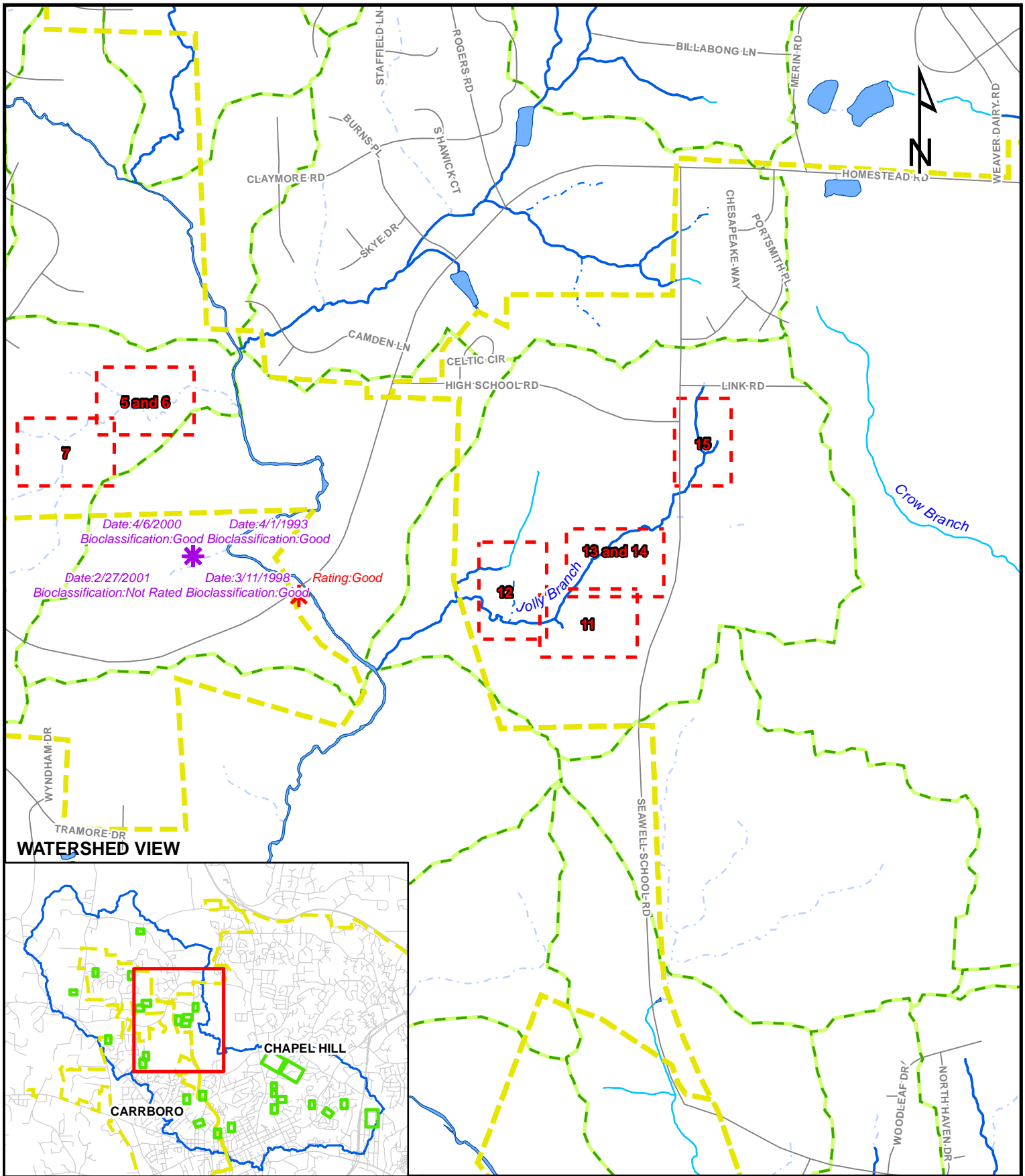


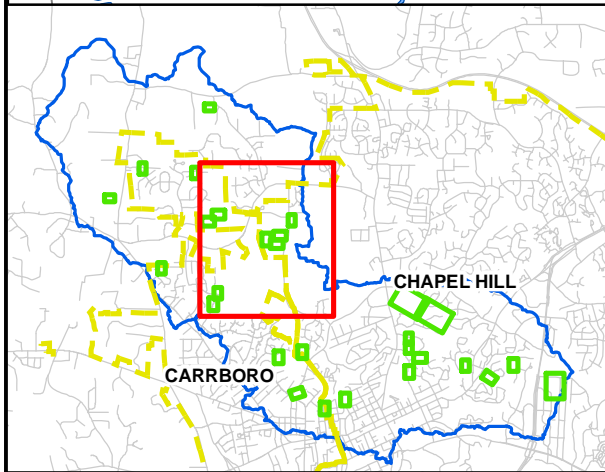
**SITE 12**

Index Sheet No.: 16  
Raw Data Name: IJ 24

Estimated Construction Cost: \$69,300



**WATERSHED VIEW**



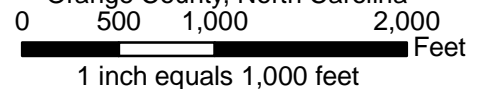
**Legend**

- Ambient Monitoring
- Benthic Monitoring
- Fish Sampling
- Municipal Boundary
- Orange County Roads
- Subwatersheds
- Perennial Stream
- Intermittent Stream
- Ephemeral Stream
- Stream, unknown flow



**SITE 12  
VICINITY MAP**

Geomorphic Analysis and Identification of Potential Sites for Stormwater BMPs  
Orange County, North Carolina



**Project Description**

	Drainage Area (acres)	Impervious Area (acres)	% Impervious
Site 12	10.8	4.1	38.0%

**Location**

Site 12 is located on the western side of the football stadium and track at Chapel Hill High School. Chapel Hill High School is located at the intersections of Seawell School Rd. and High School. Rd.

**Problem Description**

Site 12 consists of a corrugated metal pipe outlet and ditch draining part of the football stadium facility at Chapel Hill High School. The football field is likely fertilized on a regular basis. The ditch discharges the stormwater from this field into Jolly Branch, a perennial stream, without any water quality treatment. Several spots of geomorphic instability, in the form of eroding banks and scour lines in the floodplain, were noted in Jolly Branch where these stormwater inputs reach a confluence.

Sites 11 through 15 are in close proximity to each other, and could therefore be integrated amongst themselves as a single package. In addition, other similar opportunities for the work proposed here are present throughout the three surrounding campuses, as well as other parts of the Jolly Branch watershed.

**Proposed Solution**

Site 12 provides a good location for a bio-grade step (see Details). Constructing this BMP in this location would provide needed treatment of the stormwater produced by the contributing drainage area and reduce velocities of the flows reaching Jolly Branch. The bio-grade step allows for a linear shaped, grade-control BMP solution that will prevent future head cutting of the drainage ditch, while using minimum area.

The storage of some of the runoff volume will potentially augment baseflow to the stream and reduce the runoff volume that reaches the stream for the duration of the rain event. This attenuation of peak flows and chance to augment base flow is another tangible benefit of the linear bioretention.

Pollutant reduction rates as a result of stormwater treatment are shown in **Table 12.1**.

**Table 12.1**

SITE 12	Pollutant Load (lbs)		
	TN	TP	TSS
EXISTING CONDITION	7.35	0.82	190.56
BIORETENTION TREATMENT REMOVAL %	37.00%	45.00%	85.00%
NET REDUCTION	2.72	0.37	161.97
FUTURE CONDITION	4.63	0.45	28.58

*Bolin Creek Watershed  
Geomorphic Analysis and Potential Site Identification for Stormwater BMPs and Retrofits*

**Constraints**

The primary constraints at Site 12 are the existing trees, that would need to be removed to provide room for construction of the bio-grade step. However, the bio-grade step uses minimum surface area, and could probably be constructed with the least impact to the surrounding forest in comparison to other BMP options.

**Alternatives**

No alternatives are proposed for this site.

**Cost-Estimate Breakdown**

Tables 12.2 shows a conceptual itemized cost estimate for Site 12. These costs represent construction and maintenance costs only. The cost for the bio-grade step is derived from a cost per cubic foot treated for bioretention areas as reported by Schueler, et. al. (2007).

**Table 12.2**  
SITE 12

Pay Item Description	Estimated Quantity	Unit	Unit Bid Price	Bid Amount
Biograde Step	4779.0	CF	12.62	\$60,311
			<b>Total</b>	<b>\$60,311</b>
Mobilization (5%)	1.0	LS		\$3,016
Contingencies (10%)	1.0	LS		\$6,031
			<b>Total + Mobilization and Contingencies</b>	<b>\$69,358</b>
<b>Maintenance Costs</b>				
Maintenance (5% of base construction cost)	1.0	Year		<b>\$3,468</b>

# SITE 12



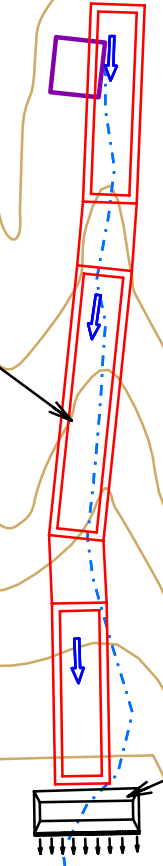
CHAPEL HILL HIGH SCHOOL  
FOOTBALL FIELD AND TRACK

EXISTING PIPE OUTLET  
DRAINS FOOTBALL FIELD

BIO-GRADE STEPS

LEVEL SPREADER

ALTERNATIVE 1:  
SMALL WET POND WITH LEVEL SPREADER

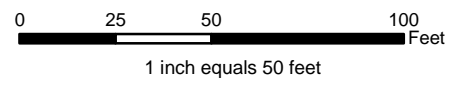


### Legend

- Stormwater Lines
- Impervious Surfaces
- Perennial Stream
- Intermittent Stream
- Ephemeral Stream
- Stream, unknown flow
- Contours



**CONCEPTUAL PLAN VIEW**  
BOLIN CREEK WATERSHED  
Geomorphic Analysis and Potential Site  
Identification For  
Stormwater Structures and Retrofits



Jolly Branch

# SITE 12



CHAPEL HILL HIGH SCHOOL  
FOOTBALL FIELD AND TRACK

EXISTING PIPE OUTLET  
DRAINS FOOTBALL FIELD

BIO-GRADE STEPS

LEVEL SPREADER

ALTERNATIVE 1:  
SMALL WET POND WITH LEVEL SPREADER

Jolly Branch

### Legend

- Stormwater Lines
- Perennial Stream
- Intermittent Stream
- Ephemeral Stream
- Stream, unknown flow



### AERIAL PHOTO VIEW

BOLIN CREEK WATERSHED  
Geomorphic Analysis and Potential Site  
Identification For  
Stormwater Structures and Retrofits

