



JUN 14 2011

LETTER OF TRANSMITTAL

DATE: June 14, 2011

TO: _____
City Hall - 8th Floor
455 N. Main
Wichita, KS 672202

PROJECT: _____
Riverside Airport

ATTENTION: Mr. Scott Lindebak, P.E.
PHONE: (316) 268-4498

| COPIES | DESCRIPTION |
|--------|---------------|
| 1 | Drainage Plan |
| 1 | O & M Manual |
| | |
| | |
| | |
| | |
| | |

- SUBMITTED FOR** _____
- For your review and approval
 - Approved As Noted
 - For Your Use
 - As Requested
 - Rejected
 - Other _____

- ACTION TAKEN** _____
- Approved as Submitted
 - Returned For Corrections

ADDITIONAL NOTES & COMMENTS: _____
Please call me if you have any questions at (316) 778-2215. Thanks!

Copy To: File

Signed: Bryce L. Barkus, P.E.

RIVERSIDE AIRPORT ADDITION STORM WATER MANAGEMENT OPERATIONS AND MAINTENANCE PLAN

Prepared by:

Bryce L. Barkus, P.E.

ASM Engineering Consultants, LLC

Date:

May 13, 2011

Restrictive Covenants for Storm Water Management Facilities

This Covenant, executed this _____ day of _____, 20_____.

WITNESSETH

WHEREAS, the undersigned (hereinafter "Property Owner") is in the process of platting real property to be known as _____ Addition (hereinafter the "Property"), an addition to Sedgwick County, Kansas; and

WHEREAS, "Sedgwick County" (hereinafter the "County") is required to protect water quality to the maximum extent practicable under its Municipal Separate Storm Sewer System permit; and

WHEREAS, Chapter 16.YY.090 of the County Storm Water Management Ordinance requires Property Owners to enter into permanent maintenance agreements for storm water facilities and credit areas before the Property is developed; and

WHEREAS, Chapter 16.YY.110 of the County Storm Water Management Ordinance requires Property Owners to inspect and properly maintain all storm water facilities and credit areas to maintain their full function; and

WHEREAS, the storm water management facilities and credit areas are located on the Property as shown on **Attachment A**, "Storm water management facility and Credit Area Map" or "Storm Water As-Built";

NOW THEREFORE, the undersigned does hereby subject the Property, an addition to Sedgwick County, Kansas, to have the following covenants and restrictions (hereinafter the "Agreement"):

1.0 Reserve Requirement

1.1 All storm water management facilities and credit areas shall be placed in a reserve shown on the Final Plat for the Property.

2.0 Home or Business Association Requirements

2.1 At such time as the Property shall be developed by erection of improvements thereon, the undersigned agrees to cause an association (hereinafter the "Association") to be formed as a Kansas corporation to provide for the care, maintenance and upkeep of the storm water facilities found on Attachment A.

2.2 Prior to the sale of any lot in the subdivision, the Property Owner shall cause to be recorded with the Register of Deeds for Sedgwick County,

Kansas a Homes or Business Association Declaration (hereinafter the "Declaration") covering all of the platted lots within the subdivision that includes this Agreement by reference.

2.3 The Declaration shall require that the Association levy assessments against the lots within the subdivision sufficient to pay for maintenance and future replacement of the storm water facilities and credit areas and for any costs incurred by reason of this Agreement. The Association shall have an enforceable lien on any lot in the subdivision in the event that any lot owner fails to pay the storm water assessment. All purchasers of lots shall be given an outline summary of the maintenance obligations and costs per this Agreement.

2.4 The Declaration shall contain a provision requiring the written consent of the County for the termination of the Association in its entirety or to any amendment, modification or termination of any provision thereto regarding storm water facilities and credit areas.

2.5 The Declaration shall name the County as a third-party beneficiary of all provisions therein relating to the storm water treatment facilities and credit areas and will give the County the right to enforce all restrictions, obligations and other provisions regarding the storm water facilities and credit areas.

2.6 The reserves located in said Addition will be conveyed to the Association at such time as the project is sold to or occupied by owners or tenants other than the undersigned. Until said reserves are so conveyed, the ownership and maintenance of the reserves shall be by the undersigned.

3.0 Maintenance Requirements

3.1 The Property Owner will construct and maintain the storm water management facilities and credit areas in strict accord with the plans, specifications, calculations, and conditions required by the County

3.2 Maintenance of all storm water management facilities and credit areas will be performed by the owner of the reserves according to the minimum maintenance frequencies and measures provided on **Attachment B**, "Inspection and Maintenance Requirements".

3.3 The Property Owner shall not use or attempt to use the reserves containing storm water management facilities or credit areas in any manner which would interfere with the continuous and perpetual maintenance and use thereof and, in particular, shall not build thereon or thereover any structure which may interference or cause to interfere with the maintenance thereof.

3.4 It is understood by the Property Owner and County that actual maintenance costs and future replacement costs are variable, however for budgetary purposes, the project designer is required to estimate future maintenance and replacement costs so that the Property Owner may better plan future required expenditures. Based on the project designer's estimates,

Attachment C is a tabulation of the anticipated maintenance and replacement costs.

4.0 Right of Entry

4.1 The Property Owner does herein grant the County, its agents and contractors, reasonable access to the property necessary for the purpose of inspecting, sampling, reconstructing, maintaining or repairing each of the storm water facilities and credit areas in accordance with Section 5 of this agreement, and shall execute any documents deemed necessary by the County, if any, thereto.

4.2 The Property Owner shall, upon written request of the County, remove any temporary or permanent obstruction that prevents reasonable access to any storm water management facility or credit area.

4.3 For purposes of this agreement, "reasonable access" means an access path from the public street right of way to the stormwater management facility or credit area with a minimum 20 foot width and a maximum ground slope of 10% that is accessible by construction equipment or vehicles that may be needed to inspect, sample, reconstruct, maintain, repair, replace or construct the storm water management facility or credit area. Such access path shall remain free of obstructions that would hinder access such as retaining walls, buildings, utility structures, walls, fences, trees, landscape monuments, permanent water bodies, gardens, amenities and other items that would prevent access to the storm water management facility or credit area.

4.4 Storm water management facility and credit area access easements have been granted on the Final Plat of _____ and are shown on Attachment A. The actual access path shall be provided whether or not one is shown on the Final Plat.

4.5 The rights granted herein shall not be construed to interfere with or restrict the Property Owner, his/her/its heirs, executors, administrators, successors and assigns from the use of the premises with respect to the construction and maintenance of property improvements along and over the premises herein described so long as the same are so constructed as not to impair the rights of access to a storm water management facility or credit area granted herein.

5.0 Maintenance Enforcement by the County

5.1 If, after reasonable notice to the Property Owner, the Property Owner shall fail to maintain all storm water facilities and credit areas as set forth herein and other applicable legal requirements, the County may perform all necessary repair or maintenance work, and the County may assess the Property Owner and the Property, for the cost of the work and any applicable penalties. For the purposes of this document, "reasonable notice" shall consist of 30 days prior written notice sent to the Property

Owner, unless there are exigent circumstances requiring either immediate or shorter response than said 30 days would provide, in which case the notice provided shall be whatever is reasonable under those circumstances.

5.2 The County may record an Affidavit of Nonpayment of Maintenance Charges in the Register of Deeds Office for Sedgwick County, Kansas, stating (a) the legal description of the property upon which the lien is claimed, (b) the name(s) of the Property Owner as last known to the County, and (c) the amount of the Maintenance Charge which is unpaid. The lien shall be created at the time of the filing and recording of the affidavit and such lien shall be superior to all other charges, liens, or encumbrances which may thereafter in any manner arise or be imposed upon the subject property, whether arising from or imposed by judgment or decree by any agreement, contract, mortgage, or other instrument, saving and excepting only such liens for taxes and other public charges as are by applicable law made superior.

5.3 It is understood by Property Owner that Sedgwick County is under no past, present, or future obligation to expend public funds or take any other action whatsoever to maintain or improve any storm water management facility or credit area. The County or Property Owner shall have the right to enforce, by any proceeding at law or in equity, all restrictions, conditions, covenants, reservations, liens, and charges now or hereafter imposed by the provisions of this declaration. The County or the Property Owner shall have the right to include in their claim for relief a reasonable sum to reimburse them for their attorneys' fees and any other expenses reasonably incurred in enforcing their rights hereunder. Failure by the County or by the Property Owner to enforce any covenant or restriction herein contained shall in no event be deemed a waiver of the right to do so thereafter. Neither shall failure by the County to enforce the provisions hereof be deemed a waiver of any provision hereof as to any other owner.

6.0 Indemnification

6.1 The Property Owner shall indemnify and hold the County harmless from any and all damage, loss, claims or liability of any kind whatsoever arising from the installation, maintenance, repair, operation or use of any storm water management facility or credit area including, but not limited to, any loss occasioned by reason of damage or injury to persons or property which may occur. In addition, the Property Owner shall pay all costs and expenses involved in defending all actions arising there from.

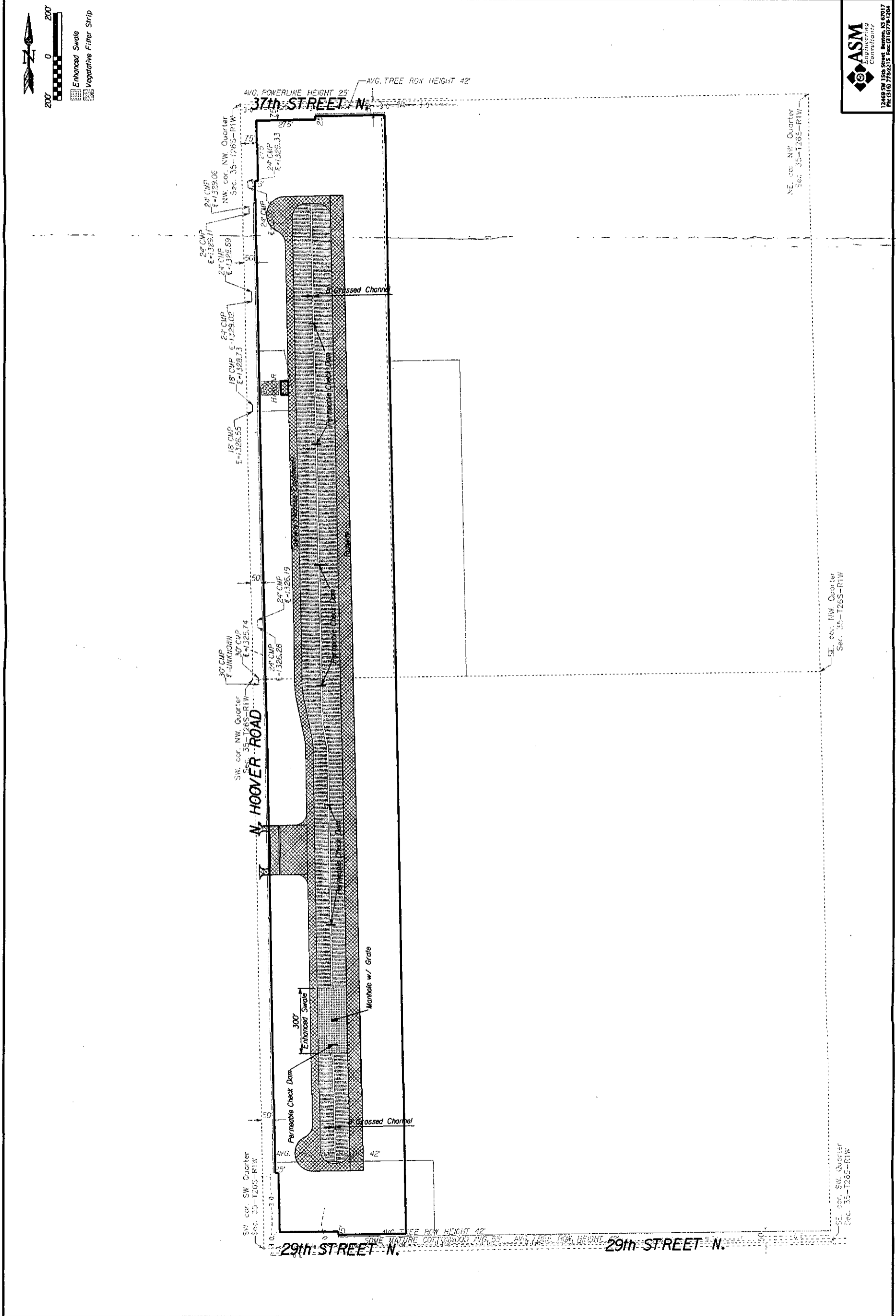
These covenants and agreements as set forth herein, fully executed, shall be filed by the Register of Deeds for Sedgwick County, Kansas, and the filing of the same shall constitute constructive notice to all heirs, successors, transferees, and assigns of the Property Owner of these covenants and agreements running with the land and notice of all stipulations made thereto.

BE IT REMEMBERED, that on this _____ day of _____, 20____, before me, the undersigned, a Notary Public, in and for the County and State aforesaid, came _____, personally known to me to be the same person who executed the within instrument of writing and such person duly acknowledged the execution of the same, for and behalf of the corporation.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed my official seal the day and year above written.

Notary: _____

(My Commission Expires: _____)



ATTACHMENT B – Inspection and Maintenance Requirements

VEGETATIVE FILTER STRIP INSPECTION AND MAINTENANCE GUIDANCE

Regular inspection and maintenance is critical to the effective operation of this storm water management facility as designed. The responsible party must maintain all storm water management facilities in accordance with the minimum design standards and other guidance provided in this manual. The approval authority may impose additional maintenance requirements where deemed necessary.

This page provides guidance on maintenance activities that are typically required for this storm water management facility, along with a suggested frequency for each activity. Individual storm water management facilities may have more, or less, frequent maintenance needs, depending upon a variety of factors including the occurrence of large storm events, overly wet or dry (i.e., drought) regional hydrologic conditions, and any changes or redevelopment in the upstream land use. Each responsible party shall perform the activities identified below at the frequency needed to maintain the filter strip in proper operating condition at all times.

| Inspection Activities | Suggested Schedule |
|---|--|
| <ul style="list-style-type: none"> • Inspect gravel diaphragm for clogging (i.e., standing water or sediment build-up). • Inspect vegetation for signs of erosion or un-vegetated areas. • Inspect to ensure that grass has established. • Inspect general flow paths to determine if runoff discharges into and across the filter strip in an unchannelized fashion. | <p>Annually (Semi-annually first year)</p> |
| Maintenance Activities | Suggested Schedule |
| <ul style="list-style-type: none"> • Maintain a dense, healthy stand of grass and other vegetation by frequent mowing. Grass heights of 3 to 5 inches should be maintained, with a maximum grass height of 8 inches. | <p>Regularly (frequently)</p> |
| <ul style="list-style-type: none"> • Repair areas of erosion and re-vegetate. • Re-vegetate as needed to maintain healthy vegetation. • Remove sediment build-up. | <p>As needed</p> |

The inspection checklist that is presented on the next page is provided to guide the responsible party in the inspection and maintenance of the storm water management facility. The approval authority may require the use of this checklist or other form(s) of maintenance documentation when and where deemed necessary in order to ensure the long-term proper operation of the storm water management facility. Questions regarding the storm water management facility inspection and maintenance should be referred to the approval authority.

FILTER STRIP INSPECTION CHECKLIST

Location: _____ Owner Change since last inspection? Y N

Owner Name, Address, Phone: _____

Date: _____ Time: _____ Site conditions: _____

The Owner shall maintain a continuous record of inspections and maintenance actions. This record shall be made available to Storm Water Division staff upon request.

| Inspection Items | Satisfactory (S) or Unsatisfactory (U) | Comments/Corrective Action |
|---|--|----------------------------|
| Healthy vegetation? | | |
| Signs of erosion? | | |
| Clogged gravel diaphragm? | | |
| Sediment build-up behind level spreader at top? | | |
| Sediment build-up in filter strip? | | |
| Other (describe)? | | |
| Hazards: | | |
| Have there been complaints from residents? | | |
| Public hazards noted? | | |

If any of the above inspection items are **UNSATISFACTORY**, list corrective actions and the corresponding completion dates below:

| Corrective Action Needed | Due Date |
|--------------------------|----------|
| | |
| | |
| | |
| | |

Inspector Signature: _____ Inspector Name (printed) _____

GRASSED CHANNEL INSPECTION AND MAINTENANCE GUIDANCE

Regular inspection and maintenance is critical to the effective operation of this storm water management facility as designed. The responsible party must maintain all storm water management facilities in accordance with the minimum design standards and other guidance provided in this manual. The approval authority may impose additional maintenance requirements where deemed necessary.

This page provides guidance on maintenance activities that are typically required for this storm water management facility, along with a suggested frequency for each activity. Individual storm water management facilities may have more, or less, frequent maintenance needs, depending upon a variety of factors including the occurrence of large storm events, overly wet or dry (i.e., drought) regional hydrologic conditions, and any changes or redevelopment in the upstream land use. Each responsible party shall perform the activities identified below at the frequency needed to maintain the grassed channel in proper operating condition at all times.

| Inspection Activities | Suggested Schedule |
|---|--|
| <ul style="list-style-type: none"> • Inspect check dams (if used) for clogging (i.e., standing water or sediment build-up). • Inspect vegetation for signs of erosion or un-vegetated areas. • Inspect to ensure that grass is healthy and well-established. | Annually (Semi-annually first year) |
| Maintenance Activities | Suggested Schedule |
| <ul style="list-style-type: none"> • Maintain a dense, healthy stand of grass and other vegetation by frequent mowing. Grass heights of 3 to 5 inches should be maintained, with a maximum grass height of 8 inches. | Regularly (frequently) |
| <ul style="list-style-type: none"> • Remove all accumulated sediment that may obstruct flow through the channel. Sediment accumulating near culverts and in channels should be removed when it builds up to 3 in. at any spot, or covers vegetation. Replace the grass areas damaged in the process. • Remove trash, debris and sediment accumulated in the channel or behind check dams (if present). • Repair areas of erosion and re-vegetate. • Re-vegetate as need to maintain healthy vegetation. | As-needed |

The inspection checklist that is presented on the next page is provided to guide the responsible party in the inspection and maintenance of the storm water management facility. The approval authority may require the use of this checklist or other form(s) of maintenance documentation when and where deemed necessary in order to ensure the long-term proper operation of the storm water management facility. Questions regarding the storm water management facility inspection and maintenance should be referred to the approval authority.

GRASSED CHANNEL INSPECTION CHECKLIST

Location: _____ Owner Change since last inspection? Y N

Owner Name, Address, Phone: _____

Date: _____ Time: _____ Site conditions: _____

The Owner shall maintain a continuous record of inspections and maintenance actions. This record shall be made available to Storm Water Division staff upon request.

| Inspection Items | Satisfactory (S) or Unsatisfactory (U) | Comments/Corrective Action |
|--|--|----------------------------|
| Healthy vegetation? | | |
| Signs of erosion? | | |
| Clogged check dams? | | |
| Sediment build-up on channel bottom? | | |
| Standing water for extended periods? | | |
| Soggy channel bottom for extended periods? | | |
| Other (describe)? | | |
| Hazards | | |
| Have there been complaints from residents? | | |
| Public hazards noted? | | |

If any of the above inspection items are **UNSATISFACTORY**, list corrective actions and the corresponding completion dates below:

| Corrective Action Needed | Due Date |
|--------------------------|----------|
| | |
| | |

Inspector Signature: _____ Inspector Name (printed) _____

ENHANCED SWALES INSPECTION AND MAINTENANCE GUIDANCE

Regular inspection and maintenance is critical to the effective operation of this storm water management facility as designed. The responsible party must maintain all storm water management facilities in accordance with the minimum design standards and other guidance provided in this manual. The approval authority may impose additional maintenance requirements where deemed necessary.

This page provides guidance on maintenance activities that are typically required for this storm water management facility, along with a suggested frequency for each activity. Individual storm water management facilities may have more, or less, frequent maintenance needs, depending upon a variety of factors including the occurrence of large storm events, overly wet or dry (i.e., drought) regional hydrologic conditions, and any changes or redevelopment in the upstream land use. Each responsible party shall perform the activities identified below at the frequency needed to maintain the enhanced swales in proper operating condition at all times.

| Inspection Activities | Suggested Schedule |
|--|-------------------------------------|
| <ul style="list-style-type: none"> Inspect after seeding and after first major storm for any damage to vegetation, side slopes and bottom. | Post construction |
| <ul style="list-style-type: none"> Inspect for signs of erosion, unhealthy or damaged vegetation, denuded areas, channelization of flow, debris and litter, and areas of sediment accumulation. Perform inspections at the beginning and end of the wet season. Additional inspections after periods of heavy rainfall are desirable. | Semi-annually |
| <ul style="list-style-type: none"> Inspect level spreader for clogging (if applicable), grass along side slopes for erosion and formation of rills or gullies, and sand/soil bed for erosion problems. Inspect gravel diaphragm for clogging. Inspect sediment forebays and/or pretreatment areas for debris and sediment accumulation. | Annually |
| Maintenance Activities | Suggested Schedule |
| <ul style="list-style-type: none"> Mow grass to maintain a height of 3-4 inches, for safety, aesthetic, or other purposes, if needed. Litter should always be removed prior to mowing. Grass clippings, if captured, should not be dumped in the swale. Irrigate swale during dry season (April through October) or when necessary to maintain the vegetation. Repair damaged areas (e.g., erosion rills or gullies) and re-establish vegetation where needed. Remove invasive species manually. The use of fertilizers, herbicides and pesticides should occur only when absolutely necessary, and then in minimal amounts. | As needed (frequent, seasonally) |
| <ul style="list-style-type: none"> Remove litter, branches, rocks blockages, and other debris and dispose of properly. Clear accumulated debris and sediment from the inlet flow spreader (if applicable) and gravel diaphragm. | Semi-annually |
| <ul style="list-style-type: none"> Inspect gravel diaphragm for clogging and correct the problem. Plant an alternative grass species if the original grass cover has not been successfully established. Reseed and apply mulch to damaged areas. | Annually (if needed) |
| <ul style="list-style-type: none"> Remove all accumulated sediment that may obstruct flow through the swale. Sediment accumulating near culverts and in channels should be removed when it builds up to 3 in. at any spot, or covers vegetation, or once it has accumulated to 10% of the original design volume. Replace the grass areas damaged in the process. Remove all accumulated sediment in the sediment forebay and pretreatment areas. Repair areas of erosion around swale and underdrain outlets. Reestablish soil stabilization measures (e.g., rip-rap stone, turf grasses) as needed. Roto-till or cultivate the surface of the sand/soil bed of dry swales if the swale does not draw down within 48 hours. Re-establish swale vegetation after roto-till activities. | As needed (infrequent) |

The inspection checklist that is presented on the next page is provided to guide the responsible party in the inspection and maintenance of the storm water management facility. The approval authority may require the use of this checklist or other form(s) of maintenance documentation when and where deemed necessary in order to ensure the long-term proper operation of the storm water management facility. Questions regarding the storm water management facility inspection and maintenance should be referred to the approval authority.

ENHANCED SWALE INSPECTION CHECKLIST

Location: _____ Owner Change since last inspection? Y N

Owner Name, Address, Phone: _____

Date: _____ Time: _____ Site conditions: _____

The Owner shall maintain a continuous record of inspections and maintenance actions. This record shall be made available to Storm Water Division staff upon request.

| Inspection Items | Satisfactory (S) or Unsatisfactory (U) | Comments/Corrective Action |
|--|--|----------------------------|
| Enhanced Swale | | |
| Healthy vegetation? | | |
| Erosion on bottom or side slopes? | | |
| Animal burrows in swale? | | |
| Clear of debris and functional? | | |
| Check dams in place (if applicable)? | | |
| Evidence of sediment accumulation? | | |
| Unintentional obstructions or blockages? | | |
| Clogged gravel diaphragm? | | |
| Undesirable vegetation growth? | | |
| Visible pollution? | | |
| Other (describe)? | | |
| Inlet/Outlet Channels | | |
| Clear of debris and functional? | | |
| Sediment accumulation? | | |
| Signs of erosion? | | |
| Other (describe)? | | |
| Sediment Forebays or Pretreatment Areas | | |
| Evidence of sediment accumulation? | | |
| Hazards | | |
| Have there been complaints from residents? | | |
| Public hazards noted? | | |

If any of the above inspection items are UNSATISFACTORY, list corrective actions and the corresponding completion dates below:

| Corrective Action Needed | Due Date |
|--------------------------|----------|
| | |
| | |
| | |
| | |

Inspector Signature: _____ Inspector Name (printed) _____

ATTACHMENT C – Anticipated Maintenance and Replacement Costs

| Anticipated Maintenance and Replacement Costs | | | | |
|--|---------------------|-------------------------|-------------|--------------------|
| Facility | Area (acres) | Unit Cost Mowing | Days | Total Cost |
| Vegetative Filter Strip | 14.51 | \$30/acre | 14 | \$ 6,094.20 |
| Grassed Channel | 0.75 | \$30/acre | 14 | \$ 315.00 |
| Enhanced Swale | 0.95 | \$30/acre | 14 | \$ 399.00 |
| Sub Total | | | | \$ 6,808.20 |
| 15% Contingency | | | | \$ 1,021.23 |
| Total | | | | \$7,829.43 |

The only frequent maintenance activity is mowing. 15% was added to account for As Needed Maintenance. These costs assume fully established vegetation.

As Needed Maintenance

Erosion Repair

Re-Vegetate

Debris/Sediment Removal

$$\text{Days} = \frac{1 \text{ day}}{2 \text{ week}} * \frac{7 \text{ months}}{\text{year}} * \frac{4 \text{ weeks}}{\text{month}} = \frac{14 \text{ days}}{\text{year}}$$