

## CHECKLIST STORMWATER SUBMITTAL (Revised 2/19/14)

SDR Application No. \_\_\_\_\_ Project Name: \_\_\_\_\_

### Submit the Following For all New Developments and Redevelopments:

- A. Approved state permits, e.g. SWFWMD or FDEP ERP Permit, and SWFWMD approved stamped plans - two hard copies.
- B. Color Aerial and Legible Boundary and Topographic Survey – two legible hard copies.
  - 1.0 Include sufficient on-site topographic elevations and contour lines to facilitate interpretation of direction of stormwater flow. Include sufficient off-site topographic elevations to show all off-site stormwater flow onto project site.
  - 2.0 Show the 100-year floodplain elevations and footprint.
  - 3.0 Include a benchmark. Survey vertical datum must be in either NGVD29 or NAVD and indicated as such clearly on the survey. Assumed elevations are not acceptable. Survey must be signed and sealed by a licensed Florida surveyor.
- C. Soil conservation service (SCS) soils survey map or soil boring analyses report to support the selection of the seasonal high water elevation (SHWE) used in the design - two legible hard copies.
- D. Stormwater Design Plans – Digital copy of the proposed construction plans in AutoCAD and PDF format - one CD copy. See number of hard copies of plans required under Chapter 33. The plans must be signed and sealed by a Florida Licensed Professional Engineer.
  - 1.0 **Paving grading and Drainage Plans :-**
    - (a) Sufficient proposed elevations, cross sections and details should be provided to show how flow is directed to the stormwater management system.
    - (b) All off-site flows onto proposed project areas must be diverted so as not to cause adverse off-site impacts.
    - (c) All required drainage and maintenance easements must be clearly shown.
    - (d) The proposed pervious and impervious area and total project area must be included in the plans with the corresponding curve numbers. This information must also be supplied on the plans for each future outparcel served by the proposed master stormwater systems.
    - (e) Provide pond contour lines, cross sections and labels corresponding to the pond bottom, change in slope, lower end of the littoral zone, upper end of the littoral zone, control water elevation (CWE), 25-year 24-hour storm event design high water elevation (DHWE) and top of berm. There should be six (6) inches of freeboard between the DHWE and the top of bank.
    - (f) Cross sections of all ponds, swales and channels proposed. Check that slopes are no steeper than 4:1 (horizontal to vertical).
    - (g) Legible water control structure details and skimmer to show the bottom of skimmer to be a minimum of 4-inch below the control water elevation and the top to be equal or higher than the 25-year 24-hr DHWE.
    - (h) Include a concrete pad poured under the skimmer to avoid growth of vegetation up through the skimmer resulting in potential flow restriction.
    - (i) It is recommended that the skimmer be constructed of fiberglass material instead of aluminum, in order to deter theft of aluminum skimmers
    - (j) Typical lot grading plan for residential subdivisions.
    - (k) Littoral zone planting plan listing non-invasive aquatic species, and showing spacing of plants with guaranteed survival rate of 85%.
    - (l) Fountain or aeration device for wet ponds with deep pool.
    - (m) Evaluate and apply to the maximum extent practicable, low impact development (LID) design concepts including stormwater reuse for irrigation.
  - 2.0 **Best Management Plans (BMPs) and National Pollutant Discharge Elimination System (NPDES) surface water pollution prevention plan (SWPPP)**
    - (a) Show the location and details of the erosion, sediment and turbidity control measures such as silt fence around the construction area, and hay bales / silt fence around each inlet structure to be implemented during each phase of construction.
    - (b) Include notes on how turbidity in stormwater runoff will be monitored and corrective actions needed if turbidity level is higher than 29 NTUs above background.
    - (c) Provide at the preconstruction meeting one hard copy of any required NPDES SWPPP and Notice of Intent (NOI).
    - (d) Leave as much undisturbed vegetation as possible to use as a buffer to retain any turbidity breakthrough.
  - 3.0 **Dewatering Plans**
    - (a) Show the location of the dewatering sites, the dewatering pump, sediment sump, methods to retain or detain discharge, methods of isolating the dewatering areas, flow path and points of discharge of the water and the duration of the dewatering.
    - (b) A sectional detail of the dewatering pump should be provided to include the dewatering pump (include pump rate in cfs on the plans), sediment sump (include dimensions), piping, temporary berm, and turbidity barriers.

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- (c) Provide calculations supporting the dimension of the sediment sumps, and the capacity of the sediment pumps.
  
- 4.0 **Floodplain Impact and Compensation**
- (a) The footprint area of floodplain impact and floodplain compensation provided shall be clearly shown on the plans, together with representative cross sections.
  
- E. Drainage Treatment and Attenuation Analysis - two hard copies signed and sealed by a Florida Licensed Professional Engineer. Provide also one CD copy of the input and output data of any hydraulic model or spreadsheet analysis used.
- 1.0 Include legible pre-development and post-development basin maps with corresponding acreages, curve numbers (CN), flow arrows showing connectivity and time of concentration (T<sub>c</sub>) overlaid on existing and proposed conditions topographic elevations.
- 2.0 Provide attenuation analysis - Hydraulic modeling using software such as Interconnected Pond Routing (ICPR) or CHAN software is preferred. Spreadsheet attenuation calculations using the Rational Method is also acceptable for drainage areas 10 acres or less.
- 3.0 Include the printout of the node/reach schematic diagram and input and output data of the Pre-development and Post-development hydraulic model if used, including a printout of the peak discharge rate and the hourly flows from all discharge points leaving the project site.
- 4.0 If the Rational Method is used (for project area 10 acres or less), provide the spreadsheet attenuation calculations for the design storm event. Outflow may not commence until the first inch has accumulated in the retention area. To compensate for the fact that flow out of the pond does not begin to flow in the initial 10 minutes, the critical pond volume for attenuation must be increased by 20 percent.
- 5.0 Provide T<sub>c</sub> calculations using TR-55 methodology or equivalent.
- 6.0 Provide table summary of proposed pervious and impervious areas for each drainage basin and corresponding CN and T<sub>c</sub> for the pre-development and post-development conditions.
- 7.0 Provide tabular summary of elevation/area/volume data for each stormwater pond at the following elevations - pond bottom, change in slope, lower end of the littoral zone, upper end of the littoral zone, control water elevation (CWE), 25-year 24-hour storm event design high water elevation (DHWE) and top of berm.
- 8.0 Provide treatment calculations based on one-inch of runoff over the entire project area and recovery of treatment volume analysis.
- 9.0 Provide calculations supporting size of drawdown orifice or weir notch if applicable.
- 10.0 Provide floodplain impact and compensation analysis based on 100-year flood elevation.
  
- F. Operation and Maintenance (O&M) Plan - two hard copies.
- 1.0 Provide an O&M plan that includes a schedule of maintenance and inspection, and details on how to rehabilitate or retrofit the system if the system does not function as designed.
- 2.0 O&M Plan must be signed by the owner accepting the responsibility to adhere to the plan.

### Prior to issuance of a Certificate of Occupancy (CO), submit the following:

- G. Complete set of as-built site and stormwater plans, signed and sealed by a Florida Licensed Professional Engineer. Any deviations shall be clearly marked and approved by the City prior to issuance of a CO - two hard copies.
  
- H. Digital copy of the as-built plans in AutoCAD and PDF format together with a signed and sealed written certification by a Florida License Professional Engineer of Record that the digital files are a complete set that correlates to the hard copy of the submitted as-built plans - one CD copy.
  
- I. Approval from SWFWMD to transfer the surface water management system into operation – two hard copies.