human remains have been unearthed several times, the earliest noted was in 1915.

The following are recommendations from the report:

Future city projects within the project area are likely to have adverse or negative effects on all six sites (DA-0148, DA-0149, DA-0174, DA-0178, DA-0196 and DA-1193) known to have been historically present within Vilas Park.

Due to the high density of burial mounds and the potential to encounter human remains within the park it is recommended that any ground disturbing activities located within the current boundaries of the park be monitored by a qualified archaeologist. Extant mound groups like Da-148 (Vilas Mound Group) should be avoided at all cost and ideally should be made part of a site management plan. Other sites, such as the large village site of DA-0196 would need archaeological survey and testing prior to any construction efforts. Given the nature and history of excavations at this site, extensive archaeological fieldwork and Native American consultation would likely be required for any such project.

The report recommends that site DA-0148 (Figure 5.159), near the Dinosaur Playground, should be avoided as it remains partially intact. Site DA-196, partly contained within the zoo property, is also called out as a site to be avoided or monitored during ground disturbing activities.

Figure 5.159. Identified Sites from Vilas Park Investigation - Study of Potential Archaeological Adverse Effects (Cardno 2018)

OTHER RESOURCES:

Friends of Lake Wingra:

https://www.lakewingra.org/about-us/friends-partners

City of Madison Engineering Lake Wingra Watershed:

https://www.cityofmadison.com/engineering/stormwater/wingraplan.cfm

SITE ANALYSIS

A site analysis is the evaluation of physical characteristics of a study area. Each site is unique consisting of elements such as topography, vegetation, watercourses and weather. The site analysis helps determine placements of structures, roads and other built elements while also providing suggestions for orientation to balance environmental effects to these uses.

SLOPES

The majority of Vilas Park is relatively level. The analysis of the slopes included in this report is from the Dane County GIS[90] using its 2-foot contour database (Map 5.2). The slope categorization is 0 to 6 percent, 6 to 12 percent, 12 to 20 percent, and over 20 percent.

The west side of the park generally slope to the south of the walking path parallel to Vilas Avenue. Along the east the elevation changes from the burial mounds at Erin Street to the zoo have the steepest topography in the park with slopes in excess of 2:1; as such these areas of the park are generally considered undevelopable. The remnant roadbed extending from the south end of Randall Avenue toward the bluff line up to the burial mound site is less than 5 percent and meets American with Disabilities Act (ADA) for accessibility requirements with no handrails. The existing path is over 8 percent and does not meet ADA requirements.

Most other areas of the park fall within the 0 to 6 percent slope and provide grades compatible with accessible walkways. The shoreline along the lagoon including the island and Lake Wingra have steeper, eroded 2:1 slope.

Figure 5.160. Vilas Park Meadow and Valley viewing toward the Lagoon

90 Dane County GIS, www.dcimapapps.countyofdane.com, 2020.

Map 5.2. Vilas Park Slope Analysis

SOILS

Soils information for the Vilas Park Master Plan are from the Dane County GIS maps (Map 5.3).[91] Supplemental information on classification and characteristics of the soil series is from the National Cooperative Soil Survey. [92]

A majority of the site that would eventually become Vilas Park was originally a bog as described in early descriptions of the property from the Annual Report of the Madison Park and Pleasure Drive Association at the time of the donation of the land by the Vilas family.[93] The soils in the low-lying areas of Vilas Park are Wacousta silt (Wa) silty clay loam. The Wa soil classification is very poorly drained with a 0 to 2 percent slope. These soils are described as located in broad depressions and swales on till plains, moraines and stream terraces that consist of very deep, very poorly drained in silty lacustrine sediments.[94] The former City of Madison plat plan of the 1905 vacated lots in conjunction with the demarcation of the "old shore line" on the 1906 O.C. Simonds plan verify the location of a wet boggy area at the north end of Lake Wingra.

Moving upward in a slight valley base toward the intersection of Drake Street and South Randall Avenue, the soils continue to be silt loams consistent with a broad depression as shown in the slopes section of this report. The predominant soil in this area, Batavia silt loam (BbA) has a gravelly substratum and is well-drained. This soils zone has relatively slight slopes of 0 to 2 percent.

The Batavia silt loam (BbB), located in the broad depression, is similar to BbA in makeup but has a slightly higher percentage of slope at 2 to 6 percent. This soil lies along the edge of the formerly boggy area found on site. As with the Wacousta silt loam the Batavia soils consist of very deep, well drained soils on till plans, glacial outwash plains and stream terraces formed in loess silty materials and loamy stratified outwash or sandy loam till.[95]

Just north of the BbB soils moving toward Vilas Avenue and higher ground is Military loam (MhD2). The loam is eroded and well-drained in composition with steeper slopes of 6 to 12 percent. The Military series are formed upland in sandy loam till, are moderately deep and are underlain by sandstone bedrock.[96]

Most of the Henry Vilas Zoo falls within the Wacousta series similar to Vilas Park. The north east and east

91 Dane County GIS, www.dcimapapps.countyofdane.com, 2020
92 National Cooperative Soil Survey, www.soilseries.sc.egov.usda.gov, 2020.
93 Madison Park and Pleasure Drive Association Annual Report, 1904
94 National Cooperative Soil Survey, Wacousta Series
95 National Cooperative Soil Survey, Batavia Series
96 National Cooperative Soil Survey, Military Series

side of both the Park and Zoo have the highest elevations and steepest slopes in either property. Moving toward South Randall Avenue the soils transition to Dodgeville silt loam (DnB). This series is well-drained forming in loess with an underlying clay residuum. There is an underlay of dolomite or limestone bedrock at a depth of 20 to 40 inches.[97]

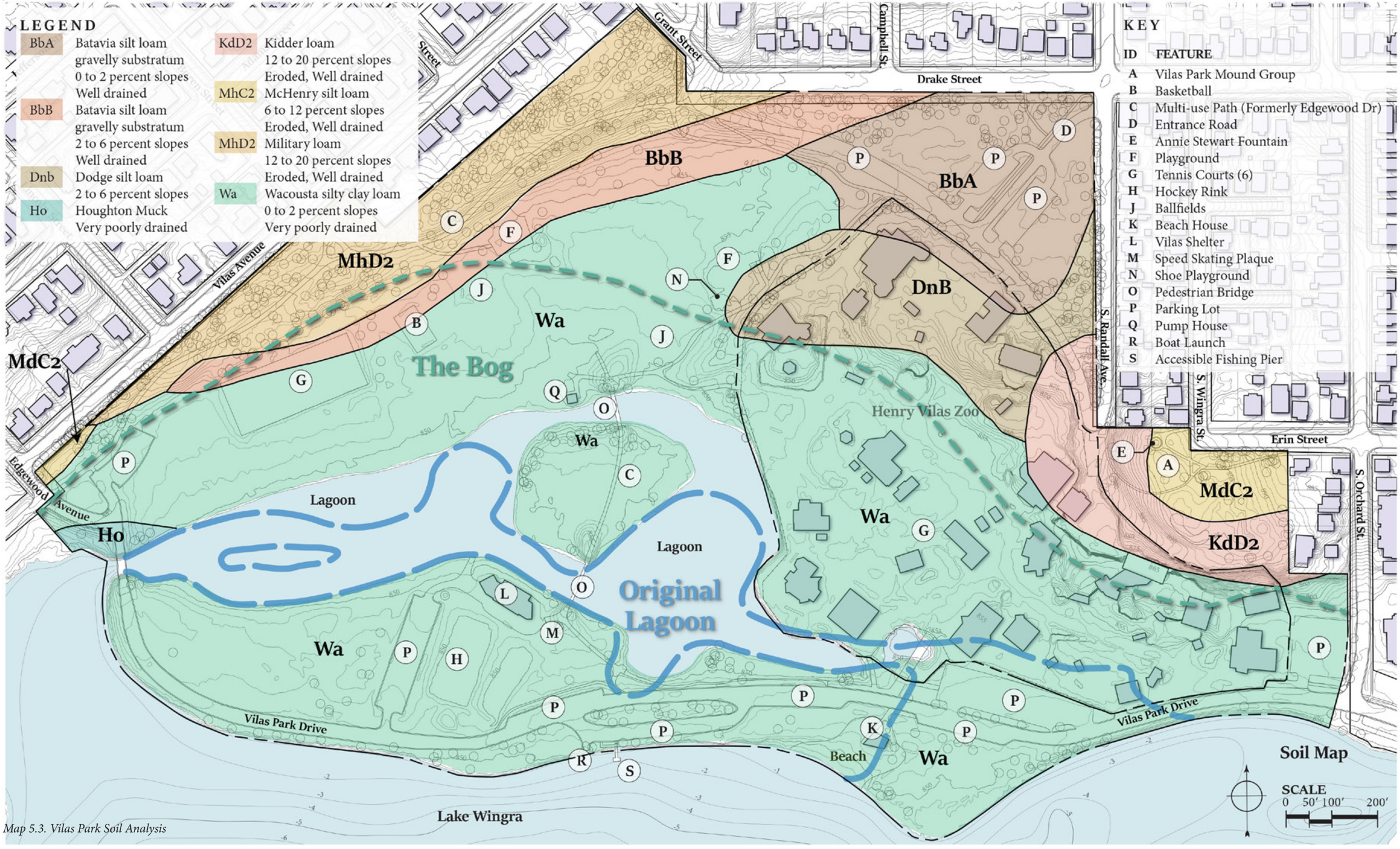
The ridgeline between the east side of Henry Vilas Zoo and the upper region of Vilas Park, where the effigy and burial mounds are located, is the steepest topography on site. The soils in this location are the Kidder loam (KdD2). The Kidder series consist of very deep, well drained soils formed in thin loess and loamy till on moraines and drumlins with slopes of 0 to 30 percent.[98]

At the highest elevation in Vilas Park, adjacent to Erin Street, are the McHenry silt loam soils (MdC2). The McHenry series is similar to Kidder with very deep, well-drained soils formed in loess or other silty materials.[99] There is also a small area of MdC2 soils at the Edgewood Drive and Vilas Avenue intersection at the base of the hilly topography extending upward to Monroe Street.

The three main building in Vilas Park are located within the Wa soils area: the main pavilion, beach house and pump house associated with the lagoons. Relocation of or modifications to the existing structures in the Wa soils areas will require site-specific soil borings to determine suitability due to the overall poor load bearing capacity in Wa soils.

Figure 5.161. Vilas Park and Historic Lake Wingra Shoreline

97 National Cooperative Soil Survey, Dodgeville Series
98 National Cooperative Soil Survey, Kidder Series
99 National Cooperative Soil Survey, McHenry Series



Map 5.3. Vilas Park Soil Analysis

WIND

Wind analysis is an important source of information for placement of elements in a park. Wind provides cooling during warm summer days and brutal chills in the winter which can determine the orientation of a shade structure or shelter. Future energy sources can also be a factor in analyzing predominant wind direction in correlation with open access to free-flowing breeze.

The wind data shown for Vilas Park is information monitored by the NRCS[100] at the Dane County Regional Airport. The prominent wind for the summer, June through August, is from direct south. Open air shelters can benefit from this southerly breeze in warm months. In the fall, September through November, the winds shift from mainly the south to northwest as well. During the winter, December through February, the winds maintain a prominence from the northwest and south. In the colder months, solid or enclosed walls of a shelter, such as restroom and concession, may best serve users with an orientation on the north side of the building. In the spring, March through May, the winds are predominantly from the south.

The diagrams show an average for each season's winds. The wind speeds are depicted with colors intensity reflecting speeds and their direction. The wind speed averages are in meters per second and are approximately 4.11 m/sec (9.19 mph) in summer, 4.60 m/sec (10.29 mph) in fall, 4.89 m/sec (10.94 mph) in winter and 5.06 m/sec (11.32 mph) in spring. The rings on the diagram represent frequency of winds. The inner ring starts at 3 percent of the time followed by 6 percent, 9 percent, 12 percent and the outer ring 15 percent of time.

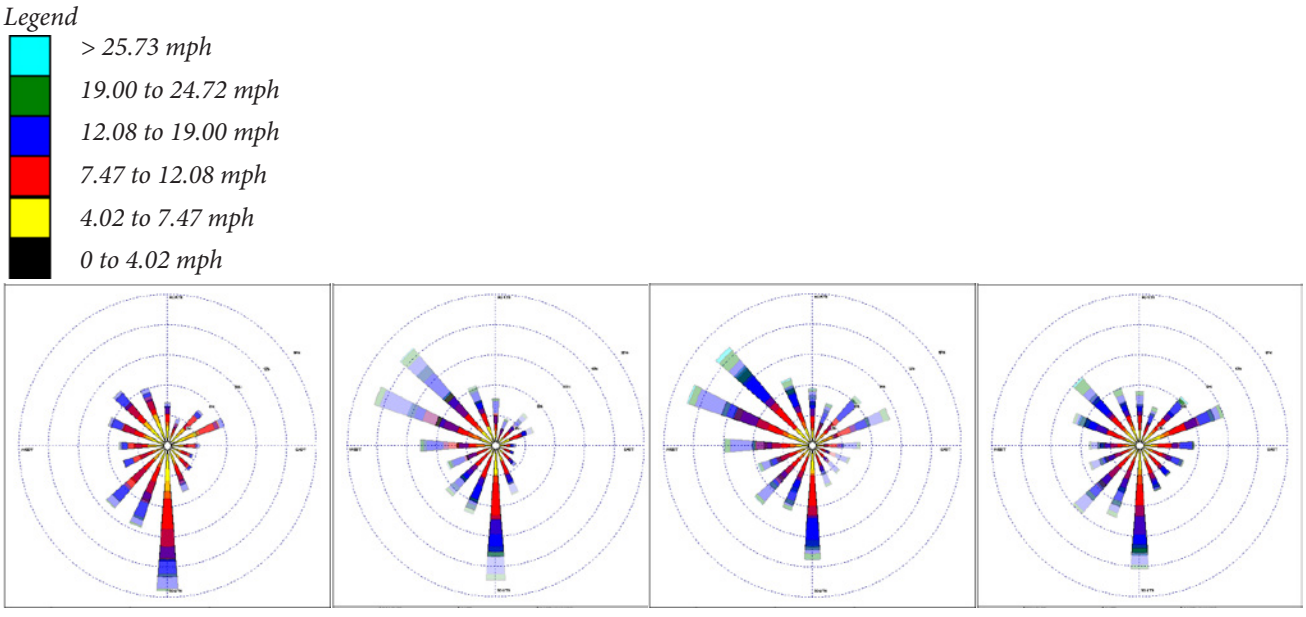


Figure 5.154. Wind Rose at Dane County Regional Airport from NRCS

100 Natural Resources Conservation Service, www.wcc.nrcs.usda.gov/climate/windrose.html, February 2010

OVERALL ANALYSIS

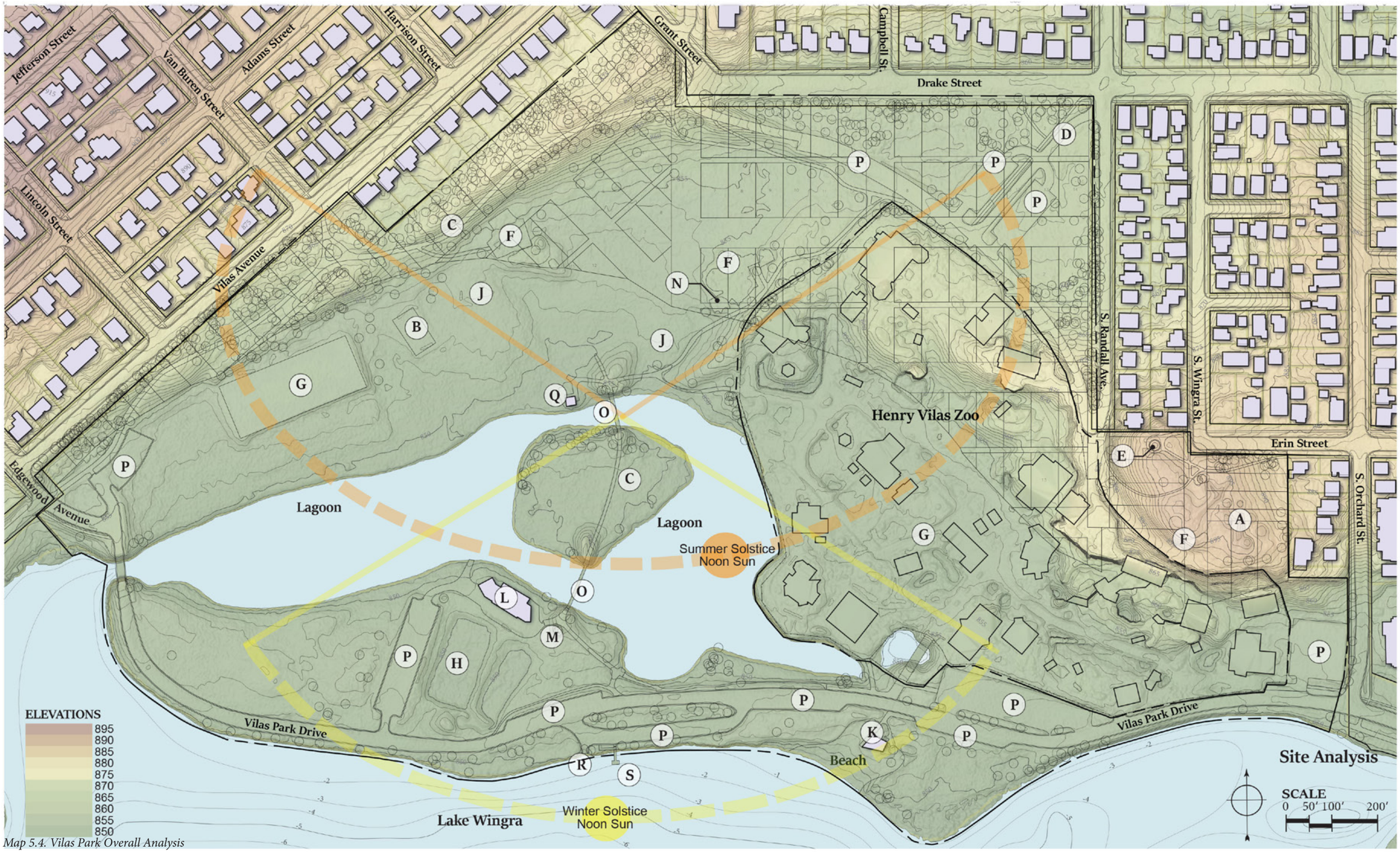
The orientation of Vilas Park respects several aspects of the natural environment (Map 5.4). Typically, the field space is located in low-lying, unbuildable areas such as the Lake Wingra basin. This natural draining valley make up most of Vilas Park and is an area that naturally stays moist in rainy seasons during fall and spring. Future consideration for better drainage should be considered to lessen the impact of water in open fields.

The elevation 853 and lower are near the demarcated original shoreline of Lake Wingra as shown on the O.C. Simonds 1906 Vilas Park Master Plan. As such the lower level of the park stays wet through most of the year. With added drain tiling or other techniques, these areas of the park can be more usable throughout damp periods. The Vilas Park shelter is located in this lower area. Documentation and detail of the footing could not be located for the shelter, but the structure seems stable. Future considerations for structure placement include factors such as robust footing requirements given the wet soil conditions found in most of Vilas Park.

Programing future cost of improvements for the Vilas Park Master Plan such as roads, walks and other hard surfaces should take into consideration the required sub-base materials to provide appropriate support in wet and poorly drained soils. The adjusted cross section for Vilas Park Drive and parking lots will establish a baseline estimate of implementation cost for construction in the poor soils in most of the park. Cross section and technical descriptions are found in Section 7.0 Master Plan.

The orientation of Vilas Park is conducive to maximizing sun angles throughout the year. The valley setting of the park aligns with sunrise and sunset both winter and summer solstice. Future planning of new or relocated park amenities benefit from this desirable orientation.

Significant canopy woodlands, as describe in the Environmental Assessment Tree Survey section of the Site Analysis, line the park edges at higher elevations, separating adjacent neighborhoods with a natural vegetative screen. The soils are not as saturated in these high elevations, providing conditions favorable for natural woodland settings. Park enhancements such as vegetation management of the understory and select canopy pruning strengthen the natural setting as O.C. Simonds originally envisioned.



Map 5.4. Vilas Park Overall Analysis