Appendix R - Management Plan for the Buffers and Stormwater Management Facilities

Purpose. The developer, in an effort to protect water quality and improve on-site habitat values, proposes to implement a Management Plan for the buffers and constructed stormwater management facilities for the subdivision.

The purpose of the Management Plan is to define the responsibilities of the developer in regards to its management of the buffers and stormwater facilities.

Compliance. The developer proposes to complete management and monitoring of the created buffers for a minimum of three (3) years after installation of each area. The proposed monitoring procedures are described later in this plan.

The developer's letter of credit/maintenance bond for the subdivision will cover any buffer or basin construction items. To be successful, the buffer areas must meet the vegetation performance criteria listed in this plan.

If successful establishment of the buffers fails to occur, the developer will be required to determine the cause of the failure and correct the deficiencies within the buffer areas.

Project Goals and Objectives. A fundamental step in the process is the establishment of goals for the effort. The developer intends to establish appropriately sized buffers around preserved wetland areas and constructed stormwater detention facilities on site. The goal is to provide habitat value and water quality benefits by establishing a predominance of desirable native vegetation within the buffer areas.

Buffer Areas

1. **Physical Description.** The developer intends to plant these buffer areas with a diverse mixture of native vegetation. This Management Plan applies to these newly planted areas. During construction, contractors will follow the Landscape Plan/Tree Preservation Plan to minimize environmental impacts to any wooded areas on the site.

2. **Ownership and Responsibility.** The developer will be responsible for all management and monitoring activities for the created buffer areas for a minimum of three (3) years following the installation of each buffer area. Once the developer receives final written approval for successful establishment of the buffer areas from the Municipality, the Homeowner's Association will take over the long-term management and monitoring responsibilities. The Homeowner's Association will include sufficient funding in its annual budgets for on-going management and monitoring of the buffer areas and stormwater management facilities on the site.

3. **Protection of existing wetlands.** The developer has designed and will implement a comprehensive soil erosion and sediment control plan to protect the existing wetlands on the site during the construction phase. The developer will also install best management practices (BMPs) for water quality treatment throughout the project site that have been developed in accordance with the specifications listed in the Illinois Urban Manual (USDA-Natural Resources Conservation Service, 1995, as updated).

The Municipality is hereby granted a non-exclusive easement for the protection of unique areas such as, but not limited to, wetlands, fens, marshes, rivers, streams, creeks, ponds, lakes, woods and prairies over and upon those areas of land, if any, designated on the Plat as "Wetland Conservation and Stormwater Management Easement" (the "Protected Land") for the following purposes:

A. To accept and conduct surface water discharges from adjacent upstream property;

B. To maintain the Protected Land in its natural, scenic, and open condition; and

C. To enter the Protected Land at all reasonable times for the purpose of inspecting the Protected Land to determine if the Homeowner's Association is complying with the terms hereof.

In furtherance of the foregoing, Declarant makes the following covenants on behalf of itself, its successors and assigns:

A. There shall be no dredged or fill material placed upon the Protected Land without appropriate permits, approvals, or other written authorization of the Municipality;

B. There shall be no fences, buildings or structures including signs constructed upon the Protected Land without appropriate permits, approvals or other written authorization of the Municipality;

C. There shall be no plowing of the Protected Land nor shall there be any mining, removal of topsoil, sand, rock, gravel, minerals or other material from the Protected Land;

D. There shall be no grazing or keeping of livestock, or domestic animals of any kind on the Protected Land; and

E. There shall be no operation of snowmobiles, dune buggies, motorcycles, all-terrain or any other types of motorized vehicles on the Protected Land.

Management Plan Performance Criteria

1. **Vegetation Criteria.** These performance criteria are based on the quality and area coverage of the native vegetation within the created buffer areas. The performance criteria are as follows:

   A. A temporary cover crop must be planted on all unvegetated buffer areas immediately upon completion of grading and soil preparation to prevent erosion. All cover crop species must be non-persistent or native and not allelopathic. The permanent native vegetation should be planted with the temporary cover crop, and if not, it must be planted at the start of the subsequent growing season. At least 80% of the buffer areas shall be vegetated within three (3) months after grading is completed, as measured by area coverage.

   B. A native mean coefficient of conservatism value (native mean C value) of greater than or equal to 2.25 must be achieved for each buffer, measured over the entire buffer area, by the end of the third growing season following the installation of each buffer area. Each successive year after planting should yield a higher native mean C value. Native plant species coefficients of conservatism are designated in *Plants of the Chicago Region* (Swink, Floyd and Gerould Wilhelm, 1994, Indianapolis: Indiana Academy of Science, 4th edition).

   C. The native floristic quality index value (native FQI) of each buffer must be greater than or equal to 14, as measured over the buffer area, by the end of the third growing season following the installation of each buffer area. The native FQI should increase each successive year after planting. The floristic quality assessment method is described in Plants of the Chicago Region (Swink, Floyd and Gerould Wilhelm, 1994, Indianapolis: Indiana Academy of Science, 4th edition).

   D. By the end of the third growing season following the installation of each buffer area, no surface areas within the buffers greater than 0.5 square meter shall be devoid of vegetation, as measured by ocular estimate.

Management

1. **Activities.** The developer proposes to perform at least two (2) prescribed burns of all created buffers during the three (3)-year monitoring period, assuming that burning is authorized by the Municipality, an open burn permit is obtained from the Illinois Environmental Protection Agency, and field conditions are suitable for conducting successful burns. If burning is not possible, an alternative measure such as high mowing will be employed at least 1-2 times each growing season during the three (3)-year period. Weed management of the planted buffer areas will be performed on an as-needed basis during the three (3)-year by the developer. This weed removal will include hand pulling and/or application of herbicides. If necessary, additional seeding or planting will be performed.

   Prescribed burning and weed control in the vegetated stormwater management facilities, including Certified Farmed Wetlands on the site, if applicable to the site, may also be performed, if deemed warranted by The developer's wetland consultant.

2. **Responsible Parties.** The developer will be responsible for the implementation of the management and monitoring plan for a minimum of three (3) years following the installation of the native buffers. The long-term management of the buffers and stormwater management facilities on the site will be the responsibility of the Homeowner's Association once the developer receives the final written approval for successful establishment of the buffers from the Municipality. The Homeowner's Association will include sufficient funding in its annual budgets for on-going management and monitoring of the buffers and stormwater management facilities on the site.

3. **Long-Term Management.** Long-term management strategies include prescribed burning (if authorized) of all established buffers every 2-3 years and weed control on an as-needed basis by manual methods (e.g., hand-pulling) and/or herbicide applications. Burning and/or weed control may also be performed in the vegetated portions of the stormwater management facilities on the site, if deemed warranted by the Homeowner's Association's wetland consultant.

Monitoring

1. **Plan.** The developer proposes the three (3)-year monitoring period will begin with written notice from the developer to the Municipality that planting of the buffer areas has been completed.

2. **Sampling Methods.** In order to assess the establishment of the planted vegetation, a meander search will be conducted throughout each buffer area. All vegetation encountered will be identified to the species level. The sampling will begin in May/June or August/September following planting and then be performed twice during each subsequent growing season of the monitoring period. Representative photographs of each buffer area will be taken at the time of sampling.

3. **Monitoring Reports.** An annual monitoring report summarizing the sampling data will be submitted to the Municipality by the 28th day of February of the following year. In the report, items discussed will be the progress in meeting the vegetation performance criteria and the proposed actions to deal with any shortfalls. Also included in the report will be the representative photographs of each buffer area taken at the time of sampling. Particular attention will be given to the progress of the vegetation in the buffers at the end of the second full growing season, as the relative success of the buffer plantings may be reasonably predicted at that time. It will be the developer's responsibility to correct any deficiencies in the buffer areas during the 3-year monitoring period or until such time as the final written approval for the buffers is received from the Municipality; this includes, but is not limited to, replanting, burning, selective herbicide use, sediment removal, and changes in water control structures.

Compliance and Completion

1. **Performance Criteria.** The developer shall provide an analysis of the cause(s) of failure and propose remedial action(s) to achieve the performance criteria within a specified time frame, if the performance criteria are not met for any of the buffers at the end of the 3-year monitoring period.

   When the developer believes that all of the vegetation performance criteria have been met for the created buffers, the developer will notify the Municipality of such in writing. Upon receipt of this notification, the Municipality will review the data from the latest monitoring report and perform a site inspection to confirm the buffer areas meet the performance criteria.

2. **Compliance.** If the Municipality determines that the buffer areas have been successfully established and meet the vegetation performance criteria outlined in this plan, the Municipality will notify the developer of this determination in writing. The developer will be relieved of further responsibility for management and monitoring of the buffer areas by written approval by the Municipality. The Municipality will release the remainder of the performance bond upon successful establishment of the buffers.

3. **Non-Compliance.** The Municipality is hereby granted the right, but not the obligation, to enforce covenants and obligations of the Association or the Owners. If the Association or one or more Owners fail to comply with any such covenants and obligations including, without limitation, maintenance of drainage, detention or retention facilities or wetlands, the Municipality shall have the right (but shall not be obligated) to give notice to the Association or the offending Owner or Owners. If such notice is given and the Association or the offending Owner or Owners do not perform to the satisfaction of the municipality within thirty (30) days after the giving of such notice, then the Municipality may (but shall not be obligated to) enter upon the Premises and perform any and all work which it deems necessary and appropriate, either directly or through contractors engaged by the Municipality. The municipality will be entitled to recover all maintenance costs, including engineering and legal fees from the association or the offending property owner.

   In the event of an emergency involving the health and welfare of the Residents or the Premises, the thirty (30) day notice requirement shall not apply; however, the Municipality shall use its best efforts to notify the offending Owner(s) or an officer of the Association of the emergency condition before initiating any necessary and appropriate work. The municipality will be entitled to recover all maintenance costs, including engineering and legal fees from the association or the offending property owner.

STORMWATER MANAGEMENT SYSTEM MAINTENANCE PLAN
STRUCTURAL COMPONENTS

Responsibilities. Adequate provisions for both short and long-term maintenance of residential stormwater systems are an essential aspect of residential communities' long-term drainage performance. The developer shall be responsible for the maintenance of the detention basins until the maintenance bond is released and the subdivision is accepted by the municipality. Following municipal acceptance the responsibility for the overall maintenance shall belong to the Homeowner's Association.

Purpose and Objective. Adequate drainage must be maintained to keep water away from the roadways and the residential lots adjacent to the detention ponds. The maintenance is supplemented by repair as required or replacement as the case may be, depending on the wear and tear of the provisions of the drainage elements. Any maintenance activity within the detention basin buffers shall be conducted so as to prevent damage to the vegetation and exposure of soil.

Maintenance Considerations. Cleaning and repairing culverts, outflow pipes, restrictors, etc. is to be particularly guarded since those elements are not visually obvious, as are the surface area elements. If the subsurface elements become clogged, water may flood pavement surfaces and may cause extensive erosion damage or water flow blockage; therefore, culvert, outflow pipe, restrictor, etc. cleaning is to be made a routine maintenance activity, which should be scheduled at least once a year and may also need to be performed on an as-needed basis. Experience will dictate the required cleaning frequencies for specific drainage items.

Record Keeping. Separate and distinct records shall be maintained by the Homeowner's Association, for all tasks performed associated with this plan. Dates of maintenance visits and the specific work performed shall be recorded. Maintenance records kept by the Homeowner's Associations will be available for municipal review upon request by the municipality.

Interpretation as to Requirements under this Maintenance Plan. The requirement for this Maintenance Plan is based on the Municipal Ordinance. Therefore, the interpretation of this Maintenance Plan shall be conducted on the basis of the intent and requirements of said Ordinance. The following items shall be maintained when applicable:

1. General

    - Litter and debris shall be controlled.
    - Accumulated sediment shall be disposed of properly, along with any wastes generated during maintenance operations.
    - Riprap areas shall be repaired with the addition of new riprap, as necessary, of similar size and shape.

2. **Storage Facilities (Detention and Water Quality Treatment Facilities).** The inlet and outlet of the basins should be checked periodically and cleaned as necessary to ensure that the flow structures are not blocked by debris.

Monthly inspections shall take place of the outlet control structures. Any debris near the orifice shall be removed immediately. All ditches or pipes connecting detention basins in series shall be checked for debris that may block flow. Inspections shall be conducted monthly during wet weather conditions from March to November and shall include the following items:

3. **Detention Basin Retaining Walls**

- Check for settlement and breaks in the wall; hire a Registered Professional Engineer for design resolution.
- Check for erosion in the vicinity of the wall and repair as necessary.
- Check for signs of piping (leakage) and repair as necessary.
- Check for signs of seepage, wet spots, or other problems on the downstream face of a dam, these may require toe drains or chimney drains to solve problems.

4. **Shorelines**

- Check for erosion and riprap failures, repair.
- Check for undermining, repair.
- Check for damage or deterioration, repair.

5. **Vegetation**

- **Need for Cutting.** Grass (non-native vegetation) shall be cut to 3" height to maintain appropriate aesthetic appearance and design velocity. Vegetation in buffer areas should be maintained in accordance with the Buffer Management Plan.
- **Need for Planting, Reseeding, or Sodding.** Supplement alternative native vegetation if a significant portion has not established (50% of the surface area). Reseed with alternative grass species if original grass cover has not successfully been established.
- **Dead or Damaged Grassy Areas.** Repair with sodding, seeding with fertilization, or seeding with mulch.
- Check for invasive vegetation, remove where possible.

6. **Principal and Emergency Outlets**

- Check for obstructions blocking outlet pipe, channel or spillway, remove.
- Check the condition of outlet and inlet structure:
    - Signs of seepage, repair;
    - Separation of joints, repair;

    - Cracks, breaks, or deterioration of concrete, repair;
    - Differential settlement, repair;
    - Scour and erosion at outlet, repair and reseed; and
    - Any ice damage to outlet of pipe and repair, if necessary.
- Check the condition of trash tracks, remove debris.
- Check the gates or valves, these should be operating freely and without resistance.
- Check for damage by debris, ice, or freezing and repair as necessary.
- Check the outlet channel conditions downstream and remove accumulated debris and plant material affecting conveyance.
- Ensure the flap gate is performing adequately and maintain as necessary.

7. **Access for Maintenance Equipment**

- Clear the access route of obstructions (woodpiles, sheds, vegetation, etc.).
- Ensure all applicable access/maintenance easements are shown on the Final Plat.

8. **Safety Features**

- Verify that access controls to hazardous areas are in place and repair, if needed.
- Check the condition of fences and repair, if needed.
- Check for loose or damaged posts and repair, if needed.
- Check for loose or broken wires and repair, if needed.
- Check for accumulated debris in fences and clean, if needed
- Check the condition of gates and repair, if needed.
- Check the condition of signs and repair, if needed.

9. **Volume**

- Facilities shall be inspected to ensure that the constructed volume for detention is maintained. No sediment, topsoil, or other dumping into the facility shall be allowed. Specific locations in a detention facility, designed to accumulate sediment, should be dredged every five (5)-years or when 50% of the volume has been lost.
- Wet ponds lose 0.5-1.0% of their volume annually. Dredging is required when accumulated volume loss reaches 15%, or approximately every 15-20 years.

10. Storm Sewers and Collector System

- Ensure they are free draining into collection channels or catch basins.
- Verify that catch basins are clean and remove sediment from catch basins when more than 50% of basin sump is filled.
- Culverts shall be checked for siltation deposit, clean out as necessary.
- Check rim elevation for change, elevations shall be retained as constructed; hire qualified person to bring back to grade as required.

11. **Swales**

- Check dams per the design plans need to be repaired and replaced as necessary.
- Verify system (both drainage ditches and side yard swales) are maintaining originally constructed design slope and cross-sectional area. If fill or sediment contributes to elevation changes in the swale, regrading and reshaping shall be performed. Licensed surveyors shall be hired to lay-out and check grades. NO landscaping, earthen fill or other obstruction shall be allowed in the swales that would impede design drainage flow patterns.
- Rototill bottom of dry swales if not drawing down within 48-hours.

Maintenance, Repairs, and Replacements of the Community Area. Maintenance, repairs, and replacements of the Community Area shall be furnished exclusively by the Homeowner's Association, and shall include, without limitation, the following:

- Added planting, replanting, care and maintenance of trees, shrubs, flowers, grass and all other landscaping on the Community Area.
- Maintenance, repair and replacement of the Stormwater Management Infrastructure and plantings, as well as all constructed improvements in the Community Area.
- Maintenance of those portions of the Community Area, which are designated as "wetland" by the U.S. Army Corps of Engineers, which maintenance shall follow guidelines, if any, from time-to-time issued by the U.S. Army Corps of Engineers or any other governmental authority which has jurisdiction over maintenance of wetlands. No owner shall in any way alter any portion of the wetlands or any vegetation thereon (including, without limitation, cutting grass or weeds) without the prior written approval of the Board. Approval may be withheld for any reason or no reason whatsoever. The cost of any maintenance, repair, and replacement furnished by the Association pursuant to this Section shall be Community Expenses.