

Final Alternative Urban Areawide Review Update

March 30, 2011

Woodland Cove *Formerly Park Cove*

Prepared for:



City of Minnetrista
7701 County Road 110W
Minnetrista, MN 55364
952-446-1660

WSB Project No. 1741-68

701 Xenia Avenue South, Suite 300 Minneapolis, MN 55416 763.541.4800



FINAL ALTERNATIVE URBAN AREAWIDE REVIEW UPDATE

**WOODLAND COVE
FORMERLY PARK COVE**

**FOR THE
CITY OF MINNETRISTA, MINNESOTA**

**March 30, 2011
Adopted April 18, 2011**

Prepared By:

**WSB & Associates, Inc.
701 Xenia Avenue – Suite 300
Minneapolis, MN 55416
763-541-4800 ■ 763-541-1700 (Fax)**

**City of Minnetrista
7701 Co Rd 110 W
Minnetrista, MN 55364
952-446-1660 ■ 952-446-1311 (Fax)**

TABLE OF CONTENTS

**TITLE SHEET
TABLE OF CONTENTS**

I. Introduction and Purpose.....1

II. Approved PUD Concept Plan – Scenario 31

III. Update to the Environmental Review2

IV. Mitigation Summary and Update.....3

V. AUAR Update Review.....10

List of Figures

Figure 6-2 Scenario 3 Landuse

List of Appendices

Appendix A Water Supply Update Memo
Appendix B Wastewater / Sanitary Collection Update Memo
Appendix C Traffic Study Update Memo

I. Introduction and Purpose

The Woodland Cove study area, formerly the Park Cove study area, is approximately 530 acres and is generally bordered on the east by Lotus Drive, on the south by TH7, on the west by Kings Point Road, and on the north by Halsted Bay.

The City of Minnetrista adopted the Park Cove Final Revised Alternative Urban Areawide Review (AUAR) in November 2006. Since that time, the proposed developer of the area has changed, thus changing the name of the development from Park Cove to Woodland Cove. No development within the study area has occurred. Pursuant to Minnesota Rules 4410.3610 Subp. 7, for the AUAR to remain valid as the environmental review document for the area, the document needs to be updated every five years until all development in the study area has received final approval. Since this area still remains undeveloped and the AUAR will expire in November 2011, the purpose of this document is to update the AUAR pursuant to Minnesota Rules.

The 2006 AUAR included an analysis of two development scenarios as follows:

- Scenario 1 –Approved Comprehensive Plan Amendment – Low End Density Range
- Scenario 2 –Approved Comprehensive Plan Amendment– High End Density Range

To implement these scenarios, a Comprehensive Plan Amendment was required. This amendment was approved by the Metropolitan Council in 2006.

This update to the Final AUAR Update includes the addition of a third development scenario as follows:

- Scenario 3 – Concept Development as Proposed by Woodland Cove, LLC and Woodland Cove II, LLC

The November 2006 adopted AUAR is available for review on the City's web-site at www.ci.minnetrista.mn.us. This report serves as an update of the 2006 AUAR, and includes a review of the new proposed development scenario, an update to the environmental analysis as needed, an update to the traffic analysis as needed, an update to the utility analysis as needed, and a review of the mitigation measures.

II. Approved PUD Concept Plan – Scenario 3

On May 17, 2010, the City Council approved the Woodland Cove Planned Unit Development Concept Plan. For purposes of this AUAR Update, the Concept Plan shall be referred to as Scenario 3. The Concept Plan is proposed as a Planned Unit Development (PUD) so that planning of the entire site can focus on facilitating the required density and the preservation of significant environmental features on the site.

The City's Comprehensive Plan Amendment from 2006 has resulted in a Land Use Map Amendment and subsequent zoning changes for the project area. This scenario analyzes the proposed PUD Concept Plan approved by the City Council and is allowed under the Comprehensive Plan. The following table outlines the land uses for this scenario:

Type	Gross Acre	Number of Units
Residential Low	255	589
Residential Medium to High	228	482
Commercial	7	N\A
Conservation Easement	42	N\A
TOTAL	532	1071

The City's Comprehensive Plan is consistent with the land uses outlined in Scenario 3, specifically to include a limited amount of retail / commercial space to be located near the Kings Point Road and Highway 7 intersections. All other areas are in conformance with the City's Comprehensive Plan and the previously approved 2006 AUAR. The PUD Concept Plan includes the following areas:

Woods and Green Space: The PUD Concept Plan preserves 140.2 acres (over 28% of the site) as permanent open space, which includes 45.9 acres of wooded area. In addition, over 44% of the trees in the Maple/Basswood forest are being preserved.

Parks and Public Area: Approximately 73 acres are planned for public parks, trails and open space. The public parks include a large park along the southern edge of the site which provides a meaningful connection between Lake Minnetonka Regional Park and Carver Park Reserve. In addition, two (2) additional parks are proposed in the PUD Concept Plan for a total of 32 acres of public parkland. Major greenways will run through the site, both north and south and east and west.

Housing Types: The Concept Plan includes a wide variety of housing types integrated throughout the site. The total of ten (10) specific types of housing include a mixture of single-family and multi-family units. The housing types and lots are oriented to create appealing neighborhoods and provide a variety of housing options for the residents of Minnetrista.

Wetlands, Shorelands and Restoration Activities: The PUD Concept Plan preserves 96.5% of the existing wetlands. Anticipated wetland impacts are primarily for public streets that out of necessity cross or are adjacent to wetland areas. Much of the shoreline is also designated as wetland area and protected as such. The PUD Concept Plan includes a restoration of native plants in area that are damaged from erosion and invasive species.

Commercial Area: The PUD Concept Plan introduces a new area than was previously planned for in the 2006 AUAR study, which includes a limited amount of retail / commercial space to be located near the Kings Point Road and Highway 7 intersection. Within this retail / commercial area, there is a 'public green' which is intended to serve as a local focal point and gathering space.

Storm Water: The PUD Concept Plan includes 30 acres of infiltration basins, ponds, and other storm water techniques.

III. Update to the Environmental Review

No development has occurred within the study area since the original AUAR was adopted in 2006. This update to the AUAR includes a review of the mitigation measures, updated analysis where necessary, and the addition of Scenario 3 to include some possible commercial development. The analysis that was completed with the 2006 AUAR remains valid unless updated in this report.

IV. Mitigation Summary and Update

Based on this AUAR Update, the approved PUD Concept Plan is consistent with the City's Comprehensive Plan and the 2006 AUAR. Toward that end, many of the mitigation measures outlined in the 2006 AUAR still remain valid. In some cases, additional analysis has been completed to include Scenario 3 and to reflect additional information that has been developed in the past five years. The updated mitigation measures are outlined below and either remain in effect from the 2006 AUAR or have been updated based on new analysis as noted.

A. Geologic Hazards, Erosion Control, and Hazardous Materials

- A1. Any development will be required to remediate the contaminated soils in conformance with MPCA regulations.
Note: The developer has completed Phase 1 and Phase 2 work to clean up some regulated materials that were found on the site.
- A2. Any development will be required to remove and properly dispose of trash and debris located within the site.
- A3. Exposed soil as a result of mass grading will be phased as approved in the Development Agreement.
- A4. Temporary and permanent seeding and staging plans will be required to be submitted by the developer and reviewed by the City.
- A5. Additional considerations for appropriate erosion control measures will be required along Lake Minnetonka to reduce erosion and sedimentation. These measures may include additional best management practices, staged grading, a floating silt curtain in the lake, and /or planting to prevent erosion into the lake.
- A6. Street sweeping will occur as needed to remove dirt that has been tracked on to adjacent roads during construction.
- A7. The property owner and contractor will be the responsible parties applying to the MPCA for a National Pollution Discharge Elimination System (NPDES) General Stormwater Construction Activity Permit and a development of a Storm Water Pollution Prevention Plan (SWPPP). Development will be required to be in conformance with the MPCA's Best Management Practices (BMPs). Grading, erosion control plans, and the SWPPP will be reviewed by the City.
- A8. The NPDES Phase II Construction Site permit requires a site specific Storm Water Pollution Prevention Plan (SWPPP) to be completed for the construction. This SWPPP is required to include pollution prevention management measures for solid waste and hazardous material spills that occur during construction.

- A9. The municipal waste hauler company will make residential and commercial recycling programs available to the area. General municipal waste will be removed by these waste hauler companies.

B. Fish, Wildlife, and Ecologically Sensitive Resources.

- B1. Species of special concern have been reported near the study area. The City will take this information into account during the review process of this development and subsequent developments that occur in the area.
- B2. Development in the study area will need to take into account the preservation and/or restoration of all or a portion of maple-basswood forest in the north central portion of the site (Area 1 on Figure 10-1). This area should be mostly contiguous and linked as much as possible to the existing wooded area (Area 2) to maintain the greenway corridor in the area. Preservation of this wooded area could be accomplished by clustering residential development and/or allowing development along the fringes to preserve an intact central area of the maple-basswood forest. Trails would be allowed within the wooded area of the maple-basswood areas. The exact location and dimensions of this corridor will be addressed as part of the plan review process. The Home Owners Association (HOA) for the development will be responsible for the preservation and maintenance of the wooded areas through the use of an Environmental Stewardship Plan.
- B3. The establishment of a greenway corridor associated with the maple-basswood forested areas on the site per the City's Greenway Corridor Plan outlined in the City's Park, Trail, and Open Space Plan will be needed. The exact location and dimensions of this corridor will be addressed as part of the plan review process. It is anticipated that this corridor will be for open space, natural areas, parks, and trails.
- B4. Wetland impacts will be avoided and minimized to the greatest extent possible in conformance with the Wetland Conservation Act and Minnehaha Creek Watershed District rules. Mitigation for any wetland impacts is to be based on the most recent local and state rules.
- B5. During the wetland permitting process, it will be investigated if Exceptional Natural Resource Value (ENRV) credit can be obtained for preserving the maple-basswood forest for mitigation for some wetland impact.
- B6. Per the City's and Minnehaha Creek Watershed District's requirements, wetland buffers will need to be established. These wetlands and buffers will be placed within easements or outlots. The buffer requirements of the Minnehaha Creek Watershed District will be the buffers that are required in the study area.
- B7. Per the City's ordinances, for buffer areas where non-native vegetation exists, buffer zones must be planted with native species typical for the habitat.
- B8. *This mitigation measure was removed as part of this update.*

- B9. Tree removal and replacement shall be subject to the City's most recent Tree Ordinance. Additionally, an Environmental Stewardship Plan to cover restoration and vegetation management of buffers, shoreline, wooded, ponds, infiltration areas, and open spaces will be required by the HOA.
- B10. The realignment of CSAH 11 shall be coordinated with Carver County Highway, Mn/DOT, and Three Rivers Park District. The location CSAH 11 shall take into account the "7/11 Woods" as noted on the County Biological Survey map. The road should be designed to minimize impact to the woods and to meet Mn/DOT, Three Rivers Park District, and Carver County design criteria.
Note: This mitigation measure is currently in process. The development plan will address the ROW needs.
- B11. An eagle nest survey will be completed as part of the development review.

C. Municipal Water Use and Service

- C1. To provide water to the study area, a network of trunk water mains will be extended from the existing southern water system. The City has recently begun updating its Comprehensive Water System Plan. Upon completion of the plan, water main size and location requirements necessary for serving Woodland Cove will be determined.
- C2. An additional 2 to 3 municipal wells, depending on well production, will be needed as a result of this development. The wells do not necessarily need to be located within the study area but rather, could be in a location to best serve the community, such as near a Water Treatment plant.
- C3. 194,000 to 327,000 gallons of water system storage will be needed for this development. Additional storage will be needed within the City's water system for this and other future developments and should be constructed in a location to best serve the entire city and overall water system.
- C4. Prior to any new wells being developed, a City-wide water conservation plan will be developed.
- C5. Any abandoned wells found within the study area will be sealed in accordance with Minnesota Department of Health guidelines.
Note: Wells were identified in the Phase 1 study completed by the developer and have all been abandoned.
- C6. Existing residents will be encouraged to connect to the municipal water system and cap private wells in conformance with State of Minnesota standards when service is provided to their area.

D. Shoreland and Floodplain Management Districts

- D1. Development will address Shoreland and Floodplain Management through the City's PUD Shoreland Ordinance and Floodplain Management Ordinance.
- D2. Development in the study area will be required to achieve no net loss in floodplain storage per MCWD's requirements.

E. Water Surface Use and Docks

- E1. The City's ordinances encourage the consolidation of docking facilities as much as possible rather than individual docking facilities. The consolidated docks must be in conformance with the Lake Minnetonka Conservation District rules and the City's dock requirements. Approvals for these docks must be secured by the project proposer.
- E2. Docking spaces will be limited to one watercraft per 50 feet of continuous shoreline, as outlined in the City's and LMCD's requirements.
- E3. The location of the consolidated docking facilities must take into account the natural shoreline and be located in such a manner to reduce the need for dredging and reduce the need for emergent vegetation impact. Dredging is subject to MCWD Rule E, the Lake Minnetonka Joint Policy Statement for Dredging, and DNR regulations.
- E4. A site inspection of the proposed docking locations will be required as part of the platting process to determine suitable locations for the docks. This inspection shall be completed by representatives of the project proposer, Department of Natural Resources, LMCD, and the City during the growing season to address sensitive vegetation areas that may be impacted by the docking areas, especially the American Lotus plant that is known to grow in the area.

F. Storm Water Management

- F1. It will be required that post-development discharge rates will be limited to less than pre-development discharge rates for the critical duration event to reduce erosion impacts downstream of the site.
- F2. There are some ravines located within the study area that receive storm water discharge from the site. The current conditions do not control or reduce storm water discharges which contribute to downstream erosion problems. The proposed project design will be required to limit the discharge rates to these problem areas to less than existing discharge rates. This will be further evaluated as part of any proposed development plans in the area.
- F3. The developer will be responsible for grading the site appropriately to provide adequate storm water management to the extent necessary and will be required to obtain the necessary permits for storm water management and grading.
- F4. Storm water will be treated through a variety of measures including water quality treatment ponds, rate control, rain gardens, swales, infiltrations areas, and/or other

innovative storm water management techniques. The intent of this will be to enable preservation of existing natural features, use the storm water management system to mitigate and/or enhance natural features, and provide water quality protection to meet City and MCWD standards. A comprehensive plan will be developed and reviewed with the appropriate permitting agencies.

- F5. Rural road sections will be used where feasible and practical to enable infiltration in swales and treatment areas. Internal street widths will be evaluated to minimize their size to the greatest extent practical while maintaining public safety.
- F6. Storm water will be required to be pretreated prior to discharge to wetlands.
- F7. Storm water management features should incorporate native plantings of grasses, trees, and shrubs.

G. Wastewater and Municipal Sanitary Sewer Service

- G1. Extension of 8-inch trunk sanitary sewer lines from the existing lift station along Kings Point Road (referred to as City Lift Station No. 4) to the south and north will be done to collect and convey wastewater from the northern portions of the proposed development. Lift Station No. 4 has a current pumping capacity of 400 gpm based on recent pump testing. Up to 374 gpm can be added to this lift station from new development, since there is 26 gpm from existing homes currently directed to Lift Station No. 4.
- G2. Extension of three separate 8-inch gravity sewer lines from the existing 8-inch and 12-inch sanitary lines that currently extend to the eastern border of the development will be done to collect and convey wastewater from the southern and eastern portion of the development area. No more than 450 gpm should be directed to the southernmost existing 8-inch gravity sewer line as it only has a full flow capacity of slightly over 450 gpm. The existing 8-inch and 12-inch gravity lines convey wastewater to another existing lift station, referred to as City Lift Station No. 6, and located at Trillium Lane. Lift Station No. 6 has a current pumping capacity of 650 gpm based on recent pump testing and would be capable of discharging the projected wastewater flows generated from the southern and eastern portions of the proposed development under Scenarios No. 1 and No. 3. However, Lift Station No. 6 would potentially need to be upgraded in capacity from 650 gpm to 850 gpm under Scenario No. 2.
- G3. *This alternative has been removed as part of this update (see Appendix B for analysis).*

H. Traffic and Transportation

An updated traffic analysis has been completed for the new proposed Woodland Cove development. A summary of the analysis and the anticipated impacts is attached as Appendix C.

- H1. Realignment will be done of CSAH 11 and Kings Point Road to form a single intersection with TH 7. Right-of-way will be needed to complete the realignment.

Note: This item has been agreed to by all affected agencies. A staff approved layout has been submitted to MnDOT and Carver County for approval. The Development plan will address the ROW needs.

- H2. Preparation of an Intersection Control Evaluation (ICE) for TH 7 at Kings Point Road/CSAH 11 and CSAH 44 will be done. Work with Mn/DOT and Carver County on approval of the appropriate traffic control.

Note: This is currently in process for the Kings Point Rd / CSAH 11 intersection. The ICE has been submitted to MnDOT and Carver County for review and approval. The CSAH 44 intersection signal improvements were completed by MnDOT in 2009.

- H3. Installation of Traffic Signals or roundabouts will be needed at the following locations:

- TH 7/CSAH 11/Kings Point Road
- TH 7/CSAH 44

Note: TH 7 at CSAH 11 / Kings Point Rd is currently in process for the installation of a roundabout. MnDOT installed a signal at TH 7 and CSAH 44 in 2009.

- H4. *This mitigation measure was removed as part of this update.*

- H5. The traffic signal was installed by MnDOT in 2009 without the additional lanes. The updated analysis found in Appendix C concludes that until such time as MnDOT programs improvements for the entire length of TH7 or the addition of lanes on CSAH 44 would not be beneficial. As traffic increases in the area additional analysis will be required to determine exactly when additional improvements would be needed.

- H6. Improvement of access roads:

- Kings Point Road should be upgraded structurally and geometrically to accommodate the forecasted traffic load.
- The corners/turns of Lotus Drive should be realigned and the road should be surfaced to accommodate the forecasted traffic load.

- H7. Compliance with the terms of the May 19, 2005 agreement between the City of Minnetrista and the Three Rivers Park District.

Note: This is currently in process. The City and Three Rivers Park District have been working together and will update this agreement as needed. This will be addressed through the development plan review process.

- H8. This item is currently in process for the CSAH 11 / Kings Point Road intersection with the ICE report and Level 1 layout. The traffic signal was installed at CSAH 44 by MnDOT in 2009 without the additional lanes. As concluded in the attached updated AUAR traffic analysis (Appendix C), until such time as MnDOT programs improvements for the entire length of TH 7, the addition of a second lane in each direction on TH 7 would not be beneficial. As traffic increases in the area additional analysis will be required to determine exactly when additional improvements would be needed and if additional through lanes are needed. Reference to the CSAH 44 intersection should be eliminated.

H9. To facilitate construction of the recommended combined TH 7/CSAH 11/Kings Point Road intersection and the additional lanes on TH 7, the dedication of sufficient right-of-way adjacent to the proposed Park Cove boundaries as a condition of granting permits for the proposed development is recommended. This would require a cooperative effort on the part of the City, Carver County, MnDOT, MetCouncil, Three Rivers Park District, and the developer to assure that a right-of-way width is provided that is adequate to accommodate the construction limits for the new intersection and its approaches. (A traffic study and preliminary design layout beyond the scope of this AUAR would be a necessary element in such an effort.)

H10. *This mitigation measure was removed as part of this update.*

H11. The improvements to TH7 at Kings Point Road/CSAH 11 would be in place prior to occupancy of residential units in the study area. The following activities could occur prior to the improvements provided that the funding for these improvements is in place and an approved schedule for completion of the improvements is granted:

- Site grading
- Model home construction
- Residential construction (no occupancy)

This mitigation measure can be modified with approval of the City Council through a developer's agreement.

The process of completing the improvements to the TH 7 at Kings Point Road / CSAH 11 intersection has been started with the submission of the updated ICE report, MnDOT staff approved layout and securing the MnDOT Municipal Cooperative Agreement funding. No additional improvements to the TH 7 at CSAH 44 intersection is identified at this time.

H12. Through discussions with the City and Three Rivers Park District it has been agreed that up to 2,500 vehicles per day ADT can be accommodated on Lotus Drive. How this will be accomplished and documented shall be included in the development agreements for the adjacent site and be reviewed and approved by Three Rivers Park District.

I. Noise, Dust, and Screening

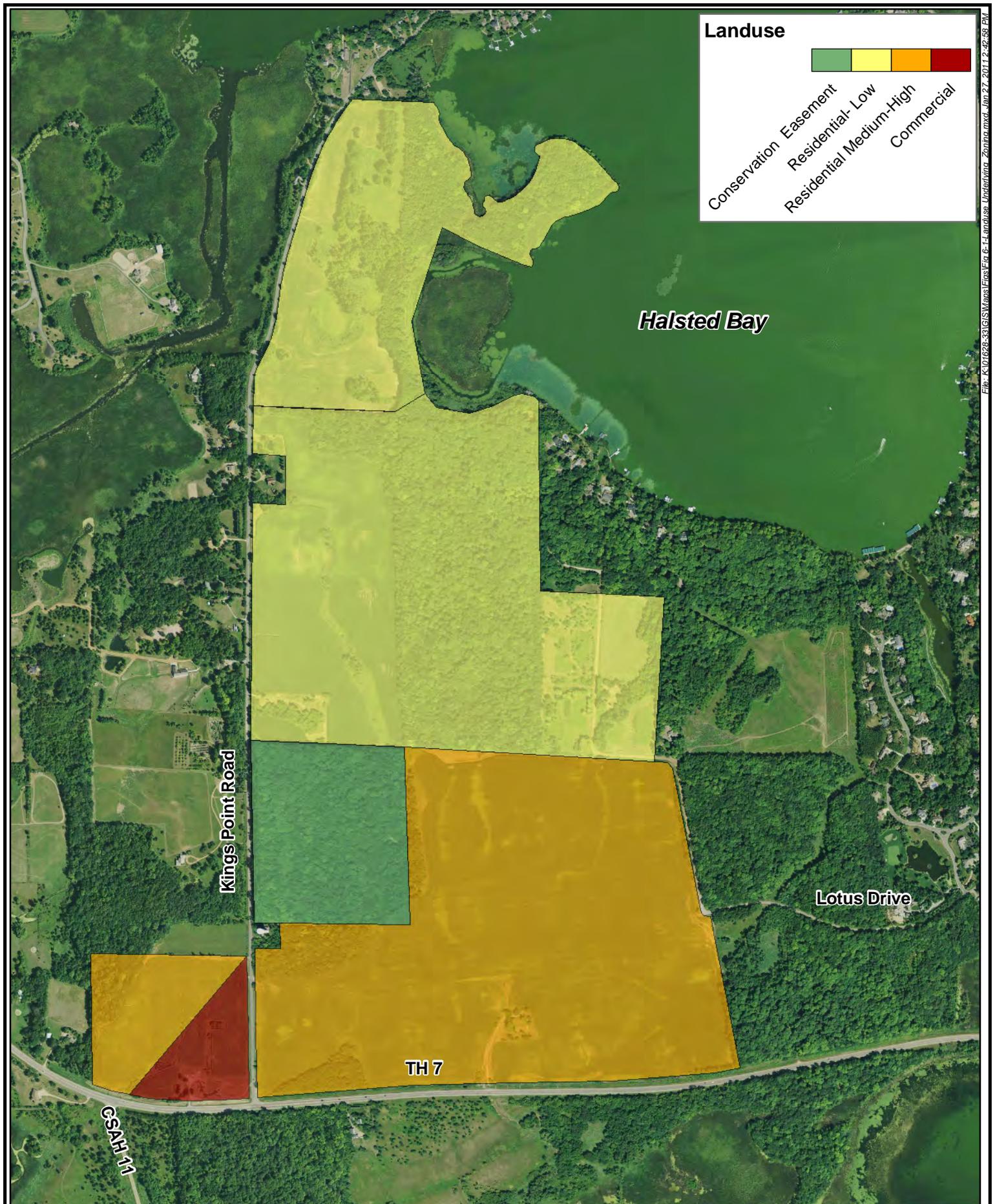
- I1. Through the City plan review process, the City will require noise and dust mitigation if deemed necessary.
- I2. Through the City plan review process, the City shall require appropriate screening of development in the study area.

J. Trails and Open Space

- J1. Per the City's ordinances, park dedication on suitable land to create neighborhood parks and local open space will be required.
- J2. Trail connections that meet the intent of the City's Park, Trail, and Open Space Plan will be required. This will also require a grade separated trail connection of the TH7 trail to the south to Carver Park Reserve per the City's agreement with Three Rivers Park District.

V. AUAR Update Review

Pursuant to Minnesota Rules 4410.3610 Subp. 7, this AUAR Update was submitted for a ten-day comment period. The comment period ended March 11, 2011. Mitigation measures were revised pursuant to comments. The City Council adopted this document on April 18, 2011. The Woodland Cove, formerly Park Cove AUAR will remain valid for an additional five years from the adoption date.



Landuse

			
Conservation Easement	Residential- Low	Residential Medium-High	Commercial

Halsted Bay

Kings Point Road

Lotus Drive

TH 7

CSAH 11



Figure 6-2
Scenario 3
Woodland Cove AUAR



WSB
 751 Xenia Avenue South - Suite 300
 Minneapolis, MN 55416
 www.wsbgroup.com

INFRASTRUCTURE | ENGINEERING | PLANNING | CONSTRUCTION

File: K:\01628-03\GIS\MapDocs\Fig 6-4 Landuse_Updated.mxd, Jan 27, 2017, 2:42:53 PM

**Appendix A –
Water Supply Update Memo**



Memorandum

To: *Mike Funk, City Administrator
Breanne Rothstein, Senior City Planner
City of Minnetrista*

Copy: *Mark Erichson, PE, City Engineer
City of Minnetrista*

From: *Joe Ward, PE
Water System Engineer*

Date: *February 17, 2011*

Re: *Water Supply Update – Woodland Cove AUAR
Formerly Park Cove AUAR (2006)
City of Minnetrista, MN
WSB Project No. 1741-68*

The Woodland Cove AUAR is being updated pursuant to Minnesota Rules. As part of this effort, the water supply analysis and mitigation measures outlined in the original AUAR were reviewed. Information about this review and the updated analysis are provided below.

Background

Upon further evaluation of the City's existing water system, existing maximum day to average day water demand ratio (peaking factor) has been reduced since the analysis completed in the original AUAR. Previously, the peaking factor for the southern water system was estimated to be 9.5, but further evaluation has indicated maximum day demands were less than estimated. Subsequently, the estimated peaking factor has been reduced to 3.75. This is important because water supply requirements (number and capacity of wells) are based on maximum day water demands. The reduced peaking factor has lowered the water supply mitigation requirements.

As a result of the peaking factor reduction, it is possible that trunk water main locations and sizes may be updated. Therefore, the City has recently begun updating its Comprehensive Water System Plan. Upon completion of the plan, water main requirements necessary for serving Woodland Cove will be determined. Assuming the water main network will be sized and located to allow adequate transportation of water throughout the distribution system, water supply and storage can be based on aggregate demands. Water supply (well capacity) should meet or exceed maximum day demands with the largest well out of service (firm capacity).

Future unit water demand requirements have been reduced for medium/high and high density residential units. Existing water demand per residential unit is estimated to be 333 gal/day.

However, existing residential development density is typically 2.5 units/acre or less. Medium/high and high density residential development planned for Woodland Cove have densities ranging from 4.0 – 6.0 units/acre. Lower density development typically demand more water for lawn watering and likely have more people per household than higher density residential development. Therefore, projected water demands for medium/high and high density residential have been revised based 100 gal/day/person and 3 people/unit resulting in 300 gal/day/unit.

Lastly a third scenario of development has been added. Water demands generated by this scenario are different than scenarios 1 and 2 resulting in different infrastructure requirements.

Existing Conditions

Since the existing system peaking factor has been updated, existing southern system average day and maximum day water demands have been updated to be 230,000 gal/day (160 gal/min) and 862,500 gal/day (599 gal/min). Existing system demand data is an average of 2008, 2009, and 2010 to account for seasonal climate variations between years.

Based on the updated maximum day water demands for the southern system, existing City demands indicates the City needs approximately 99 gal/min of additional well capacity to meet existing southern system demands. Assuming new wells constructed will have capacities similar to the existing two wells (500 gal/min) one additional well is needed to serve the study area under existing conditions. It is possible that the capacity of new wells will be higher than the existing wells, which could supply enough water to make up the current capacity deficiency.

Scenario 1

As described in the preceding sections, projected water demands for medium/high and high density residential development have been reduced. Table 1 below shows updated Scenario 1 demands.

Table 1. Scenario 1 Projected Water Demand

Type	Number of Units	Avg. Day Water Demand (gal/day)	Maximum Day Water Demand (gal/day)
Residential Low	292	97,200	364,500
Residential Medium-High	648	194,400	729,000
Residential High	131	39,300	147,400
Unaccounted (10%)		33,100	124,100
Total	1,071	364,000	1,365,000

The projected average day and maximum day water demands for Scenario 1 are 364,000 gal/day (253 gal/min) and 1,365,000 gal/day (948 gal/min) respectively. Since well firm capacity should meet or exceed maximum day demand, Scenario 1 would require an additional 948 gal/min of well capacity. As discussed in the existing conditions, the City is already in need of 99 gal/min of well capacity, therefore 1,047 gal/min of total additional well capacity would be necessary for

Scenario 1. It is anticipated that future well capacities will be similar to those constructed in the past (500 gal/min), so it is likely that two new wells would be necessary to Scenario 1 water demands. The wells do not need to be located within the project area, but could be sited in a location to best serve the community, such as near a water treatment plant.

Construction of trunk water mains will be necessary for water distribution. As discussed the preceding sections, location and sizing of trunk water mains will be determined upon completion of the update to the City's WaterCAD model and Comprehensive Water System Plan.

This scenario will trigger the need for additional storage in the southern system. The Kings Point Tower has a storage capacity of 400,000 gallons. System storage should meet or exceed average day demand. Development under Scenario 1 would increase average day demand from 230,000 gal/day to 594,000 gal/day. Thus, an additional 194,000 gallons of storage is needed. Storage should be located in a location to best serve the City's entire water system, so locations other than within Woodland Cove should be considered for siting new storage facilities.

Since the developer funded construction of the King's Point Tower, it could be assumed Woodland Cove would have rights to use the entire tower capacity (400,000 gallons) to serve the development. Under this scenario, no additional storage would be necessary to serve Woodland Cove, but 194,000 gallons of additional storage would be necessary to serve existing development.

Scenario 2

As described in the preceding sections, projected water demands for medium/high and high density residential development have been reduced. Table 2 below shows updated Scenario 2 demands.

Table 2. Scenario 2 Projected Water Demand

Type	Number of Units	Avg. Day Water Demand (gal/day)	Maximum Day Water Demand (gal/day)
Residential Low	486	161,800	606,800
Residential Medium-High	809	242,700	910,100
Residential High	157	47,100	176,600
Unaccounted (10%)		45,200	169,500
Total	1,452	496,800	1,863,000

It is anticipated that the average day water demand associated with Scenario 2 will be 496,800 gal/day (345 gal/min) and maximum day water demand 1,863,000 gal/day (1,294 gal/min). Based on water supply capacity requirements and anticipated supply per well detailed in preceding sections, approximately 1,393 gal/min of additional well capacity would be necessary (estimated three new wells).

Construction of trunk water mains will be necessary for water distribution. As discussed the preceding sections, location and sizing of trunk water mains will be determined upon completion of the update to the City's WaterCAD model and Comprehensive Water System Plan.

Based on water storage capacity requirements detailed in preceding sections, the additional storage necessary to serve the development would be approximately 326,800 gallons. Assuming Woodland Cove would have rights to use the entire tower capacity (400,000 gallons), an additional 96,800 gallons of storage capacity would be necessary to serve Woodland Cove along and an additional 230,000 gallons of storage capacity to serve existing development.

Scenario 3

Scenario 3 has been added. In addition to residential development, commercial development has been projected as well. The total number of residential units in Scenario 3 is 1,071 and the total acres of commercial is 7.

Based on research for other Metro area communities and Metropolitan Council projections, water demand for commercial development is typically projected to be 800 gal/day/acre. It is possible that water customers may have higher water demand requirements locally, but specific unit requirements will be evaluated as development occurs. Table 3 below shows projected Scenario 3 demands.

Table 3. Scenario 3 Projected Water Demand

Type	Number of Units	Avg. Day Water Demand (gal/day)	Maximum Day Water Demand (gal/day)
Residential Low	589	196,100	735,400
Residential Medium-High	482	144,600	542,300
Commercial	7 acres	5,600	21,000
Unaccounted (10%)		34,600	129,800
Total		380,900	1,428,500

It is anticipated that the average day water demand associated with Scenario 3 will be 380,900 gal/day (265 gal/min) and maximum day water demand 1,428,500 gal/day (992 gal/min). Based on water supply capacity requirements and anticipated supply per well detailed in preceding sections, approximately 1,091 gal/min of additional well capacity would be necessary (estimated two new wells).

Construction of trunk water mains will be necessary for water distribution. As discussed the preceding sections, location and sizing of trunk water mains will be determined upon completion of the update to the City's WaterCAD model and Comprehensive Water System Plan.

Based on water storage capacity requirements detailed in preceding sections, the additional storage necessary to serve the development would be approximately 210,900 gallons. In the mid 1990's, the Kings Point water tower, well number 4, and trunk watermain were constructed and assessed to the property now part of the Woodland Cove Project. Since the

construction of these trunk facilities, Minnetrista has consumed a significant portion of the capacity of these trunk facilities. Woodland Cove would have rights to use the tower capacity (400,000 gallons) with no additional storage capacity being necessary on-site to serve Woodland Cove. However, an additional 210,900 gallons of storage capacity would be necessary to serve the existing water system. This storage would be in a location to best serve the entire City and overall system.

**Appendix B –
Wastewater / Sanitary Collection Update Memo**



Memorandum

To: *Mike Funk, City Administrator
Breanne Rothstein, Senior City Planner
City of Minnetrista*

Copy: *Mark Erichson, PE, City Engineer
City of Minnetrista*

From: *Kevin Newman, PE
Water / Wastewater Engineer*

Date: *February 17, 2011*

Re: *Wastewater/Sanitary Collection Study Update – Woodland Cove AUAR
Formerly Park Cove AUAR (2006)
City of Minnetrista, MN
WSB Project No. 1741-68*

Background

In the 2006 AUAR for the Woodland Cove Development area it was recommended that pump down testing be performed to confirm the actual pumping capacities of Lift Station No.4 (Kings Point Lift Station) and Lift Station No. 6 (Trillium Lane), which will receive wastewater flow generated from the development. Since completion of the AUAR, pump down testing has been completed on both lift stations. Based on the pump down testing, Lift Station No. 4 has a pumping capacity of approximately 400 gpm. This compares to an estimated capacity of 560 gpm used in the 2006 AUAR, which was based on original design information. Lift Station No. 6 was determined to have a pumping capacity of 650 gpm based on the pump down testing. This compares to an estimated capacity of 600 gpm used in the 2006 AUAR. The difference in pumping capacities of the two lift stations does not affect the portion of wastewater flow that would be conveyed to each lift station under Scenario No. 1. However it does affect the portion of wastewater flow that would be conveyed to each lift station under Scenario No. 2. The revisions to the wastewater mitigation measures for Scenario No. 2 based on the revised lift station pumping capacities are address in this Technical Memorandum.

The wastewater mitigation measures required for Development Scenario No. 3, which has been added, are also addressed in this technical memorandum.

A summary of revised wastewater mitigation measures are given at the end of this Technical Memorandum.

Revisions to Wastewater Mitigation Measures for Development Scenario No. 2

Under Scenario No. 2, the projected peak hour wastewater flow received from the development would be approximately 1,742,000 gallons per day or 1,210 gpm. The combined capacity of Lift Station No. 4 and Lift Station No. 6 based on recent pump down testing is 1050 gpm. Lift Station No. 4 has a lower capacity than originally estimated and therefore, only 374 gpm would be directed to that lift station in addition to the 26 gpm already received from existing homes. Trunk sewer lines ranging in diameter from 8-inches to 10-inches, in-lieu of 8-inches to 12-inches, would need to be extended from Lift Station No. 4, north and south through the development to collect and convey the wastewater to the lift station.

The balance of the peak hour wastewater flow generated from the proposed development, which would be approximately 810 gpm, would need to be conveyed east to the three existing sewer lines that would then convey the wastewater to existing City Lift Station No. 6. Lift Station No. 6, which has an existing capacity of 650 gpm, would need to be upgraded to approximately 850 gpm to handle the existing 40 gpm of peak hour flow currently conveyed to that lift station, plus the additional 810 gpm of peak hour flow from the proposed development.

Alternatively all the wastewater generated from the Woodland Cove Development could be conveyed south and east to Lift Station No. 6. This would require upgrading the lift station from its current capacity of 650 gpm to a capacity of at least 1,210 gpm. This would also require increasing the size of the existing trunk line to that lift station to an 18-inch, which could be very costly.

Scenario No. 3

Under Scenario No. 3, commercial development has been included in the southwestern corner of the development in addition to residential development. The total number of residential units under Scenario No. 3 is 1071 and the total net area of commercial is 7 acres. As with Scenarios No. 1 and No. 2, it will be assumed that each residential unit will generate an average wastewater flow of 300 gpd. It will also be assumed that commercial property will generate an average wastewater flow of 800 gals/acre/day. An assumed peaking factor of 4.0 will be used to determine the peak hour flow. **Table 1** shows the estimated wastewater flows that could potential be developed under Scenario No. 3.

Table 1. Estimated Average Day and Peak Hour Wastewater Flow from Scenario No. 3

Type	Number of Units	Average Daily Wastewater Flow per Unit (gpd)	Total Average Daily Wastewater Flow (gpd)	Peak Hour Wastewater Flow (gpd)
Residential Low	589	300	176,700	706,800
Residential Medium-High	482	300	144,600	578,400
Commercial	7 acres	800	5,600	22,400
Total			326,900	1,307,600

Table 2 summarizes the estimated wastewater characteristics and loading for the wastewater that will be generated from the Woodland Cove development under Scenario 3.

Table 2. Estimated Wastewater Characteristics and Total Average Daily Wastewater Loading from Scenario 1

Parameter	Estimated Wastewater Characteristics and Average Day Loading	
	mg/l	lbs/day
Biochemical Oxygen Demand	220	600
Total Suspended Solids	220	600
Ammonia –Nitrogen	25	68
Total Phosphorous	8	22

As with Scenario No. 1 and No. 2, a portion of the peak hour flow generated from the proposed development could be conveyed to City Lift Station No. 4, which has a current capacity of 400 gpm. The current flow to that lift station, from approximately 31 homes, is estimated to be 26 gpm at peak hour. Consequently, up to 374 gpm at peak hour from the development could be conveyed to this Lift Station No. 4 without upgrading the lift station. Under this scenario approximately 260 gpm, including flow from existing homes, at peak hour flow from the development would be directed to this lift station. Trunk sewer lines 8-inch in diameter would need to be extended from Lift Station No. 4, north and south through the development to collect and convey the wastewater to the lift station.

The balance of the peak hour wastewater flow generated from the proposed development, which under Scenario No. 3 would be 610 gpm, would need to be conveyed east to three existing sewer lines that would convey the wastewater to existing City Lift Station No. 6. Lift Station No. 6 has an existing pumping capacity of 650 gpm, with a current estimated peak hour flow to that lift station of 40 gpm.

Alternatively all the wastewater generated from the study area could be conveyed south and east to Lift Station No. 6 located at Trillium Lane. This would require upgrading the lift station from its current capacity of 650 gpm to a capacity of at least 973 gpm. In this case two (2) 12-inch diameter trunk sewer lines would need to be extended through the southern portion of the development to convey the wastewater to the existing trunk lines and to Lift Station No. 6.

Revised Wastewater/Sanitary Sewer (Item 18)

In the northwestern portion of the proposed development, along Kings Point Road, the City has an existing lift station (Lift Station No. 4) with a capacity of 400 gpm. The current flow to that lift station, from approximately 31 homes, is estimated to be 26 gpm at peak hour. Consequently, there is a reserve capacity of 374 gpm. Under development Scenario No. 1, wastewater from the northern portions of the development could be conveyed by gravity to this station. Approximately 340 gpm peak hour flow would be added to this station from the northern portions of the development. The size of the gravity sewers to convey the wastewater to this lift station would need to be 8-inch in diameter if constructed at minimum grades. Under

development Scenario No.2, approximately 374 gpm of additional estimated peak hour flow from the northern portion of the development would be directed to Lift Station No. 4. Under Scenario No. 2, the size of the gravity sewers to convey the wastewater to this lift station would need to be 8-inch and 10-inch in diameter if constructed at minimum grades. Under development Scenario No. 3, wastewater from the northern portions of the development could be conveyed by gravity to this station Lift Station No. 4. Approximately 260 gpm peak hour flow, including flow from existing homes, would be directed to this station from the northern portions of the development. The size of the gravity sewers to convey the wastewater to this lift station would need to be 8-inch to 10-inch in diameter if constructed at minimum grades.

Wastewater generated from the entire southern portion of the development could be conveyed to existing 8-inch and 12-inch sanitary sewer lines that currently extend to the eastern border of the development. These existing lines convey wastewater east to another existing lift station located at Trillium Lane (Lift Station No. 6). This lift station has an existing capacity of 650 gpm. The current flow to this lift station is estimated to be 40 gpm at peak hour. Therefore, there is 610 gpm of reserve capacity in the lift station. Depending on the development scenario, approximately 560 to 810 gpm at peak hour flow would be added to this lift station from the southern portion of the development. Under Scenario No. 2, Lift Station No. 6 would need to be upgraded in capacity to 850 gpm. Three separate 8-inch diameter gravity sewer lines could be extended from the existing gravity lines to accommodate the estimated peak hour flows generated from the southern and eastern portion of the development provided no more than 450 gpm is directed to the southernmost 8-inch gravity sewer line, which has a full flow capacity of slightly over 450 gpm. Under Scenario No. 3, Lift Station No. 6 the existing capacity of the lift station would be sufficient to accommodate the projected peak hour flow from the entire southern and eastern portion of the development.

Alternatively all the wastewater generated from the study area could be conveyed to the existing City lift station (Lift Station No. 6) located at Trillium Lane. Depending on the development scenario this would require upgrading the lift station from a capacity of 650 gpm to a capacity of 850 to 1,210 gpm. At the higher peak hour flow rate of 1,210 gpm, the existing trunk sewer line that conveys wastewater to Lift Station No. 6 may need to be either replaced with an 18-inch gravity sewer line or a parallel line may need to be constructed. Consequently, it would be preferred to take a portion of the area north to Lift Station No. 4.

**Appendix C –
Traffic Study Update Memo**



Memorandum

To: *Mike Funk, City Administrator
Breanne Rothstein, Senior City Planner
City of Minnetrista*

Copy: *Mark Erichson, PE, City Engineer
City of Minnetrista*

From: *Chuck Rickart, PE, PTOE
Transportation Engineer*

Date: *February 17, 2011*

Re: *Traffic Study Update – Woodland Cove AUAR
Formerly Park Cove (2006)
City of Minnetrista, MN
WSB Project No. 1741-68*

Background

An Alternative Urban Areawide Review (AUAR) was completed and approved for the Park Cove (now named Woodland Cove) development area in November 2006. The site is located north of TH 7 between Kings Point Road and Lotus Drive comprising of approximately 530 acres. As part of the 2006 AUAR a detailed traffic analysis was completed for two development scenarios ranging from 1071 to 1452 residential units. No commercial uses were included in the original AUAR development scenarios. The 2006 AUAR recommended several mitigation measures be completed with any development proposal.

Currently a proposed mixed used PUD development, Woodland Cove, is being considered for the site. The proposed development includes 1071 residential units and approximately 7 acres of potential commercial uses. The purpose of this memorandum is to provide an updated traffic analysis of the new development scenario and to update the AUAR for the required five year update.

Traffic Generation Comparison

Traffic generation was completed for each of the proposed development scenarios in the 2006 AUAR. **Table 1** below illustrates what the anticipated traffic generation was for the proposed Park Cove development area.

Table 1 - Park Cove Forecasted Trip Generation

Scenario	No. of Units	Category No.	ADT	AM Peak Hour					PM Peak Hour				
				Total	Entering		Exiting		Total	Entering		Exiting	
					%	Tot.	%	Tot.		%	Tot.	%	Tot.
1 (1,071 Units)	940	210	8,545	658	25	165	75	493	902	568	568	37	334
	131	231	230	355	17	10	83	45	97	57	57	42	40
	Residential Total		9,275	713		175		538	999		625		374
2 (1,452 Units)	1,295	210	11,722	907	35	318	75	589	1,243	63	783	37	460
	157	231	875	66	17	11	83	55	117	58	68	42	49
	Residential Total		12,647	973		329		644	1,360		851		509

The Woodland Cove development is proposing to ultimately construct the same number of total residential units as scenario 1 in the 2006 AUAR, a total of 1071 units. However, the mix of units between low density and medium / high density has changed. In addition the 2006 AUAR did not include any commercial development. The new Woodland Cove development is proposing an area of commercial development adjacent to Kings Point Road just north of TH 7. Based on the identified area it was assumed that up to 30,000 SF of commercial uses could be included. It was also assumed that the makeup of the commercial development will be primarily neighborhood services such as a gas station / convenience store, bank, coffee shop, etc., attracting the majority of the trips from the residential development area. For this reason, the commercial development traffic generation was adjusted by a factor of 50% for dual purpose and pass-by trips. **Table 2** shows the anticipated traffic generation for the proposed Woodland Cove development.

Table 2 – Woodland Cove Traffic Generation

Use	Size	ADT			AM Peak			PM Peak		
		Total	In	Out	Total	In	Out	Total	In	Out
Low Density Residential	589 Units	5637	2818	2818	442	110	331	595	375	220
Med / High Density Residential	482 Units	2800	1400	1400	212	36	176	251	168	83
Commercial	30,000 SF	1330	665	665	205	98	107	151	84	66
Dual Purpose / Pass-by Trip Reduction		665	332	332	103	49	53	75	42	33
Total		9102	4551	4551	756	196	561	921	585	336

As illustrated in **Table 1** and **Table 2** the anticipated traffic generation from the new proposed Woodland Cove development is less than what was proposed in the 2006 AUAR for Scenario 2 (the maximum development scenario). Compared to Scenario 1 in the 2006 AUAR, with the same total residential units, the daily (ADT) and total AM and PM peak trips would be approximately the same as the proposed new development.

Roadway Network

One of the identified mitigation measures in the 2006 AUAR was the realignment of CSAH 11 and Kings Point Road to meet at a common intersection on TH 7. A committee was established following the completion of the AUAR including the City, Mn/DOT, Carver County, Three Rivers Park District and the developer (Lennar) at that time, to determine the appropriate type of intersection control, location on TH 7 and general configuration of the intersection. The result of those meetings was a determination that a roundabout was appropriate. The group also determined the location of the roundabout and the preliminary concept design of the intersection. At that time, the development proposal was not approved and the project was put on hold. Most recently, with the proposed Woodland Cove development proposal, the process was again initiated. A revised Intersection Control Evaluation (ICE) was completed, again documenting a roundabout as the most appropriate intersection control. In addition the City applied for and has received Mn/DOT Municipal Cooperative Agreement funds to assist in the cost of constructing the improvements at the intersection. It therefore was assumed for the updated AUAR traffic analysis that with any build condition a roundabout would be the intersection control at the TH 7 and CSAH 11 / Kings Point Road realigned intersection. The traffic signal alternative was not analyzed.

Since the completion of the 2006 AUAR, the intersection of TH 7 and CSAH 44 was upgraded to include a new traffic control signal system. This together with additional intersection geometric improvements was one of the recommended mitigation measures in the 2006 AUAR. Mn/DOT constructed the signal system in 2009 however; no additional intersection improvements were provided (i.e. additional lanes). Therefore, with the updated AUAR traffic analysis, a traffic signal will be assumed with no geometric improvements.

As part of the proposed Woodland Cove development plan a connection to CSAH 44 using the existing Lotus Drive is anticipated. A detailed analysis was completed to determine the amount of traffic that would use this connection from the proposed development to CSAH 44. Based on that study it was estimated that 2,500 to 3,000 vehicles per day would use Lotus Drive.

Traffic Analysis

The traffic analysis results completed for the 2006 AUAR are summarized in **Tables 3- 6**. The analysis assumed for the existing and 2015 no build conditions that no traffic signal control would be provided at TH 7 and CSAH 44. In addition the analysis for the projected 2015 build conditions included the worse case alternative of providing a signalized intersection at the TH 7 and Kings Point Road / CSAH 11 intersection. Following the completion of the 2006 AUAR it was determined that a roundabout would provide satisfactory operation in a safer condition. The analysis also assumed that a signalized intersection with additional geometric improvements would be provided at TH 7 and CSAH 44.

Table 3 – Existing Intersection Level of Service

Intersection	2005 AM Peak		2005 PM Peak	
	LOS	Delay (Sec.)	LOS	Delay (Sec.)
TH 7/CSAH 11	A	2.7	F	54.0
TH 7/Kings Point Road	A	0.2	A	0.2
TH 7/CSAH 44 (un-signalized)	E	35.2	C	20.2
CSAH 44/Lotus Dr.	A	0.8	A	0.7

Table 4 - Projected 2015 Intersection Level of Service – No Build Scenario

Intersection	2015 AM Peak		2015 PM Peak	
	LOS	Delay (Sec.)	LOS	Delay (Sec.)
TH 7/CSAH 11	F	117.4	F	216.0
TH 7/Kings Point Road	A	0.9	A	0.1
TH 7/CSAH 44 (un-signalized)	F	103.6	F	378.0
CSAH 44/Lotus Drive	F	406.5	F	121.8

Table 5 - Scenario 1, 2015 Intersection Level of Service

Intersection	2015 A.M. Peak		2015 P.M. Peak	
	LOS	Delay (Sec.)	LOS	Delay (Sec.)
TH 7/CSAH 11/Kings Point Rd. (signalized)	C	22.4	C	24.3
TH 7/CSAH 44 (signalized with improvements)	B	15.4	B	18.5
CSAH 44/Lotus Drive	A	3.4	A	3.0

Table 6 - Scenario 2, 2015 Intersection Level of Service

Intersection	2015 AM Peak		2015 PM Peak	
	LOS	Delay (Sec.)	LOS	Delay (Sec.)
TH 7/CSAH 11/Kings Point Rd. (signalized)	C	23.9	D	35.9
TH 7/CSAH 44 (signalized with improvements)	B	15.6	C	21.2
CSAH 44/Lotus Drive	A	4.2	A	4.5

The existing base traffic volumes in the 2006 AUAR were based on peak hour traffic counts conducted in 2005. In order to update the ICE report and for the AUAR traffic analysis, the

existing traffic volumes were recounted in November 2010. The new counts were found to be approximately 4.5% less than the 2005 counts specifically for the through traffic on TH 7.

The background traffic growth in the 2006 AUAR used to project the non-site traffic from existing conditions to the 2015 conditions was based on historical traffic data ranging from 1.26 to 1.65 for a 20 year factor depending on the roadway segment. For the AUAR update it was assumed that these projection factors would be the same. This is a conservative assumption in light of the actual recent reduction in traffic volumes on TH 7 and will insure a worse case analysis.

Based on the new background traffic volumes and the updated traffic generation including the new commercial development for Woodland Cove an updated traffic analysis was completed. **Table 7 and Table 8** shows the results of the updated traffic analysis.

Table 7 – AUAR update No Build Intersection Level of Service

Intersection	Existing - No Improvements				2015 - No Build / No Improvements			
	AM Peak		PM Peak		AM Peak		PM Peak	
	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS
TH 7 at CSAH 11	1.7	A	41.7	E	22.5	C	85.5	F
TH 7 at Kings Point Road	0.3	A	0.3	A	0.4	A	0.4	A
TH 7 at CSAH 44 (Signalized with no improvements)	12.9	B	13.7	B	16.4	B	16.1	B
CSAH 44 at Lotus Dr/Shady Ln	0.8	A	0.7	A	0.8	A	0.7	A

Table 8 – AUAR update Build (Woodland Cove) Intersection Level of Service

Intersection	2015				2030			
	AM Peak		PM Peak		AM Peak		PM Peak	
	Delay (sec)	LOS						
TH 7 at CSAH 11/Kings Point Road (Roundabout)	5.5	A	5.5	A	29.8	D	20.1	C
TH 7 at CSAH 44 (Signalized with no improvements)	64.3	E	45.8	D	125.3	F	74.1	E
CSAH 44 at Lotus Dr/Shady Ln	5.2	A	4.4	A	5.1	A	4.4	A

The results of the AUAR updated traffic analysis for the no build condition indicates that with the existing traffic (no development) during the PM peak hour the TH 7 and CSAH 11 intersection is operating at a LOS E. The analysis also indicates that if no improvements are made and if background growth is realized, by 2015 the intersection of TH 7 at CSAH 11 will be operating at LOS F during the PM peak hour. The intersection of TH 7 at CSAH 44 with the signal improvements constructed by Mn/DOT in 2009 is currently operating, and is expected to continue

by 2015, with just anticipated background traffic growth, at satisfactory levels of service (LOS B or better).

The results of the traffic analysis for the build conditions (with Woodland Cove development traffic) at the TH 7 and Kings Point Road / CSAH 11 intersection, indicates that with the proposed improvement to a roundabout the intersection is expected to operate at an acceptable level of service through 2030 (LOS D or better).

The intersection of TH 7 at CSAH 44 is expected to begin to see some delays by 2015 in the AM peak hour, operating at a LOS E. This is assuming full build-out of the Woodland Cove site, projected background traffic growth and no additional intersection improvements. By 2030 the intersection is expected to be operating at a LOS F in the AM peak hour and E in the PM peak hour and would warrant the need for intersection improvement (i.e. adding lanes to TH 7). This is primarily the result of the anticipated background traffic growth between 2015 and 2030 on TH 7.

In the 2006 AUAR analysis for the 2015 no-build conditions the intersection of CSAH 44 and Lotus Drive / Shady Lane was projected to operate at a LOS F. This was primarily due to the back up of traffic from the TH 7 intersection assuming at that time no traffic signal control. With the installation of the traffic signal at the TH 7 and CSAH 44 intersection in 2009 by Mn/DOT the backup has been eliminated and the intersection of CSAH 44 and Lotus Drive / Shady Lane is currently and is expected to continue to operate at an acceptable level of service (LOS B or better) with or without the proposed Woodland Cove development traffic.

Conclusions

Based on the updated traffic analysis the following general conclusions can be made:

1. The existing traffic volumes on TH 7 have decreased between 2005 and 2010 by 4.5%. However, to insure a conservative analysis the same growth rate used in the 2006 AUAR was assumed for the updated traffic analysis.
2. The traffic generated from the proposed Woodland Cove development is anticipated to be less than what was estimated in the 2006 AUAR for Scenario 2 (maximum development) and approximately the same as Scenario 1 with the same number of residential units. The estimated ADT generated by the proposed Woodland Cove development is 9,102 vehicles.
3. It was determined that between 2,500 and 3,000 vehicle will use the Lotus Drive connection to CSAH 44.
4. Traffic delays currently exist on TH 7 during peak hours. By 2015, if no improvements are made to the intersections, operations in the corridor will continue to deteriorate.
5. The increase in traffic from the proposed Woodland Cove development is anticipated to be accommodated with the proposed multi-lane roundabout improvement to the TH 7 at Kings

Point Road / CSAH 11 intersection and with the previous signalization improvement to the TH 7 at CSAH 44 intersection.

6. The proposed improvement to the intersection of TH 7 at Kings Point Road / CSAH 11 is currently in the process of layout approval. It has been recommended that this intersection be reconstructed as a roundabout. An updated ICE report and Mn/DOT staff approved layout has been submitted for review and approval by Mn/DOT and Carver County. These planned improvements are anticipated to accommodate traffic through 2030.
7. The intersection of TH 7 at CSAH 44 was improved by Mn/DOT in 2009 with the addition of a traffic signal. Mn/DOT did not include any geometric / lane additions with the project. The improvements completed by Mn/DOT are anticipated to accommodate the increased traffic on TH 7 and CSAH 44 through 2015 including the proposed full build out of the Woodland Cove development. However, by 2030 the traffic growth on TH 7 will require Mn/DOT to begin to plan for additional improvements not only at the CSAH 44 intersection but throughout the TH 7 corridor.

Recommendations

Based on the above conclusions and the updated traffic analysis the following mitigation measures from the 2006 AUAR should be eliminated or modified. The mitigation measures not listed are currently completed, in the process of being completed or have no change from the 2006 AUAR.

H4 - Provision of two TH 7 through lanes in each direction through the CSAH 11 intersection along with right and left turn lanes; a double north- to westbound left turn lane, one through lane, and a right turn lane on CSAH 11; and a double south- to eastbound left turn lane and a combined right and through lane on Kings Point Road at such time that the appropriate traffic control at CSAH 11 is installed.

This mitigation measure should be eliminated.

The updated analysis concluded that a roundabout should be installed at this intersection. The roundabout design will include two lanes on the TH 7 approaches and appropriate lane configurations on CSAH 11 and Kings Point Road. The Mn/DOT Staff Approved Layout has been submitted for review and approval.

H5. - Provision of two TH 7 through lanes in each direction through the CSAH 44 intersection along with a westbound right turn lane and an eastbound left turn lane; and an additional left turn lane CSAH 44 (to allow a double left operation) along with the existing right turn lane at such time that the CSAH 44 signal is installed.

This mitigation measure should be modified to: Provision for two TH 7 through lanes in each direction through the CSAH 44 intersection along with a westbound right turn lane and an eastbound left turn lane; and an additional left turn lane on

CSAH 44 (to allow a double left operation) should be constructed at such time that Mn/DOT programs improvements to TH 7 in this area.

The traffic signal at CSAH 44 was installed by MnDOT in 2009 without the additional lanes. The updated traffic analysis concluded that until such time as Mn/DOT programs improvements for the entire length of TH 7, the addition of a second lane in each direction on TH 7 or the addition of lanes on CSAH 44 would not be beneficial. As traffic increases in the area additional analysis will be required to determine exactly when additional improvements would be needed.

H8. - *In the above noted lane configurations, the additional TH 7 through lanes should extend beyond the intersections for a distance sufficient to provide an adequate merging length for traffic passing through the intersection. A raised median should be provided on each leg of both intersections starting ahead of the widening in each direction. Figure 21-7 provides a schematic representation of the suggested improvements at both intersections in terms of lane geometrics. As noted in the Traffic Section of this AUAR, Mn/DOT is in the process of programming a signal installation project at CSAH 44 and has given some consideration to a signal at CSAH 11 although programming is not underway.*

This mitigation measure should be modified to: The additional TH 7 through lanes should extend beyond the intersection of Kings Point Road / CSAH 11 for a distance sufficient to provide an adequate merging of traffic. A raised median should be provided on each leg of the intersection starting ahead of the widening in each direction.

The City has recently submitted the updated ICE report and Mn/DOT Staff approved layout for the TH 7 at Kings Point Road / CSAH 11 roundabout. The design of the approaches will be in accordance with Mn/DOT and Carver County standards. The revised mitigation measure eliminates reference to the CSAH 44 intersection. The traffic signal was installed at CSAH 44 by Mn/DOT in 2009 without the additional lanes. As concluded in traffic analysis, until such time as Mn/DOT programs improvements for the entire length of TH 7, the addition of a second lane in each direction on TH 7 would not be beneficial. As traffic increases in the area additional analysis will be required to determine exactly when additional improvements would be needed and if additional through lanes are needed.

H10. - *Provision of an additional through lane on TH 7 in each direction throughout the length of the study area.*

This mitigation measure should be eliminated

See H5 and H8 above.

H11. - *The improvements to TH7 at Kings Point Road/CSAH 11 and TH7 at CSAH 44 would be in place prior to occupancy of residential units in the study area. The following activities could*

occur prior to the improvements provided that the funding for these improvements is in place and an approved schedule for completion of the improvements is granted:

- *Site grading*
- *Model home construction*
- *Residential construction (no occupancy)*

This mitigation measure can be modified with approval of the City Council through a developer's agreement

This mitigation measure should be modified to: The improvements to TH7 at Kings Point Road/CSAH 11 should be in place prior to occupancy of residential units in the study area. The following activities could occur prior to the improvements provided that the funding for the intersection improvements is in place and an approved schedule for completion of the improvements has been granted:

- **Site grading**
- **Model home construction**
- **Residential construction (no occupancy)**

This mitigation measure can be modified with approval of the City Council through a developer's agreement.

The process of completing the improvements to the TH 7 at Kings Point Road / CSAH 11 intersection has been started with the submission of the updated ICE report, Mn/DOT staff approved layout and securing Mn/DOT Municipal Cooperative Agreement funding. No additional improvements to the TH 7 at CSAH 44 intersection is identified at this time. Therefore the reference to the TH 7 at CSAH 44 intersection improvements has been eliminated.