

MITIGATION PLAN

**Sandy Bridge Farm Restoration Site
Rutherford County, North Carolina
DMS Contract 6400
DMS Project Number 96920**

**Broad River Basin
Cataloging Unit 03050105**



Prepared for:

NCDEQ Division of Mitigation Services

NC Department of Environmental Quality
Division of Mitigation Services
1652 Mail Service Center
Raleigh, NC 27699

June 2016



DEPARTMENT OF THE ARMY
WILMINGTON DISTRICT, CORPS OF ENGINEERS
69 DARLINGTON AVENUE
WILMINGTON, NORTH CAROLINA 28403-1343

July 15, 2016

Regulatory Division

Re: NCIRT Review and USACE Approval of the Sandy Bridge Mitigation Plan;
SAW-2015-00827; DMS Project #96920

Mr. Tim Baumgartner
North Carolina Division of Mitigation Services
1652 Mail Service Center
Raleigh, NC 27699-1652

Dear Mr. Baumgartner:

The purpose of this letter is to provide the North Carolina Division of Mitigation Services (NCDMS) with all comments generated by the North Carolina Interagency Review Team (NCIRT) during the 30-day comment period for the Sandy Bridge Mitigation Plan, which closed on May 11, 2016. These comments are attached for your review.

We have evaluated the comments generated during the review process and determined that the concerns raised during the review have been adequately addressed by the provider in their final response letter. Therefore, the Mitigation Plan is considered approved with this correspondence provided the proposed changes are incorporated into the Final Mitigation Plan.

A copy of the Final Mitigation Plan is to be submitted with the Preconstruction Notification (PCN) application for Nationwide permit approval of the project along with a copy of this letter. All changes that were made to the Final Mitigation Plan should be summarized in an errata sheet included at the beginning of the document. If it is determined that the project does not require a Department of the Army permit, you must still provide a copy of the Final Mitigation Plan, along with a copy of this letter, to the appropriate USACE field office at least 30 days in advance of beginning construction of the project. Please note that this approval does not preclude the inclusion of permit conditions in the permit authorization for the project, particularly if issues mentioned above are not satisfactorily addressed. Additionally, this letter provides initial approval for the Mitigation Plan, but this does not guarantee that the project will generate the requested amount of mitigation credit. As you are aware, unforeseen issues may arise during construction or monitoring of the project that may require maintenance or reconstruction that may lead to reduced credit.

Thank you for your prompt attention to this matter. If you have questions regarding this letter, the mitigation plan review process, or the requirements of the Mitigation Rule, please call me at 919-846-2564.

Sincerely,

HUGHES.ANDREA.WADE.125
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Andrea Hughes
Mitigation Project Manager

Enclosures

Electronic Copies Furnished:
NCIRT Distribution List



REPLY TO
ATTENTION OF:

DEPARTMENT OF THE ARMY
WILMINGTON DISTRICT, CORPS OF ENGINEERS
69 DARLINGTON AVENUE
WILMINGTON, NORTH CAROLINA 28403-1343

CESAW-RG/Hughes

May 13, 2016

MEMORANDUM FOR RECORD

SUBJECT: Sandy Bridge Farm Restoration Site - NCIRT Comments During 30-day Mitigation Plan Review

PURPOSE: The comments listed below were posted to the NCDMS Mitigation Plan Review Portal during the 30-day comment period in accordance with Section 332.8(g) of the 2008 Mitigation Rule.

NCDMS Project Name: Sandy Bridge Farm Restoration Site, Rutherford County, NC

USACE AID#: SAW-2015-00827

NCDMS #: 96920

30-Day Comment Deadline: May 11, 2016

Paul Wiesner, NCDMS, April 28, 2016:

The table on page 35 incorrectly says "Vegetation will be monitored using the Carolina Vegetation Survey (CVS) protocols". Please note that this table will be updated in the final mitigation plan. The Full Delivery provider will monitor tree and shrubs by height and species. Volunteers will be recorded, but counted separately from planted trees. CVS protocols will not be utilized for this project.

Todd Bowers, USEPA, May 5, 2016:

1. General comments: Tables and Figures are not labeled as such and referred to by their number in the document text. Example: The table on page 15 in Section 4.0 has no table #. I am a bit disappointed to discover that the stream restoration work is now restricted to the area downstream of the bridge and that the protected area for wetland/riparian habitat has decreased somewhat from the original proposal. I am troubled by the sponsor possibly getting credit for wetlands within the 50-foot riparian zone adjacent to the stream. This is not spelled out directly and the maps make this approach unclear so I am assuming that some of the 6.94 acres of wetlands are within the riparian zone. Full stream credit requires the riparian zone and although in the past the IRT has given wetland credit in the riparian areas I do not think that this approach should continue unless it can be justified. Some clarity is needed to fully denote that the 0.67 acres of jurisdictional wetland on east side of T1 is not being fully rehabilitated but that only 0.59 acres of it is (removal of ditches?).
2. The unnamed tributary (T2) which flows into Tributary 1 (project stream) has a name: Logan Creek. This was found on the Conservation Easement Survey on page 51 (Appendix A)
3. Recommend the sponsor rename T1 to something appropriate such as Hughes Creek.
4. Page 1: Recommend addition of programmatic goal of providing wetland and stream mitigation credits to the NCDMS in-lieu fee program for compensatory mitigation needs in the GSA.

5. Page 1: The Water Quality Treatment Area shown on page 162 and 163 (Site Plans) is not mentioned in the document and should be included (or removed from site plans) as one of the objectives addressing the goal of protecting and improving water quality leaving the site.
6. Page 1: Add improving water quality leaving the site as a project goal.
7. Page 1: Add “planting a riparian buffer to stabilize stream banks, provide nutrient inputs to the stream and provide shade to aid thermal regulation of the stream” to the objectives.
8. Page 1: Add “improve aquatic habitat” as a goal and “addition of structures and large woody debris to improve aquatic habitat” as an objective.
9. Page 15: Baseline Information Table - NCDWQ should be changed to NCDWR
10. Page 15: The “mapped soil series” is Chewacla and Dogue (ChA and DoB). A footnote should be made that the analysis of soils does not match the mapped series as per the text found on page 3.
11. Page 15: A footnote should be added to clarify and justify that not all of the 1.38 acres of jurisdictional wetlands are included in “existing wetland size”. I have to assume here that the wetlands minus the 0.59 acres are just ditches.
12. Pages 18, 19, 21, 22, 25, 27, 31, 32 and 35: no table #. See comment above
13. Page 19: I’m a bit unclear on why the wetlands included in the jurisdictional determination are not jurisdictional. I understand they are mainly ditches used to drain the on-site wetlands but why are they not included as “jurisdictional”? W1 is 0.67 acres but only 0.59 acres is considered for rehab?
14. Page 22: Stream credit release schedule reserve is 10% and differs from text on page 23 which states 15% of credits held in reserve for bankfull events.
15. Page 23: Planting 968 stems per acre seems excessively dense especially when considering that 75% of the trees can die and the site satisfy the vegetation monitoring performance standard. This rate of mortality seems very wasteful of time and resources. Please consider planting at a stem density of 600-700 stems per acre.
16. Page 23: Recommend breaking out the plant communities that apply to the riparian zone (live stakes), wetland (Piedmont Alluvial Forest) and upland areas outside the stream buffer and wetland (Piedmont Alluvial Forest?). Including FAC and FACU species in the planting plan may be better suited for upland areas on-site.
17. Page 23: Recommend removing several species from the wetland planting plan due to 1) not included in Shafale 2012 and 2) not considered OBL-FACW. Consider removing *Acer rubrum*, *Cornus amomum*, *Hamamelis virginiana*, *Diospyros virginiana*, and *Quercus phellos*. Recommend adding *Lindera benzoin* and *Carpinus carolinana* as suitable understory species.
18. Page 25: The table lacks goals and objectives to address aquatic habitat and biology as well as water quality goals and objectives.
19. Page 26: does the project creek flow into unnamed tributary T2/Logan Creek or is it the other way around?
20. Page 26: Describe type and depth of “additional grading”.
21. Page 30: Need to delineate between wetland and riparian zone. Once again I am troubled by the overlap in credit implied here. Also would like to see the “water quality treatment area” outlined here.
22. Page 31: Include a beaver contingency plan in the maintenance plan table.
23. Page 31 and 32: State the number of consecutive days during the growing season needed to meet the minimum standard for wetland performance.
24. Page 33: Recommend separate vegetation monitoring for riparian zones and wetland areas.
25. Overall recommendation: Collection of baseline data to include water quality and benthic macroinvertebrates to better establish demonstrated functional lift at the end of the project. This project looks great for improving hydrology and stream geomorphology but there is also great potential for this highly degraded stream to have suitable habitat, improved water quality and an aquatic insect community that reflects those improvements.

26. Recommend at least one monitoring well and one vegetation plot set up outside the wetland restoration areas. This will demonstrate the limits of wetland hydrology and plant survival outside of the adjacent wetland area.

Travis Wilson, NCWRC, May 6, 2016:

Red maple is shown as a planted species, this is not necessary. Although Red maple is found in late successional forest communities it will establish as an early successional species on disturbed sites and should naturally recolonize in the project area. Planted species should be comprised of climax community species with the intent of reducing the temporal lag associated with restoring these systems in the absence of an existing seed source.

Mac Haupt, Virginia Baker, NCDWR, May 9, 2016:

1. Sandy Bridge Farm Restoration site is a good candidate for stream and wetland mitigation. The unnamed tributary to Catheys Creek and associated wetland appear to be highly degraded from years of agricultural land use and should benefit substantially from restorative measures. However DWR does have concerns related to the success and monitoring standards proposed.
2. DWR is concerned about the hydrology success criteria proposed for the Sandy Bridge Farm Restoration site (page 32). DWR recognizes that there is “inherent variability in site soils and associated drainage patterns” that would result in variable hydrologic conditions across the site, but still considers 6.5% to be too low for a restoration site that will be generating riverine wetland credits. DWR recommends raising the minimum well hydrologic success criteria to 10% which is consistent with what would be expected for riverine wetlands with Chewacla and Wehadkee soils. In addition, DWR would like to evaluate the model utilized in the spatial averaging before allowing its use a determinant of wetland hydrologic success.
3. DWR is concerned that the proposed restored wetland acreage may not be achieved throughout, especially closer to the edges and in areas further from the stream influence. We recommend that an additional well be added in the open area in the middle where none exists and a transect of wells be added closer to the SW edge.
4. It should be noted that during construction the wetland should be graded no more than 6-8” for restoration. Please further discuss the grading plans mentioned on page 26 and 28.
5. DWR does have some concern that the reference reach used for the design is located in a different basin and more importantly a different physiographic region (page 19).
6. Please further explain the stream Geomorphic Performance standards (page 32), what are the expected ranges for this proposed type of stream, how far different from the reference is considered stable and successful? DWR does have some reservations about maintaining channel stability along the restored reach since the designed bankfull channel will be “slightly undersized”.
7. DWR is concerned with not having the appropriate monitoring results to determine site performance success OR percent of site performance success needed for credit release during monitor years 2, 4, and 6. By year six it is certainly more likely to determine if a site is trending toward success, but this will certainly not be evident by year 2. If the site is not meeting or only partially meeting success criteria at the end of a detailed monitoring year this could be problematic for credit release the following year without accurate results. Additionally, site trends that can be evaluated with detailed monitoring methods such as stream cross-section monitoring and vegetative stem count data will not necessarily be identified with visual monitoring solely. Therefore, needed adaptive management strategies may be overlooked or addressed later in the monitoring period potentially delaying a site closeout.

8. How was the stream location that follows the west side of the site determined as opposed to further to the east closer to the north south running ditches? Were there soil indicators?

Andrea Hughes, USACE, May 11, 2016:

1. Page 21, Determination of Credits: Please separate the wetland rehabilitation and wetland re-establishment credits.
2. Page 22: Credit Release Schedules: Regarding early release, please note this provision is only for high-quality sites that have consistently and fully met all performance standards and have not had any major or reoccurring problems. Requests for early closure must be submitted in writing along with the year 5 or 6 monitoring report and justification for the request.
3. Page 23: Subsequent Credit Releases: For stream projects, a reserve of 10% of a site's total stream credits shall be released after two bank-full events.
4. Page 23: Mitigation Work Plan: We recommend removing *Acer rubrum* from the planting list or limit this species to 5% of planted species.
5. Page 24: Design Parameters: The plan states that the riffle cross-section has been designed smaller than typical bank full flow to encourage frequent overbank flooding into the stream/wetland complex. Please provide details regarding the design (difference?) and the rationale for the design (to meet wetland hydrology performance standards?).
6. Page 25: Design Parameters: Please provide additional details regarding the proposed grading for the wetland restoration areas.
7. Page 31: Performance Standards: The monitoring period is 7 years. Regarding early release, see comment above.
8. Page 31: Performance Standards, Vegetation: Within planted portions of the site, a minimum of 320 planted stems per acre must be present at year three; a minimum of 260 planted stems per acre must be present at year five; and a minimum of 210 planted stems per acre must be present at year seven. Individual plot data for planted species must be provided. Plot data cannot be averaged across plots over the entire site to obtain a single figure for stem density for the purposes of meeting performance standards.
9. Page 32: Performance Standards, Wetland: Hydrology performance should be based on gauge data that demonstrates saturation/inundation for 10% of the growing season (217 days) rather than a spatial average.
10. Page 32: Performance Standards, Geomorphic: Performance standards should relate directly to the goals and objectives, and the monitoring protocols for the project. The table on page ii lists goals, objectives, and monitoring protocols for the project. Please provide specific (quantitative) performance standards to document that the project is meeting these goals and objectives.
11. Page 33, Monitoring, Vegetation: Vegetation plots must be monitored for 7 years, with data collection occurring in years 1, 2, 3, 5, and 7.
12. Page 33, Monitoring, Wetland Hydrology: Well data must be monitored for 7 years with data collection in years 1, 2, 3, 4, 5, 6, and 7. Also, according to the field notes the provider was advised to install monitoring wells pre and post construction in order to generate wetland credits for areas adjacent to the stream. The pre-construction data should be provided in the mitigation plan.
13. Page 34, Monitoring, Geomorphology: Channel stability (i.e., cross-sections, bank pins, bed materials, etc.) must be monitored for 7 years, with data collection occurring in years 1, 2, 3, 5, and 7.
14. Page 34, Monitoring, Reporting: Planted vegetation must be in the ground for at least 180 days prior to the initiation of the first year of monitoring (Year 1).
15. Page 34, Monitoring, Reporting: Full monitoring reports must be provided in years 1, 2, 3, 5, and 7. Limited monitoring reports may be submitted for years 4 and 6.
16. Appendix A: Please provide a copy of the conservation easement document.

17. Appendix B: The project is located within the boundaries of a designated historic district. Please provide documentation to support the categorical exclusion.
18. Appendix B: Rutherford County T&E species include the Bog turtle, the Northern Long Ear bat, and the Indiana bat. It appears that construction activities may require tree removal on the lower end of the project. Please provide discussion regarding any effects the project may have on these or other known T&E species for Rutherford County.
19. Other: Regarding the project location, it appears that the project is located in close proximity to the Rutherford County Airport. Compensatory mitigation projects that have the potential to attract waterfowl and other bird species that might pose a threat to aircraft should not be sited within the limits specified by the Federal Aviation Administration Advisory Circular on Hazardous Wildlife Attracts on or near Airports (AC No: 150/5200-33, 5/1/97) currently 10,000 feet from the airport and 5 statute miles if the attractant may cause hazardous wildlife movement into or across the approach or departure airspace. Please provide written confirmation from the FAA that the mitigation project will not present a hazard to aircraft.

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Andrea Hughes
Mitigation Project Manager
Regulatory Division



Date: May 20, 2016

Todd Tugwell
Wilmington District, Corps of Engineers
69 Darlington Avenue
Wilmington, North Carolina 28403-1343

NCDMS Project Name: Sandy Bridge Farm Restoration Site, Rutherford County, NC
USACE AID#: SAW-2015-00827
NCDMS #: 96920

Dear Mr. Tugwell,

Please find below our responses in italics to the NCIRT Comments dated May 13, 2016 for the Sandy Bridge Farm Restoration Site Mitigation Plan. These changes will be made as outlined in the Final Mitigation Plan that will be resubmitted to NCDMS and included with the PCN application for the project.

Todd Bowers, USEPA, May 5, 2016:

1. General comments: Tables and Figures are not labeled as such and referred to by their number in the document text. Example: The table on page 15 in Section 4.0 has no table #.
This format generally follows the template provided by NCDMS for their mitigation plan in which most of the tables have their own section noted in the table of contents.

I am a bit disappointed to discover that the stream restoration work is now restricted to the area downstream of the bridge and that the protected area for wetland/riparian habitat has decreased somewhat from the original proposal.

The current extent of the project is the option NCDMS selected to best meet their mitigation needs and did not require the extra project length above the wooden bridge.

I am troubled by the sponsor possibly getting credit for wetlands within the 50-foot riparian zone adjacent to the stream. This is not spelled out directly and the maps make this approach unclear so I am assuming that some of the 6.94 acres of wetlands are within the riparian zone. Full stream credit requires the riparian zone and although in the past the IRT has given wetland credit in the riparian areas I do not think that this approach should continue unless it can be justified.

Sorry, it was not our intent to make this situation unclear. Yes, we are counting the wetland acreage in the riparian buffer as potential wetland credit. We have received guidance that this strategy is appropriate on past projects and believe that it is also suitable for this project since the stream and wetland complex are being restored as one community.

Some clarity is needed to fully denote that the 0.67 acres of jurisdictional wetland on east side of T1 is not being fully rehabilitated but that only 0.59 acres of it is (removal of ditches?).

Yes, this area was delineated as one unit of wetland in the JD (0.67 acre). Of this, 0.59 acre is wetland to be

rehabilitated and 0.08 acre is an existing ditch. Per recent communication with the USACE, we will also call the ditches rehabilitation, but at a 1:1 credit ratio. This will be revised and clarified in the mitigation plan as necessary.

2. The unnamed tributary (T2) which flows into Tributary 1 (project stream) has a name: Logan Creek. This was found on the Conservation Easement Survey on page 51 (Appendix A)
In general, we use NCDWR or USGS topographic maps for guidance with stream names. In this case, neither stream was a named stream. The streams are also not named in FEMA or NCDMS planning documents. The name Logan Creek likely came from historical land records uncovered during the survey and easement plat process and was not considered an official name. As such, we will leave both tributaries as T1 and T2.
3. Recommend the sponsor rename T1 to something appropriate such as Hughes Creek.
See above answer to #2.
4. Page 1: Recommend addition of programmatic goal of providing wetland and stream mitigation credits to the NCDMS in-lieu fee program for compensatory mitigation needs in the GSA.
We generally limit our goals to functional stream and wetland outcomes anticipated for the project. We discuss the use of the project as compensatory mitigation needs in other locations in the mitigation plan.
5. Page 1: The Water Quality Treatment Area shown on page 162 and 163 (Site Plans) is not mentioned in the document and should be included (or removed from site plans) as one of the objectives addressing the goal of protecting and improving water quality leaving the site.
We will add a description of the Water Quality Treatment Area in to Section 7.2. However, we view this feature as more of an ancillary treatment for a small portion of incoming stormwater and less of an integrated project component with measureable outcomes.
6. Page 1: Add improving water quality leaving the site as a project goal.
See answer to #5. Water quality Improvements are anticipated for the site as an ancillary benefit to the restoration activities. We did not include this as a project goal because it will not be a measured parameter in our monitoring program.
7. Page 1: Add “planting a riparian buffer to stabilize stream banks, provide nutrient inputs to the stream and provide shade to aid thermal regulation of the stream” to the objectives.
We have included planting a Piedmont Alluvial Forest as one objective, because we consider the whole site an integrated stream and wetland community, even if not all areas of the site achieve jurisdictional hydrology. Since we are not measuring nutrient levels and stream temperature as part of the anticipated project outcomes, they are not included in the primary objectives.
8. Page 1: Add “improve aquatic habitat” as a goal and “addition of structures and large woody debris to improve aquatic habitat” as an objective.
We did not include habitat, since the use of aquatic habitat as a goal has recently been thought to be too broad for stream restoration projects as discussed in Harman and other’s 2012 A Function-Based Framework for Stream Assessment and Restoration Projects. In addition, “Biology” is the top level of the stream functions pyramid and not all elements of this pyramid are within the control of the restoration project to effect a change clearly caused by project actions.
9. Page 15: Baseline Information Table - NCDWQ should be changed to NCDWR
This change will be made in the report.
10. Page 15: The “mapped soil series” is Chewacla and Dogue (ChA and DoB). A footnote should be made that the analysis of soils does not match the mapped series as per the text found on page 3.
This will be noted in the table.

11. Page 15: A footnote should be added to clarify and justify that not all of the 1.38 acres of jurisdictional wetlands are included in “existing wetland size”. I have to assume here that the wetlands minus the 0.59 acres are just ditches.
Yes, the 0.59 acres refers to the existing wetland that will be maintained and improved as part of the project as rehabilitation. A note will be added to clarify that there are also 0.79 acre of existing jurisdictional ditches.
12. Pages 18, 19, 21, 22, 25, 27, 31, 32 and 35: no table #.
See comment above for #1.
13. Page 19: I’m a bit unclear on why the wetlands included in the jurisdictional determination are not jurisdictional. I understand they are mainly ditches used to drain the on-site wetlands but why are they not included as “jurisdictional”? W1 is 0.67 acres but only 0.59 acres is considered for rehab?
In our past work with the USACE under NWP 27 permits, ditches have been considered eligible for 1:1 credit due to their low functional value. As mentioned in Comment #1 above, per recent communication with the USACE, we will rename the jurisdictional ditches as rehabilitation, but still propose a 1:1 credit ratio. This will be revised and clarified in the mitigation plan as necessary.
14. Page 22: Stream credit release schedule reserve is 10% and differs from text on page 23 which states 15% of credits held in reserve for bankfull events.
Apologies for this discrepancy – the text on page 23 has been changed to 10%; the 15% is applicable to a 5-year monitoring period.
15. Page 23: Planting 968 stems per acre seems excessively dense especially when considering that 75% of the trees can die and the site satisfy the vegetation monitoring performance standard. This rate of mortality seems very wasteful of time and resources. Please consider planting at a stem density of 600-700 stems per acre.
In our past experience, it is worth it to have the extra density to offset losses from deer and general mortality.
16. Page 23: Recommend breaking out the plant communities that apply to the riparian zone (live stakes), wetland (Piedmont Alluvial Forest) and upland areas outside the stream buffer and wetland (Piedmont Alluvial Forest?). Including FAC and FACU species in the planting plan may be better suited for upland areas on-site.
We view the entire site as an integrated community type and prefer to keep it as one planting zone. The planting mix includes a blend of species on the facultative spectrum, and has approximately 30% FAC/FACU species (following revisions recommended in #17 below).
17. Page 23: Recommend removing several species from the wetland planting plan due to 1) not included in Shafale 2012 and 2) not considered OBL-FACW. Consider removing *Acer rubrum*, *Cornus amomum*, *Hamamelis virginiana*, *Diospyros virginiana*, and *Quercus phellos*. Recommend adding *Lindera benzoin* and *Carpinus caroliniana* as suitable understory species.
*We have removed *Acer rubrum* and added *Lindera benzoin*. We have had good success with the other species in wetland plantings. *Carpinus caroliniana* can be hard to obtain and has lower survival rates.*
18. Page 25: The table lacks goals and objectives to address aquatic habitat and biology as well as water quality goals and objectives.
This was intentional following the recommendations in Harman and other’s 2012 A Function-Based Framework for Stream Assessment and Restoration Projects. The higher tier functions (Physicochemical and Biology) are only anticipated to be indirectly affected by the project.
19. Page 26: does the project creek flow into unnamed tributary T2/Logan Creek or is it the other way around?
The project watershed for T1 is 1.31 square miles and the watershed for T2 is approximately 1.8 square

miles. As such, we consider T1 to flow into T2.

20. Page 26: Describe type and depth of “additional grading”.
Additional grading will be completed to break up compacted soil from cattle impacts and restore minor variations in site topography from ditching. Grading depth will be limited to 6-8” below the surface.
21. Page 30: Need to delineate between wetland and riparian zone. Once again I am troubled by the overlap in credit implied here. Also would like to see the “water quality treatment area” outlined here.
See previous response to differentiation between wetland and riparian zones. The water quality treatment area will be added to the Proposed Mitigation Type map.
22. Page 31: Include a beaver contingency plan in the maintenance plan table.
*The following has been added to the maintenance plan table.
Beaver Impacts: The site will be inspected semi-annually for any beaver impacts that are causing harm or damage to the project’s stated goals. If necessary, beaver dams will be dismantled. USDA APHIS North Carolina Wildlife Services will be contacted if additional assistance is required in controlling or removing beavers from the project.*
23. Page 31 and 32: State the number of consecutive days during the growing season needed to meet the minimum standard for wetland performance.
The last sentence in the second paragraph in the Wetland Hydrologic Performance section has been modified to read: These data will determine if the wetland meets the hydrology success criterion of the water table being within 12 inches of the ground surface continuously for 10% or more of the growing season (22 days for Rutherford County’s growing season of 217 days).
24. Page 33: Recommend separate vegetation monitoring for riparian zones and wetland areas.
See previous comments on this issue.
25. Overall recommendation: Collection of baseline data to include water quality and benthic macroinvertebrates to better establish demonstrated functional lift at the end of the project. This project looks great for improving hydrology and stream geomorphology but there is also great potential for this highly degraded stream to have suitable habitat, improved water quality and an aquatic insect community that reflects those improvements.
Water quality and benthic macroinvertebrate monitoring are not typically included as part of NCDMS projects. As per the NCD stream functions pyramid mention in #23, improvements in these areas are not directly controlled by the project and as such are not generally included in project goals or monitoring.
26. Recommend at least one monitoring well and one vegetation plot set up outside the wetland restoration areas. This will demonstrate the limits of wetland hydrology and plant survival outside of the adjacent wetland area.
The areas outside of the planned mitigation will be monitored through visual monitoring.

Travis Wilson, NCWRC, May 6, 2016:

Red maple is shown as a planted species, this is not necessary. Although Red maple is found in late successional forest communities it will establish as an early successional species on disturbed sites and should naturally recolonize in the project area. Planted species should be comprised of climax community species with the intent of reducing the temporal lag associated with restoring these systems in the absence of an existing seed source.

Red maple has been removed from the planting list.

Mac Haupt, Virginia Baker, NCDWR, May 9, 2016:

1. Sandy Bridge Farm Restoration site is a good candidate for stream and wetland mitigation. The unnamed tributary to Catheys Creek and associated wetland appear to be highly degraded from years of agricultural land use and should benefit substantially from restorative measures. However DWR does have concerns related to the success and monitoring standards proposed.
2. DWR is concerned about the hydrology success criteria proposed for the Sandy Bridge Farm Restoration site (page 32). DWR recognizes that there is “inherent variability in site soils and associated drainage patterns” that would result in variable hydrologic conditions across the site, but still considers 6.5% to be too low for a restoration site that will be generating riverine wetland credits. DWR recommends raising the minimum well hydrologic success criteria to 10% which is consistent with what would be expected for riverine wetlands with Chewacla and Wehadkee soils. In addition, DWR would like to evaluate the model utilized in the spatial averaging before allowing its use a determinant of wetland hydrologic success.
We use ArcMap to produce hydrologic contours from the point well data rather than a model per se. Based on the contours, we evaluate whether there are any portions of the site not meeting the proposed criterion or not. However, based on your response and feedback from USACE, we will removal the averaging language. The hydrologic success criteria will be 10%.
3. DWR is concerned that the proposed restored wetland acreage may not be achieved throughout, especially closer to the edges and in areas further from the stream influence. We recommend that an additional well be added in the open area in the middle where none exists and a transect of wells be added closer to the SW edge.
We will add another well to the center of the site as well as another well along the SW edge (which makes three wells total along that boundary).
4. It should be noted that during construction the wetland should be graded no more than 6-8” for restoration. Please further discuss the grading plans mentioned on page 26 and 28.
We agree that wetland grading should go no deeper than 6-8” and will add this to the mitigation plan. Additional grading will be used as needed to break up compacted soil from livestock and to restore minor variations in site topography from ditching.
5. DWR does have some concern that the reference reach used for the design is located in a different basin and more importantly a different physiographic region (page 19).
We believe this reference is appropriate given that both streams are in the Piedmont and that we are just using the generalized planform reference values. We have found these planform values are typical throughout the Piedmont for a stream with these characteristics. The sediment size is similar between the two sites – D50 of 7.5 mm and D84 of 16 mm at the reference site compared to D50 ranges of 0.21-6 mm and D84 ranges of 2.8-16 mm at the project site (lower ranges reflect influence of high rates of bank erosion at the bottom of the site).
6. Please further explain the stream Geomorphic Performance standards (page 32), what are the expected ranges for this proposed type of stream, how far different from the reference is considered stable and successful? DWR does have some reservations about maintaining channel stability along the restored reach since the designed bankfull channel will be “slightly undersized”.
The geomorphological results from the monitoring will be compared primarily to the design and as-built conditions to see what deviations exist rather than the reference values. We will then evaluate any changes to determine if there are trends leading toward an unstable condition using our best professional judgement. In the past, we have not used strict numerical limits to judge project success.
7. DWR is concerned with not having the appropriate monitoring results to determine site performance success OR percent of site performance success needed for credit release during monitor years 2, 4, and 6. By year six it is certainly more likely to determine if a site is trending toward success, but this will certainly not be

evident by year 2. If the site is not meeting or only partially meeting success criteria at the end of a detailed monitoring year this could be problematic for credit release the following year without accurate results. Additionally, site trends that can be evaluated with detailed monitoring methods such as stream cross-section monitoring and vegetative stem count data will not necessarily be identified with visual monitoring solely. Therefore, needed adaptive management strategies may be overlooked or addressed later in the monitoring period potentially delaying a site closeout.

A full set of monitoring has been added for Monitoring Year 2.

8. How was the stream location that follows the west side of the site determined as opposed to further to the east closer to the north south running ditches? Were there soil indicators?

The stream was located in the proposed position based on communications from the landowner that suggested the stream was pushed to the east away from its original position. No strong indicators were found in the soil profiles one way or another – it is a somewhat atypical soil in showing hydrologic indicators.

Andrea Hughes, USACE, May 11, 2016:

1. Page 21, Determination of Credits: Please separate the wetland rehabilitation and wetland re-establishment credits.

This has been added to the Determination of Credits table.

2. Page 22: Credit Release Schedules: Regarding early release, please note this provision is only for high-quality sites that have consistently and fully met all performance standards and have not had any major or reoccurring problems. Requests for early closure must be submitted in writing along with the year 5 or 6 monitoring report and justification for the request.

Noted – The seven year credit release schedules are included in the report. We acknowledge the above comment and note that most sites will not be candidates for early closure, however; we have included early release language to cover that circumstance should the site warrant special consideration.

3. Page 23: Subsequent Credit Releases: For stream projects, a reserve of 10% of a site's total stream credits shall be released after two bank-full events.

This has been changed on page 23; the language in there was for a 5-year monitoring scenario.

4. Page 23: Mitigation Work Plan: We recommend removing *Acer rubrum* from the planting list or limit this species to 5% of planted species.

Acer rubrum has been removed from the planting list.

5. Page 24: Design Parameters: The plan states that the riffle cross-section has been designed smaller than typical bank full flow to encourage frequent overbank flooding into the stream/wetland complex. Please provide details regarding the design (difference?) and the rationale for the design (to meet wetland hydrology performance standards?).

Yes, we believe a high width-to-depth ratio and smaller channel area are most suitable for this location due to the broad floodplain and riparian wetlands to be restored. The typical riffle cross-section has been intentionally designed smaller than the typical bankfull dimensions for the site with an area of 12.7 square feet and a width of 15 feet. Based on the average bankfull area determined for the site of 14.6 square feet, the proposed channel is sized at approximately 75% of the typical bankfull value.

6. Page 25: Design Parameters: Please provide additional details regarding the proposed grading for the wetland restoration areas.

Additional grading will be used as needed to break up compacted soil from livestock and to restore minor variations in site topography from ditching. A limit of approximately 6-8" from the surface will be used for the depth of grading.

7. Page 31: Performance Standards: The monitoring period is 7 years. Regarding early release, see comment

above.

Noted, thank you.

8. Page 31: Performance Standards, Vegetation: Within planted portions of the site, a minimum of 320 planted stems per acre must be present at year three; a minimum of 260 planted stems per acre must be present at year five; and a minimum of 210 planted stems per acre must be present at year seven. Individual plot data for planted species must be provided. Plot data cannot be averaged across plots over the entire site to obtain a single figure for stem density for the purposes of meeting performance standards.
The 320 stems per acre has been added to the performance standards and we added that individual plot data will be provided.
9. Page 32: Performance Standards, Wetland: Hydrology performance should be based on gauge data that demonstrates saturation/inundation for 10% of the growing season (217 days) rather than a spatial average.
We have removed the spatial average language. The hydrologic success criteria is 10%.
10. Page 32: Performance Standards, Geomorphic: Performance standards should relate directly to the goals and objectives, and the monitoring protocols for the project. The table on page ii lists goals, objectives, and monitoring protocols for the project. Please provide specific (quantitative) performance standards to document that the project is meeting these goals and objectives.
On past projects, we have not used numerical criteria in evaluating geomorphic success. Each project is expected to experience some evolution following implementation and is evaluated using our professional judgement in relation to the design values and any relevant reference values.
11. Page 33, Monitoring, Vegetation: Vegetation plots must be monitored for 7 years, with data collection occurring in years 1, 2, 3, 5, and 7.
We have added a full scope of monitoring for Monitoring Year 2.
12. Page 33, Monitoring, Wetland Hydrology: Well data must be monitored for 7 years with data collection in years 1, 2, 3, 4, 5, 6, and 7. Also, according to the field notes the provider was advised to install monitoring wells pre and post construction in order to generate wetland credits for areas adjacent to the stream. The pre-construction data should be provided in the mitigation plan.
Yes, we are planning on monitoring the site every year for wetland hydrology as shown in the table on page 35. No gauges were installed due to the difficulty with the landowner's livestock disturbing gauges and anticipated construction period early in this growing season.
13. Page 34, Monitoring, Geomorphology: Channel stability (i.e., cross-sections, bank pins, bed materials, etc.) must be monitored for 7 years, with data collection occurring in years 1, 2, 3, 5, and 7.
We have added a full scope of monitoring for Monitoring Year 2.
14. Page 34, Monitoring, Reporting: Planted vegetation must be in the ground for at least 180 days prior to the initiation of the first year of monitoring (Year 1).
We have added this note to Vegetation Monitoring Section on page 33.
15. Page 34, Monitoring, Reporting: Full monitoring reports must be provided in years 1, 2, 3, 5, and 7. Limited monitoring reports may be submitted for years 4 and 6.
We have added a full scope of monitoring for Monitoring Year 2.
16. Appendix A: Please provide a copy of the conservation easement document.
This has been added to this appendix.
17. Appendix B: The project is located within the boundaries of a designated historic district. Please provide documentation to support the categorical exclusion.
We will provide you a copy of the Categorical Exclusion document, which should cover Comments #17-19.

18. Appendix B: Rutherford County T&E species include the Bog turtle, the Northern Long Ear bat, and the Indiana bat. It appears that construction activities may require tree removal on the lower end of the project. Please provide discussion regarding any effects the project may have on these or other known T&E species for Rutherford County.

In addition to the language provided in the approved Categorical Exclusion Report forwarded to the Corps on 5-20-16, the following information is provided:

The only trees that could be disturbed on the project are at the tie-in to Tributary 2 at the very bottom of the project. KCI will inspect any and all trees prior to removal (if removal is even necessary) to ensure they are not candidate roost trees for the Indiana bat or the Northern long-eared bat.

Regarding the bog turtle, while this species is not subject to Section 7 consultation KCI will avoid areas that may be suitable for bog turtle habitat. At this time the existing .59 acre wetland that will be rehabilitated through ditch filling may have some characteristics as BT habitat. This area will not be disturbed during construction other than to fill the ditch that currently partially drains the wetland. This activity will occur within the existing ditches and not within the wetland area.

19. Other: Regarding the project location, it appears that the project is located in close proximity to the Rutherford County Airport. Compensatory mitigation projects that have the potential to attract waterfowl and other bird species that might pose a threat to aircraft should not be sited within the limits specified by the Federal Aviation Administration Advisory Circular on Hazardous Wildlife Attracts on or near Airports (AC No: 150/5200-33, 5/1/97) currently 10,000 feet from the airport and 5 statute miles if the attractant may cause hazardous wildlife movement into or across the approach or departure airspace. Please provide written confirmation from the FAA that the mitigation project will not present a hazard to aircraft.

Please see the Categorical Exclusion for further background information. As part of Rutherford County's approval of this project located near the airport, KCI will perform monthly surface water monitoring in the beginning of post-restoration period to document that ponding is not occurring for significant periods of time such that additional waterfowl would be attracted to the site.

20. Additional Comment via email (Hughes): The Rule requires that a mitigation plan include performance criteria to demonstrate the project is meeting goals and objectives. Given our concerns related to design geometry of the channel, we will need performance criteria to demonstrate that the channel is stable and functioning as anticipated. At a minimum, bank height ratios should not exceed 1.2 and entrenchment ratios should be 2.2 or greater. In addition, all riffle cross-sections should fall within the parameters defined for channels of the appropriate stream type.

Added paragraph to the MP that states: "The bank height ratios should not exceed 1.2 and the entrenchment ratios should be 2.2 or greater. All riffle cross-sections should fall within the parameters for the appropriate stream type. If the monitoring results show that there are morphological parameters that fall outside of the typical ranges for the designed stream type, an assessment of the cross-section and stream reach will be conducted to determine if this change is indicative of a destabilizing trend or a stable shift in channel dimensions."

Please contact me if you have any questions or would like clarification concerning these responses.

Sincerely,

Timothy J. Morris
Project Manager

MITIGATION PLAN

Sandy Bridge Farm Restoration Site
Rutherford County, North Carolina
DMS Contract 6400
DMS Project Number 96920

Broad River Basin
Cataloging Unit 03050105

Prepared for:

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June 2016

EXECUTIVE SUMMARY

This mitigation plan has been written in conformance with the requirements of the following:

- *Federal rule for compensatory mitigation project sites as described in the Federal Register Title 33 Navigation and Navigable Waters Volume 3 Chapter 2 Section § 332.8 paragraphs (c)(2) through (c)(14).*
- *NCDEQ Division of Mitigation Services In-Lieu Fee Instrument signed and dated July 28, 2010*

These documents govern DMS operations and procedures for the delivery of compensatory mitigation.

The Sandy Bridge Farm Restoration Site (SBFRS) is a full-delivery mitigation project being developed for the North Carolina Division of Mitigation Services (DMS) in the Broad River Basin (03050105 8-digit cataloging unit) in Rutherford County, North Carolina. The site's natural hydrologic regime has been substantially modified through the relocation of the existing stream channel, the installation of drainage ditches, and the manipulation of the soil profile in order to maximize the use of the area for grazing. This site was identified in the Catheys Creek Local Watershed Plan as a potential stream and wetland restoration project (NCEEP 2005). The site offers the chance to restore impacted agricultural lands to a functioning stream and wetland ecosystem with enhanced water quality, restored hydrology, and improved fish and wildlife habitat (NCEEP 2009).

The North Carolina Ecosystem Enhancement Program's (NCEEP) publication in 2009 identified HUC 03050105070020 (Catheys Creek) as a Targeted Local Watershed (TLW). The goals and priorities for SBFRS are based on the information presented in the Broad River Basin Restoration Priorities: to restore wetland and stream functions to maintain and enhance water quality, restore hydrology, and improve fish and wildlife habitat (NCEEP 2009). The project goals are in line with the following basin priorities:

- Reduce sources of sediment and nutrients by restoring riparian buffer vegetation, excluding livestock, and restoring natural geomorphology.
- Prioritize project implementation in the Catheys Creek local watershed planning area.

The goals for the project are to:

- Restore a channelized stream to a meandering C-type channel with a floodplain.
- Buffer and reduce sediment impacts to the project stream.
- Restore a Piedmont Alluvial Forest Community.
- Restore a wetland hydroperiod to drained and livestock-impacted land.

The project goals will be addressed through the following objectives:

- Relocate a channelized stream to its historic landscape position.
- Install an appropriately-sized channel cross-section.
- Install bedform diversity with pools, riffles, and habitat structures.
- Demarcate the project easement boundaries and fence out livestock.
- Plant the site with native trees and shrubs and a herbaceous seed mix that supports the development of a Piedmont Alluvial Forest.
- Fill field ditches and redevelop wetland microtopography to slow the flow of surface and subsurface drainage.

SBFRS is located approximately three miles north-northeast of Rutherfordton, North Carolina in Rutherford County. Specifically, the site is approximately 2.2 miles north on Rock Road from the intersection of US 64 and US 74A. The center of the site is at approximately 35.407997° N and -81.937000° W near the south-central portion of the Rutherfordton North USGS Quadrangle.

The SBFRS will aim to restore and establish a functional stream/wetland complex with 5.56 acres of wetland re-establishment and 1.38 acres of wetland rehabilitation. Select ditches across the site will be modified or filled and incoming surface inputs and seeps will be integrated to create a stream/wetland complex. In addition, approximately 1,626 linear feet of Tributary 1 to Catheys Creek will be improved with Priority 1 stream restoration to re-meander the stream and elevate the groundwater table.

Sandy Bridge Farm Restoration Site, Rutherford County DMS Contract 6400; DMS Project Number 96920									
Mitigation Credits									
	Stream		Riparian Wetland		Non-riparian Wetland		Buffer	Nitrogen Nutrient Offset	Phosphorous Nutrient Offset
Type	R	RE	R	RE	R	RE			
Linear Feet/Acres	1,626		6.94						
Credits	1,626		6.74						
TOTAL CREDITS	1,626		6.74		-				

R= Restoration RE= Restoration Equivalent of Creation or Enhancement

Once site grading is complete, the riparian and wetland community will be planted as a Piedmont Alluvial Forest community (Schafale 2012). The site will be monitored for a minimum of five years or until the success criteria are met. The table below summarizes the project goals and objectives that will lead to functional improvements and the monitoring tools that will be used to track these changes to the site.

Goals	Objective	Functional Level	Function-Based Parameter Effects	Monitoring Measurement
Restore a channelized stream to a meandering C-type channel with a floodplain	Relocate a channelized stream to its historic landscape position	Hydraulics	Floodplain Connectivity	Flood Frequency Bank Height Ratio and Entrenchment Ratio
	Install an appropriately-sized channel cross-section	Geomorphology	Bank Migration/Lateral Stability	Cross-Sectional Survey Visual Inspection of Bank Stability
	Install bedform diversity with pools, riffles, and habitat structures	Geomorphology	Bed Form Diversity	Percent Riffle and Pool, Facet Slopes, Visual Inspection Visual Inspection of Feature Maintenance
Buffer and reduce sediment impacts to the project stream	Demarcate the project easement boundaries and fence out livestock	Geomorphology	Bed Material Characterization	Pebble Count
Restore a Piedmont Alluvial Forest Community	Plant the site with native trees and shrubs and a herbaceous seed mix that supports the development of a Piedmont Alluvial Forest	Geomorphology/ Wetland Species Composition	Vegetation	Density
				Species Composition/Diversity
				Exotic and Nuisance Species

Restore a wetland hydroperiod to drained and livestock-impacted land	Fill field ditches and redevelop wetland microtopography to slow the flow of surface and subsurface drainage	Wetland Hydrology	Groundwater Saturation/ Surface Ponding	Percent Saturation Within 12 inches
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Table adapted from Harman et al. 2012

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- Appendix D. Project Plan Sheets

1.0 RESTORATION PROJECT GOALS AND OBJECTIVES

DMS develops River Basin Restoration Priorities (RBRP) to guide its restoration activities within each of the state's 54 cataloging units. RBRPs delineate specific watersheds that exhibit both the need and opportunity for wetland, stream and riparian buffer restoration. These watersheds are called Targeted Local Watersheds (TLWs) and receive priority for DMS planning and restoration project funds.

The 2009 Broad River Basin RBRP identified HUC 03050105070020 (Catheys Creek) as a Targeted Local Watershed (NCEEP 2009). The watershed is characterized by 57% forest; however, only 1% is protected as conservation lands, with past impacts to streams including sedimentation and nonpoint source agricultural pollution (NCEEP 2009). This watershed is a TLW due to concerns about degradation from agricultural and urban land use impacts within its boundary and the many opportunities for mitigation.

The 2009 Broad River Basin RBRP identified impacts from agriculture and urbanization, including erosion, excessive sedimentation, and stormwater pollution (heavy metals, fecal coliforms, and solid waste) as major stressors within this TLW (NCEEP). The Sandy Bridge Farm Restoration Site (SBFRS) was identified as an opportunity to improve and protect stream and wetland habitat and functions within the TLW. The goals and priorities for SBFRS are based on the information presented in the Broad River Basin Restoration Priorities, to protect and improve water quality throughout the Basin by reducing sediment and nutrient inputs into streams and rivers and to support efforts to restore local watersheds (NCEEP 2009). The project goals are in line with the following basin priorities:

- Reduce sources of sediment and nutrients by restoring riparian buffer vegetation, excluding livestock, and restoring natural geomorphology.
- Prioritize project implementation in the Catheys Creek local watershed planning area.

The goals for the project site will include:

- Restore a channelized stream to a meandering C-type channel with a floodplain.
- Buffer and reduce sediment impacts to the project stream.
- Restore a Piedmont Alluvial Forest Community.
- Restore a wetland hydroperiod to drained and livestock-impacted land.

The following objectives will be implemented to achieve these goals:

- Relocate a channelized stream to its historic landscape position.
- Install an appropriately-sized channel cross-section.
- Install bedform diversity with pools, riffles, and habitat structures.
- Demarcate the project easement boundaries and fence out livestock.
- Plant the site with native trees and shrubs and a herbaceous seed mix that supports the development of a Piedmont Alluvial Forest.
- Fill field ditches and redevelop wetland microtopography to slow the flow of surface and subsurface drainage.

2.0 SITE SELECTION

2.1 Directions

SBFRS is located on two parcels that are approximately 3.0 miles north-northeast of Rutherfordton, North Carolina in the central portion of Rutherford County. Specifically, the site is approximately 2.2 miles north on Rock Road from the intersection of US 64 and US 74A. To reach the site from Raleigh: proceed west on I-40 for approximately 188 miles until Exit 103 for US-64. Then travel on US-64 west towards

Morganton/Rutherfordton for approximately 27 miles. Turn left onto Oscar Justice Road and then 1 mile later turn left onto Rock Road. SBFRS will be approximately 0.5 mile ahead on the left. Section 2.3 shows the Vicinity Map for the site.

2.2 Site Selection

SBFRS is part of the 03050105070020 Watershed Cataloging Unit (Catheys Creek) located within the Broad River Basin. The Broad River Basin spans both the Blue Ridge and Piedmont ecoregions in North Carolina. Its headwaters originate in the Blue Ridge Mountains, where its confluence with the First Broad and Second Broad rivers flows across the South Carolina border, ultimately making its way to the Atlantic Ocean (NCEEP 2009). The majority of developed land in the watershed is used for agricultural and urban purposes. The percentage of agricultural land has increased from 23% to 27% of the watershed area between 1992 and 2001. Similarly, the percentage of urban land use in the basin has increased from 4% to 9% during this time period. This development has resulted in a decrease in the amount of forested land in the Broad River Basin (NCDWQ 2008). The trends noted in the overall basin for the Broad River are pertinent to Catheys Creek (03050105070020), the 14-digit HUC subwatershed within which SBFRS is located. This 14-digit HUC has been identified by the North Carolina Division of Mitigation Services (DMS) as a TLW. Section 2.4 Watershed Map shows the site in relation to the project watershed. The project is also located in the Catheys Creek Local Watershed Plan (LWP) study area, and is within the Sub-Watershed Focus Area 8 of the LWP. The Critical Area Analysis Report for the LWP pinpointed the SBFRS as Site 08-01, an ideal candidate for stream and/or wetland restoration (NCEEP 2005). The report refers to Tributary 1, a channelized, unnamed tributary to Catheys Creek, which runs through the center of SBFRS. Excessive sedimentation and livestock access are primary stressors within the LWP area, and both of these impacts are affecting the proposed project site.

The project site is bounded by interspersed pastureland and forested land to the east, agricultural land and Rock Road to the north-northwest, and Catheys Creek to the southwest. The site has a long history of hydrologic modification in order to allow for grazing to take place on the property. The existing site conditions are shown in Section 2.6 and seen in site photographs (Section 2.8). Within the 8-digit cataloging unit, the Catheys Creek drainage (03050105070020) remains only moderately affected by urban development, having its start northwest of Union Mills, NC and then reaching its confluence with the Second Broad River after flowing under Rock Corner Road northeast of Bostic, NC. The site receives seepage flow from the project watershed's northeastern edge and overland flow from the western edge along the levee of Catheys Creek. The nearest named downstream water body is Catheys Creek, which flows immediately to the west and then south of the project site. The section of Catheys Creek along the site is DWQ 9-41-13-(0.5), which is classified for surface water as WS-V (Water Supply – upstream). This reach of Catheys Creek was not listed as impaired under the 2014 303(d) list, but the stream is listed as impaired for aquatic life starting approximately 4 miles downstream of the project.

2.2.1 Historic Site Geology/Geomorphologic Setting

The site lies within the Southern Inner Piedmont (Level IV 45a) ecoregion of the Piedmont physiographic province. The region is a transitional zone from the Blue Ridge to the Piedmont. The general roughness of the landscape decreases to the southeast away from the mountains. The region is now mostly forested, with major forest types of oak-pine and oak-hickory. The rolling to hilly well-dissected upland contains mostly gneiss and schist bedrock that is covered with clayey and micaceous saprolite. The geology at the site is classified as part of the Migmatitic Granitic Gneiss, which is foliated to massive, granitic to quartz dioritic, biotite gneiss and amphibolite.

The soils at the site were examined for their wetland potential. The soil data sheets and a map of the soil borings are included in Appendix C. According to the Soil Survey of Rutherford County, the majority of the site is mapped as Chewacla loam with a small portion of Dogue loam mapped on the northeastern portion of the site. Detailed soils mapping performed by a KCI licensed soil scientist confirmed that the soils on the site have been manipulated to create the levee systems used to relocate the stream channel. Due to the disturbance in the upper profile, an exact soil type could not be identified, but the soils are most similar to a Wehadkee-Chewacla association. Hydric indicators are prevalent in the soil profile and include mottles, concretions, and oxidized root channels.

2.2.2 Chronology of Impacts

SBFRS has undergone significant modifications that have altered the site hydrology and vegetation. Historic aeriels were examined for any information about how the site hydrology and vegetation have changed over recent history. The reviewed aeriels are found in Figure 2.7. Historic aeriels were obtained from the USGS EarthExplorer, USGS DOQQs, and NC OneMap for 1950, 1963, 1975, 1984, 1993, 1998, 2005, and 2010.

Evaluation of the current site conditions noted the stream channel running along the valley wall, ditching and draining of the adjacent fields/seepage area, and manipulation of the soil profile. An abbreviated chronology of impacts can be described as follows:

1950 – The site is completely forested. The aerial image is not of a quality to identify specific stream corridors or wetland conditions.

1963 - The southwestern half of the site has been cleared, and the stream channel has been pushed to the northeast along the valley wall. The seeps to the northwest of the stream have been ditched around their periphery but remain forested. From this image one can deduce that the seeps drained to the stream in its historic position. The stream was then pushed closer to the seeps in an attempt to gain control over the seepage water.

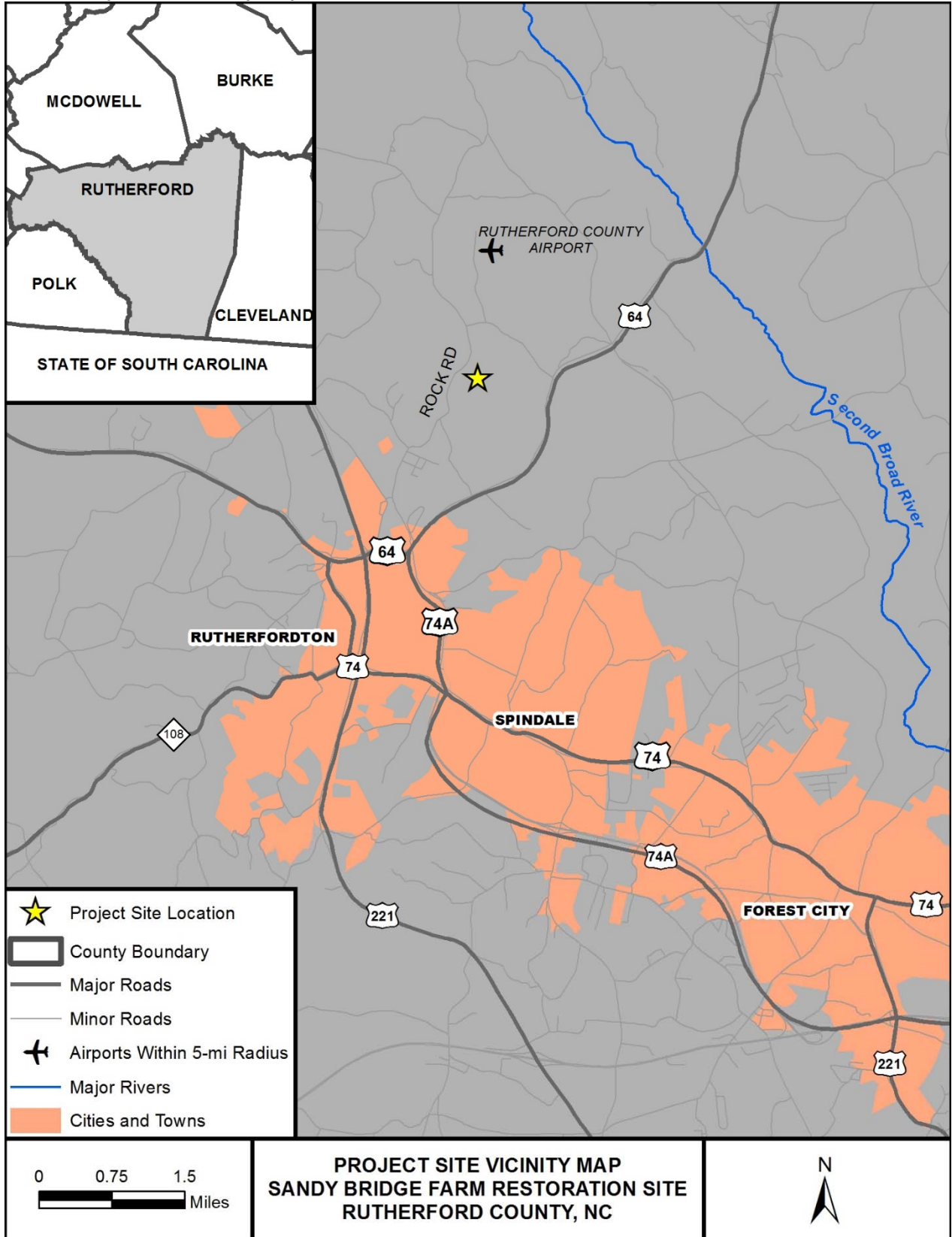
1975 – At this point in time, the site is completely deforested.

1993 – The movement of the stream to the eastern side of the valley is very apparent in the photograph. Ditches have been constructed to drain the southwest and northeast of the stream.

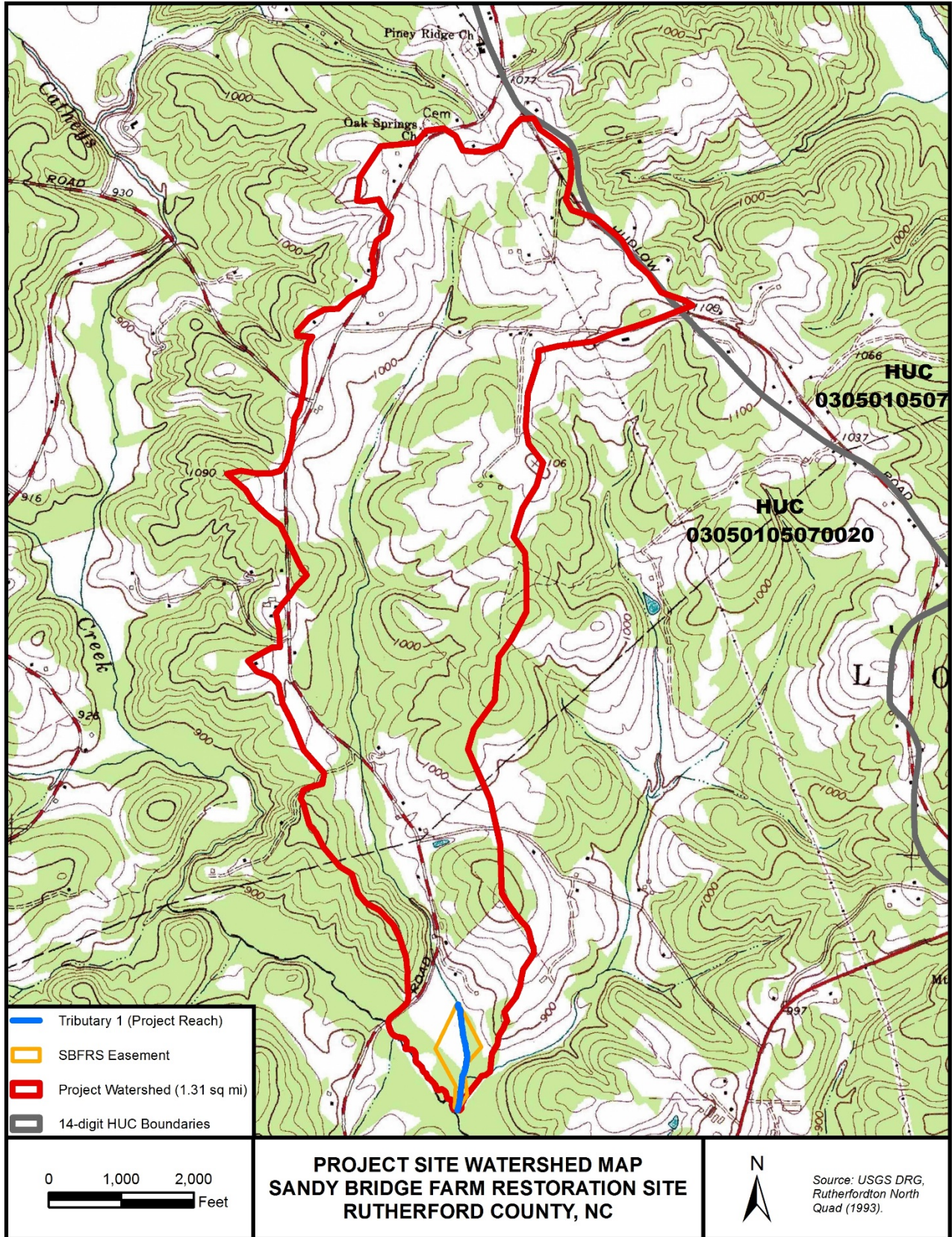
2010 – This photo shows continued use of the area for grazing, with numerous fences dividing the site into pastures as well as evident wet conditions in the field.

Based on field evaluations and historic photograph interpolation, Tributary 1 is believed to have flowed across the floodplain in a shallow valley, which received drainage from several large seeps at the toe of the slope to the northeast until reaching Catheys Creek. This condition created a wetland seep complex alongside the original stream habitat. After the site was cleared, the channel was relocated adjacent to the seeps in an attempt to carry both seepage and stream flow and drain the adjacent wetlands. The stream was held in place by channelizing the flow from the wetland area with remnant spoil in places. This was effective in relocating the channel but did not effectively drain the wetlands; additional ditching was later added in the adjacent wetland areas to facilitate complete drainage. The wetlands have been effectively drained aside from a 0.59-acre degraded remnant on the northeastern side of the existing channel of Tributary 1 and 0.79 acre of jurisdictional ditches for a total of 1.38 acres of existing wetlands.

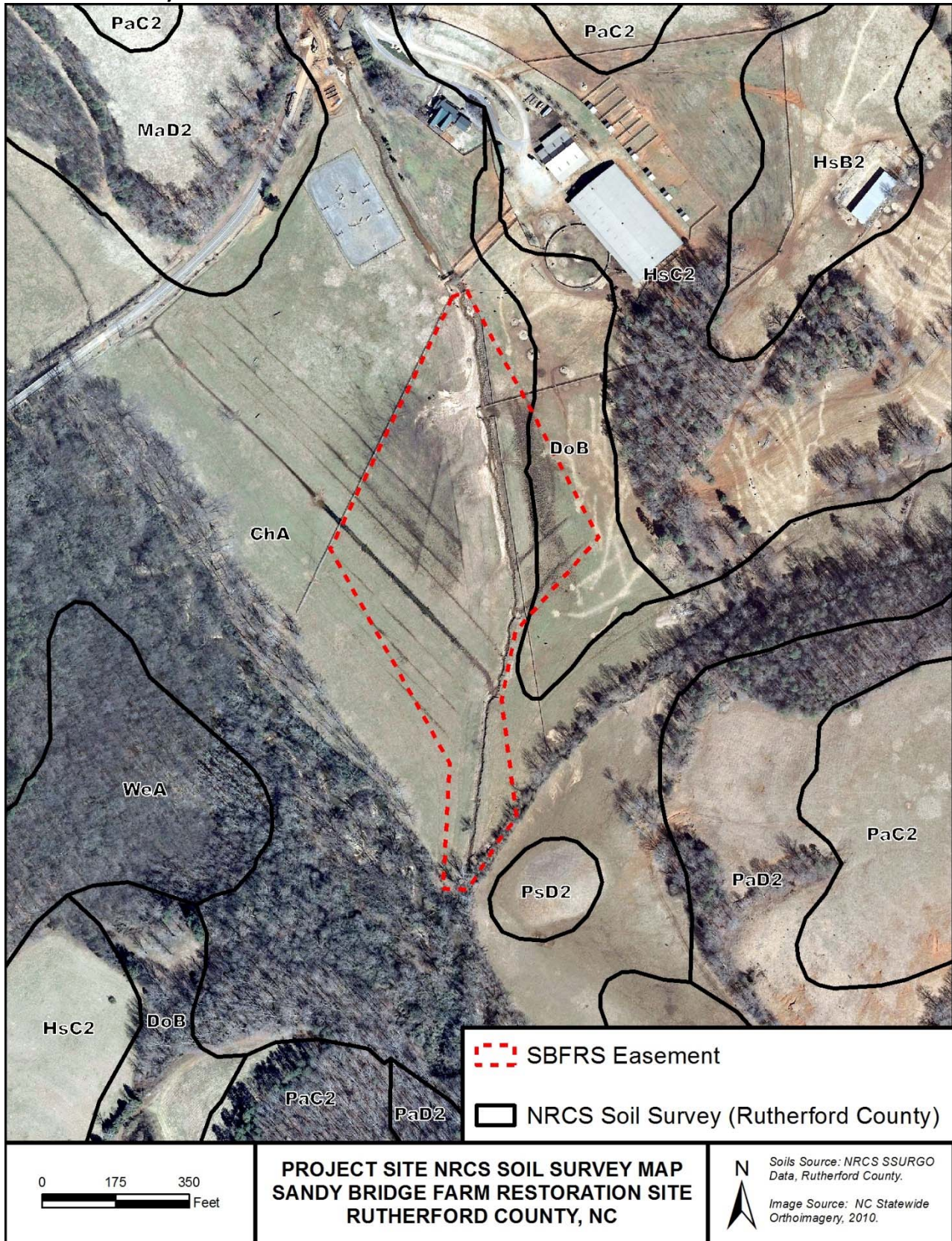
2.3 Project Site Vicinity Map



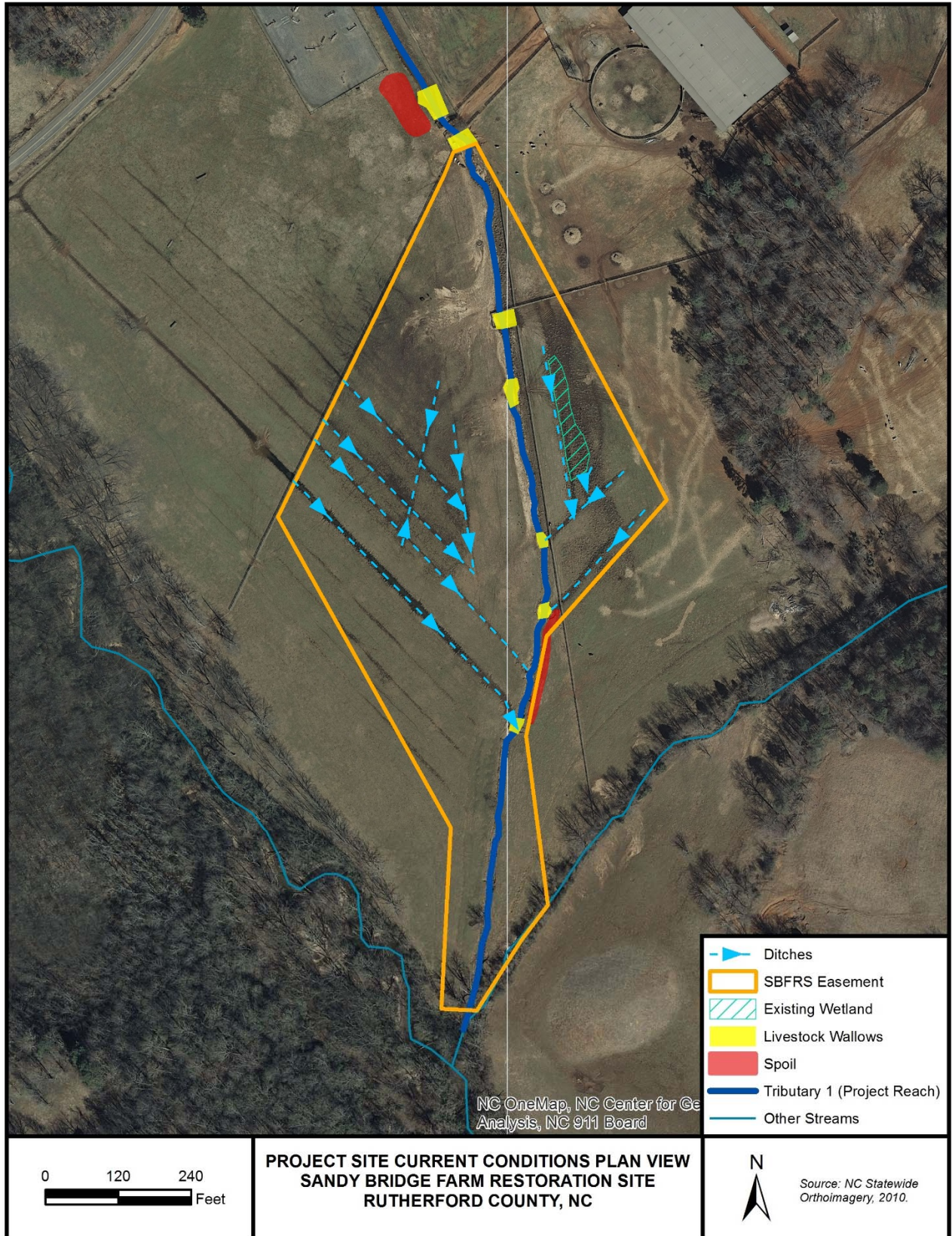
2.4 Project Site Watershed Map



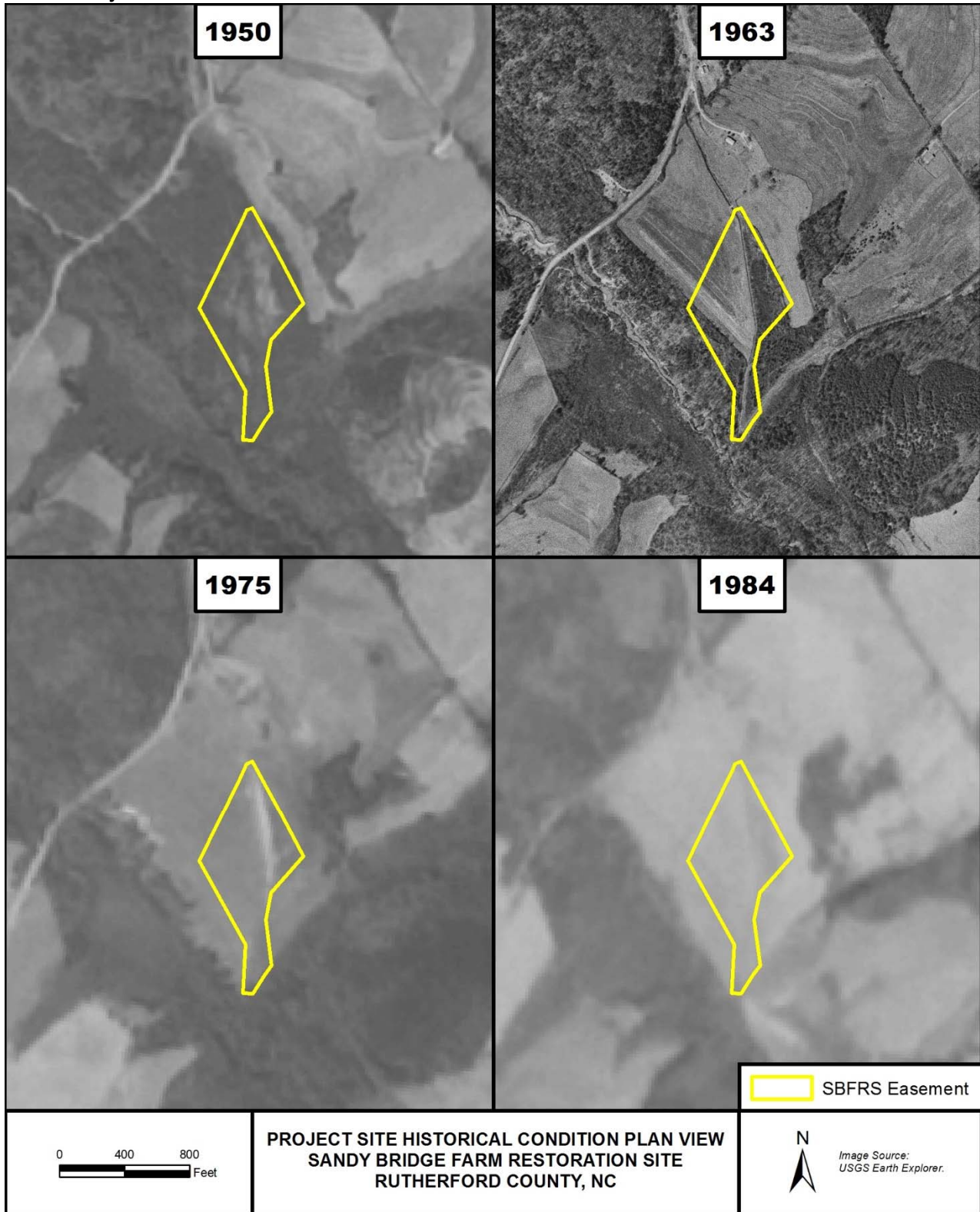
2.5 Soil Survey

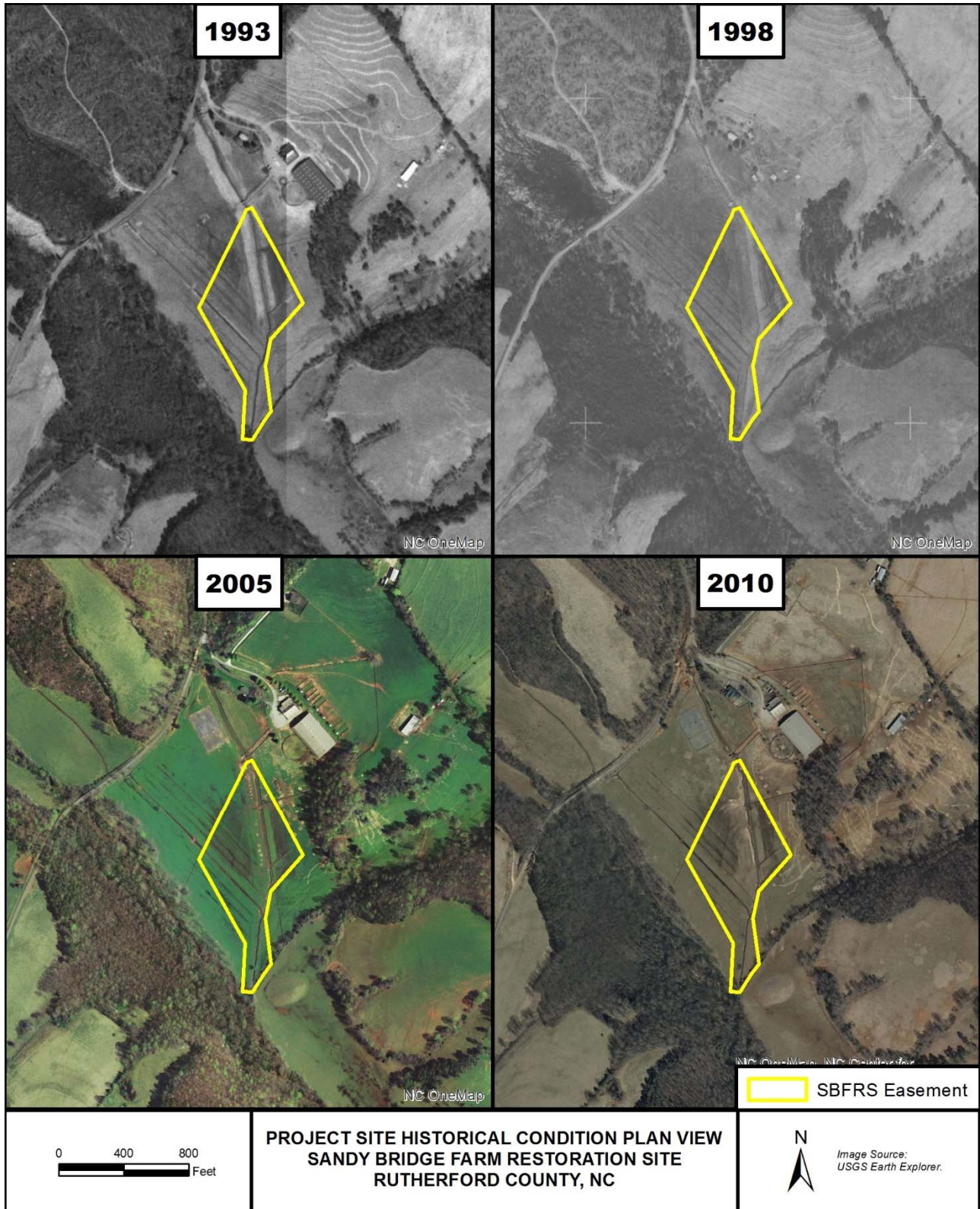


2.6 Project Site Current Condition Plan View



2.7 Project Site Historical Condition Plan View





2.8 Site Photographs



Project site overview, looking southwest from the top of the project site near Rock Road. 2/12/13.



Positive reaction for presence of reduced iron along the stream banks at SBFRS. 2/12/13



View looking north and upstream at the eroded stream entering Tributary 1 (T1) after flowing under a bridge for cattle crossing. 6/4/15



View looking east at Tributary 1 from the top of the project reach. Erosion is channelizing and incising the stream. 6/4/15



View looking northeast and upstream at the top of T1. 6/4/15



View looking south and downstream at the straightened stream channel. This reach will be re-meandered. 2/12/2013



View looking south and downstream at the straightened stream channel at the top of the project reach. 6/4/2015.



View looking southeast and downstream at bank erosion midway through the length of T1. 6/4/15



View looking south and downstream at T1. Significant bank erosion has been caused by cattle access to the stream. 6/4/15



View looking east at erosion from cattle access to T1. 6/4/15



View looking west of Tributary 1 at the cattle being pastured on the site. 6/4/15



View northeast and upstream of T1. Restoration will integrate T1 with its floodplain as a stream/wetland/seep complex. 6/4/2015



Ditches that drain the site will be filled to increase hydrology and the connection between the stream and wetlands on site. 2/12/2013.



View looking south and downstream at the end of SBFRS where Tributary 1 and another stream flow into Catheys Creek. 6/13/2013



View looking west of Tributary 1 at the wetland re-establishment area. Surface roughening and ditch filling will increase hydrology. 2/12/2013



View looking east of Tributary 1 at the existing jurisdictional wetland at SBFRS, which will be rehabilitated. 2/12/2013



View looking northwest at the edge of the drained area at SBFRS, where T1 and its planted riparian buffer will be relocated. 6/4/2015

3.0 SITE PROTECTION INSTRUMENT

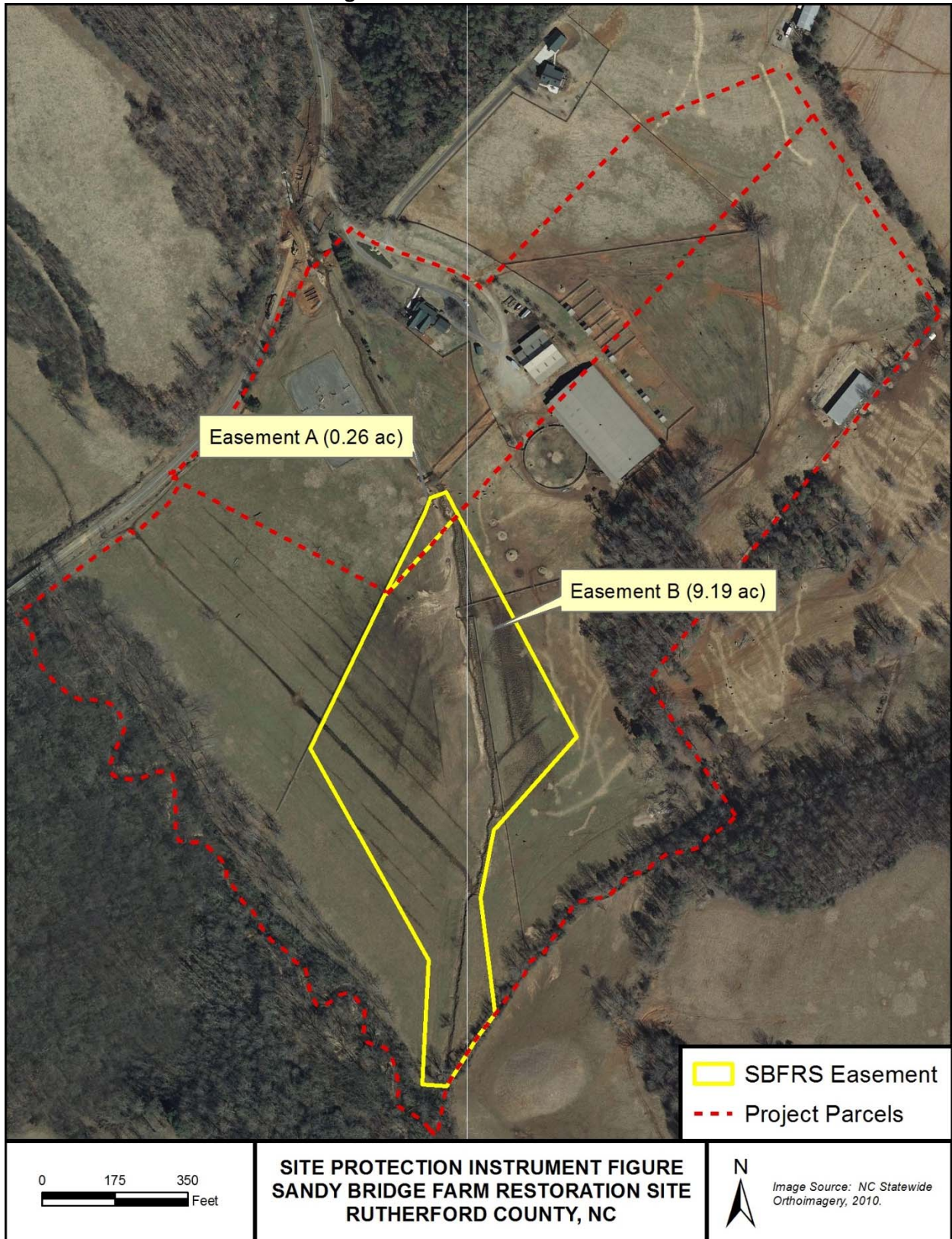
3.1 Site Protection Instrument Summary Information

The land required for the construction, management, and stewardship of this mitigation project includes portions of the following parcel. The conservation easement for SBFRS has been completed and a copy is of the recorded plat is included in Appendix A.

The project easements will be marked and surveyed per the requirements as indicated in RFP 16-006178 and the two addenda. The boundary marking plan and specifications to be used are described in the attached project plan sheets (Appendix D).

Landowners	Instrument Number	PIN	County	Site Protection Instrument	Deed Book and Page Number	Acreage protected
Scott & Sandra Hughes	Easement A Easement B	1621005716140000 1621005609790000	Rutherford	Conservation Easement	Book 37, Page 16	0.26 acres 9.19 acres

3.2 Site Protection Instrument Figure



4.0 BASELINE INFORMATION

Project Information			
Project Name	Sandy Bridge Farm Restoration Site		
County	Rutherford County		
Project Area (acres)	9.45 acres		
Project Coordinates (lat. and long.)	35.407997° N, -81.937000° W		
Project Watershed Summary Information			
Physiographic Province	Piedmont		
River Basin	Broad		
USGS Hydrologic Unit 8-digit	03050105	USGS Hydrologic Unit 14-digit	03050105070020
DWR Sub-basin	9-41-13-(0.5)		
Project Drainage Area (acres)	837 acres		
Project Drainage Area Percentage of Impervious Area	8%		
CGIA Land Use Classification	Mixed Hardwoods/Conifers 42% (350.0 ac), Managed Herbaceous Cover 39% (329.3 ac), Mountain Conifers 12% (99.5 ac), Mixed Shrubland 5% (43.5 ac), Low Intensity Developed 1% (11.0 ac)		
Existing Reach Summary Information			
Parameters	T1		
Length of reach (linear feet)	1,470 lf		
Valley classification	Valley Type VIII		
Drainage area (acres)	837 acres		
NCDWR Water Quality Classification	WS-V (Water Supply – upstream)		
Morphological Description (stream type)	Ditched channel		
Evolutionary trend	Channelized		
Mapped Soil Series	Chewacla (ChA) and Dorian (DoB)*		
Drainage class	Poorly drained; Somewhat poorly drained		
Soil Hydric status	Drained hydric		
Slope	0-1%		
FEMA classification	Zone AE		
Existing vegetation community	N/A (Pasture)		
Percent composition of exotic invasive vegetation	5%		

Existing Wetland Summary Information	
Parameters	
Size of Wetland (acres)	0.59 acre (Wetland Rehabilitation Area at 1.5:1 ratio) and 0.79 acre existing jurisdictional ditches (Wetland Rehabilitation at 1:1 ratio)
Wetland Type	Headwater Seep
Mapped Soil Series	Wehadkee-Chewacla Association
Drainage class	Poorly drained; Somewhat poorly drained
Soil Hydric Status	Drained Hydric
Source of Hydrology	Seepage/ Precipitation
Hydrologic Impairment	Ditching and Grazing
Existing vegetation community	Emergent Wetland

Percent composition of exotic invasive vegetation	5%		
Regulatory Considerations			
Regulation	Applicable?	Resolved?	Supporting Documentation
Waters of the United States – Section 404	Yes	Applying for NWP 27	Jurisdictional Determination
Waters of the United States – Section 401	Yes	Applying for NWP 27	Jurisdictional Determination
Endangered Species Act	No	N/A	N/A
Historic Preservation Act	No	N/A	N/A
Coastal Zone Management Act (CZMA)/ Coastal Area Management Act (CAMA)	No	N/A	N/A
FEMA Floodplain Compliance	No	N/A	N/A
Essential Fisheries Habitat	No	N/A	N/A

* KCI's soil scientist mapped the project soils as a Wehadkee-Chewacla Association, which differs from the mapped NRCS soils series.

4.1 Watershed Summary Information

The site is part of the 03050105070020 USGS Cataloging Unit (Catheys Creek) within the Broad River Basin. Covering eight counties in North Carolina, the Broad River Basin watershed contains the urban areas of the cities of Shelby, Rutherfordton, Spindale, Forest City, and Kings Mountain (NCEEP 2009). Future population growth is expected within the basin. The impacts associated with this, and the current impacts from the agricultural practices within the watershed, have been identified as threats to streams and wetlands (NCEEP 2009). This project would mitigate these impacts and provide functional uplift opportunities at a site currently being used as cattle pasture.

The project watershed for the SBFRS is comprised of 1.31 square miles (837 acres). Current land use in the project watershed consists of forest (42%/348 ac), pasture/farmland (39%/329 ac), low-density development (11%/92 ac), high-density development (6%/50 ac) and roads (2%/18 ac). The majority of the impervious surface within the project watershed comes from the Rutherford County Airport located north of the site. The impervious surface within the airport, roads, and rural residential properties amounts to approximately 8% of the total area of the project watershed. The nearest named downstream water body is Catheys Creek, which flows immediately to the west and then south of the project site. The project area is located in the United States Geological Survey (USGS) Rutherfordton North USGS Quadrangle.

The nearest Significant Natural Heritage Area (SNHA) is the Camp Bud Schiele/BSA Reservation, located approximately 2 miles to the northeast of the project site. There are no conservation or protected areas located adjacent to the project site, but the site will connect to the forested buffer of Catheys Creek at the end of Tributary 1.

4.2 Reach Summary Information

Existing Conditions

The project site has experienced significant landscape and vegetative modifications to allow for grazing. The historic aerials indicate that the existing stream was channelized and the site has been ditched

sometime prior to 1963. The project stream, Tributary 1 (T1), is an unnamed tributary to Catheys Creek, and currently runs through the property, entering the site in the far northwestern boundary of the project area, and draining in a southeasterly direction toward the confluence with Catheys Creek. T1 had historically run through the valley of the site prior to being relocated and straightened. This is evidenced by soil survey data, on-site soils evaluations and information gathered during landowner and local resident interviews. LIDAR imagery of the site obtained from NC Floodplain Mapping also shows this drainage patterns from this tributaries entering the site from the northwest. The property is currently being managed for cattle and horse grazing. Livestock have unrestricted access to the stream channel, and trampled/sloughing banks devoid of woody vegetation are prevalent along the entire length of Tributary 1 throughout the project.

The project reach of T1 is approximately 1,470 lf in existing length and begins just below a bridge for a cattle crossing. The stream has been moved and channelized and lacks bed variability. The beginning of T1 has lower bank heights than the downstream end of the stream, but the banks have been impacted by heavy cattle traffic and a lack of riparian vegetation. The cattle wallow areas are particularly degraded and contribute to a high amount of erosion to the stream. However, the upper half of the stream shows the strongest bankfull indicators. The downstream half of the project reach is more incised with bank height ratios greater than 1.5 and narrower banks as the stream approaches the confluence with Catheys Creek. Many of the banks in the lower half are nearly vertical and devoid of vegetation, contributing a high amount of sediment to the stream. Bankfull indicators are difficult to discern in this incised section of channel.

The stream is free of any woody vegetation aside from isolated individuals of black willow, green ash, American sycamore and red maple along the bottom of T1 and as the stream transitions into the confluence with Catheys Creek. The *Current Conditions Plan View* in Section 2.6 shows the existing conditions at the SBRFS and the site photographs are included in Section 2.8. T1 is shown on the USGS quad map, which indicates that it is a perennial stream. For this reason, a NCDWQ Stream Classification evaluation was not conducted for the project reach T1.

Channel Classification

Channel Morphology (Pattern, Dimension, and Profile)

A Rosgen Level II assessment was conducted to gather existing stream dimension data from the SBRFS reach of T1 to determine the degree of channel instability. Four channel cross-sections were surveyed along the length of the stream and classified T1 as an E4 stream type at the beginning of the reach and then transitioning to a G4c at the end of the reach. The cross-sectional data developed from this survey are presented in Appendix C.

Bankfull Verification

The standard methodology used in natural channel design is based on the ability to select the appropriate bankfull discharge and generate the corresponding bankfull hydraulic geometry from a stable reference system(s). The determination of bankfull stage is the most critical component of the natural channel design process.

Bankfull can be defined as “the stage at which channel maintenance is most effective, that is, the discharge at which moving sediment, forming or removing bars, forming or changing bends and meanders, and generally doing work that results in the average morphologic characteristics of the channels,” (Dunne and Leopold, 1978). Several characteristics that commonly indicate the bankfull stage include: incipient

point of flooding, breaks in slope, changes in vegetation, highest depositional features (i.e. point bars), and highest scour line. The identification of bankfull stage, especially in a degraded system, can be difficult.

At the SBFRS, four cross-sections were taken along the 1,470 lf-long channel as representative of the existing conditions. The two upper cross-sections monitored presented stronger bankfull indicators than the two bottom cross-sections, which were located in a more degraded, eroded section of channel with few signs of a bankfull elevation. The top cross-sections had bankfull areas of 15.3 and 13.9 square feet, respectively, with an average bankfull area of 14.6 square feet for the site based on the bankfull indicators. With a channel slope of 0.0043, the bankfull discharge for these two cross-sections is estimated between 46-48 cfs.

These on-site field measurements were compared to regional curve estimates. Regional curves are typically utilized in ungauged areas to approximate bankfull discharge, area, width, and depth as a function of drainage area based on interrelated variables from other similar streams in the same hydrophysiographic province. Regional curves and corresponding equations from “Bankfull Hydraulic Geometry Relationships for North Carolina Streams” (Harman *et al.*, 1999) were used to compare to the approximate bankfull values found in the upper part of the project reach. The results from the regional curves – for both the Piedmont and Mountain Rural curves, since the site is near the physiographic edge – were compared to results from the existing cross-sectional data and field indicators. The regional curves estimate a bankfull area of approximately 26 square feet based on the drainage area of 1.31 square miles. Based on the analysis of the site, these regional curve areas estimates are considered to be slightly high when compared to the field data. A summary of the bankfull verification is provided in the table below. The field-determined bankfull area (14.6 sf average) was determined to be the most valid result for this site.

Bankfull Verification	Area (sf)	Width (ft)	Approx. Discharge (cfs)	Field Indicators?	Remark
Regional Curve - NC Rural Piedmont (1.31 sq mi)	25.7	13.3	108	N/A	Overestimate compared to on-site indicators
Regional Curve - NC Rural Mountain (1.31 sq mi)	26.0	21.0	123	N/A	
Existing Cross-Section 1	15.3	11.8	48	Yes – existing top of bank	Used as bankfull indicators
Existing Cross-Section 2	13.9	9.3	46	Yes – existing top of bank	
Existing Cross-Section 3	19.6	8.8	78	No – ditched, eroding section	Not valid for bankfull call
Existing Cross-Section 4	20.3	10.7	76	No – ditched, eroding section	

A section of Long Branch, located northwest of Chapel Hill, was used as a reference reach, primarily for the pattern of T1 (see Appendix B). While the reference site is located in a different river basin than SBFRF, the planform reference values from Long Branch are typical for those found within the Piedmont for a stream with these characteristics. The sediment size is similar between the two sites – D50 of 7.5 mm and D84 of 16 mm at the reference site compared to D50 ranges of 0.21-6 mm and D84 ranges of 2.8-16 mm at the project site (lower ranges reflect influence of high rates of bank erosion at the bottom of the site).

Long Branch flows northeast through Orange County toward its confluence with New Hope Creek. This reference site was selected based on its similar valley morphology and sediment regime as the project stream. This reach of Long Branch was classified as a Rosgen C4 channel type. The surrounding reference

reach valley has a slope of 0.6%, which is similar to the project site. Long Branch is situated within the Carolina Slate Belt ecoregion in the Piedmont physiographic province. The Long Branch watershed is located within the 14-digit Hydrologic Unit 03030002060110 of the Cape Fear Basin. The headwaters of Long Branch form to the north of and along Dodsons Crossroads. The reference reach watershed boundary continues along Arthur Minnis Road to the north and extends almost to Union Grove Church Road to the east. It drains approximately 1.49 square miles of low-density residential, agriculture, and forested lands. The topographic relief within the reference reach ranged from approximately 538 feet AMSL at the upstream limits to 520 feet AMSL at the downstream limits.

Similar to the SBFRS, a bankfull verification was performed at the reference site. The table below outlines the results of the field riffle cross-sections and the regional curve (NC Piedmont Rural). Valid bankfull indicators were present in the existing cross-sections and indicated a slightly smaller bankfull area and width than that predicted by the regional curve. The on-site indicators were used to determine the bankfull values. See Appendix B for further reference reach data.

Bankfull Verification	Area (sf)	Width (ft)	Approx. Discharge (cfs)	Field Indicators?	Remark
Regional Curve - NC Rural Piedmont (1.49 sq mi)	28.1	14.1	119	N/A	Slightly larger compared to on-site indicators
Existing Cross-Section 2	25.1	18.6	83	Yes – existing top of bank	Used as bankfull indicators
Existing Cross-Section 3	25.0	14.8	90	Yes – existing top of bank	

4.3 Wetland Summary Information

Wetlands historically formed at SBFRS due to surface inputs and an incoming seep, with additional inputs coming from out of bank stream events. Based on field topographic survey data and LIDAR elevation data, the contours at SBFRS range from 867 to 874 feet. The topography of the site begins with the highest elevations at the northeastern edge of the site. The elevation decreases as one moves from northeast to southwest until the center of the site at T1. Water on the site exits the southern boundary via T1 and then into another unnamed tributary along the eastern property boundary shortly before the confluence with Catheys Creek. The existing wetland to the east of T1 experiences approximately a 1-foot change in elevation as the slope grades down slightly from the center towards T1 to the west.

Existing Wetlands

SBFRS has been impacted by a history of channelization and cattle and horse grazing. These efforts to drain wetlands on the property were largely successful; however, a 0.59-acre jurisdictional wetland remains on the northeastern portion of the project site. This area was delineated by KCI wetland scientists and the boundaries were confirmed through a jurisdictional determination with the US Army Corps of Engineers (Section 4.4). A series of ditches on the western and southeastern portions of the site that were installed to remove excess seepage and surface inundation were also delineated as part of the jurisdictional determination (approximately 0.79 acre total across the site). Together, there are 1.38 acres of jurisdictional wetlands. The wetland data forms are included in Appendix B, USACE Wetland Determination Forms.

Vegetation

The areas of drained hydric soils are free of any woody vegetation and there is no existing forested buffer width or longitudinal forest continuity on the project site. Existing herbaceous vegetation throughout the wetland rehabilitation area and the ditches includes soft rush (*Juncus effusus*), yellow pond lily (*Nuphar lueta*), swamp smartweed (*Polygonum hydropiperoides*), arrow arum (*Peltandra virginica*), and spike rush (*Eleocharis palustris*).

4.3.1 Existing Seeps

There is currently one seep on the project site, located in the northeastern portion of the property. This seep flows out of an elevated forested area and provides non-continuous flow to lower elevation areas on the eastern portion of the property including a current jurisdictional wetland. This provides a portion of the hydrology for the wetland rehabilitation area.

4.4 Regulatory Considerations

A jurisdictional determination was submitted to the US Army Corps of Engineers on June 8, 2015 and was approved July 7, 2015 (see Appendix B). Following the completion of the mitigation plan, a pre-construction notification (PCN) will be completed to apply for a Nationwide 27 Permit (NWP) to comply with Sections 401 and 404 of the Clean Water Act with the Wilmington District of the US Army Corps of Engineers and the NCDEQ Division of Water Resources. A map showing the anticipated wetland and stream impacts is included in Appendix B.

5.0 DETERMINATION OF CREDITS

Sandy Bridge Farm Restoration Site, Rutherford County									
Mitigation Credits									
	Stream		Riparian Wetland		Non-riparian Wetland		Buffer	Nitrogen Nutrient Offset	Phosphorous Nutrient Offset
Type	R	RE	R	RE	R	RE			
Linear Feet/Acres	1,626		6.94						
Credits	1,626		6.74						
TOTAL CREDITS	1,626		6.74						
Project Components									
Project Component -or- Reach ID	Stationing/ Location		Existing Footage/ Acreage	Approach (PI, PII etc.)	Restoration -or- Restoration Equivalent	Restoration Footage or Acreage	Mitig. Ratio 1:1	Credits	
Tributary 1	10+00 to 26+26		1,470 lf	PI	Restoration	1,626 lf	1:1	1,626	
Wetland Re-establishment					Restoration	5.56 ac	1:1	5.56	
Wetland Rehabilitation					Restoration	0.79 ac	1:1	0.79	
Wetland Rehabilitation					Restoration	0.59 ac	1.5:1	0.39	
Component Summation									
Restoration Level	Stream (linear feet)	Riparian Wetland (acres)		Non-riparian Wetland (acres)	Buffer (square feet)	Upland (acres)			
		Riverine	Non-Riverine						
Restoration	1,626 lf	6.94 ac							
Enhancement									
Enhancement I									
Enhancement II									
Creation									
Preservation									
High Quality Preservation									
TOTAL CREDITS	1,626	6.74							

R= Restoration RE= Restoration Equivalent of Creation or Enhancement

6.0 CREDIT RELEASE SCHEDULE

All credit releases will be based on the total credit generated as reported by the as-built survey of the mitigation site. Under no circumstances shall any mitigation project be debited until the necessary DA authorization has been received for its construction or the District Engineer (DE) has otherwise provided written approval for the project in the case where no DA authorization is required for construction of the mitigation project. The DE, in consultation with the Interagency Review Team (IRT), will determine if performance standards have been satisfied sufficiently to meet the requirements of the release schedules below. In cases where some performance standards have not been met, credits may still be released depending on the specifics of the case. Monitoring may be required to restart or be extended, depending on the extent to which the site fails to meet the specified performance standard. The release of project credits will be subject to the criteria described as follows:

Stream Credit Release Schedule – 7 year Timeframe			
Monitoring Year	Credit Release Activity	Interim Release	Total Released
0	Initial Allocation – see requirements below	30%	30%
1	First year monitoring report demonstrates performance standards are being met	10%	40%
2	Second year monitoring report demonstrates performance standards are being met	10%	50% (60%*)
3	Third year monitoring report demonstrates performance standards are being met	10%	60% (70%*)
4	Fourth year monitoring report demonstrates performance standards are being met	5%	65% (75%*)
5	Fifth year monitoring report demonstrates performance standards are being met	10%	75% (85%*)
6	If required, sixth year monitoring report demonstrates performance standards are being met	5%	80% (90%*)
7	If required, seventh year monitoring report demonstrates performance standards are being met, and project has received close-out approval from IRT	10%	90% (100%*)

**See Subsequent Credit Releases description below*

Forested Wetlands Credits			
Monitoring Year	Credit Release Activity	Interim Release	Total Released
0	Initial Allocation – see requirements below	30%	30%
1	First year monitoring report demonstrates performance standards are being met	10%	40%
2	Second year monitoring report demonstrates performance standards are being met	10%	50%
3	Third year monitoring report demonstrates performance standards are being met	10%	60%
4	Fourth year monitoring report demonstrates performance standards are being met	10%	70%
5	Fifth year monitoring report demonstrates performance standards are being met; provided that all performance standards are met, the project may be closed out contingent on IRT approval. If so, the remainder of the credits will be released at this stage.	10%	80%
6	If required, sixth year monitoring report demonstrates performance	10%	90%

	standards are being met		
7	If required, seventh year monitoring report demonstrates performance standards are being met, and project has received close-out approval from IRT	10%	100%

Initial Allocation of Released Credits

The initial allocation of released credits, as specified in the mitigation plan can be released by the NCDMS without prior written approval of the DE upon satisfactory completion of the following activities:

- Approval of the final Mitigation Plan
- Recordation of the preservation mechanism, as well as a title opinion acceptable to the USACE covering the property
- Completion of project construction (the initial physical and biological improvements to the mitigation site) pursuant to the mitigation plan; Per the NCDMS Instrument, construction means that a mitigation site has been constructed in its entirety, to include planting, and an as-built report has been produced. As-built reports must be sealed by an engineer prior to project closeout, if appropriate but not prior to the initial allocation of released credits.
- Receipt of necessary DA permit authorization or written DA approval for projects where DA permit issuance is not required

Subsequent Credit Releases

All subsequent credit releases must be approved by the DE, in consultation with the IRT, based on a determination that required performance standards have been achieved. For stream project with a 7-year monitoring period, a reserve of 10% of a site’s total stream credits shall be released after two bank-full events have occurred, in separate years, provided the channel is stable and all other performance standards are met. In the event that less than two bankfull events occur during the monitoring period, release of these reserve credits shall be at the discretion of the IRT. As projects approach milestones associated with credit release, the NCDMS will submit a request for credit release to the DE along with documentation substantiating achievement of criteria required for release to occur. This documentation will be included with the annual monitoring report.

7.0 MITIGATION WORK PLAN

7.1 Target Wetland Types and Plant Communities

The SBFRS will be planted as a Piedmont Alluvial Forest community (Schafale 2012) based on evaluation of adjacent wetland and community types in the area; the project stream joins the floodplain of Catheys Creek as it nears the end of the site. The planting plan is shown in the attached project plan sheets (Appendix D). Trees and shrubs will be planted at a density of 968 stems per acre (9 feet x 5 feet spacing) to achieve a mature survivability of 260 stems per acre after five years and 210 stems per acre after seven years. Woody vegetation planting will be conducted during dormancy. Species to be planted may consist of the following and any substitutions from the planting plan will be taken from this list:

Piedmont Alluvial Forest – 8.88 acres

Common Name	Scientific Name	Wetland Status (Eastern Mts & Piedmont)
Red Chokeberry	<i>Aronia arbutifolia</i>	FACW
River Birch	<i>Betula nigra</i>	FACW

Sugarberry	<i>Celtis laevigata</i>	FACW
Buttonbush	<i>Cephalanthus occidentalis</i>	OBL
Silky Dogwood	<i>Cornus amomum</i>	FACW
American Persimmon	<i>Diospyros virginiana</i>	FAC
Green Ash	<i>Fraxinus pennsylvanica</i>	FACW
Witch Hazel	<i>Hamamelis virginiana</i>	FACU
Winterberry	<i>Ilex verticillata</i>	FACW
Spicebush	<i>Lindera benzoin</i>	FAC
Yellow Poplar	<i>Liriodendron tulipifera</i>	FACU
American Sycamore	<i>Platanus occidentalis</i>	FACW
Cottonwood	<i>Populus deltoides</i>	FAC
Swamp Chestnut Oak	<i>Quercus michauxii</i>	FACW
Cherrybark Oak	<i>Quercus pagoda</i>	FACW
Willow Oak	<i>Quercus phellos</i>	FAC
American Elm	<i>Ulmus americana</i>	FACW

A custom herbaceous seed mix composed of appropriate native species found in reference communities will also be developed and used to further stabilize and restore the wetland. The seed mix includes River Oats (*Chasmanthium latifolium*), Virginia Wildrye (*Elymus virginicus*), Leathery Rush (*Juncus coriaceus*), Beaked Panicgrass (*Panicum anceps*), Redtop Panicgrass (*Panicum rigidulum*), and Switchgrass (*Panicum virgatum*).

7.2 Design Parameters

The mitigation approach for SBRFS will aim to restore an integrated stream/wetland ecosystem that will provide improved hydraulics, geomorphology, wetland hydroperiod, and vegetation diversity at the project site. The DMS needs for mitigation in this basin will be achieved by the restoration of a stream and wetland complex with 6.94 acres of wetland restoration and 1,626 lf of stream restoration. Figures 7.4 and 7.5 show the mitigation type and extent. The approach will include the re-establishment of 5.56 acres and the rehabilitation of 1.38 acres of riparian wetlands on the site. In addition, 1,626 lf of stream credit will be provided by restoration and protection under the conservation easement. Approximately 2.5 acres of protected upland inclusion (no mitigation credit) are contained within SBRFS. An overview map of the proposed mitigation is shown in Section 7.4 and the project plan sheets are included in Appendix D.

The restoration approach and implementation will include relocating the existing channel of T1 back to its historic position in the valley. A single reach of Priority 1 stream restoration will be used to re-meander the stream and elevate the groundwater table. The channelized and incised cross-section will be replaced with a higher width-to-depth cross-section that will be integrated into the riparian wetland restoration. The proposed riffle cross-section has been designed slightly smaller than typical bankfull flow to encourage frequent overbank flooding into the stream/wetland complex.

For the wetland restoration, the small area of existing wetland will be rehabilitated by filling in the surrounding ditches, which are currently depriving the wetland of added hydrology. The remainder of the drained soils will be developed as wetland re-establishment by filling the ditches and creating an integrated wetland/stream complex. Incoming seeps and surface inputs will provide the majority of wetland hydrology, with additional inputs from out of bank stream events.

As a result of the restoration actions, the table below takes the proposed goals and objectives of the site described in Section 1 and relates them to the anticipated functional uplift (adapted from Harman *et al.* 2012). The primary stream functions that will be improved are stream hydraulics, through the redevelopment of a Priority 1 stream, and stream geomorphology, through the restoration of a stable stream form with diverse bed features, structure, and vegetation. In addition, the project will lead to improvements in the wetland hydroperiod and species composition.

Goals	Objective	Functional Level	Function-Based Parameter Effects
Restore a channelized stream to a meandering C-type channel with a floodplain	Relocate a channelized stream to its historic landscape position	Hydraulics	Floodplain Connectivity
	Install an appropriately-sized channel cross-section	Geomorphology	Bank Migration/Lateral Stability
	Install bedform diversity with pools, riffles, and habitat structures	Geomorphology	Bed Form Diversity
Buffer and reduce sediment impacts to the project stream	Demarcate the project easement boundaries and fence out livestock.	Geomorphology	Bed Material Characterization
Restore a Piedmont Alluvial Forest Community	Plant the site with native trees and shrubs and a herbaceous seed mix that supports the development of a Piedmont Alluvial Forest	Geomorphology/ Wetland Species Composition	Vegetation
Restore a wetland hydroperiod to drained and livestock-impacted land	Fill field ditches and redevelop wetland microtopography to slow the flow of surface and subsurface drainage	Wetland Hydrology	Groundwater Saturation/ Surface Ponding

Table adapted from Harman *et al.* 2012

While the credit type and ratio for this project generally follow the framework of the restoration mitigation type, these mitigation types have been further refined to be considered either re-establishment or rehabilitation, which are both forms of restoration. Re-establishment occurs where the functions are returned to the site in a location where an aquatic resource previously existed. Rehabilitation results in an improvement in most, if not all, aquatic resource functions at a degraded, existing wetland site (40 CFR Part 230). The USACE has approved restoration credits for both “re-establishment” and “rehabilitation” through the 2008 mitigation rules and subsequently on other DMS projects. The outcome from these discussions has been different ratios for rehabilitation and re-establishment, although they are both considered forms of restoration credit.

Summary***Stream Restoration (Priority 1) 1,626 lf***

Tributary 1 will be restored using a Priority 1 Approach to return a meandering C4-type stream to the site. Restoration will begin just below the existing wooden bridge crossing and continue until the end of the site, joining another unnamed tributary shortly before reaching Catheys Creek off the project. In conjunction with the wetland restoration at the site, the grade of T1 will be brought up and re-established at historic floodplain elevations to lengthen the wetland hydroperiod and restore natural hydraulic functionality to the system.

A high width-to-depth ratio and moderate sinuosity will be characteristic of the newly restored stream's form. The typical riffle cross-section has been intentionally designed smaller than the typical bankfull dimensions for the site with an area of 12.7 square feet and a width of 15 feet. Based on the average bankfull area determined for the site of 14.6 square feet and a discharge of 47 cfs, the proposed channel is sized at approximately 75% of the bankfull values. This smaller cross-section will encourage frequent out-of-bank flooding events that will support the hydroperiod of the adjacent wetlands. In-stream structures, including riffle enhancement, step pools, and live lifts, will be used to stabilize the channel and restore geomorphological function. Additional structures are needed in the transitional areas at the top and bottom of the site that bring the stream onto the open floodplain and drop it back into the confluence with Catheys Creek. These structures are designed to reduce bank erosion, influence secondary circulation in the near-bank region of stream bends, and provide grade control. Riffle areas will also be enhanced with graded gravel material to mimic existing stable riffle features and to reduce the potential for riffle degradation.

The reference reach pattern from Long Branch information was used to shape the proposed design, primarily the planform, but documents such as Harman's common reference values (Harman *et al.* 2012) were also used along with professional judgement based on past experiences in restoring Piedmont streams. The proposed channel design values have been adjusted as necessary to fit the existing site conditions based on all of these sources. In general, the proposed values for the pattern fit within the ranges given by the reference reach. Slope values were adjusted slightly as needed to fit the needs of transitional areas and the existing site (valley) conditions. Valley slope adjustments will be limited to filling in the old channel and field ditches. The proposed channel slopes have been designed to match the existing valley slope as the new top of bank elevations as much as possible. There are slightly steeper channel slopes at the top that transition to a milder slope in the center of the project. At the end, there is a steeper transitional Priority 1/2 section of the proposed stream as it grades down to the elevation to match Catheys Creek. Appendix C contains the proposed morphological criteria and the project plan sheets are in Appendix D.

Riparian Wetland Restoration – 6.94 acres (5.56 ac Re-establishment and 1.38 ac Rehabilitation)

The restoration of the wetland will focus primarily on filling in the field ditches to return the natural hydrologic condition to the site. Additional grading will be completed to break up compacted soil from cattle impacts and restore minor variations in site topography. The grading will be limited to the top 6 to 8 inches of the soil. In the re-establishment area, the stream will be relocated to its natural location in the valley, allowing seepage conditions for the upslope hillside to the east to spread across the site instead of being immediately drained to the stream. The 1.38 acres of wetland rehabilitation will involve filling the ditches that run through the existing 0.59-acre wetland at a 1.5:1 mitigation ratio in order to increase the hydroperiod of the wetland. Another 1.38 acres of rehabilitation will be completed by filling in the jurisdictional ditches throughout the site at a 1:1 mitigation ratio. The SBFRS will be restored to a

Piedmont Alluvial Forest Community as described in Section 7.1 and as shown on the planting plan in Appendix D.

Water Quality Treatment Area

In addition to the stream and wetland design features, a water quality treatment area will also be installed at the project in the southwestern corner of the easement. This feature will be a graded swale that will capture and slow incoming stormwater that travels from Rock Road via a ditch into the project stream. The area will have a maximum depth of 0.5 feet and a stabilized rock outlet into the stream.

7.3 Data Analysis

Sediment Transport Analysis

T1 is currently a mixture of gravel, sand, and silt/clay. Upstream of the project (above the Rock Road bridge), the stream is steeper and dominated by a gravel-small cobble mixture with some inclusions of bedrock. However, most of the larger material is immobile and the only active sediment transport seen downstream on the project reach is small gravel as the valley transitions from a VI to a VIII. Within the project reach, the sediment bedload is currently highly influenced by the sand contribution from near-bank erosion. Once the stream is restored, the load is anticipated to change from sand-dominated to fine to medium gravel.

In order to analyze the existing sediment conditions within the project stream, a bar sample was collected and two pebble counts (at XS2 and XS4) were performed for trend analysis. These data are provided in Appendix C. The sediment sampling shows that the stream has a D50 of 6 mm (fine gravel) in its upper half (XS2) and a smaller D50 of 0.21 mm (sand) in the lower half (XS4), likely due to the more severe bank erosion in that part of the reach. A bar sample near XS2 resulted in a D50 of 2.4 mm (very fine gravel) and a D84 of 6.6 mm (fine gravel).

Based on the collected sediment and cross-section data, shear stress values were calculated to compare the existing conditions to the proposed riffle cross-section. The shear stress values for the designed reaches were calculated and related to the movement of a particular grain size using Shield’s threshold of motion curve (Shields *et al.* 1936).

$\tau = \gamma R s$ Where: τ = shear stress (lb/ft²) γ = specific gravity of water (62.4 lb/ft³)
 R = hydraulic radius (ft) s = average water slope (ft/ft)

	Location	Shear Stress (lb/sq. ft)	Predicted Largest Grain Diameter Mobilized (mm)	Equivalent Grain Type
EXISTING COND.	T1, XS2	0.42	31	Coarse Gravel
	T1, XS4	0.34	26	Coarse Gravel
DESIGN	T1	0.20	14	Medium Gravel

Based on the calculated shear stress for the proposed channel, the stream will have adequate stream power to transport medium gravel, which is believed to be the predominant sediment type once the on-site sources of erosion are stabilized. The D84 value sampled from the upper portion of the stream was 16 mm, similar to the designed grain mobilized. Based on this analysis, the designed channel provides sufficient competency and is capable of transporting sediment during bankfull events.

Wetlands

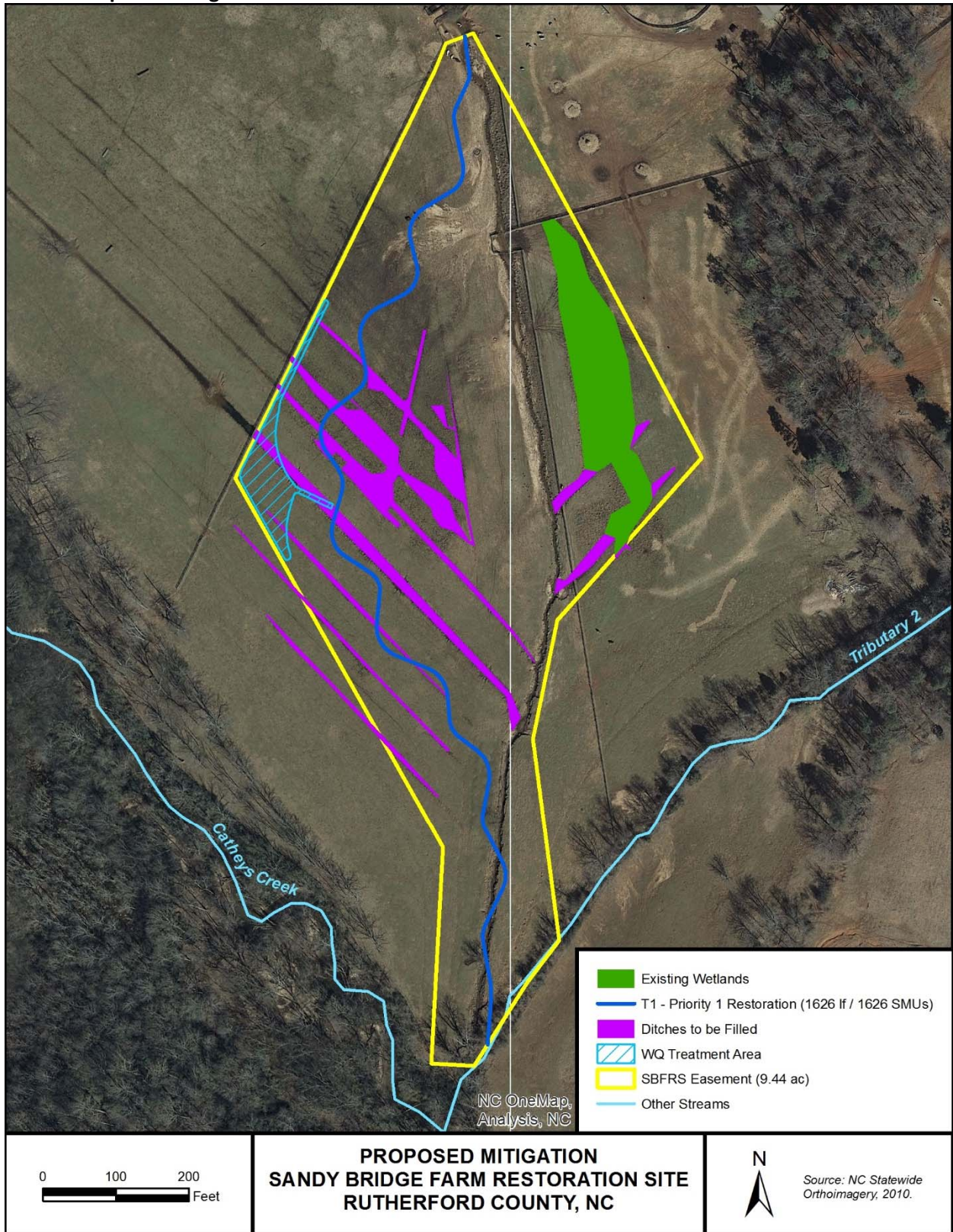
In order to model the effect of filling the onsite ditches and the grading of the wetland restoration areas of Sandy Bridge Farm, DRAINMOD was used to simulate the before and after conditions. DRAINMOD is a computer simulation water balance model that follows the groundwater elevation in the surface profile using soil inputs, climatic data, and drainage conditions (NCSU 2015). It was originally developed for agricultural drainage design, but has been adapted for evaluating wetland hydrology due to its modeling of poorly drained soils over a time step.

Climatic data (daily rainfall and maximum and minimum daily temperatures) were obtained from the Tryon, NC Station (318744), approximately 29 miles southwest from the site and the closest station with at least 50 years of daily rainfall data. The daily rainfall was distributed to an hourly increment within the computer program. The temperatures were used in the Thornthwaite potential evapotranspiration calculations. The soils data were obtained from the NRCS parameters for the Chewacla soil series, silt loam approximations in the DRAINMOD manual, and from onsite observations. The wetland criteria were set to evaluate the groundwater saturation over the growing season of April 4 to November 6 (217 days) at 10% continuous saturation (22 days). Wetland hydrology was considered achieved if the model reached a period of 10% continuous saturation for 50% or more of the simulated years.

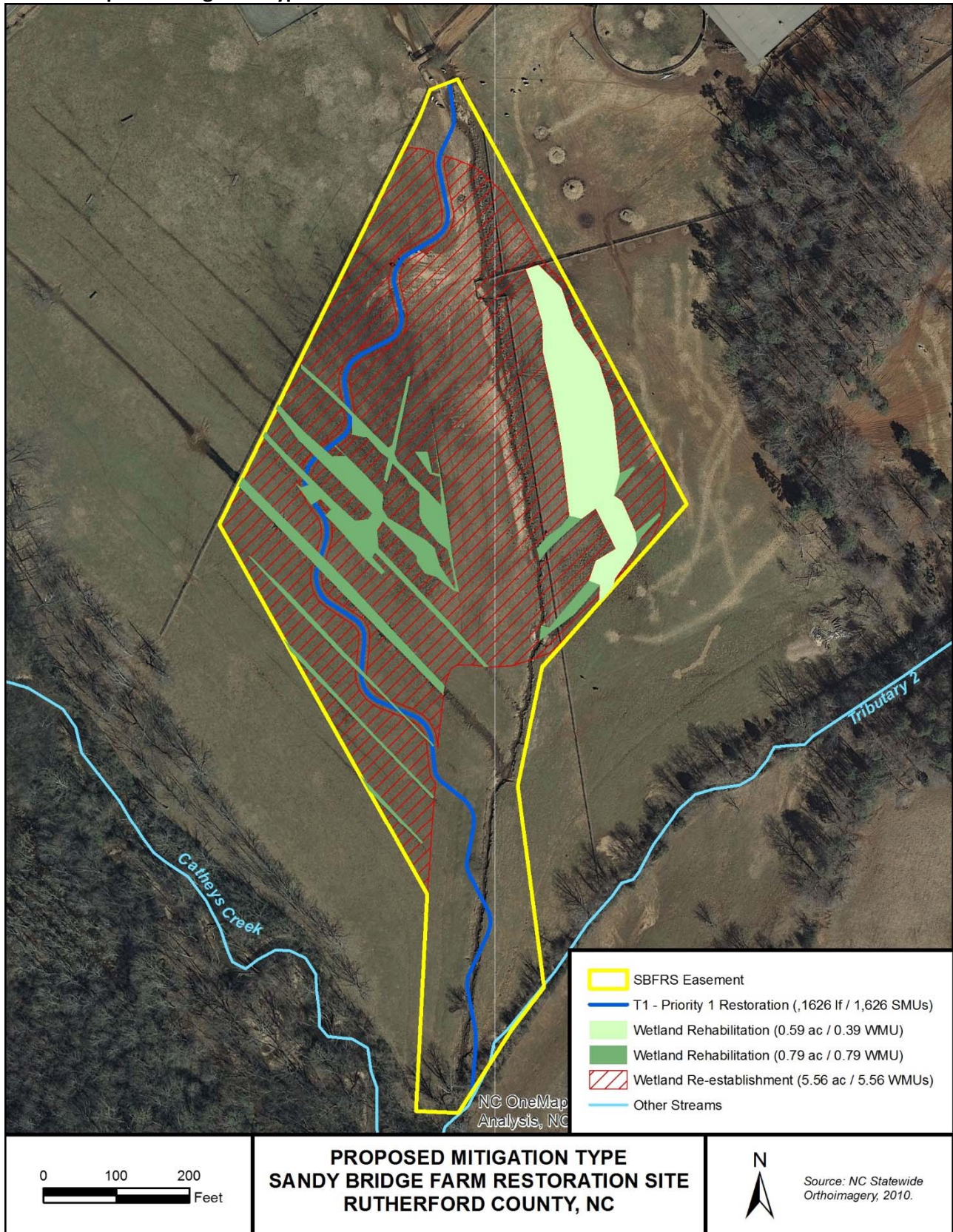
For the existing conditions model, the average drain spacing for the wetland restoration area is approximately 36.5 feet and the average drain depth is 0.8 feet between the field drains. The proposed conditions model has the same drain spacing with a minimal depth to assume a small influence from the regraded wetland and dispersed surface flow. Based on these conditions, the existing conditions model showed that wetland hydrology was achieved 9 out of 50 years, or 18% of modeled years. For the proposed conditions, the site achieved wetland hydrology for 36 out of 50 years, or 72%.

Based on the model results, the site should show an increase in groundwater hydrology following restoration that will lead to jurisdictional wetland conditions. The model results are included in Appendix C.

7.4 Proposed Mitigation



7.5 Proposed Mitigation Type



8.0 MAINTENANCE PLAN

The site will be monitored on a regular basis, with a physical inspection of the site conducted a minimum of once per year throughout the post-construction monitoring period until performance standards are met. These site inspections may identify site components and features that require routine maintenance. Routine maintenance should be expected most often in the first two years following site construction and may include the following:

Component/Feature	Maintenance Through Project Close-Out
Stream and Wetland	Routine maintenance and repair activities may include securing of loose coir matting and supplemental installations of live stakes and other target vegetation within the mitigation area. Areas where stormwater and floodplain flows intercept the wetland may also require maintenance to prevent scour.
Vegetation	Vegetation shall be maintained to ensure the health and vigor of the targeted plant community. Routine vegetation maintenance and repair activities may include supplemental planting, pruning, mulching, and fertilizing. Exotic invasive plant species shall be controlled by mechanical and/or chemical methods. Any vegetation control requiring herbicide application will be performed in accordance with NC Department of Agriculture (NCDA) rules and regulations.
Site Boundary	Site boundaries shall be identified in the field to ensure clear distinction between the mitigation site and adjacent properties. Boundaries may be identified by fence, marker, bollard, post, tree-blazing, or other means as allowed by site conditions and/or conservation easement. Boundary markers disturbed, damaged, or destroyed will be repaired and/or replaced on an as needed basis.
Beaver Impacts	The site will be inspected semi-annually for any beaver impacts that are causing harm or damage to the project’s stated goals. If necessary, beaver dams will be dismantled. USDA APHIS North Carolina Wildlife Services will be contacted if additional assistance is required in controlling or removing beavers from the project.

9.0 PERFORMANCE STANDARDS

Monitoring of the Sandy Bridge Farm Stream Restoration Site shall occur for a minimum of five years following construction or up to seven years depending on site performance. The following performance standards are based on the *Stream and Wetland Mitigation Monitoring Guidelines* (NCEEP 2014b) and will be used to judge site success. The table at the end of this section expands on the functional improvements anticipated for this site and how these improvements are linked to the monitoring of the performance standards.

Vegetation Performance

The site must achieve a woody stem density of 320 stems/acre after three years, 260 stems/acre after five years, and 210 stems/acre after seven years to be considered successful. Plot data with individual species lists will be provided. If monitoring indicates that the specified survival rate is not being met, appropriate corrective actions will take place, which may include invasive species control, and replanting.

Wetland Hydrologic Performance

Wetland hydrology monitoring will be conducted to determine if the restored wetland areas meet the proposed performance criteria for wetland hydrology. The site must present continuous saturated or inundated hydrologic conditions for at least 10% of the growing season for the Piedmont Alluvial Forest community during normal weather conditions based on a conservative estimate. A “normal” year is based

on NRCS climatological data for Rutherford County, and using the 30th to 70th percentile thresholds as the range of normal, as documented in the USACE Technical Report “Accessing and Using Meteorological Data to Evaluate Wetland Hydrology, April 2000.” The soil survey for Rutherford County estimates that the growing season begins April 4 and ends November 6 (217 days) for a 50% probability of a freeze of 28 degrees F or lower (NRCS 1997).

Wetland hydrologic performance will be determined through evaluation of automatic recording gauge data supplemented by documentation of wetland hydrology indicators as defined in the 1987 USACE Wetland Delineation Manual. Daily data will be collected from automatic wells over the monitoring period following implementation. These data will determine if the wetland meets the hydrology success criterion of the water table being within 12 inches of the ground surface continuously for 10% or more of the growing season (22 days for Rutherford County’s growing season of 217 days).

Stream Hydrologic Performance

During the monitoring period, a minimum of two bankfull events must be recorded within the monitoring period. These two bankfull events must occur in separate monitoring years. Bankfull events will be verified using a minimum of one automatic stream monitoring gauge to record daily stream depth readings. The site may receive more bankfull events than a typical project stream, since it is slightly undersized.

Since the designed bankfull channel is slightly undersized to encourage more overbank flooding to the adjacent wetlands, the Q_{gs} flow (90 cfs based on 66% of the USGS 2-year regression flow estimate) will be an out-of-bank event at the project stream and not below the bankfull discharge as is typically expected. Recorded flows will be categorized as to how they relate to the designed channel capacity, existing bankfull measurements, and Q_{gs} flow quantity.

Stream Geomorphology Performance

The site’s geomorphology will be monitored per the NCEEP 2014 monitoring guidelines. Adjustment and lateral movement following construction and as the C-type channel settles over the monitoring period are to be expected. Geomorphological measurements of cross-sections will be used to determine if any adjustments that occur are out of the range typically expected for this type of stream. The bank height ratios should not exceed 1.2 and the entrenchment ratios should be 2.2 or greater. All riffle cross-sections should fall within the parameters for the appropriate stream type. If the monitoring results show that there are morphological parameters that fall outside of the typical ranges for the designed stream type, an assessment of the cross-section and stream reach will be conducted to determine if this change is indicative of a destabilizing trend or a stable shift in channel dimensions.

The table below shows how the anticipated functional outcomes are linked to the monitoring tools and performance standards being used for the project.

Goals	Objective	Functional Level	Function-Based Parameter Effects	Monitoring Measurement
Restore a channelized stream to a meandering C-type channel with a floodplain	Relocate a channelized stream to its historic landscape position	Hydraulics	Floodplain Connectivity	Flood Frequency
				Bank Height Ratio and Entrenchment Ratio
	Install an appropriately-sized channel cross-section	Geomorphology	Bank Migration/Lateral Stability	Cross-Sectional Survey
				Visual Inspection of Bank Stability

	Install bedform diversity with pools, riffles, and habitat structures	Geomorphology	Bed Form Diversity	Percent Riffle and Pool, Facet Slopes, Visual Inspection
				Visual Inspection of Feature Maintenance
Buffer and reduce sediment impacts to the project stream	Demarcate the project easement boundaries and fence out livestock.	Geomorphology	Bed Material Characterization	Pebble Count
Restore a Piedmont Alluvial Forest Community	Plant the site with native trees and shrubs and a herbaceous seed mix that supports the development of a Piedmont Alluvial Forest	Geomorphology / Wetland Species Composition	Vegetation	Density
				Species Composition/Diversity
				Exotic and Nuisance Species
Restore a wetland hydroperiod to drained and livestock-impacted land	Fill field ditches and redevelop wetland microtopography to slow the flow of surface and subsurface drainage	Wetland Hydrology	Groundwater Saturation/ Surface Ponding	Percent Saturation Within 12 inches

Table adapted from Harman et al. 2012

10.0 MONITORING REQUIREMENTS

Monitoring of the Sandy Bridge Farm Stream Restoration Site shall consist of the collection and analysis of stream and wetland hydrology, stability, and vegetation survivability data to support the evaluation of the project in meeting established performance standards described above. The Proposed Monitoring Plan in Appendix C shows the proposed locations of monitoring features described below.

Vegetation Monitoring

The success of the riparian buffer and wetland plantings will be evaluated using 8 ten-by-ten meter or equivalently-sized vegetative sampling plots within the planted area. Trees and shrubs will be grouped into height classifications and the species notated. Volunteers will be recorded in the same manner, but counted separately from planted trees. The corners of each monitoring plot will be permanently marked in the field and the coordinates of the plot corners will be recorded using conventional survey or GPS. Additionally, a photograph will be taken of each plot that will be replicated each monitoring year. Beginning at the end of the first growing season, KCI will monitor the planted vegetation in monitoring years 1, 2, 3, and 5 at a minimum; vegetation monitoring will occur in Year 7 as needed.

Wetland Hydrologic Monitoring

Hydrologic performance will be determined through evaluation of automatic recording gauge data supplemented by documentation of wetland hydrology indicators as defined in the 1987 USACE Wetland Delineation Manual. Daily data will be collected from nine automatic wells over the 5 to 7-year monitoring period following implementation.

Stream Hydrologic Monitoring

Bankfull events on-site will be verified using an automatic stream monitoring gauge to record daily stream depth readings.

Stream Geomorphology Monitoring

For stream monitoring, the purpose of monitoring is to evaluate the stability of the restored stream. Following the procedures established in the USDA Forest Service Manual, Stream Channel Reference Sites (Harrelson et al. 1994) and the methodologies utilized in the Rosgen stream assessment and classification system (1994 and 1996), data collected will consist of detailed dimension measurements, longitudinal profiles, and bed materials sampling.

Dimension

Four permanent cross-sections (2 riffles and 2 pools) will be established, one set of a riffle and pool at the top of the site and the other set within the lower third of the restored reach. The extents of each cross-section will be recorded by either conventional survey or GPS. The cross-sectional surveys shall provide a detailed measurement of the stream and banks and will include points on the adjacent floodplain or valley, at the top of bank, bankfull, at all breaks in slope, the edge of water, and thalweg. Width/depth and entrenchment ratios will be calculated for each cross-section based on the survey data. Cross-section measurements will take place in Years 1, 2, 3, and 5, and in Year 7 if determined necessary.

Profile

A detailed longitudinal profile will be conducted along the length of T1 during the as-built survey. Measurements will include slopes (average, pool, and riffle) as well as calculations of pool-to-pool spacing. No additional profile measurements will be taken during the monitoring period unless deemed necessary due to concerns about bed elevation adjustments.

Bed Materials

Pebble counts will be conducted at each monitored riffle cross-section for the purpose of repeated classification and to evaluate sediment transport during Years 1, 2, 3, and 5, and in Year 7 if determined necessary.

Visual Assessment

An annual site walk will be conducted at the end of each monitoring period to document any problem areas. Specific problem areas that could arise include excessive bank erosion, bed deposition or aggradation, problems with the installed structures, or sparse vegetative cover. The findings of the visual assessment as well as any recommended corrective actions for problem areas will be summarized in the monitoring reports by way of a Current Conditions Plan View (CCPV) figure.

Photograph reference points (PRPs) will be established to assist in characterizing the site and to allow qualitative evaluation of the site conditions. The location of each photo point will be marked in the monitoring plan and the bearing/orientation of the photograph will be documented to allow for repeated use.

Reporting

Annual monitoring data will be reported using the most current DMS monitoring template (NCEEP 2014a). The monitoring report shall provide a project data chronology that will facilitate an understanding of project status and trends, population of DMS databases for analysis, research purposes, and assist in decision making regarding project close-out. The report will document the monitored components and include all collected data, analyses, and photographs. The first scheduled monitoring will be conducted during the first full growing season following project completion. Planted vegetation must be in the ground for at least 180 days prior to initiation of the first year of monitoring. The site will be monitored for performance standards for a minimum of five years or for seven years as needed after completion of

construction. Full monitoring reports will be completed in Years 1, 2, 3, and 5, plus Year 7 if necessary. Limited monitoring reports (CCPV, photos, stream and wetland gauge data, and site narrative) will be submitted in Year 4, plus Year 6 if necessary.

Sandy Bridge Farm Restoration Site Monitoring				
Required	Parameter	Quantity	Frequency	Notes
Yes	Stream Pattern and Profile	1,626 linear feet	Once, during as-built survey	Additional measurements in later years may be taken as necessary.
Yes	Stream Dimension	4 Cross-sections (2 pools, 2 riffles)	Monitoring Years 1, 2, 3, and 5; 7 if necessary.	Monitoring may occur in additional years (particularly Year 7) if necessary.
Yes	Substrate	2 pebble counts at permanent riffle cross-section	Monitoring Years 1, 2, 3, and 5; 7 if necessary.	Monitoring may occur in additional years (particularly Year 7) if necessary.
Yes	Groundwater Hydrology	9 gauges	Annual	Groundwater monitoring gauges with data recording devices will be installed on-site; the data will be downloaded on a monthly basis during the growing season
Yes	Stream Hydrology	1 gauge	Annual	
Yes	Vegetation	8 permanent vegetation monitoring plots	Monitoring Years 1, 2, 3, and 5; 7 if necessary.	
Yes	Exotic and nuisance vegetation		Annual	Locations of exotic and nuisance vegetation will be mapped
Yes	Project boundary		Semi-annual	Locations of vegetation damage, boundary encroachments, etc. will be mapped

11.0 LONG-TERM MANAGEMENT PLAN

Upon approval for close-out by the Interagency Review Team (IRT), the site will be transferred to the NCDEQ Stewardship Program. This party shall be responsible for periodic inspection of the site to ensure that restrictions required in the conservation easement are upheld. Endowment funds required to uphold easement and deed restrictions shall be negotiated prior to site transfer to the responsible party.

The NCDEQ Stewardship Program currently houses DMS stewardship endowments within the non-reverting, interest-bearing Conservation Lands Stewardship Endowment Account. The use of funds from the Endowment Account is governed by North Carolina General Statute GS 113A-232(d)(3). Interest gained by the endowment fund may be used only for the purpose of stewardship, monitoring, stewardship administration, and land transaction costs, if applicable. The NCDEQ Stewardship Program intends to manage the account as a non-wasting endowment. Only interest generated from the endowment funds will be used to steward the compensatory mitigation site. Interest funds not used for those purposes will be re-invested in the Endowment Account to offset losses due to inflation.

12.0 ADAPTIVE MANAGEMENT PLAN

Upon completion of site construction KCI will implement the post-construction monitoring protocols previously defined in this document. Project maintenance will be performed as described previously in this document. If, during the course of annual monitoring it is determined that the site's ability to achieve site performance standards are jeopardized, KCI will notify the DMS and the USACE of the need to develop a Plan of Corrective Action. The Plan of Corrective Action may be prepared using in-house technical staff or may require engineering and consulting services. Once the Corrective Action Plan is prepared and finalized KCI will:

1. Notify the DMS and USACE as required by the Nationwide 27 permit general conditions.
2. Revise performance standards, maintenance requirements, and monitoring requirements as necessary and/or required by the USACE.
3. Obtain other permits as necessary.
4. Implement the Corrective Action Plan.
5. Provide the USACE a Record Drawing of Corrective Actions. This document shall depict the extent and nature of the work performed.

13.0 FINANCIAL ASSURANCES

Pursuant to Section IV H and Appendix III of the Division of Mitigation Service's In-Lieu Fee Instrument dated July 28, 2010, the North Carolina Department of Environmental Quality (formerly NCDENR) has provided the U.S. Army Corps of Engineers Wilmington District with a formal commitment to fund projects to satisfy mitigation requirements assumed by DMS. This commitment provides financial assurance for all mitigation projects implemented by the program.

14.0 REFERENCES

- Dunne, T. and L.B. Leopold. 1978. *Water in Environmental Planning*. New York: W.H. Freeman and Company.
- Environmental Laboratory. 1987. *Corps of Engineers Wetlands Delineation Manual, Technical Report Y-87-1*. Vicksburg, MS: U.S. Army Engineer Waterways Experiment Station.
- Harman, W.A., G.D. Jennings, J.M. Patterson, D.R. Clinton, L.O. Slate, A.G. Jessup, J. R. Everhart, and R.E. Smith, 1999. *Bankfull Hydraulic Geometry Relationships for North Carolina Streams*. *Wildland Hydrology. AWRA Symposium Proceedings*. Edited by D.S. Olsen and J.P. Potyondy. American Water Resources Association. June 30 – July 2, 1999. Bozeman, MT.
- Harman, W., R. Starr, M. Carter, K. Tweedy, M. Clemmons, K. Suggs, C. Miller. 2012. *A Function-Based Framework for Stream Assessment and Restoration Projects*. US Environmental Protection Agency, Office of Wetlands, Oceans, and Watersheds, Washington, DC EPA 843-K-12-006.
- NCDENR, Division of Water Quality. 2008. *Broad River Basinwide Water Quality Plan*. Last accessed 1/2016 at: <http://portal.ncdenr.org/web/wq/ps/bpu/basin/broad/2008>
- NCDENR, Ecosystem Enhancement Program. 2009. *Broad River Basin Restoration Priorities 2009*. Raleigh, NC. Last accessed 1/2016 at: http://portal.ncdenr.org/c/document_library/get_file?uuid=705d1b58-cb91-451e-aa58-4ef128b1e5ab&groupId=60329
- NCDENR, Ecosystem Enhancement Program. 2014. *NCDENR, Ecosystem Enhancement Program. 2014. Stream and Wetland Mitigation Monitoring Guidelines*. Last accessed 1/2016 at: http://portal.ncdenr.org/c/document_library/get_file?p_l_id=60409&folderId=18877169&name=DLFE-86604.pdf
- NCDENR, Ecosystem Enhancement Program. 2014. *Stream and Wetland Mitigation Monitoring Guidelines*. Last accessed 6/2015 at: http://portal.ncdenr.org/c/document_library/get_file?p_l_id=60409&folderId=18877169&name=DLFE-86606.pdf
- NCDEQ, Division of Water Resources. 2015. *Surface Water Classification*. Last accessed 1/2016 at: <http://portal.ncdenr.org/web/wq/ps/csu/classifications>
- NCDEQ, Division of Water Resources. 2014 303(d) list. Raleigh, NC. Last accessed 1/2016 at: <http://portal.ncdenr.org/web/wq/ps/mtu/assessment>
- North Carolina State University. 2015. *DRAINMOD Computer Model*. Last accessed 11/2015 at: www.bae.ncsu.edu/soil_water/drainmod/
- NOAA, National Climatic Data Center. 2015. *Climate Data Online - Tryon, NC Station 318744*. Last accessed 6/2015 at: <http://www.ncdc.noaa.gov/cdo-web/>.

Schafale, M.P. 2012. Guide to the Natural Communities of North Carolina, Fourth Approximation. North Carolina Natural Heritage Program, Department of Environment and Natural Resource. Raleigh, NC.

Sprecher, S.W. 2000. Accessing and Using Meteorological Data to Evaluate Wetland Hydrology. Headquarters, U.S. Army Corps of Engineers, Operations Division, Regulatory Branch.

Stream Mitigation Guidelines, April 2003, US Army Corps of Engineers Wilmington District.

USDA, Natural Resources Conservation Service. 2010. Field Indicators of Hydric Soils in the United States: a Guide for Identifying and Delineating Hydric Soils, Version 7.0.

USDA, Natural Resources Conservation Service. 1997. Soil Survey of Rutherford County. Raleigh, North Carolina.

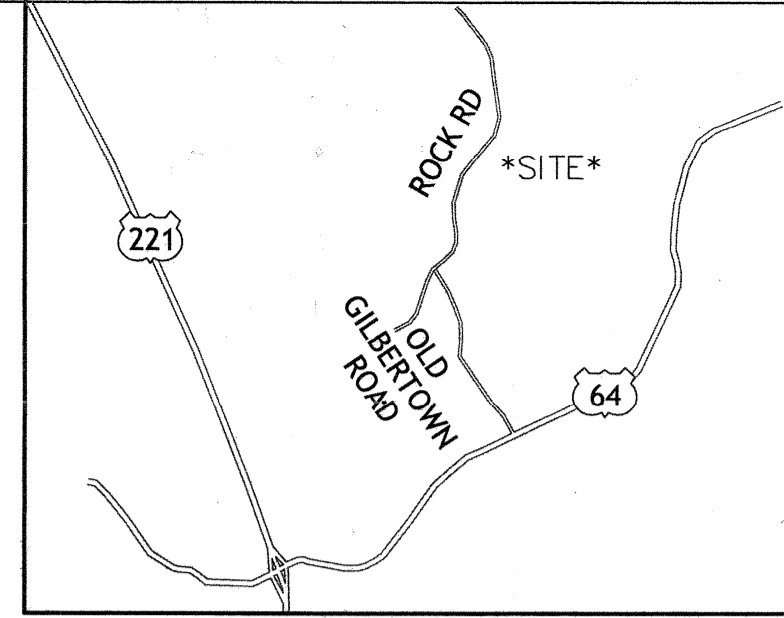
Appendix A. Site Protection Instrument

NOTES:

- THIS PLAT DOES NOT REPRESENT A BOUNDARY SURVEY OF THE PARENT TRACTS. THE PARENT TRACT BOUNDARIES ADJACENT TO THIS EASEMENT ARE NOT CHANGED BY THIS PLAT. BOUNDARY INFORMATION SHOWN HEREON WAS DERIVED FROM DEEDS AND MAPS OF RECORD IN RUTHERFORD COUNTY AND MONUMENTATION FOUND IN THE FIELD.
- DISTANCES SHOWN ARE HORIZONTAL GROUND DISTANCES IN U.S. SURVEY FEET UNLESS OTHERWISE NOTED.
- AREA COMPUTED BY COORDINATE METHOD.
- THE BASIS OF THE MERIDIANS AND COORDINATES FOR THIS PLAT IS THE NORTH CAROLINA STATE PLANE COORDINATE SYSTEM, NORTH AMERICAN DATUM 1983 (NAD 83), BASED ON DIFFERENTIAL GPS OBSERVATIONS PERFORMED IN JUNE 2015.
- DEED REFERENCES: AS SHOWN HEREON.
- SUBJECT PROPERTIES KNOWN AS TAX NUMBER: AS SHOWN HEREON.
- SUBJECT EASEMENT LIES WITHIN THE AREA DESIGNATED AS ZONE "AE", BASED ON FEDERAL FLOOD INSURANCE RATE MAP 3710162100J EFFECTIVE JULY 2, 2008.
- NO UNDERGROUND UTILITY LOCATING PERFORMED DURING THE COURSE OF THIS SURVEY.
- THE STATE PLANE COORDINATES FOR THIS PROJECT WERE PRODUCED WITH RTK GPS OBSERVATIONS. THE NETWORK POSITIONAL ACCURACY OF THE RTK DERIVED POSITIONAL INFORMATION IS 0.02 METER. HORIZONTAL POSITIONS ARE REFERENCED TO NAD 83 (2011). VERTICAL POSITIONS ARE REFERENCED TO NAVD83 (GEOID12B). COMBINED SCALE FACTOR = 0.99983921

POINT	NORTHING	EASTING
1	617312.12	1124911.82
2	617326.40	1124949.07
3	616740.33	1125262.63
4	616516.23	1125064.67
5	616352.00	1125031.43
6	616073.83	1125067.19
7	616016.31	1125023.49
8	615900.51	1124950.42
9	615903.58	1124891.97
10	616202.14	1124907.64
11	616712.59	1124622.97

Doc ID: 00470089001 Type: CRP
 Recorded: 02/04/2016 at 04:56:11 PM
 Fee Amt: \$21.00 Page 1 of 1
 Instr# 20150006780
 Rutherford County, NC
 Faye H. Huskey Register of Deeds
BK 37 PG 16



LINE	LENGTH	BEARING
L1	52.15	N53°29'08"E
L2	11.76	S40°46'48"E
L3	108.24	N48°22'17"E
L4	59.63	N30°07'39"E
L5	24.80	S43°10'24"E
L6	39.89	N69°01'50"E

OWNER CERTIFICATION

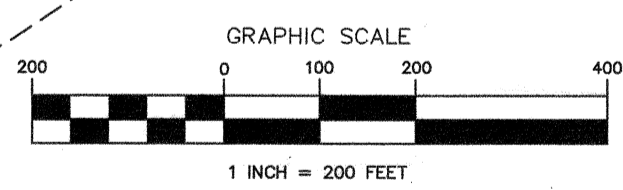
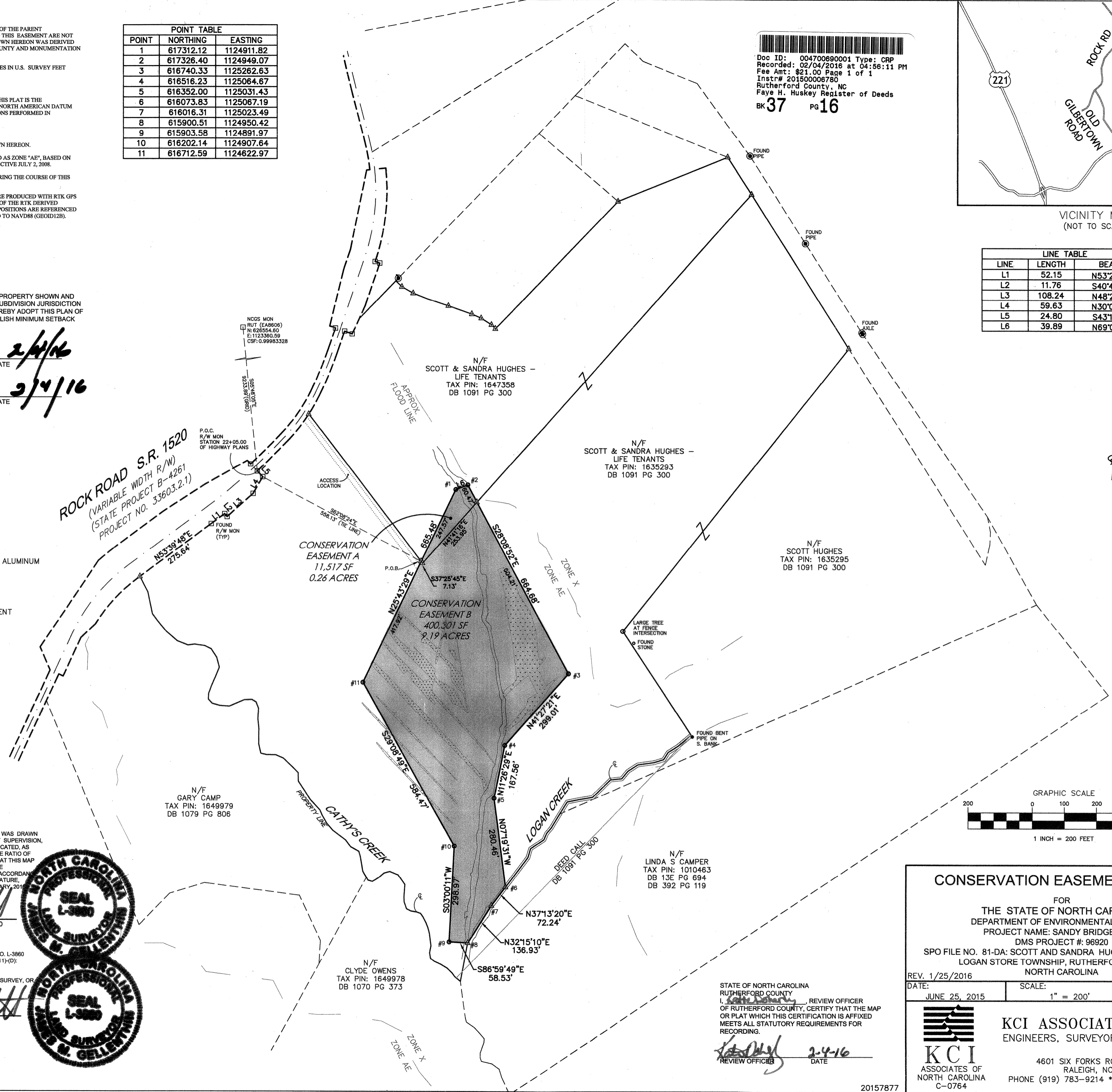
I HEREBY CERTIFY THAT I AM THE OWNER OF THE PROPERTY SHOWN AND DESCRIBED HEREON, WHICH IS LOCATED IN THE SUBDIVISION JURISDICTION OF THE COUNTY OF RUTHERFORD AND THAT I HEREBY ADOPT THIS PLAN OF SUBDIVISION WITH MY FREE CONSENT AND ESTABLISH MINIMUM SETBACK LINES AS NOTED.

Carol Ann Hill 2/4/16
 OWNER DATE
Sandra D Hughes 2/4/16
 OWNER DATE

LEGEND

- EXISTING PK NAIL
- EXISTING IRON
- 5/8" REBAR SET W/ 3.25" ALUMINUM CAP WITH STATE SEAL
- △ CALCULATED POINT
- EXISTING MONUMENT
- NEW CONSERVATION EASEMENT
- ▨ WETLAND
- P.O.B. POINT OF BEGINNING
- P.O.C. POINT OF COMMENCEMENT

ROCK ROAD S.R. 1520
 (VARIABLE WIDTH R/W)
 (STATE PROJECT B-4261
 PROJECT NO. 33603.2.1)



I, JAMES M. GELLENTHIN, HEREBY DECLARE THAT THIS MAP WAS DRAWN UNDER MY SUPERVISION FROM A SURVEY MADE UNDER MY SUPERVISION, THAT THE BOUNDARIES NOT SURVEYED ARE CLEARLY INDICATED, AS DRAWN FROM INFORMATION AS SHOWN HEREON, THAT THE RATIO OF PRECISION AS CALCULATED IS GREATER THAN 1:10,000; THAT THIS MAP DOES REPRESENT AN OFFICIAL BOUNDARY SURVEY OF THE CONSERVATION EASEMENT AND HAS BEEN PREPARED IN ACCORDANCE WITH G.S. 47-30 AS AMENDED. WITNESS MY ORIGINAL SIGNATURE, REGISTRATION NUMBER AND SEAL THIS 25TH DAY OF JANUARY, 2016.

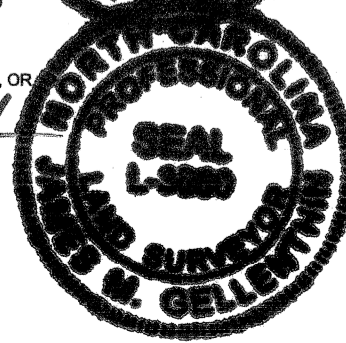
James M. Gellenthin
 NORTH CAROLINA REGISTRATION NUMBER L-3860
JAMES M. GELLENTHIN



I, JAMES M. GELLENTHIN, PROFESSIONAL LAND SURVEYOR, NO. L-3860 CERTIFY TO THE FOLLOWING AS REQUIRED IN G.S. 47-30 (F)-(1)-(D):

THAT THE SURVEY IS OF ANOTHER CATEGORY, SUCH AS THE RECOMBINATION OF EXISTING PARCELS, A COURT ORDERED SURVEY, OR OTHER EXCEPTION TO THE DEFINITION OF SUBDIVISION.

James M. Gellenthin
 NORTH CAROLINA REGISTRATION NUMBER L-3860
JAMES M. GELLENTHIN



CONSERVATION EASEMENT SURVEY

FOR
 THE STATE OF NORTH CAROLINA
 DEPARTMENT OF ENVIRONMENTAL QUALITY
 PROJECT NAME: SANDY BRIDGE FARM
 DMS PROJECT #: 98920
 SPO FILE NO. 81-DA: SCOTT AND SANDRA HUGHES - LIFE TENANTS
 LOGAN STORE TOWNSHIP, RUTHERFORD COUNTY
 NORTH CAROLINA

REV. 1/25/2016

DATE: JUNE 25, 2015	SCALE: 1" = 200'	SHEET: 1 OF 1
---------------------	------------------	---------------

KCI ASSOCIATES OF N.C.
 ENGINEERS, SURVEYORS AND PLANNERS

4601 SIX FORKS ROAD, SUITE 220
 RALEIGH, NC 27609
 PHONE (919) 783-9214 * FAX (919) 783-9266

C-0764

STATE OF NORTH CAROLINA
 RUTHERFORD COUNTY
 I, *James M. Gellenthin*, REVIEW OFFICER
 OF RUTHERFORD COUNTY, CERTIFY THAT THE MAP
 OR PLAT WHICH THIS CERTIFICATION IS AFFIXED
 MEETS ALL STATUTORY REQUIREMENTS FOR
 RECORDING.
James M. Gellenthin 2-4-16
 REVIEW OFFICER DATE

Doc ID: 004700700012 Type: CRP
Recorded: 02/04/2016 at 04:57:52 PM
Fee Amt: \$253.00 Page 1 of 12
Revenue Tax: \$227.00
Instr# 20150006781
Rutherford County, NC
Faye H. Huskey Register of Deeds
BK **1120** PG **802-813**

This instrument prepared by ~~Richard P Williams~~
a licensed NC attorney. Delinquent taxes, if
any, to be paid by the closing attorney to the
county tax collector upon disbursement of
closing proceeds

STATE OF NORTH CAROLINA

**DEED OF CONSERVATION EASEMENT
AND RIGHT OF ACCESS PROVIDED
PURSUANT TO
FULL DELIVERY
MITIGATION CONTRACT**

RUTHERFORD COUNTY

**SPO File Number: 81-DA
DMS Project Number: 96920**

Stamp \$227.00
Prepared by: Office of the Attorney General
Property Control Section
Return to: NC Department of Administration
State Property Office
1321 Mail Service Center
Raleigh, NC 27699-1321

Law Offices of Richard P Williams, PLLC
PO Box 550, Rutherfordton, NC 28139

THIS DEED OF CONSERVATION EASEMENT AND RIGHT OF ACCESS, made this 4 day of February, 2016, by David Scott Hughes and wife, Sandra D. Hughes (collectively, "**Grantor**"), whose mailing address is 1356 Rock Road, Rutherfordton, NC 28139, to the State of North Carolina, ("**Grantee**"), whose mailing address is State of North Carolina, Department of Administration, State Property Office, 1321 Mail Service Center, Raleigh, NC 27699-1321. The designations of Grantor and Grantee as used herein shall include said parties, their heirs, successors, and assigns, and shall include singular, plural, masculine, feminine, or neuter as required by context.

WITNESSETH:

WHEREAS, pursuant to the provisions of N.C. Gen. Stat. § 143-214.8 et seq., the State of North Carolina has established the Division of Mitigation Services (formerly known as the Ecosystem Enhancement Program) within the Department of Environmental Quality for the purposes of acquiring, maintaining, restoring, enhancing, creating and preserving wetland and riparian resources that contribute to the protection and improvement of water quality, flood prevention, fisheries, aquatic habitat, wildlife habitat, and recreational opportunities; and

WHEREAS, this Conservation Easement from Grantor to Grantee has been negotiated, arranged and provided for as a condition of a full delivery contract between **KCI Environmental Technologies and Construction Inc.** and the North Carolina Department of Environmental Quality, to provide stream, wetland and/or buffer mitigation pursuant to the North Carolina Department of Environmental Quality Purchase and Services Contract Number **6400**.

WHEREAS, The State of North Carolina is qualified to be the Grantee of a Conservation Easement pursuant to N.C. Gen. Stat. § 121-35; and

WHEREAS, the Department of Environment and Natural Resources and the United States Army Corps of Engineers, Wilmington District entered into a Memorandum of Understanding, (MOU) duly executed by all parties on November 4, 1998. This MOU recognized that the Wetlands Restoration Program was to provide effective compensatory mitigation for authorized impacts to wetlands, streams and other aquatic resources by restoring, enhancing and preserving the wetland and riparian areas of the State; and

WHEREAS, the Department of Environment and Natural Resources, the North Carolina Department of Transportation and the United States Army Corps of Engineers, Wilmington District entered into a Memorandum of Agreement, (MOA) duly executed by all parties in Greensboro, NC on July 22, 2003, which recognizes that the Ecosystem Enhancement Program is to provide for compensatory mitigation by effective protection of the land, water and natural resources of the State by restoring, enhancing and preserving ecosystem functions; and

WHEREAS, the Department of Environment and Natural Resources, the U.S. Army Corps of Engineers, the U.S. Environmental Protection Agency, the U.S. Fish and Wildlife Service, the North Carolina Wildlife Resources Commission, the North Carolina Division of Water Quality, the North Carolina Division of Coastal Management, and the National Marine Fisheries Service entered into an agreement to continue the In-Lieu Fee operations of the North Carolina Department of Natural Resources' Ecosystem Enhancement Program with an effective date of 28 July, 2010, which supersedes and replaces the previously effective MOA and MOU referenced above; and

WHEREAS, the acceptance of this instrument for and on behalf of the State of North Carolina was granted to the Department of Administration by resolution as approved by the Governor and Council of State adopted at a meeting held in the City of Raleigh, North Carolina, on the 8th day of February 2000; and

WHEREAS, the Division of Mitigation Services in the Department of Environmental Quality, which has been delegated the authority authorized by the Governor and Council of State to the Department of Administration, has approved acceptance of this instrument; and

WHEREAS, Grantor owns in fee simple certain real property situated, lying, and being in **Logan Store** Township, Rutherford County, North Carolina (the "**Property**"), and being more particularly described as that certain parcel of land containing approximately 63 acres and described as "Tract 1" and "Tract 3" in deed recorded in **Deed Book 1091 at Page 300** of the **Rutherford** County Registry, North Carolina; and

WHEREAS, Grantor is willing to grant a Conservation Easement and Right of Access over the herein described areas of the Property, thereby restricting and limiting the use of the areas of the Property subject to the Conservation Easement to the terms and conditions and purposes hereinafter set forth, and Grantee is willing to accept said Easement and Access Rights. The Conservation Easement shall be for the protection and benefit of the waters of Catheys Creek.

NOW, THEREFORE, in consideration of the mutual covenants, terms, conditions, and restrictions hereinafter set forth, Grantor unconditionally and irrevocably hereby grants and conveys unto Grantee, its successors and assigns, forever and in perpetuity, a Conservation Easement along with a general Right of Access.

The Conservation Easement Area consists of the following:

Conservation Easement A containing **0.26 acres** and Conservation Easement B containing **9.19 acres** as shown on the plats of survey entitled "Final Plat, Conservation Easement for North Carolina Department of Environmental Quality, Division of Mitigation Services, Project Name: Sandy Bridge Farm, DMS Project #: 96920, SPO File No. 81-DA: Property of Scott and Sandra Hughes," dated June 25, 2015 by **James M. Gellenthin**, PLS Number **L-3860** and recorded in the **Rutherford County**, North Carolina Register of Deeds at **Plat Book 37 Pages 16**.

See attached "**Exhibit A**", Legal Description of area of the Property hereinafter referred to as the "Conservation Easement Area"

The purposes of this Conservation Easement are to maintain, restore, enhance, construct, create and preserve wetland and/or riparian resources in the Conservation Easement Area that contribute to the protection and improvement of water quality, flood prevention, fisheries, aquatic habitat, wildlife habitat, and recreational opportunities; to maintain permanently the Conservation Easement Area in its natural condition, consistent with these purposes; and to prevent any use of the Easement Area that will significantly impair or interfere with these purposes. To achieve these purposes, the following conditions and restrictions are set forth:

I. DURATION OF EASEMENT

Pursuant to law, including the above referenced statutes, this Conservation Easement and Right of Access shall be perpetual and it shall run with, and be a continuing restriction upon the use of, the Property, and it shall be enforceable by the Grantee against the Grantor and against Grantor's heirs, successors and assigns, personal representatives, agents, lessees, and licensees.

II. GRANTOR RESERVED USES AND RESTRICTED ACTIVITIES

The Conservation Easement Area shall be restricted from any development or usage that would impair or interfere with the purposes of this Conservation Easement. Unless expressly

reserved as a compatible use herein, any activity in, or use of, the Conservation Easement Area by the Grantor is prohibited as inconsistent with the purposes of this Conservation Easement. Any rights not expressly reserved hereunder by the Grantor have been acquired by the Grantee. Any rights not expressly reserved hereunder by the Grantor, including the rights to all mitigation credits, including, but not limited to, stream, wetland, and riparian buffer mitigation units, derived from each site within the area of the Conservation Easement, are conveyed to and belong to the Grantee. Without limiting the generality of the foregoing, the following specific uses are prohibited, restricted, or reserved as indicated:

A. Recreational Uses. Grantor expressly reserves the right to undeveloped recreational uses, including hiking, bird watching, hunting and fishing, and access to the Conservation Easement Area for the purposes thereof.

B. Motorized Vehicle Use. Motorized vehicle use in the Conservation Easement Area is prohibited except within a Crossing Area(s) or Road or Trail as shown on the recorded survey plat.

C. Educational Uses. The Grantor reserves the right to engage in and permit others to engage in educational uses in the Conservation Easement Area not inconsistent with this Conservation Easement, and the right of access to the Conservation Easement Area for such purposes including organized educational activities such as site visits and observations. Educational uses of the property shall not alter vegetation, hydrology or topography of the site.

D. Damage to Vegetation. Except within Crossing Area(s) as shown on the recorded survey plat and as related to the removal of non-native plants, diseased or damaged trees, or vegetation that destabilizes or renders unsafe the Conservation Easement Area to persons or natural habitat, all cutting, removal, mowing, harming, or destruction of any trees and vegetation in the Conservation Easement Area is prohibited.

E. Industrial, Residential and Commercial Uses. All industrial, residential and commercial uses are prohibited in the Conservation Easement Area.

F. Agricultural Use. All agricultural uses are prohibited within the Conservation Easement Area including any use for cropland, waste lagoons, or pastureland.

G. New Construction. There shall be no building, facility, mobile home, antenna, utility pole, tower, or other structure constructed or placed in the Conservation Easement Area.

H. Roads and Trails. There shall be no construction or maintenance of new roads, trails, walkways, or paving in the Conservation Easement .

All existing roads, trails and crossings within the Conservation Easement Area shall be shown on the recorded survey plat.

I. Signs. No signs shall be permitted in the Conservation Easement Area except interpretive signs describing restoration activities and the conservation values of the

Conservation Easement Area, signs identifying the owner of the Property and the holder of the Conservation Easement, signs giving directions, or signs prescribing rules and regulations for the use of the Conservation Easement Area.

J. Dumping or Storing. Dumping or storage of soil, trash, ashes, garbage, waste, abandoned vehicles, appliances, machinery, or any other material in the Conservation Easement Area is prohibited.

K. Grading, Mineral Use, Excavation, Dredging. There shall be no grading, filling, excavation, dredging, mining, drilling, hydraulic fracturing; removal of topsoil, sand, gravel, rock, peat, minerals, or other materials.

L. Water Quality and Drainage Patterns. There shall be no diking, draining, dredging, channeling, filling, leveling, pumping, impounding or diverting, causing, allowing or permitting the diversion of surface or underground water in the Conservation Easement Area. No altering or tampering with water control structures or devices, or disruption or alteration of the restored, enhanced, or created drainage patterns is allowed. All removal of wetlands, polluting or discharging into waters, springs, seeps, or wetlands, or use of pesticide or biocides in the Conservation Easement Area is prohibited. In the event of an emergency interruption or shortage of all other water sources, water from within the Conservation Easement Area may temporarily be withdrawn for good cause shown as needed for the survival of livestock on the Property.

M. Subdivision and Conveyance. Grantor voluntarily agrees that no further subdivision, partitioning, or dividing of the Conservation Easement Area portion of the Property owned by the Grantor in fee simple ("fee") that is subject to this Conservation Easement is allowed. Any future transfer of the Property shall be subject to this Conservation Easement and Right of Access and to the Grantee's right of unlimited and repeated ingress and egress over and across the Property to the Conservation Easement Area for the purposes set forth herein.

N. Development Rights. All development rights are permanently removed from the Conservation Easement Area and are non-transferrable.

O. Disturbance of Natural Features. Any change, disturbance, alteration or impairment of the natural features of the Conservation Easement Area or any intentional introduction of non-native plants, trees and/or animal species by Grantor is prohibited.

The Grantor may request permission to vary from the above restrictions for good cause shown, provided that any such request is not inconsistent with the purposes of this Conservation Easement, and the Grantor obtains advance written approval from the N.C. Ecosystem Enhancement Program, whose mailing address is 1652 Mail Services Center, Raleigh, NC 27699-1652.

III. GRANTEE RESERVED USES

A. Right of Access, Construction, and Inspection. The Grantee, its employees and agents, successors and assigns, receive a perpetual right and easement of access to the Conservation Easement Area over the Property at reasonable times to undertake any activities to restore, construct, manage, maintain, enhance, protect, and monitor the stream, wetland and any other riparian resources in the Conservation Easement Area, in accordance with restoration activities or a long-term management plan. Unless otherwise specifically set forth in this Conservation Easement, the rights granted herein do not include or establish for the public any access rights.

B. Restoration Activities. These activities include planting of trees, shrubs and herbaceous vegetation, installation of monitoring wells, utilization of heavy equipment to grade, fill, and prepare the soil, modification of the hydrology of the site, and installation of natural and manmade materials as needed to direct in-stream, above ground, and subterranean water flow.

C. Signs. The Grantee, its employees and agents, successors or assigns, shall be permitted to place signs and witness posts on the Property to include any or all of the following: describe the project, prohibited activities within the Conservation Easement, or identify the project boundaries and the holder of the Conservation Easement.

D. Fences. Conservation Easements are purchased to protect the investments by the State (Grantee) in natural resources. Livestock within conservations easements damages the investment and can result in reductions in natural resource value and mitigation credits which would cause financial harm to the State. Therefore, Landowners (Grantor) with livestock are required to restrict livestock access to the Conservation Easement area. Repeated failure to do so may result in the State (Grantee) repairing or installing livestock exclusion devices (fences) within the conservation area for the purpose of restricting livestock access. In such cases, the landowner (Grantor) must provide access to the State (Grantee) to make repairs.

E. Crossing Area(s). The Grantee is not responsible for maintenance of crossing area(s), however, the Grantee, its employees and agents, successors or assigns, reserve the right to repair crossing area(s), at its sole discretion and to recover the cost of such repairs from the Grantor if such repairs are needed as a result of activities of the Grantor, his successors or assigns.

IV. ENFORCEMENT AND REMEDIES

A. Enforcement. To accomplish the purposes of this Conservation Easement, Grantee is allowed to prevent any activity within the Conservation Easement Area that is inconsistent with the purposes of this Conservation Easement and to require the restoration of such areas or features in the Conservation Easement Area that may have been damaged by such unauthorized activity or use. Upon any breach of the terms of this Conservation Easement by Grantor, the Grantee shall, except as provided below, notify the Grantor in writing of such breach and the Grantor shall have ninety (90) days after receipt of such notice to correct the damage caused by such breach. If the breach and damage remains uncured after ninety (90) days, the Grantee may enforce this Conservation Easement by bringing appropriate legal proceedings including an action to recover damages, as well as injunctive and other relief. The Grantee shall also have the power and authority, consistent with its statutory authority: (a) to prevent any impairment of the

Conservation Easement Area by acts which may be unlawful or in violation of this Conservation Easement; (b) to otherwise preserve or protect its interest in the Property; or (c) to seek damages from any appropriate person or entity. Notwithstanding the foregoing, the Grantee reserves the immediate right, without notice, to obtain a temporary restraining order, injunctive or other appropriate relief, if the breach is or would irreversibly or otherwise materially impair the benefits to be derived from this Conservation Easement, and the Grantor and Grantee acknowledge that the damage would be irreparable and remedies at law inadequate. The rights and remedies of the Grantee provided hereunder shall be in addition to, and not in lieu of, all other rights and remedies available to Grantee in connection with this Conservation Easement.

B. Inspection. The Grantee, its employees and agents, successors and assigns, have the right, with reasonable notice, to enter the Conservation Easement Area over the Property at reasonable times for the purpose of inspection to determine whether the Grantor is complying with the terms, conditions and restrictions of this Conservation Easement.

C. Acts Beyond Grantor's Control. Nothing contained in this Conservation Easement shall be construed to entitle Grantee to bring any action against Grantor for any injury or change in the Conservation Easement Area caused by third parties, resulting from causes beyond the Grantor's control, including, without limitation, fire, flood, storm, and earth movement, or from any prudent action taken in good faith by the Grantor under emergency conditions to prevent, abate, or mitigate significant injury to life or damage to the Property resulting from such causes.

D. Costs of Enforcement. Beyond regular and typical monitoring expenses, any costs incurred by Grantee in enforcing the terms of this Conservation Easement against Grantor, including, without limitation, any costs of restoration necessitated by Grantor's acts or omissions in violation of the terms of this Conservation Easement, shall be borne by Grantor.

E. No Waiver. Enforcement of this Easement shall be at the discretion of the Grantee and any forbearance, delay or omission by Grantee to exercise its rights hereunder in the event of any breach of any term set forth herein shall not be construed to be a waiver by Grantee.

V. MISCELLANEOUS

A. This instrument sets forth the entire agreement of the parties with respect to the Conservation Easement and supersedes all prior discussions, negotiations, understandings or agreements relating to the Conservation Easement. If any provision is found to be invalid, the remainder of the provisions of the Conservation Easement, and the application of such provision to persons or circumstances other than those as to which it is found to be invalid, shall not be affected thereby.

B. Grantor is responsible for any real estate taxes, assessments, fees, or charges levied upon the Property. Grantee shall not be responsible for any costs or liability of any kind related to the ownership, operation, insurance, upkeep, or maintenance of the Property, except as expressly provided herein. Upkeep of any constructed bridges, fences, or other amenities on the Property are the sole responsibility of the Grantor. Nothing herein shall relieve the Grantor of the

obligation to comply with federal, state or local laws, regulations and permits that may apply to the exercise of the Reserved Rights.

C. Any notices shall be sent by registered or certified mail, return receipt requested to the parties at their addresses shown herein or to other addresses as either party establishes in writing upon notification to the other.

D. Grantor shall notify Grantee in writing of the name and address and any party to whom the Property or any part thereof is to be transferred at or prior to the time said transfer is made. Grantor further agrees that any subsequent lease, deed, or other legal instrument by which any interest in the Property is conveyed is subject to the Conservation Easement herein created.

E. The Grantor and Grantee agree that the terms of this Conservation Easement shall survive any merger of the fee and easement interests in the Property or any portion thereof.

F. This Conservation Easement and Right of Access may be amended, but only in writing signed by all parties hereto, or their successors or assigns, if such amendment does not affect the qualification of this Conservation Easement or the status of the Grantee under any applicable laws, and is consistent with the purposes of the Conservation Easement. The owner of the Property shall notify the State Property Office and the U.S. Army Corps of Engineers in writing sixty (60) days prior to the initiation of any transfer of all or any part of the Property or of any request to void or modify this Conservation Easement. Such notifications and modification requests shall be addressed to:

Division of Mitigation Services Program Manager
State Property Office
1321 Mail Service Center
Raleigh, NC 27699-1321

and

General Counsel
US Army Corps of Engineers
69 Darlington Avenue
Wilmington, NC 28403

G. The parties recognize and agree that the benefits of this Conservation Easement are in gross and assignable provided, however, that the Grantee hereby covenants and agrees, that in the event it transfers or assigns this Conservation Easement, the organization receiving the interest will be a qualified holder under N.C. Gen. Stat. § 121-34 et seq. and § 170(h) of the Internal Revenue Code, and the Grantee further covenants and agrees that the terms of the transfer or assignment will be such that the transferee or assignee will be required to continue in perpetuity the conservation purposes described in this document.

VI. QUIET ENJOYMENT

Grantor reserves all remaining rights accruing from ownership of the Property, including the right to engage in or permit or invite others to engage in only those uses of the Conservation Easement Area that are expressly reserved herein, not prohibited or restricted herein, and are not inconsistent with the purposes of this Conservation Easement. Without limiting the generality of the foregoing, the Grantor expressly reserves to the Grantor, and the Grantor's invitees and licensees, the right of access to the Conservation Easement Area, and the right of quiet enjoyment of the Conservation Easement Area,

TO HAVE AND TO HOLD, the said rights and easements perpetually unto the State of North Carolina for the aforesaid purposes,

AND Grantor covenants that Grantor is seized of said premises in fee and has the right to convey the permanent Conservation Easement herein granted; that the same is free from encumbrances and that Grantor will warrant and defend title to the same against the claims of all persons whomsoever.

Remainder of page intentionally left blank

IN TESTIMONY WHEREOF, the Grantor has hereunto set his hand and seal, the day and year first above written.

David Scott Hughes (SEAL)
David Scott Hughes

Sandra D. Hughes (SEAL)
Sandra D. Hughes

NORTH CAROLINA
COUNTY OF Rutherford

I, Amy M. Hamrick, a Notary Public in and for the County and State aforesaid do hereby certify that David Scott Hughes and Sandra D. Hughes, Grantor, personally appeared before me this day and acknowledged the execution of the foregoing instrument.

IN WITNESS WHEREOF, I have hereunto set my hand and Notary Seal this the 4 day of February, 2016.

Amy M. Hamrick
Notary Public

My commission expires: 8-7-2020

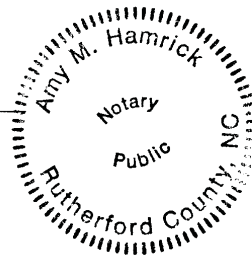


Exhibit A

SANDY BRIDGE CONSERVATION EASEMENT "A"

A PARCEL OF LAND TO BE USED FOR CONSERVATION EASEMENT PURPOSES LOCATED ON LANDS NOW OR FORMERLY OWNED BY AARON ADKINS AND JESSICA HUGHES ADKINS (SCOTT AND SANDRA HUGHES – LIFE TENANTS, TAX PIN 1647358) AS RECORDED BOOK 1091 PAGE 300, LOCATED IN LOGAN STORE TOWNSHIP, RUTHERFORD COUNTY, NORTH CAROLINA AND BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

COMMENCING AT A FOUND CONCRETE MONUMENT ON THE SOUTHEAST LINE OF ROCK ROAD (S.R. 1520 VARIABLE WIDTH RIGHT OF WAY), SAID MONUMENT BEING S 43°10'24" E A DISTANCE OF 15.20 FEET FROM THE CENTERLINE OF –L- STATION 22+05.00 (STATE PROJECT B-4261 PROJECT NO. 33603.2.1); THENCE S 43°10'24" E ON THE RIGHT OF WAY OF ROCK ROAD A DISTANCE OF 24.80 FEET TO A CONCRETE MONUMENT; THENCE S 62°08'24" E A DISTANCE OF 558.13 FEET TO **THE POINT OF BEGINNING**;

THENCE N 25°43'29" E A DISTANCE OF 247.57 FEET TO A 5/8" REBAR SET WITH ALUMINUM CAP NO.1;
THENCE N 69°01'50" E A DISTANCE OF 39.89 FEET TO A 5/8" REBAR SET WITH ALUMINUM CAP NO.2;
THENCE S 28°08'52" E A DISTANCE OF 60.47 FEET TO A POINT;
THENCE S 41°41'16" W A DISTANCE OF 253.95 FEET TO A POINT;
THENCE N 37°25'45" W A DISTANCE OF 7.13 FEET TO **THE POINT OF BEGINNING**.

CONSERVATION EASEMENT CONTAINING 11,517 SQUARE FEET OR 0.26 ACRES MORE OR LESS.

SANDY BRIDGE CONSERVATION EASEMENT "B"

A PARCEL OF LAND TO BE USED FOR CONSERVATION EASEMENT PURPOSES LOCATED ON LANDS NOW OR FORMERLY OWNED BY AARON ADKINS AND JESSICA HUGHES ADKINS (SCOTT AND SANDRA HUGHES – LIFE TENANTS, TAX PIN 1635293) AS RECORDED BOOK 1091 PAGE 300, LOCATED IN LOGAN STORE TOWNSHIP, RUTHERFORD COUNTY, NORTH CAROLINA AND BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

COMMENCING AT A FOUND CONCRETE MONUMENT ON THE SOUTHEAST LINE OF ROCK ROAD (S.R. 1520 VARIABLE WIDTH RIGHT OF WAY), SAID MONUMENT BEING S 43°10'24" E A DISTANCE OF 15.20 FEET FROM THE CENTERLINE OF –L-

STATION 22+05.00 (STATE PROJECT B-4261 PROJECT NO. 33603.2.1); THENCE S 43°10'24" E ON THE RIGHT OF WAY OF ROCK ROAD A DISTANCE OF 24.80 FEET TO A CONCRETE MONUMENT; THENCE S 62°08'24" E A DISTANCE OF 558.13 FEET TO **THE POINT OF BEGINNING;**

THENCE S 37°25'45" E A DISTANCE OF 7.13 FEET TO A POINT;
THENCE N 41°41'16" E A DISTANCE OF 253.95 FEET TO A POINT;
THENCE S 28°08'52" E A DISTANCE OF 604.21 FEET TO A 5/8" REBAR SET WITH ALUMINUM CAP NO.3;
THENCE S 41°27'21" W A DISTANCE OF 299.01 FEET TO A 5/8" REBAR SET WITH ALUMINUM CAP NO.4;
THENCE S 11°26'29" W A DISTANCE OF 167.56 FEET TO A 5/8" REBAR SET WITH ALUMINUM CAP NO.5;
THENCE S 07°19'31" E A DISTANCE OF 280.46 FEET TO A POINT IN THE CENTERLINE OF LOGAN CREEK;
THENCE S 37°13'20" W CONTINUING ON THE CENTERLINE OF LOGAN CREEK A DISTANCE OF 72.24 FEET TO A POINT;
THENCE S 32°15'10" W CONTINUING ON THE CENTERLINE OF LOGAN CREEK A DISTANCE OF 136.93 FEET TO A POINT;
THENCE N 86°59'49" W A DISTANCE OF 58.53 FEET TO A 5/8" REBAR SET WITH ALUMINUM CAP NO.9;
THENCE N 03°00'11" E A DISTANCE OF 298.97 FEET TO A 5/8" REBAR SET WITH ALUMINUM CAP NO.10;
THENCE N 29°08'49" W A DISTANCE OF 584.47 FEET TO A 5/8" REBAR SET WITH ALUMINUM CAP NO.11;
THENCE N 25°43'29" E A DISTANCE OF 417.92 FEET TO **THE POINT OF BEGINNING;**

CONSERVATION EASEMENT CONTAINING 400,301 SQUARE FEET OR 9.19 ACRES MORE OR LESS.

Appendix B. Baseline Information Data

USACE Wetland Determination Forms

W5 wet DP#2
 Joe W A SB#18

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: Sandy Bridge Farm FDP City/County: Rutherford Co, Rutherford Sampling Date: 6-2-15
 Applicant/Owner: KCF State: NC Sampling Point: DP#1
 Investigator(s): Steven F. Stokes, Tommy Selinger Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Floodplain ditch Local relief (concave, convex, none): Concave Slope (%): 0-1
 Subregion (LRR or MLRA): P Lat: 35.4089 Long: -81.9378 Datum: NAD83
 Soil Map Unit Name: Wehadkee Variant NWI classification: PEM

Are climatic / hydrologic conditions on the site typical for this time of year? Yes No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes _____ No
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____ Hydric Soil Present? Yes <input checked="" type="checkbox"/> No _____ Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No _____
Remarks: <p style="margin-left: 40px;"><i>wetland was ditched to drain pasture.</i></p>	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> True Aquatic Plants (B14) <input checked="" type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Water Marks (B1) <input checked="" type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Iron Deposits (B5) <input checked="" type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> Aquatic Fauna (B13)	<u>Secondary Indicators (minimum of two required)</u> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input checked="" type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input checked="" type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input checked="" type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): <u>—</u> Water Table Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>11</u> Saturation Present? (includes capillary fringe) Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>11</u>	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks:	

W5 wet
Sady Bridge

VEGETATION (Four Strata) – Use scientific names of plants.

Sampling Point: 1

Tree Stratum (Plot size: <u>30 ft.</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>none</u>			
2.			
3.			
4.			
5.			
6.			
7.			

_____ = Total Cover
50% of total cover: _____ 20% of total cover: _____

Sapling/Shrub Stratum (Plot size: <u>30 ft.</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Burton bush cephalanthus</u>	<u>5</u>	<u>X</u>	<u>OBL</u>
2. <u>occidentalis</u>			
3.			
4.			
5.			
6.			
7.			
8.			
9.			

_____ = Total Cover
50% of total cover: 2.5 20% of total cover: 1

Herb Stratum (Plot size: <u>1 m</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Nyctag in lutea</u>	<u>40</u>	<u>X</u>	<u>OBL</u>
2. <u>Juncus effusus</u>	<u>40</u>	<u>X</u>	<u>FACW</u>
3. <u>Polygonum hydropiperoides</u>	<u>10</u>		<u>OBL</u>
4. <u>Umbrella sedge? Carex lupulina</u>	<u>5</u>		<u>OBL</u>
5. <u>NY Ironweed Vernonia noveboracensis</u>			<u>FACW</u>
6.			
7.			
8.			
9.			
10.			
11.			

_____ = Total Cover
50% of total cover: 50 20% of total cover: 20

Woody Vine Stratum (Plot size: <u>30 ft.</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>none</u>			
2.			
3.			
4.			
5.			

_____ = Total Cover
50% of total cover: _____ 20% of total cover: _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

- Hydrophytic Vegetation Indicators:**
- 1 - Rapid Test for Hydrophytic Vegetation
 - 2 - Dominance Test is >50%
 - 3 - Prevalence Index is ≤3.0¹
 - 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
- Problematic Hydrophytic Vegetation¹ (Explain)
- ¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes No

Remarks: (Include photo numbers here or on a separate sheet.)

W5 wet
Sandy Ridge

Sampling Point: DP#1

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features			Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹		
0-13	7.5YR 4/1	75	2.5YR 3/6	5	C	PL	1 fsbk
			7.5YR 3/1	20	D	m	caF
13-18	7.5YR 4/1	100					massive - no structure

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- 2 cm Muck (A10) (LRR N)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1) (LRR N, MLRA 147, 148)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)

- Dark Surface (S7)
- Polyvalue Below Surface (S8) (MLRA 147, 148)
- Thin Dark Surface (S9) (MLRA 147, 148)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Iron-Manganese Masses (F12) (LRR N, MLRA 136)
- Umbric Surface (F13) (MLRA 136, 122)
- Piedmont Floodplain Soils (F19) (MLRA 148)
- Red Parent Material (F21) (MLRA 127, 147)

Indicators for Problematic Hydric Soils³:

- 2 cm Muck (A10) (MLRA 147)
- Coast Prairie Redox (A16) (MLRA 147, 148)
- Piedmont Floodplain Soils (F19) (MLRA 136, 147)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:

W5 up

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: SANDY BRIDGE FAUNA City/County: Rutherfordton, Rutherford State: NC Sampling Date: 6-2-15
Applicant/Owner: KCI Sampling Point: DP#2 NW (SB# 18)
Investigator(s): Steven Stokes, Tommy Seelinger Section, Township, Range:
Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): Convex Slope (%): 0-2
Subregion (LRR or MLRA): P Lat: 35.4099 Long: -81.9377 Datum: NAD83
Soil Map Unit Name: Chewalla NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes [checked] No
Are Vegetation, Soil, or Hydrology significantly disturbed? Yes [checked] No
Are "Normal Circumstances" present? Yes No [checked]
Are Vegetation, Soil, or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes No
Hydric Soil Present? Yes No [checked]
Wetland Hydrology Present? Yes No [checked]
Is the Sampled Area within a Wetland? Yes No [checked]
Remarks: Local relief is convex due to spoil from ditching.

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply)
Secondary Indicators (minimum of two required)
Surface Water (A1) True Aquatic Plants (B14) Surface Soil Cracks (B6)
High Water Table (A2) Hydrogen Sulfide Odor (C1) Sparsely Vegetated Concave Surface (B8)
Saturation (A3) Oxidized Rhizospheres on Living Roots (C3) Drainage Patterns (B10)
Water Marks (B1) Presence of Reduced Iron (C4) Moss Trim Lines (B16)
Sediment Deposits (B2) Recent Iron Reduction in Tilled Soils (C6) Dry-Season Water Table (C2)
Drift Deposits (B3) Thin Muck Surface (C7) Crayfish Burrows (C8)
Algal Mat or Crust (B4) Other (Explain in Remarks) Saturation Visible on Aerial Imagery (C9)
Iron Deposits (B5) Stunted or Stressed Plants (D1)
Inundation Visible on Aerial Imagery (B7) Geomorphic Position (D2)
Water-Stained Leaves (B9) Shallow Aquitard (D3)
Aquatic Fauna (B13) FAC-Neutral Test (D5)

Field Observations:
Surface Water Present? Yes No [checked] Depth (inches):
Water Table Present? Yes No [checked] Depth (inches): >18
Saturation Present? Yes No [checked] Depth (inches): >18
Wetland Hydrology Present? Yes No [checked]

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WSup

VEGETATION (Four Strata) – Use scientific names of plants.

Sampling Point: DP#2

Tree Stratum (Plot size: 30 ft)

	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>none</u>			
2.			
3.			
4.			
5.			
6.			
7.			

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0% (A/B)

_____ = Total Cover
50% of total cover: _____ 20% of total cover: _____

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____	(A) _____ (B)

Prevalence Index = B/A = _____

Sapling/Shrub Stratum (Plot size: 30 ft)

	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>none</u>			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			

Hydrophytic Vegetation Indicators:

1 - Rapid Test for Hydrophytic Vegetation

2 - Dominance Test is >50%

3 - Prevalence Index is $\leq 3.0^1$

4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation¹ (Explain)

¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

_____ = Total Cover
50% of total cover: _____ 20% of total cover: _____

Herb Stratum (Plot size: 1m)

	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Ranunculus sp</u>	<u>30</u>	<u>X</u>	<u>NI</u>
2. <u>Schedonorus afundroceus</u>	<u>40</u>	<u>X</u>	<u>FACU</u>
3. <u>Solanum carolinense</u>	<u>10</u>		<u>FACU</u>
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

_____ = Total Cover
50% of total cover: 40 20% of total cover: 16

Woody Vine Stratum (Plot size: 30 ft)

	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>none</u>			
2.			
3.			
4.			
5.			

Hydrophytic Vegetation Present? Yes _____ No X

_____ = Total Cover
50% of total cover: _____ 20% of total cover: _____

Remarks: (Include photo numbers here or on a separate sheet.)

W5 up

SB# 18

Sampling Point: DP#2

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-5	7.5yR 4/3	90	2.5yR 3/6 c2d	10	C	PL,m	l	
5-8	7.5yR 4/3	95	2.5yR 4/8 c1p	5	C	m	l	
8-18	5yR 4/6	75	7.5yR 4/4 c1d	20	C	m	cl	
			2.5yR 4/8 c1d	5	C	m		

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- 2 cm Muck (A10) (LRR N)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1) (LRR N, MLRA 147, 148)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)

- Dark Surface (S7)
- Polyvalue Below Surface (S8) (MLRA 147, 148)
- Thin Dark Surface (S9) (MLRA 147, 148)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Iron-Manganese Masses (F12) (LRR N, MLRA 136)
- Umbric Surface (F13) (MLRA 136, 122)
- Piedmont Floodplain Soils (F19) (MLRA 148)
- Red Parent Material (F21) (MLRA 127, 147)

Indicators for Problematic Hydric Soils³:

- 2 cm Muck (A10) (MLRA 147)
- Coast Prairie Redox (A16) (MLRA 147, 148)
- Piedmont Floodplain Soils (F19) (MLRA 136, 147)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:

W1 wet

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: Sandy Bridge Farm City/County: Rutherfordton/Rutherford Sampling Date: 6-2-15
Applicant/Owner: KEZ State: NC Sampling Point: 3
Investigator(s): Steven Stokes, Tomm Section, Township, Range: _____
Landform (hillslope, terrace, etc.): flood plain, seep Local relief (concave, convex, none): concave Slope (%): 0-1
Subregion (LRR or MLRA): P Lat: 35.4095 Long: -91.9367 Datum: NAD 83
Soil Map Unit Name: Wehadkee Variant NWI classification: PEM

Are climatic / hydrologic conditions on the site typical for this time of year? Yes No _____ (If no, explain in Remarks.)
Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes No _____
Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No _____
Hydric Soil Present? Yes <input checked="" type="checkbox"/> No _____	
Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____	
Remarks:	

HYDROLOGY

Wetland Hydrology Indicators:	Secondary Indicators (minimum of two required)
<u>Primary Indicators (minimum of one is required; check all that apply)</u>	_____ Surface Soil Cracks (B6)
_____ Surface Water (A1)	_____ Sparsely Vegetated Concave Surface (B8)
_____ High Water Table (A2)	_____ Drainage Patterns (B10)
_____ Saturation (A3)	_____ Moss Trim Lines (B16)
_____ Water Marks (B1)	_____ Dry-Season Water Table (C2)
_____ Sediment Deposits (B2)	_____ Crayfish Burrows (C8)
_____ Drift Deposits (B3)	_____ Saturation Visible on Aerial Imagery (C9)
_____ Algal Mat or Crust (B4)	_____ Stunted or Stressed Plants (D1)
_____ Iron Deposits (B5)	<input checked="" type="checkbox"/> Geomorphic Position (D2)
<input checked="" type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	_____ Shallow Aquitard (D3)
_____ Water-Stained Leaves (B9)	_____ Microtopographic Relief (D4)
_____ Aquatic Fauna (B13)	<input checked="" type="checkbox"/> FAC-Neutral Test (D5)
Field Observations:	
Surface Water Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____	
Water Table Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): <u>15</u>	
Saturation Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____	
(includes capillary fringe)	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: water table came in at 23" and rose to 15"

W1 wet

Sandy Bridge

3

VEGETATION (Four Strata) - Use scientific names of plants.

Sampling Point: _____

Tree Stratum (Plot size: <u>30ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>none</u>			
2.			
3.			
4.			
5.			
6.			
7.			

_____ = Total Cover
50% of total cover: _____ 20% of total cover: _____

Sapling/Shrub Stratum (Plot size: <u>30ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>none</u>			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			

_____ = Total Cover
50% of total cover: _____ 20% of total cover: _____

Herb Stratum (Plot size: <u>1 m</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Swamp smartweed - Polygonum hydrophiloides</u>	<u>30</u>	<u>X</u>	<u>OBL</u>
2. <u>Arrow arum - Sagittaria latifolia</u>	<u>20</u>	<u>X</u>	<u>OBL</u>
3. <u>Spike rush - Eleocharis obtusa</u>	<u>20</u>	<u>X</u>	<u>OBL</u>
4. <u>Threats effusoid</u>	<u>20</u>	<u>X</u>	<u>FACW</u>
5. <u>Joe pyo weed - Eutrochium purpureum</u>	<u>1</u>		<u>FAC</u>
6. <u>Curley dock - Rumex crispus</u>	<u>1</u>		<u>FAC</u>
7. <u>Carex lupulina</u>	<u>5</u>		<u>OBL</u>
8. <u>Buttercup - Ranunculus sp.</u>	<u>3</u>		<u>NI</u>
9.			
10.			
11.			

_____ = Total Cover
50% of total cover: 50 20% of total cover: 20

Woody Vine Stratum (Plot size: <u>30ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>none</u>			
2.			
3.			
4.			
5.			

_____ = Total Cover
50% of total cover: _____ 20% of total cover: _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____	(A) _____ (B) _____

Prevalence Index = B/A = _____

- Hydrophytic Vegetation Indicators:**
- 1 - Rapid Test for Hydrophytic Vegetation
 - 2 - Dominance Test is >50%
 - 3 - Prevalence Index is ≤3.0¹
 - 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
 - Problematic Hydrophytic Vegetation¹ (Explain)
- ¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree - Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes No

Remarks: (Include photo numbers here or on a separate sheet.)
Asiatic dayflower nearby

Wet
Sandy Bridge

SOIL

Sampling Point: 3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features			Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹		
0-7	7.5YR 4/4		2.5YR 4/6	40	C	PL, M	L
			2.5YR 3/6	5	C	PL, M	
7-20	10YR 4/2		2.5YR 3/6	5	C	PL, M	L
			5YR 4/6	5	C	PL	
20-24	7.5YR 4/3		1.5YR 4/6	10	C	PL	L
			2.5YR 3/6	10	C	PL	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- 2 cm Muck (A10) (LRR N)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1) (LRR N, MLRA 147, 148)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)

- Dark Surface (S7)
- Polyvalue Below Surface (S8) (MLRA 147, 148)
- Thin Dark Surface (S9) (MLRA 147, 148)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Iron-Manganese Masses (F12) (LRR N, MLRA 136)
- Umbric Surface (F13) (MLRA 136, 122)
- Piedmont Floodplain Soils (F19) (MLRA 148)
- Red Parent Material (F21) (MLRA 127, 147)

Indicators for Problematic Hydric Soils³:

- 2 cm Muck (A10) (MLRA 147)
- Coast Prairie Redox (A16) (MLRA 147, 148)
- Piedmont Floodplain Soils (F19) (MLRA 136, 147)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:

W/ up

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Sandy Bridge Farm City/County: Rutherford / Rutherford Sampling Date: 6-2-15
Applicant/Owner: KCS State: NC Sampling Point: DP# 4 NW
Investigator(s): Steven Stokes, Tommy Section, Township, Range:
Landform (hillslope, terrace, etc.): fill slope Local relief (concave, convex, none): convex Slope (%): 0.2
Subregion (LRR or MLRA): P Lat: 35.4095 Long: -81.9368 Datum: NAD 83
Soil Map Unit Name: Chewacla NWI classification: -

Are climatic / hydrologic conditions on the site typical for this time of year? Yes [checked] No
Are Vegetation, Soil, or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes [checked] No
Are Vegetation, Soil, or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes No [checked]
Hydric Soil Present? Yes No [checked]
Wetland Hydrology Present? Yes No [checked]
Is the Sampled Area within a Wetland? Yes No [checked]
Remarks: Soil is spoil sidcast from ditching stream

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply)
Secondary Indicators (minimum of two required)
Surface Water (A1) True Aquatic Plants (B14) Surface Soil Cracks (B6)
High Water Table (A2) Hydrogen Sulfide Odor (C1) Sparsely Vegetated Concave Surface (B8)
Saturation (A3) Oxidized Rhizospheres on Living Roots (C3) Drainage Patterns (B10)
Water Marks (B1) Presence of Reduced Iron (C4) Moss Trim Lines (B16)
Sediment Deposits (B2) Recent Iron Reduction in Tilled Soils (C6) Dry-Season Water Table (C2)
Drift Deposits (B3) Thin Muck Surface (C7) Crayfish Burrows (C8)
Algal Mat or Crust (B4) Other (Explain in Remarks) Saturation Visible on Aerial Imagery (C9)
Iron Deposits (B5) Stunted or Stressed Plants (D1)
Inundation Visible on Aerial Imagery (B7) Geomorphic Position (D2)
Water-Stained Leaves (B9) Shallow Aquitard (D3)
Aquatic Fauna (B13) Microtopographic Relief (D4)
FAC-Neutral Test (D5)

Field Observations:
Surface Water Present? Yes No [checked] Depth (inches):
Water Table Present? Yes No [checked] Depth (inches): >20"
Saturation Present? Yes No [checked] Depth (inches):
Wetland Hydrology Present? Yes No [checked]

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

W1 up

VEGETATION (Four Strata) – Use scientific names of plants.

Sampling Point: DPACT

Tree Stratum (Plot size: 30 ft)

	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>NONE</u>			
2.			
3.			
4.			
5.			
6.			
7.			

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0% (A/B)

_____ = Total Cover
 50% of total cover: _____ 20% of total cover: _____

Sapling/Shrub Stratum (Plot size: 30 ft.)

1. <u>NONE</u>			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____	(A) _____ (B)

Prevalence Index = B/A = _____

_____ = Total Cover
 50% of total cover: _____ 20% of total cover: _____

Herb Stratum (Plot size: 1m)

1. <u>Tall fescue - Schedonorus arundinaceus</u> <u>45</u> <u>Y</u> <u>FACU</u>			
2. <u>Bittersweet Ranunculus sp</u> <u>45</u> <u>X</u> <u>NI</u>			
3. <u>Curly Dock Rumex crispus ID</u> <u></u> <u></u> <u>FAC</u>			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			

Hydrophytic Vegetation Indicators:

1 - Rapid Test for Hydrophytic Vegetation

2 - Dominance Test is >50%

3 - Prevalence Index is ≤3.0¹

4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation¹ (Explain)

¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

_____ = Total Cover
 50% of total cover: 50 20% of total cover: 80

Woody Vine Stratum (Plot size: 30ft.)

1. <u>NONE</u>			
2.			
3.			
4.			
5.			

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

_____ = Total Cover
 50% of total cover: _____ 20% of total cover: _____

Hydrophytic Vegetation Present? Yes _____ No X

Remarks: (Include photo numbers here or on a separate sheet.)

W/ up

Sandy Ridge
DP#4

Sampling Point: _____

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-2	7.5YR 4/4	99	5YR 4/6 fid	1	C	pl, m	SL	mass - no structure
2-10	5YR 4/6	95	7.5YR 2.5/2	5	D	m	SL	ma masses
10-20	5YR 4/6	75	7.5YR 4/6 m3d	20	D	m	L	m3d massive - no structure
			5/5G Y 2p	10				Sign of Spoil - massive - no structure completely unnatural.

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

Indicators for Problematic Hydric Soils³:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) (LRR N)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) (LRR N, MLRA 147, 148)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)

- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) (MLRA 147, 148)
- ___ Thin Dark Surface (S9) (MLRA 147, 148)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) (LRR N, MLRA 136)
- ___ Umbric Surface (F13) (MLRA 136, 122)
- ___ Piedmont Floodplain Soils (F19) (MLRA 148)
- ___ Red Parent Material (F21) (MLRA 127, 147)

- ___ 2 cm Muck (A10) (MLRA 147)
- ___ Coast Prairie Redox (A16) (MLRA 147, 148)
- ___ Piedmont Floodplain Soils (F19) (MLRA 136, 147)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
Depth (inches): _____

Hydric Soil Present? Yes _____ No

Remarks:

0-20" layer is all Spoil/Fill from channelizing stream.

Jurisdictional Determination

U.S. ARMY CORPS OF ENGINEERS
WILMINGTON DISTRICT

Action I.D.: SAW-2015-00827

County: Rutherford

U.S.G.S. Quad: NC-RUTHERFORDTON NORTH

NOTIFICATION OF JURISDICTIONAL DETERMINATION

Property Owner/Agent: Scott & Sandra Hughes/Steve Stokes, KCI Technologies Inc.

Address: 4601 Six Forks Road, Suite 220, Landmark Center II Raleigh, North Carolina 27609

Telephone No.: 919 278 2517

Property description:

Size (acres): 10.2 acres

Nearest Town: Rutherfordton

Nearest Waterway: Catheys Creek

Coordinates: 35.411499N, -81.936702W

River Basin: Upper Broad

Hydrologic Unit Code: 03050105

Location Description: The site is located at 1356 Rock Road, Rutherfordton, in Rutherford County. Coordinates: 35.411499N, -81.936702W

Indicate Which of the Following Apply:

A. Preliminary Determination

- Based on preliminary information, there may be waters and wetlands on the above described property. We strongly suggest you have this property inspected to determine the extent of Department of the Army (DA) jurisdiction. To be considered final, a jurisdictional determination must be verified by the Corps. This preliminary determination is not an appealable action under the Regulatory Program Administrative Appeal Process (Reference 33 CFR Part 331).). If you wish, you may request an approved JD (which may be appealed), by contacting the Corps district for further instruction. Also, you may provide new information for further consideration by the Corps to reevaluate the JD.

B. Approved Determination

- There are Navigable Waters of the United States within the above described property subject to the permit requirements of Section 10 of the Rivers and Harbors Act and Section 404 of the Clean Water Act. Unless there is a change in the law or our published regulations, this determination may be relied upon for a period not to exceed five years from the date of this notification.
- There are waters and wetlands on the above described property subject to the permit requirements of Section 404 of the Clean Water Act (CWA)(33 USC § 1344). Unless there is a change in the law or our published regulations, this determination may be relied upon for a period not to exceed five years from the date of this notification.
- We strongly suggest you have the waters and wetlands on your property delineated. Due to the size of your property and/or our present workload, the Corps may not be able to accomplish this wetland delineation in a timely manner. For a more timely delineation, you may wish to obtain a consultant. To be considered final, any delineation must be verified by the Corps.
- The waters and wetlands on your property have been delineated and the delineation has been verified by the Corps. We strongly suggest you have this delineation surveyed. Upon completion, this survey should be reviewed and verified by the Corps. Once verified, this survey will provide an accurate depiction of all areas subject to CWA jurisdiction on your property which, provided there is no change in the law or our published regulations, may be relied upon for a period not to exceed five years.
- The waters and wetlands have been delineated and surveyed and are accurately depicted on the plat signed by the Corps Regulatory Official identified below on _____. Unless there is a change in the law or our published regulations, this determination may be relied upon for a period not to exceed five years from the date of this notification.
- There are no waters of the U.S., to include wetlands, present on the above described property which are subject to the permit requirements of Section 404 of the Clean Water Act (33 USC 1344). Unless there is a change in the law or our published regulations, this determination may be relied upon for a period not to exceed five years from the date of this notification.

Action Id.: SAW-2015-00827

Placement of dredged or fill material within waters of the US and/or wetlands without a Department of the Army permit may constitute a violation of Section 301 of the Clean Water Act (33 USC § 1311). If you have any questions regarding this determination and/or the Corps regulatory program, please contact William Elliott at 828-271-7980.

C. Basis For Determination

The site contains wetlands as determined by the *1987 Corps of Engineers Wetland Delineation Manual* and the *Interim Regional Supplement to the Corps of Engineers Wetlands Delineation Manual: Eastern Mountain and Piedmont Region*. These wetlands are adjacent to stream channels located on the property that exhibit indicators of ordinary high water marks. The stream channel on the property is an unnamed tributary to Catheys Creek which flows into the Upper Broad River to the Broad River. The Broad River becomes a Section 10 water in South Carolina then flows to the Congaree River and the Santee River, before flowing into the Atlantic Ocean.

D. Remarks: Jurisdictional “Waters of the US” have been identified on this property as depicted by submitted Jurisdictional Request Package on file.

E. Attention USDA Program Participants

This delineation/determination has been conducted to identify the limits of Corps’ Clean Water Act jurisdiction for the particular site identified in this request. The delineation/determination may not be valid for the wetland conservation provisions of the Food Security Act of 1985. If you or your tenant are USDA Program participants, or anticipate participation in USDA programs, you should request a certified wetland determination from the local office of the Natural Resources Conservation Service, prior to starting work.

F. Appeals Information (This information applies only to approved jurisdictional determinations as indicated in B. above)

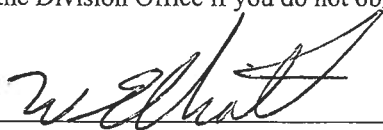
Attached to this verification is an approved jurisdictional determination. If you are not in agreement with that approved jurisdictional determination, you can make an administrative appeal under 33 CFR 331. Enclosed you will find a request for appeal (RFA) form. If you request to appeal this determination you must submit a completed RFA form to the following address:

US Army Corps of Engineers
South Atlantic Division
Attn: Jason Steele, Review Officer
60 Forsyth Street SW, Room 10M15
Atlanta, Georgia 30303-8801

In order for an RFA to be accepted by the Corps, the Corps must determine that it is complete, that it meets the criteria for appeal under 33 CFR part 331.5, and that it has been received by the Division Office within 60 days of the date of the NAP. Should you decide to submit an RFA form, it must be received at the above address within 60 days of the issue date below.

It is not necessary to submit an RFA form to the Division Office if you do not object to the determination in this correspondence.

Corps Regulatory Official: William Elliott



Issue Date: July 27, 2015

Expiration Date: July 26, 2015

The Wilmington District is committed to providing the highest level of support to the public. To help us ensure we continue to do so, please complete the Customer Satisfaction Survey located at our website at <http://per2.nwp.usace.army.mil/survey.html> to complete the survey online.

CF: Scott & Sandra Hughes, 1356 Rock Road, Rutherfordton, NC 28139,

NOTIFICATION OF ADMINISTRATIVE APPEAL OPTIONS AND PROCESS AND REQUEST FOR APPEAL

Applicant: Steve Stokes, KCI Technologies Inc.	File Number: SAW-2015-00827	Date: July 27, 2015
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Attached is:	See Section below
INITIAL PROFFERED PERMIT (Standard Permit or Letter of permission)	A
PROFFERED PERMIT (Standard Permit or Letter of permission)	B
PERMIT DENIAL	C
APPROVED JURISDICTIONAL DETERMINATION	D
X PRELIMINARY JURISDICTIONAL DETERMINATION	E

SECTION I - The following identifies your rights and options regarding an administrative appeal of the above decision. Additional information may be found at http://www.usace.army.mil/CECW/Pages/reg_materials.aspx or Corps regulations at 33 CFR Part 331.

A: INITIAL PROFFERED PERMIT: You may accept or object to the permit.

- **ACCEPT:** If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- **OBJECT:** If you object to the permit (Standard or LOP) because of certain terms and conditions therein, you may request that the permit be modified accordingly. You must complete Section II of this form and return the form to the district engineer. Your objections must be received by the district engineer within 60 days of the date of this notice, or you will forfeit your right to appeal the permit in the future. Upon receipt of your letter, the district engineer will evaluate your objections and may: (a) modify the permit to address all of your concerns, (b) modify the permit to address some of your objections, or (c) not modify the permit having determined that the permit should be issued as previously written. After evaluating your objections, the district engineer will send you a proffered permit for your reconsideration, as indicated in Section B below.

B: PROFFERED PERMIT: You may accept or appeal the permit

- **ACCEPT:** If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- **APPEAL:** If you choose to decline the proffered permit (Standard or LOP) because of certain terms and conditions therein, you may appeal the declined permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

C: PERMIT DENIAL: You may appeal the denial of a permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

D: APPROVED JURISDICTIONAL DETERMINATION: You may accept or appeal the approved JD or provide new information.

- **ACCEPT:** You do not need to notify the Corps to accept an approved JD. Failure to notify the Corps within 60 days of the date of this notice, means that you accept the approved JD in its entirety, and waive all rights to appeal the approved JD.
- **APPEAL:** If you disagree with the approved JD, you may appeal the approved JD under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

E: PRELIMINARY JURISDICTIONAL DETERMINATION: You do not need to respond to the Corps regarding the preliminary JD. The Preliminary JD is not appealable. If you wish, you may request an approved JD (which may be appealed), by contacting the Corps district for further instruction. Also you may provide new information for further consideration by the Corps to reevaluate the JD.

SECTION II - REQUEST FOR APPEAL or OBJECTIONS TO AN INITIAL PROFFERED PERMIT

REASONS FOR APPEAL OR OBJECTIONS: (Describe your reasons for appealing the decision or your objections to an initial proffered permit in clear concise statements. You may attach additional information to this form to clarify where your reasons or objections are addressed in the administrative record

ADDITIONAL INFORMATION: The appeal is limited to a review of the administrative record, the Corps memorandum for the record of the appeal conference or meeting, and any supplemental information that the review officer has determined is needed to clarify the administrative record. Neither the appellant nor the Corps may add new information or analyses to the record. However, you may provide additional information to clarify the location of information that is already in the administrative record.

POINT OF CONTACT FOR QUESTIONS OR INFORMATION:

If you have questions regarding this decision and/or the appeal process you may contact:

William Elliott, Project Manager
 USACE, Asheville Regulatory Field Office
 151 Patton Ave
 RM 208
 Asheville, NC 28801
 828-271-7980

If you only have questions regarding the appeal process you may also contact:

Mr. Jason Steele, Administrative Appeal Review Officer
 CESAD-PDO
 U.S. Army Corps of Engineers, South Atlantic Division
 60 Forsyth Street, Room 10M15
 Atlanta, Georgia 30303-8801
 Phone: (404) 562-5137

RIGHT OF ENTRY: Your signature below grants the right of entry to Corps of Engineers personnel, and any government consultants, to conduct investigations of the project site during the course of the appeal process. You will be provided a 15 day notice of any site investigation, and will have the opportunity to participate in all site investigations.

_____ Signature of appellant or agent.	Date:	Telephone number:
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For appeals on Initial Proffered Permits send this form to:

District Engineer, Wilmington Regulatory Division, Attn: William Elliott, 69 Darlington Avenue, Wilmington, North Carolina 28403

For Permit denials, Proffered Permits and approved Jurisdictional Determinations send this form to:

Division Engineer, Commander, U.S. Army Engineer Division, South Atlantic, Attn: Mr. Jason Steele, Administrative Appeal Officer, CESAD-PDO, 60 Forsyth Street, Room 10M15, Atlanta, Georgia 30303-8801 Phone: (404) 562-5137

**ATTACHMENT A
PRELIMINARY JURISDICTIONAL DETERMINATION FORM**

BACKGROUND INFORMATION

A. REPORT COMPLETION DATE FOR PRELIMINARY JURISDICTIONAL DETERMINATION (JD): 27 JUL 2015

B. NAME AND ADDRESS OF PERSON REQUESTING PRELIMINARY JD:
Steve Stokes, KCI Technologies Inc.
4601 Six Forks Road, Suite 220, Landmark Center II, Raleigh, NC 27609

C. DISTRICT OFFICE, FILE NAME, AND NUMBER: SAW-2015-00827
CESAW-R6-A-STEVE STOKES KCI TECHNOLOGIES

D. PROJECT LOCATION(S) AND BACKGROUND INFORMATION:
1356 Rock Road, Rutherfordton, NC

(USE THE ATTACHED TABLE TO DOCUMENT MULTIPLE WATERBODIES AT DIFFERENT SITES)

State: NC County/parish/borough: Rutherford City: Rutherfordton

Center coordinates of site (lat/long in degree decimal format):

Lat. 35.4091 °N; Long. -81.9371 °W.

Universal Transverse Mercator: _____

Name of nearest waterbody: Catheys Creek

Identify (estimate) amount of waters in the review area:

Non-wetland waters:

1.485 linear feet: 7 width (ft) and/or _____ acres.

Cowardin Class: Riverine

Stream Flow: Perennial

Wetlands: 1.38 acres.

Cowardin Class: Emergent

Name of any water bodies on the site that have been identified as Section 10 waters:

Tidal: _____

Non-Tidal: _____

E. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):

Office (Desk) Determination. Date: _____

Field Determination. Date(s): _____

SUPPORTING DATA. Data reviewed for preliminary JD (check all that apply - checked items should be included in case file and, where checked and requested, appropriately reference sources below):

Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant: Vicinity Map

Data sheets prepared/submitted by or on behalf of the applicant/consultant.

Office concurs with data sheets/delineation report.

Office does not concur with data sheets/delineation report.

Data sheets prepared by the Corps: _____

Corps navigable waters' study: _____

U.S. Geological Survey Hydrologic Atlas: _____

USGS NHD data

USGS 8 and 12 digit HUC maps

U.S. Geological Survey map(s). Cite scale & quad name: 1:24K Rutherfordton North (2013)

USDA Natural Resources Conservation Service Soil Survey.
Citation: _____

National wetlands inventory map(s). Cite name: _____

State/Local wetland inventory map(s): _____

FEMA/FIRM maps: _____

100-year Floodplain Elevation is: _____
(National Geodetic Vertical Datum of 1929)

Photographs: Aerial (Name & Date): 2010 Statewide Aerial Photographs or
 Other (Name & Date): _____

Previous determination(s). File no. and date of response letter: _____

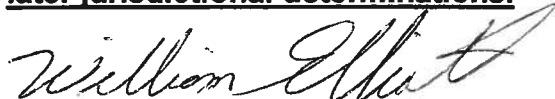
Other information (please specify): _____

1. The Corps of Engineers believes that there may be jurisdictional waters of the United States on the subject site, and the permit applicant or other affected party who requested this preliminary JD is hereby advised of his or her option to request and obtain an approved jurisdictional determination (JD) for that site. Nevertheless, the permit applicant or other person who requested this preliminary JD has declined to exercise the option to obtain an approved JD in this instance and at this time.

2. In any circumstance where a permit applicant obtains an individual permit, or a Nationwide General Permit (NWP) or other general permit verification requiring "pre-construction notification" (PCN), or requests verification for a non-reporting NWP or other general permit, and the permit applicant has not requested an approved JD for the activity, the permit applicant is hereby made aware of the following: (1) the permit applicant has elected to seek a permit authorization based on a preliminary JD, which does not make an official determination of jurisdictional waters; (2) that the applicant has the option to request an approved JD before accepting the terms and conditions of the permit authorization, and that basing a permit authorization on an approved JD could possibly result in less compensatory mitigation being required or different special conditions; (3) that the applicant has the right to request an individual permit rather than accepting the terms and conditions of the NWP or other general permit authorization; (4) that the applicant can accept a permit authorization and thereby agree to comply with all the terms and conditions of that permit, including whatever mitigation requirements the Corps has determined to be necessary; (5) that undertaking any activity in reliance upon the subject permit authorization without requesting an approved JD constitutes the applicant's acceptance of the use of the preliminary JD, but that either form of JD will be processed as soon as is practicable; (6) accepting a permit authorization (e.g., signing a proffered individual permit) or undertaking any activity in reliance on any form of Corps permit authorization based on a preliminary JD constitutes agreement that all wetlands and other water bodies on the site affected in any way by that activity are jurisdictional waters of the United States, and precludes any challenge to such jurisdiction in any administrative or judicial compliance or enforcement action, or in any administrative appeal or in any Federal court; and (7) whether the applicant elects to use either an approved JD or a preliminary JD, that JD will be processed as soon as is practicable. Further, an approved JD, a proffered individual permit (and all terms and conditions contained therein), or individual permit denial can be administratively appealed pursuant to 33 C.F.R. Part 331, and that in any administrative appeal, jurisdictional issues can be raised (see 33 C.F.R. 331.5(a)(2)). If, during that administrative appeal, it becomes necessary to make an official determination whether CWA jurisdiction exists over a site, or to provide an official delineation of jurisdictional waters on the site, the Corps will provide an approved JD to accomplish that result, as soon as is practicable.

This preliminary JD finds that there "may be" waters of the United States on the subject project site, and identifies all aquatic features on the site that could be affected by the proposed activity, based on the following information:

IMPORTANT NOTE: The information recorded on this form has not necessarily been verified by the Corps and should not be relied upon for later jurisdictional determinations.


27 JULY 2015

Signature and date of
Regulatory Project Manager
(REQUIRED)



Signature and date of
person requesting preliminary JD
(REQUIRED, unless obtaining
the signature is impracticable)

Table 1.

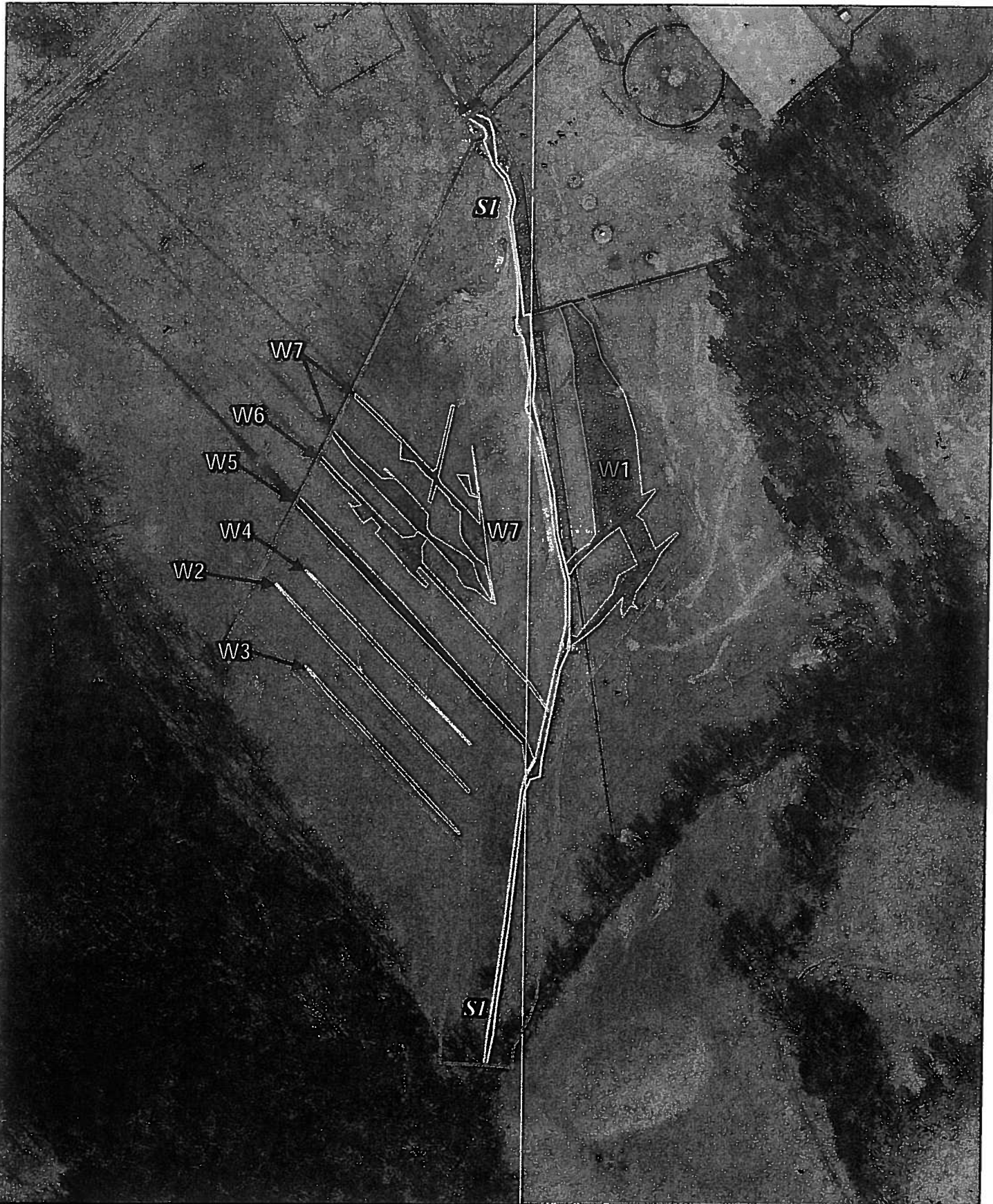
Stream Name	Stream Status	Length (Feet)	Latitude	Longitude
S1	Perennial	1485	35.4101	-81.9371

Table 2.

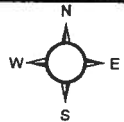
Wetland ID	NCWAM	Hydrologic Class	Cowardin Class	Size (Acres)	USACE Forms		Latitude	Longitude
					WET	UP		
W1	Seep	Riparian	PEM	0.67	X	X	35.4095	-81.9367
W2	Headwater Forest	Riparian	PEM	0.04	W5	W5	35.4083	-81.9378
W3	Headwater Forest	Riparian	PEM	0.04	W5	W5	35.4081	-81.9377
W4	Headwater Forest	Riparian	PEM	0.04	W5	W5	35.4385	-81.9378
W5	Headwater Forest	Riparian	PEM	0.16	X	X	35.4088	-81.9378
W6	Headwater Forest	Riparian	PEM	0.15	W5	W5	35.4089	-81.9376
W7	Headwater Forest	Riparian	PEM	0.28	W5	W5	35.4091	-81.9735

X = Data Forms Completed

PEM = Palustrine Emergent



0 100 200
 Feet



2010 NC Statewide Aerial Imagery
 June 2015



Study Area



Wetlands

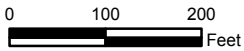
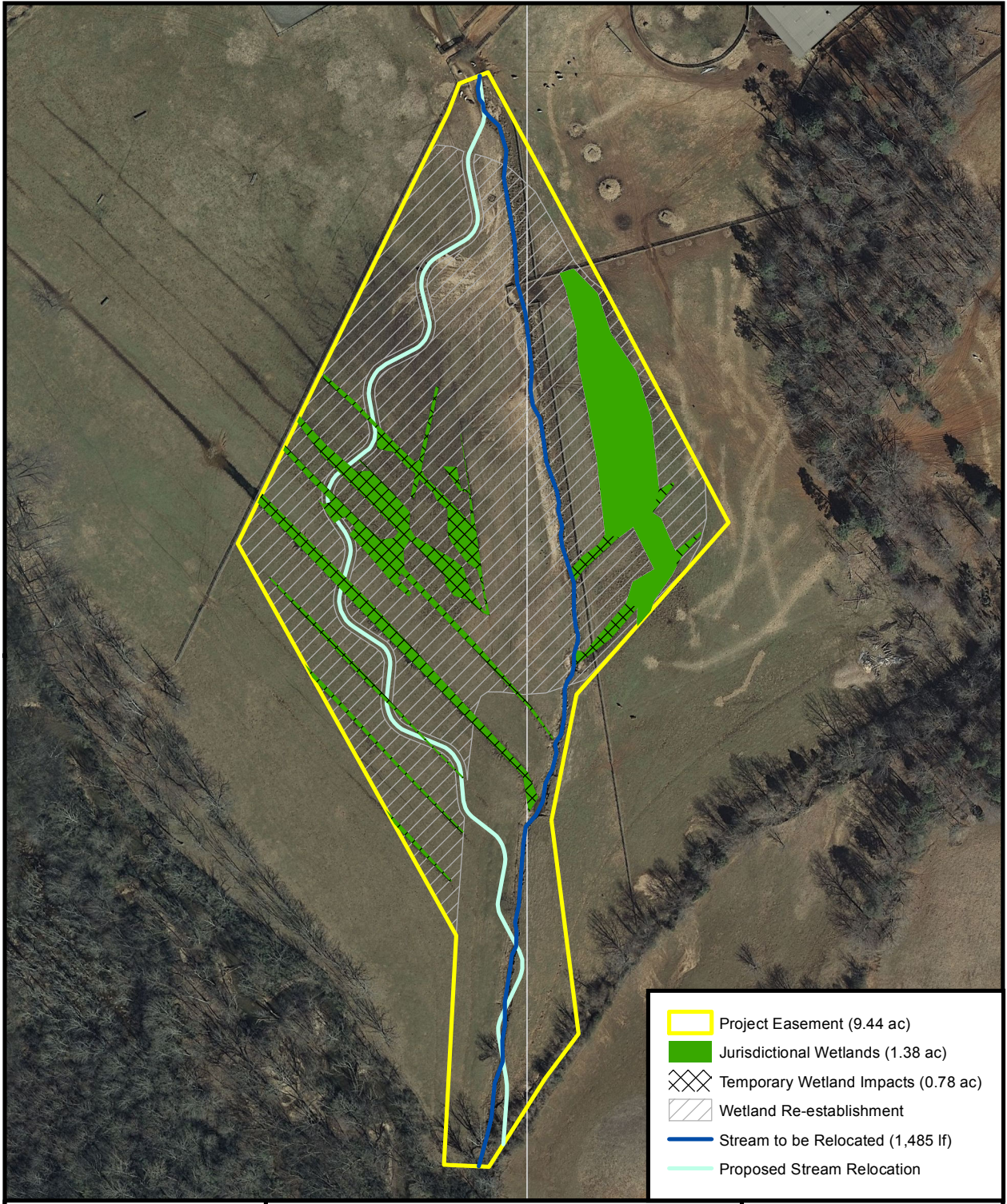


Perennial Stream

Figure 3: Jurisdictional Features Map

Sandy Bridge Farm
 Restoration Site
 Rutherford County

Wetland and Stream Impact Map

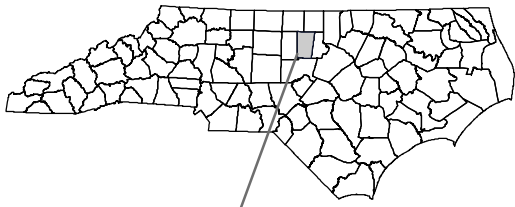


**PROPOSED IMPACTS
SANDY BRIDGE FARM RESTORATION SITE
RUTHERFORD COUNTY, NC**

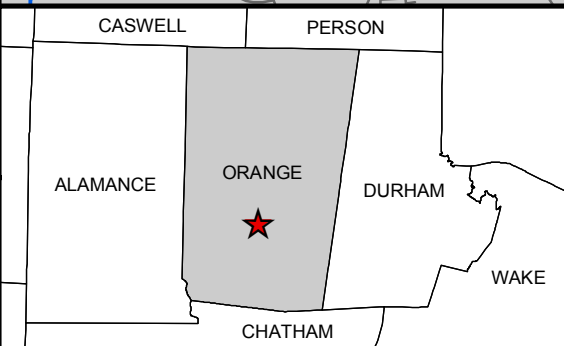
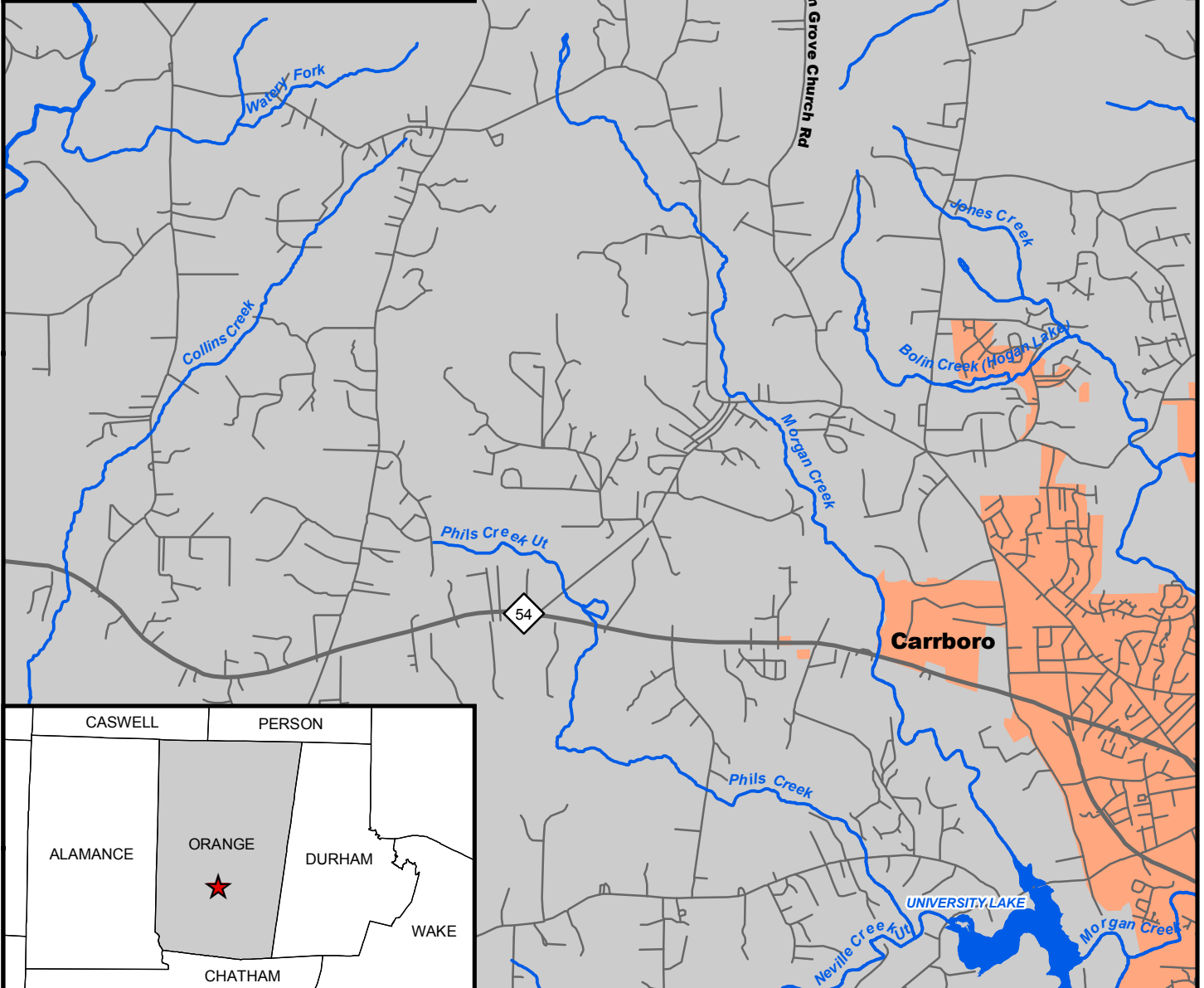


Source: NC Statewide
Orthoimagery, 2010.

Reference Reach



Orange County, North Carolina

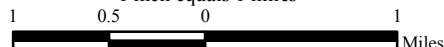


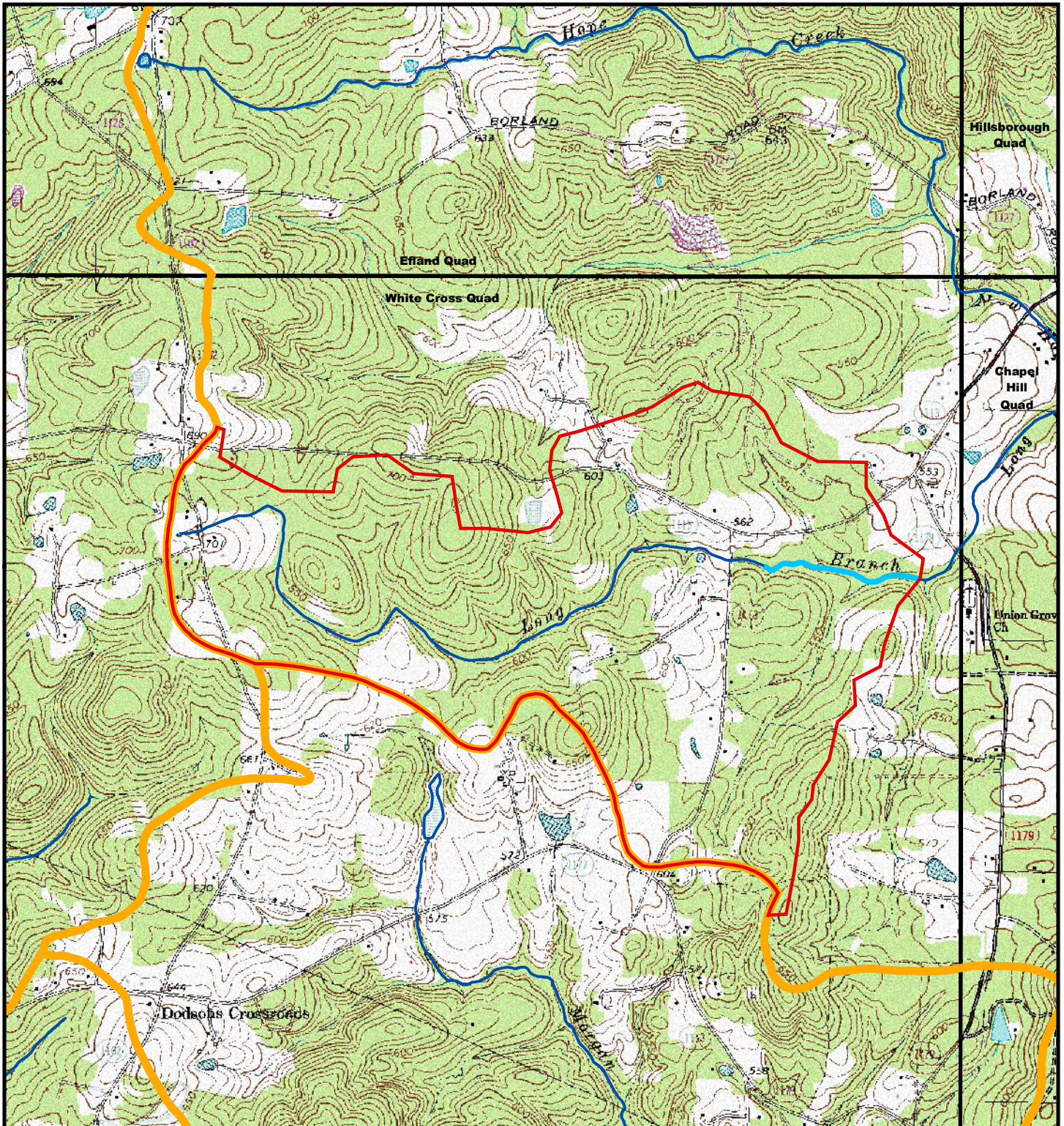
Reference Site Vicinity Map (Long Branch)

- Reference Reach (Long Branch)
- Streams
- Lakes and Reservoirs
- Cities and Towns
- Orange County
- County Boundaries
- Major Roads
- Other Roads








1:63,360
1 inch equals 1 miles





Reference Site Watershed (Long Branch)

-  Reference Reach Watershed (1.49 sq. miles)
-  14-digit HUC Boundaries
-  Reference Reach (Long Branch)
-  Other Streams
-  Quadrangle Boundaries



1:24,000

1 inch equals 2,000 feet



Source: USGS Topographic Quadrangles Chapel Hill (1978), Effland (1968), Hillsborough (1981), and White Cross (1981)



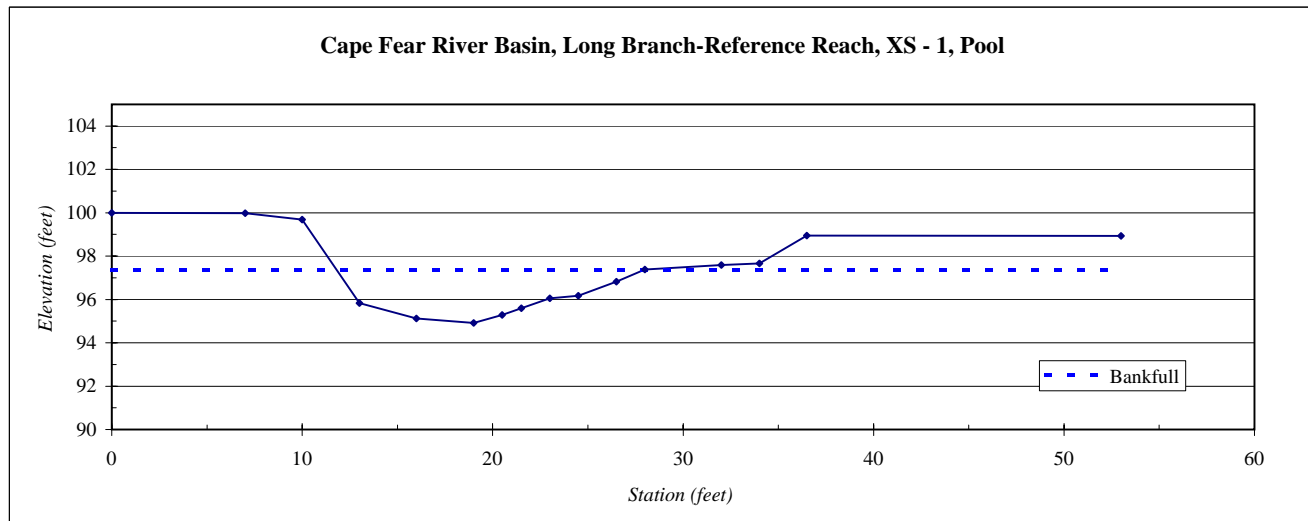
River Basin:	Cape Fear
Watershed:	Long Branch-Reference Reach
XS ID	XS - 1, Pool
Drainage Area (sq mi):	1.49
Date:	
Field Crew:	A. Helms, A. French, A. Spiller, G. Mrynzca

Station	Elevation
0	100.00
7	99.98
10	99.69
13	95.83
16	95.12
19	94.91
20.5	95.29
21.5	95.60
23	96.05
24.5	96.17
26.5	96.82
28	97.38
32	97.59
34	97.66
36.5	98.94
53	98.93

SUMMARY DATA	
Bankfull Elevation:	97.4
Bankfull Cross-Sectional Area:	25.5
Bankfull Width:	16.2
Flood Prone Area Elevation:	-
Flood Prone Width:	-
Max Depth at Bankfull:	2.5
Mean Depth at Bankfull:	1.6
W / D Ratio:	-
Entrenchment Ratio:	-
Bank Height Ratio:	-
Water Surface Slope (ft/ft):	0.004



Cape Fear River Basin, Long Branch-Reference Reach, XS - 1, Pool

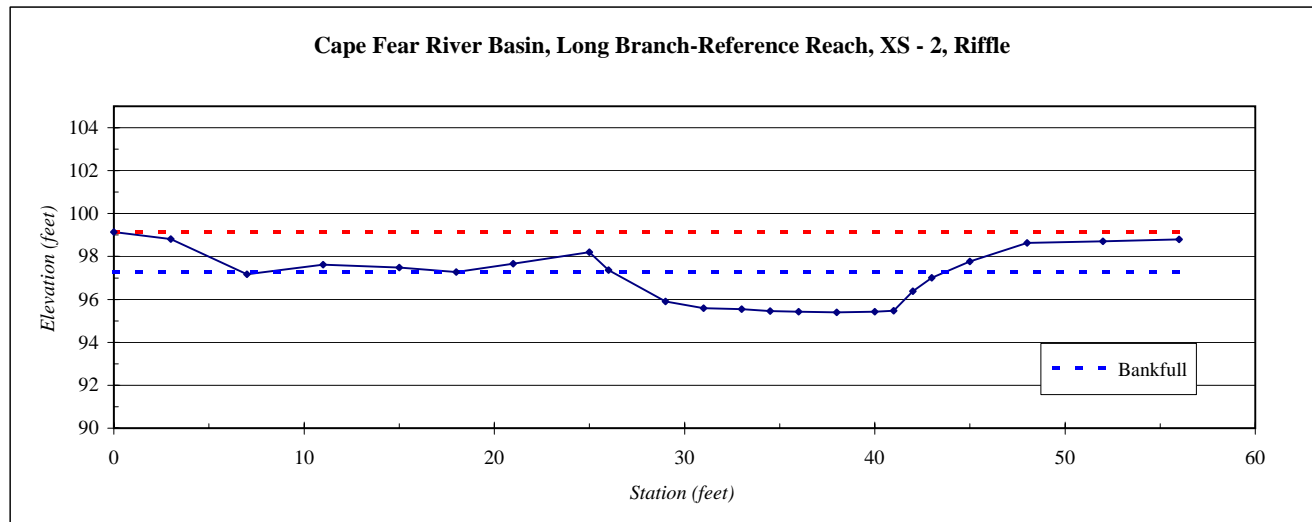


River Basin:	Cape Fear
Watershed:	Long Branch-Reference Reach
XS ID	XS - 2, Riffle
Drainage Area (sq mi):	1.49
Date:	
Field Crew:	A. Helms, A. French, A. Spiller, G. Mrynzca



Station	Elevation
0	99.15
3	98.81
7	97.17
11	97.62
15	97.48
18	97.27
21	97.66
25	98.20
26	97.37
29	95.90
31	95.59
33	95.55
34.5	95.46
36	95.42
38	95.40
40	95.43
41	95.48
42	96.38
43	97.00
45	97.76
48	98.64
52	98.71
56	98.79

SUMMARY DATA	
Bankfull Elevation:	97.3
Bankfull Cross-Sectional Area:	25.1
Bankfull Width:	18.6
Flood Prone Area Elevation:	99.1
Flood Prone Width:	>55
Max Depth at Bankfull:	1.9
Mean Depth at Bankfull:	1.3
W / D Ratio:	13.8
Entrenchment Ratio:	>2.5
Bank Height Ratio:	1.5
Water Surface Slope (ft/ft):	0.004



Riffle Pebble Count

Material	Size Range (mm)	Count
silt/clay	0 0.062	
very fine sand	0.062 0.13	
fine sand	0.13 0.25	
medium sand	0.25 0.5	
coarse sand	0.5 1	1
very coarse sand	1 2	10
very fine gravel	2 4	2
fine gravel	4 6	6
fine gravel	6 8	13
medium gravel	8 11	19
medium gravel	11 16	9
coarse gravel	16 22	17
coarse gravel	22 32	9
very coarse gravel	32 45	9
very coarse gravel	45 64	5
small cobble	64 90	
medium cobble	90 128	
large cobble	128 180	
very large cobble	180 256	
small boulder	256 362	
small boulder	362 512	
medium boulder	512 1024	
large boulder	1024 2048	
very large boulder	2048 4096	

total particle count: 100

bedrock		
clay hardpan		
detritus/wood		
artificial		

total count: 100

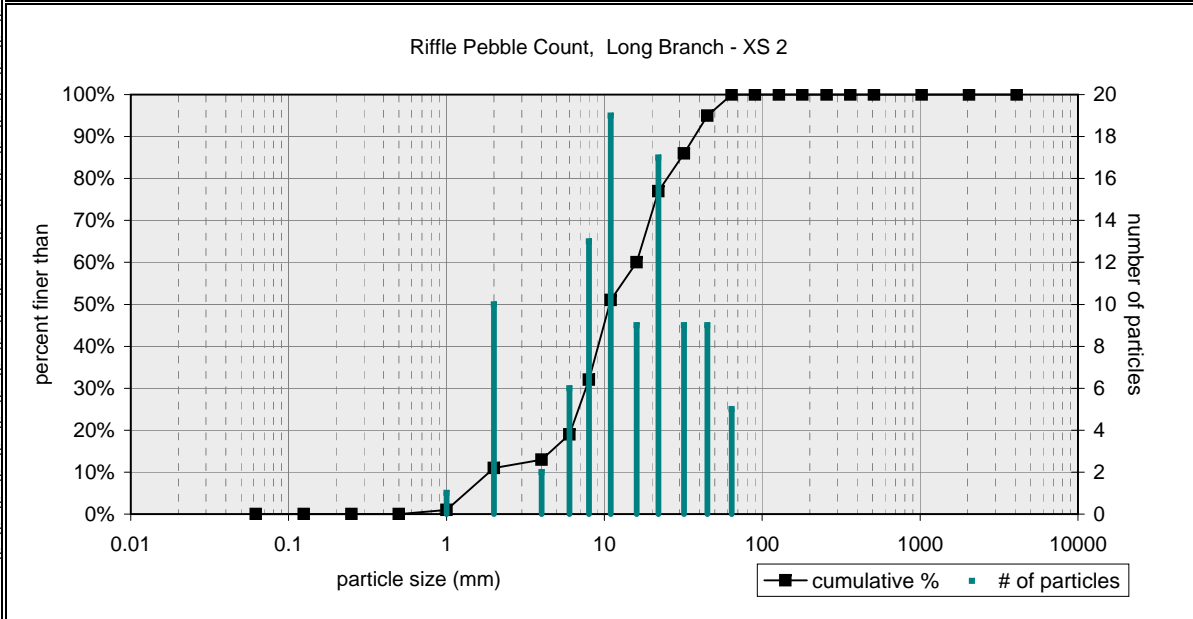
Riffle Pebble Count,

Long Branch - XS 2

Cape Fear

Orange County

Note: **XS 2**



based on sediment particles only	size percent less than (mm)						particle size distribution gradation		
	D16	D35	D50	D65	D84	D95	geo mean	std dev	
	4.899	8.41	10.8	18	29	45	2.5	12.0	2.5
based on total count	percent by substrate type								
	silt/clay	sand	gravel	cobble	boulder	bedrock	hardpan	wood/det	artificial
	0%	11%	89%	0%	0%	0%	0%	0%	0%

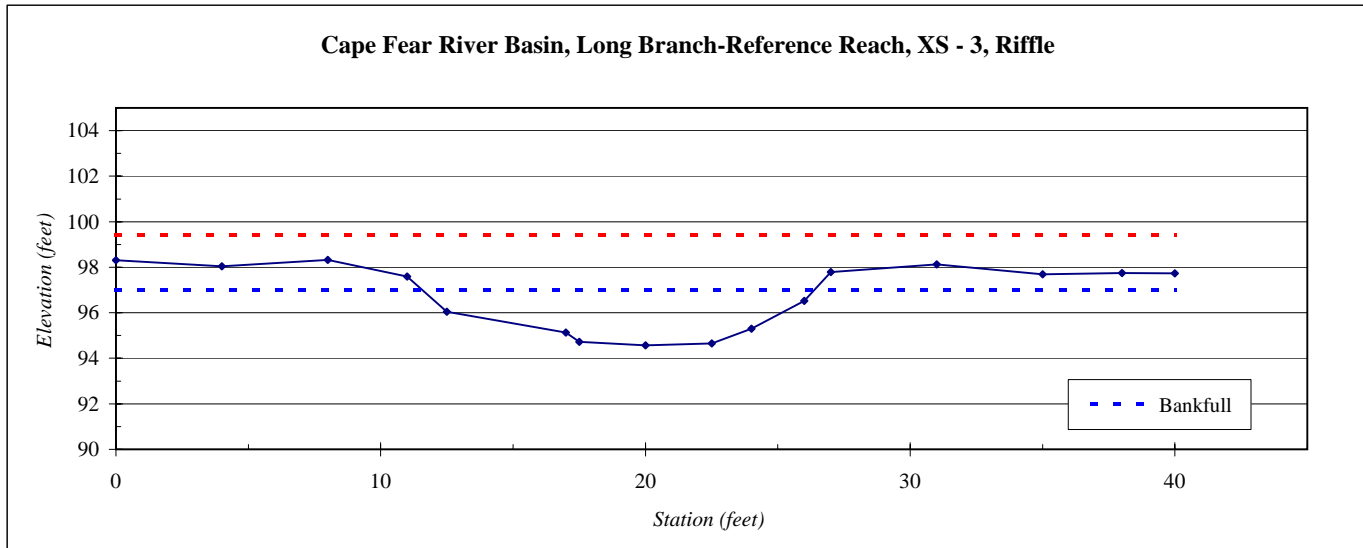
River Basin:	Cape Fear
Watershed:	Long Branch-Reference Reach
XS ID	XS - 3, Riffle
Drainage Area (sq mi):	1.49
Date:	
Field Crew:	A. Helms, A. French, A. Spiller, G. Mrynzca

Station	Elevation
0	98.31
4	98.04
8	98.32
11	97.59
12.5	96.05
17	95.13
17.5	94.73
20	94.57
22.5	94.66
24	95.29
26	96.52
27	97.79
31	98.12
35	97.68
38	97.75
40	97.73

SUMMARY DATA	
Bankfull Elevation:	97.0
Bankfull Cross-Sectional Area:	25.0
Bankfull Width:	14.8
Flood Prone Area Elevation:	99.4
Flood Prone Width:	>40
Max Depth at Bankfull:	2.4
Mean Depth at Bankfull:	1.7
W / D Ratio:	8.8
Entrenchment Ratio:	>2.5
Bank Height Ratio:	1.2
Water Surface Slope (ft/ft):	0.004



Cape Fear River Basin, Long Branch-Reference Reach, XS - 3, Riffle



Riffle Pebble Count

Material	Size Range (mm)	Count
silt/clay	0 0.062	
very fine sand	0.062 0.13	
fine sand	0.13 0.25	
medium sand	0.25 0.5	2
coarse sand	0.5 1	5
very coarse sand	1 2	5
very fine gravel	2 4	1
fine gravel	4 6	5
fine gravel	6 8	5
medium gravel	8 11	15
medium gravel	11 16	24
coarse gravel	16 22	20
coarse gravel	22 32	12
very coarse gravel	32 45	4
very coarse gravel	45 64	1
small cobble	64 90	1
medium cobble	90 128	
large cobble	128 180	
very large cobble	180 256	
small boulder	256 362	
small boulder	362 512	
medium boulder	512 1024	
large boulder	1024 2048	
very large boulder	2048 4096	

total particle count: 100

bedrock		
clay hardpan		
detritus/wood		
artificial		

total count: 100

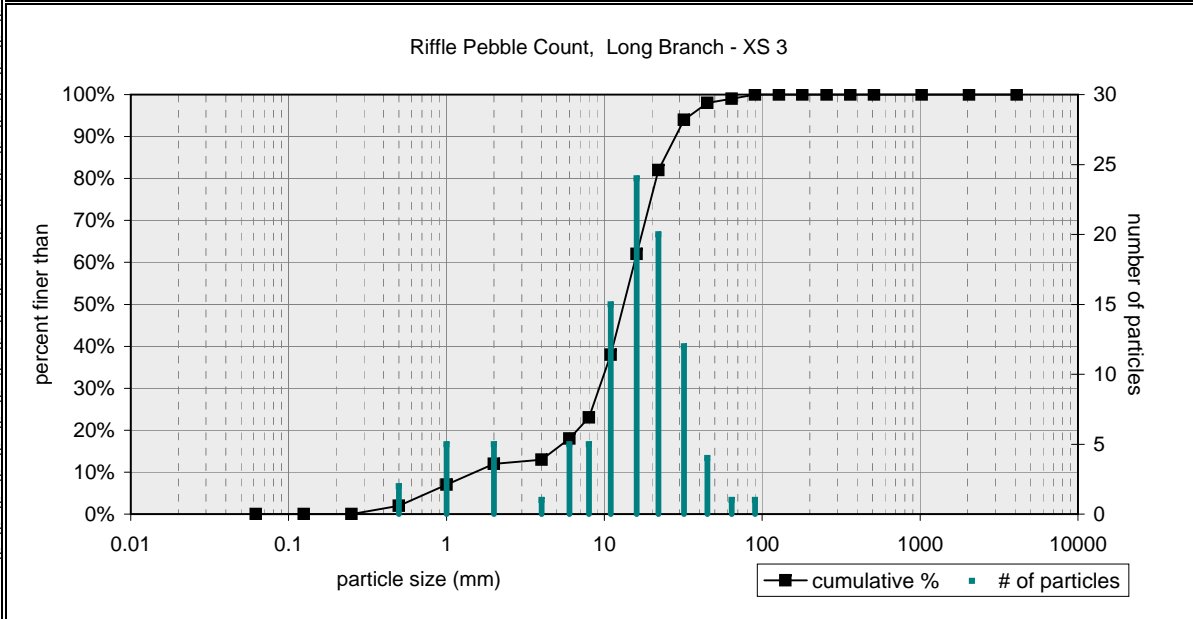
Riffle Pebble Count,

Long Branch - XS 3

Cape Fear

Orange County

Note: **XS 3**



based on sediment particles only	size percent less than (mm)						particle size distribution gradation		
	D16	D35	D50	D65	D84	D95	geo mean	std dev	
	5.102	10.32	13.3	17	23	35	2.2	10.9	2.1
based on total count	percent by substrate type								
	silt/clay	sand	gravel	cobble	boulder	bedrock	hardpan	wood/det	artificial
	0%	12%	87%	1%	0%	0%	0%	0%	0%

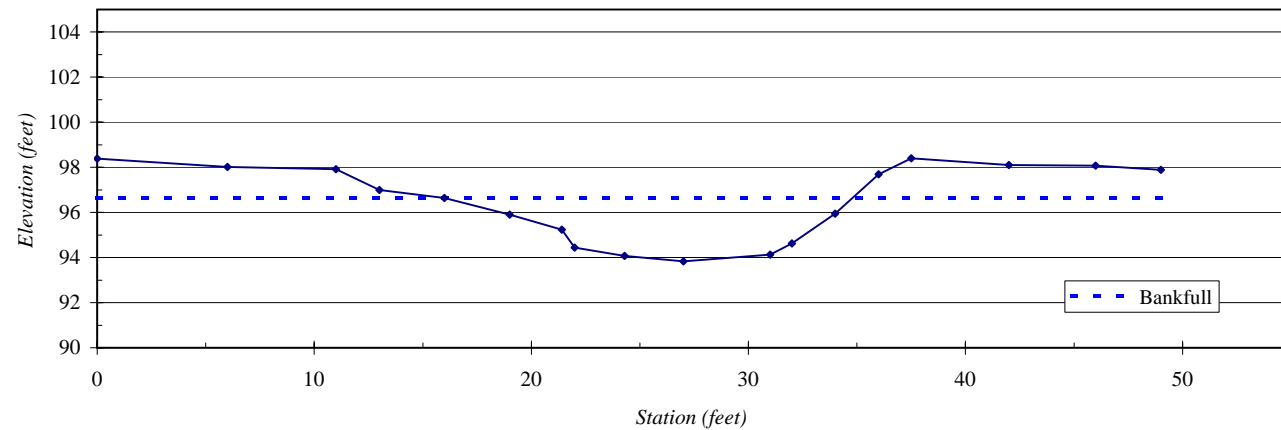
River Basin:	Cape Fear
Watershed:	Long Branch-Reference Reach
XS ID	XS - 4, Pool
Drainage Area (sq mi):	1.49
Date:	
Field Crew:	A. Helms, A. French, A. Spiller, G. Mrynzca

Station	Elevation
0	98.38
6	98.02
11	97.91
13	97.00
16	96.64
19	95.91
21.4	95.23
22	94.45
24.3	94.07
27	93.84
31	94.13
32	94.62
34	95.94
36	97.69
37.5	98.40
42	98.11
46	98.07
49	97.89

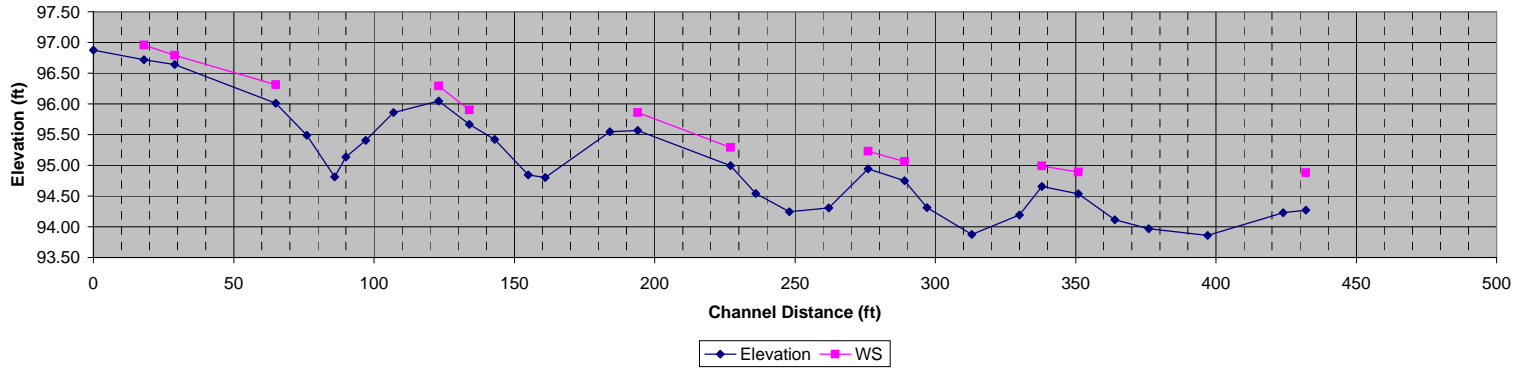
SUMMARY DATA	
Bankfull Elevation:	96.6
Bankfull Cross-Sectional Area:	33.4
Bankfull Width:	18.8
Flood Prone Area Elevation:	-
Flood Prone Width:	-
Max Depth at Bankfull:	2.8
Mean Depth at Bankfull:	1.8
W / D Ratio:	-
Entrenchment Ratio:	-
Bank Height Ratio:	-
Water Surface Slope (ft/ft):	0.004



Cape Fear River Basin, Long Branch-Reference Reach, XS - 4, Pool

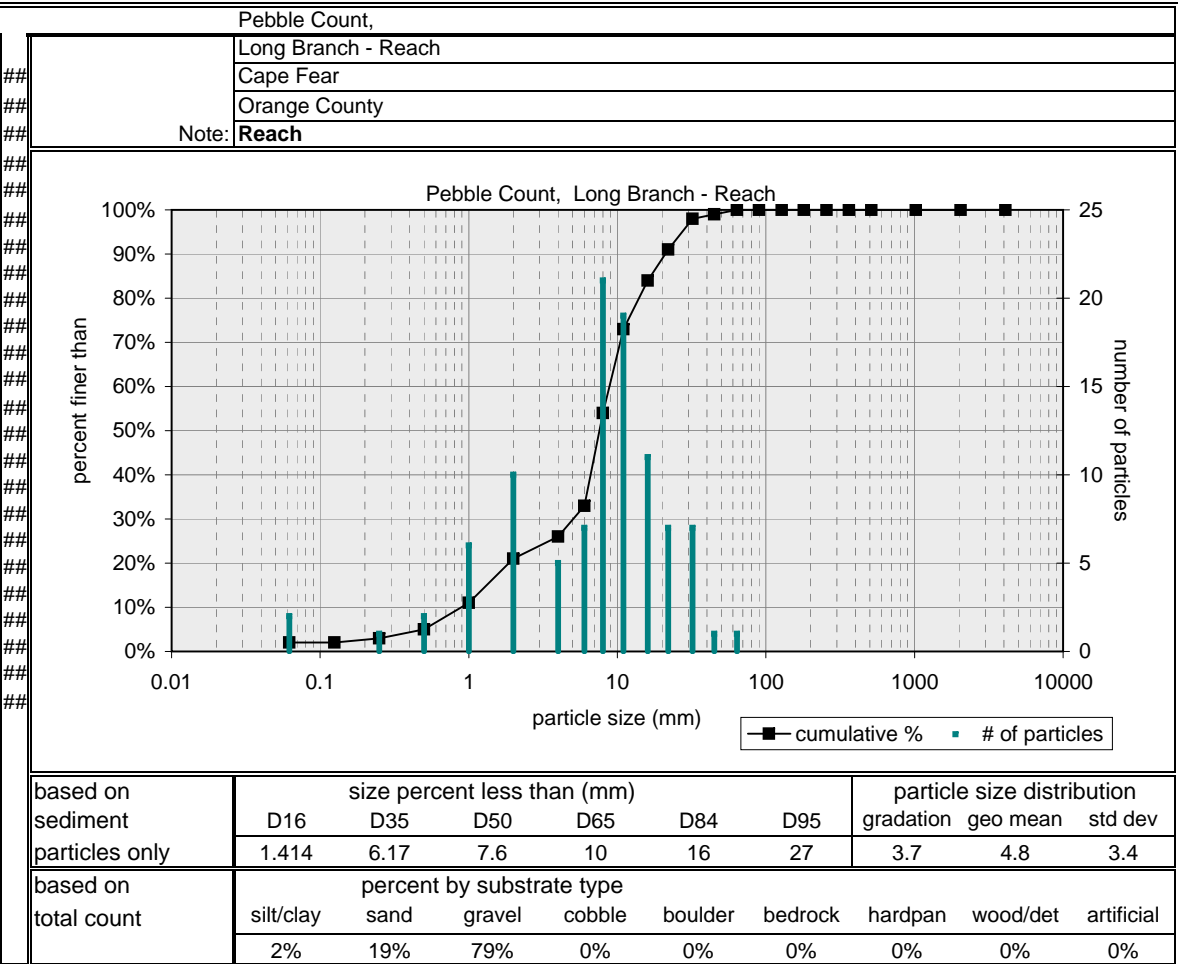


Long Branch Reference Profile



Elevation BM: 100				FS	FS		FS	FS	FS	FS	AZ	ELEV	ELEV	ELEV	ELEV	ELEV	ELEV		
notes	inc distance	station	BS	HI	TP	bed	water	LB	RB	BKF	WS	azimuth	bed	water srf	LF	RB	BKF	WS	
			0	100															
TW	0	0		100									96.87						96.96
TW_ERI	18	18		100									96.72						96.79
TW_BRI	11	29		100									96.64						96.31
TW_ERI	36	65		100									96.01						
TW_BPO	11	76		100									95.49						
TW_PO	10	86		100									94.81						
TW_EPO	4	90		100									95.14						
TW_GL	7	97		100									95.40						
TW_GL	10	107		100									95.86						96.29
TW_BRI	16	123		100									96.05						95.9
TW_ERI	11	134		100									95.67						
TW_BPO	9	143		100									95.42						
TW_PO	12	155		100									94.84						
TW_EPO	6	161		100									94.80						
TW_GL	23	184		100									95.55						95.86
TW_BRI	10	194		100									95.57						95.29
TW_ERI	33	227		100									94.99						
TW_ERU	9	236		100									94.54						
TW_POOL	12	248		100									94.25						
TW_EPO	14	262		100									94.31						95.23
TW_BRI	14	276		100									94.94						95.06
TW_ERI	13	289		100									94.75						
TW_BPO	8	297		100									94.31						
TW_POOL	16	313		100									93.88						
TW_EPO	17	330		100									94.19						94.99
TW_BRI	8	338		100									94.65						94.89
TW_ERI	13	351		100									94.54						
TW_BPO	13	364		100									94.12						
TW_PO	12	376		100									93.97						
TW_EPO	21	397		100									93.86						
TW_GL	27	424		100									94.23						94.88
TW_BRI	8	432		100									94.27						

Pebble Count of Channel Reach			
Material	Size Range (mm)		Count
silt/clay	0	0.062	2
very fine sand	0.062	0.13	
fine sand	0.13	0.25	1
medium sand	0.25	0.5	2
coarse sand	0.5	1	6
very coarse sand	1	2	10
very fine gravel	2	4	5
fine gravel	4	6	7
fine gravel	6	8	21
medium gravel	8	11	19
medium gravel	11	16	11
coarse gravel	16	22	7
coarse gravel	22	32	7
very coarse gravel	32	45	1
very coarse gravel	45	64	1
small cobble	64	90	
medium cobble	90	128	
large cobble	128	180	
very large cobble	180	256	
small boulder	256	362	
small boulder	362	512	
medium boulder	512	1024	
large boulder	1024	2048	
very large boulder	2048	4096	
total particle count:			100
bedrock			
clay hardpan			
detritus/wood			
artificial			
total count:			100



FHWA Categorical Exclusion Form

**Categorical Exclusion Form for
Division of Mitigation Services Projects
Version 1.4**

Note: Only Appendix A should to be submitted (along with any supporting documentation) as the environmental document.

Part 1: General Project Information	
Project Name:	Sandy Bridge Farm Stream and Wetland Restoration Site
County Name:	Rutherford County, NC
EEP Number:	96920
Project Sponsor:	KCI Technologies, Inc.
Project Contact Name:	Tim Morris
Project Contact Address:	4601 Six Forks Rd, Suite 220, Raleigh, NC 27609
Project Contact E-mail:	tim.morris@kci.com
EEP Project Manager:	Harry Tsomides
Project Description	
For Official Use Only	
Reviewed By:	
Date <u>10/5/2015</u>	<u>Harry Tsomides</u> DMS Project Manager
Conditional Approved By:	
Date _____	For Division Administrator FHWA
<input type="checkbox"/> Check this box if there are outstanding issues	
Final Approval By:	
Date <u>10-5-15</u>	<u>[Signature]</u> For Division Administrator FHWA

Part 2: All Projects Regulation/Question		Response
Coastal Zone Management Act (CZMA)		
1. Is the project located in a CAMA county?		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
2. Does the project involve ground-disturbing activities within a CAMA Area of Environmental Concern (AEC)?		<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
3. Has a CAMA permit been secured?		<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
4. Has NCDCCM agreed that the project is consistent with the NC Coastal Management Program?		<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
Comprehensive Environmental Response, Compensation and Liability Act (CERCLA)		
1. Is this a "full-delivery" project?		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
2. Has the zoning/land use of the subject property and adjacent properties ever been designated as commercial or industrial?		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A
3. As a result of a limited Phase I Site Assessment, are there known or potential hazardous waste sites within or adjacent to the project area?		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A
4. As a result of a Phase I Site Assessment, are there known or potential hazardous waste sites within or adjacent to the project area?		<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
5. As a result of a Phase II Site Assessment, are there known or potential hazardous waste sites within the project area?		<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
6. Is there an approved hazardous mitigation plan?		<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
National Historic Preservation Act (Section 106)		
1. Are there properties listed on, or eligible for listing on, the National Register of Historic Places in the project area?		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
2. Does the project affect such properties and does the SHPO/THPO concur?		<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
3. If the effects are adverse, have they been resolved?		<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
Uniform Relocation Assistance and Real Property Acquisition Policies Act (Uniform Act)		
1. Is this a "full-delivery" project?		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
2. Does the project require the acquisition of real estate?		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
3. Was the property acquisition completed prior to the intent to use federal funds?		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A
4. Has the owner of the property been informed: * prior to making an offer that the agency does not have condemnation authority; and * what the fair market value is believed to be?		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A

Part 3: Ground-Disturbing Activities Regulation/Question		Response
American Indian Religious Freedom Act (AIRFA)		
1. Is the project located in a county claimed as "territory" by the Eastern Band of Cherokee Indians?		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
2. Is the site of religious importance to American Indians?		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A
3. Is the project listed on, or eligible for listing on, the National Register of Historic Places?		<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
4. Have the effects of the project on this site been considered?		<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
Antiquities Act (AA)		
1. Is the project located on Federal lands?		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
2. Will there be loss or destruction of historic or prehistoric ruins, monuments or objects of antiquity?		<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
3. Will a permit from the appropriate Federal agency be required?		<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
4. Has a permit been obtained?		<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
Archaeological Resources Protection Act (ARPA)		
1. Is the project located on federal or Indian lands (reservation)?		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
2. Will there be a loss or destruction of archaeological resources?		<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
3. Will a permit from the appropriate Federal agency be required?		<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
4. Has a permit been obtained?		<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
Endangered Species Act (ESA)		
1. Are federal Threatened and Endangered species and/or Designated Critical Habitat listed for the county?		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
2. Is Designated Critical Habitat or suitable habitat present for listed species?		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A
3. Are T&E species present or is the project being conducted in Designated Critical Habitat?		<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
4. Is the project "likely to adversely affect" the specie and/or "likely to adversely modify" Designated Critical Habitat?		<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
5. Does the USFWS/NOAA-Fisheries concur in the effects determination? (By virtue of no-response)		<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
6. Has the USFWS/NOAA-Fisheries rendered a "jeopardy" determination?		<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A

Executive Order 13007 (Indian Sacred Sites)	
1. Is the project located on Federal lands that are within a county claimed as "territory" by the EBCI?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
2. Has the EBCI indicated that Indian sacred sites may be impacted by the proposed project?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
3. Have accommodations been made for access to and ceremonial use of Indian sacred sites?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
Farmland Protection Policy Act (FPPA)	
1. Will real estate be acquired?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
2. Has NRCS determined that the project contains prime, unique, statewide or local important farmland?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
3. Has the completed Form AD-1006 been submitted to NRCS?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
Fish and Wildlife Coordination Act (FWCA)	
1. Will the project impound, divert, channel deepen, or otherwise control/modify any water body?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
2. Have the USFWS and the NCWRC been consulted?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
Land and Water Conservation Fund Act (Section 6(f))	
1. Will the project require the conversion of such property to a use other than public, outdoor recreation?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
2. Has the NPS approved of the conversion?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
Magnuson-Stevens Fishery Conservation and Management Act (Essential Fish Habitat)	
1. Is the project located in an estuarine system?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
2. Is suitable habitat present for EFH-protected species?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
3. Is sufficient design information available to make a determination of the effect of the project on EFH?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
4. Will the project adversely affect EFH?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
5. Has consultation with NOAA-Fisheries occurred?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
Migratory Bird Treaty Act (MBTA)	
1. Does the USFWS have any recommendations with the project relative to the MBTA?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
2. Have the USFWS recommendations been incorporated?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
Wilderness Act	
1. Is the project in a Wilderness area?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
2. Has a special use permit and/or easement been obtained from the maintaining federal agency?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A

Appendix
Supporting Documentation for
Categorical Exclusion Form for NC DENR Division of Mitigation
Services (DMS) Projects

Contents

Limited Phase I ESA – EDR Report
 Radius Report
 Sanborn Map
 Historic Topography Report

Agency Letters

 State Historic Preservation Office Letter
 United States Fish and Wildlife Service Letter with RTE Report
 NRCS Letter
 NC Wildlife Resources Commission Letter
 NC Natural Heritage Program Letter
 Eastern Band of Cherokee Indians Letter
 Rutherford County Airport Note
 Uniform Act Letter
 Letter References
 Figure 1 – Vicinity Map
 Figure 2 – Project Watershed
 Figure 3 – Watershed Land Use
 Figure 4 – Project Area

Agency Response

 State Historic Preservation Office Response
 - Archaeological Survey Report (Archaeological Consultants of the Carolinas, Inc.)
 Farmland Conversion Form (AD-1006) and USDA Letter
 NC Natural Heritage Program Letter
 Rutherford County Airport Authority Letter

Affidavit of Public Notice

Limited Phase I ESA

1. Radius Report
2. Sanborn Map
3. Historic Topography

Sandy Bridge Farm

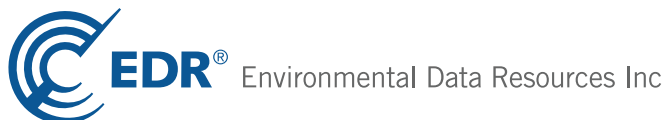
1356 Rock Road

Rutherfordton, NC 28139

Inquiry Number: 4326486.2s

June 15, 2015

The EDR Radius Map™ Report with GeoCheck®



6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

EXECUTIVE SUMMARY

A search of available environmental records was conducted by Environmental Data Resources, Inc (EDR). The report was designed to assist parties seeking to meet the search requirements of EPA's Standards and Practices for All Appropriate Inquiries (40 CFR Part 312), the ASTM Standard Practice for Environmental Site Assessments (E 1527-13) or custom requirements developed for the evaluation of environmental risk associated with a parcel of real estate.

TARGET PROPERTY INFORMATION

ADDRESS

1356 ROCK ROAD
RUTHERFORDTON, NC 28139

COORDINATES

Latitude (North): 35.4096000 - 35° 24' 34.56"
Longitude (West): 81.9370000 - 81° 56' 13.20"
Universal Transverse Mercator: Zone 17
UTM X (Meters): 414922.2
UTM Y (Meters): 3918672.0
Elevation: 875 ft. above sea level

USGS TOPOGRAPHIC MAP ASSOCIATED WITH TARGET PROPERTY

Target Property Map: 35081-D8 RUTHERFORDTON NORTH, NC
Most Recent Revision: 2002

AERIAL PHOTOGRAPHY IN THIS REPORT

Portions of Photo from: 20120816
Source: USDA

MAPPED SITES SUMMARY

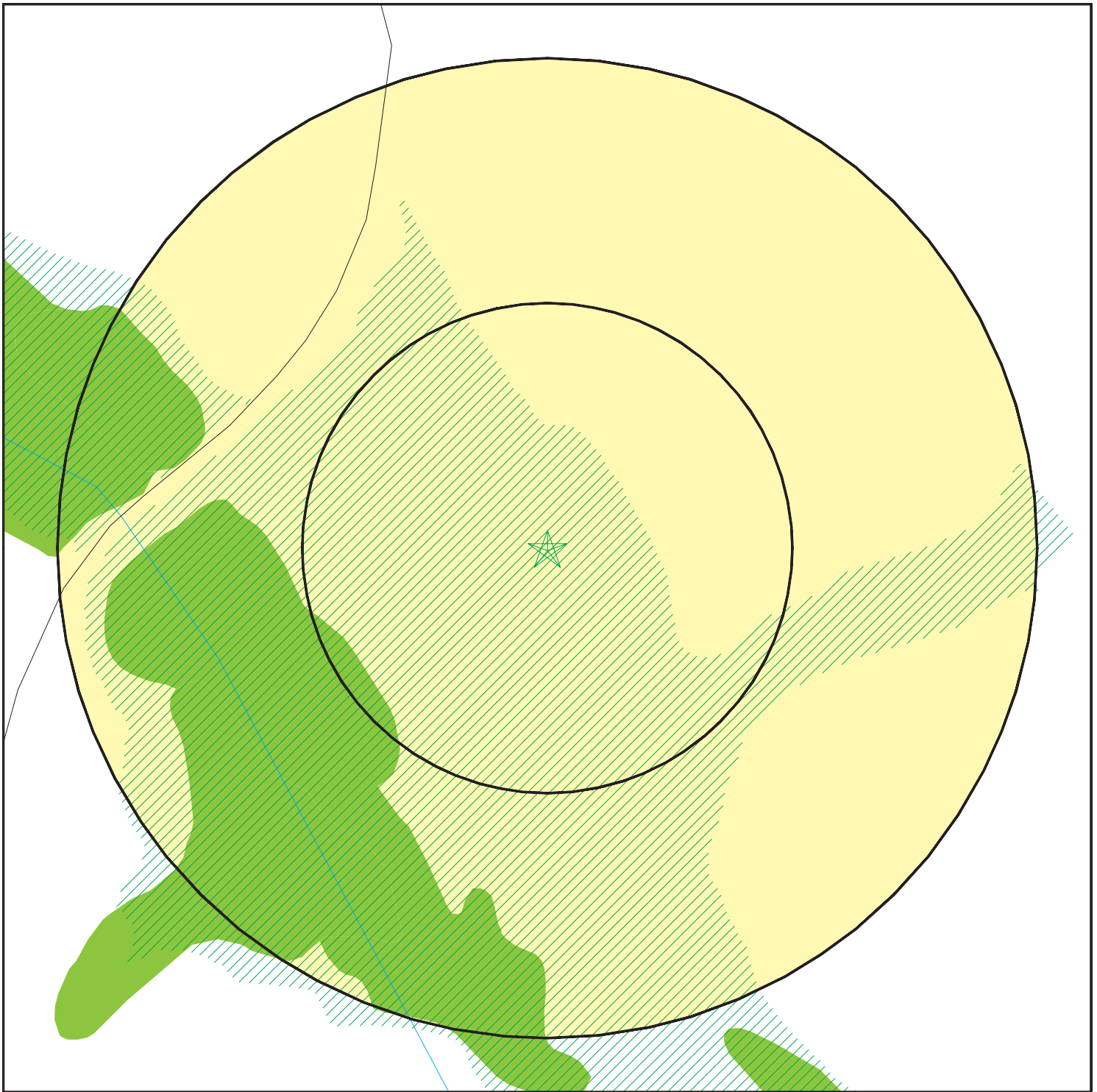
Target Property Address:
1356 ROCK ROAD
RUTHERFORDTON, NC 28139

Click on Map ID to see full detail.

MAP ID	SITE NAME	ADDRESS	DATABASE ACRONYMS	RELATIVE ELEVATION	DIST (ft. & mi.) DIRECTION
--------	-----------	---------	-------------------	--------------------	----------------------------

NO MAPPED SITES FOUND

DETAIL MAP - 4326486.2S



- ★ Target Property
- ▲ Sites at elevations higher than or equal to the target property
- ◆ Sites at elevations lower than the target property
- ▲ Manufactured Gas Plants
- Sensitive Receptors
- National Priority List Sites
- Dept. Defense Sites

- Indian Reservations BIA
- ▲ Oil & Gas pipelines from USGS
- 100-year flood zone
- 500-year flood zone
- National Wetland Inventory
- State Wetlands
- Hazardous Substance Disposal Sites



This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME: Sandy Bridge Farm
 ADDRESS: 1356 Rock Road
 Rutherfordton NC 28139
 LAT/LONG: 35.4096 / 81.937

CLIENT: KCI Technologies, Inc.
 CONTACT: Tim Morris
 INQUIRY #: 4326486.2s
 DATE: June 15, 2015 5:46 pm

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
STANDARD ENVIRONMENTAL RECORDS								
<i>Federal NPL site list</i>								
NPL	1.000		0	0	0	0	NR	0
Proposed NPL	1.000		0	0	0	0	NR	0
NPL LIENS	TP		NR	NR	NR	NR	NR	0
<i>Federal Delisted NPL site list</i>								
Delisted NPL	1.000		0	0	0	0	NR	0
<i>Federal CERCLIS list</i>								
CERCLIS	0.500		0	0	0	NR	NR	0
FEDERAL FACILITY	0.500		0	0	0	NR	NR	0
<i>Federal CERCLIS NFRAP site List</i>								
CERC-NFRAP	0.500		0	0	0	NR	NR	0
<i>Federal RCRA CORRACTS facilities list</i>								
CORRACTS	1.000		0	0	0	0	NR	0
<i>Federal RCRA non-CORRACTS TSD facilities list</i>								
RCRA-TSDF	0.500		0	0	0	NR	NR	0
<i>Federal RCRA generators list</i>								
RCRA-LQG	0.250		0	0	NR	NR	NR	0
RCRA-SQG	0.250		0	0	NR	NR	NR	0
RCRA-CESQG	0.250		0	0	NR	NR	NR	0
<i>Federal institutional controls / engineering controls registries</i>								
US ENG CONTROLS	0.500		0	0	0	NR	NR	0
US INST CONTROL	0.500		0	0	0	NR	NR	0
LUCIS	0.500		0	0	0	NR	NR	0
<i>Federal ERNS list</i>								
ERNS	TP		NR	NR	NR	NR	NR	0
<i>State- and tribal - equivalent NPL</i>								
NC HSDS	1.000		0	0	0	0	NR	0
<i>State- and tribal - equivalent CERCLIS</i>								
SHWS	1.000		0	0	0	0	NR	0
<i>State and tribal landfill and/or solid waste disposal site lists</i>								
SWF/LF	0.500		0	0	0	NR	NR	0
OLI	0.500		0	0	0	NR	NR	0
<i>State and tribal leaking storage tank lists</i>								
LUST	0.500		0	0	0	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
LUST TRUST	0.500		0	0	0	NR	NR	0
LAST	0.500		0	0	0	NR	NR	0
INDIAN LUST	0.500		0	0	0	NR	NR	0
State and tribal registered storage tank lists								
UST	0.250		0	0	NR	NR	NR	0
AST	0.250		0	0	NR	NR	NR	0
INDIAN UST	0.250		0	0	NR	NR	NR	0
FEMA UST	0.250		0	0	NR	NR	NR	0
State and tribal institutional control / engineering control registries								
INST CONTROL	0.500		0	0	0	NR	NR	0
State and tribal voluntary cleanup sites								
INDIAN VCP	0.500		0	0	0	NR	NR	0
VCP	0.500		0	0	0	NR	NR	0
State and tribal Brownfields sites								
BROWNFIELDS	0.500		0	0	0	NR	NR	0
ADDITIONAL ENVIRONMENTAL RECORDS								
Local Brownfield lists								
US BROWNFIELDS	0.500		0	0	0	NR	NR	0
Local Lists of Landfill / Solid Waste Disposal Sites								
ODI	0.500		0	0	0	NR	NR	0
DEBRIS REGION 9	0.500		0	0	0	NR	NR	0
SWRCY	0.500		0	0	0	NR	NR	0
HIST LF	0.500		0	0	0	NR	NR	0
INDIAN ODI	0.500		0	0	0	NR	NR	0
Local Lists of Hazardous waste / Contaminated Sites								
US CDL	TP		NR	NR	NR	NR	NR	0
US HIST CDL	TP		NR	NR	NR	NR	NR	0
Local Land Records								
LIENS 2	TP		NR	NR	NR	NR	NR	0
Records of Emergency Release Reports								
HMIRS	TP		NR	NR	NR	NR	NR	0
IMD	0.500		0	0	0	NR	NR	0
SPILLS	TP		NR	NR	NR	NR	NR	0
SPILLS 80	TP		NR	NR	NR	NR	NR	0
SPILLS 90	TP		NR	NR	NR	NR	NR	0
Other Ascertainable Records								
RCRA NonGen / NLR	0.250		0	0	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
DOT OPS	TP		NR	NR	NR	NR	NR	0
DOD	1.000		0	0	0	0	NR	0
FUDS	1.000		0	0	0	0	NR	0
CONSENT	1.000		0	0	0	0	NR	0
ROD	1.000		0	0	0	0	NR	0
UMTRA	0.500		0	0	0	NR	NR	0
US MINES	0.250		0	0	NR	NR	NR	0
TRIS	TP		NR	NR	NR	NR	NR	0
TSCA	TP		NR	NR	NR	NR	NR	0
FTTS	TP		NR	NR	NR	NR	NR	0
HIST FTTS	TP		NR	NR	NR	NR	NR	0
SSTS	TP		NR	NR	NR	NR	NR	0
ICIS	TP		NR	NR	NR	NR	NR	0
PADS	TP		NR	NR	NR	NR	NR	0
MLTS	TP		NR	NR	NR	NR	NR	0
RADINFO	TP		NR	NR	NR	NR	NR	0
FINDS	TP		NR	NR	NR	NR	NR	0
RAATS	TP		NR	NR	NR	NR	NR	0
RMP	TP		NR	NR	NR	NR	NR	0
UIC	TP		NR	NR	NR	NR	NR	0
DRYCLEANERS	0.250		0	0	NR	NR	NR	0
NPDES	TP		NR	NR	NR	NR	NR	0
INDIAN RESERV	1.000		0	0	0	0	NR	0
SCRD DRYCLEANERS	0.500		0	0	0	NR	NR	0
COAL ASH	0.500		0	0	0	NR	NR	0
Financial Assurance	TP		NR	NR	NR	NR	NR	0
LEAD SMELTERS	TP		NR	NR	NR	NR	NR	0
US AIRS	TP		NR	NR	NR	NR	NR	0
EPA WATCH LIST	TP		NR	NR	NR	NR	NR	0
US FIN ASSUR	TP		NR	NR	NR	NR	NR	0
COAL ASH EPA	0.500		0	0	0	NR	NR	0
PCB TRANSFORMER	TP		NR	NR	NR	NR	NR	0
COAL ASH DOE	TP		NR	NR	NR	NR	NR	0
2020 COR ACTION	0.250		0	0	NR	NR	NR	0
PRP	TP		NR	NR	NR	NR	NR	0

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR MGP	1.000		0	0	0	0	NR	0
EDR US Hist Auto Stat	0.250		0	0	NR	NR	NR	0
EDR US Hist Cleaners	0.250		0	0	NR	NR	NR	0

EDR RECOVERED GOVERNMENT ARCHIVES

Exclusive Recovered Govt. Archives

RGA HWS	TP		NR	NR	NR	NR	NR	0
RGA LF	TP		NR	NR	NR	NR	NR	0
RGA LUST	TP		NR	NR	NR	NR	NR	0

- Totals -- 0 0 0 0 0 0 0 0

MAP FINDINGS SUMMARY

<u>Database</u>	<u>Search Distance (Miles)</u>	<u>Target Property</u>	<u>< 1/8</u>	<u>1/8 - 1/4</u>	<u>1/4 - 1/2</u>	<u>1/2 - 1</u>	<u>> 1</u>	<u>Total Plotted</u>
-----------------	--	----------------------------	-----------------	------------------	------------------	----------------	---------------	--------------------------

NOTES:

TP = Target Property

NR = Not Requested at this Search Distance

Sites may be listed in more than one database



Sandy Bridge Farm

1356 Rock Road

Rutherfordton, NC 28139

Inquiry Number: 4326486.3

June 15, 2015

Certified Sanborn® Map Report



6 Armstrong Road, 4th Floor
Shelton, Connecticut 06484
Toll Free: 800.352.0050
www.edrnet.com

Certified Sanborn® Map Report

6/15/15

Site Name:

Sandy Bridge Farm
1356 Rock Road
Rutherfordton, NC 28139

Client Name:

KCI Technologies, Inc.
4601 Six Forks Road
Raleigh, NC 27609

EDR Inquiry # 4326486.3

Contact: Tim Morris



The Sanborn Library has been searched by EDR and maps covering the target property location as provided by KCI Technologies, Inc. were identified for the years listed below. The Sanborn Library is the largest, most complete collection of fire insurance maps. The collection includes maps from Sanborn, Bromley, Perris & Browne, Hopkins, Barlow, and others. Only Environmental Data Resources Inc. (EDR) is authorized to grant rights for commercial reproduction of maps by the Sanborn Library LLC, the copyright holder for the collection. Results can be authenticated by visiting www.edrnet.com/sanborn.

The Sanborn Library is continually enhanced with newly identified map archives. This report accesses all maps in the collection as of the day this report was generated.

Certified Sanborn Results:

Site Name: Sandy Bridge Farm
Address: 1356 Rock Road
City, State, Zip: Rutherfordton, NC 28139
Cross Street:
P.O. # 20157877
Project: Sandy Bridge Farm
Certification # AB6A-433A-B4D2



Sanborn® Library search results
Certification # AB6A-433A-B4D2

UNMAPPED PROPERTY

This report certifies that the complete holdings of the Sanborn Library, LLC collection have been searched based on client supplied target property information, and fire insurance maps covering the target property were not found.

The Sanborn Library includes more than 1.2 million fire insurance maps from Sanborn, Bromley, Perris & Browne, Hopkins, Barlow and others which track historical property usage in approximately 12,000 American cities and towns. Collections searched:

- Library of Congress
- University Publications of America
- EDR Private Collection

The Sanborn Library LLC Since 1866™

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Sandy Bridge Farm

1356 Rock Road

Rutherfordton, NC 28139

Inquiry Number: 4326486.4

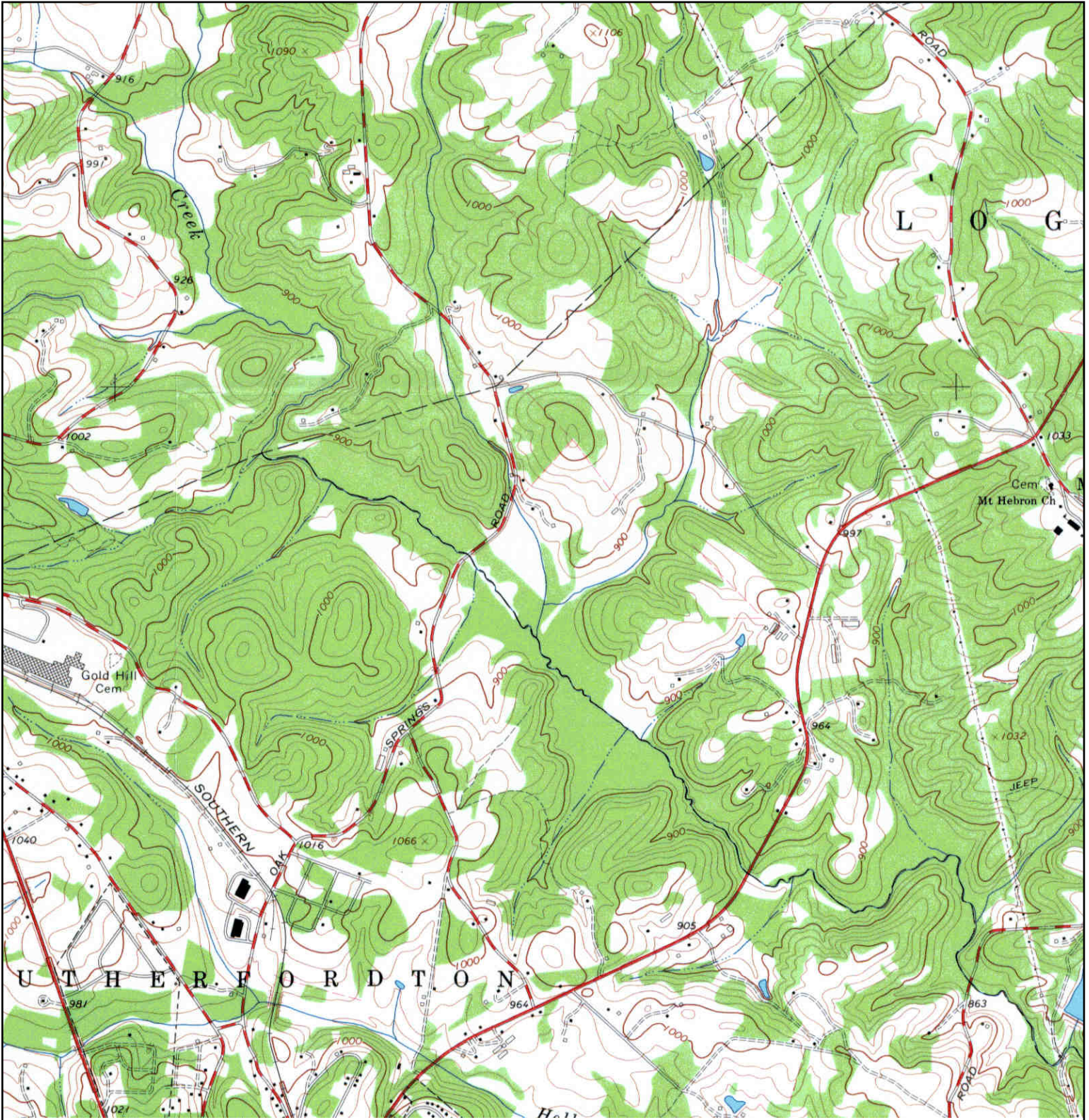
June 15, 2015


EDR Historical Topographic Map Report



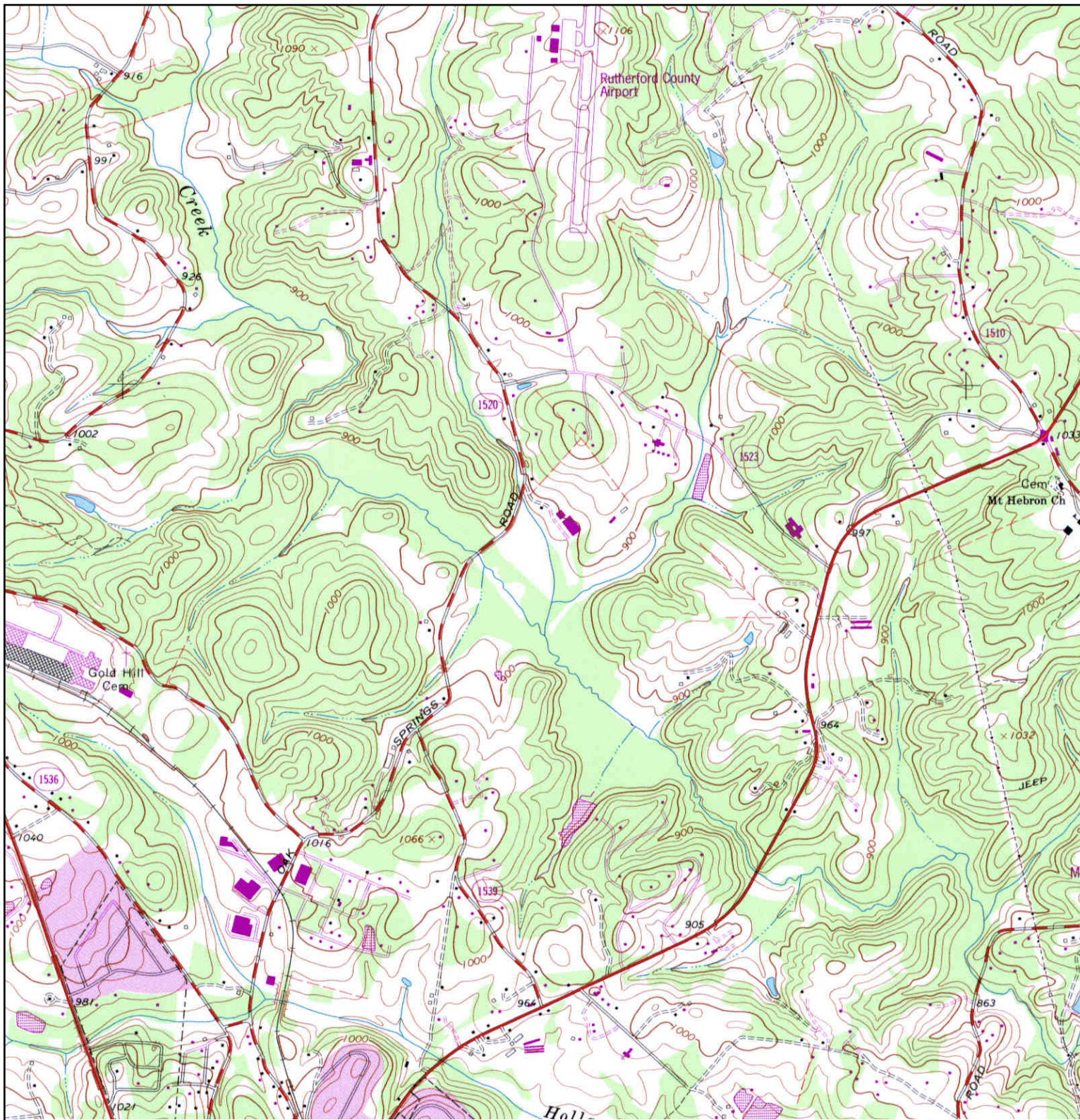
6 Armstrong Road, 4th Floor
Shelton, Connecticut 06484
Toll Free: 800.352.0050
www.edrnet.com


Historical Topographic Map



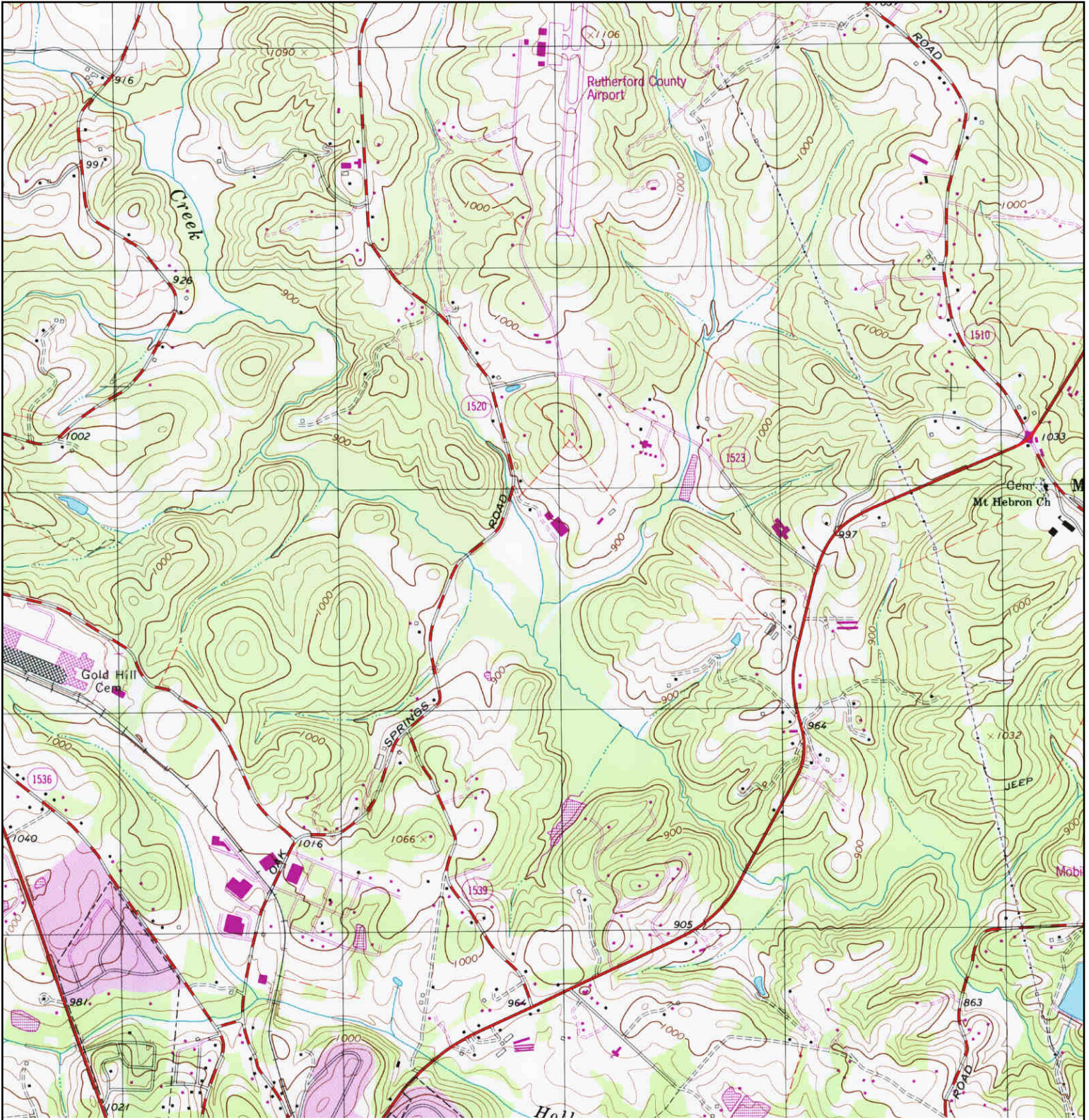
	TARGET QUAD	SITE NAME: Sandy Bridge Farm	CLIENT: KCI Technologies, Inc.
	NAME: RUTHERFORDTON NORTH	ADDRESS: 1356 Rock Road Rutherfordton, NC 28139	CONTACT: Tim Morris
	MAP YEAR: 1966	LAT/LONG: 35.4096 / -81.937	INQUIRY#: 4326486.4
	SERIES: 7.5		RESEARCH DATE: 06/15/2015
	SCALE: 1:24000		


Historical Topographic Map



	TARGET QUAD	SITE NAME: Sandy Bridge Farm	CLIENT: KCI Technologies, Inc.
	NAME: RUTHERFORDTON NORTH	ADDRESS: 1356 Rock Road Rutherfordton, NC 28139	CONTACT: Tim Morris
	MAP YEAR: 1993	LAT/LONG: 35.4096 / -81.937	INQUIRY#: 4326486.4
	SERIES: 7.5		RESEARCH DATE: 06/15/2015
	SCALE: 1:24000		

Historical Topographic Map



	TARGET QUAD	SITE NAME: Sandy Bridge Farm	CLIENT: KCI Technologies, Inc.
	NAME: RUTHERFORDTON NORTH	ADDRESS: 1356 Rock Road Rutherfordton, NC 28139	CONTACT: Tim Morris
	MAP YEAR: 2002	LAT/LONG: 35.4096 / -81.937	INQUIRY#: 4326486.4
	SERIES: 7.5		RESEARCH DATE: 06/15/2015
	SCALE: 1:24000		



ENGINEERS • SCIENTISTS • SURVEYORS • CONSTRUCTION MANAGERS

Landmark Center II, Suite 220 4601 Six Forks Road Raleigh, NC 27609 (919) 783-9214 (919) 783-9266 Fax

June 16, 2015

Ms. Renee Gledhill-Earley
Environmental Review Coordinator
State Historic Preservation Office
4617 Mail Service Center
Raleigh, NC 27699-4617

Subject: Cultural Resources Review
Sandy Bridge Farm Stream and Wetland Restoration Project
KCI Job # 20157877

Dear Mrs. Gledhill-Earley:

On behalf of our client, the North Carolina Division of Mitigation Services (DMS), KCI Technologies, Inc. requests review and comment on any possible issues that might emerge with respect to archaeological or cultural resources associated with a potential stream and wetland restoration project on the above referenced site. The subject site, known as the Sandy Bridge Farm stream and wetland restoration site, is located north-northeast of Rutherfordton, North Carolina in the central portion of Rutherford County (Figure 1). Specifically, the site is located 2.2 miles north on Rock Road from the intersection of US 64 and US 74A. It is situated within the 03050105 (Broad River Basin) Watershed Cataloging Unit and the 03050105070020 Local Watershed Unit (Figure 2). Land use in the watershed is primarily agricultural or forest land (Figure 3). Please accept the attached information as a submittal for cultural resources review by the State Historic Preservation Office and the Office of State Archaeology.

The planned stream and wetland restoration work aims to restore the hydrology and vegetation components to this riparian wetland system by filling existing ditches across the site and stabilizing the site with native vegetation. There will not be any impacts to existing structures (buildings, barns, etc.) on the subject property. No architectural structures or archeological artifacts have been observed or noted during preliminary surveys of the site for restoration purposes. In addition, the majority of the site has historically been disturbed due to agricultural purposes such as cattle grazing, ditching and draining. Proposed mitigation actions are shown on Figure 4.

Please feel free to contact me at 919-278-2511, should you have any questions or require any further information concerning the extent of site disturbance associated with this project. Thank you in advance for your assistance.

Sincerely,

A handwritten signature in black ink, appearing to read "Timothy J. Morris".

Timothy J. Morris
Senior Environmental Scientist
Ecosystem Dynamics Practice



ENGINEERS • SCIENTISTS • SURVEYORS • CONSTRUCTION MANAGERS
Landmark Center II, Suite 220 4601 Six Forks Road Raleigh, NC 27609 (919) 783-9214 (919) 783-9266 Fax

June 16, 2015

Ms. Marella Buncick,
US Fish and Wildlife Service
Asheville Field Office
160 Zillicoa Street
Asheville, NC 28801

Subject: Endangered Species Act, Fish and Wildlife Coordination Act, Migratory Bird Treaty Act
Sandy Bridge Farm Stream and Wetland Restoration Site
KCI Job # 20157877

Dear Mr. Benjamin:

Please accept this information pertaining to the proposed Sandy Bridge Farm stream and wetland restoration site for natural area and rare species review by the US Fish and Wildlife Service. The subject site, known as the Sandy Bridge Farm stream and wetland restoration site, is located north-northeast of Rutherfordton, North Carolina in the central portion of Rutherford County (Figure 1). Specifically, the site is located 2.2 miles north on Rock Road from the intersection of US 64 and US 74A. It is situated within the 03050105 (Broad River Basin) Watershed Cataloging Unit and the 03050105070020 Local Watershed Unit (Figure 2). Land use in the watershed is primarily agricultural or forest land (Figure 3).

A portion of the site (Figure 4) is currently under investigation as a wetland restoration project for the North Carolina Division of Mitigation Services. The funding for this project comes from the USDOT Federal Highway Administration through the North Carolina Department of Transportation. Land use at this site is primarily pastureland. The planned restoration work aims to restore the hydrology and vegetation components to this riparian wetland system by filling drainage ditches, restoring a channelized stream to a meandering channel integrated with riparian wetlands, reducing the impacts of adjacent agricultural practices, and stabilizing the site with native vegetation. All of the wetland restoration actions will focus on reconnecting the restoration areas to existing wetlands to expand wetland habitat and the forested corridor along Catheys Creek. Besides expanding wetland habitat, it will also increase the buffering capacity before runoff reaches Catheys Creek. There will not be any impacts to existing structures (buildings, barns, etc.) on the subject property. As part of the environmental documentation process (Categorical Exclusion), coordination with the NCWRC and the USFWS is required for compliance with the Fish and Wildlife Coordination Act and the Endangered Species Act.

We have already obtained an updated species list for Rutherford County from your web site. The rare, threatened and endangered species for this county are included in Attachment 1. We are requesting that you please provide any known information for any additional species, if any, in the county that we should be aware of in the development of this project. The USFWS will be contacted if additional studies find suitable habitat for any listed species or if we determine that the project may affect one or more federally listed species or designated critical habitat. Please provide comments on any possible issues that might

emerge with respect to endangered species, migratory birds or other trust resources from the construction of a stream and wetland restoration project on the subject property.

If we have not heard from you in 30 days we will assume that our species list is correct, that you do not have any comments regarding associated laws, and that you do not have any information relevant to this project at the current time.

We thank you in advance for your timely response and cooperation. Please feel free to contact us with any questions that you may have concerning the extent of site disturbance associated with this project. My phone number is 919-278-2511 and my email address is tim.morris@kci.com

Sincerely,

A handwritten signature in black ink, appearing to read "Timothy J. Morris". The signature is fluid and cursive, with the first name being the most prominent.

Timothy J. Morris
Project Manager

Enclosures

**Endangered Species Review for Sandy Bridge Farm Stream and Wetland
Restoration Site
Rutherford County, North Carolina**

A review of the United States Fish and Wildlife Service's (USFWS) listing of federally endangered species, threatened species, species of concern and candidate species revealed three endangered species, three threatened species, and twelve federal species of concern in Rutherford County (Table 1).

Table 1. Species in Rutherford County, North Carolina listed under the federal Endangered Species Act.

Major Taxonomic Group	Scientific Name	Common Name	Federal Status/ Record Status
Vertebrate	<i>Dendroica cerulea</i>	Cerulean warbler	FSC/Current
Vertebrate	<i>Myotis leibii</i>	Eastern small-footed bat	FSC/Current
Vertebrate	<i>Aneides aeneus</i>	Green salamander	FSC/Current
Vertebrate	<i>Myotis sodalis</i>	Indiana bat	Endangered/Current
Vertebrate	<i>Myotis septentrionalis</i>	Northern long-eared bat	Threatened/Current
Vertebrate	<i>Pituophis melanoleucus melanoleucus</i>	Northern pine snake	FSC/Obscure
Vertebrate	<i>Neotoma floridana haematoreia</i>	Southern Appalachian eastern woodrat	FSC/Current
Vascular Plant	<i>Packera millefolium</i>	Blue Ridge Ragwort	FSC/Current
Vascular Plant	<i>Juglans cinerea</i>	Butternut	FSC/Current
Vascular Plant	<i>Hexastylis naniflora</i>	Dwarf-flowered heartleaf	Threatened/Current
Vascular Plant	<i>Solidago simulans</i>	Granite dome goldenrod	FSC/Current
Vascular Plant	<i>Saxifraga caroliniana</i>	Gray's saxifrage	FSC/Current
Vascular Plant	<i>Silene ovata</i>	Mountain catchfly	FSC/Historic
Vascular Plant	<i>Hexastylis contracta</i>	Mountain heartleaf	FSC/Current
Vascular Plant	<i>Isotria medeoloides</i>	Small whorled pogonia	Threatened/Current
Vascular Plant	<i>Monotropsis odorata</i>	Sweet pinesap	FSC/Current

Vascular Plant	<i>Sisyrinchium dichotomum</i>	White irisette	Endangered/Current
Lichen	<i>Gymnoderma lineare</i>	Rock gnome lichen	Endangered/Current

Species and Habitat Description (Threatened and Endangered Species)

Indiana Bat (*Myotis sodalis*)

Indiana bats can be found throughout the eastern half of the United States. Indiana bats hibernate during winter in caves or, occasionally, in abandoned mines. For hibernation, they require cool, humid caves with stable temperatures, under 50° F but above freezing. Very few caves within the range of the species have these conditions. Hibernation is an adaptation for survival during the cold winter months when no insects are available for bats to eat. Bats must store energy in the form of fat before hibernating. During the six months of hibernation the stored fat is their only source of energy. If bats are disturbed or cave temperatures increase, more energy is needed and hibernating bats may starve. After hibernation, Indiana bats migrate to their summer habitat in wooded areas where they usually roost under loose tree bark on dead or dying trees. During summer, males roost alone or in small groups, while females roost in larger groups of up to 100 bats or more. Indiana bats also forage in or along the edges of forested areas.

Northern long-eared bat (*Myotis septentrionalis*)

The northern long-eared bat is federally listed as a *threatened* species under the Endangered Species Act. Northern long-eared bats spend winter hibernating in caves and mines, called hibernacula. They use areas in various sized caves or mines with constant temperatures, high humidity, and no air currents. Within hibernacula, surveyors find them hibernating most often in small crevices or cracks, often with only the nose and ears visible. During the summer, northern long-eared bats roost singly or in colonies underneath bark, in cavities or in crevices of both live trees and snags (dead trees). Males and non-reproductive females may also roost in cooler places, like caves and mines. Northern long-eared bats seem to be flexible in selecting roosts, choosing roost trees based on suitability to retain bark or provide cavities or crevices. This bat has also been found rarely roosting in structures, like barns and sheds. Threats to the northern long-eared bat include disease (namely the White-nose syndrome), wind farm operation mortality, and removal of habitat via converting forests to other land uses.

Dwarf-flowered heartleaf (*Hexastylis naniflora*)

Dwarf-flowered heartleaf is a low-growing evergreen perennial plant that is federally listed as a *threatened* species. Dwarf-flowered heartleaf grows in acidic soils along bluffs and adjacent slopes, in boggy areas next to streams and creek heads, and along the slopes of nearby hillsides and ravines. It can be found in the upper piedmont region of Western North Carolina and upstate South Carolina. The greatest threat to dwarf-flowered heartleaf is conversion of habitat to agricultural, residential, commercial, and industrial uses. Habitat may also be eliminated through the construction of reservoirs, which floods habitat.

Small whorled pogonia (*Isotria medeoloides*)

The small whorled pogonia is a member of the orchid family that is currently listed as a *threatened* species. Although widely distributed, the small whorled pogonia is rare. It is found in 17 eastern states and Ontario, Canada. Populations are typically small with less than 20 plants. This orchid grows in older hardwood stands of beech, birch, maple, oak, and hickory that have an open understory. Sometimes it grows in stands of softwoods such as hemlock. It prefers acidic soils with a thick layer of dead leaves, often on slopes near small streams. The primary threat to the small whorled pogonia is the past and continuing loss of populations when their habitat is developed for urban expansion. Some forestry practices eliminate habitat. Also, habitat may be degraded or individual plants lost because of recreational activities and trampling.

White Irisette (*Sisyrinchium dichotomum*)

The white irisette is a perennial herb that is found in specific regions of North and South Carolina. The species is found on mid-elevation slopes, characterized by open, dry to moderate-moisture oak-hickory forests. White irisette usually grows in shallow soils on regularly disturbed sites (such as woodland edges and roadsides) and over rocky, steep terrain. It is currently threatened by human-related disturbances, such as development.

Rock Gnome Lichen (*Gymnoderma lineare*)

Found in the Southern Appalachian Mountains, the Rock gnome lichen is primarily limited to vertical rock faces where seepage water from forest soils above flows during (and only during) very wet times. It appears that the species needs a moderate amount of light, but that it cannot tolerate high-intensity solar radiation. It does well on moist, generally open, sites, with northern exposures, but needs at least partial canopy coverage where the aspect is southern or western.

Bald and Golden Eagle Protection Act (BGPA)

The Bald and Golden Eagle Protection Act (BGPA) prohibits the killing, selling or otherwise harming of eagles, their nests and their eggs. The bald eagle was delisted as endangered in 1995 and as threatened in 2007. The BGPA continues to protect the species regardless of its delisted status. Bald eagles have been documented in Rutherford County.

Bald Eagle (*Haliaeetus leucocephalus*)

Bald eagles like lakes and other large bodies of water. During the summer, they can be seen soaring above lakes and in the nearby trees. They prefer lakes and reservoirs with lots of fish and surrounding forests. In the winter, bald eagles can be seen around unfrozen lakes and hunting along coastlines, reservoirs and rivers. During the migration, bald eagles are seen near all types of water habitats. The bald eagle is an opportunistic feeder which subsists mainly on fish, which it swoops down and snatches from the water with its talons. It builds the largest nest of any North American bird and the largest tree nests ever recorded for any animal species, up to 4 m (13 ft) deep, 2.5 m (8.2 ft) wide, and 1 metric ton (1.1 short tons) in weight. Sexual maturity is attained at the age of four

to five years. The bald eagle typically requires old-growth and mature stands of coniferous or hardwood trees for perching, roosting, and nesting. Tree species reportedly is less important to the eagle pair than the tree's height, composition and location. Perhaps of paramount importance for this species is an abundance of comparatively large trees surrounding the body of water. Selected trees must have good visibility, be over 20 m (66 ft) tall, an open structure, and proximity to prey.

Potential Habitat at the Sandy Bridge Farm Stream and Wetland Restoration Site

Habitat for Indiana bat (*Myotis sodalis*)

Indiana bats find habitat in small to medium river and stream corridors with well-developed riparian woods and in woodlots within 1 to 3 miles of small to medium rivers and streams during the summer. During the winter, they hibernate in mines and caves. Since the project area is currently used for agricultural production, it provides no suitable habitat for Indiana bats.

Biological Conclusion: No effect

Habitat for Northern long-eared bat (*Myotis septentrionalis*)

Hibernating in caves in the winter, and roosting in both live and dead trees in the winter, the Northern long-eared bat finds habitat in forested areas along the eastern and north central portion of the United States. Since the project site is currently in agricultural production, there is no suitable habitat for this species.

Biological Conclusion: No effect

Habitat for Dwarf-flowered heartleaf (*Hexastylis naniflora*)

The Dwarf-flowered heartleaf grows along slopes, ravines, and valleys, and as well as in boggy areas adjacent to streams. Its current threats include conversion of its native habitat into other land uses. Since our project site has been altered by channelizing the stream and converting the land into agricultural areas, there is currently no suitable habitat for the Dwarf-flowered heartleaf at the project site.

Biological Conclusion: No effect

Habitat for Small whorled pogonia (*Isotria medeoloides*)

The small whorled pogonia lives in the open understories of old stands of hardwood trees. Since the current land use of the project site is agricultural land, all trees on the site have been historically removed, and there is no suitable habitat for this species at the site. Furthermore, the channelization of the stream prevents it from finding habitat along the small stream.

Biological Conclusion: No effect

Habitat for White irisette (*Sisyrinchium dichotomum*)

The White irisette is a vascular plant that inhabits dry to medium moisture environments, with a preference for areas that regularly undergo disturbance events. Furthermore, it prefers shallow soils in rocky and steep terrain. The project area is currently used as agricultural land and does not have this disturbed, rocky substrate that the White irisette occupies. Additionally, the site topography is generally flat as it is located within the floodplain of Cathey Creek. The presence of water at the restoration site also precludes the area from being a suitable habitat for the White irisette due to its preference for dry to medium moisture conditions. Because of this and the specific habitat requirements of the White irisette, we can safely conclude that there is no potential habitat for them within the bounds of the project.

Biological Conclusion: No effect

Habitat for Rock Gnome Lichen (*Gymnoderma lineare*)

The Rock gnome lichen grows on wet, partially shaded, steep escarpments of vertical rock faces. Since the project area consists of a stream and former wetland area that is now under current agricultural production, there is an inherent lack of these habitat conditions at the project site. Due to the particular need for vertical rock faces to grow on, we conclude that there is no potential habitat for the Rock gnome lichen within the bounds of the project.

Biological Conclusion: No effect

Bald Eagle (*Haliaeetus leucocephalus*)

Nesting habitat for the Bald Eagle does not exist within the boundaries of the project area. Furthermore the project does not exist on a large body of water and mature trees do not exist on the site. Adjacent areas along Cathey's Creek are generally composed of second growth timber and do not appear to present nesting habitat for the bald eagle.

Biological Conclusion (BGPA) – No effect

Reference:

NCDENR, Wildlife Resources Commission. 2006. Carolina Wildlife Profiles.
http://www.ncwildlife.org/fs_index_07_conservation.htm

United States Fish and Wildlife Service. 2006. North Carolina's Threatened and
Endangered Species. <http://www.fws.gov/southeast/>.



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Landmark Center II, Suite 220 4601 Six Forks Road Raleigh, NC 27609 (919) 783-9214 (919) 783-9266 Fax

June 3, 2015

Mr. Milton Cortes
USDA Natural Resource Conservation Service
4407 Bland Road, Suite 117
Raleigh, NC 27609

Subject: Farmland Conversion Impact Rating
Sandy Bridge Farm Stream and Wetland Restoration Project
KCI Job Number - 20157877

Dear Mr. Clary:

The purpose of this letter is to inform NRCS of our contractual intent to complete a stream and wetland restoration project on the Hughes farm in Rutherford County. This work is expected to occur over the course of the next year. The subject site, known as the Sandy Bridge Farm stream and wetland restoration site, is located north-northeast of Rutherfordton, North Carolina in the central portion of Rutherford County (Figure 1). Specifically, the site is located 2.2 miles north on Rock Road from the intersection of US 64 and US 74A. It is situated within the 03050105 (Broad River Basin) Watershed Cataloging Unit and the 03050105070020 Local Watershed Unit (Figure 2). Land use in the watershed is primarily agricultural or forest land (Figure 3).

A portion of the Hughes Property (Figure 4) is currently under investigation as a stream and wetland restoration project for the North Carolina Division of Mitigation Services. The funding for this project comes from the USDOT and Federal Highway Administration. Land use at this site is primarily pastureland. The planned restoration work aims to restore the hydrology and vegetation components to this riparian wetland system by filling existing ditches across the site and stabilizing the site with native vegetation.

Following the review of the included documentation, please provide a determination regarding any potential impacts from farmland conversion associated with this project. Included is the Farmland Conversion Impact Rating Form (AD-1006); please complete Parts II, IV and V. Please feel free to contact me at tim.morris@kci.com, or 919-278-2511, should you have any questions or require any further information concerning the extent of site disturbance associated with this project. Thank you in advance for your assistance.

Sincerely,

A handwritten signature in black ink, appearing to read 'Timothy J. Morris'.

Timothy J. Morris
Senior Environmental Scientist
Ecosystem Dynamics Practice



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Landmark Center II, Suite 220 4601 Six Forks Road Raleigh, NC 27609 (919) 783-9214 (919) 783-9266 Fax

June 15, 2015

Ms. Shannon Deaton
Habitat Conservation Program Manager
NC Wildlife Resources Commission, Division of Inland Fisheries
1721 Mail Service Center
Raleigh, NC 27699-1721

Subject: Fish and Wildlife Coordination Act
Sandy Bridge Farm Stream and Wetland Restoration Project
KCI Project Number - 20157877

Dear Ms. Deaton:

The purpose of this letter is to request review and comment from the NC Wildlife Resources Commission with respect to potential fish and wildlife impacts associated with the above referenced project. The subject site, known as the Sandy Bridge Farm stream and wetland restoration site, is located north-northeast of Rutherfordton, North Carolina in the central portion of Rutherford County (Figure 1). Specifically, the site is located 2.2 miles north on Rock Road from the intersection of US 64 and US 74A. It is situated within the 03050105 (Broad River Basin) Watershed Cataloging Unit and the 03050105070020 Local Watershed Unit (Figure 2). Land use in the watershed is primarily agricultural or forest land (Figure 3).

A portion of the site (Figure 4) is currently under investigation as a stream and wetland restoration project for the North Carolina Division of Mitigation Services. The funding for this project comes from the USDOT Federal Highway Administration through the North Carolina Department of Transportation. Land use at this site is primarily pastureland. The planned restoration work aims to restore the hydrology and vegetation components to this riparian wetland system by filling existing ditches across the site and stabilizing the site with native vegetation. As part of the environmental documentation process (Categorical Exclusion), coordination with the NCWRC and the USFWS is required for compliance with the Fish and Wildlife Coordination Act.

Following the review of the included documentation, please provide a determination of the potential effects to wildlife associated with this project. Please feel free to contact me at tim.morris@kci.com, or 919-278-2511, should you have any questions or require any further information concerning the extent of site disturbance associated with this project. Thank you in advance for your assistance.

Sincerely,

A handwritten signature in black ink, appearing to read "Timothy J. Morris".

Timothy J. Morris
Senior Environmental Scientist
Ecosystem Dynamics Practice



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Landmark Center II, Suite 220 4601 Six Forks Road Raleigh, NC 27609 (919) 783-9214 (919) 783-9266 Fax

June 15, 2015

Ms. Allison Weakley
North Carolina Natural Heritage Program
1601 Mail Service Center
Raleigh, NC 27529

Subject: Natural Heritage Review
Sandy Bridge Farm Stream and Wetland Restoration Project
KCI Project Number: 20157877

Dear Ms. Weakley:

Please accept this information pertaining to the proposed Sandy Bridge Farm stream and wetland restoration site for natural area and rare species review by the North Carolina Natural Heritage Program. The subject site, known as the Sandy Bridge Farm stream and wetland restoration site, is located north-northeast of Rutherfordton, North Carolina in the central portion of Rutherford County (Figure 1). Specifically, the site is located 2.2 miles north on Rock Road from the intersection of US 64 and US 74A. It is situated within the 03050105 (Broad River Basin) Watershed Cataloging Unit and the 03050105070020 Local Watershed Unit (Figure 2). Land use in the watershed is primarily agricultural or forest land (Figure 3).

A portion of this property (Figure 4) is currently under investigation for a stream and wetland restoration project for the North Carolina Division of Mitigation Services. The vegetation at this site is primarily pastureland with small areas of both wetland and upland forest occurring within and adjacent to the project area. The planned restoration work aims to restore the hydrology and vegetation components to this wetland system by filling existing ditches across the site and stabilizing the site with native vegetation.

Following the review of the included documentation, please provide a determination of the potential effects to endangered species, wildlife, or migratory birds associated with this project.

Please feel free to contact me at (919) 278-2511, should you have any questions or require any further information to process this request. Thank you in advance for your assistance.

Sincerely,

A handwritten signature in black ink, appearing to read 'Timothy J. Morris', is written over a light blue horizontal line.

Timothy J. Morris
Senior Environmental Scientist
Ecosystem Dynamics Practice

Attachments



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Landmark Center II, Suite 220 4601 Six Forks Road Raleigh, NC 27609 (919) 783-9214 (919) 783-9266 Fax

June 19, 2015

Mr. Tyler Howe
Tribal Historic Preservation Specialist
Eastern Band of Cherokee Indians
Tribal Historic Preservation Office
P.O. Box 455
Cherokee, NC 28719

Subject: Project Comment Request
NC DENR Division of Mitigation Services (DMS) - Sandy Bridge Farm Stream and Wetland Restoration
Project in Rutherford County, NC
KCI Project Number: 20157877

Dear Mr. Howe,

The NC DENR Division of Mitigation Services (formerly the Ecosystem Enhancement Program) requests review and comment on any possible issues that might emerge with respect to archaeological or religious resources associated with a potential wetland and stream restoration project on the above referenced site. The subject site is located north-northeast of Rutherfordton, North Carolina in the central portion of Rutherford County (Figure 1). Specifically, the site is located 2.2 miles north on Rock Road from the intersection of US 64 and US 74A. It is situated within the 03050105 (Broad River Basin) Watershed Cataloging Unit and the 03050105070020 Local Watershed Unit (Figure 2). Land use in the watershed is primarily agricultural or forest land (Figure 3).

A portion of this property (Figure 4) is currently under investigation for a stream and wetland restoration project for the North Carolina Division of Mitigation Services. The vegetation at this site is primarily pastureland with small areas of both wetland and upland forest occurring adjacent to the project area. The planned restoration work aims to restore the hydrology and vegetation components to this wetland system by filling existing ditches across the site, realigning the existing stream and stabilizing the site with native vegetation.

No architectural structures or archeological artifacts have been observed or noted during preliminary surveys of the site for restoration purposes. In addition, the majority of this site has historically been disturbed due to agricultural purposes such as tilling, clearing and hydrologic manipulation (primarily ditching).

We ask that you review this site based on the attached information to determine if you know of any existing resources that we need to be made aware of. In addition, please let us know the level your future involvement with this project needs to be (if any). A similar comment request letter has been sent to the North Carolina State Preservation Office for compliance with Section 106 of the Historic Preservation Act.

We thank you in advance for your timely response and cooperation. Please feel free to contact the below referenced DMS Project Manager with any questions that you may have concerning the extent of site disturbance associated with this project.

Sincerely,



Timothy J. Morris
Senior Environmental Scientist
Ecosystem Dynamics Practice

Cc: Harry Tsomides, DMS Project Manager harry.tsomides@ncdenr.gov – 828-545-7057

Attachments

Rutherford County Airport – Due to the proximity of the project to the Rutherford County Airport and the potential for the project to be in conflict with FAA Advisory Circular 150/5200-33B, KCI requested a site meeting with Rutherford County Manager Steve Garrison and others at the County with interest in the project. Rutherford County Airport is owned and operated by the County through the Rutherford County Airport Authority. This field meeting occurred on July 6, 2014. The results of that meeting are detailed in the “Agency Response” Section of this report.



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Landmark Center II, Suite 220 4601 Six Forks Road Raleigh, NC 27609 (919) 783-9214 (919) 783-9266 Fax

June 16, 2015

Mr. Scott Hughes and Mrs. Sandra Hughes
1356 Rock Road
Rutherfordton, NC 28139

Subject: Notification of Uniform Act Provisions
KCI Job Number – 20157877

Dear Mr. and Mrs. Hughes:

As part of the environmental documentation process in preparation for the stream and wetland restoration project on your property, this letter is to inform you of provisions in the Federal Highway Administration Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended, referred to as the Uniform Act.

The Uniform Act was developed to provide for uniform and equitable treatment of persons displaced from their homes, businesses, non-profit associations, or farms by federal and federally-assisted programs, and establishes uniform and equitable land acquisition policies. The Act assures that such persons are treated fairly, consistently, and equitably, and so that they will not suffer disproportionate injuries.

This act applies to any project which utilizes federal funds for the purchase of any interest in real property, including conservation easements. A portion of the funding for this project is ultimately provided by the US Department of Transportation, through the NC Department of Transportation for in-kind mitigation to offset impacts from transportation projects in the area, and therefore we are required to inform you of the following provisions.

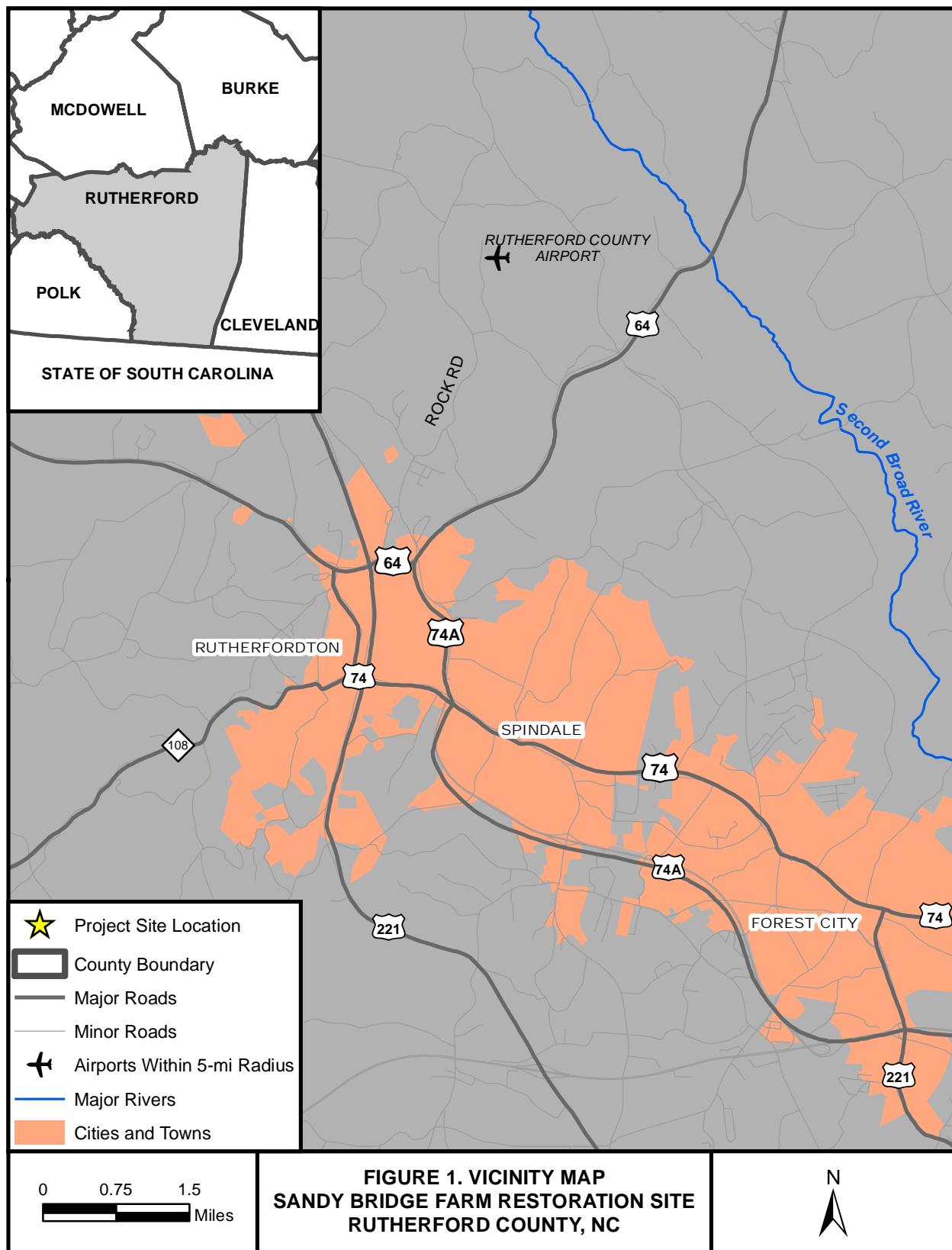
The provisions of this act require that we inform you in writing that this conservation easement transaction is voluntary and that the project is being developed by KCI for the North Carolina Division of Mitigation Services (NCDMS), and as a result, KCI or NCDMS does not have the authority to acquire the property by eminent domain in the event negotiations fail to reach an amicable agreement. In addition, the Act requires that we indicate the agreed purchase price of \$12,000 per acre.

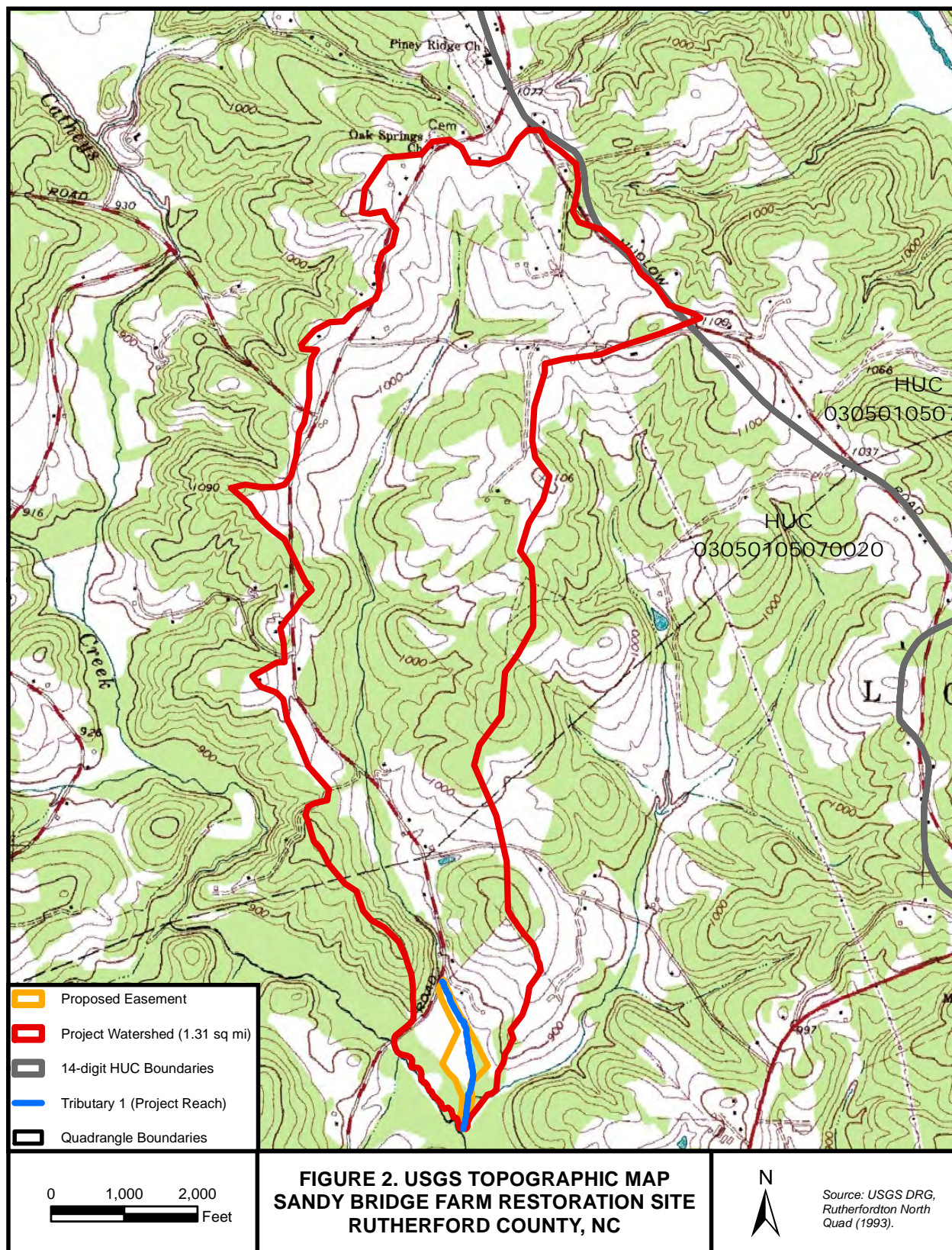
This letter is for your information, and no response is necessary. Please feel free to contact me at 919-278-2511, should you have any questions or require any further information.

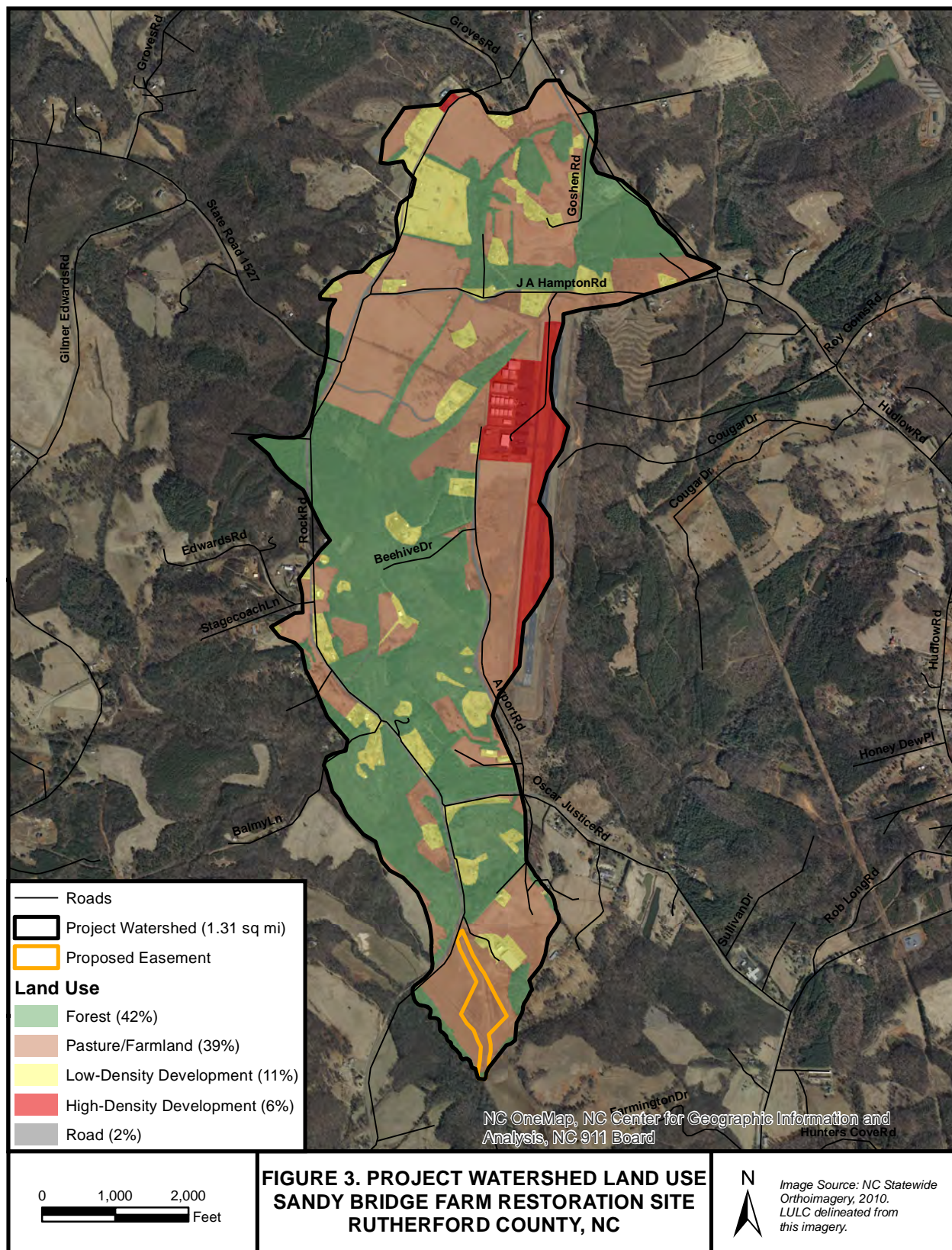
Sincerely,

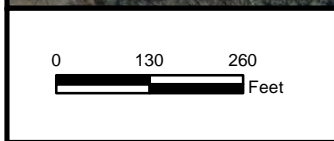
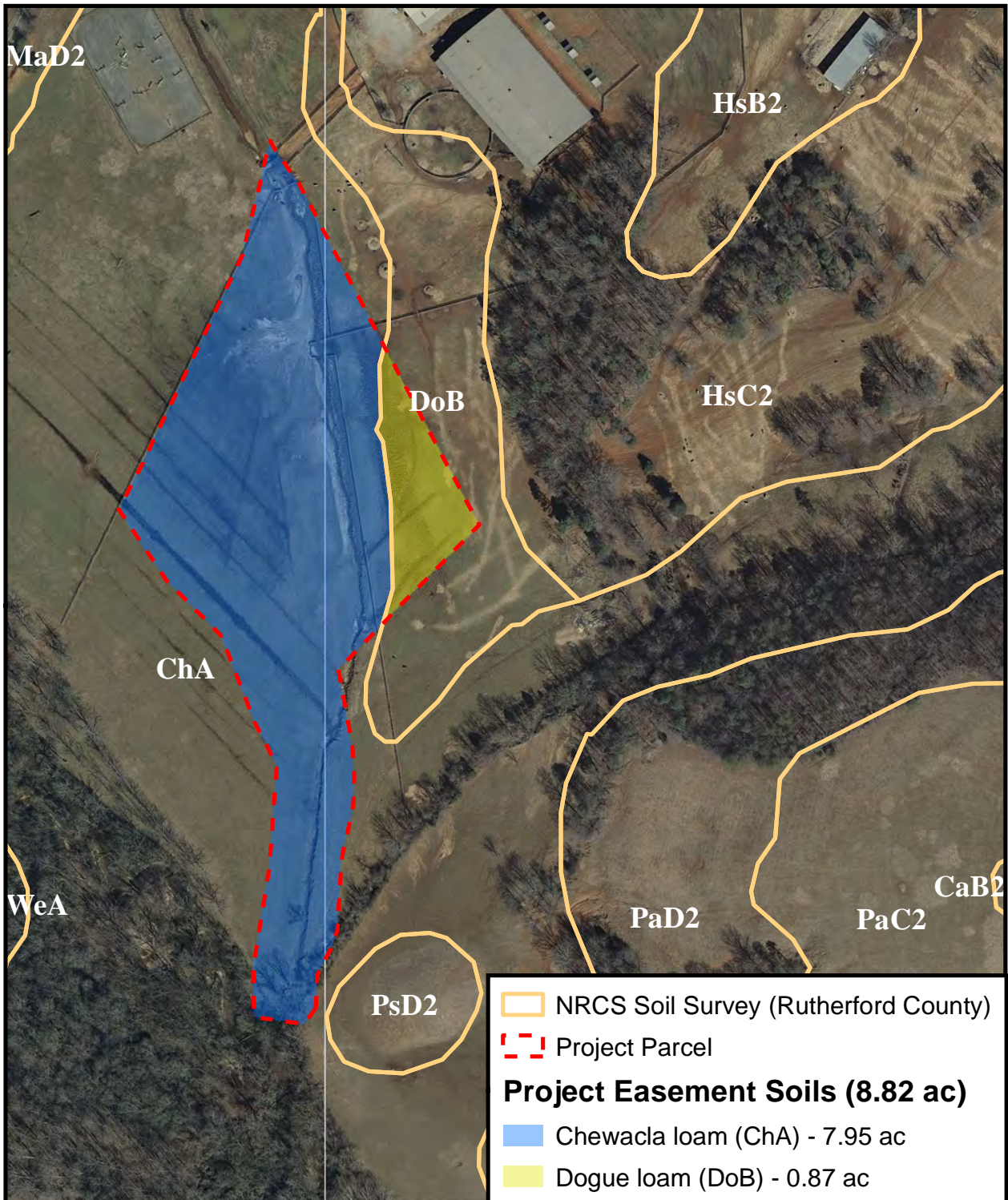
A handwritten signature in black ink, appearing to read 'Timothy J. Morris', is written over a light blue horizontal line.

Timothy J. Morris
Senior Environmental Scientist
Ecosystem Dynamics Practice



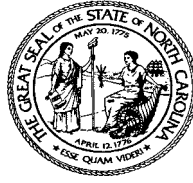






NRCS SOIL SURVEY
SANDY BRIDGE FARM RESTORATION SITE
RUTHERFORD COUNTY, NC

N
 Soils Source: NRCS SSURGO Data, Rutherford County.
 Image Source: NC Statewide Orthoimagery, 2010.



**North Carolina Department of Cultural Resources
State Historic Preservation Office**

Ramona M. Bartos, Administrator

Governor Pat McCrory
Secretary Susan Kluttz

Office of Archives and History
Deputy Secretary Kevin Cherry

July 20, 2015

Timothy J. Morris
KCI Technologies
Landmark Center II, Suite 220
4601 Six Forks Road
Raleigh, NC 27609

Re: Sandy Bridge Farm Stream and Wetland Restoration Project, Rutherfordton, KCI 20157877,
Rutherford County, ER 15-1439

Dear Mr. Morris:

Thank you for your letter of June 16, 2015, concerning the above project.

There are no known recorded archaeological sites within the project boundaries. However, the project area has never been systematically surveyed to determine the location or significance of archaeological resources. The project area is located immediately east of an unevaluated historic archaeological site, 31RF174**, and is in close proximity to the Gilbert Town Historic District. Based on the topographic and hydrological situation and the density of archaeological sites in the area, there is a high probability for the presence of prehistoric or historic archaeological sites.

We recommend that a comprehensive survey be conducted by an experienced archaeologist to identify and evaluate the significance of archaeological remains that may be damaged or destroyed by the proposed project. Potential effects on unknown resources must be assessed prior to the initiation of construction activities.

Two copies of the resulting archaeological survey report, as well as one copy of the appropriate site forms, should be forwarded to us for review and comment as soon as they are available and well in advance of any construction activities.

A list of archaeological consultants who have conducted or expressed an interest in contract work in North Carolina is available at www.archaeology.ncdcr.gov/ncarch/resource/consultants.htm. The archaeologists listed, or any other experienced archaeologist, may be contacted to conduct the recommended survey.

We have determined that the project as proposed will not have an effect on any historic structures.

The above comments are made pursuant to Section 106 of the National Historic Preservation Act and the Advisory Council on Historic Preservation's Regulations for Compliance with Section 106 codified at 36 CFR Part 800.

Thank you for your cooperation and consideration. If you have questions concerning the above comment, contact Renee Gledhill-Earley, environmental review coordinator, at 919-807-6579 or environmental.review@ncdcr.gov. In all future communication concerning this project, please cite the above referenced tracking number.

Sincerely,



for Ramona M. Bartos

Archaeological Survey of the Sandy Bridge Farm Stream and Wetland Restoration Area Rutherford County, North Carolina

Prepared by

Michael Keith O'Neal
Archaeological Consultants of the Carolinas, Inc.
August 2015

Introduction

In August 2015, Archaeological Consultants of the Carolinas, Inc. (ACC), conducted an archaeological survey of the Sandy Bridge Farm Stream and Wetland Restoration Area in Rutherford County, North Carolina (Figure 1). This project was conducted on behalf of KCI Associates of North Carolina. The objectives of this survey were to identify all archaeological resources within the project tract, evaluate their significance based on National Register of Historic Places (NRHP) criteria, and determine the potential effects of the proposed substation on identified resources.

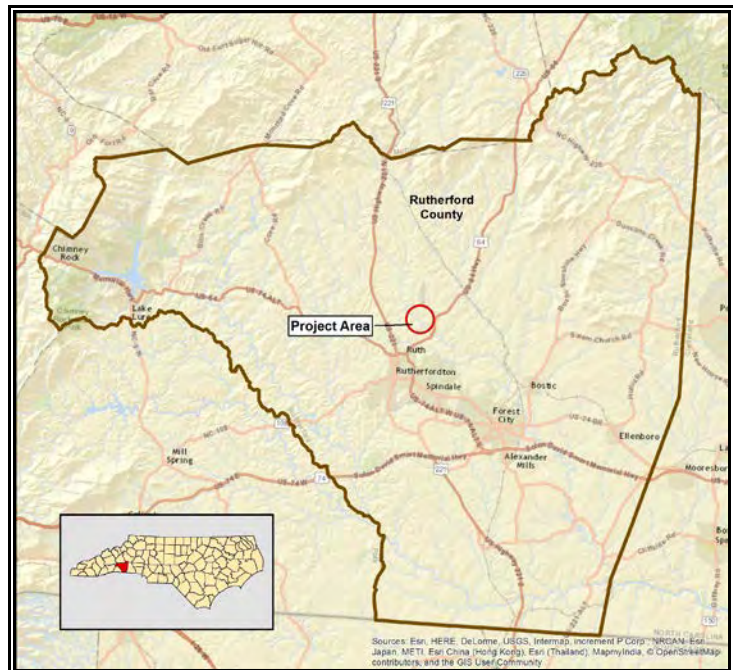


Figure 1. Map showing the location of the project area.

The Project Tract

The wetland restoration area is located southeast of the Rock Road crossing of Catheys Creek (Figure 2). The survey tract encompasses approximately 9 acres. The tract is predominantly located in a floodplain associated with an unnamed tributary of Catheys Creek (Figure 3). The unnamed creek flows approximately north to south through the center of the tract. The tract is currently used as pasture for long horn steer and horses (Figure 4). Drainage ditches are present in the western portion of the tract and are oriented northwest to southeast (Figure 5). Erosion throughout the area is quite significant, particularly along the creek banks.

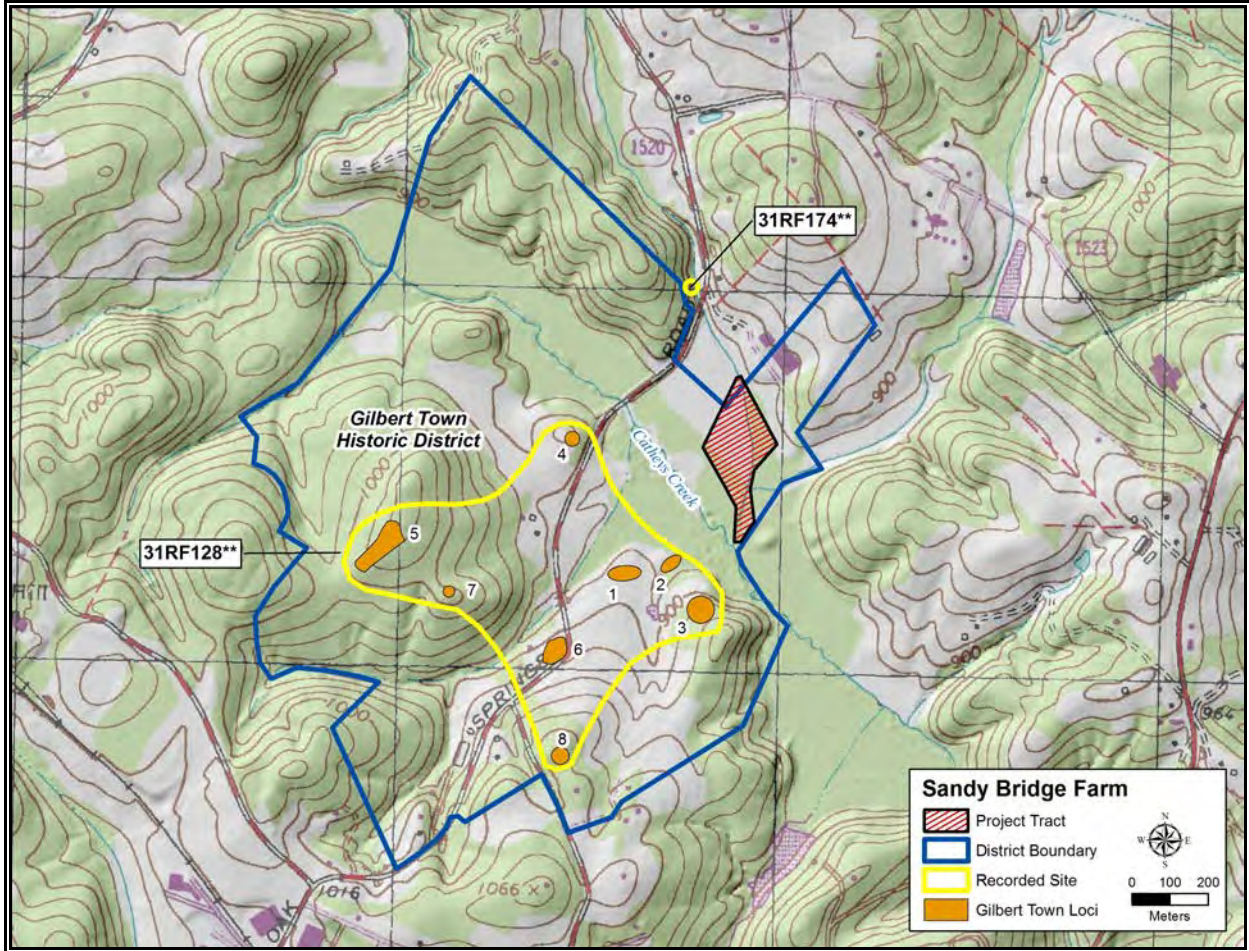


Figure 2. Map showing the location of the project tract (1966 *Rutherfordton North, NC* USGS 7.5 minute topographic quadrangle).

Background Research

Background research included a review of records on file at the Office of State Archaeology in Raleigh, North Carolina to identify previously recorded archaeological resources in the vicinity of the project tract. This task also included examination of historic highway maps, aerial photography, and historic topographic maps. No archaeological sites are located within the project tract. However, the project tract is located in the eastern portion of the Gilbert Town Historic District (see Figure 2). Gilbert Town is associated with William Gilbert whose house served as the Rutherford County courthouse in the 1780s. The town was an important trading center and was used as a camp for both American and British forces during the Revolutionary War (NRHP Registration Form). The district encompasses approximately 460 acres of cultivated land and woodland. The boundaries were determined based on the relative integrity (lack of development and other disturbances) in the area surrounding Gilbert Town. In total, the district includes 20 tax parcels. The project tract is within Parcel 8 and is described as open pasture with woodland along Catheys Creek. No buildings or structures associated with Gilbert Town proper are located in the project tract.



Figure 3. View of the unnamed tributary in the project tract, looking north.



Figure 4. General view of the pasture in the project tract, looking south.



Figure 5. View of a drainage ditch in the western portion of the tract, looking northwest.

Within the Gilbert Town Historic District, is archaeological site 31RF128**, Historic Gilbert Town (see Figure 2). In 2004, an archaeological reconnaissance of the area was conducted by the South Carolina Institute of Archaeology and Anthropology (SCIAA; Smith and Legg 2004). Smith and Legg (2004) identified eight activity loci within the site (Table 1), all of which are located west of Catheys Creek. None of the identified activity loci are within the project tract, and site 31RF128** will not be impacted by the proposed wetland restoration..

Table 1. Summary of Activity Loci in Historic Gilbert Town (31RF128**).

Locus	Description
1	18 th - 19 th century house site
2	18 th century historic site - unknown function
3	small domestic site or military camp
4	domestic site and/or military camp
5	possible location of main camp under command of British Major Patrick Ferguson (September 1780)
6	Hampton-McKinney House
7	Gilbert Cemetery
8	18 th century cemetery

One additional archaeological site (31RF174**) is located approximately 270 meters northwest of the project tract along the unnamed drainage. This site was recorded during an investigation for bridge replacements along Catheys Creek and its tributaries (Halvorsen 2006). The site consists of two granite grinding stones and a “presumed placer (mining) pit” (Halvorsen 2006:36). It was recommended not eligible for the NRHP. Being well outside of the wetland restoration area, this site will not be impacted by proposed restoration.

Geological and soil data for the project area were also examined. The data were obtained from the published soil survey and online resources (Keenan and Harris 1997; USDA 2015). Two soil types, Chewacla loam and Dorian loam, are present in the tract (Figure 6). These soil types encompass 91 and 9 percent of the project tract, respectively. Chewacla loam forms on floodplains, is somewhat poorly drained, and frequently flooded. Poorly drained soils are generally view as having low potential for the presence of archaeological remains. Dorian loam forms on flats on stream terraces, is moderately well drained, and rarely flooded. This soil type was considered to have high archaeological potential.

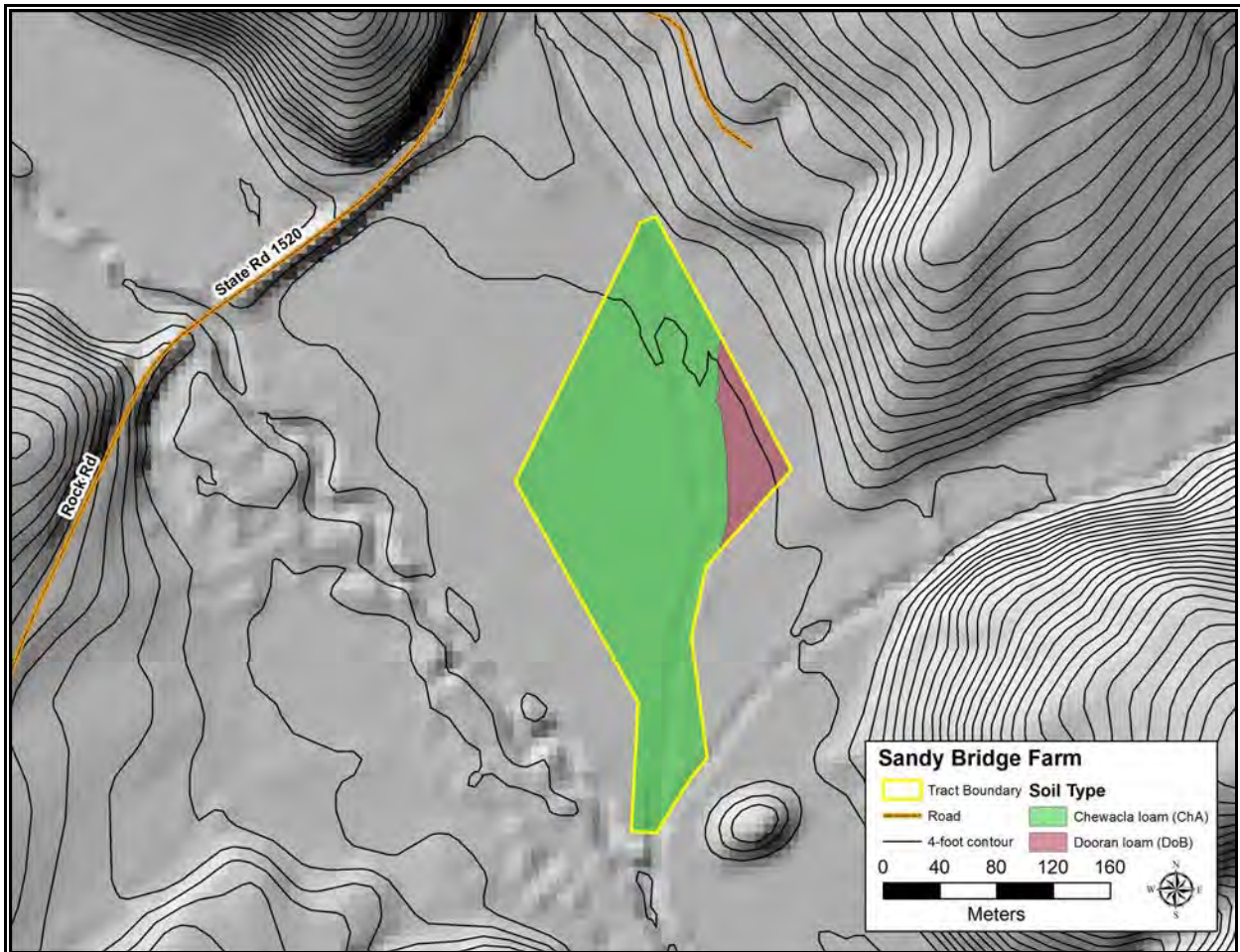


Figure 6. Map showing the soils in the project tract.



Figure 7. Aerial view of the Sandy Bridge Farm project tract.

Field Investigation

The project tract was surveyed by excavating shovel tests at 20 meter intervals along parallel transects spaced 20 meters apart. Transects were oriented along the creek in the southern and eastern portions of the tract. Transects in the northwestern portion of the tract were oriented with the drainage ditches. Figure 7 presents an aerial image showing the ditches and the creek. Areas exhibiting exposed subsoil were visually inspected for archaeological remains. In total, 84 shovel tests were excavated. Shovel test soil profiles typically consisted of 10 to 15 cm of reddish brown sandy loam overlaying red sandy clay. No archaeological remains were identified in the shovel tests.

Summary and Recommendations

The Sandy Bridge Farm Stream and Wetland Restoration tract encompasses approximately 9 acres of pasture. The area is severely disturbed by flooding, erosion, and land-use practices. No archaeological deposits were identified during this investigation. As no significant archaeological resources will be impacted by the proposed restoration, archaeological clearance is recommended.

References Cited

Halvorsen, Scott E.

2006 *Replacement of Bridges 37 and 39 on SR 1520 over Cathey's Creek and Fork of Cathey's Cree; Rutherford County, North Carolina.* North Carolina Department of Transportation, Raleigh.

Keenan, Scott C. and J. Craig Harris

1997 *Soil Survey of Rutherford County, North Carolina.* United States Department of Agriculture, Washington, D.C.

Smith, Steven D. and James B. Legg

2004 *Archaeological Reconnaissance of Historic Gilbert Town, 31RF128, Rutherford County, North Carolina.* South Carolina Institute of Archaeology and Anthropology, Columbia.

United States Department of Agriculture

2015 *Web Soil Survey, Electronic Document.*
<http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx>. Accessed August 2015.

United States Geological Survey (USGS)

1966 *Rutherfordton North, NC 7.5 minute topographic quadrangle.*



North Carolina Department of Cultural Resources
State Historic Preservation Office

Ramona M. Bartos, Administrator

Governor Pat McCrory
Secretary Susan Kluttz

Office of Archives and History
Deputy Secretary Kevin Cherry

September 25, 2015

Michael O'Neal
Archaeological Consultants of the Carolinas, Inc.
121 East First Street
Clayton, NC 27520

Re: Sandy Bridge Farm Stream and Wetland Restoration Project, Rutherfordton,
Rutherford County, ER 15-1439

Dear Mr. O'Neal:

Thank you for your email of August 24, 2015, transmitting the archaeological survey report by Archaeological Consultants of the Carolinas (ACC) for the above project.

During the course of the survey, no sites were located within the project area. ACC has recommended that no further archaeological investigation be conducted in connection with this project. We concur with this recommendation since the project will not involve significant archaeological resources.

The above comments are made pursuant to Section 106 of the National Historic Preservation Act and the Advisory Council on Historic Preservation's Regulations for Compliance with Section 106 codified at 36 CFR Part 800.

Thank you for your cooperation and consideration. If you have questions concerning the above comment, contact Renee Gledhill-Earley, environmental review coordinator, at 919-807-6579 or environmental.review@ncdcr.gov. In all future communication concerning this project, please cite the above referenced tracking number.

Sincerely,

A handwritten signature in blue ink that reads "Renee Gledhill-Earley".

for Ramona M. Bartos

cc: Timothy J. Morris, KCI Technologies



United States Department of Agriculture
Natural Resources Conservation Service
4407 Bland Road, Suite 117
Raleigh, North Carolina 27609

Milton Cortés, Assistant State Soil Scientist
Telephone No.: (919) 873-2171
Fax No.: (919) 873-2157
E-mail: milton.cortes@nc.usda.gov

August 14, 2015

Timothy J. Morris
Senior Associate
KCI Associates of NC, P.A.
Landmark Center II, Suite 220
4601 Six Forks Road
Raleigh, NC 27609

Mr. Morris

The following information is in response to your review request in the Sandy Bridge Farm Wetland Restoration Project, Rutherford Co. NC

Projects are subject to Farmland Protection Policy Act (FPPA) requirements if they may irreversibly convert farmland (directly or indirectly) to nonagricultural use and are completed by a Federal agency or with assistance from a Federal agency.

For the purpose of FPPA, farmland includes prime farmland, unique farmland, and land of statewide or local importance. Farmland subject to FPPA requirements does not have to be currently used for cropland. It can be forest land, pastureland, cropland, or other land, but not water or urban built-up land.

Farmland means prime or unique farmlands as defined in section 1540(c)(1) of the Act or farmland that is determined by the appropriate state or unit of local government agency or agencies with concurrence of the Secretary to be farmland of statewide or local importance.

"Farmland" does not include land already in or committed to urban development or water storage. Farmland "already in" urban development or water storage includes all such land with a density of 30 structures per 40-acre area. Farmland already in urban development also includes lands identified as "urbanized area" (UA) on the Census Bureau Map, or as urban area mapped with a "tint overprint" on the USGS topographical maps, or as "urban-built-up" on the USDA Important Farmland Maps. See over for more information.

The area in question meets one or more of the above criteria for Farmland. Farmland area will be affected or converted. Enclosed is the Farmland Conversion Impact Rating form AD1006 with PARTS II, IV and V completed by NRCS. The corresponding agency will need to complete the evaluation, according to the Code of Federal Regulation 7CFR 658, Farmland Protection Policy Act.

If you have any questions, please contact me at number above.

Sincerely,

Milton Cortes

Milton Cortés
Assistant State Soil Scientist

Helping People Help the Land

An Equal Opportunity Provider and Employer



Projects and Activities Subject to FPPA

Projects are subject to FPPA requirements if they may irreversibly convert farmland (directly or indirectly) to nonagricultural use and are completed by a Federal agency or with assistance from a Federal agency.

Assistance from a Federal agency includes:

- Acquiring or disposing of land.
- Providing financing or loans.
- Managing property.
- Providing technical assistance

Activities that may be subject to FPPA include:

- State highway construction projects, (through the Federal Highway Administration)
- Airport expansions
- Electric cooperative construction projects
- Railroad construction projects
- Telephone company construction projects
- Reservoir and hydroelectric projects
- Federal agency projects that convert farmland
- Other projects completed with Federal assistance.

Activities not subject to FPPA include:

- Federal permitting and licensing
- Projects planned and completed without the assistance of a Federal agency
- Projects on land already in urban development or used for water storage
- Construction within an existing right-of-way purchased on or before August 4, 1984
- Construction for national defense purposes
- Construction of on-farm structures needed for farm operations
- Surface mining, where restoration to agricultural use is planned
- Construction of new minor secondary structures such as a garage or storage shed.

U.S. Department of Agriculture

FARMLAND CONVERSION IMPACT RATING

PART I (To be completed by Federal Agency)		Date Of Land Evaluation Request 6/18/15			
Name Of Project Sandy Bridge Farm Wetland Restoration Project		Federal Agency Involved NC DOT/FHWA			
Proposed Land Use Stream and Wetland Mitigation		County And State Rutherford County NC			
PART II (To be completed by NRCS)		Date Request Received By NRCS			
Does the site contain prime, unique, statewide or local important farmland? <i>(If no, the FPPA does not apply -- do not complete additional parts of this form).</i>		Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Acres Irrigated none	Average Farm Size 93 acres
Major Crop(s) CORN	Farmable Land In Govt. Jurisdiction Acres: 329,807 % 90	Amount Of Farmland As Defined In FPPA Acres: 54,557 % 15			
Name Of Land Evaluation System Used Rutherford Co. LESA	Name Of Local Site Assessment System N/A	Date Land Evaluation Returned By NRCS August 14, 2015 by email NRCS-MC			
PART III (To be completed by Federal Agency)		Alternative Site Rating			
		Site A	Site B	Site C	Site D
A. Total Acres To Be Converted Directly		8.8			
B. Total Acres To Be Converted Indirectly		0.0			
C. Total Acres In Site		8.8	0.0	0.0	0.0
PART IV (To be completed by NRCS) Land Evaluation Information					
A. Total Acres Prime And Unique Farmland		8.8			
B. Total Acres Statewide And Local Important Farmland		0.0			
C. Percentage Of Farmland In County Or Local Govt. Unit To Be Converted		0.0162			
D. Percentage Of Farmland In Govt. Jurisdiction With Same Or Higher Relative Value		1.7			
PART V (To be completed by NRCS) Land Evaluation Criterion Relative Value Of Farmland To Be Converted (Scale of 0 to 100 Points)		81	0	0	0
PART VI (To be completed by Federal Agency) Site Assessment Criteria <i>(These criteria are explained in 7 CFR 658.5(b))</i>		Maximum Points			
1. Area In Nonurban Use		15	15		
2. Perimeter In Nonurban Use		10	10		
3. Percent Of Site Being Farmed		20	20		
4. Protection Provided By State And Local Government		20	0		
5. Distance From Urban Builtup Area		15	15		
6. Distance To Urban Support Services		15	15		
7. Size Of Present Farm Unit Compared To Average		10	7		
8. Creation Of Nonfarmable Farmland		10	0		
9. Availability Of Farm Support Services		5	5		
10. On-Farm Investments		20	20		
11. Effects Of Conversion On Farm Support Services		10	0		
12. Compatibility With Existing Agricultural Use		10	0		
TOTAL SITE ASSESSMENT POINTS		160	107	0	0
PART VII (To be completed by Federal Agency)					
Relative Value Of Farmland <i>(From Part V)</i>		100	81	0	0
Total Site Assessment <i>(From Part VI above or a local site assessment)</i>		160	107	0	0
TOTAL POINTS (Total of above 2 lines)		260	188	0	0
Site Selected:	Date Of Selection	Was A Local Site Assessment Used? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>			
Reason For Selection:					



North Carolina Department of Environment and Natural Resources
Office of Land and Water Stewardship

Pat McCrory
Governor

Bryan Gossage
Director

Donald R. van der Vaart
Secretary

NCNHDE-402

June 22, 2015

Thomas Seelinger
KCI Technologies, Inc.
4601 Six Forks Road
Raleigh, NC 27609
tommy.seelinger@kci.com

RE: Sandy Bridge

Dear Thomas Seelinger:

The North Carolina Natural Heritage Program (NCNHP) appreciates the opportunity to provide information about natural heritage resources from our database that have been compiled for the project referenced above.

A query of the NCNHP database, based on the project area mapped with your request, indicates that there are no records for rare species, important natural communities, natural areas, or conservation/managed areas within the proposed project boundary, or within a one-mile radius of the project boundary.

Please note that the results of this query should not be substituted for site-specific surveys where suitable habitat exists. Although there may be no documentation of natural heritage elements within the project boundary, it does not imply or confirm their absence; the area may not have been surveyed. In the event that rare species are found within the project area, please contact the NCNHP so that we may update our records.

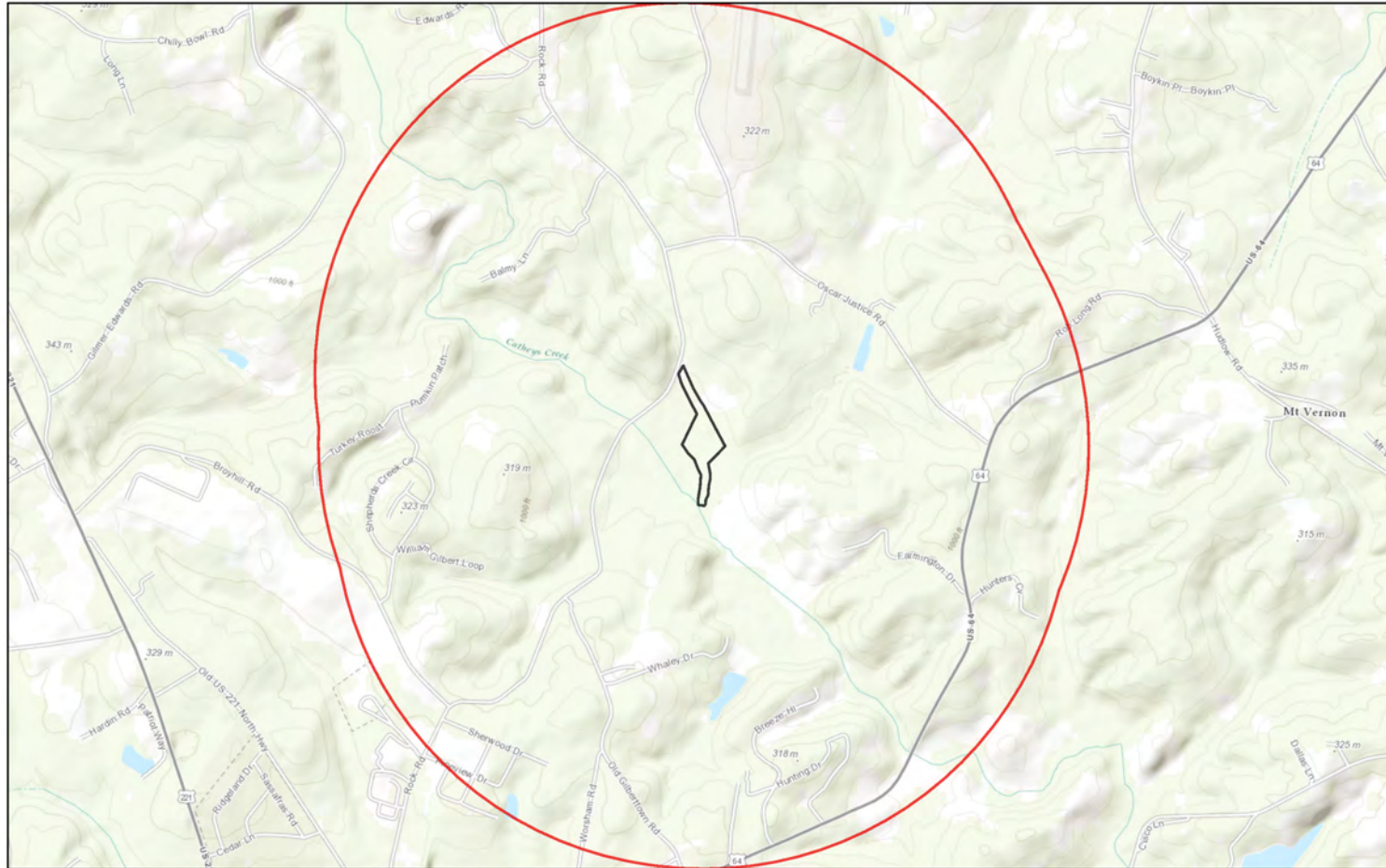
Please also note that natural heritage element data are maintained for the purposes of conservation planning, project review, and scientific research, and are not intended for use as the primary criteria for regulatory decisions. Information provided by the NCNHP database may not be published without prior written notification to the NCNHP, and the NCNHP must be credited as an information source in these publications. Maps of NCNHP data may also not be redistributed without permission.

Thank you for your inquiry. If you have questions regarding the information provided in this letter or need additional assistance, please contact Allison Schwarz Weakley at allison.weakley@ncdenr.gov or 919.707.8629.



Sincerely,

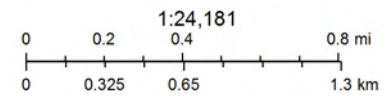
NC Natural Heritage Program

NCNHDE-402: Sandy Bridge



June 22, 2015

-  Project Boundary
-  Buffered Project Boundary



Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL,



AIRPORT AUTHORITY

622 Airport Road, Rutherfordton NC 28139 (828) 287-0800

July 14, 2015

Stephen F. Stokes, LLS
KCI Technologies
Landmark Center II, Suite 220
4601 Six Forks Road
Raleigh, NC 27609

Re: Sandy Bridge Stream and Wetland Restoration Site and Rutherford County Airport

Dear Mr. Stokes:

After review of the materials you provided and our July 6, 2015 site visit, Rutherford County Airport Authority offers the following opinion of your project:

As stated in FAA Advisory Circular 150/5200-33B (*Hazardous Wildlife Attractants on or Near Airports*, **bold added**):

SECTION 1.

GENERAL SEPARATION CRITERIA FOR HAZARDOUS WILDLIFE ATTRACTANTS ON OR NEAR AIRPORTS

1-1. INTRODUCTION.....

The FAA recommends the minimum separation criteria outlined below for land-use practices that attract hazardous wildlife to the vicinity of airports. Please note that FAA criteria include land uses that cause movement of hazardous wildlife on, into or across the airport's approach or departure airspace or air operations area (AOA).....

*The basis for the separation criteria contained in this section can be found in existing FAA regulation. The separation distances are based on (1) flight patterns of piston-powered aircraft and turbine-powered aircraft, (2) **the altitude at which most strikes happen (78 percent occur under 1,000 feet and 90 percent occur under 3,000 feet above ground level)**, and (3) National Transportation Safety Board (NTSB) recommendations.*

*1-3. AIRPORTS SERVING TURBINE –POWERED AIRCRAFT. Airports selling Jet-A fuel normally serve turbine-powered aircraft. Notwithstanding more stringent requirements for specific land uses, **the FAA recommends a separation distance of***

Members of the Board

*Michael Benfield, Chairman
Eddie Holland, Vice Chairman*

*Bryan King
Greg Lovelace
Alan Toney*

10,000 feet at these airports for any of the hazardous wildlife attractants mentioned in Section 2 or for new airport development projects meant to accommodate aircraft movement. This distance is to be maintained between an airport's AOA and the hazardous wildlife attractant.....

1-4. PROTECTION OF APPROACH, DEPARTURE, AND CIRCLING AIRSPACE. For all airports, the FAA recommends a distance of 5 statute miles between the farthest edge of the airport's AOA and the hazardous wildlife attractant if the attractant could cause hazardous wildlife movement into or across the approach or departure airspace.

SECTION 2.

LAND-USE PRACTICES ON OR NEAR AIRPORTS THAT POTENTIALLY ATTRACT HAZARDOUS WILDLIFE.

2-4. WETLANDS. Wetlands provide a variety of functions and can be regulated by local, state, and Federal laws. Normally, wetlands are attractive to many types of wildlife, including many which rank high on the list of hazardous wildlife species (Table 1).

c. Mitigation for wetland impacts from airport projects. Wetland mitigation may be necessary when unavoidable wetland disturbances result from new airport development projects or projects required to correct wildlife hazards from wetlands. Wetland mitigation must be designed so it does not create a wildlife hazard. The FAA recommends that wetland mitigation projects that may attract hazardous wildlife be sited outside of the separations identified in Sections 1-2 through 1-4.

(3) Mitigation Banking. Wetland mitigation banking is the creation or restoration of wetland in order to provide mitigation credits that can be used to offset permitted wetland losses. Mitigation banking benefits wetland resources by providing advance replacement for permitted wetland losses; consolidating small projects into larger, better-designed and managed units; and encouraging integration of wetland mitigation projects with watershed planning. This last benefit is most helpful for airport projects, as wetland impacts mitigated outside of the separations identified in Sections 1-2 through 1-4 can still be located within the same watershed. Wetland mitigation banks meeting the separation criteria offer an ecologically sound approach to mitigation in these situations. Airport operators should work with local watershed management agencies or organizations to develop mitigation banking for wetland impacts on airport property.

SECTION 4.

FAA NOTIFICATION AND REVIEW OF PROPOSED LAND-USE PRACTICE CHANGES IN THE VICINITY OF PUBLIC-USE AIRPORTS

4-1. FAA REVIEW OF PROPOSED LAND-USE PRACTICE CHANGES IN THE VICINITY OF PUBLIC-USE AIRPORTS.

a. The FAA discourages the development of waste disposal and other facilities, discussed in Section 2, located within the 5,000/10,000-foot criteria specified in Sections 1-2

through 1-4.

4-3. OTHER LAND-USE PRACTICE CHANGES. As a matter of policy, the FAA encourages operators of public-use airports who become aware of proposed land use practice changes that may attract hazardous wildlife within 5 statute mile of their airports to promptly notify the FAA.....

a. Airports that have received Federal grant-in-aid assistance. Airports that have received Federal grant-in-aid assistance are required by their grant assurances to take appropriate actions to restrict the use of land next to or near the airport to uses that are compatible with normal airport operations. The FAA recommends that airport operators to the extent practicable oppose off-airport land-use changes or practices within the separations identified in Sections 1-2 through 1-4 that may attract hazardous wildlife. Failure to do so may lead to noncompliance with applicable grant assurances. The FAA will not approve the placement of airport development projects pertaining to aircraft movement in the vicinity of hazardous wildlife attractants without appropriate mitigative measures. Increasing the intensity of wildlife control efforts is not a substitute for eliminating or reducing a proposed wildlife hazard. Airport operators should identify hazardous wildlife attractants and any associated wildlife hazards during any planning process for new airport development projects.

Based on the disturbance extent discussed in the field, and shown on the revised conceptual Site Plan provided by KCI (Sheet 5 of /; July 2015), the proposed Sandy Bridge Stream and Wetland Restoration Site (the Project) is approximately 4,000 feet south of Rutherford County Airport's Runway 1 and directly within its approach and departure airspace. Runway 1's elevation is approximately 1,058 feet above mean sea level. At its northern end, just downstream of the existing wooden bridge (35.410717 °; -81.937343°), the Project's elevation is approximately 866 feet above mean sea level (i.e. approximately 192 feet lower than Runway 1, based on Google Earth elevation data).

The Rutherford County Airport serves turbine-powered aircraft and sells Jet-A fuel.

While not directly providing wetland mitigation for impacts associated with the Airport, because it is funded by an NC Division of Mitigation Services Full Delivery contract, the Project does offset impacts resulting from NCDOT-funded projects. Similarly, while AC 150/5200-33B specifically addresses the citing of wetland restoration projects used to offset impacts resulting from airport improvements, the implications of the resultant increase of wildlife hazards are the same.

Because the Project is less than 10,000 horizontal feet from Runway 1 and less than 200 vertical feet from Runway 1, if it was directly associated with Rutherford County Airport construction, as stated above in FAA AC 150/5200-33B, the Sponsor would be required to find another alternative (i.e. formally oppose it). After conversations with NCDOT Division of Aviation

Environmental Program staff, the Sponsor has been advised that, as long as the safety of the flying public is not decreased, project concurrence can be provided.

After evaluation of the ecological and water quality benefits associated with the Project, conversations with KCI, and analysis by the Sponsor's engineering and environmental consultant (WK Dickson), the Sponsor hereby concurs with the project, provided that the following conditions are agreed upon:

1. KCI will provide the Sponsor and their consultant the final proposed design plans, including monitoring well locations, upon completion.
2. KCI will consider proposed modifications to well locations provided by the Sponsor (if any) and, if implementation of well location modifications are not followed, provide technical justification for this decision.
3. KCI will provide the Sponsor with daily surface and groundwater depth data for all wells. Data will be provided monthly throughout the monitoring period.
4. If well data indicate unacceptable levels of surface water (e.g. > 6 inches) for extended periods (e.g. >10 consecutive days), KCI will work with the Sponsor on acceptable remedial action to decrease/eliminate risks to the flying public.
5. KCI will grant the Sponsor access to the Project site throughout the monitoring period to evaluate risks to the flying public.

Thank you for the opportunity to review the Project.

Sincerely,



Michael Benfield

Chairman, Rutherford County Airport Authority Board

cc: Jennifer M. Fuller, P.E. NC Division of Aviation



ENGINEERS • SCIENTISTS • SURVEYORS • CONSTRUCTION MANAGERS

Landmark Center II, Suite 220 4601 Six Forks Road Raleigh, NC 27609 (919) 783-9214 (919) 783-9266 Fax

August 12, 2015

Mr. Michael Benfield, Chairman
Rutherford County Airport Authority Board
622 Airport Road
Rutherfordton NC 28139

Subject: Response to July 14, 2015 Letter
Sandy Bridge Farm Stream and Wetland Restoration Site and Rutherford County Airport
KCI Project Number: 20157877

Dear Mr. Benfield,

This letter is in response to the July 14, 2015 letter from your office (attached). We appreciate the Airport Authority working with us on this project. As indicated in our field meeting held in early July, we feel that the final condition of the site will actually be better than the current condition of the site relative to concerns identified in your letter and in FAA Advisory Circular 150/5200-33B. The current condition of the site is that of active pasture containing areas of open water in the form of ditches. These ditches will be filled as part of the construction of this project reducing the prevalence of open water. The grazed pasture also may encourage waterfowl due to the limited cover for predators. The post construction condition will deter waterfowl, especially Canada geese due to the unmaintained and dense cover of vegetation that will serve to recruit predators. This cover will eventually give way to a hardwood forest community further discouraging most species of waterfowl from the property.

Regarding the five conditions outlined on Page 4 of the letter, KCI agrees to concur with all of those obligations, however; we would request that we be able to work with the Airport Authority to determine when the monitoring period can be terminated based on the data that is provided over time. Since positive drainage will be provided across the site we do not believe there will be any areas where we will have >6 inches of standing water for >10days unless Catheys Creek (the adjacent river) is out of bank. This type of flooding event would need to be considered an abnormal condition that our site would have no effective influence on. The monthly monitoring (Condition 3), especially during the non-growing season, will be costly to us and we would like to be able to cease monitoring when it becomes clear that there isn't going to be an impact to the operation of the airport. We assume that we will have enough data by the second year of monitoring to make that determination, however we would just appreciate an acknowledgement from the Airport Authority stating that monitoring can be discontinued based on trends in that data that support "no effect".

Please feel free to contact me at (919) 278-2511, or at tim.morris@kci.com, should you have any questions or require any further information to process this request. Thank you in advance for your assistance.

Sincerely,

A handwritten signature in black ink, appearing to read 'Timothy J. Morris'.

Timothy J. Morris
Senior Environmental Scientist, Ecosystem Dynamics Practice
Attachments

Cc: Steve Stokes, KCI, Steve Garrison, Rutherford County



AIRPORT AUTHORITY

622 Airport Road, Rutherfordton NC 28139 (828) 287-0800

September 7, 2015

Stephen F. Stokes, LLS
KCI Technologies
Landmark Center II, Suite 220
4601 Six Forks Road
Raleigh, NC 27609

Re: Sandy Bridge Stream and Wetland Restoration Site and Rutherford County Airport

Dear Mr. Stokes:

After review of the materials you provided and our July 6, 2015 site visit, Rutherford County Airport Authority offers the following opinion of your project:

As stated in FAA Advisory Circular 150/5200-33B (*Hazardous Wildlife Attractants on or Near Airports*, **bold added**):

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1-4. PROTECTION OF APPROACH, DEPARTURE, AND CIRCLING AIRSPACE. For all airports, the FAA recommends a distance of 5 statute miles between the farthest edge of the airport's AOA and the hazardous wildlife attractant if the attractant could cause hazardous wildlife movement into or across the approach or departure airspace.

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4-3. *OTHER LAND-USE PRACTICE CHANGES.* As a matter of policy, the FAA encourages operators of public-use airports who become aware of proposed land use practice changes that may attract hazardous wildlife within 5 statute mile of their airports to promptly notify the FAA.....

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After evaluation of the ecological and water quality benefits associated with the Project, conversations with KCI, and analysis by the Sponsor's engineering and environmental consultant (WK Dickson), the Sponsor hereby concurs with the project, provided that the following conditions are agreed upon:

1. KCI will provide the Sponsor and their consultant the final proposed design plans, including monitoring well locations, upon completion.
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4. If well data indicate unacceptable levels of surface water (e.g. > 6 inches) for extended periods (e.g. >10 consecutive days), KCI will work with the Sponsor on acceptable remedial action to decrease/eliminate risks to the flying public.
5. KCI will grant the Sponsor access to the Project site throughout the monitoring period to evaluate risks to the flying public.

The Airport Sponsor agrees that, once it is confident that the Sandy Bridge Farm Stream and Wetland Restoration Site (Site) is not a wildlife attractant that would pose danger to the flying public, ongoing hydrologic monitoring of the site will no longer be necessary. The Sponsor and its environmental consultant (WK Dickson) will work with KCI to determine at what point site conditions (e.g. the combination of surface hydrology and vegetative cover) warrant this.

Thank you for the opportunity to review the Project.

Sincerely,

Michael Benfield
Chairman, Rutherford County Airport Authority Board

cc: Jennifer M. Fuller, P.E. NC Division of Aviation

Affidavit of Public Notice

**Notice of Opportunity -
Sandy Bridge Farm
Stream and Wetland
Restoration Project**

KCI Technologies, Inc. proposes to purchase conservation easement rights on approximately 10.5 acres of existing farmland in Rutherford County, NC. The site is located 2.2 miles north on Rock Road from the intersection of US 64 and US 74A. The purpose of acquiring the easement rights is to provide mitigation for impacts to wetlands that have, or will, result from existing or future development in this area. Anyone desiring that an informational public meeting be held for this proposed action may make a request by registered letter to KCI Technologies, Inc. at 4601 Six Forks Road, Suite 220, Raleigh, NC 27609. Requests must be postmarked by Thursday, July 23, 2015. If additional information is required, please contact Tim Morris at 919-278-2511. The project is being completed for the North Carolina Department of Natural Resources, Division of Mitigation Services (DMS). DMS reserves the right to determine if a public meeting will be held.

**AFFIDAVIT OF PUBLICATION
STATE OF NORTH CAROLINA
RUTHERFORD COUNTY**

Before the undersigned, a Notary Public of said County and State, duly commissioned, qualified, and authorized by law to administer oaths, personally appeared

Pam Dixon

who being first duly sworn, deposes and says: that they are

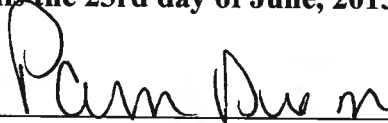
Sales Representative

(Owner, partner, publisher, or other officer or employee authorized to make this affidavit) of THE DAILY COURIER, a newspaper published, issued and entered as second class mail in the town of FOREST CITY, in said County and State; that they are authorized to make this affidavit and sworn statement; that the notice or other legal advertisement, a true copy of which is attached hereto, was published in THE DAILY COURIER on the following dates:

June 23, 2015

and that said newspaper in which such notice, paper, document, or legal advertisement was published was, at the time of each and every such publication, a newspaper meeting all of the requirements and qualifications of Section 1-597 of the General Statutes of North Carolina and was a qualified newspaper within the meaning of Section 1-597 of the General Statutes of North Carolina.

This the 23rd day of June, 2015.



Pam Dixon, Sales Representative

Sworn to and subscribed before me this the 23rd day of June, 2015



Cindy D. Branch, (Notary Public)

My commission expires: February 18, 2017.



Appendix C. Mitigation Work Plan Data and Analyses

Existing Conditions

Cross-Sections

Cross-Section Plots

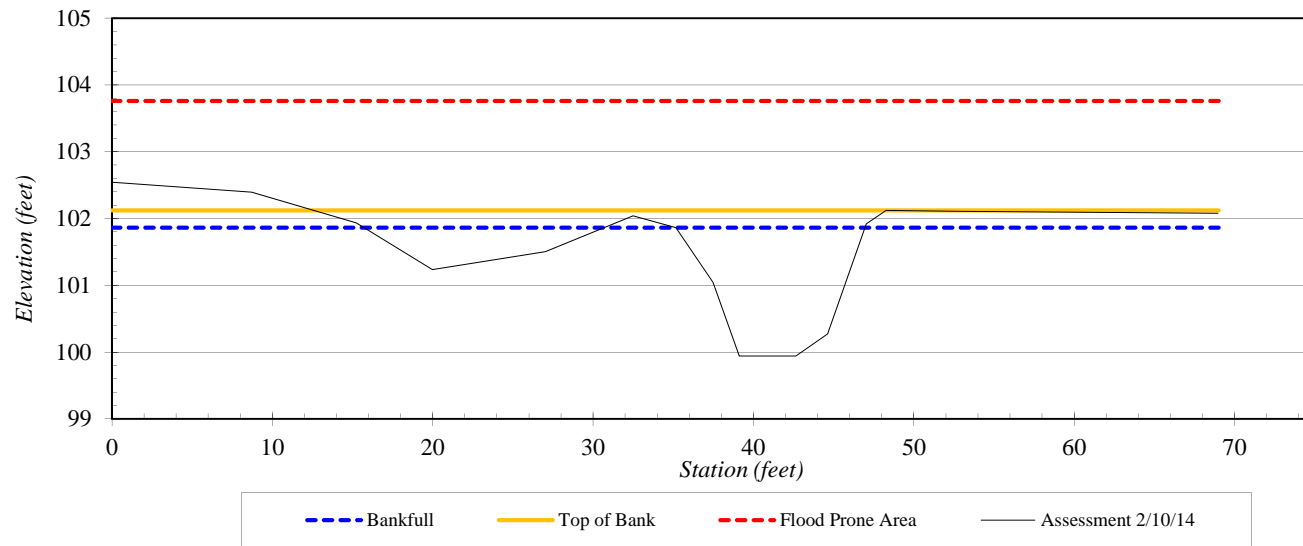
River Basin:	Broad
Watershed:	Catheys Creek
XS ID	XS-1
Drainage Area (sq mi):	1.3 sq miles
Date:	2/10/2014
Field Crew:	A. Eason, K. Knight-Meng



Station	Elevation
0.0	102.54
8.7	102.39
15.2	101.94
20.0	101.24
27.0	101.50
32.5	102.04
35.2	101.86
37.5	101.05
39.1	99.94
40.7	99.94
42.6	99.94
44.6	100.27
47.0	101.92
48.3	102.12
53.1	102.11
69.0	102.08

SUMMARY DATA	
Bankfull Elevation:	101.86
Top of Bank Elevation:	102.12
Bankfull Cross-Sectional Area:	15.3
Bankfull Width:	11.8
Flood Prone Area Elevation:	103.76
Flood Prone Width:	69.0
Max Depth at Bankfull:	1.9
Mean Depth at Bankfull:	1.3
W / D Ratio:	9.1
Entrenchment Ratio:	8.5
Bank Height Ratio:	1.1

Broad River Basin, Catheys Creek, XS-1



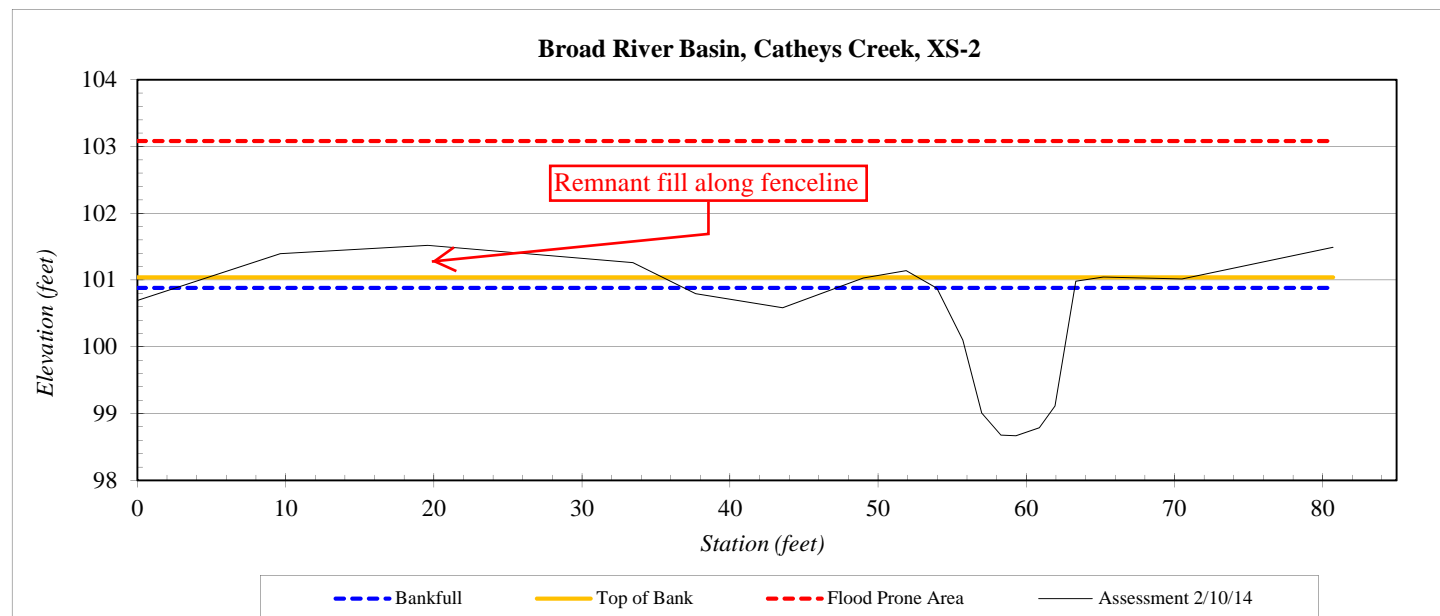
Cross-Section Plots

River Basin:	Broad
Watershed:	Catheys Creek
XS ID	XS-2
Drainage Area (sq mi):	1.3 sq miles
Date:	2/10/2014
Field Crew:	A. Eason, K. Knight-Meng



Station	Elevation
0.00	100.69
9.64	101.39
19.60	101.52
33.44	101.26
37.68	100.80
43.56	100.59
49.00	101.03
51.88	101.14
53.97	100.88
55.72	100.10
56.98	99.01
58.28	98.68
59.31	98.67
60.87	98.79
61.94	99.12
63.35	100.98
65.20	101.04
70.52	101.02
80.71	101.49

SUMMARY DATA	
Bankfull Elevation:	100.88
Top of Bank Elevation:	101.04
Bankfull Cross-Sectional Area:	13.9
Bankfull Width:	9.3
Flood Prone Area Elevation:	103.08
Flood Prone Width:	81
Max Depth at Bankfull:	2.2
Mean Depth at Bankfull:	1.5
W / D Ratio:	6.3
Entrenchment Ratio:	8.7
Bank Height Ratio:	1.1



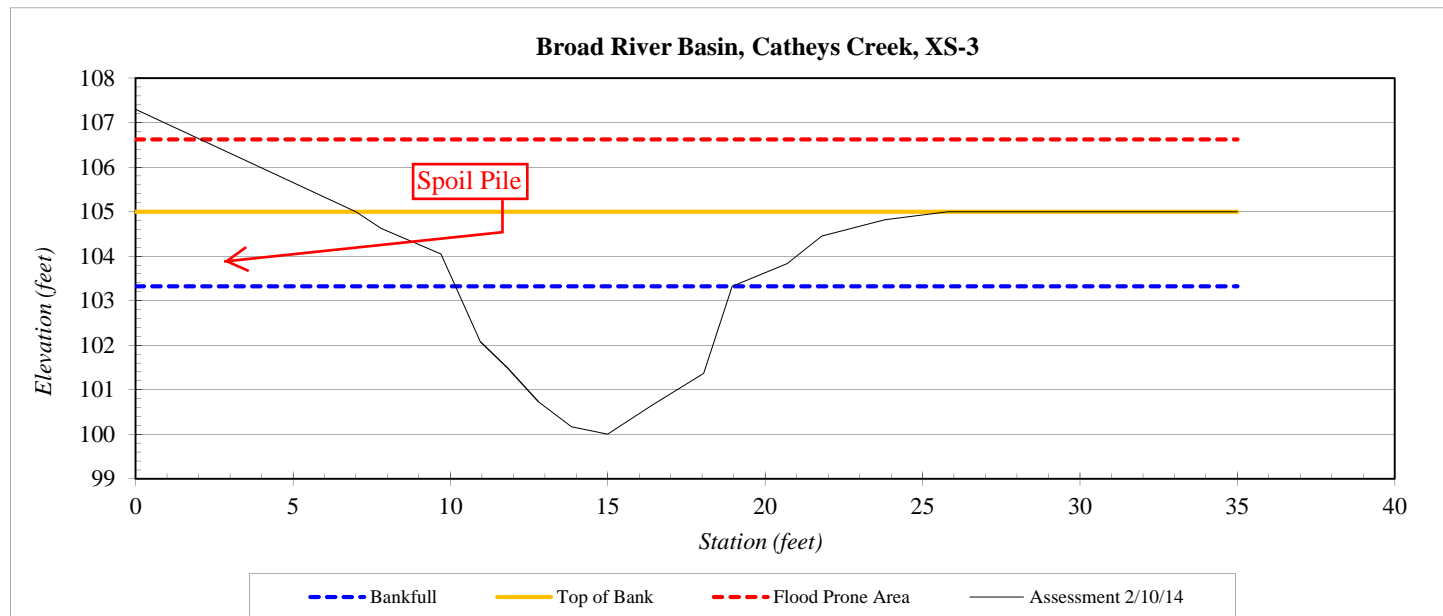
Cross-Section Plots

River Basin:	Broad
Watershed:	Catheys Creek
XS ID	XS-3
Drainage Area (sq mi):	1.3 sq miles
Date:	2/10/2014
Field Crew:	A. Eason, K. Knight-Meng



Station	Elevation
0.00	107.30
7.00	105.00
7.80	104.63
9.70	104.05
10.95	102.08
11.80	101.50
12.80	100.73
13.85	100.17
15.00	100.00
16.40	100.65
18.05	101.37
18.95	103.32
20.70	103.83
21.80	104.45
23.80	104.82
25.80	105.00
35.00	105.00

SUMMARY DATA	
Bankfull Elevation:	103.32
Top of Bank Elevation:	105.00
Bankfull Cross-Sectional Area:	19.6
Bankfull Width:	8.8
Flood Prone Area Elevation:	106.62
Flood Prone Width:	35.0
Max Depth at Bankfull:	3.3
Mean Depth at Bankfull:	2.2
W / D Ratio:	3.9
Entrenchment Ratio:	3.2
Bank Height Ratio:	1.5



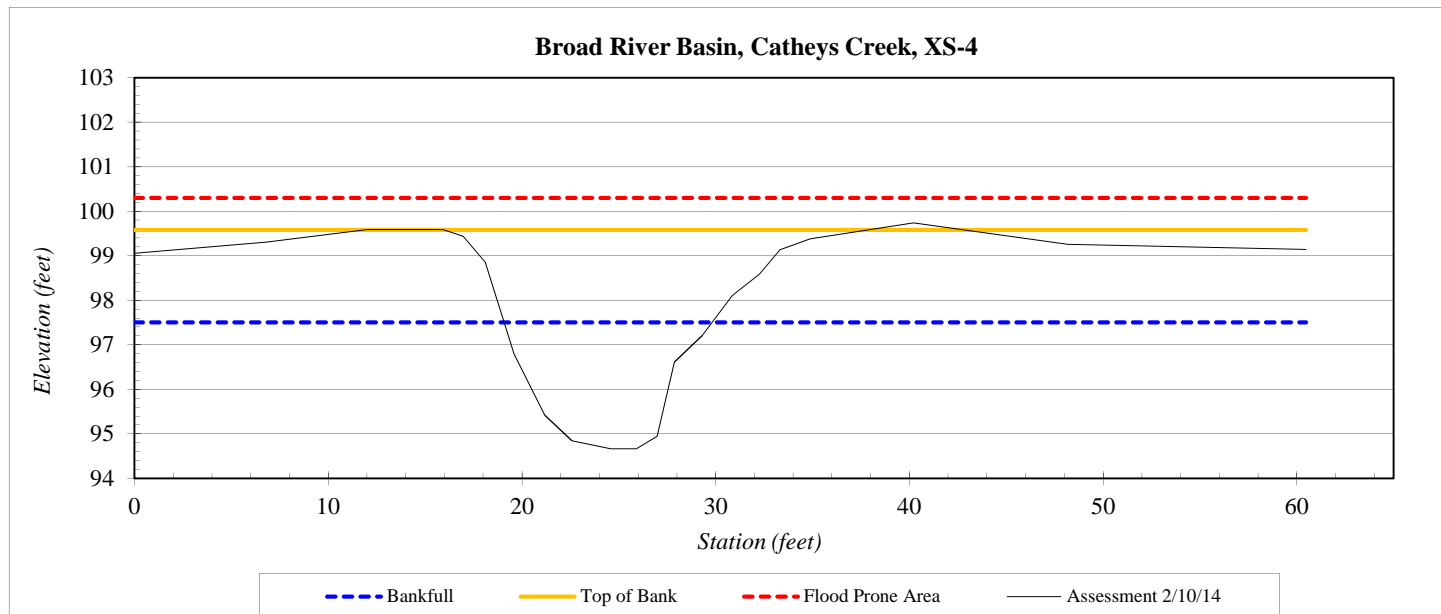
Cross-Section Plots

River Basin:	Broad
Watershed:	Catheys Creek
XS ID	XS-4
Drainage Area (sq mi):	1.3 sq miles
Date:	2/10/2014
Field Crew:	A. Eason, K. Knight-Meng



Station	Elevation
0.00	99.05
6.82	99.31
11.99	99.59
15.93	99.58
16.97	99.44
18.10	98.86
19.59	96.79
21.18	95.42
22.58	94.85
24.58	94.66
25.91	94.66
26.98	94.94
27.86	96.61
29.31	97.21
30.86	98.11
32.26	98.59
33.32	99.13
34.88	99.38
40.22	99.74
48.18	99.25
60.49	99.14

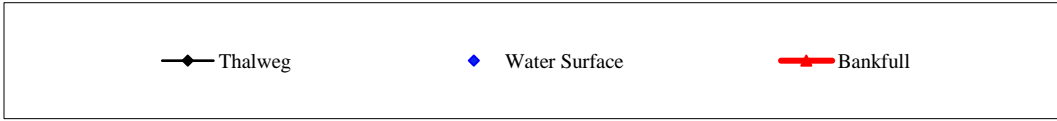
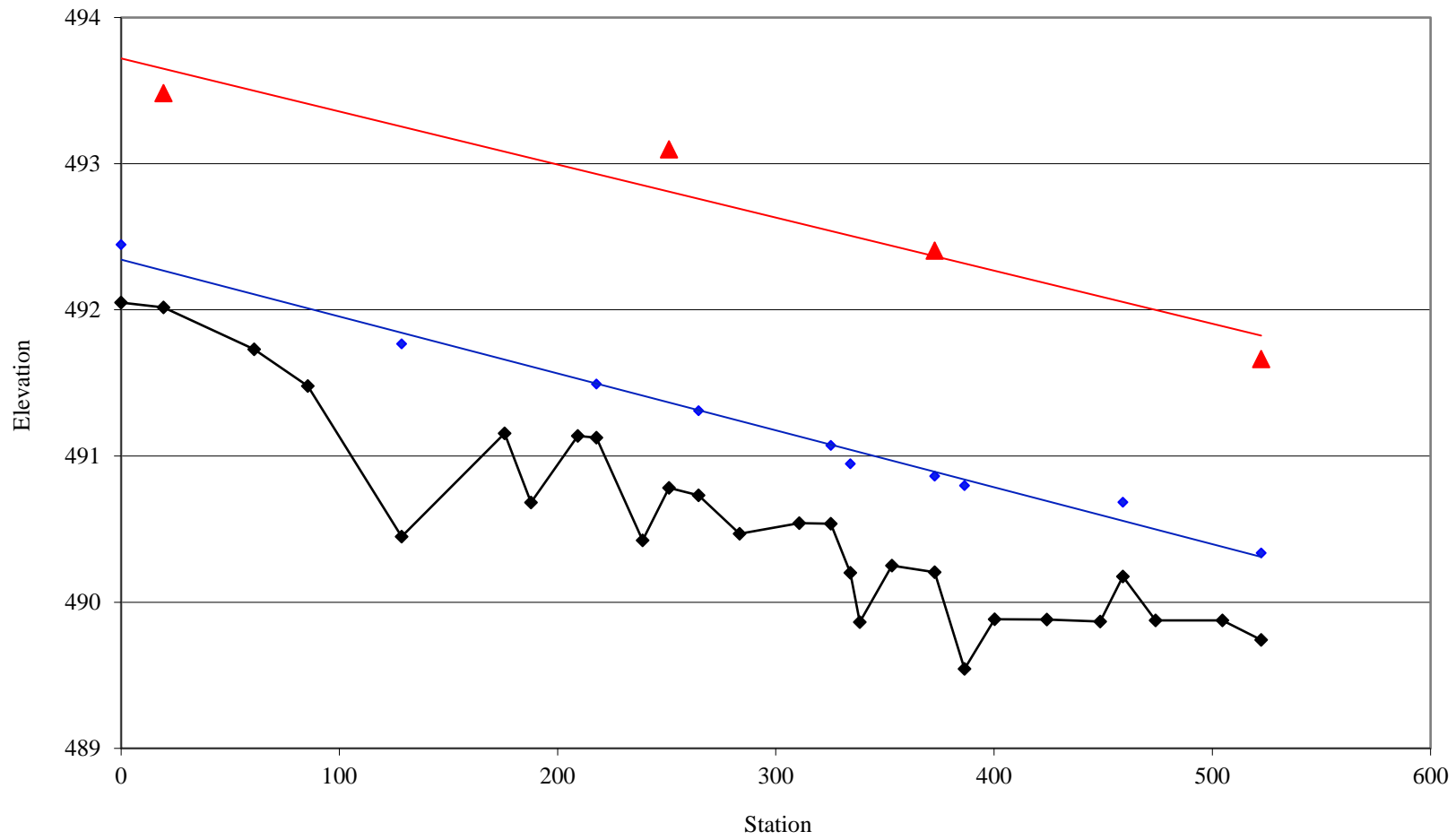
SUMMARY DATA	
Bankfull Elevation:	97.50
Top of Bank Elevation:	99.58
Bankfull Cross-Sectional Area:	20.3
Bankfull Width:	10.7
Flood Prone Area Elevation:	100.30
Flood Prone Width:	60.5
Max Depth at Bankfull:	2.8
Mean Depth at Bankfull:	1.9
W / D Ratio:	5.7
Entrenchment Ratio:	5.6
Bank Height Ratio:	1.7



Existing Conditions

Stream Profile

Longitudinal Profile For Sandy Bridge Farm

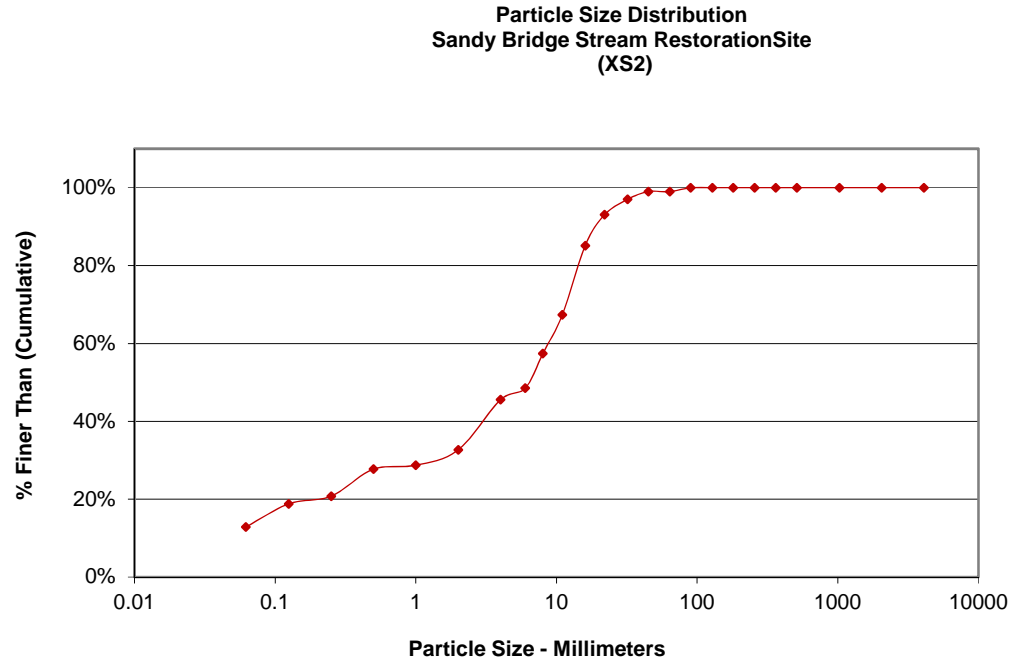


Existing Conditions

Sediment Data

Pebble Count Plots

Cross-Section 2			
Particle	Millimeter		Count
Silt/Clay	< 0.062	S/C	13
Very Fine	.062 - .125	S	6
Fine	.125 - .25	A	2
Medium	.25 - .50	N	7
Coarse	.50 - 1	D	1
Very Coarse	1 - 2	S	4
Very Fine	2 - 4		13
Fine	4 - 5.7	G	3
Fine	5.7 - 8	R	9
Medium	8 - 11.3	A	10
Medium	11.3 - 16	V	18
Coarse	16 - 22.6	E	8
Coarse	22.6 - 32	L	4
Very Coarse	32 - 45	S	2
Very Coarse	45 - 64		
Small	64 - 90	C	1
Small	90 - 128	O	
Large	128 - 180	B	
Large	180 - 256	L	
Small	256 - 362	B	
Small	362 - 512	L	
Medium	512 - 1024	D	
Lrg- Very Lrg	1024 - 2048	R	
Bedrock	>2048	BDRK	
		Total	101
Note:			

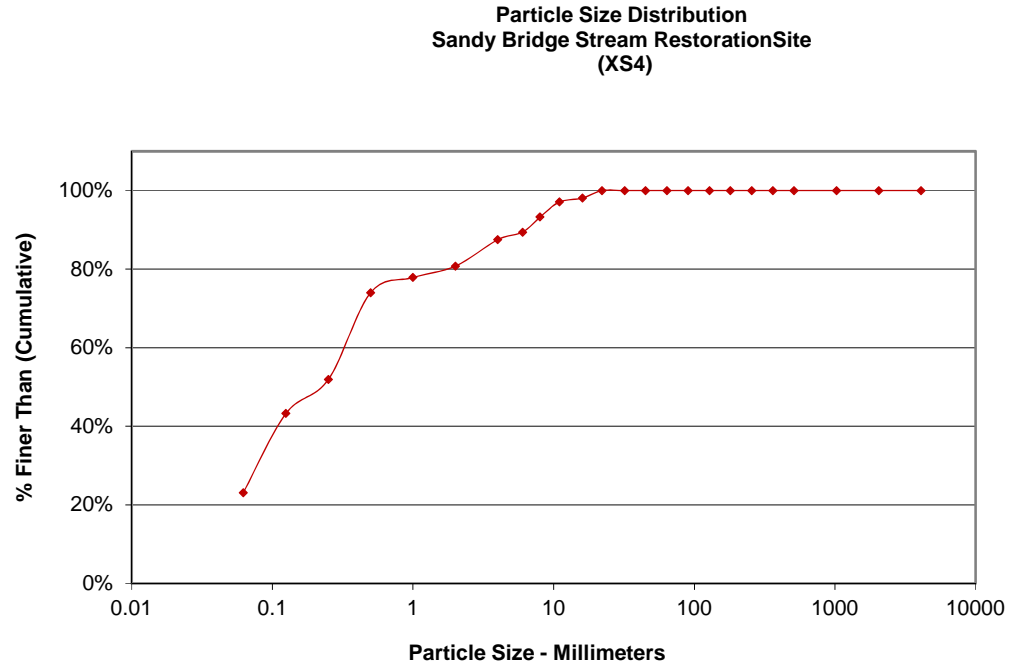


Size (mm)	
D16	0.09
D35	2
D50	6
D65	10
D84	16
D95	26

Size Distribution	
mean	1.2
dispersion	36.3
skewness	-0.48

Type	
silt/clay	13%
sand	20%
gravel	66%
cobble	1%
boulder	0%
bedrock	0%
hardpan	0%
wood/det	0%
artificial	0%

Cross-Section 4			
Particle	Millimeter		Count
Silt/Clay	< 0.062	S/C	24
Very Fine	.062 - .125	S	21
Fine	.125 - .25	A	9
Medium	.25 - .50	N	23
Coarse	.50 - 1	D	4
Very Coarse	1 - 2	S	3
Very Fine	2 - 4		7
Fine	4 - 5.7	G	2
Fine	5.7 - 8	R	4
Medium	8 - 11.3	A	4
Medium	11.3 - 16	V	1
Coarse	16 - 22.6	E	2
Coarse	22.6 - 32	L	
Very Coarse	32 - 45	S	
Very Coarse	45 - 64		
Small	64 - 90	C	
Small	90 - 128	O	
Large	128 - 180	B	
Large	180 - 256	L	
Small	256 - 362	B	
Small	362 - 512	L	
Medium	512 - 1024	D	
Lrg- Very Lrg	1024 - 2048	R	
Bedrock	>2048	BDRK	
		Total	104
Note:			

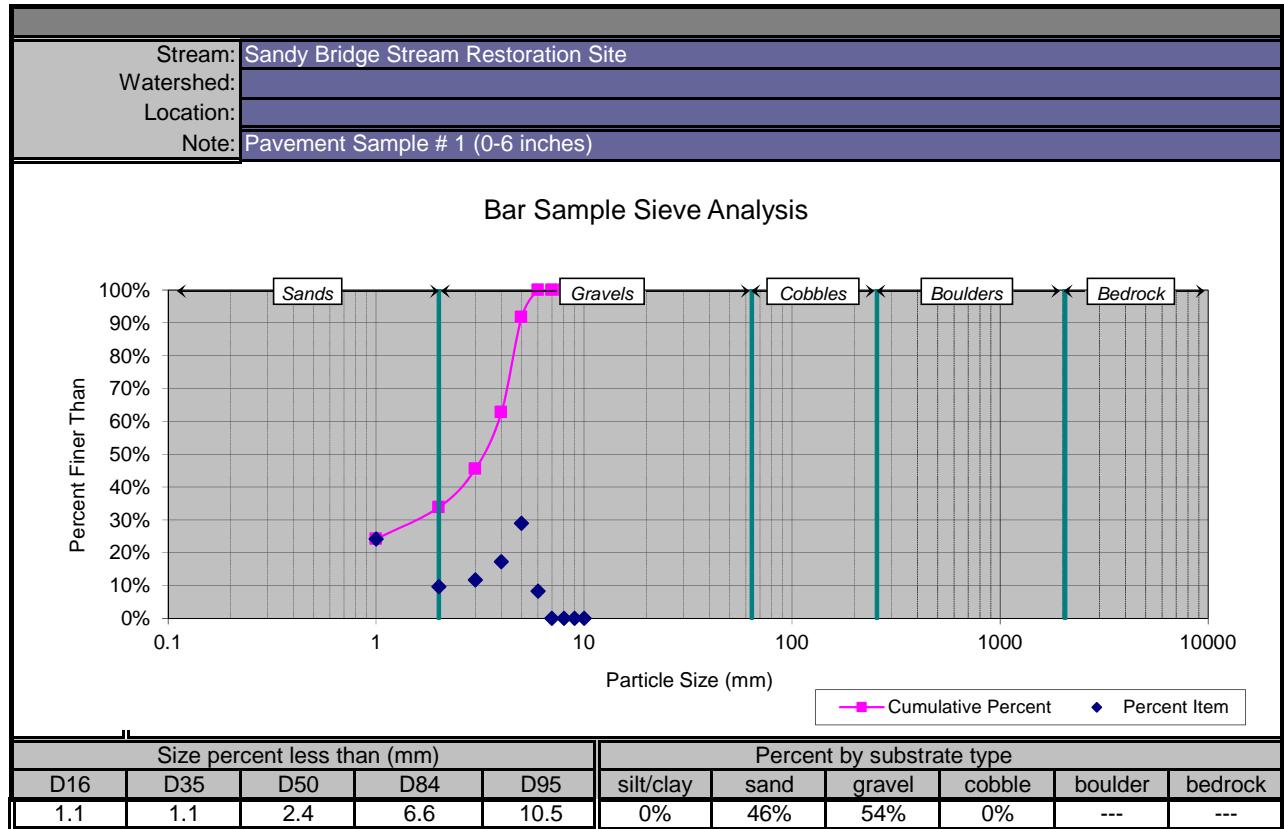


Size (mm)	
D16	0.062
D35	0.094
D50	0.21
D65	0.38
D84	2.8
D95	9.2

Size Distribution	
mean	0.4
dispersion	8.4
skewness	0.23

Type	
silt/clay	23%
sand	58%
gravel	19%
cobble	0%
boulder	0%
bedrock	0%
hardpan	0%
wood/det	0%
artificial	0%

Bar Sample Sieve Analysis			
Smallest Sieve Passed (mm)	Weight (oz)	% Item	Percent Finer Than
<1	35	24.1%	24.1%
1.0	14.0	9.7%	33.8%
2.0	17.0	11.7%	45.5%
4.0	25.0	17.2%	62.8%
8.0	42.0	29.0%	91.7%
16.0	12.0	8.3%	100.0%
31.5	0.0	0.0%	100.0%
128.0	0.0	0.0%	100.0%
256.0	0.0	0.0%	100.0%
> 256.0	0.0	0.0%	100.0%
Total:	145.0	100%	



Proposed Morphological Criteria

Proposed Morphological Criteria for T1				
Variables	Existing	Reference Reach: Long Branch	Proposed	
	T1		T1	
Rosgen Stream Type	E4-G4c	C4	C4	
Drainage Area (mi ²)	1.31	1.49	1.31	
Bankfull Width (W_{bkf}) (ft)	8.8-11.8	14.8-18.8	15.0	
Bankfull Mean Depth (d_{bkf}) (ft)	1.3-2.2	1.3-1.8	0.9	
Bankfull Cross Sectional Area (A_{bkf}) (ft ²)	13.9-20.3	25.0	12.7	
Width/depth Ratio (W_{bkf}/d_{bkf})	3.9-9.1	9.0-14.0	17.7	
Maximum Depth (d_{mbkf}) (ft)	1.9-3.3	1.9-2.4	1.3	
Width of flood prone area (W_{fpa}) (ft)	35-81	>50	>38	
Entrenchment Ratio (ER)	3.2-8.7	>2.5	>2.5	
Sinuosity (stream length/valley length) (K)	1.0	1.3	1.2	
Dimension	Pool Depth (ft)	*	1.6-1.8	1.5
	Riffle Depth (ft)	1.3-2.2	1.3-1.8	0.9
	Pool Width (ft)	*	16.2-18.8	20.0
	Riffle Width (ft)	8.8-11.8	14.8-18.8	15.0
	Pool XS Area (sf)	*	25.5-33.4	30.0
	Riffle XS Area (sf)	13.9-20.3	25	12.7
	Pool depth/mean riffle depth	*	0.9-1.4	1.7
	Pool width/riffle width	*	1.2-1.3	1.3
	Pool area/riffle area	*	1.0-1.3	2.4
	Max pool depth/ d_{bkf}	*	2.2	3.0
	Bank Height Ratio	1.1-1.7	1.0-1.2	1.0
	Mean Bankfull Velocity (V) (fps)	3.1-3.3	3.7-4.2	2.3
	Bankfull Discharge (Q) (cfs)	46-48	93-105	30
Pattern	Meander length (L_m) (ft)	*	66-191	134-160
	Radius of curvature (R_c) (ft)	*	16-87	30-50
	Belt width (W_{bit}) (ft)	*	60	35-60
	Meander width ratio (W_{bit}/W_{bkf})	*	4.1	2.3-4.0
	Radius of curvature/bankfull width	*	0.9-5.9	2.0-3.3
	Meander length/bankfull width	*	3.5-12.9	8.9-10.7
Profile	Valley slope	0.0023	0.0060	0.0050
	Average water surface slope	0.0043	0.0050	0.0038
	Riffle slope	0.000-0.010	0.013-0.035	0.002-0.008
	Pool slope	*	0-0.0003	0
	Pool to pool spacing	*	50-105	55-90
	Pool length	*	14-33	17-55
	Riffle slope/avg water surface slope	0.000-2.3	2.6-7.0	0.5-2.1
	Pool slope/avg water surface slope	*	0-0.06	0
	Pool length/bankfull width	*	0.7-2.2	1.1-3.7
Pool to pool spacing/bankfull width	*	2.7-7.1	3.7-6.0	

*No data shown for pools in existing stream do to channelization / lack of bed diversity

DRAINMOD Model Results

Sandy_Bridge.WET

 * DRAINMOD version 6.1 *
 * Copyright 1980-2011 North Carolina State University *

Sandy Bridge Farm - Existing Conditions
 Tyron, NC Weather Data 318744

-----RUN STATISTICS ----- time: 12/13/2015 @ 23:42
 input file: C:\DRAINMOD\inputs\Sandy_Bridge.prj
 parameters: free drainage and yields not calculated
 drain spacing = 1115. cm drain depth = 25.3 cm

DRAINMOD --- WET PERIOD EVALUATION
 ***** Version 6.1 *****

Number of periods with water table closer than 30.00 cm
 for at least 22 days. Counting starts on day
 94 and ends on day 310 of each year

YEAR	Number of Periods of 22 days or more with WTD < 30.00 cm	Longest Consecutive Period in Days
	-----	-----
1965	0.	12.
1966	0.	19.
1967	0.	20.
1968	0.	13.
1969	0.	11.
1970	0.	17.
1971	0.	16.
1972	0.	15.
1973	0.	18.
1974	0.	16.
1975	0.	10.
1976	1.	37.
1977	0.	12.
1978	1.	23.
1979	0.	19.
1980	0.	19.
1981	0.	12.
1982	0.	21.
1983	1.	26.
1984	0.	21.
1985	0.	8.
1986	0.	13.
1987	0.	8.
1988	0.	20.
1989	0.	15.
1990	1.	24.
1991	1.	23.
1992	0.	19.
1993	0.	16.
1994	1.	29.

	Sandy_Bri dge. WET	
1995	0.	13.
1996	0.	9.
1997	0.	17.
1998	1.	36.
1999	0.	13.
2000	0.	9.
2001	0.	7.
2002	1.	22.
2003	0.	12.
2004	0.	8.
2005	0.	16.
2006	0.	21.
2007	0.	20.
2008	0.	12.
2009	1.	33.
2010	0.	11.
2011	0.	11.
2012	0.	12.
2013	0.	16.
2014	0.	11.

Number of Years with at least one period = 9. out of 50 years.

Sandy_Bridge_PROP.WET

 * DRAINMOD version 6.1 *
 * Copyright 1980-2011 North Carolina State University *

Sandy Bridge Farm - Proposed Conditions
 Tyron, NC Weather Data 318744

-----RUN STATISTICS ----- time: 12/13/2015 @ 23:33
 input file: C:\DRAINMOD\inputs\Sandy_Bridge_PROP.prj
 parameters: free drainage and yields not calculated
 drain spacing = 1115. cm drain depth = 1.0 cm

DRAINMOD --- WET PERIOD EVALUATION
 ***** Version 6.1 *****

Number of periods with water table closer than 30.00 cm
 for at least 22 days. Counting starts on day
 94 and ends on day 310 of each year

YEAR	Number of Periods of 22 days or more with WTD < 30.00 cm	Longest Consecutive Period in Days
	-----	-----
1965	1.	29.
1966	1.	24.
1967	0.	20.
1968	0.	19.
1969	1.	25.
1970	0.	17.
1971	1.	22.
1972	2.	32.
1973	1.	29.
1974	1.	25.
1975	0.	18.
1976	1.	40.
1977	1.	29.
1978	1.	24.
1979	1.	31.
1980	0.	21.
1981	1.	22.
1982	1.	30.
1983	2.	27.
1984	1.	40.
1985	0.	19.
1986	1.	27.
1987	0.	10.
1988	2.	34.
1989	0.	21.
1990	1.	24.
1991	1.	31.
1992	1.	25.
1993	1.	27.
1994	1.	34.

	Sandy_Bridge_PROP.WET	
1995	1.	34.
1996	1.	22.
1997	1.	36.
1998	1.	41.
1999	1.	33.
2000	1.	32.
2001	0.	17.
2002	1.	22.
2003	1.	37.
2004	0.	9.
2005	0.	18.
2006	0.	21.
2007	1.	22.
2008	0.	19.
2009	2.	33.
2010	0.	12.
2011	2.	26.
2012	1.	25.
2013	1.	42.
2014	1.	24.

Number of Years with at least one period = 36. out of 50 years.

Soil Delineation and Characterization

A detailed soils investigation at the SBFRS was conducted by a licensed soil scientist (# 187) to determine the extent and distribution of the hydric soils and to classify the predominate soils to the soil series level. The investigation consisted of delineating the hydric soil boundaries with pink flagging and wooden survey stakes in accordance with the US Army Corps of Engineers, Wetland Delineation Manual (1987) and the USDA Field Indicators of Hydric Soils in the United States: A Guide for Identifying and Delineating Hydric Soils, Version 7.0 (2010). Areas that were identified as possible hydric soil mapping units were surveyed at a higher intensity until the edge of the mapping unit was identified. The boundary of the hydric and non-hydric soil mapping units were then followed by continual sampling and observations as the boundary line was identified and delineated. In those areas where the boundary was found to be a broad gradient rather than a distinct break, microtopography, landscape position, soil textural changes, redoximorphic features, and depleted matrices were additionally considered to identify the extent of the hydric soils.

In developing a detailed soils map, several soil borings were advanced on the site in the general hydric soil areas identified by landscape position, vegetation and slope. Once the hydric soil borings were identified, the soil scientist marked the points and established a visual line to the next auger boring where again hydric soil conditions were confirmed by additional borings. The soil scientist moved along the edges of the mapping unit and marked each point along the line. To confirm the hydric soil mapping unit and taxonomic classification, soil borings were advanced to a depth of 50 inches. The soil profile descriptions identified the individual horizons in the topsoil and upper subsoil as well as the depth, color, texture, structure, boundary, and evidence of restrictive horizons and redoximorphic features. Delineated hydric soils boundaries typically matched to those mapped in the Soil Survey of Rutherford County, North Carolina. The delineation did show inclusions of Wehadkee soils in the mapped Chewacla soils, indicating wet soil areas are present. The delineated hydric soil boundaries are shown in the following figure, Detailed Soils Map.

Taxonomic Classification

The predominant soils identified on the site were of the Wehadkee (Fine-loamy, mixed, semiactive, nonacid, thermic Typic Fluvaquents) and the Chewacla Association (Fine-loamy, mixed, semiactive, thermic Fluvaquentic Dystrochrepts). Both of these series are listed as hydric soils in Rutherford County, North Carolina. The Wehadkee association is defined as primary hydric due to saturation for a significant period during the growing season, while the Chewacla association is defined as secondary hydric due to its inclusions of hydric soils or wet spots.

Profile Description

Typical Pedon Descriptions:

CHEWACLA SERIES

TAXONOMIC CLASS: Fine-loamy, mixed, semiactive, thermic Fluvaquentic Dystrochrepts

TYPICAL PEDON: Chewacla loam. (Colors are for moist soil unless otherwise stated.)

Ap—0 to 8 inches; brown (7.5YR 4/4) loam; moderate medium granular structure; very friable; few fine and medium roots; common fine flakes of mica; slightly acid; clear smooth boundary.

Bw1—8 to 16 inches; strong brown (7.5YR 5/6) loam; weak medium subangular blocky structure; friable; few fine roots; common fine flakes of mica; common fine distinct brown (10YR 5/3) iron depletions; slightly acid; clear smooth boundary.

Bw2—16 to 21 inches; brown (7.5YR 4/4) clay loam; few thin lenses of yellowish red (5YR 4/6) sandy loam; weak medium subangular blocky structure; friable; slightly sticky, slightly plastic; few fine roots; common fine flakes of mica; common fine distinct brown (10YR 5/3) iron depletions; slightly acid; gradual wavy boundary.

Bw3—21 to 34 inches; strong brown (7.5YR 4/6) clay loam; weak medium subangular blocky structure; friable; slightly sticky, slightly plastic; common fine flakes of mica; common medium distinct grayish brown (10YR 5/2) iron depletions; slightly acid; gradual wavy boundary.

BC—34 to 48 inches; brown (10YR 5/3) loam; weak fine subangular blocky structure; friable; slightly sticky, slightly plastic; common fine flakes of mica; common coarse distinct grayish brown (10YR 5/2) iron depletions and few fine prominent yellowish red (5YR 5/6) masses of iron accumulation; moderately acid; gradual wavy boundary.

Cg—48 to 61 inches; gray (10YR 5/1) loam; massive; friable; common fine flakes of mica; few coarse distinct strong brown (7.5YR 5/6) masses of iron accumulation; moderately acid.

RANGE IN CHARACTERISTICS:

Thickness of solum: 15 to 70 inches.

Depth to bedrock: More than 60 inches.

Content and size of rock fragments: 0 to 5 percent, by volume, in the A and B horizons, 0 to 15 percent in the C horizon to a depth of 40 inches, and 0 to 65 percent in horizons below a depth of 40 inches; dominantly gravel.

Reaction: Slightly acid to very strongly acid within a depth of 40 inches; mildly alkaline to very strongly acid below a depth of 40 inches.

RANGE OF INDIVIDUAL HORIZONS:

A horizon:

Color—hue of 5YR to 10YR, value of 3 to 5, and chroma of 1 to 4

Texture—loam

Bw horizon:

Color—hue of 5YR to 2.5Y, value of 4 to 7, and chroma of 3 to 8

Texture—loam, sandy clay loam, sandy loam, fine sandy loam, clay loam, silt loam, or silty clay loam

Redoximorphic features—few or common iron depletions within a depth of 24 inches and in shades of gray or brown; masses of iron accumulation in shades of brown, yellow, or red

Bg horizon (if it occurs):

Color—horizon has hue of 10YR or 2.5Y or is neutral in hue, has value of 4 to 7, and has chroma of 0 or 2

Texture—similar to the Bw horizon

BC horizon:

Color—similar to the Bw horizon

Texture—similar to the Bw horizon

BCg horizon (if it occurs):

Color—similar to the Bg horizon

Texture—similar to the Bg horizon

Ab horizon (if it occurs):

Color—horizon has hue of 7.5YR to 2.5Y or is neutral in hue, has value of 3 or 4, and has chroma of 0 or 2

Texture—loam, sandy loam, fine sandy loam, or silt loam

Cg or C horizon:

Color—similar to the Bw and Bg horizons

Texture—loamy to a depth of 40 inches; variable below a depth of 40 inches; ranging from sand to clay in the fine-earth fraction

WEHADKEE SEIRES

TAXONOMIC CLASS: Fine-loamy, mixed, semiactive, nonacid, thermic Typic Fluvaquents

TYPICAL PEDON: Wehadkee silt loam. (Colors are for moist soils.)

A—0 to 6 inches; dark grayish brown (2.5Y 4/2) silt loam; weak medium granular structure; very friable; common fine and medium roots; few fine flakes of mica; slightly acid; clear smooth boundary.

Bg—6 to 20 inches; dark gray (5Y 4/1) silty clay loam; weak medium subangular blocky structure; friable; sticky, slightly plastic; few fine and medium roots; common medium distinct olive brown (2.5Y 4/4) masses of iron accumulation; few fine flakes of mica; moderately acid; clear smooth boundary.

Cg1—20 to 48 inches; dark gray (5Y 4/1) sandy loam; weak medium subangular blocky structure; friable; 5 percent, by volume, gravel; few fine flakes of mica; moderately acid; clear smooth boundary.

Cg2—48 to 62 inches; gray (10YR 5/1) sandy loam; massive; very friable; 10 percent, by volume, gravel; few fine flakes of mica; moderately acid

RANGE IN CHARACTERISTICS:

Thickness of solum: 20 to more than 60 inches.

Depth to bedrock: More than 60 inches.

Content and size of rock fragments: Less than 5 percent, by volume, in horizons within a depth of 40 inches and 0 to 35 percent in horizons below a depth of 40 inches; dominantly gravel.

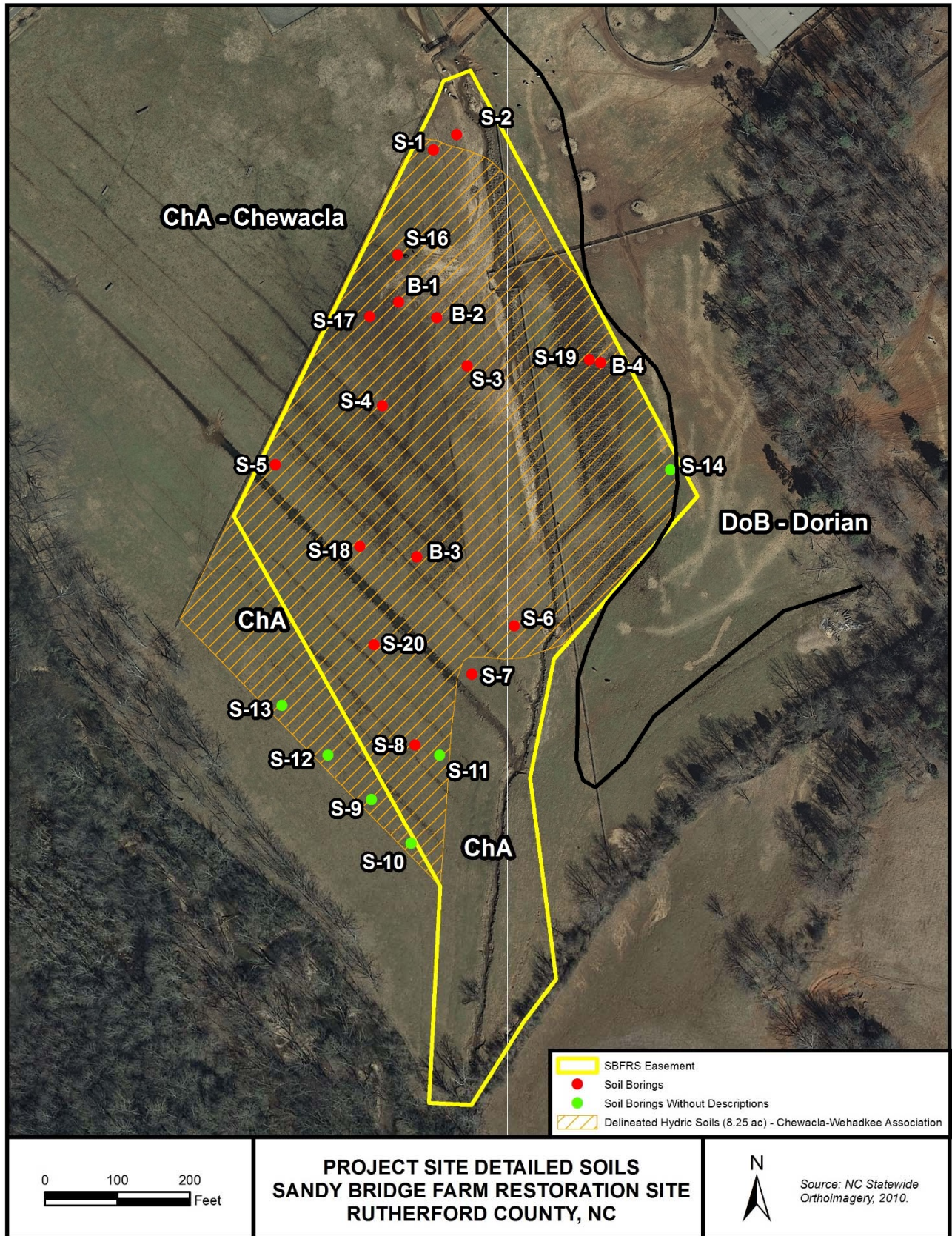
Reaction: Slightly acid to very strongly acid throughout the profile; neutral to moderately acid in some part between depths of 10 and 40 inches.

RANGE IN INDIVIDUAL HORIZONS:

A horizon: Color—horizon has hue of 10YR or 2.5Y or is neutral in hue, has value of 4 to 6, and has chroma of 0 to 4 Mottles (if they occur)—few or common; in shades of brown Texture—silt loam

Bg horizon: Color—horizon has hue of 10YR to 5Y or is neutral in hue, has value of 4 to 6, and has chroma of 0 to 2 Texture—silt loam, silty clay loam, sandy clay loam, loam, or clay loam Redoximorphic features—masses of iron accumulation in shades of red, yellow, or brown 278 Soil Survey

Cg horizon: Color—horizon has hue of 10YR to 5Y or is neutral in hue, has value of 4 to 7, and has chroma of 0 to 2 Texture—horizon is loam or sandy loam or is stratified with layers of silty clay loam, loamy sand, sandy clay loam, clay loam, sand, or gravel Redoximorphic features (if they occur)—masses of iron accumulation in shades of red, yellow, or brown





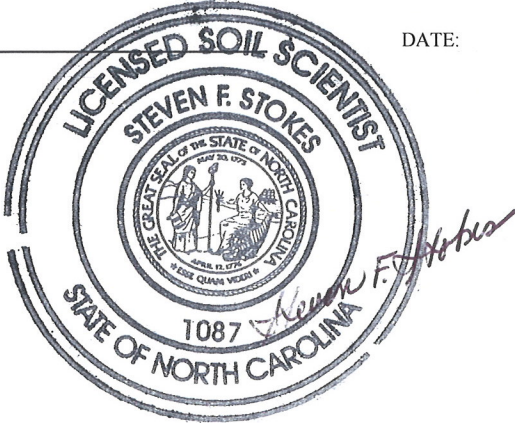
SOIL PROFILE DESCRIPTION

Client: KCI Associates of North Carolina, P.A. **Date:** May 22, 2013
Project: Sandy Bridge Farm **Project #:** 20133280P BR05
County: Rutherford **State:** NC
Location: 1356 Rock Road Rutherfordton, NC 28139 **Site/Lot:** Boring # 1
Soil Series: Wehadkee-Chewacla Association
Soil Classification: _____
AWT: 13" **SHWT:** 0-12" **Slope:** 0-1% **Aspect:** _____
Elevation: _____ **Drainage:** Poorly Drained **Permeability:** Moderate
Vegetation: Pasture Grasses
Borings terminated at 42 **Inches**

HORIZON	DEPTH (IN)	MATRIX	MOTTLES	TEXTURE	STRUCTURE	CONSISTENCE	BOUNDARY	NOTES
Ap1	0-1.5	10YR 3/2		l	l fgr	mvfr	cs	common fine flakes mica
Ap2	1.5-2.5	7.5YR 4/6		l	l fgr	mvfr	cs	common fine flakes mica
Bw1	2.5-5	10YR 4/2	2.5YR 3/6c2d	ls	lmsbk	mvfr	gw	2.5YR3/6 (3%), common fine flakes mica
Bw2	5-13	7.5YR 4/4	5YR 4/6c2d	cl	lmsbk	mvfr	gw	5YR4/6 (10%), common fine flakes mica
			7.5YR 5/2c2d					7.5YR5/2 (2%), common fine flakes mica
Bw3	13-18	5YR 4/4	2.5YR 3/6c2d	cl	lmsbk	mvfr	gw	2.5YR 3/6 (5%)
Bw4	18-30	5YR 4/4	10YR 4/2c2d	cl	lmsbk	mvfr	gw	10YR4/6 (2%)
Bw5	30-36	10YR 4/2	7.5YR 4/4c2d	l	lmsbk	mvfr	gw	7.5YR4/4 (20%)
Bw6	36-42	10YR 4/1	5YR 4/6c2d	l-cl	massive	mvfr		5YR4/6 (2%)

COMMENTS:
Meets Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region Indicator F3:Depleted Matrix
Meets Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region Indicator F21:Red Parent Material
Top 12" of surface has positive reaction with alpha, alpha-dipyridyl.

DESCRIBED BY: SFS **DATE:** 5/22/2013





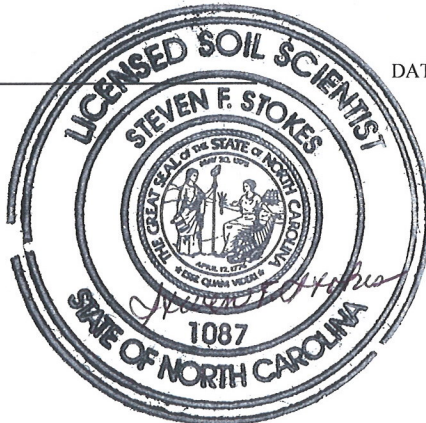
SOIL PROFILE DESCRIPTION

Client: <u>KCI Associates of North Carolina, P.A.</u>	Date: <u>May 22, 2013</u>
Project: <u>Sandy Bridge Farm</u>	Project #: <u>20133280P BR05</u>
County: <u>Rutherford</u>	State: <u>NC</u>
Location: <u>1356 Rock Road Rutherfordton, NC 28139</u>	Site/Lot: <u>Boring # 2</u>
Soil Series: <u>Wehadkee-Chewacla Association</u>	
Soil Classification: _____	
AWT: <u>12"</u>	SHWT: <u>0-12"</u> Slope: <u>0-1%</u> Aspect: _____
Elevation: _____	Drainage: <u>Poorly Drained</u> Permeability: <u>Moderate</u>
Vegetation: <u>Pasture Grasses</u>	
Borings terminated at <u>36</u> Inches	

HORIZON	DEPTH (IN)	MATRIX	MOTTLES	TEXTURE	STRUCTURE	CONSISTENCE	BOUNDARY	NOTES
Ap1	0-3.5	10YR 3/2		1	1 fgr	mvfr	cs	common fine flakes mica
Ap2	3.5-4	7.5YR 4/4	7.5YR 2.5/1c2d	1	1 fgr	mvfr	cs	7.5YR 2.5/1 (15%)
			2.5YR 3/6c2d	1				2.5YR3/6 (5%)
Bw1	4-7	7.5YR 4/3	7.5YR 2.5/1c2d	1	1msbk	mvfr	gw	7.5YR 2.5/1 (15%)
			2.5YR 3/6c2d					7.5YR 3/6 (5%)
Bw2	7-20	7.5YR 4/3	5YR 4/6c2d	1	1msbk	mvfr	gw	5YR 4/6 (20%)
Bw3	20-36	7.5YR 4/3	2.5YR 3/6c2d	1	1msbk	mvfr		2.5YR 3/6 (30%)

COMMENTS:
 Meets Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region Indicator F8:Redox Depressions
 Top 12" of surface has positive reaction with alpha, alpha-dipyridyl.
 Common fine manganese masses in Ap2 and Bw1 horizons.

DESCRIBED BY: SFS DATE: 5/22/2013





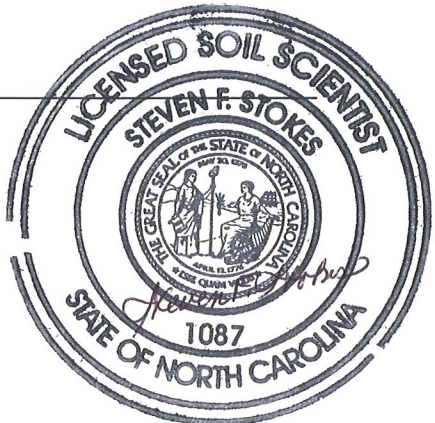
SOIL PROFILE DESCRIPTION

Client: KCI Associates of North Carolina, P.A. **Date:** May 22, 2013
Project: Sandy Bridge Farm **Project #:** 20133280P BR05
County: Rutherford **State:** NC
Location: 1356 Rock Road Rutherfordton, NC 28139 **Site/Lot:** Boring # 3
Soil Series: Wehadkee-Chewacla Association
Soil Classification: _____
AWT: 10" **SHWT:** 0-12" **Slope:** 0-1% **Aspect:** _____
Elevation: _____ **Drainage:** Poorly Drained **Permeability:** Moderate
Vegetation: Pasture Grasses
Borings terminated at 48 **Inches**

HORIZON	DEPTH (IN)	MATRIX	MOTTLES	TEXTURE	STRUCTURE	CONSISTENCE	BOUNDARY	NOTES
Ap1	0-2	10YR 4/3		l	1 fgr	mvfr	cs	
Ap2	2-6	7.5YR 4/4	5YR 4/6c2d	l	1 fgr	mvfr	cs	5YR 4/6 (10%)
			7.5YR 2.5/1c2d	l				7.5YR 2.5/1 (3%)
Bw1	6-24	5YR 4/4	7.5YR 2.5/1c2d	l	1msbk	mvfr	gw	7.5YR 2.5/1 (3%)
Bw2	24-39	7.5YR 4/3	10YR 5/6c2d	cl	1msbk	mvfr	gw	10YR 5/6 (3%)
			10YR 4/2c2d					10YR 4/2 (5%)
Bw3	39-48	10YR 4/2	10YR 4/6c2d	l	massive	mvfr		10YR 4/6 (10%)

COMMENTS:
 Meets Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region Indicator F8:Redox Depressions
 Meets Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region Indicator F21:Red Parent Material
 Top 12" of surface has positive reaction with alpha, alpha-dipyridyl.
 Common fine manganese masses in Ap2 and Bw1 horizons.

DESCRIBED BY: SFS DATE: 5/22/2013





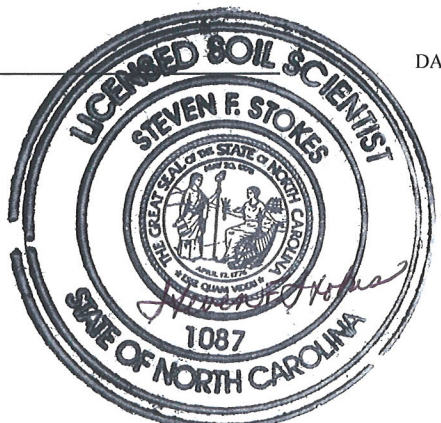
SOIL PROFILE DESCRIPTION

Client: KCI Associates of North Carolina, P.A. **Date:** May 22, 2013
Project: Sandy Bridge Farm **Project #:** 20133280P BR05
County: Rutherford **State:** NC
Location: 1356 Rock Road Rutherfordton, NC 28139 **Site/Lot:** Boring # 4
Soil Series: Wehadkee-Chewacla Association
Soil Classification: _____
AWT: 6" **SHWT:** 0-12" **Slope:** 0-1% **Aspect:** _____
Elevation: _____ **Drainage:** Poorly Drained **Permeability:** Moderate
Vegetation: Pasture Grasses
Borings terminated at 40 **Inches**

HORIZON	DEPTH (IN)	MATRIX	MOTTLES	TEXTURE	STRUCTURE	CONSISTENCE	BOUNDARY	NOTES
Ap1	0-4	10YR 4/3	2.5YR 4/6c2d	l	l fgr	mvfr	cs	2.5YR 4/6 (2%)
Ap2	4-12	7.5YR 4/4	2.5YR 4/6c2d	l	l fgr	mvfr	cs	2.5YR 4/6 (10%)
Bw1	12-15	5YR 4/4	7.5YR 4/4c2d	l	l msbk	mvfr	gw	7.5YR 4/4 (15%)
Bw2	15-18	7.5YR 4/4	10YR 4/1c2d		l msbk	mvfr	gw	10YR 4/1 (10%)
Bw3	18-21	7.5YR 4/4	10YR 4/1c2d	cl	l msbk	mvfr	gw	10YR 4/1 (40%)
			2.5YR 4/6c2d					2.5YR 4/6 (2%)
Ab1	21-24	10YR 4/2	7.5YR 4/3c2d	l	l fsbk	mvfr	cs	Buried surface
Bw1	24-40	10YR 5/3	7.5YR 5/8c2d	cl	l msbk	mvfr		

COMMENTS:
 Meets Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region Indicator F8:Redox Depressions
 Meets Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region Indicator F21:Red Parent Material
 Top 12" of surface has positive reaction with alpha, alpha-dipyridyl.

DESCRIBED BY: SFS **DATE:** 5/22/2013





SOIL PROFILE DESCRIPTION

Client: KCI Associates of North Carolina, P.A. **Date:** May 1, 2015
Project: Sandy Bridge Farm **Project #:** 20143280P_BR05
County: Rutherford **State:** NC
Location: 1356 Rock Road Rutherfordton, NC 28139 **Site/Lot:** Boring # S-3
Soil Series: Wehadkee-Chewacla Association
Soil Classification: _____
AWT: 26" **SHWT:** 0-12" **Slope:** 0-1% **Aspect:** _____
Elevation: _____ **Drainage:** _____ **Permeability:** Moderate
Vegetation: Pasture Grasses
Borings terminated at 51 **Inches**

HORIZON	DEPTH (IN)	MATRIX	MOTTLES	TEXTURE	STRUCTURE	CONSISTENCE	BOUNDARY	NOTES
Ap	0-5	10YR 4/2	2.5YR 3/6f2d	l	massive	mfr	cs	oxid root channels, 2.5YR 3/6, 2%
			7.5YR 4/6c1p					7.5YR 4/6, 10%
			5YR 4/4f1p					5YR 4/4, 1%
								overwash
								massive breaking to 1fgr
Bw1	5-10	7.5YR 4/2	7.5YR 3/2f2d	sl	massive	mfr	cs	7.5YR 3/2, 3%
			7.5YR 4/6c2d					breaking to 1msbk
Bw2	10-13	7.5YR 4/4		s-ls	sg	mfr	cw	many coarse gravels
Bw3	13-22	7.5YR 4/6		l	1msbk	mfr	gw	
Bw4	22-33	7.5YR 4/4		l	1msbk		gw	
C	33-45	7.5YR 4/4	7.5YR 4/6c2d	l	massive		gw	wood & charcoal pieces
			2.5YR 3/6f1p					
			10YR 4/2f2d					
			10YR 3/6c2d					
Cg	45-51	10YR 4/2	2.5YR 4/6m2p	l	massive	mfr		
			5/5GYc2p					
			7.5YR 4/4c2d					

COMMENTS:
 Meets Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region Indicator F3: Depleted Matrix
 F3: Meets 60% or more chroma 2 or less in either a 2" layer within 6" and 6" layer within 10" with ≥2% distinct or prominent redox.
 Top 12" of surface has positive reaction with alpha, alpha-dipyridyl. The reagent is used to provide evidence that a soil is hydric.
 Water table in creek 22" below TOB; soil boring is 30' from creek.
 Weather: Sunny to Partly Cloudy
 Landform: floodplain positions near stream channels

DESCRIBED BY: SFS **DATE:** 5/1/2015





SOIL PROFILE DESCRIPTION

Client: KCI Associates of North Carolina, P.A. Date: May 1, 2015
Project: Sandy Bridge Farm Project #: 20143280P_BR05
County: Rutherford State: NC
Location: 1356 Rock Road Rutherfordton, NC 28139 Site/Lot: Boring # S-4
Soil Series: Wehadkee-Chewacla Association
Soil Classification:
AWT: 22" SHWT: 0-12" Slope: 0-1% Aspect:
Elevation: Drainage: Permeability: Moderate
Vegetation:
Borings terminated at 22 Inches

Table with 9 columns: HORIZON, DEPTH (IN), MATRIX, MOTTLES, TEXTURE, STRUCTURE, CONSISTENCE, BOUNDARY, NOTES. Rows include Ap, Bw1, Bw2 horizons with detailed soil characteristics.

COMMENTS:

Meets Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region Indicator F3: Depleted Matrix F3: Meets 60% or more chroma 2 or less in either a 2" layer within 6" and 6" layer within 10" with ≥2% distinct or prominent redox.
Meets Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region Indicator F21: Red Parent Material F21: Has 4" layer (5.5-12.5) starting within 10" with hue of 7.5YR and matrix has value & chroma >2 or ≤4 with 10% distinct redox concentrations.
Top 12" of surface has positive reaction with alpha, alpha-dipyridyl. The reagent is used to provide evidence that a soil is hydric.
Weather: Sunny to Partly Cloudy
Landform: floodplain positions near stream channels

DESCRIBED BY: SFS DATE: 5/1/2015





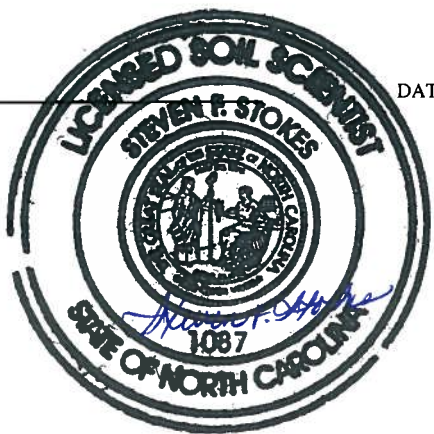
SOIL PROFILE DESCRIPTION

Client: KCI Associates of North Carolina. P.A. **Date:** May 1, 2015
Project: Sandy Bridge Farm **Project #:** 20143280P_BR05
County: Rutherford **State:** NC
Location: 1356 Rock Road Rutherfordton, NC 28139 **Site/Lot:** Boring # S-5
Soil Series: Wehadkee-Chewacla Association
Soil Classification: _____
AWT: 26" **SHWT:** 0-12" **Slope:** 0-1% **Aspect:** _____
Elevation: _____ **Drainage:** _____ **Permeability:** Moderate
Vegetation: Pasture Grasses
Borings terminated at 27 **Inches**

HORIZON	DEPTH (IN)	MATRIX	MOTTLES	TEXTURE	STRUCTURE	CONSISTENCE	BOUNDARY	NOTES
Ap	0-6	10YR 4/3	10YR 4/2f1f	sl	1fsbk	mfr	cs	spoil-compacted
Ap2	6-8.5	10YR4/1	10YR 5/3c2d	scl	massive	mfr	cs	spoil-massive breaking to 1msbk
Ab1	8.5-13	10YR 4/3	10YR 4/1c1d	ls	1fsbk	mfr	gw	M
			5YR 4/4c2p					PL, M
Ab2	13-27	10YR 4/4	10YR 5/6c2d	ls	1fsbk	mfr		M

COMMENTS:
 Meets Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region Indicator F8:Redox Depressions
 Remove spoil and soil meets F8: Redox Depression with 2" layer entirely within the upper 6" with 5% redox concentrations in pore linings
 Top 12" of surface has positive reaction with alpha, alpha-dipyridyl. The reagent is used to provide evidence that a soil is hydric.
 Weather: Sunny, Clear
 Ab1 and Ab2 layer potentially indicate historic stream channel.
 Landform: Microtopographic depression

DESCRIBED BY: SFS DATE: 5/1/2015





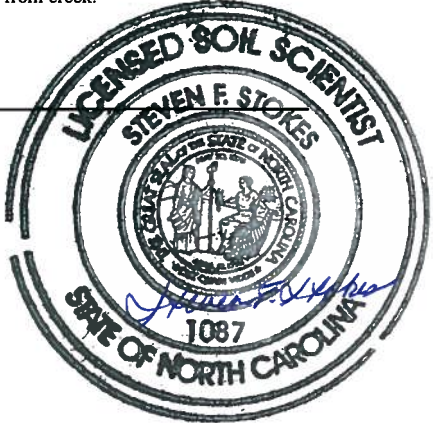
SOIL PROFILE DESCRIPTION

Client: KCI Associates of North Carolina, P.A. **Date:** May 1, 2015
Project: Sandy Bridge Farm **Project #:** 20143280P_BR05
County: Rutherford **State:** NC
Location: 1356 Rock Road Rutherfordton, NC 28139 **Site/Lot:** Boring # S-6
Soil Series: Wehadkee-Chewacla Association
Soil Classification: _____
AWT: >18" **SHWT:** 0-12" **Slope:** 0-1% **Aspect:** _____
Elevation: _____ **Drainage:** _____ **Permeability:** Moderate
Vegetation: Pasture Grasses
Borings terminated at 18 **Inches**

HORIZON	DEPTH (IN)	MATRIX	MOTTLES	TEXTURE	STRUCTURE	CONSISTENCE	BOUNDARY	NOTES
Ap	0-5.5	7.5YR 4/4	7.5YR 4/3c2f 5YR 4/6c2d	l	lfsbk	mfr	cs	compacted breaking to lfsbk
Bw1	5.5-12.5	7.5YR 4/4	5YR 4/6c1d 7.5YR 4/3f1f 2.5YR 3/6c2p	sl	lfsbk	mfr	cw	redox 5YR 4/6-15%, PL & M redox 2.5YR 3/6-2%, M
Bw2	12.5-18	7.5YR 4/4	5YR 4/6c2d 7.5YR 4/3f1f	l	lcsbk	mfr		redox 5YR 4/6-20%, PL & M common mica

COMMENTS:
 Meets Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region Indicator F21:Red Parent Material F21: Has 4" layer (5.5-12.5) starting within 10" with hue of 7.5YR and matrix has value & chroma >2 or ≤4 with 10% distinct redox concentrations.
 Top 12" of surface has positive reaction with alpha, alpha-dipyridyl. The reagent is used to provide evidence that a soil is hydric.
 Water table in creek is >36" below TOB; soil boring is 36' from creek.
 Weather: Sunny to Partly Cloudy
 Landform: floodplain positions near stream channels

DESCRIBED BY: SFS **DATE:** 5/1/2015





SOIL PROFILE DESCRIPTION

Client: KCI Associates of North Carolina. P.A. **Date:** May 1, 2015
Project: Sandy Bridge Farm **Project #:** 20143280P_BR05
County: Rutherford **State:** NC
Location: 1356 Rock Road Rutherfordton, NC 28139 **Site/Lot:** Boring # S-7
Soil Series: Wehadkee-Chewacla Association
Soil Classification: _____
AWT: >18" **SHWT:** 0-12" **Slope:** 0-1% **Aspect:** _____
Elevation: _____ **Drainage:** _____ **Permeability:** Moderate
Vegetation: Pasture Grasses
Borings terminated at 18 **Inches**

HORIZON	DEPTH (IN)	MATRIX	MOTTLES	TEXTURE	STRUCTURE	CONSISTENCE	BOUNDARY	NOTES
Ap	0-8	7.5YR 4/3	5YR 5/8c2d	l	1msbk	mfr	cs	compacted breaking to 1msbk redox 5YR 5/8-2%, M charcoal pieces
Bw1	8-12	5YR 4/4		l	1fsbk	mfr	gw	
	12-18	5YR 4/4	5YR 4/6c2f	l	1csbk	mfr		

COMMENTS:
 Top 12" of dry surface non-reactive with alpha, alpha-dipyridyl.
 Weather: Sunny to Partly Cloudy
 Landform: floodplain positions near stream channels

DESCRIBED BY: SFS

DATE: 5/1/2015





SOIL PROFILE DESCRIPTION

Client:	KCI Associates of North Carolina, P.A.	Date:	June 2, 2015
Project:	Sandy Bridge Farm	Project #:	20157877
County:	Rutherford	State:	NC
Location:	1356 Rock Road Rutherfordton, NC 28139 (35.409935N/081.937541W)	Site/Lot:	Boring # S-16
Soil Series:	Chewacla		
Soil Classification:	Fine-loamy, mixed, active, thermic Fluvaquentic Dystrudepts		
AWT:	33"	SHWT:	n/a
Elevation:		Slope:	0-1%
Vegetation:	Pasture Grasses	Aspect:	
Borings terminated at	25	Drainage:	n/a
	Inches	Permeability:	Moderate

HORIZON	DEPTH (IN)	MATRIX	MOTTLES	TEXTURE	STRUCTURE	CONSISTENCE	BOUNDARY	NOTES
Ap1	0-2	10YR 4/3	2.5YR 3/6c2p	l	1fsbk	mfr	cs	5% compacted, oxidized root channels
Ap2	2-6.5	7.5YR 3/1	2.5YR 4/6c2p	l	massive	mfr	cs	10% PL, no structure
Bw1	6.5-8.5	7.5YR 4/3	5YR 4/4	l	1fsbk	mfr	gw	5%
			2.5YR 4/6					5%
			7.5YR 2.5/2					2% Mn masses
Bw2	8.5-23	5YR 4/4	7.5YR 4/3c1d	l	1fsbk	mfr	gw	10%
			7.5YR 5/8c2d	l		mfr		5%
Bw3	23-25	5YR 4/4	10YR 4/2	l	1fsbk	mfr		
			7.5YR 5/8c2d					3%

COMMENTS:

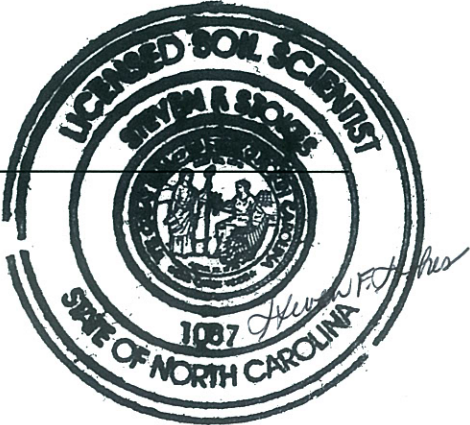
Meets Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region Indicator F3: Deleted Matrix F3: Meets 60% or more chroma 2 or less in either a 2" layer within 6" and 6" layer within 10" with ≥2% distinct or prominent redox.

Meets Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region Indicator F8: Redox Depressions F8: Closed Redox Depression subject to ponding with 2" layer entirely within the upper 6" with 5% redox concentrations in pore linings

Weather: Partly cloudy

Landform: Microtopographic depressions

DESCRIBED BY: SFS DATE: 6/2/2015





SOIL PROFILE DESCRIPTION

Client: <u>KCI Associates of North Carolina, P.A.</u>	Date: <u>June 2, 2015</u>
Project: <u>Sandy Bridge Farm</u>	Project #: <u>20157877</u>
County: <u>Rutherford</u>	State: <u>NC</u>
Location: <u>1356 Rock Road Rutherfordon, NC 28139 (35.409699N/081.937661W)</u>	Site/Lot: <u>Boring # S-17</u>
Soil Series: <u>Chewacla</u>	
Soil Classification: <u>Fine-loamy, mixed, active, thermic Fluvaquentic Dystrudepts</u>	
AWT: <u>>18"</u>	SHWT: <u>n/a</u> Slope: <u>0-1%</u> Aspect: _____
Elevation: _____	Drainage: <u>n/a</u> Permeability: <u>Moderate</u>
Vegetation: <u>Pasture Grasses</u>	
Borings terminated at <u>18</u> Inches	

HORIZON	DEPTH (IN)	MATRIX	MOTTLES	TEXTURE	STRUCTURE	CONSISTENCE	BOUNDARY	NOTES
Ap1	0-6	7.5YR 4/4	2.5YR 3/6c2p	l	1fsbk	mfr	cw	10% compacted, could be 4/3
Bw1	6-9	5YR 4/4	2.5YR 3/6c2d	l	1fsbk	mfr	gw	5%
			5YR 4/6c2d					5%
Bw2	9-14	5YR 4/6	7.5YR 4/4c2d	l	2fsbk	mfr	gw	20%
			5YR 5/8c2d					2%
Bw3	14-18	5YR 4/6	7.5YR 5/8c2d	l	2fsbk	mfr		5%

COMMENTS:
 Meets Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region Indicator F8: Redox Depressions F8: Closed Redox Depression subject to ponding with 2" layer entirely within the upper 6" with 5% redox concentrations in pore linings
 Meets Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region Indicator F21: Red Parent Material F21: Has 4" layer (5.5-12.5) starting within 10" with hue of 7.5YR and matrix has value & chroma >2 or ≤4 with 10% distinct redox concentrations.
 Weather: Partly cloudy
 Landform: Microtopographic depressions

DESCRIBED BY: SFS DATE: 6/2/2015





SOIL PROFILE DESCRIPTION

Client: KCI Associates of North Carolina, P.A. **Date:** June 2, 2015
Project: Sandy Bridge Farm **Project #:** 20157877
County: Rutherford **State:** NC
Location: 1356 Rock Road Rutherfordton, NC 28139 (35.408828N/081.937676W) **Site/Lot:** Boring # S-18
Soil Series: Chewacla
Soil Classification: Fine-loamy, mixed, active, thermic Fluvaquentic Dystrudepts
AWT: >18" **SHWT:** n/a **Slope:** 0-1% **Aspect:** _____
Elevation: _____ **Drainage:** n/a **Permeability:** Moderate
Vegetation: Pasture Grasses
Borings terminated at 18 **Inches**

HORIZON	DEPTH (IN)	MATRIX	MOTTLES	TEXTURE	STRUCTURE	CONSISTENCE	BOUNDARY	NOTES
Ap1	0-5	7.5YR 4/3	2.5YR 3/6c2d	l	1fsbk	mfr	cs	10%
Ap2	5-8	7.5YR 4/3	2.5YR 4/8c1p	l	1fsbk	mfr	cw	5%
Bw1	8-18	5YR 4/6	7.5YR 4/4c1d 2.5YR 4/8c1d	cl	1msbk	mfr		20%

COMMENTS:
 Meets Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region Indicator F8: Redox Depressions F8: Closed Redox Depression subject to ponding with 2" layer entirely within the upper 6" with 5% redox concentrations in pore linings
 Meets Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region Indicator F21: Red Parent Material F21: Has 4" layer (5.5-12.5) starting within 10" with hue of 7.5YR and matrix has value & chroma >2 or ≤4 with 10% distinct redox concentrations.
 Weather: Partly cloudy
 Landform: Microtopographic depressions

DESCRIBED BY: SFS DATE: 6/2/2015





SOIL PROFILE DESCRIPTION

Client: KCI Associates of North Carolina, P.A. **Date:** June 2, 2015
Project: Sandy Bridge Farm **Project #:** 20157877
County: Rutherford **State:** NC
Location: 1356 Rock Road Rutherfordton, NC 28139 (35.4095580N/081.9366345W) **Site/Lot:** Boring # S-19
Soil Series: Chewacla
Soil Classification: Fine-loamy, mixed, active, thermic Fluvaquentic Dystrudepts
AWT: >18" **SHWT:** 0-12" **Slope:** 0-1% **Aspect:** _____
Elevation: _____ **Drainage:** _____ **Permeability:** Moderate
Vegetation: Pasture Grasses
Borings terminated at 18 **Inches**

HORIZON	DEPTH (IN)	MATRIX	MOTTLES	TEXTURE	STRUCTURE	CONSISTENCE	BOUNDARY	NOTES
Ap1	0-3	7.5YR 4/4	5YR 4/6c1d	l	1fsbk	mfr	cs	redox 5YR 4/6-10%, PL & M
A1	3-7	10YR 4/2	2.5YR 3/6c1p	l	massive	mfr	cw	redox 2.5YR 3/6-5%, M
			5YR 4/6c2p					redox 5YR 4/6-20%, PL & M
Bw1	7-15	7.5YR 4/4	5YR 4/6c2d	l	1fsbk	mfr	gw	redox 5YR 4/6-10%, PL & M
Bw2	15-18	5YR 4/4		l-sl	1fsbk	mfr		

COMMENTS:
 Meets Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region Indicator F3: Deleted Matrix F3: Meets 60% or more chroma 2 or less in either a 2" layer within 6" and 6" layer within 10" with ≥2% distinct or prominent redox.
 Meets Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region Indicator F8: Redox Depressions F8: Closed Redox Depression subject to ponding with 2" layer entirely within the upper 6" with 5% redox concentrations in pore linings
 Meets Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region Indicator F21: Red Parent Material F21: Has 4" layer (7-15) starting within 10" with hue of 7.5YR and matrix has value & chroma >2 or ≤4 with 10% distinct redox concentrations.
 Top 12" of surface has positive reaction with alpha, alpha-dipyridyl. The reagent is used to provide evidence that a soil is hydric.
 Weather: Sunny to Partly cloudy
 Landform: Microtopographic depression

DESCRIBED BY: SFS **DATE:** 6/2/2015





SOIL PROFILE DESCRIPTION

Client: KCI Associates of North Carolina, P.A. Date: June 2, 2015
Project: Sandy Bridge Farm Project #: 20157877
County: Rutherford State: NC
Location: 1356 Rock Road Rutherfordton, NC 28139 (35.4084557N/081.9375915W) Site/Lot: Boring # S-20
Soil Series: Chewacla
Soil Classification: Fine-loamy, mixed, active, thermic Fluvaquentic Dystrudepts
AWT: >20" SHWT: n/a Slope: 0-1% Aspect:
Elevation: Drainage: n/a Permeability: Moderate
Vegetation: Pasture Grasses
Borings terminated at 20 Inches

Table with 9 columns: HORIZON, DEPTH (IN), MATRIX, MOTTLES, TEXTURE, STRUCTURE, CONSISTENCE, BOUNDARY, NOTES. Rows include Ap1, Ap2, Ab1, Bw1 with detailed soil characteristics.

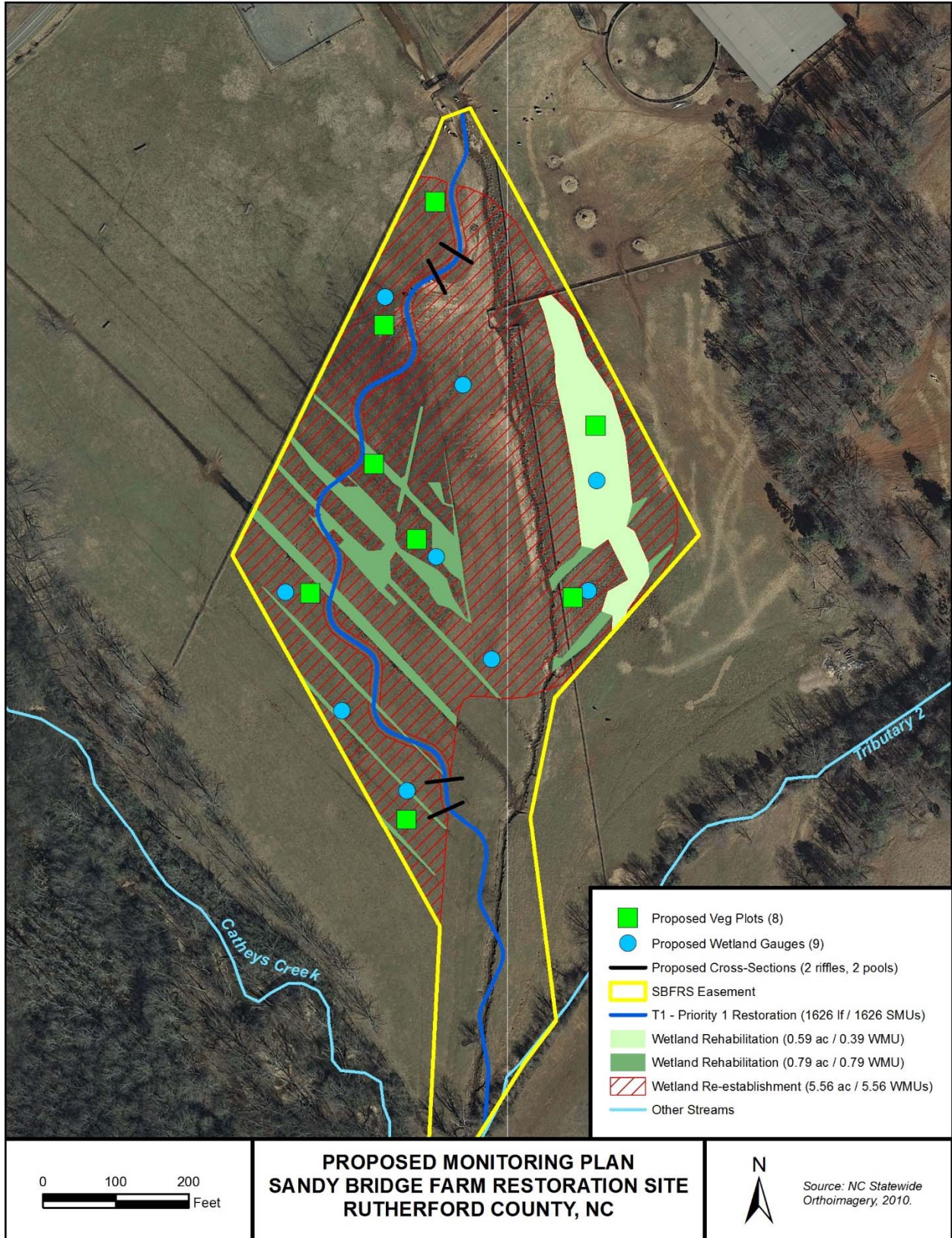
COMMENTS:

Remove spoil (0-2, 2-5 layers) and soil meets F8, F19 & F21
Meets Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region Indicator F8: Redox Depressions
F8: Closed Redox Depression subject to ponding with 2" layer entirely within the upper 6" with 5% redox concentrations in pore linings
Meets Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region Indicator F19: Piedmont Floodplain Soils
F19: Has 6" layer within 10" of soil surface with a matrix of 60% or more, chroma of less than 4 and 20% or more distinct redox concentrations as masses or PL.
Meets Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region Indicator F21: Red Parent Material
F21: Has 4" layer (5-12) starting within 10" with hue of 7.5YR and matrix has value & chroma >2 or <=4 with 10% distinct redox concentrations.
Top 12" of surface has positive reation with alpha, alpha-dipyridyl. The reagent is used to provide evidence that a soil is hydric.
Weather: Partly cloudy
Landform: Microtopographic depressions

DESCRIBED BY: SFS DATE: 6/2/2015



Proposed Monitoring Plan

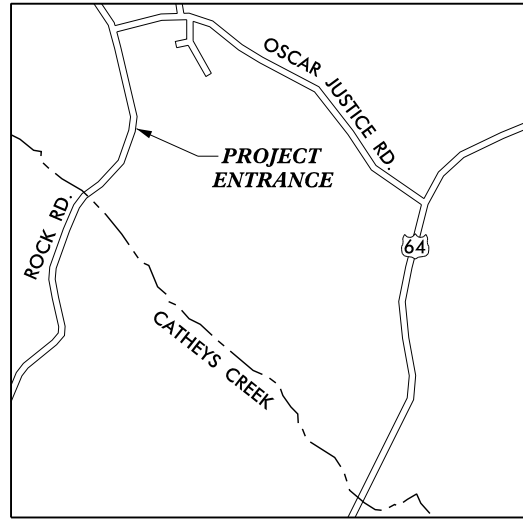


Appendix D. Project Plan Sheets

KCI JOB# : 20157877

STATE	DMS PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
N.C.	96920	1	11

REVISIONS	



**VICINITY MAP
NOT TO SCALE**

NCDEQ DIVISION OF MITIGATION SERVICES

SANDY BRIDGE FARM STREAM AND RIPARIAN WETLAND SITE

RUTHERFORD COUNTY, NORTH CAROLINA



INDEX OF SHEETS

- 1 TITLE SHEET
- 2 GENERAL NOTES & PROJECT LEGEND
- 3-4 DETAILS
- 5 SITE PLAN
- 6 TYPICAL CROSS-SECTION & PROFILE
- 7 PLANTING PLAN
- 8 BOUNDARY MARKING PLAN
- 9-11 EROSION CONTROL PLAN

	WETLAND RE-ESTABLISHMENT
	WETLAND REHABILITATION (1.5:1)
	WETLAND REHABILITATION (1:1)
	STREAM RESTORATION



SCO #:

DIRECTIONS TO SITE

From Raleigh, follow I-40 West for approximately 192 miles to exit 103, US-64 West/Burkemon Ave. Follow US-64 West for about 28 miles, then take a right onto Oscar Justice Road. Follow to Rock Road and take a left. Site entrance will be just up on left at 1362 Rock Road.

PROJECT DATA

	WETLAND RE-ESTAB. (1:1)	WETLAND REHAB. (1:1)	WETLAND REHAB. (1.5:1)	STREAM RESTORATION (1:1)
SANDY BRIDGE FARM CREDITS	5.56 AC./ 5.56 CR.	0.79 AC./ 0.79 CR.	0.59 AC./ 0.39 CR.	1626 FT./ 1626 CR.
LIMITS OF DISTURBANCE = 9.61 ACRES				

Prepared In the Office of:

ENGINEERS • PLANNERS • ECOLOGISTS
SUITE 220 LANDMARK CENTER II
4601 SIX FORKS RD., RALEIGH, NC

Prepared for: HARRY TSOMIDES DMS PROJECT MANAGER	Prepared by: GARY M. MRYNCA, PE PROJECT ENGINEER ALEX FRENCH PROJECT DESIGNER
LIN XU DMS REVIEW COORDINATOR	

PROJECT ENGINEER

SIGNATURE: _____ P.E.



GENERAL NOTES:

BEARINGS AND DISTANCES:
 ALL BEARINGS ARE NAD 1983 GRID BEARINGS.
 ALL DISTANCES AND COORDINATES SHOWN ARE HORIZONTAL (GROUND) VALUES.

UTILITY/SUBSURFACE PLANS:
 NO SUBSURFACE PLANS ARE AVAILABLE ON THIS PROJECT. EXISTING UNDERGROUND UTILITIES HAVE NOT BEEN VERIFIED.
 THE CONTRACTOR IS RESPONSIBLE FOR CONTACTING A UTILITY LOCATOR AND ESTABLISHING THE EXACT LOCATION OF ANY AND ALL EXISTING UTILITIES IN THE PROJECT REACH.

CONTROL POINTS

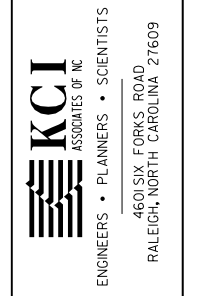
POINT	NORTHING	EASTING	ELEV
KCI#1	617465.59	1125031.23	882.58
KCI#2	617078.31	1125149.33	870.20
KCI#3	616313.52	1125176.28	866.26
KCI#4	616804.73	1125047.72	866.49
KCI#5	615954.68	1124912.81	864.75
KCI#6	617921.74	1125732.32	940.94
KCI#7	617874.25	1125977.49	946.96
KCI#8	616669.64	1125416.59	873.88

PROJECT LEGEND:

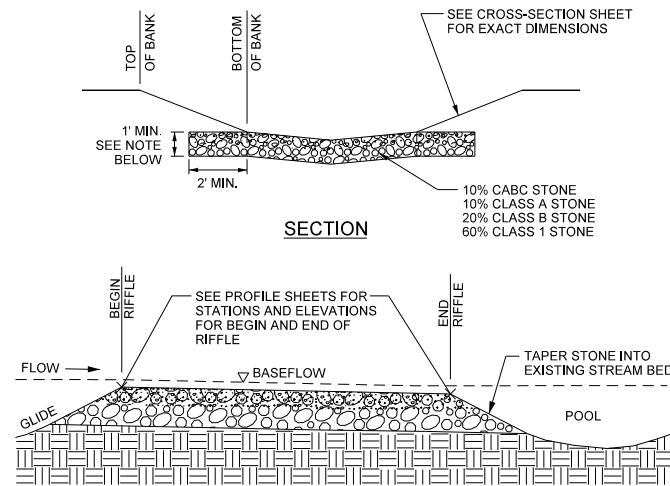
Proposed Thalweg w/Approximate Bankfull Limits		Existing Woods Line	
Proposed Step Pool		Single Tree	
Proposed Riffle Grade Control		Minor Contour Line	
Proposed Live Lift		Major Contour Line	
Proposed Riffle Enhancement		Floodplain Grading	
Proposed Channel Block			
Existing Channel to be Filled			

NO.	DATE	REVISIONS

NCDEQ DIVISION OF
 MITIGATION SERVICES

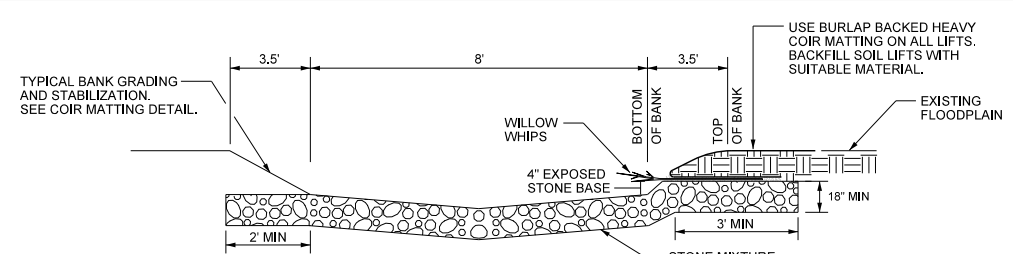


SANDY BRIDGE FARM
 STREAM AND RIPARIAN WETLAND SITE
 RUTHERFORD COUNTY, NORTH CAROLINA



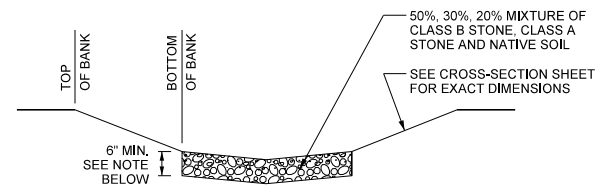
NOTE:
STONE INSTALLATION: START BY INSTALLING STONE MIXTURE. THEN ADD SURGE STONE TO FILL IN VOIDS. FINISH BY WASHING IN NATURAL STREAM MATERIAL TO OBTAIN FINAL GRADE.

RIFFLE GRADE CONTROL
SCALE: NTS



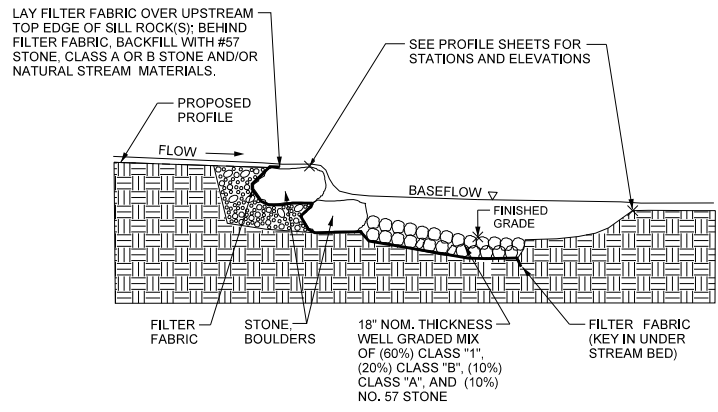
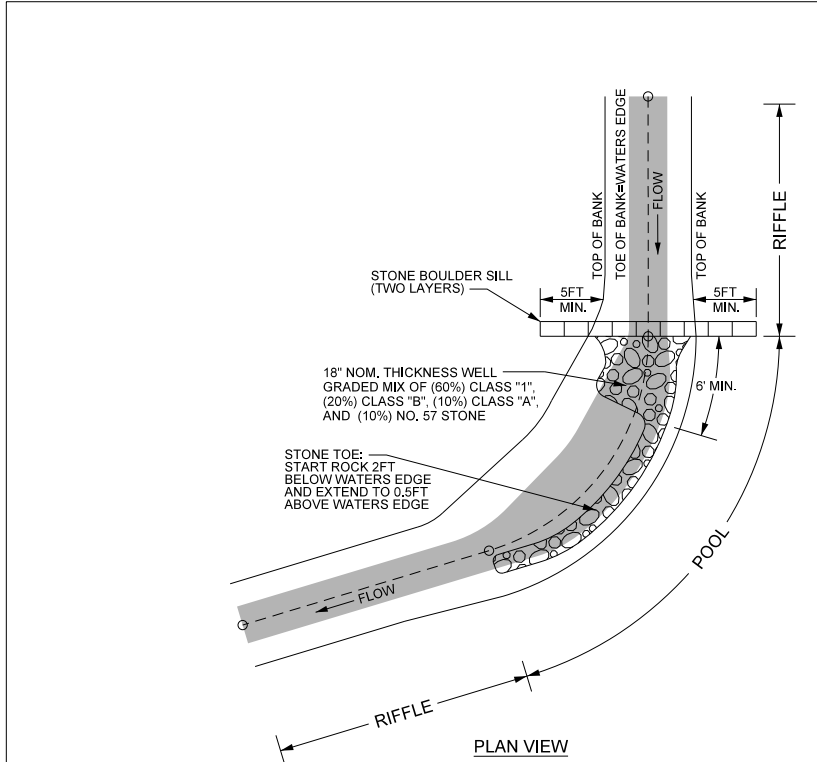
NOTES:
INSTALL LIVE WILLOW WHIPS WITH APPROX. 1 FOOT OF PLANT MATERIAL EXPOSED. MINIMUM LENGTH OF CUTTINGS SHALL BE 4'. SPACING BETWEEN CUTTINGS SHALL BE 2'. FILL VOIDS WITH SUITABLE SOIL.
USE BURLAP BACKED HEAVY COIR MATTING ON ALL LIFTS. BACKFILL SOIL LIFTS WITH SUITABLE MATERIAL.

RIFFLE GRADE CONTROL WITH LIVE LIFT DETAIL
SCALE: NTS



NOTE:
START BY INSTALLING CLASS B STONE AND CLASS A STONE MIXTURE. FINISH BY WASHING IN NATURAL STREAM MATERIAL TO OBTAIN FINAL GRADE.

RIFFLE ENHANCEMENT DETAIL
SCALE: NTS

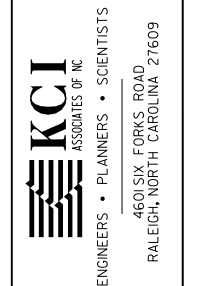


NOTES:
BOULDERS SHOULD BE NATIVE STONES OR SHOT ROCK, ANGULAR AND OBLONG, WITH AN AXIS APPROXIMATELY 3' L x 2' W x 1.5' D.
BOULDER SILLS TO EXTEND 5' MINIMUM INTO STREAM BANKS FOR STEP POOL STRUCTURES.
STONE INSTALLATION: START BY INSTALLING STONE MIXTURE. THEN ADD SURGE STONE TO FILL IN VOIDS. FINISH BY WASHING IN NATURAL STREAM MATERIAL TO OBTAIN FINAL GRADE.

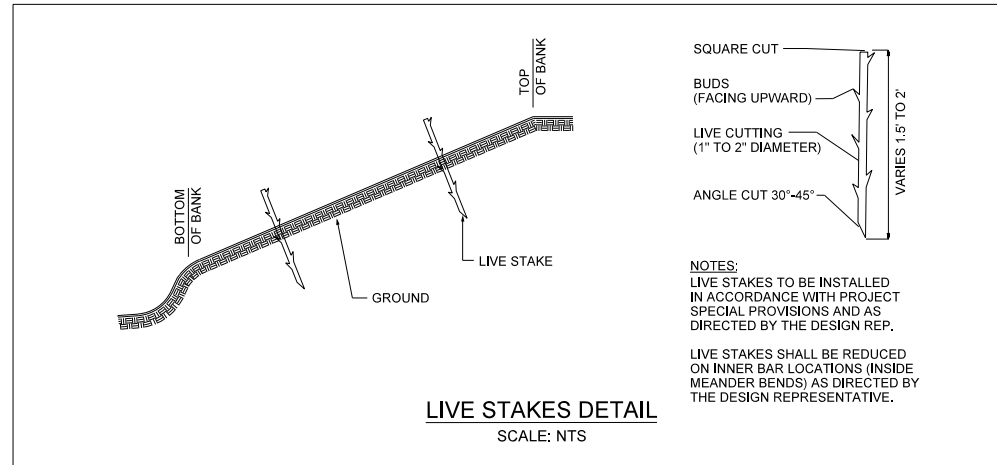
STEP POOL DETAIL
SCALE: NTS

SYMBOL	DESCRIPTION	REVISIONS

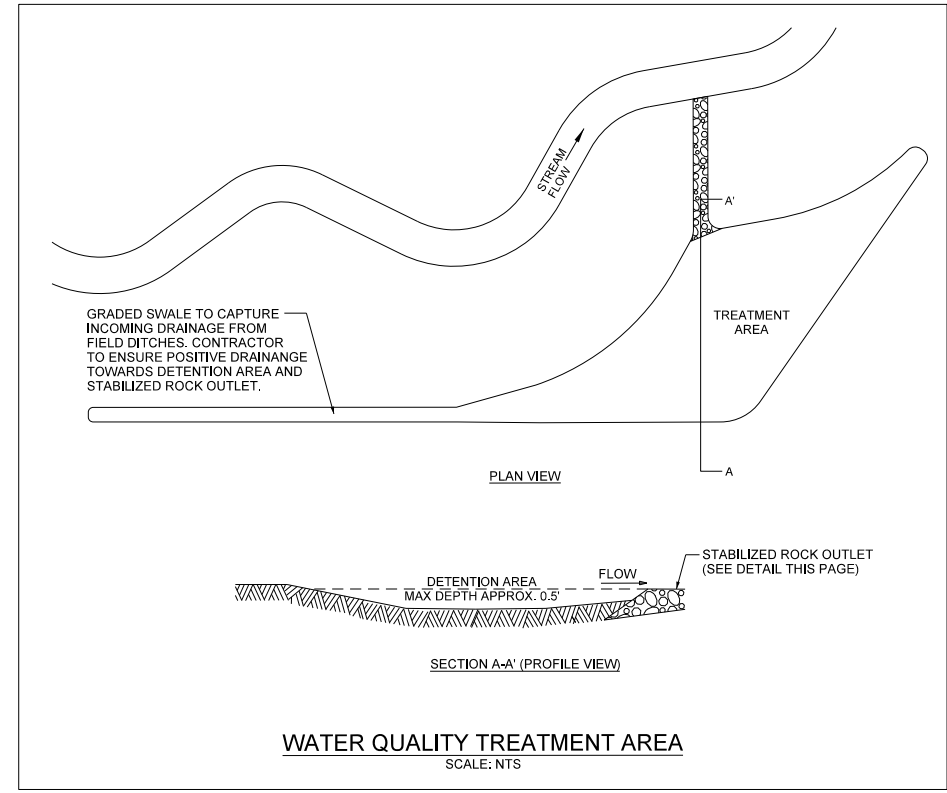
NCDEQ DIVISION OF MITIGATION SERVICES



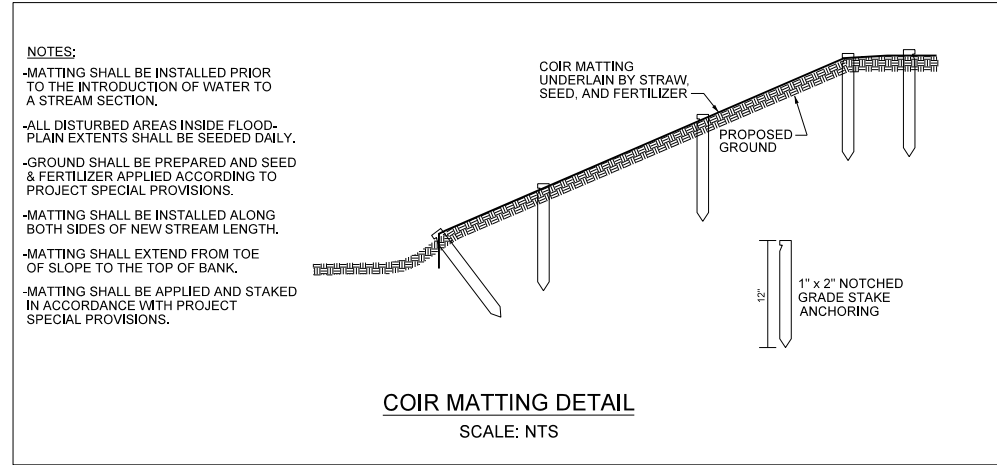
**SANDY BRIDGE FARM
STREAM AND RIPARIAN WETLAND SITE**
RUTHERFORD COUNTY, NORTH CAROLINA



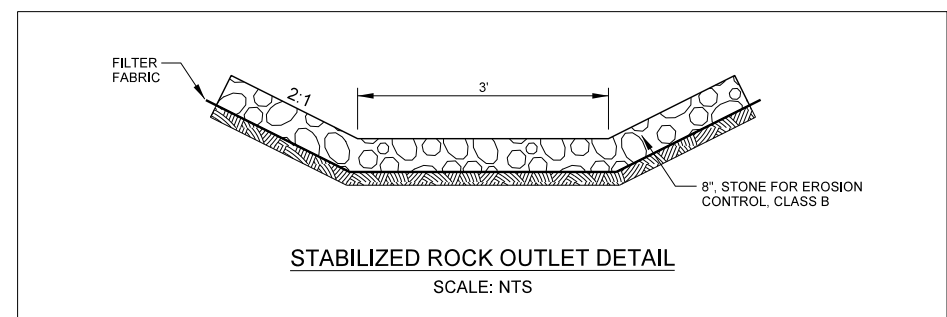
LIVE STAKES DETAIL
SCALE: NTS



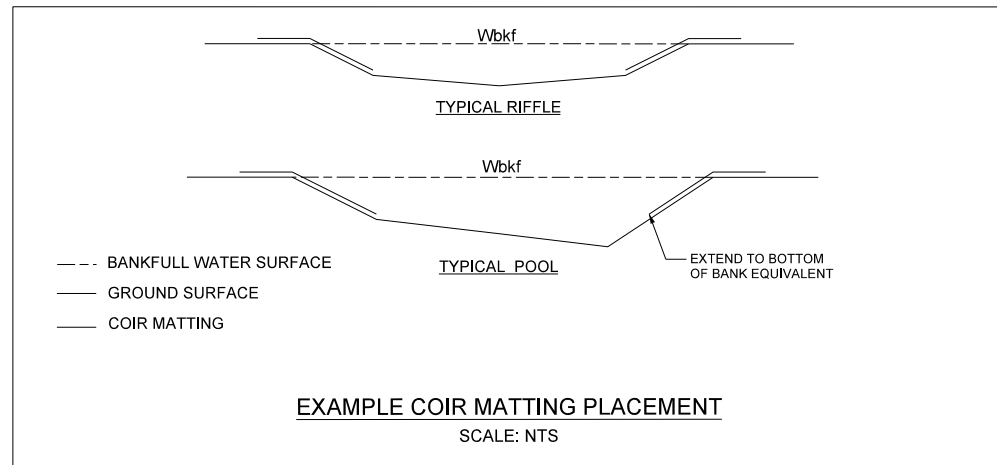
WATER QUALITY TREATMENT AREA
SCALE: NTS



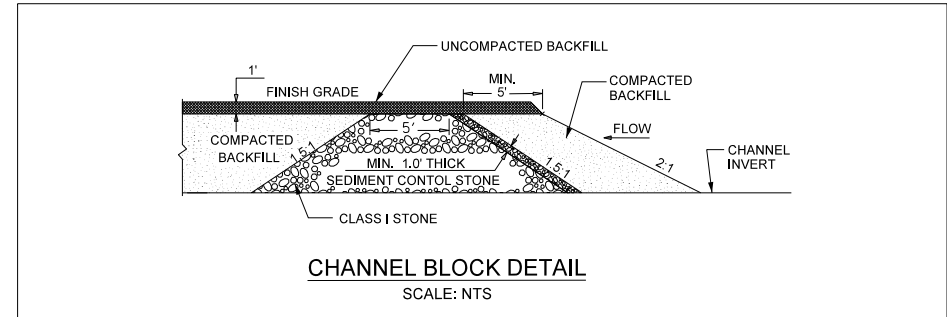
COIR MATTING DETAIL
SCALE: NTS



STABILIZED ROCK OUTLET DETAIL
SCALE: NTS

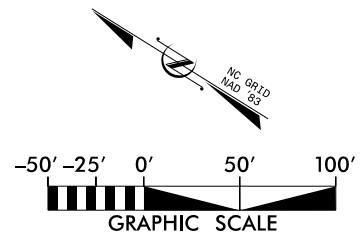
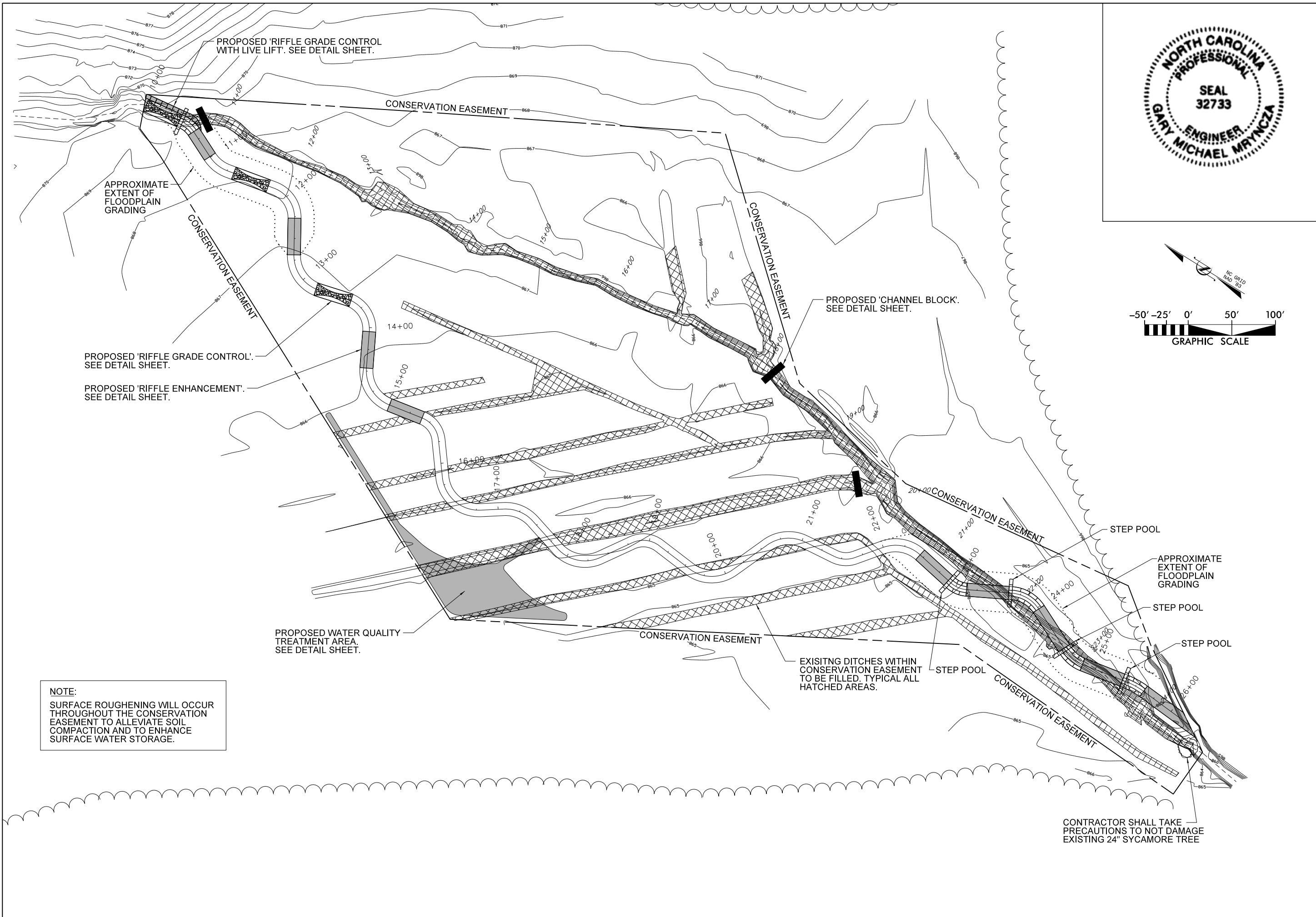


EXAMPLE COIR MATTING PLACEMENT
SCALE: NTS




CHANNEL BLOCK DETAIL
SCALE: NTS

DATE	FEB 2016
SCALE	N.T.S.
DETAILS	
SHEET	4 OF 11
SANDY BRIDGE FARM STREAM AND RIPARIAN WETLAND SITE	
RUTHERFORD COUNTY, NORTH CAROLINA	
 ENGINEERS • PLANNERS • SCIENTISTS 4601 SIX FORKS ROAD RALEIGH, NORTH CAROLINA 27609	
NCDEQ DIVISION OF MITIGATION SERVICES	
SYMBOL	REVISIONS

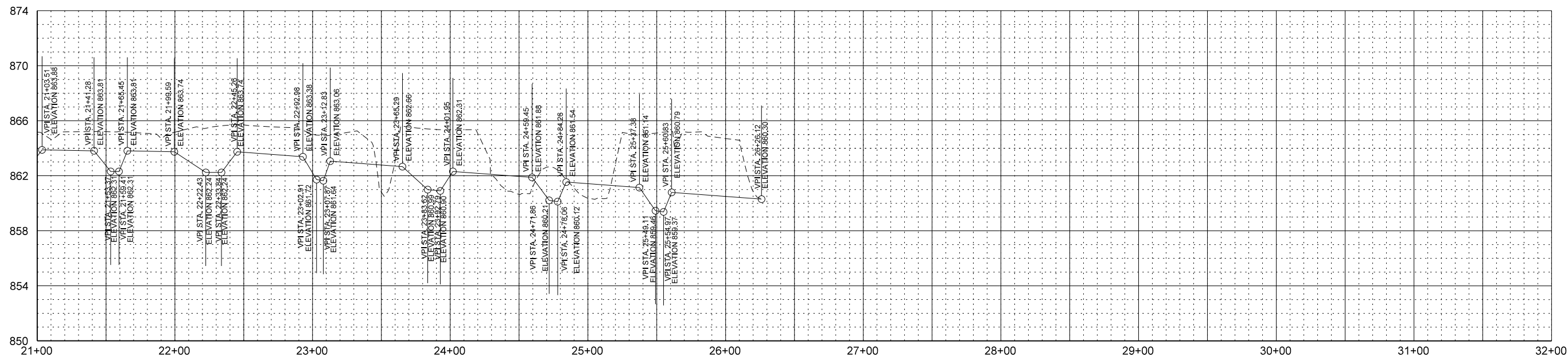
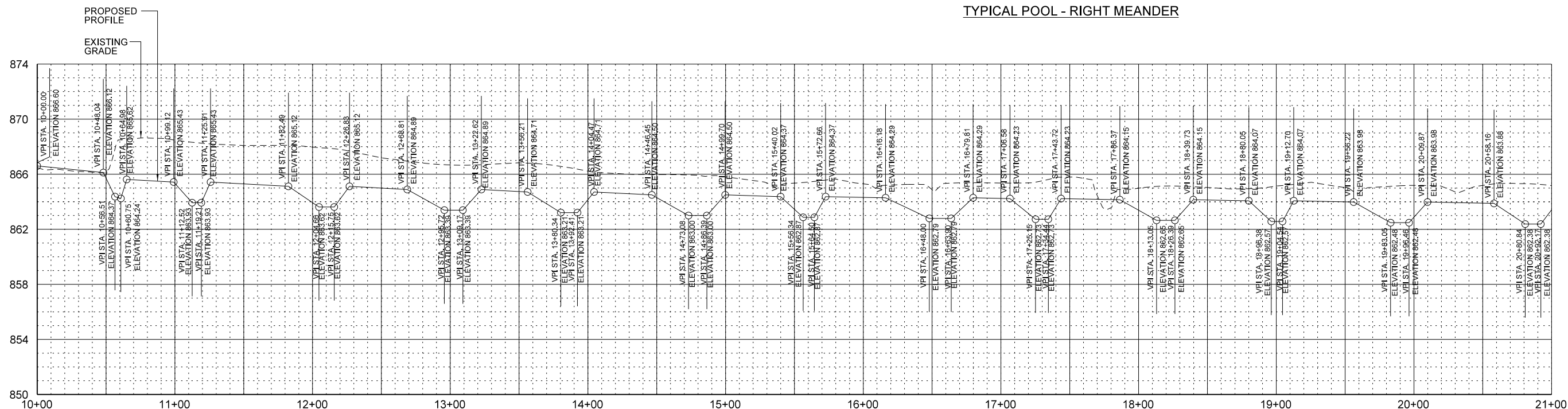
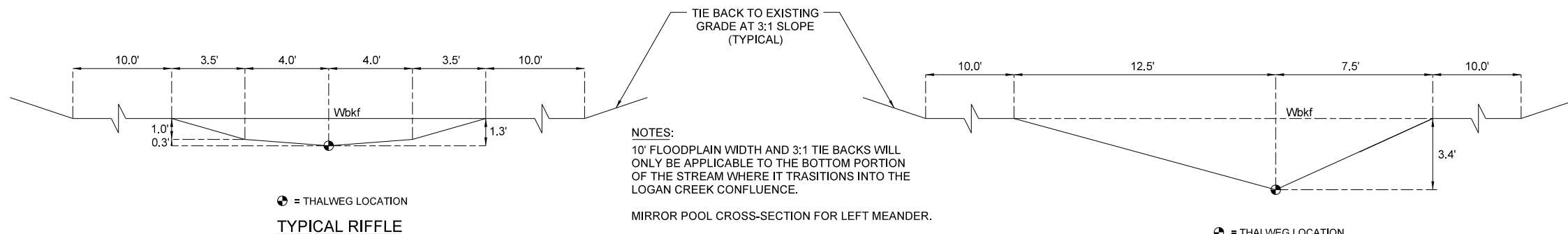


NOTE:
 SURFACE ROUGHENING WILL OCCUR THROUGHOUT THE CONSERVATION EASEMENT TO ALLEVIATE SOIL COMPACTION AND TO ENHANCE SURFACE WATER STORAGE.

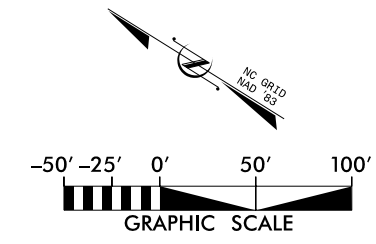
CONTRACTOR SHALL TAKE PRECAUTIONS TO NOT DAMAGE EXISTING 24" SYCAMORE TREE

DATE: FEB 2016	REVISIONS
SCALE: GRAPHIC	DESCRIPTION
	SYMBOL
	DATE
 KCI ASSOCIATES OF NC ENGINEERS • PLANNERS • SCIENTISTS 4601 SIX FORKS ROAD RALEIGH, NORTH CAROLINA 27609	
NCDEQ DIVISION OF MITIGATION SERVICES	
SANDY BRIDGE FARM STREAM AND RIPARIAN WETLAND SITE RUTHERFORD COUNTY, NORTH CAROLINA	
SITE PLAN	
SHEET 5 OF 11	

TRIBUTARY 1
STATION 10+00 TO STATION 26+26
"C4" STREAM TYPE



DATE: FEB 2016	SYMBOL	REVISIONS
SCALE: 1"=40'	DESCRIPTION	
TYPICAL CROSS-SECTION & PROFILE		
SHEET 6 OF 11		
KCI ASSOCIATES OF NC ENGINEERS • PLANNERS • SCIENTISTS 4601 SIX FORKS ROAD RALEIGH, NORTH CAROLINA 27609		
SANDY BRIDGE FARM STREAM AND RIPARIAN WETLAND SITE RUTHERFORD COUNTY, NORTH CAROLINA		
NCDEQ DIVISION OF MITIGATION SERVICES		



STREAM ZONE

STREAM ZONE
LIVE STAKES: 1.5' TO 2' LENGTHS, 1/2" TO 2" DIAMETER,
2 ROWS AT 3' CENTER SPACING, RANDOM SPECIES PLACEMENT

COMMON NAME	SCIENTIFIC NAME
BLACK WILLOW	SALIX NIGRA
SILKY WILLOW	SALIX SERICEA
SILKY DOGWOOD	CORNUS AMOMUM

NOTE: NO SINGLE LIVE STAKING SPECIES SHALL COMPOSE MORE THAN 40% OF THE TOTAL NUMBER OF LIVE STAKES TO BE INSTALLED.

RIPARIAN ZONE

PIEDMONT ALLUVIAL FOREST PLANTING ZONE = 8.88 ACRES
12" - 18" BARE ROOT MATERIAL
968 STEMS/ACRE (9' X 5' SPACING), RANDOM SPECIES PLACEMENT

COMMON NAME	SCIENTIFIC NAME	STATUS	% OF TOTAL	# OF PLANTS
RED CHOKEBERRY	ARONIA ARBUTIFOLIA	FACW	3	260
RIVER BIRCH	BETULA NIGRA	FACW	9	770
SUGARBERRY	CELTIS LAEVIGATA	FACW	6	520
BUTTONBUSH	CEPHALANTHUS OCCIDENTALIS	OBL	6	520
SILKY DOGWOOD	CORNUS AMOMUM	FACW	5	430
AMERICAN PERSIMMON	DIOSPYROS VIRGINIANA	FAC	4	340
GREEN ASH	FRAXINUS PENNSYLVANICA	FACW	8	690
WITCH HAZEL	HAMAMELIS VIRGINIANA	FACU	3	260
WINTERBERRY	ILEX VERTICILLATA	FACW	3	260
SPICEBUSH	LINDERA BENZOIN	FAC	4	340
YELLOW POPLAR	LIRIODENDRON TULIPIFERA	FACU	7	600
AMERICAN SYCAMORE	PLATANUS OCCIDENTALIS	FACW	8	690
COTTONWOOD	POPULUS DELTOIDES	FAC	6	520
SWAMP CHESTNUT OAK	QUERCUS MICHAUXII	FACW	9	770
CHERRYBARK OAK	QUERCUS PAGODA	FACW	7	600
WILLOW OAK	QUERCUS PHELLOS	FAC	6	520
AMERICAN ELM	ULMUS AMERICANA	FACW	6	520

8,610

NO.	DATE	DESCRIPTION	REVISIONS

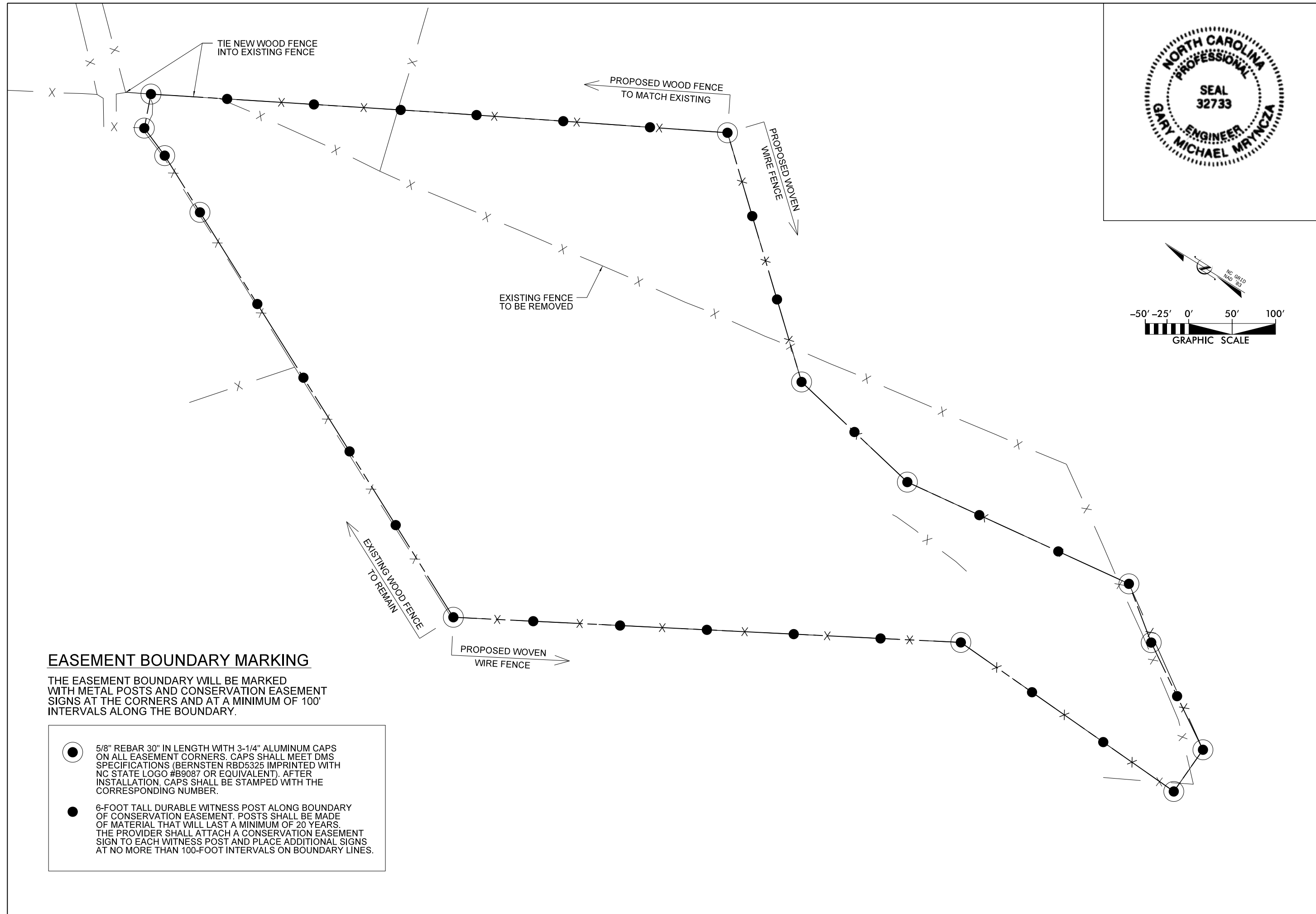
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4601 SIX FORKS ROAD
RALEIGH, NORTH CAROLINA 27609

SANDY BRIDGE FARM
STREAM AND RIPARIAN WETLAND SITE
RUTHERFORD COUNTY, NORTH CAROLINA

DATE: APRIL 2016
SCALE: GRAPHIC

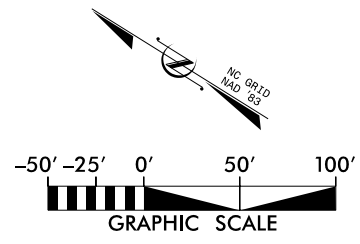
PLANTING PLAN



EASEMENT BOUNDARY MARKING

THE EASEMENT BOUNDARY WILL BE MARKED WITH METAL POSTS AND CONSERVATION EASEMENT SIGNS AT THE CORNERS AND AT A MINIMUM OF 100' INTERVALS ALONG THE BOUNDARY.

- 5/8" REBAR 30" IN LENGTH WITH 3-1/4" ALUMINUM CAPS ON ALL EASEMENT CORNERS. CAPS SHALL MEET DMS SPECIFICATIONS (BERNSTEN RBD5325 IMPRINTED WITH NC STATE LOGO #B9087 OR EQUIVALENT). AFTER INSTALLATION, CAPS SHALL BE STAMPED WITH THE CORRESPONDING NUMBER.
- 6-FOOT TALL DURABLE WITNESS POST ALONG BOUNDARY OF CONSERVATION EASEMENT. POSTS SHALL BE MADE OF MATERIAL THAT WILL LAST A MINIMUM OF 20 YEARS. THE PROVIDER SHALL ATTACH A CONSERVATION EASEMENT SIGN TO EACH WITNESS POST AND PLACE ADDITIONAL SIGNS AT NO MORE THAN 100-FOOT INTERVALS ON BOUNDARY LINES.



DATE: FEB 2016	REVISIONS
SCALE: GRAPHIC	DESCRIPTION
NCDEQ DIVISION OF MITIGATION SERVICES	
 KCI ASSOCIATES OF NC ENGINEERS • PLANNERS • SCIENTISTS 4601 SIX FORKS ROAD RALEIGH, NORTH CAROLINA 27609	
SANDY BRIDGE FARM STREAM AND RIPARIAN WETLAND SITE RUTHERFORD COUNTY, NORTH CAROLINA	
BOUNDARY MARKING PLAN	
SHEET 8 OF 11	