



Memo

To: Lenny Branch, Public Works Director
From: Bill Dreitzler, P.E., Town Engineer
Date: April 11, 2017
Re: Spring Branch Stormwater Wetland Facility

Lenny,

I completed a comprehensive field assessment of the Spring Branch Stormwater Wetland Facility (2nd Street) along with Nick Rightmyer, P.E. on Friday, March 10, 2017. The field assessment included verifying key elevations within the system. Based on my field observations and elevation verifications and comparing the findings with the original plans, I can offer my recommendations for restoration. The original plans for the facility were prepared by The Rose Group and dated May 4, 2005. Please consider:

The Spring Branch Wetland Facility was designed for normal flow to be predominately routed through the concrete stream diversion wall through a 10-inch diameter pipe. Existing conditions show that 2 pipes were installed through the stream diversion wall. Two 12-inch pipes through the diversion wall direct stream flow into the wetland facility forebay chamber. These pipe inverts are 6-inches above the pipes that direct normal flow along the Spring Branch stream line. The inlet weir for the wetland facility was originally designed to be 24-inches above the pipes directing normal flow along the Spring Branch. The forebay chamber is the first chamber inside the wetland facility and is very important in that it acts as a stilling basin and allows flows to spread out over an earthen dam prior to entering the wetland water quality pool. The water quality pool has a discharge device releasing the treated water back into the Spring Branch. The following structures require attention:

1. Concrete Diversion Wall Outlet Pipes: Upstream sediment must be cleaned out to allow the pipes to carry the intended stream flow through the diversion wall and along the normal Spring Branch flow line.
2. Concrete Diversion Wall Inlet Pipes to Wetland Facility: Sediment at the outlet end of the inlet pipes has made these pipes non-functional. Based on elevation checks, the sediment in the forebay is at approximately elevation 110.3. The inlet pipes were designed to

discharge at elevation 108.5 with that elevation being the normal pool level in the forebay. The forebay bottom was designed to be at elevation 106.0. The forebay has approximately 4.3-feet of sediment built up within the chamber. This sediment should be removed.

3. Wetland Facility Inlet Weir: The inlet weir was designed to be 2-feet above the normal flow discharge pipes through the stream diversion wall. Elevation checks show that the inlet weir is currently at elevation 109.2. The design elevation was 110.0. Therefore, instead of a 24-inch elevation difference as designed, current conditions have an approximate elevation difference of 14.4-inches. This is a critical aspect to the functionality of the wetland facility and likely a key reason that the Spring Branch is currently being diverted through the wetland facility in lieu of the wetland facility functioning as originally designed. Options should be explored to restore the inlet weir to the proper elevation. I believe the most effective solution is to construct a new concrete inlet weir to replace the original earthen weir. The ability to add 9.6-inches of soil material to the existing earthen weir and achieve stabilization will be problematic. I would recommend consultation with a geotechnical engineer.
4. Forebay: As noted, the forebay has been inundated with silt. The approximately 4.3-feet of silt must be removed to return the forebay bottom elevation to at or near the original 106.0 design elevation. Of note, even the re-routed Spring Branch ditch line through the forebay is at elevation 108.2 or 2.2-feet above the design bottom of the chamber.
5. Wetland Facility Berm: The berm wall was breached. The normal pool area for the wetland facility was designed to narrow around the crossing of the aerial sanitary sewer pipe. This design likely assisted in directing what became stream flow through the wetland facility to the breach location. The berm in this location received direct stream flow and eventually eroded and then failed. The breach must be repaired.
6. Outlet Device: Silt around the inlet pipes to the outlet device needs to be removed. The outlet pool bottom was designed to be elevation 106.0. The lowest of the inlet pipes was designed to be at elevation 108.25 or 2.25-feet above the existing grade. In addition, the 4"x6" treated timber wall needs to be re-established. The bottom timbers are missing which makes this location the inlet to the outlet device in lieu of the pipes as originally designed.
7. Plantings: The wetland facility will require replanting upon completion of repairs to function as intended.
8. Stream Diversion through Wetland Facility: I would recommend ditch check dams be considered at prescribed intervals along the ditch line that has formed through the wetland facility. This will allow the ditch section to naturally silt up over time restoring the area to the desired elevation.

I would recommend that the first order of restoration should be the inlet structures. Items 1-4 above. Once the inlet to the wetland facility is functioning as designed then I would recommend repair of the berm wall breach and the outlet device. If you have any questions or wish to discuss the assessment in more detail, please let me know. In addition, please advise if you want to obtain quotes for the restoration work.

END MEMO