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## **Appendix B**

### **Tributary to Rocky Branch (244) Subwatershed Project Conceptual Design Narratives**

## Project: Tributary to Rocky Branch 244-688 Water Quality Retrofit

<b>Watershed:</b>	<b>Broad Run</b>
<b>Subwatershed Name:</b>	<b>Tributary to Rocky Branch</b>
<b>Subwatershed Code:</b>	<b>244</b>
<b>Site ID:</b>	<b>244-688</b>
<b>County Facility ID:</b>	<b>668</b>
<b>Facility Type:</b>	<b>SWMP/BMP</b>
<b>Facility Description:</b>	<b>Dry</b>
<b>Project Type:</b>	<b>Water Quality Retrofit</b>
<b>Drainage Area:</b>	<b>32.3 acres (measured in GIS)</b>
<b>GPIN/Owner:</b>	<b>7497-22-0787</b>
<b>Neighborhood/Address:</b>	<b>Dalrymple Realty Corp. 13450 University Boulevard, Gainesville 20155</b>
<b>GPS Coordinates:</b>	<b>38° 47' 33.95 77° 35' 25.92</b>
<b>SWM Subwatershed Ranking:</b>	<b>2</b>
<b>SWM Study Ranking:</b>	<b>--</b>
<b>Priority:</b>	<b>Moderate</b>

**Location:** This site is located in the north-east quadrant of the intersection of Wellington Road and University Boulevard on the property of Dalrymple Realty Corporation.

**Problem Description:** The facility was recorded in the County database in 2010 as a dry basin with an 84 inch riser. About 1/3<sup>rd</sup> of the facility is a wetland due to the low flow orifice being clogged. The existing facility lacks sediment forebays which allows sediment and other debris to settle out at the riser. The two inlets have fairly short flow paths to the riser (<0.4 path/length). The facility is fairly large (37,600 SF) which represents about 2.7% of the contributing drainage area. The far end appears to receive minimal ponding and is mowed grass.

**Project Description:** This facility could be retrofitted with a constructed wetland including two sediment forebays, a micropool and a berm. The berm would increase the flow path by 4x, preventing short cutting and increasing treatment, and meet the Level II design standard. The length width ratio exceeds 3:1, which meets the Level II design standard. The basin size to drainage area ratio of 2.7% meets the Level I design standards. The forebays would capture sediment, and improve performance. The micropool would improve the function of the riser. The conceptual design meets Level I design standards, but may provide higher N and P removal due to a longer flow path.

**Potential Benefits:** Under current conditions, this BMP does not appear to be functioning as designed (i.e. dry basin). If it did meet the criteria for an extended detention pond it would have Phosphorus (P) and Nitrogen (N) removal rates of 15% and 10% respectively. The conversion of this facility from a dry basin BMP to a constructed wetland BMP would increase the P and N removal to 50%, and 25%, respectively. The retrofit should also improve the ease of maintenance, help prevent low flow clogging and extend the serviceable life of the facility.

**Design Considerations and Constraints:** Construction access would be easily provided from the adjacent road. The original design should be evaluated to determine if there is additional capacity within the facility.

**Cost Estimate:** The retrofit of this site is estimated to cost approximately \$107,000. The average cost per acre of impervious surface would be \$14,000.



Watershed: Tributary to Rocky Branch

Site ID#: 244-688

BMP #: 688

ADC Map (25th edition): Map 7, Page 12, grid coordinate G2



**Existing Condition:** Facility designed as a dry pond is supporting wetland vegetation due to clogged low flow orifice. Flow has a short path to outlet structure.



**Conceptual Plan:** Conversion to a wetland will increase N and P removal. Facility includes forebays for pretreatment and a berm to increase flow path.



**Photo 1:** Large dry basin supporting wetland vegetation over about 33% of the basin



**Photo 2:** Significant portion of basin is currently not wetland

## Project: Tributary to Rocky Branch 244-689 Major Repair

<b>Watershed:</b>	<b>Broad Run</b>
<b>Subwatershed Name:</b>	<b>Tributary to Rocky Branch</b>
<b>Subwatershed Code:</b>	<b>244</b>
<b>Site ID:</b>	<b>244-689</b>
<b>County Facility ID:</b>	<b>689</b>
<b>Facility Type:</b>	<b>SWMP/BMP</b>
<b>Facility Description:</b>	<b>Dry</b>
<b>Project Type:</b>	<b>Major Repair</b>
<b>Drainage Area:</b>	<b>66 acres</b>
<b>GPIN/Owner:</b>	<b>7497-24-9109</b>
<b>Neighborhood/Address:</b>	<b>Dalrymple Realty Corp. 7201 Rail Line Court Gainesville 20155</b>
<b>GPS Coordinates:</b>	<b>38° 47' 41.06 77° 35' 12.16</b>
<b>SWM Subwatershed Ranking:</b>	<b>1</b>
<b>SWM Study Ranking:</b>	<b>2</b>
<b>Priority:</b>	<b>High</b>

**Location:** The site is located in the north-east quadrant of the intersection of Wellington Road and University Boulevard near Rail Line Court on the property of Dalrymple Realty Corporation.

**Problem Description:** This facility is listed in the database as a dry basin BMP and was added to the inventory in 2010. However, the facility is visible on 2006 aerial photography. The riser appears to be designed for a wet pond instead of a dry pond as reported in the database. A 4-inch low flow orifice is reported in the database but was not observed in the field. During site inspection the facility was ponded and heavily loaded with sediment. This site appears to be used to process water generated at the adjacent quarry in addition to stormwater. The facility in its current state cannot provide stormwater detention. There are no forebays to contain incoming sediment loads. Gravel is apparent in the sediment deposited in the basin.

**Project Description:** This facility appears to require a major renovation to remove the deposited sediment and provide a functional dry basin. If use of the facility by the quarry is going to continue to generate large sediment loads, then forebays should be installed to make removal more efficient.

**Potential Benefits:** In its present condition, the facility cannot provide BMP functions. Given that this facility is only a few years old, the accelerated sediment loading should be considered in excess of what is typical under normal design standards. Either upstream treatment should be provided to protect the water quality functions of the facility or the facility should be modified to improve sediment handling.

**Design Considerations and Constraints:** Construction access and staging would be easily accomplished from the adjacent road. The original design should be reviewed and the assumptions re-evaluated to determine if this site was designed as a wet pond.

**Cost Estimate:** The renovation/repair to this facility is estimated to cost approximately \$115,600, primarily due to excavation costs.



Watershed: Tributary to Rocky Branch  
Site ID#: 244-689  
BMP #: 689  
ADC Map (25th edition): Map 7, Page 12, grid coordinate G1



**Existing Condition:** Dry basin showing wet conditions and sediment load



**Conceptual Plan:** Excavate sediment load and install forebays





**Photo 1:** Site appears to be designed as wet pond, no forebays, and heavy sediment load



**Photo 2:** Service road provides easy site access for sediment removal