Storm Water Management Practice Maintenance Agreement

Document Number

Clearwater Apartments, LLC, as "Owner" of the property described below, in accordance with Chapter 32 City of Waukesha Storm Water Management and Erosion Control, agrees to install and maintain storm water management practice(s) on the subject property in accordance with approved plans and Storm Water Management Plan conditions. The owner further agrees to the terms stated in this document to ensure that the storm water management practice(s) continues serving the intended functions in perpetuity. This Agreement includes the following exhibits:

Exhibit A: Legal Description of the real estate for which this Agreement applies ("Property").
Exhibit B: Location Map(s) – shows an accurate location of each storm water management practice affected by this Agreement.
Exhibit C: Maintenance Plan – prescribes those activities that must be carried out to maintain compliance with this Agreement.

Note: After construction verification has been accepted by the City of Waukesha, for all planned storm water management practices, an addendum(s) to this agreement shall be recorded by the Owner showing design and construction details. The addendum(s) may contain several additional exhibits, including certification by City of Waukesha of Storm Water and Erosion Control Permit termination, as described below.

Name and Return Address

City of Waukesha
130 Delafield Street
Waukesha, WI 53188

WAKC1375124003, WAKC1375124004
Tax Key Number(s)

Through this Agreement, the Owner hereby subjects the Property to the following covenants, conditions and restrictions:

1. The Owner shall be responsible for the routine and extraordinary maintenance and repair of the storm water management practice(s) and drainage easements identified in Exhibit B until Storm Water and Erosion Control Permit termination by the City of Waukesha in accordance with Chapter 32 of the County Code of Ordinances.
2. After Storm Water and Erosion Control Permit termination under 1., the current Owner(s) shall be solely responsible for maintenance and repair of the storm water management practices and drainage easements in accordance with the maintenance plan contained in Exhibit C.
3. The Owner(s) shall, at their own cost, complete inspections of the storm water management practices at the time intervals listed in Exhibit C, and conduct the inspections by a a qualified professional, file the reports with the City of Waukesha after each inspection and complete any maintenance or repair work recommended in the report. The Owner(s) shall be liable for the failure to undertake any maintenance or repairs. After the work is completed by the Contractor, the qualified professional shall verify that the work was properly completed and submit the follow-up report to the City within 30 days.
4. In addition, and independent of the requirements under paragraph 3 above, the City of Waukesha, or its designee, is authorized to access the property as necessary to conduct inspections of the storm water management practices or drainage easements to ascertain compliance with the intent of this Agreement and the activities prescribed in Exhibit C. The City of Waukesha may require work to be done which differs from the report described in paragraph 3 above, if the City of Waukesha reasonably concludes that such work is necessary and consistent with the intent of this agreement. Upon notification by the City of Waukesha of required maintenance or repairs, the Owner(s) shall complete the specified maintenance or repairs within a reasonable time frame determined by the City of Waukesha.
5. If the Owner(s) do not complete an inspection under 3. above or required maintenance or repairs under 4. above within the specified time period, the City of Waukesha is authorized, but not required, to perform the specified inspections, maintenance or repairs. In the case of an emergency situation, as determined by the City of Waukesha, no notice shall be required prior to the City of Waukesha performing emergency maintenance or repairs. The City of Waukesha may levy the costs and expenses of such inspections, maintenance or repair related actions as a special charge against the Property and collected as such in accordance with the procedures under s. 66.0627 Wis. Stats. or subch. VII of ch. 66 Wis. Stats.

6. This Agreement shall run with the Property and be binding upon all heirs, successors and assigns. After the Owner records the addendum noted above, the City of Waukesha shall have the sole authority to modify this agreement upon a 30-day notice to the current Owner(s).

Dated this ___ day of _____, 201_.

Owner:

_____
(Owners Signature)

Ms. Abby Brzezinski_____
(Owners Typed Name)

Acknowledgements

State of Wisconsin:
County of Waukesha

Personally came before me this ____ day of _____, 2016, the above named Ms. Abby Brzezinski to me known to be the person who executed the foregoing instrument and acknowledged the same.

_____.
[Name]
Notary Public, Waukesha County, WI
My commission expires:_____.

This document was drafted by:

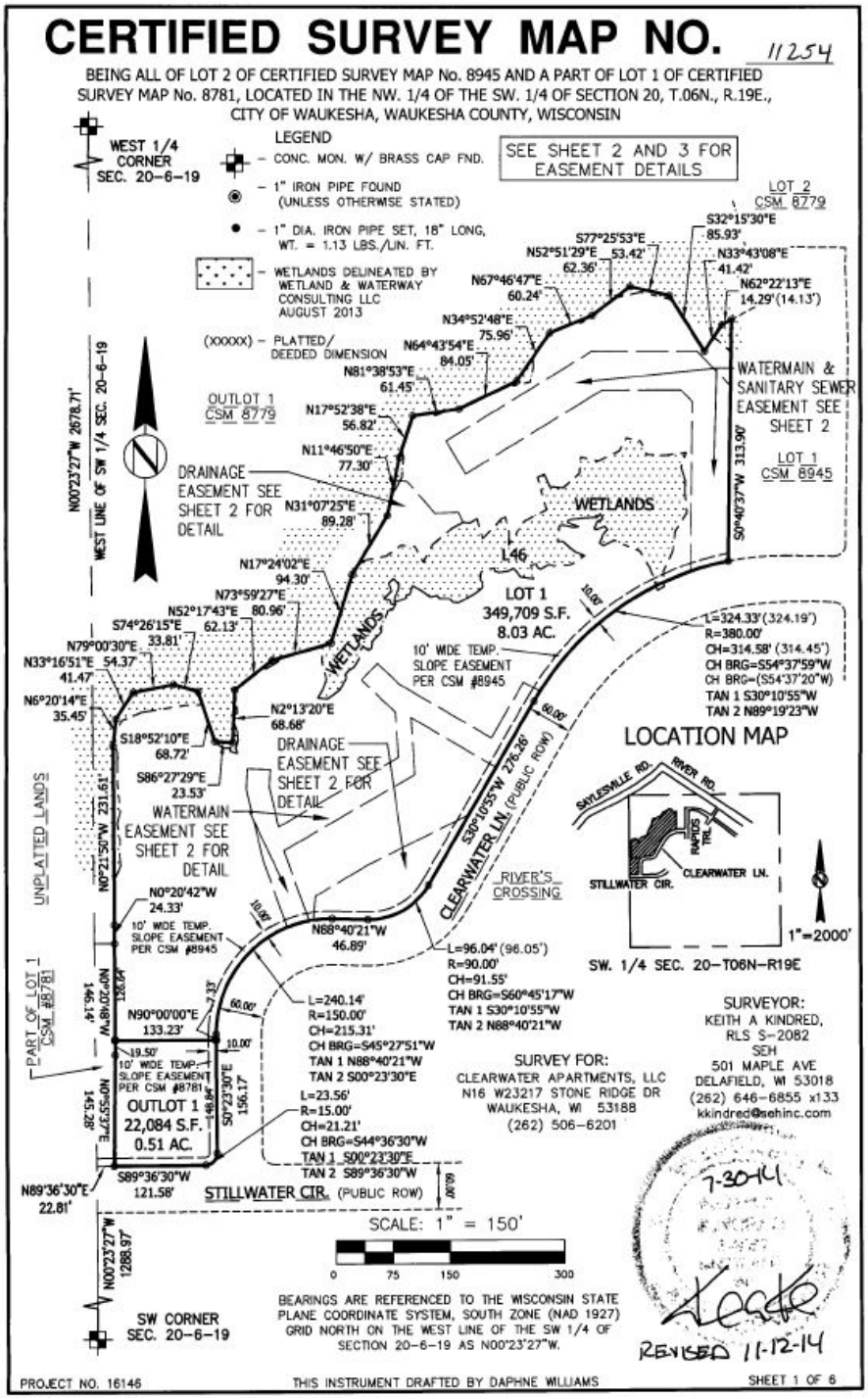
Mark Mickelson, S.E.H.
501 Maple Ave.
Delafield, WI 53018

For Certification Stamp

Exhibit A – Legal Description

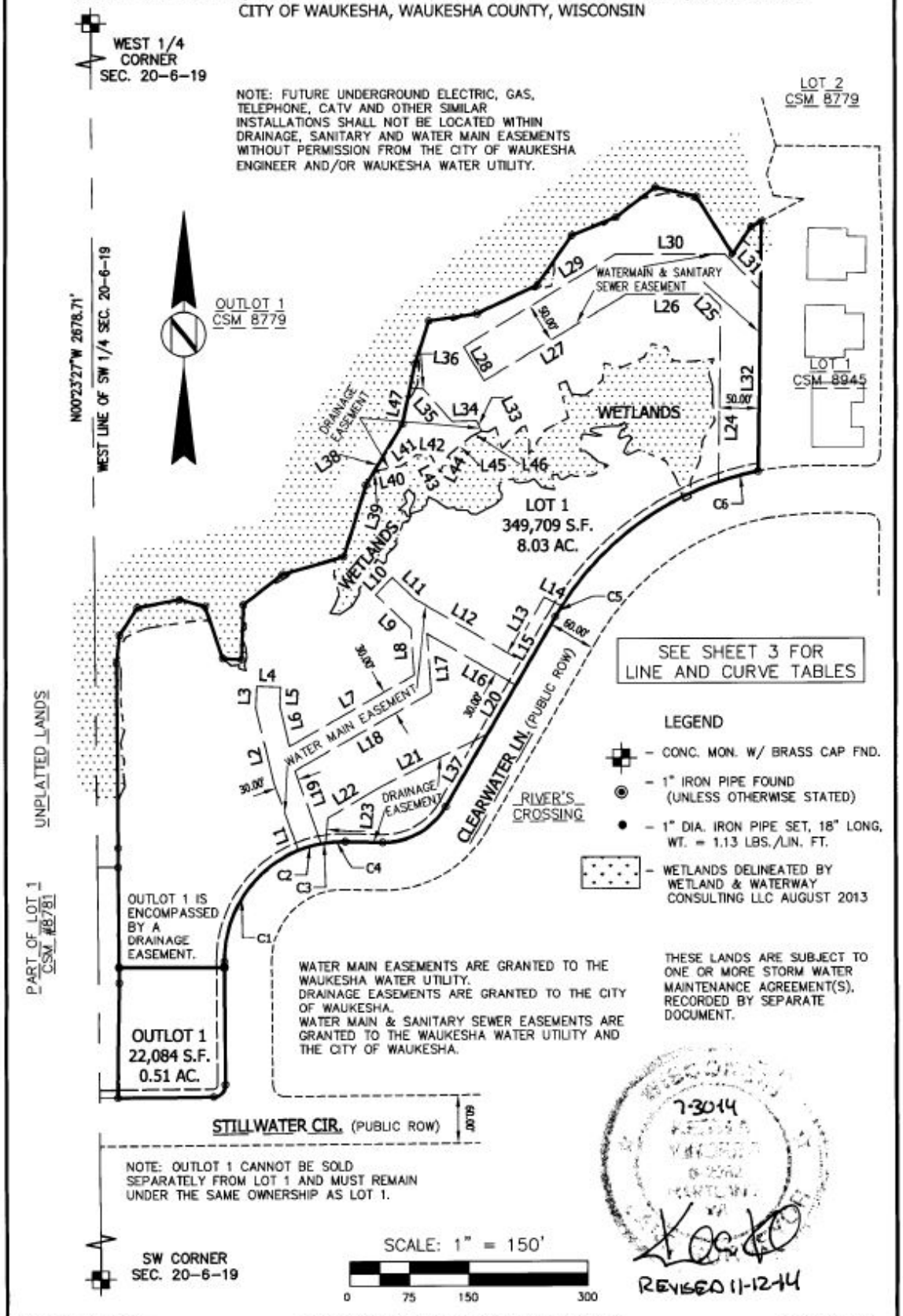
The following description and reduced copy map identifies the land parcel(s) affected by this Agreement. For a larger scale view of the referenced document, contact the Waukesha County Register of Deeds office.

Project Identifier: **Clearwater Apartments** Acres**: 8.03**
Date of Recording: **December 2, 2014**
Map Produced By: **SEH, 501 Maple Ave, Delafield, WI**
Legal Description: **Lot 1, and Outlot 1 of CSM No. 11254, located in the Northwest 1/4 if the Southwest Quarter (SW ¼) of Section 20, Township 6N, Range 19E (City of Waukesha) Waukesha County, Wisconsin.**



CERTIFIED SURVEY MAP NO. 11254

BEING ALL OF LOT 2 OF CERTIFIED SURVEY MAP No. 8945 AND A PART OF LOT 1 OF CERTIFIED SURVEY MAP No. 8781, LOCATED IN THE NW. 1/4 OF THE SW. 1/4 OF SECTION 20, T.06N., R.19E., CITY OF WAUKESHA, WAUKESHA COUNTY, WISCONSIN



PROJECT NO. 16146 THIS INSTRUMENT DRAFTED BY DAPHNE WILLIAMS SHEET 2 OF 6

CERTIFIED SURVEY MAP NO. 11254

BEING ALL OF LOT 2 OF CERTIFIED SURVEY MAP No. 8945 AND A PART OF LOT 1 OF CERTIFIED SURVEY MAP No. 8781, LOCATED IN THE NW. 1/4 OF THE SW. 1/4 OF SECTION 20, T.06N., R.19E., CITY OF WAUKESHA, WAUKESHA COUNTY, WISCONSIN

Curve Table					
CURVE #	RADIUS	DELTA	ARC DIST	CHORD DIST	CHORD BEARING
C1	150.00	068°34'05"	179.51	168.99	S33°53'03"W
C2	150.00	011°30'17"	30.12	30.07	S73°55'14"W
C3	150.00	002°10'54"	5.71	5.71	S80°45'49"W
C4	150.00	009°28'25"	24.80	24.77	S86°35'29"W
C5	380.00	002°18'14"	15.28	15.28	S31°20'02"W
C6	380.00	007°49'47"	51.93	51.89	S75°10'10"W

Line Table		
Line #	Length	Direction
L1	91.06	S19°56'44"E
L2	95.54	S13°30'42"E
L3	27.65	S02°29'48"W
L4	30.00	N87°30'12"W
L5	23.44	N02°29'48"E
L6	52.52	N13°30'42"W
L7	181.33	S60°21'40"W
L8	58.98	S04°01'25"E
L9	60.94	S46°23'30"E
L10	30.00	S43°36'30"W
L11	39.28	N46°23'30"W
L12	140.08	N59°51'17"W
L13	83.67	S30°10'55"W
L14	24.85	N62°59'58"W
L15	99.76	S30°10'55"W
L16	129.18	N59°51'17"W
L17	74.19	S04°01'25"E
L18	198.47	S60°21'40"W
L19	97.15	S19°56'44"E
L20	71.42	S30°10'55"W
L21	150.16	N63°46'02"E

Line Table		
Line #	Length	Direction
L22	77.12	N59°45'02"E
L23	31.33	N05°03'38"E
L24	220.95	S00°40'37"W
L25	21.29	S44°39'42"E
L26	104.10	N90°00'00"E
L27	209.76	N58°47'13"E
L28	50.00	S31°12'47"E
L29	223.73	S58°47'13"W
L30	138.95	N90°00'00"W
L31	63.06	N44°39'42"W
L32	227.96	S00°40'37"W
L33	14.38	S24°54'45"E
L34	30.76	N87°54'22"E
L35	55.10	S41°26'36"E
L36	16.57	S84°59'45"E
L37	105.08	S30°10'55"W
L38	74.75	S31°07'25"W
L39	10.17	N55°55'00"E
L40	29.10	N79°22'33"E
L41	23.90	N54°04'38"E
L42	18.56	S85°17'16"E

Line Table		
Line #	Length	Direction
L43	22.73	S28°00'51"E
L44	25.61	N28°56'59"E
L45	34.42	N50°34'01"E
L46	15.29	N61°26'39"E
L47	46.75	N11°46'50"E

7-30-14

REVISED 11-12-14

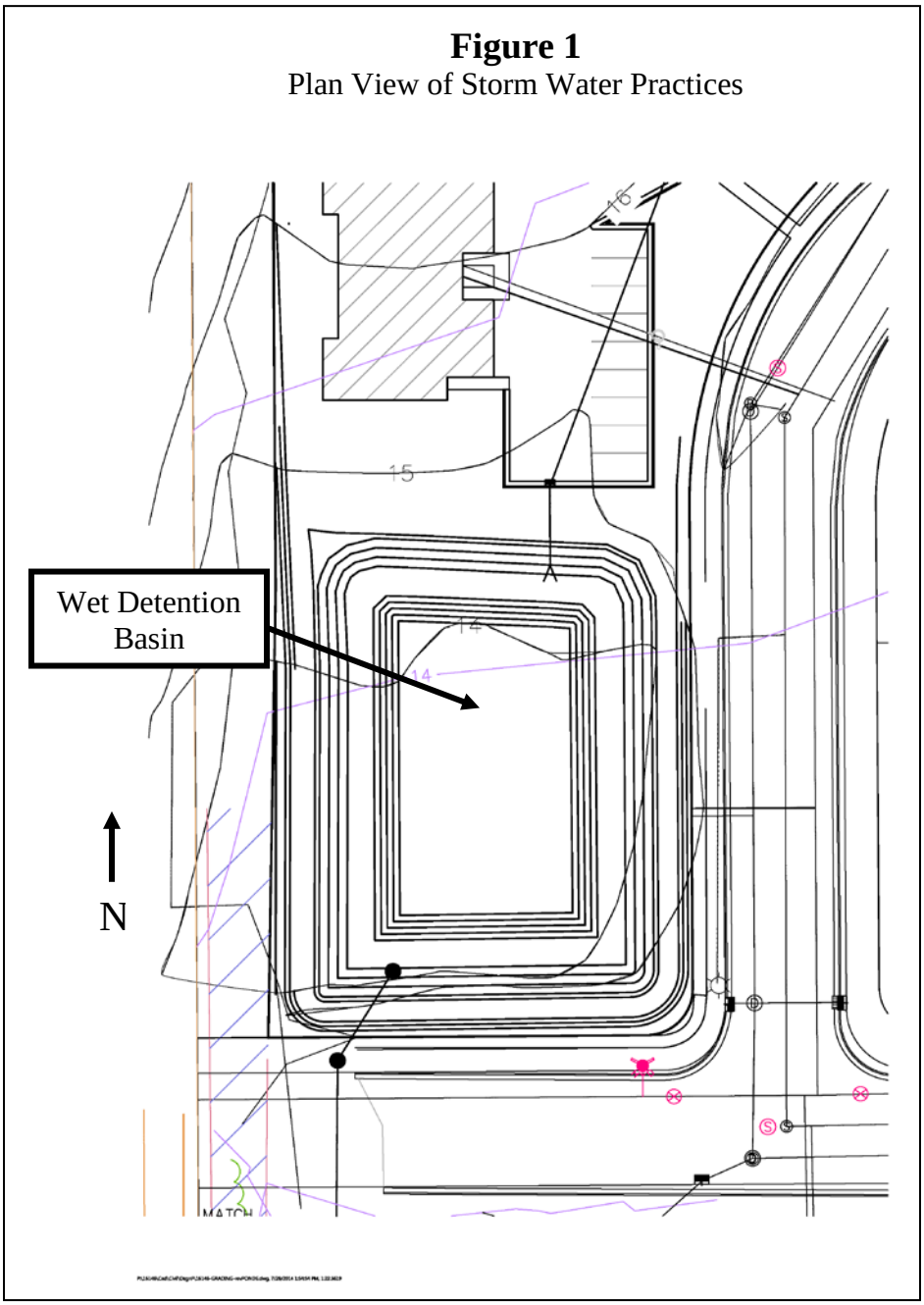
PROJECT NO. 16146 THIS INSTRUMENT DRAFTED BY DAPHNE WILLIAMS SHEET 3 OF 6

Exhibit B - Location Map
Storm Water Management Practices Covered by this Agreement

The storm water management practices covered by this Agreement are depicted in the reduced copy of a portion of the construction plans, as shown below. The practices include one wet detention basin, two forebays, two grass swales (conveying storm water to the forebays) and all associated pipes, earthen berms, rock chutes and other components of these practices. All of the noted storm water management practices are located within drainage easements on the CSM, as noted in Exhibit A.

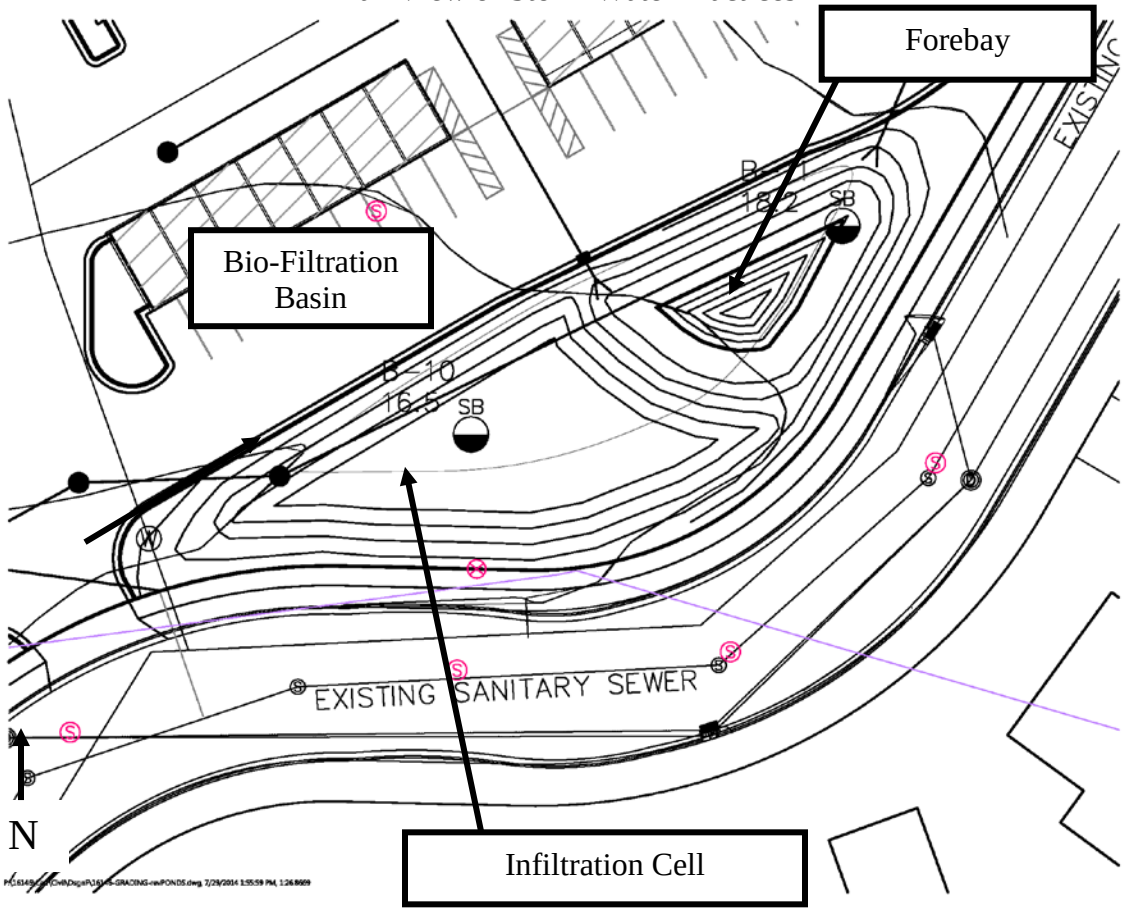
Subdivision Name**:** **Clearwater Apartments**
Storm water Practices**:** **Wet Detention Basin**
Location of Practices**:** **All of Outlot 1 of CSM No. 11254**
Owners of Outlot 1: **Owners of Lot 1**

Figure 1
Plan View of Storm Water Practices



Subdivision Name: **Clearwater Apartments**
Storm water Practices: **Bio-Filtration Basin**
Location of Practices: **Drainage Easement on Lot 1 of CSM No. 11254**
Owners of Outlot 1: **Owners of Lot 1**

Figure 2
Plan View of Storm Water Practices



Subdivision Name: **Clearwater Apartments**
Storm water Practices: **Rain Garden**
Location of Practices: **Drainage Easement on Lot 1 of CSM No. 11254**
Owners of Outlot 1: **Owners of Lot 1**

Figure 3
Plan View of Storm Water Practices

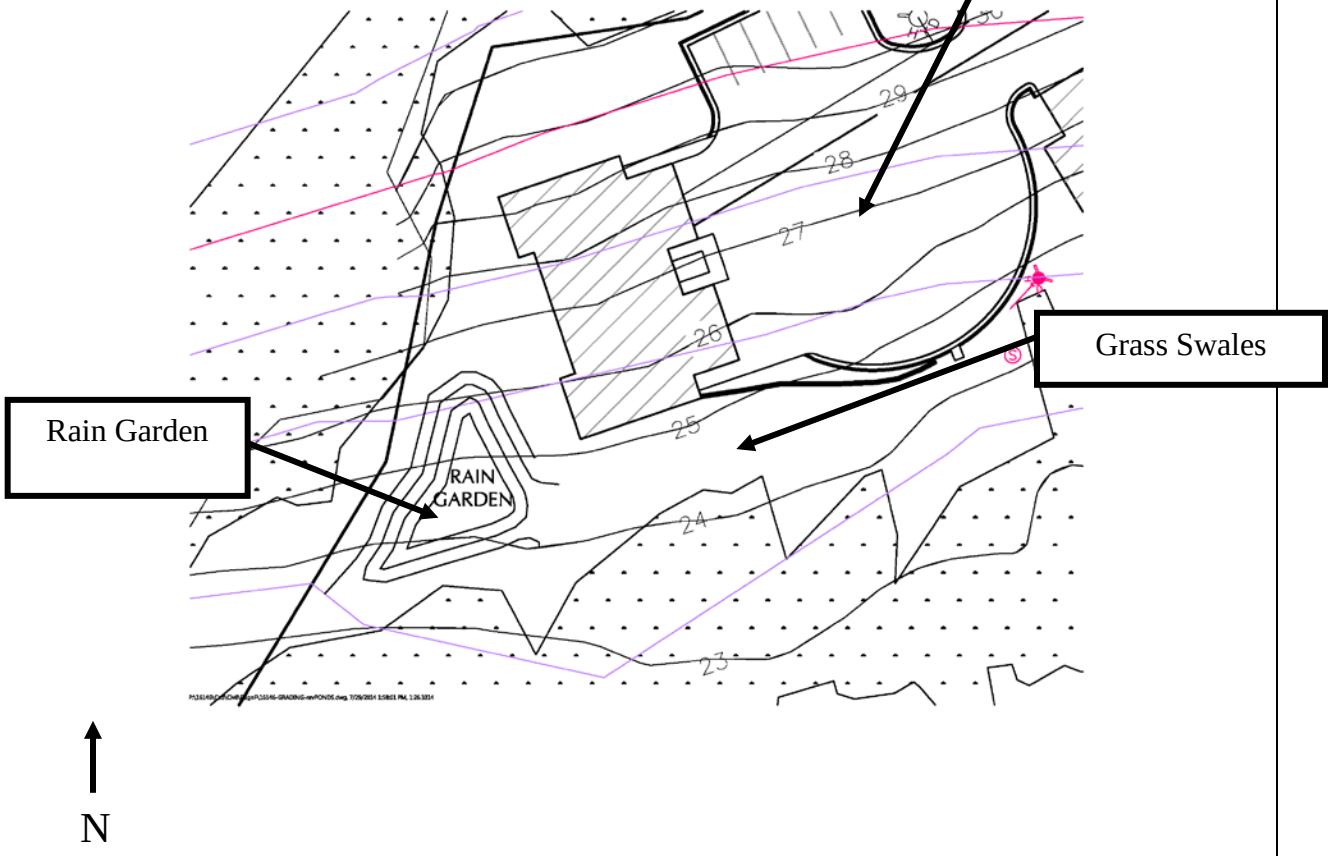


Exhibit C
Storm Water Practice Maintenance Plan

This exhibit explains the basic function of each of the storm water practices listed in Exhibit B and prescribes the minimum maintenance requirements to remain compliant with this Agreement. The maintenance activities listed below are aimed to ensure these practices continue serving their intended functions in perpetuity. The list of activities is not all inclusive, but rather indicates the minimum type of maintenance that can be expected for this particular site. Access to the stormwater practices for maintenance vehicles is shown in Exhibit B. Any failure of a storm water practice that is caused by a lack of maintenance will subject the Owner(s) to enforcement of the provisions listed on page 1 of this Agreement by the City of Waukesha.

System Description:
There are three BMP's designed to control and treat the storm water from Clearwater Apartments, which include a Wet Detention Basin, Bio-Filtration Basin, and a Rain Garden. The wet detention basin is designed to trap 80% of sediment in runoff and maintain pre-development downstream peak flows. The main pool will trap all of the suspended sediment. To do this, the pond size, water level and outlet structures must be maintained as specified in this Agreement (see Figures 1, 2 and 3).

The wet basin receives direct runoff from a 7.7 acre drainage area, including off-site drainage coming from the north. During high rainfall or snow melt events, the water level will temporarily rise and slowly drain down to the elevation of the control structure. The water level is controlled by a 4-inch orifice, in a concrete riser pipe, through the berm in the southwest corner of the basin (see Figure1). This orifice controls the water level and causes the pond to temporarily rise during runoff events. High flows may enter the grated concrete riser or flow over the rock lined emergency spillway. "As-built" construction drawings of the basin, showing actual dimensions, elevations, outlet structures, etc. will be recorded as an addendum(s) to this agreement within 60 days after City of Waukesha accepts verification of construction from the project engineer.

Minimum Maintenance Requirements:
To ensure the proper long-term function of the storm water management practices described above, the following activities must be completed:

1. All outlet pipes must be checked monthly to ensure there is no blockage from floating debris or ice, especially the washed stone in front of the 3-inch orifice and the trash rack on the riser in the main basin. Any blockage must be removed immediately. The washed stone must be replaced when it becomes clogged.
2. Grass swales shall be preserved to allow free flowing of surface runoff in accordance with approved grading plans. No buildings or other structures are allowed in these areas. No grading or filling is allowed that may interrupt flows in any way.
3. Grass swales, inlets and outlets must be checked after heavy rains (minimum of annually) for signs of erosion. Any eroding areas must be repaired immediately to prevent premature sediment build-up in the downstream forebays or basin. Erosion matting is recommended for repairing grassed areas.
4. NO trees are to be planted or allowed to grow on the earthen berms. Tree root systems can reduce soil compaction and cause berm failure. The berms must be inspected annually and any woody vegetation removed.
5. Invasive plant and animal species shall be managed in compliance with Wisconsin Administrative Code Chapter NR 40. This may require eradication of invasive species in some cases.
6. If the permanent pool falls below the safety shelf, a review shall be performed to determine whether the cause is liner leakage or an insufficient water budget. If the cause is leakage, the liner shall be repaired. Leakage due to muskrat burrows may require removal of the animals. If the permanent pool cannot be sustained at the design elevation, benching of the safety shelf may be necessary.
7. If floating algae or weed growth becomes a nuisance (decay odors, etc.), it must be removed from the basin or the forebay and deposited where it cannot drain back into the basin. Removal of the vegetation from the water reduces regrowth the following season (by harvesting the nutrients). Wetland vegetation must be maintained along the waters edge for safety and pollutant removal purposes.
8. When sediment in the forebays or the basin has accumulated to an elevation of three feet below the outlet elevation, it must be removed (see Exhibit D). All removed sediment must be placed in an appropriate upland disposal site and stabilized (grass cover) to prevent sediment from washing back into the basin. The

forebays will likely need sediment removal first. Failure to remove sediment from the forebays will cause resuspension of previously trapped sediments and increase downstream deposition.

9. No grading or filling of the basin or berm other than for sediment removal is allowed, unless otherwise approved by the City of Waukesha.
10. Periodic mowing of the grass swales will encourage vigorous grass cover and allow better inspections for erosion. Waiting until after August 1 will avoid disturbing nesting wildlife. Mowing around the basin or the forebays may attract nuisance populations of geese to the property and is not necessary or recommended.
11. Any other repair or maintenance needed to ensure the continued function of the storm water practices or as ordered by the City of Waukesha under the provisions listed on page 1 of this Agreement.
12. The titleholder(s) or their designee must document all inspections as specified above. Documentation shall include as a minimum: (a) Inspectors Name, Address and Telephone Number, (b) Date of Inspections, (c) Condition Report of the Storm Water Management Practice, (d) Corrective Actions to be Taken and Time Frame for Completion, (e) Follow-up Documentation after Completion of the Maintenance Activities. All documentation is to be delivered to the City of Waukesha Engineering Department.

Maintenance Provisions for Infiltration Basin

System Description:
The Bio-Infiltration basin and Rain Garden are designed to reduce runoff volumes from the site after development by intercepting the runoff and allowing it to slowly seep (infiltrate) into the underlying soil and groundwater. They are designed to infiltrate the first 1/2" to 1" of runoff in an attempt to meet average annual predevelopment runoff volumes.

Infiltration basins can also be designed to reduce peak flows by temporarily detaining runoff from larger storms and releasing it through outlet pipes or other controlled discharge devices. Pretreatment of the runoff is often provided to reduce sedimentation in the basin and prevent the risk of groundwater pollution, depending on the land use of the drainage area served by the basin. For this example, it is assumed that the infiltration basin is seeded with native warm season (prairie) grasses, has a pretreatment forebay, a stone trench in its center, one monitoring well located nearby, and has peak flow control incorporated into the design.

Minimum Maintenance Requirements:
To ensure the proper function of storm water infiltration basin, the following list of maintenance activities are recommended:

1. A minimum of 70% soil cover made up of native grasses must be maintained on the basin bottom to ensure infiltration rates. Periodic burning or mowing is recommended to enhance establishment of the prairie grasses (which may take 2-3 years) and maintain the minimum native cover. To reduce competition from cool season grasses (bluegrass, fescues, quack, etc.) and other weeds:
    - For the first year, cut to a 6" height three times – once each in June, July and early August. To prevent damage to the native grasses, do not mow below a 6" height. Remove excessive accumulation of clippings to avoid smothering next year's seedlings.
    - After the first year, mowing may only be needed in early June each year to help control the spread of cool season plants. The mowing should also be raised to 10-12" to avoid damage to the warm season plants.
    - Burning may also be used to manage weeds in 2-5 years intervals. Late spring burns (mid-late May) provide maximum stimulus to warm season grasses and work well to control cool season grasses. Burn when the cool season grasses are growing and the warm season plants are just barely starting to grow to get maximum control of cool season species.
    - Any major bare areas or areas taken over by nonnative species must be reseeded. To clear area of weeds and cool season grasses, treat with an herbicide that contains glysophosphate in accordance with manufacture's instructions. Ensure a firm seedbed is prepared to a depth of 3 inches (a roller is recommended). Seeding should occur in early-mid June. Seed with Big Bluestem, Indian Grass, Little Blue Stem or Switchgrass (preferably an equal mix of all four types). A companion crop of oats is recommended. Seed must be placed at a depth of 1/4 – 1/2" and a minimum rate of 1/4 pound per 100 square feet. If broadcast seeding by hand, drag leaf rake over soil surface after seeding. Then roll it again and cover with a light layer of mulch and staked erosion control netting

to hold it in place until germination. For other planting details, see NRCS standard 342 (Critical Area Planting).

2. Invasive plant and animal species shall be managed in compliance with Wisconsin Administrative Code Chapter NR 40. This may require eradication of invasive species in some cases.
3. The basin and all components (grass swales, forebay, inlets, outlets, etc.) should be inspected after each heavy rain, but at a minimum of once per year. If the basin is not draining properly (within 72 hours), further inspection may be required by persons with expertise in storm water management and/or soils.
    - If soil testing shows that the soil surface has become crusted, sealed or compacted, some deep tillage should be performed. Deep tillage will cut through the underlying soils at a 2-3 foot depth, loosening the soil and improving infiltration rates, with minimal disturbance of the surface vegetation. Types of tillage equipment that can be used include a subsoiler or straight, narrow-shanked chisel plow.
    - If sedimentation is determined to be causing the failure, the accumulated sediment must be removed and the area reseeded in accordance with the notes above.
    - If inspection of the monitoring well shows that groundwater is regularly near the surface, additional design features may need to be considered, such as subsurface drainage or conversion to a wetland treatment system.
    - If the washed stone trench has become clogged, the stone – and possibly the soil immediately around the stone – must be replaced.
4. All outlet pipes, stone trenches and other flow control devices must be kept free of debris. Any blockage must be removed immediately.
5. Any eroding areas must be repaired immediately to prevent premature sediment build-up in the system. Erosion matting is recommended for repairing grassed areas.
6. Heavy equipment and vehicles must be kept off of the bottom and side slopes of infiltration basins to prevent soil compaction. Soil compaction will reduce infiltration rates and may cause failure of the basin, resulting in ponding and possible growth of wetland plants.
7. No trees are to be planted or allowed to grow on the earthen berms of the bottom of the basin. On the berms, tree root systems can reduce soil compaction and cause berm failure. On the basin bottom, trees may shade out the native grasses. The basin must be inspected annually and any woody vegetation removed.
8. Grass swales leading to the basin shall be preserved to allow free flowing of surface runoff in accordance with approved grading plans. No buildings or other structures are allowed in these areas. No grading or filling is allowed that may interrupt flows in any way.
9. If floating algae or weed growth becomes a nuisance in the forebay (decay odors, etc.), it must be removed and deposited where it cannot drain back into the basin or forebay. Removal of the vegetation from the water reduces regrowth the following season (by harvesting the nutrients). Wetland vegetation must be maintained along the waters edge for safety and pollutant removal purposes.
10. When sediment in the forebay has accumulated to an elevation of three feet below the outlet elevation, it must be removed (refer to figure). All removed sediment must be placed in an appropriate upland disposal site and stabilized (grass cover) to prevent sediment from washing back into the basin. Failure to remove sediment from the forebays will cause resuspension of previously trapped sediments and increase deposition in the infiltration basin.
11. No grading or filling of the basin or berms other than for sediment removal is allowed.
12. Periodic mowing of the grass swales will encourage rigorous grass cover and allow better inspections for erosion. Waiting until after August 1 will avoid disturbing nesting wildlife. Mowing around forebay may attract nuisance populations of geese to the property and is not necessary or recommended.
13. Any other repair or maintenance needed to ensure the continued function of the infiltration basin as ordered by the City of Waukesha under the provisions listed on page 1 of this Agreement.
14. The titleholder(s) or their designee must document all inspections as specified above. Documentation shall include as a minimum: (a) Inspectors Name, Address and Telephone Number, (b) Date of Inspections, (c) Condition Report of the Storm Water Management Practice, (d) Corrective Actions to be Taken and Time Frame for Completion, (e) Follow-up Documentation after Completion of the Maintenance Activities. All documentation is to be delivered to the attention of the City Engineer at the City of Waukesha Engineering Department on January 10th and July 10th each year.

Addendum 1
Storm Water Management Practice Maintenance Agreement

Document number

The purpose of this addendum is to record verified "as-built" construction details, supporting design data and permit termination documentation for the storm water management practice(s) located on Lot 1 and Outlot 1 of the Clearwater Apartments, described as being all that part of the Southwest Quarter (SW ¼) of Section 4, Township 8N, Range 19E (Town of Lisbon) Waukesha County, Wisconsin. This document shall serve as an addendum to document # _____, herein referred to as the "Maintenance Agreement". This addendum includes all of the following exhibits:

Exhibit D: Design Summary – contains a summary of key engineering calculations and other data used to design the wet detention basin.
Exhibit E: As-built Survey – shows detailed "as-built" cross-section and plan view of the wet detention basin.
Exhibit F: Engineering/Construction Verification – provides verification from the project engineer that the design and construction of the wet detention basin complies with all applicable technical standards and Waukesha County ordinance requirements.
Exhibit G: Storm Water Management & Erosion Control Permit Termination – provides certification by the City of Waukesha that the Storm Water and Erosion Control Permit for the above noted site has been terminated.

Name and Return Address
City of Waukesha
130 Delafield Street
Waukesha, WI 53188

Dated this ___ day of _____, 2016.

WAKC1375124003, WAKC1375124004
Tax Key Number(s)

Owner:

_____
[Owners Signature – per the Maintenance Agreement]

Ms. Abby Brzezinski
[Owners Typed Name]

Acknowledgements

State of Wisconsin, County of Waukesha

Personally came before me this ____ day of _____, 2016, the above named Ms. Abby Brzezinski to me known to be the person who executed the foregoing instrument and acknowledged the same.

_____.
[Name]
Notary Public, Waukesha County, WI
My commission expires:_____.

This document was drafted by:

Mark Mickelson, P.E., S.E.H.
501 Maple Ave.
Delafield, WI 53018

For Certification Stamp

Exhibit D
Design Summaries for Wet Detention Basin #1

Project Identifier: Clearwater Apartments **Project Size:** 8 Acres **No. of Lots:** 2
Number of Runoff Discharge Points: 1 **Watershed (ultimate discharge)**: Fox River
Watershed Area (including off-site runoff traveling through project area): 14.4 acres

Watershed Data Summary. The following table summarizes the watershed data used to determine peak flows and runoff volumes required to design wet detention basin #1.

Summary Data Elements	Subwatershed C	
	Pre-develop	**Post-develop**
Watershed Areas *(in acres) (see attached map)*	13.8 acres	41 acres
Average Watershed Slopes (%)	2-8%	2-8%
Land Uses *(% of each) (see attached map)*	75 ac. cropland 15 ac. brush 10 ac. woodland	110 ac. ½ ac. lots 5ac. brush 5 ac. woodlands
Runoff Curve Numbers	68 x 75ac.= 5100 30 x 25ac.= 750 *Net 5850\100 ac.* RCN = 59	70 x 110 ac.= 7700 10 x 10 ac.= 100 Net 7800\120ac RCN = 65
Conveyance Systems Types	Grass waterway	50% grass swale 50% storm sewer
Summary of Average Conveyance System Data	8’ bottom/4:1 ss 2’ depth/3% grade	2’ depth swale/3% 30” r/c sewer/2% (See calcs.)
Time of Concentration *(Tc) (see attached map & worksheets)*	1.1 hrs.	.97 hrs.
25% of 2-yr 24-hr post-dev runoff volume	N/A	2.29 ac. ft.
1-year/24 hour Runoff Volume	N/A	(.2” x 60 ac.) 1.0 ac. ft.
2-yr./24 hour Peak Flow *(see attached hydrographs)*	11.2 cfs	14.3 cfs
10-yr./24 hour Peak Flow	21 cfs	32 cfs
100-yr./24 hour Peak Flow	78 cfs	91 cfs

Exhibit D (continued)

Practice Design Summary. The following table summarizes the data used to design wet detention basin #1.

Design Element	Design Data
Site assessment data: (see attached maps)	
Contributing drainage area to basin (subwatershed A & B)	70 acres
Distance to nearest private well (including off-site wells)	> 100 feet
Distance to municipal well (including off-site wells)	> 1200 feet
Wellhead protection area involved?	No
Ground slope at site of proposed basin	average 3%
Any buried or overhead utilities in the area?	No
Proposed outfall conveyance system/discharge (w/ distances)	35 ft. to CTH "U" Road ditch 1000 ft. to wetland
Any downstream roads or other structures? (describe)	Yes – 36" cmp road culvert
Floodplain, shoreland or wetlands?	No
Soil investigation data (see attached map & soil logs):	
Number of soil investigations completed	3 (in basin area)
Do elevations of test holes extend 3 ft. below proposed bottom?	Yes (see map)
Average soil texture at pond bottom elevation (USDA)	Clay loam
Distance from pond bottom to bedrock	> 5 feet
Distance from pond bottom to seasonal water table	Pond bottom 2 ft. below mottling No water observed in test holes
General basin design data (see attached detailed drawings):	
Permanent pool surface area	1.5 acres
Design permanent pool water surface elevation	elev. 900.0
Top of berm elevation (after settling) and width	elev. 905.0 / 10 feet wide
Length/width (dimensions/ratio)	445 ft. (L) x 145 ft. (W) = 3:1
Safety shelf design (length, grade, max. depth)	10 ft. @ 10% slope/1.5' deepest
Ave. water depth (minus safety shelf/sediment)	5 ft. (in center)
Sediment forebay size & depth	.16 acres (13% pool size)/5 feet
Sediment storage depth & design maintenance	2 ft. depth for forebay & pool 15 year maintenance schedule

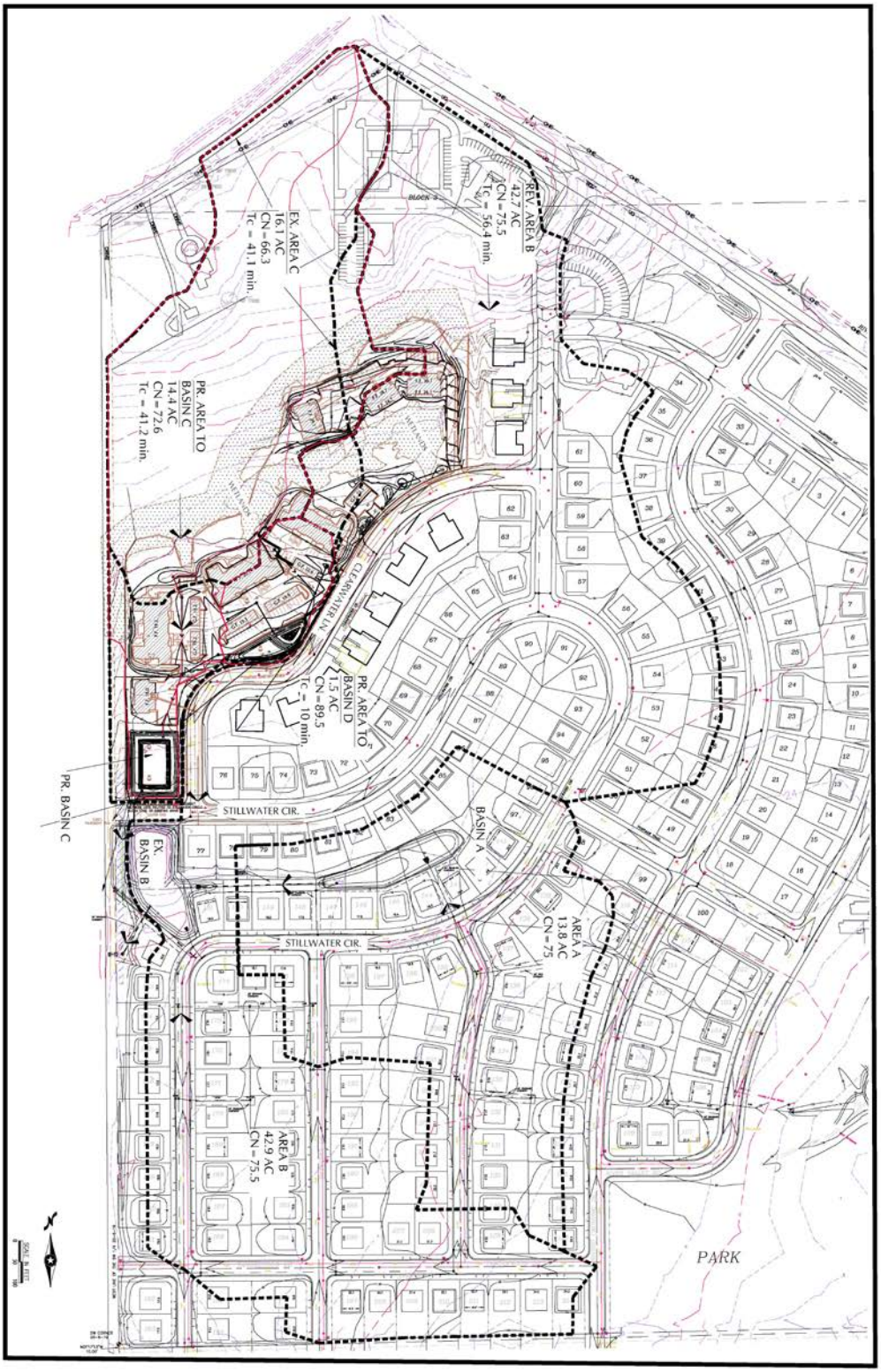
Design Basin Inflow, Outflow & Storage Data
(see attached hydrographs and detail drawings)

Inflow Peak/Volume	Maximum Outflow Rate	Max. Water Elevation	Storage Volume at Max. Elev. (above perm. pool)	Outflow Control Structures*
1-yr./24 hr. (volume)	.7 cfs (34 hr. drawdown)	901.3 ft.	2 acre feet	#1
24.3 cfs (Post 2-yr./24 hr. peak)	11 cfs	902.0 ft.	3.1 acre feet	#1 and #2
72 cfs (Post 10-yr./24 hr. peak)	35 cfs	903.0 ft.	4.5 acre feet	#3
171 cfs (Post 100-yr./24 hr. peak)	143 cfs	904.0 ft.	6.0 acre feet	#3 and #4

* #1 = 6 inch orifice in water level control weir plate – flow line elev. @ 900.0 (1.3 ft. max. head)
#2 = 2 foot wide rectangular weir – flow line elev. @ 901.3 (.7 ft. hydraulic head)
#3 = 30 inch diameter smooth wall pvc pipe – flow line elev. @ 900.0 (3.0 ft. max. hydraulic head)
#4 = 30 foot wide earthen/grass emergency spillway – flow line elev. @ 903.0 (1.0 ft. max. depth)

Exhibit D (continued)

Watershed Map. The watershed map shown below was used to determine the post-development data contained in this exhibit. The post-developed watershed areas are the same as the pre-development watershed areas for this project.



CLEARWATER APARTMENTS - RIVERS CROSSING WATERSHED MAP

Exhibit E
As-built Survey for Wet Detention Basin #1

The wet detention basin depicted in Figure 1 is a reduced copy of the as-built plan.

Project Identifier**:** **Clearwater Apartments**
Storm water Practice**:** **Wet Detention Basin #1**
Location of Practice**:** **All of Outlot 1 of Clearwater Apartments:**
Owners of Outlot 1: **Clearwater Apartments, LLC.**

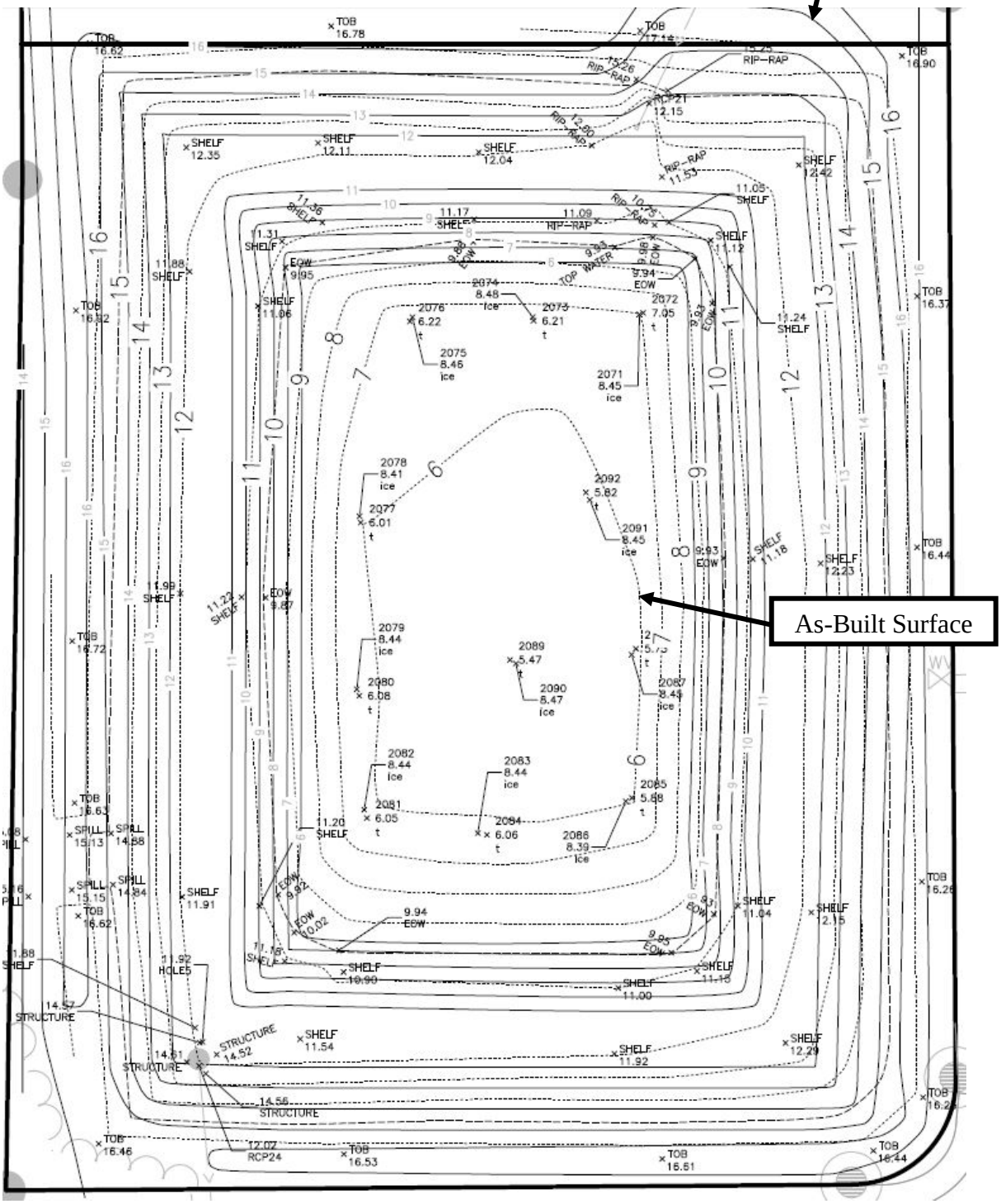


Exhibit E

Cross-Section A – A'

Figure 2

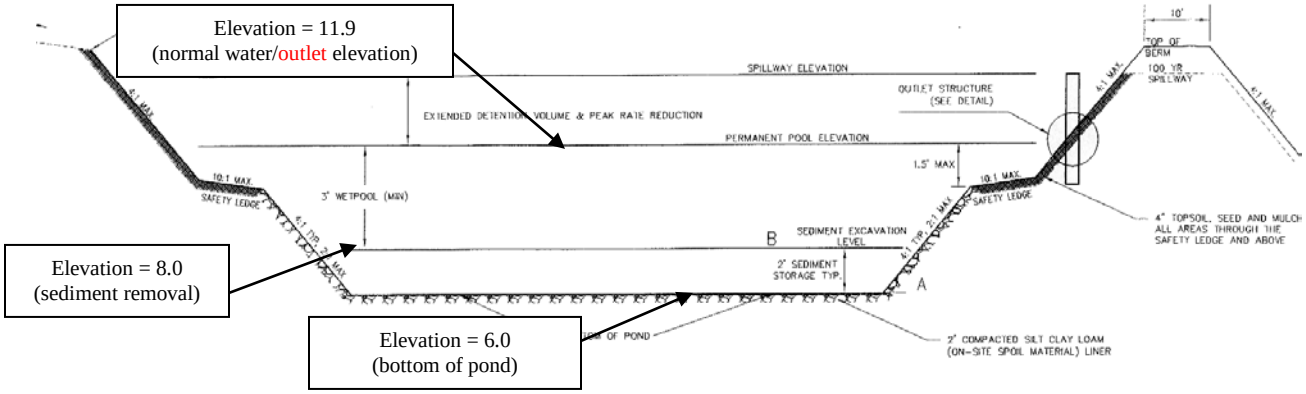


Figure 3

Outlet Structure Detail

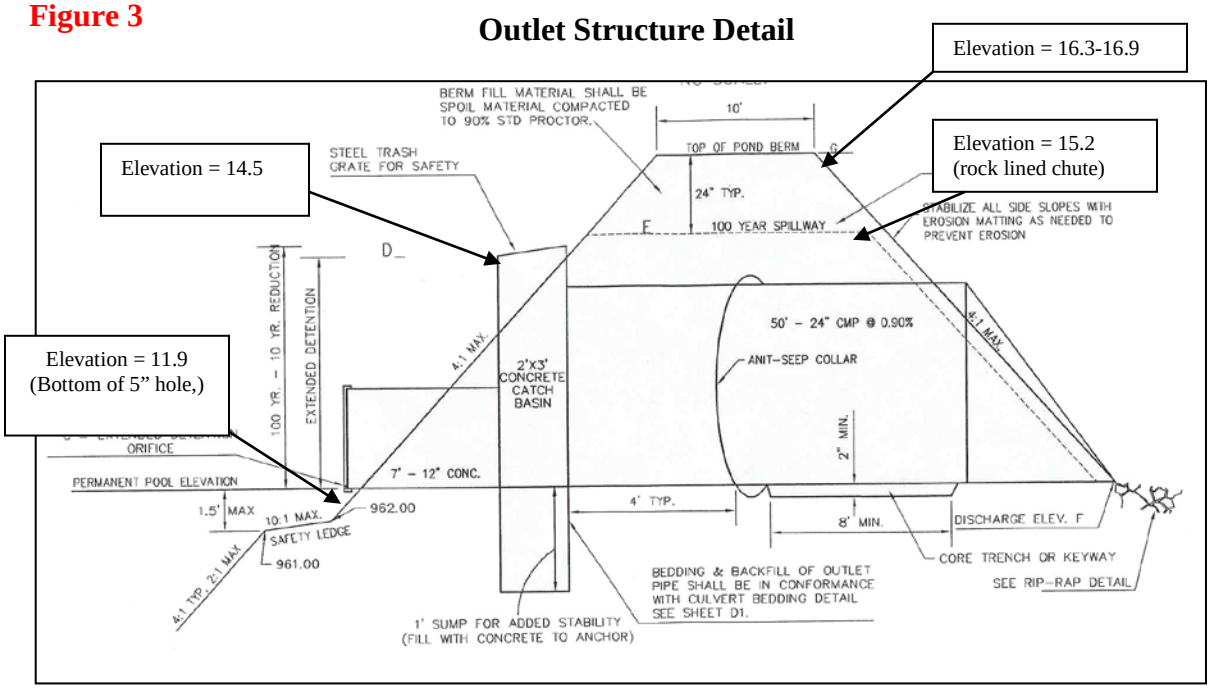


Exhibit E
As-built Survey for Bio-Filtration Basin

The bio-filtration basin depicted in Figure 4 is a reduced copy of the as-built plan.

Project Identifier**:** **Clearwater Apartments**
Storm water Practice**:** **Bio-Filtration Basin**
Location of Practice**:** **A portion of Lot 1 of Clearwater Apartments:**
Owners of Lot 1: Clearwater Apartments, LLC.

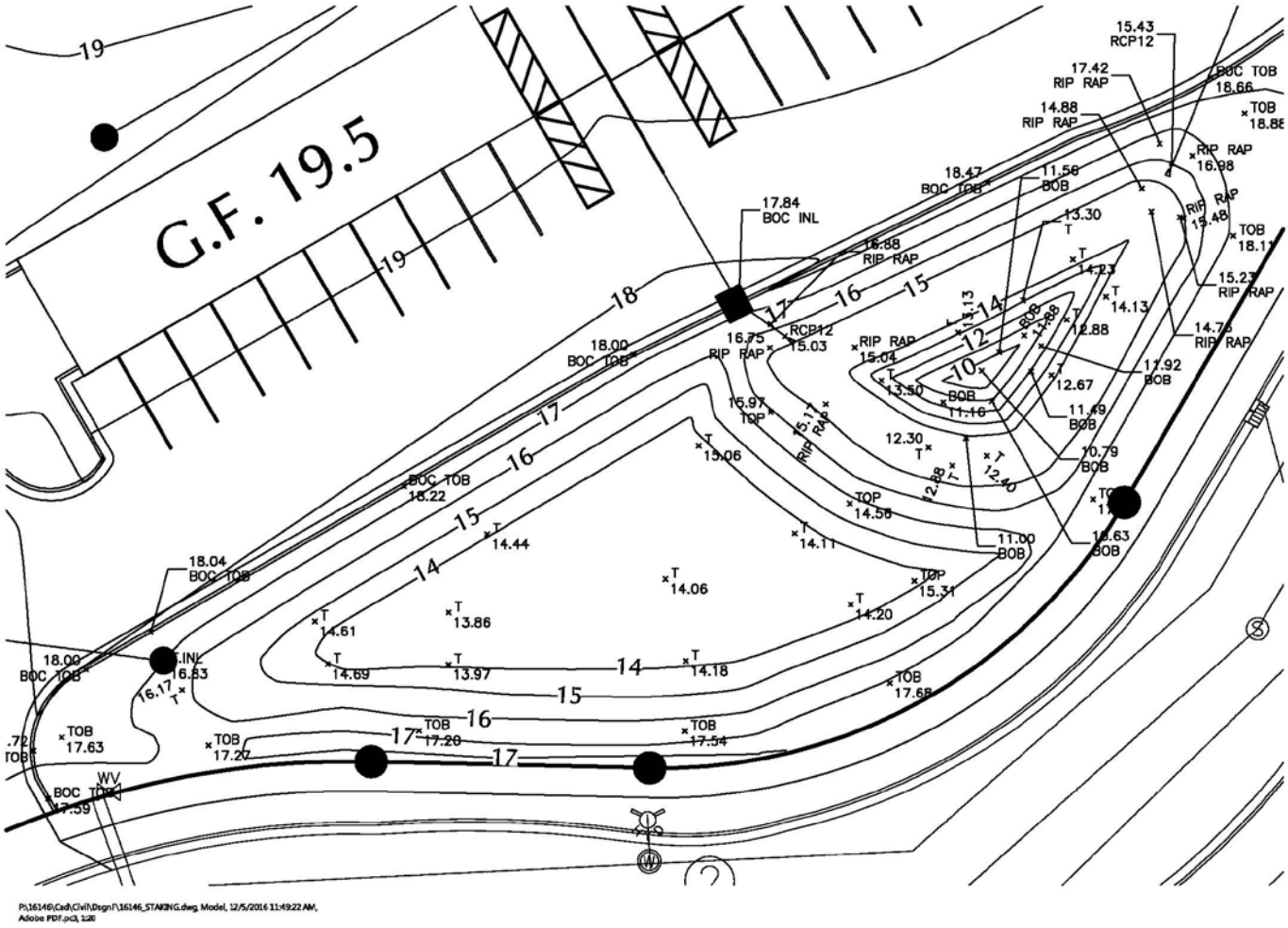


Exhibit "F"
Engineering/Construction Verification

DATE: December 5, 2016

TO: City of Waukesha

FROM: Mark Mickelson, SEH [Project Engineer's Name/Company]

RE: Engineering/Construction Verification for the following project:

Project Name: Clearwater Apartments

Section 20, T.06N, R.19E, City of Waukesha

Storm Water Management & Erosion Control Permit # _____

Storm Water Management Practices: Wet Detention, Bio-Filtration

_____

For the above-referenced project and storm water management practices, this correspondence shall serve as verification that: 1) all site inspections outlined in approved inspection plans have been successfully completed; and 2) the storm water management practice design data presented in Exhibit D, and the "as-built" construction documentation presented in Exhibit E comply with all applicable state and local technical standards, in accordance with the City of Waukesha Storm Water Management and Erosion Control Ordinance.

1. Any variations from the originally approved construction plans are noted in Exhibit E. These variations are considered to be within the tolerances of standard construction techniques and do not affect the original design as presented in Exhibit D in any way.

(Signed P.E. stamp must be included)

Exhibit G
Storm Water Management and Erosion Control Permit Termination

Project Identifier: Clearwater Apartments

Location: All that part of the Southwest Quarter (SW ¼) of Section 4, Township 8N, Range 19E (Town of Lisbon)

Storm Water Management and Erosion Control Permit Holder's Name:

_____

Storm Water Management & Erosion Control Permit #: _____

Chapter 32 – City of Waukesha Storm Water Management and Erosion Control requires that all newly constructed storm water management practices be maintained by the Storm Water and Erosion Control Permit Holder until permit termination, after which maintenance responsibilities shall be transferred to the responsible party identified on the subdivision plat [or CSM] and referenced in this Maintenance Agreement.

Upon execution below, this exhibit shall serve to certify that the Storm Water Permit Holder has satisfied all requirements of the Storm Water Management and Erosion Control Ordinance and that the City of Waukesha has terminated the Storm Water Management and Erosion Control Permit for the property covered by this Maintenance Agreement.

Dated this ___ day of _____, 201_.

City of Waukesha representative:

_____
(Signature)

_____

(Typed Name and Title)

Acknowledgements

State of Wisconsin
County of Waukesha

Personally came before me this ____ day of _____, 201_, the above named ___[Owners name]_____ to me known to be the person who executed the foregoing instrument and acknowledged the same.

_____.
[Name]
Notary Public, Waukesha County, WI
My commission expires: _____