

## II. METHODOLOGY

### Assessment Forms

Assessment forms were developed to document stream conditions and areas of concern encountered within DuPont SRF. Blank forms are included as Appendix B. Before use in the field, these forms were reviewed by NCFS staff and field-tested. Two forms were created: one named “Stream Condition Assessment” and one named “Area of Concern Assessment”.

The “Stream Condition Assessment” form documents conditions for a stream reach, and results in an overall score based on site and watershed conditions, channel morphology and condition, floodplain morphology, vegetation, and habitat. This score can range from 0 to 20, and allows the stream to be categorized into one of four classes: Excellent (score 18-20), Good (score 13-17), Fair (score 8-12), or Poor (score 0-7). For the purposes of this study, forms were not completed for stream reaches that would have scored in the Excellent category.

The “Area of Concern Assessment” form was developed to document problems observed that do not correspond to a long stream reach. These areas of concern typically occur at a point, such as a trail crossing of a stream, and do not necessarily represent a systemic problem along the stream. Areas of concern can occur at a stream, though also include other points that may impact water quality, such as culverts, lakes, eroding areas, stormwater sources, and areas of concentrated human or animal use.

The assessment of stream conditions and areas of concern includes limited observations on potential public safety hazards that are inherent in outdoor recreational settings. This plan is not intended to provide a comprehensive safety analysis of DuPont SRF’s facilities, including the trail system. Trail users and other visitors to DuPont SRF are encouraged to recognize and avoid natural hazards to the extent possible, comply with DuPont SRF Forest Rules, and follow instructions on posted signs while on DuPont SRF property.

### Site Identification

In order to identify sites, all mapped trails and roads within DuPont SRF were covered by walking, biking, or driving. Water bodies visible from the trails and roads were visually assessed to determine if an assessment form should be completed. As needed, field personnel bushwhacked along or through the streams. Additionally, NCFS personnel provided information about known problem areas. A total of 17 stream reaches and 51 areas of concern were documented using the field forms. Each of these 68 sites was also photo-documented and mapped using hand-held GPS.

### Geodata

The data for this project has been compiled, analyzed, and placed into a dataset named “Sites” within the project’s geodatabase. There are two feature classes in that dataset: “AreasOfConcern” and “StreamConditions”. The geodatabase is of the structure: *Project Geodatabase -> Feature Dataset “Sites”*

-> *Feature Class “AreaOfConcern” and StreamConditions”*. Appendix C contains the complete features class structure for the two feature classes. This is also available as a Microsoft Excel file.

“AreasOfConcern” is a point feature class with a total of 51 sites within the project. Each site has an assigned Site ID beginning with a “P” and is a feature with populated fields based off of datasheets that were completed during site visits. Each feature in this feature class has five categories of issues that were observed: culvert, trail/road impact, upland/stormwater, lake/pond issues, and other problem areas. There is also a potential solutions category and a comments section for additional, more detailed notes about that particular site/feature.

“StreamConditions” is a line feature class which depicts approximate locations of stream sections that were determined in the field to be of concern. There are a total of 17 of these sites within the project. Each site is assigned a Site ID beginning with an “S” and is also a feature with populated fields based off of datasheets that were completed during site visits. Each feature in this feature class has five categories of issues there were observed: site and watershed conditions, channel morphology and conditions, floodplain morphology, vegetation, and habitat. Each of these categories has a list of several issues to choose from and are also scored on a range of 0-4, then totaled to provide a final score of 0-20. There is also a potential solutions category and a comments section for additional, more detailed notes about that particular site/feature.

### Mapping

A large (22 x 34 inch) base map was created showing the location of each of the 68 sites (Appendix D). Additionally, an 11 x 17 inch sheet was created for each site, showing photographs, assessment data, and site detail overlaid over the latest aerial photo provided by NCOneMap (Appendix E and F). Credits for the base data include:

*Aerial Imagery:* NCOneMap (2010)

*Trails:* NC Department of Agriculture and Consumer Services, Kee Mapping & Surveying

*Streams, rivers, and lakes:* NC Flood Mapping Program

*Roads:* NC Department of Transportation

*Contours:* NC Flood Mapping Program

*County and forest boundaries:* NCOneMap

*Waterfalls and parking:* NC Department of Agriculture and Consumer Services

*Powerline easement location:* Pisgah Mapping Company