STREAM DEBRIS REMOVAL CONTRACTORS:

Notice is hereby given that Pamlico County is soliciting contractors and professional firms to perform the removal of stream debris in the following waterways:

GROUP 1	**GROUP 2**	**GROUP 3**
Sasses Branch	Beard Creek	Whitehurst Creek
Deep Run	East Prong	Chapel Creek
Unnamed Tributary #3	Cedar Gut	Smith Creek
	Lower Duck Creek	

Please reference the enclosed project documents:

- Groupings and Streams Description
- Group/Project Maps
- Scope of Work
- Woody Debris Removal Guidelines titled "Incremental Effects of Large Woody Debris Removal on Physical Aquatic Habitat".
- StRAP "Debris Removal & Processing Recommendations"
- Project Bid Sheet

Work must be completed according to the Woody Debris Removal Guidelines, starting on page B-1, of the attached document titled "Incremental Effects of Large Woody Debris Removal on Physical Aquatic Habitat".

Removed woody debris must be placed a minimum of **30 feet** from the edge of the stream and on the same side that it originated and cabled to ensure securement as required in the attached document titled StRAP "Debris Removal & Processing Recommendations" on page 2.

PROJECT TIME FRAME:

Target start date: November 11, 2024
Required completion date (all stream segments): December 31, 2026

Bids must be submitted on the enclosed Project Bid Sheet. Bids must be submitted for all project groups (1 – 3) and each individual stream segment within the three groups. Bids must clearly state the total price for completing each individual stream segment within each group, NOT a price per linear foot. Lengths referenced in project documents and maps are approximate and will not be used to determine payment or project completion.

Bids must also include documentation of prior stream debris removal experience, reference letters, equipment list, and proof of liability insurance.

The County reserves the right to reject any and all bids.

INSURANCE AND INDEMNITY. To the fullest extent permitted by laws and regulations, CONTRACTOR shall indemnify and hold harmless the COUNTY and its officials, agents, and employees from and against all claims, damages, losses, and expenses, direct, indirect, or consequential (including but not limited to fees and charges of engineers or architects, attorneys, and other professionals and costs related to court action or arbitration) arising out of or resulting from CONTRACTOR'S performance of this Contract or the actions of the CONTRACTOR or its officials, employees, or contractors under this Contract or under contracts entered into by the CONTRACTOR in connection with this Contract. This indemnification shall survive the termination of this Contract.

In addition, CONTRACTOR shall comply with the North Carolina Workers' Compensation Act and shall provide for the payment of workers' compensation to its employees in the manner and to the extent required by such Act. Contractor shall also maintain Employers' Liability insurance limits of not less than $1,000,000 per accident and $1,000,000 each employee for injury by disease. Additionally, CONTRACTOR shall maintain, at its expense, the following minimum insurance coverage:

$1,000,000 per occurrence /$2,000,000 aggregate - Bodily Injury Liability, and $1,000,000 - per occurrence/S 1,000,000 annual aggregate - Commercial General Liability $100,000 - Property Damage Liability, or $1,000,000 per occurrence /$2,000,000 aggregate-Combined Single Limit Bodily Injury and Property Damage.

The CONTRACTOR shall maintain during the life of this contract automobile/vehicle liability insurance. Such coverage shall be written on a comprehensive form covering owned, non-owned and leased vehicles. Unless otherwise specified, this coverage shall be written providing liability limits at least in the amount of $1,000,000.

CONTRACTOR, upon execution of this Contract, shall furnish to the COUNTY a Certificate of Insurance reflecting the minimum limits stated above. The Certificate shall provide for thirty (30) days advance written notice in the event of a decrease, termination, or cancellation of coverage. Providing and maintaining adequate insurance coverage is a material obligation of the CONTRACTOR. All such insurance shall meet all laws of the State of North Carolina. Such insurance coverage shall be obtained from companies that are authorized to provide such coverage and that are authorized by the Commissioner of Insurance to do business in North Carolina. The CONTRACTOR shall at all times comply with the terms of such insurance policies, and all requirements of the insurer under any such insurance policies, except as they may conflict with existing North Carolina laws or this Contract. The limits of coverage under each insurance policy maintained by the CONTRACTOR shall not be interpreted as limiting the CONTRACTOR'S liability and obligations under the Contract.

Project Bid Sheets must be received by 5:00 pm on November 6, 2024. Send project bid sheets to, Pamlico Soil and Water Conservation District, 13724 Highway 55 East B, Bayboro, NC 28515.

Questions about this project should be directed to Sabra Cahoon at 252-745-5064 x3.

PAMLICO COUNTY STREAM DEBRIS REMOVAL PROJECT
GROUPINGS and STREAMS DESCRIPTION

***Actual creeks to be completed and actual distance to be completed will be determined by the Board based on funding.**

GROUP 1

• **Sasses Branch, Deep Run, Unnamed Tributary #3**– Work will consist of removal of un-marked debris from the stream channels. These areas may be designated as fish spawning or primary nursery areas. Project areas are as follows; *Sasses Branch* - from its junction with Highway 55 to GPS coordinates 35° 7'41.15"N 76°57'36.83"W. *Deep Run*- from its junction with Highway 55 to GPS coordinates 35° 7'35.73"N 76°56'53.11"W. *Unnamed Tributary #3*- from its junction with Chair Road to coordinates 35° 6'57.65"N 76°55'47.08"W.

GROUP 2

•**Beard Creek, East Prong, Cedar Gut, Lower Duck Creek** – Work will consist of removal of un-marked debris from the stream channels. These areas may be designated as fish spawning or primary nursery areas. Project areas for these streams are as follows; *Beard Creek* – from junction with Roberts Road to its junction with Scott Town Road. *East* Prong – from the junction of Scott Town Road to GPS coordinates 35° 2'42.17"N 76°51'48.08"W. *Cedar* Gut – from the junction of Neuse Road to GPS coordinates 35° 2'55.83"N 76°50'36.64"W. Lower *Duck Creek*- from the junction with Goose Creek Road to GPS coordinates 35° 1'46.81"N 76°53'38.68"W.

GROUP 3

• **Whitehurst Creek, Chapel Creek, Smith Creek**– Work will consist of removal of un-marked debris from the stream channels. These areas may be designated as fish spawning or primary nursery areas. Project area for these streams are as follows; *Whitehurst Creek* – from junction with Highway 304 GPS coordinates 35° 9'59.51"N 76°43'52.97"W. *Chapel Creek*—From junction with Highway 304 to GPS coordinates 35°10'22.65"N 76°42'59.09"W. *Smith Creek*—From junction with Highway 304 to GPS coordinates 35°10'46.77"N 76°41'41.69"W and GPS coordinates 35°11'0.70"N 76°41'33.99"W.

SCOPE OF WORK

The CONTRACTOR will complete stream debris removal activities which include cutting and removing woody and non-woody debris from the targeted stream channels which impede or potentially impedes water flow. Woody debris may include downed trees, broken tops/limbs and floating debris. Non-woody debris may include any object or material which impedes or potentially impedes water flow.

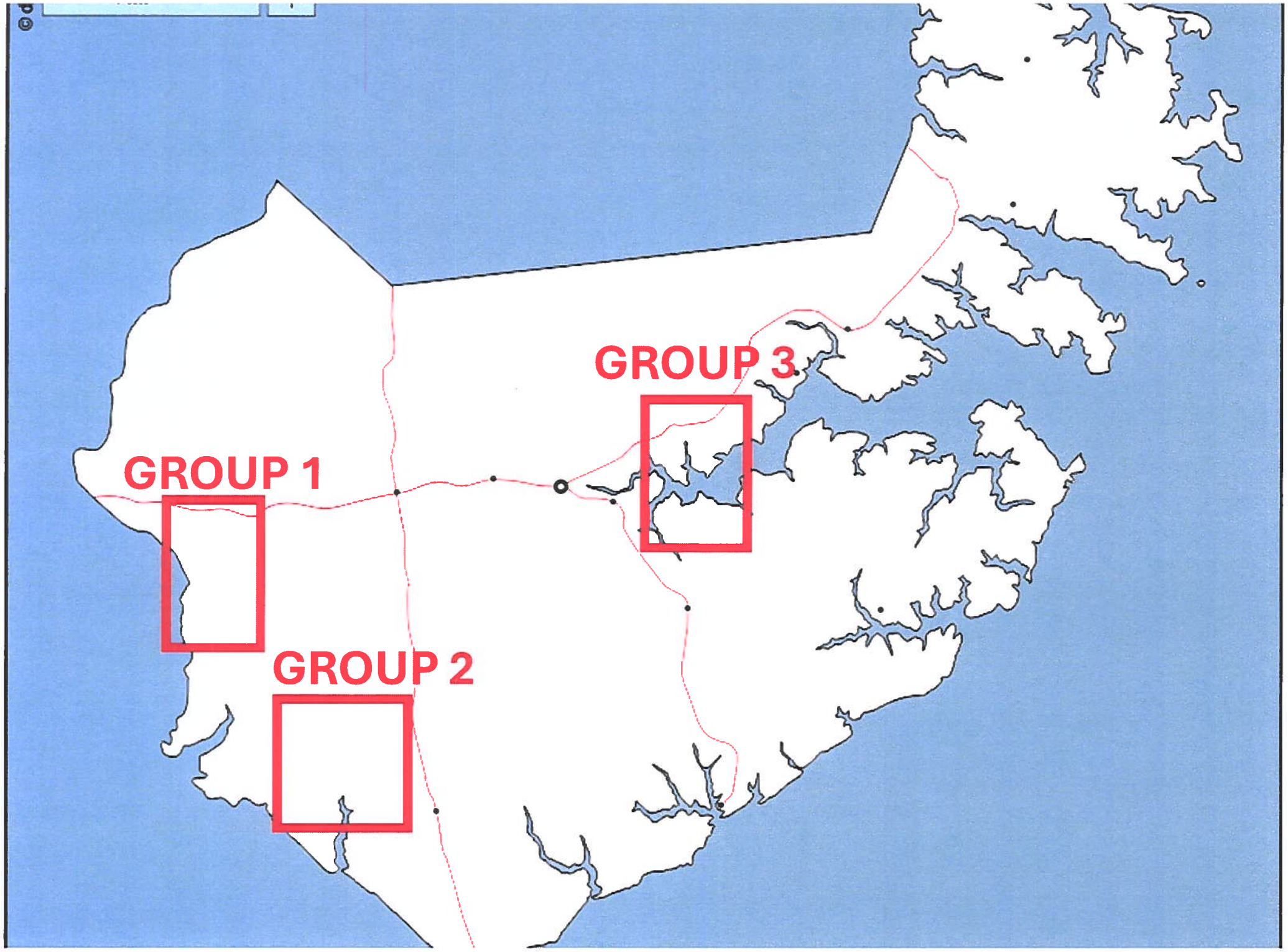
Woody material removed from the stream channel will be placed on the adjoining land, a minimum of 30 feet away from the stream bank and cabled to ensure securement. If possible, removed debris should be placed on the same side that it originated. Non-woody material must be hauled out and disposed of offsite. Pamlico County will provide instructions on where to dispose of this type of material.

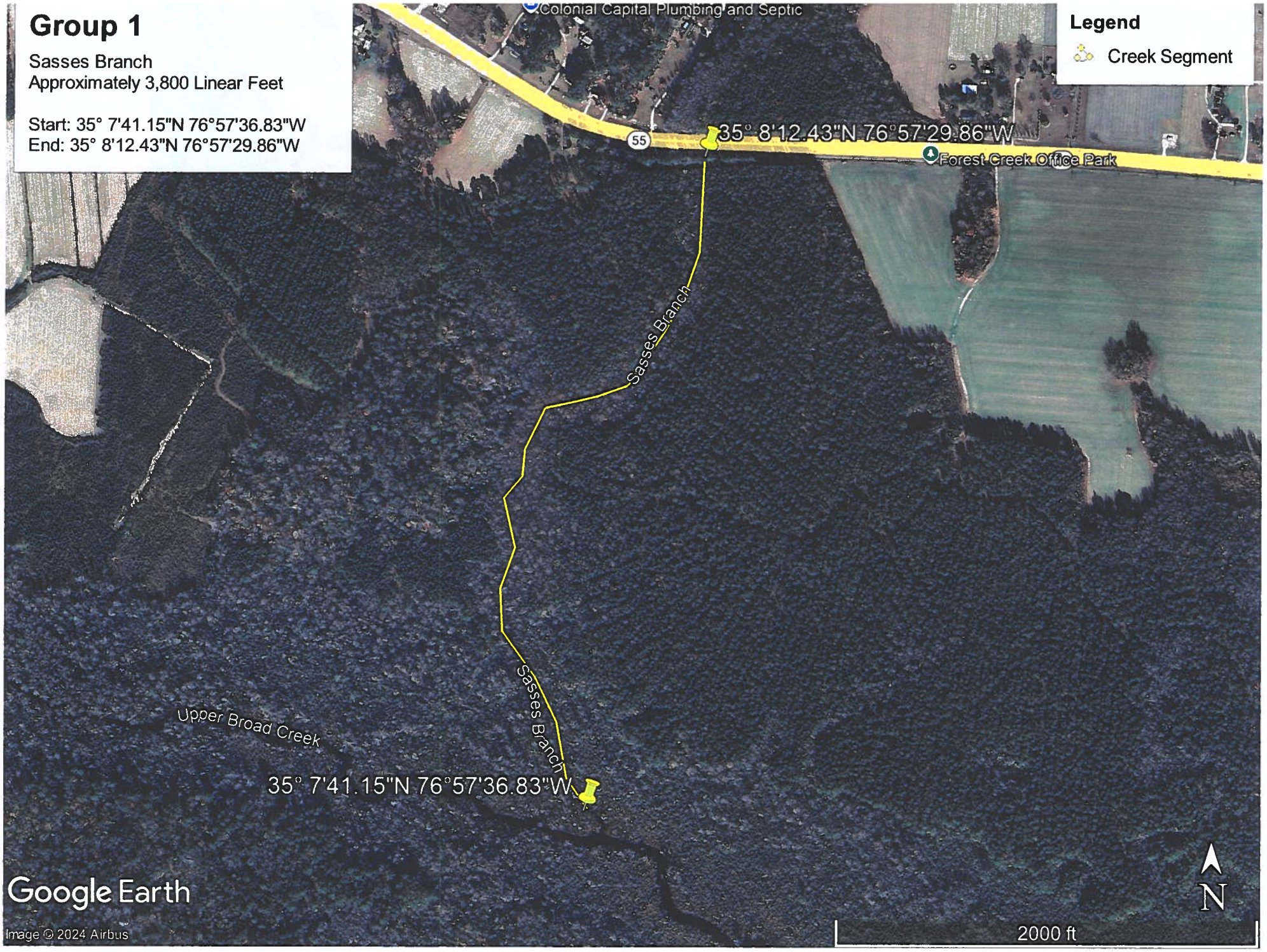
Removal of woody material will be in accordance with the Woody Debris Removal Guidelines starting on page B1 of the document titled "Incremental Effects of Large Woody Debris Removal on Physical Aquatic Habitat".

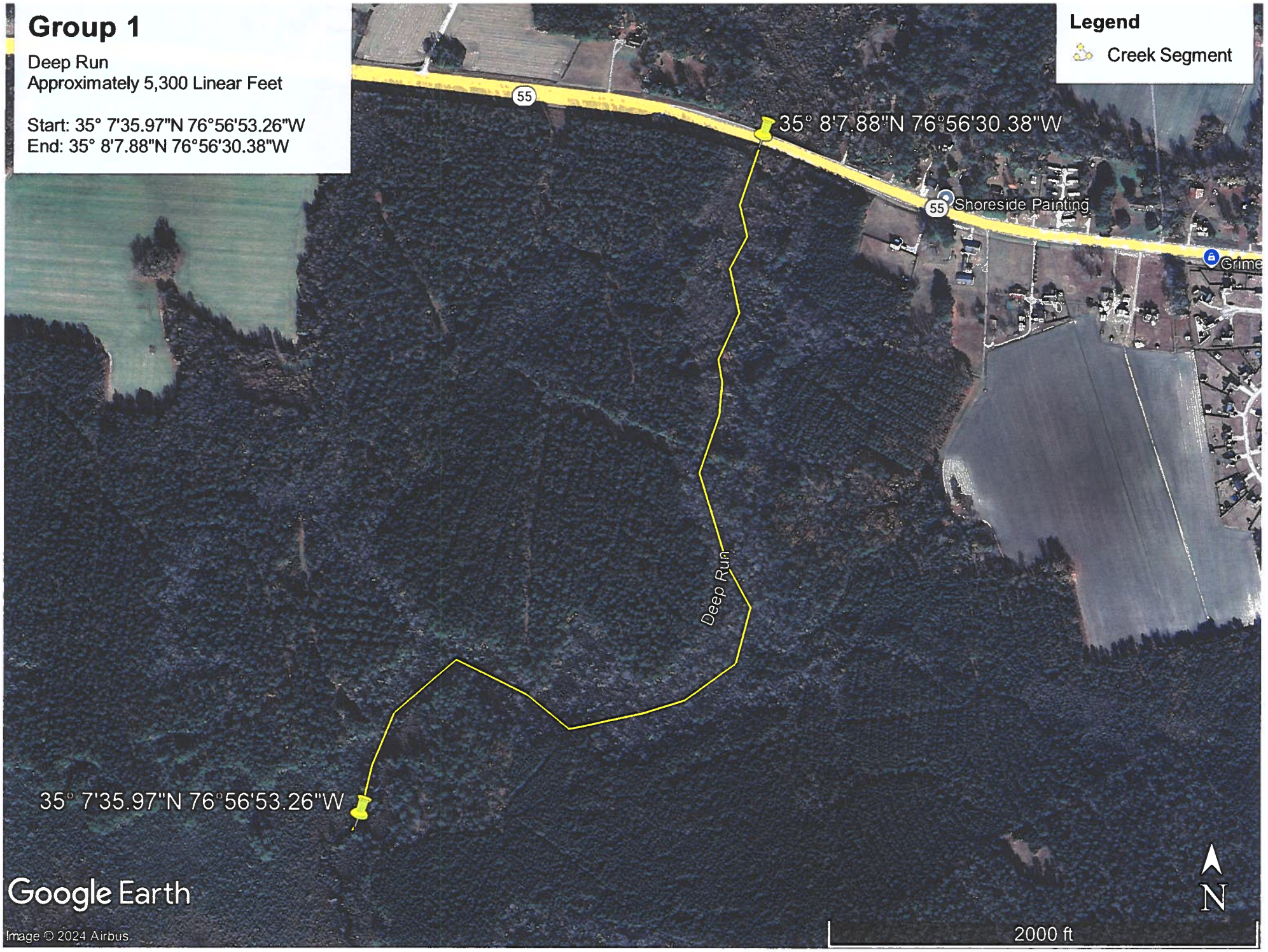
The CONTRACTOR will be responsible for compliance with any applicable federal, state, or local laws during the course of this project and will secure any required permits before beginning work.

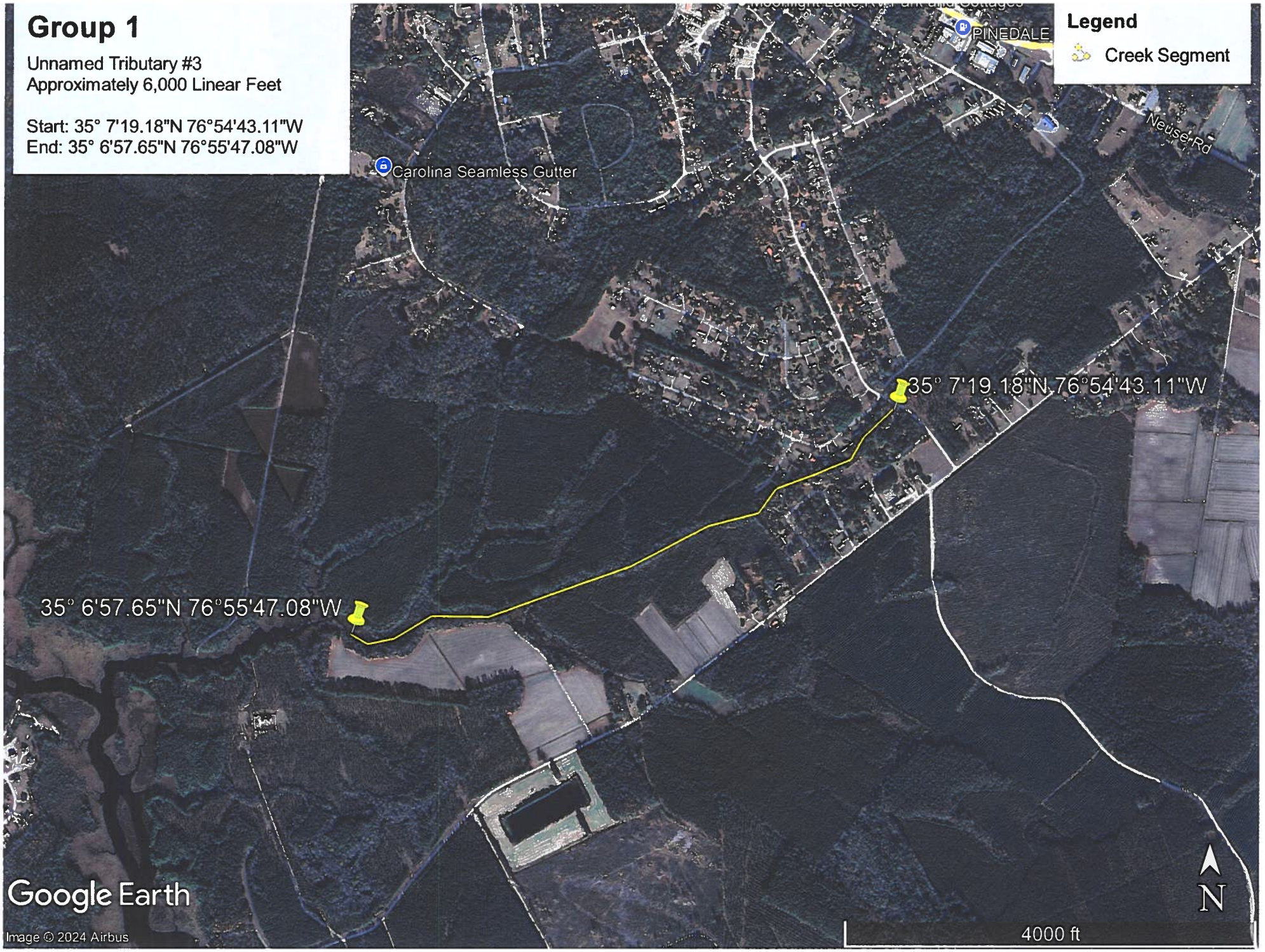
CONTRACTOR will be required to enter into a Service Agreement with Pamlico County prior to start of any work.

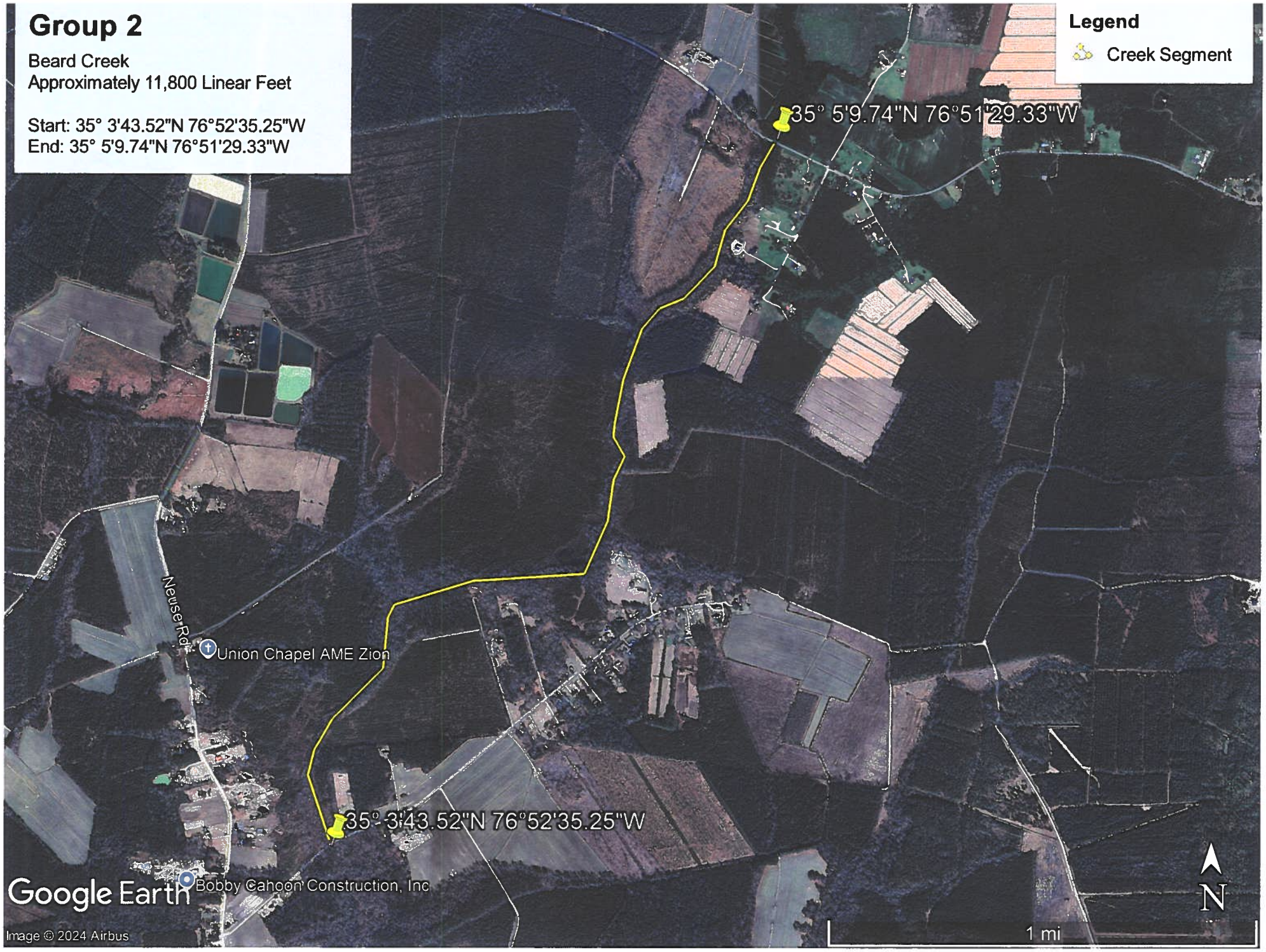
Pamlico County staff will conduct regular site visits to ensure the quality of work performed. Pamlico County will not release payment to the CONTRACTOR until the completed work has been approved by Pamlico County staff and by state inspectors assigned by the North Carolina Department of Agriculture and Consumer Services.


GROUP 3
GROUP 1
GROUP 2


Group 1
Sasses Branch
Approximately 3,800 Linear Feet
Start: 35° 7'41.15"N 76°57'36.83"W
End: 35° 8'12.43"N 76°57'29.86"W
Legend
Creek Segment
Colonial Capital Plumbing and Septic
55
35° 8'12.43"N 76°57'29.86"W
Forest Creek Office Park
Sasses Branch
Sasses Branch
Upper Broad Creek
35° 7'41.15"N 76°57'36.83"W
Google Earth
Image © 2024 Airbus
N
2000 ft


Group 1
Deep Run
Approximately 5,300 Linear Feet
Start: 35° 7'35.97"N 76°56'53.26"W
End: 35° 8'7.88"N 76°56'30.38"W
Legend
Creek Segment
55
35° 8'7.88"N 76°56'30.38"W
55
Shoreside Painting
Grime
Deep Run
35° 7'35.97"N 76°56'53.26"W
Google Earth
Image © 2024 Airbus
N
2000 ft


Group 1
Unnamed Tributary #3
Approximately 6,000 Linear Feet
Start: 35° 7'19.18"N 76°54'43.11"W
End: 35° 6'57.65"N 76°55'47.08"W
Legend
Creek Segment
PINEDALE
Carolina Seamless Gutter
Neuse Rd
35° 7'19.18"N 76°54'43.11"W
35° 6'57.65"N 76°55'47.08"W
Google Earth
Image © 2024 Airbus
N
4000 ft


Group 2
Beard Creek
Approximately 11,800 Linear Feet
Start: 35° 3'43.52"N 76°52'35.25"W
End: 35° 5'9.74"N 76°51'29.33"W
Legend
Creek Segment
35° 5'9.74"N 76°51'29.33"W
Neuse Rd
Union Chapel AME Zion
35° 3'43.52"N 76°52'35.25"W
Bobby Canoon Construction, Inc
Google Earth
Image © 2024 Airbus
N
1 mi


Group 2
East Prong
Approximately 16,700 Linear Feet
Start: 35° 2'42.17"N 76°51'48.08"W
End: 35° 5'7.97"N 76°50'55.38"W
Legend
Creek Segment
35° 5'7.97"N 76°50'55.38"W
Neuse Rd
Union Chapel AME Zion
Pamlico Community College
Bobby Cahoon Construction, Inc
306
35° 2'42.17"N 76°51'48.08"W
Google Earth
Image © 2024 Airbus
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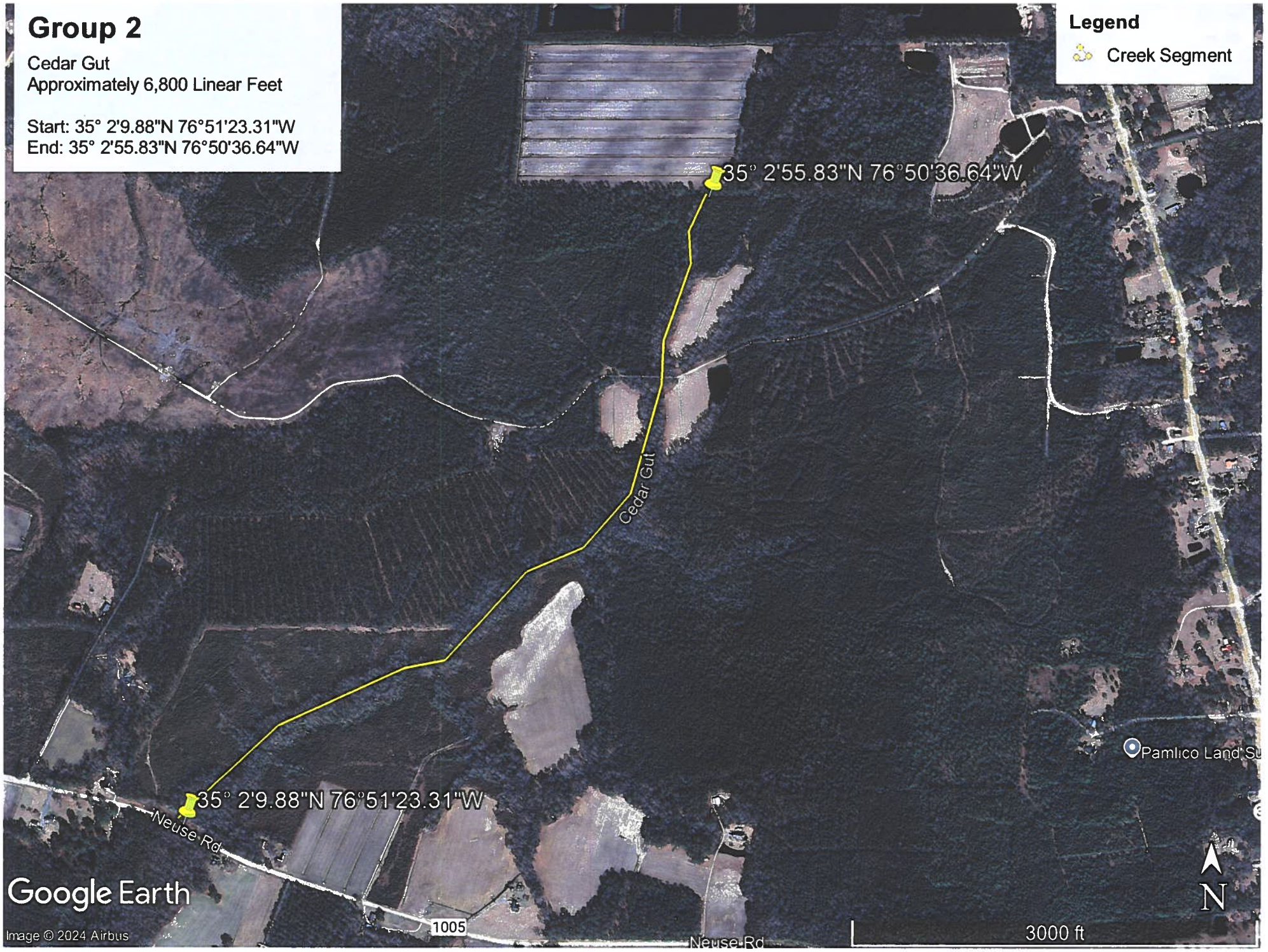
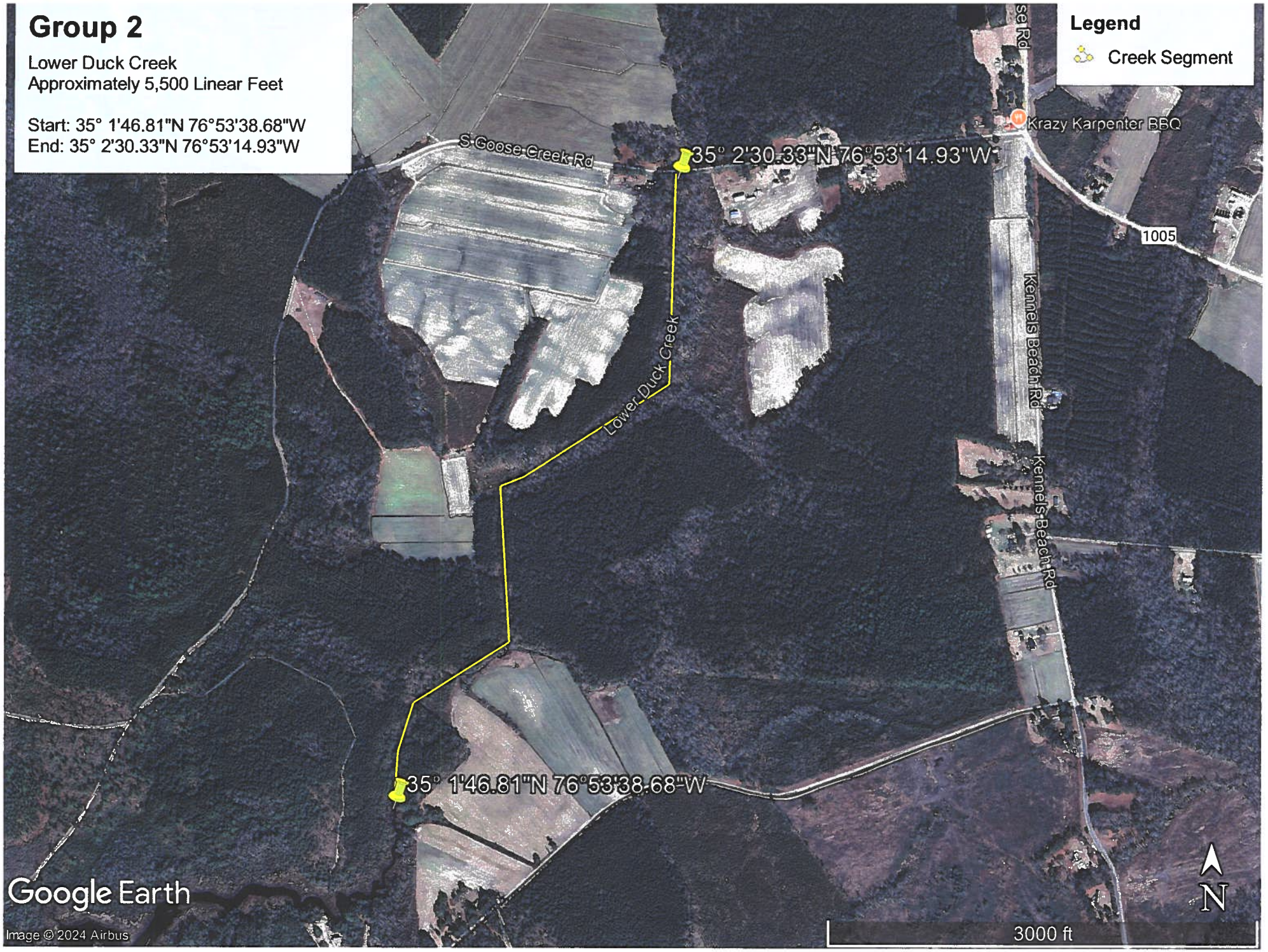
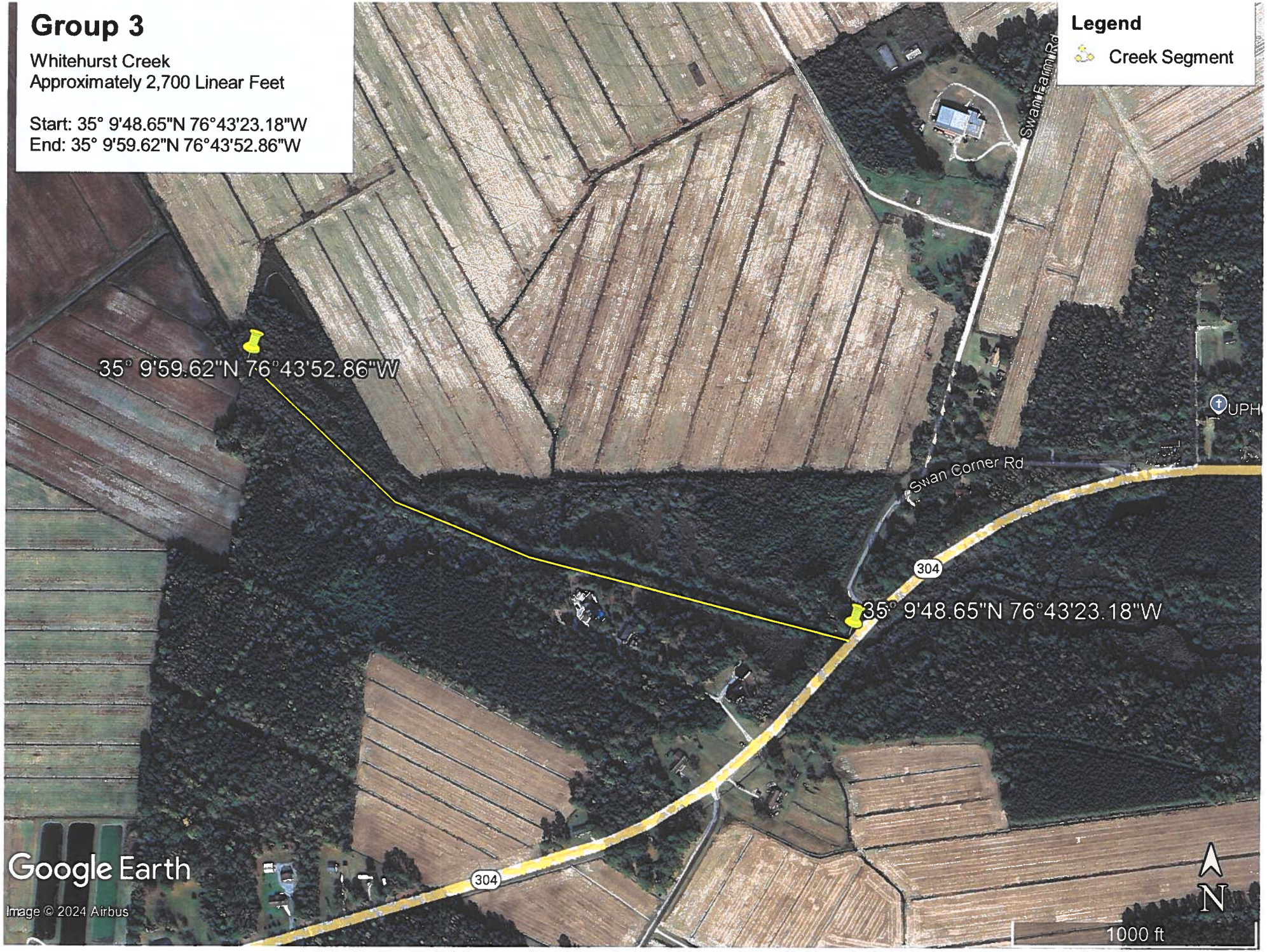
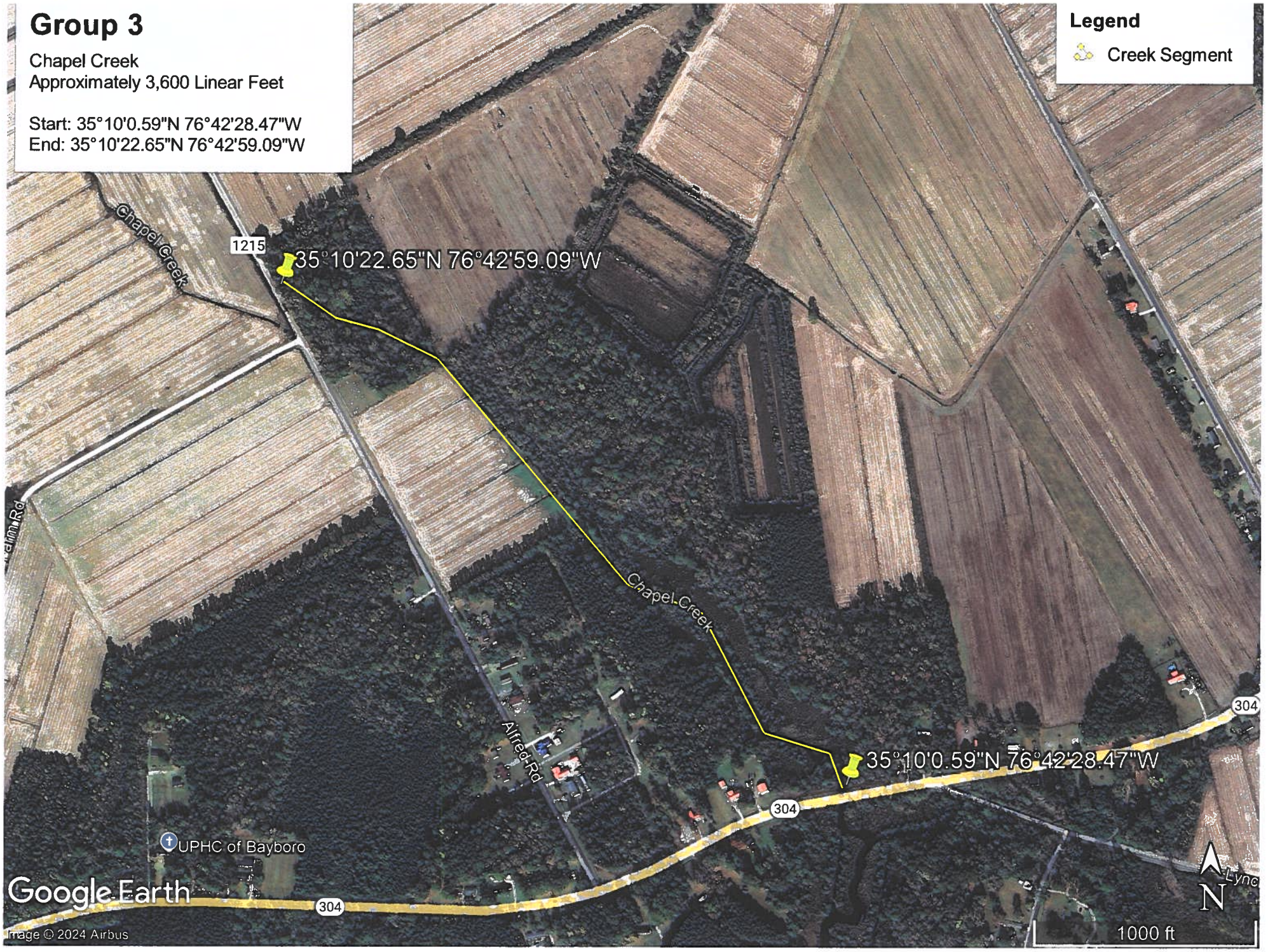

Group 2
Cedar Gut
Approximately 6,800 Linear Feet
Start: 35° 2'9.88"N 76°51'23.31"W
End: 35° 2'55.83"N 76°50'36.64"W
Legend
Creek Segment
35° 2'55.83"N 76°50'36.64"W
Cedar Gut
35° 2'9.88"N 76°51'23.31"W
Neuse Rd
Pamlico Land Su
Google Earth
Image © 2024 Airbus
1005
Neuse Rd
3000 ft
N


Group 2
Lower Duck Creek
Approximately 5,500 Linear Feet
Start: 35° 1'46.81"N 76°53'38.68"W
End: 35° 2'30.33"N 76°53'14.93"W
Legend
Creek Segment
S Goose Creek Rd
35° 2'30.33"N 76°53'14.93"W
Krazy Karpenter BBQ
1005
Kennels Beach Rd
Lower Duck Creek
35° 1'46.81"N 76°53'38.68"W
Google Earth
Image © 2024 Airbus
N
3000 ft

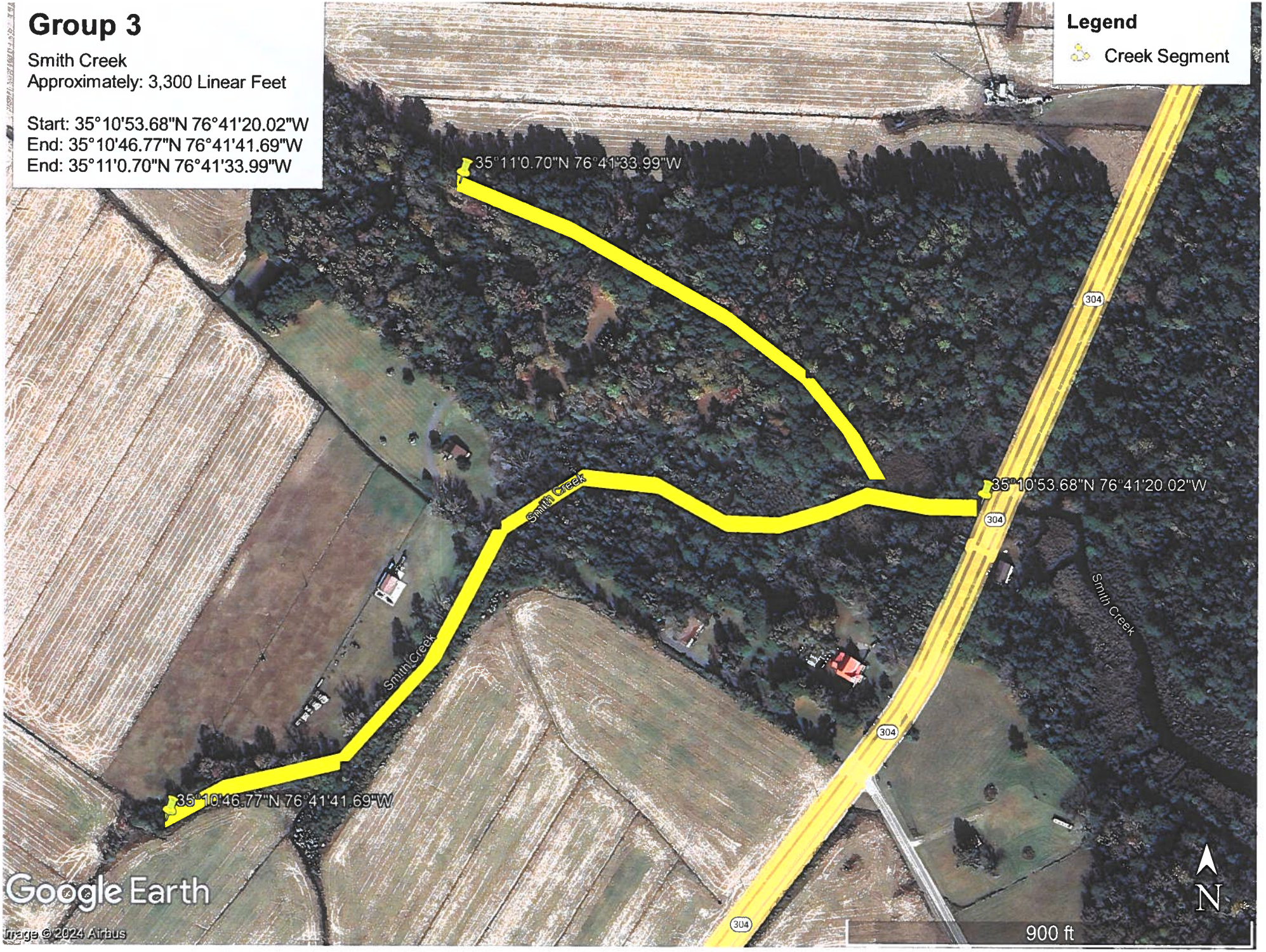

Group 3
Whitehurst Creek
Approximately 2,700 Linear Feet
Start: 35° 9'48.65"N 76°43'23.18"W
End: 35° 9'59.62"N 76°43'52.86"W
Legend
Creek Segment
35° 9'59.62"N 76°43'52.86"W
35° 9'48.65"N 76°43'23.18"W
Swan Corner Rd
304
Google Earth
Image © 2024 Airbus
N
1000 ft

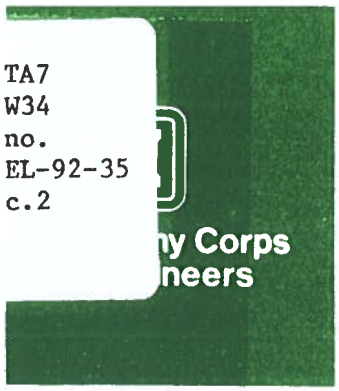

Group 3
Chapel Creek
Approximately 3,600 Linear Feet
Start: 35°10'0.59"N 76°42'28.47"W
End: 35°10'22.65"N 76°42'59.09"W
Legend
Creek Segment
Chapel Creek
1215
35°10'22.65"N 76°42'59.09"W
Chapel Creek
Alfred Rd
35°10'0.59"N 76°42'28.47"W
304
304
304
UPHC of Bayboro
Google Earth
Image © 2024 Airbus
N
1000 ft

Group 3

Smith Creek
Approximately: 3,300 Linear Feet

Start: 35°10'53.68"N 76°41'20.02"W
End: 35°10'46.77"N 76°41'41.69"W
End: 35°11'0.70"N 76°41'33.99"W





ENVIRONMENTAL IMPACT RESEARCH PROGRAM

TECHNICAL REPORT EL-92-35

INCREMENTAL EFFECTS OF LARGE WOODY DEBRIS REMOVAL ON PHYSICAL AQUATIC HABITAT

by

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Environmental Laboratory

DEPARTMENT OF THE ARMY
Waterways Experiment Station, Corps of Engineers
3909 Halls Ferry Road, Vicksburg, Mississippi 39180-6199

November 1992

Final Report

Prepared for DEPARTMENT OF THE ARMY
US Army Corps of Engineers
Washington, DC 20314-1000

Under EIRP Work Unit 32555

PART V: SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary

LWD plays an important role as a component of aquatic habitat. Although LWD enters food webs as it decays, the major importance of debris lies in its structural characteristics and the way it influences channel flow patterns. Physical processes associated with debris in streams include the formation of pools and retention of fine sediment and organic matter.

Awareness of the adverse effects of complete LWD removal on channel stability and aquatic habitat has led to the development of guidelines for selective removal of LWD as a means of balancing habitat and conveyance objectives. These guidelines (Appendix A) involve the use of manual labor and small equipment to remove only the LWD that causes significant flow obstruction. Removal of bank vegetation and disturbance to stream habitats is minimized. Personnel within some Corps districts have already completed or are in the process of classifying the streams under their jurisdiction according to these guidelines. Use of these guidelines for project planning and design requires quantification of the hydraulic and environmental impacts of incremental LWD removal.

In this study, a simple method for quantifying LWD density and computing associated friction factors was developed and tested using data collected during an LWD removal project on the South Fork Obion River in western Tennessee. Physical conditions of both cleared and uncleared stream reaches were measured by collecting three types of data: LWD density, dye tracer tests (for computing reach mean hydraulic parameters), and physical habitat (depth, velocity, bed type, and cover) at selected transects. The LWD density was the important independent variable, while the dye tracer and physical habitat data were used to study macroscale and microscale effects of LWD, respectively. Macroinvertebrate samples were also collected at low flow conditions, and the results are presented in a companion report to this study (Payne and Miller in preparation).

Conclusions

Removal of LWD from the study reach decreased near-bank-full friction factor by about one third. Impacts on physical aquatic habitat at base flow

were measurable and statistically significant, even though the Stream Obstruction Removal Guidelines (IAFWA 1983) were applied throughout project planning and implementation. Benefits of proposed LWD removal projects should be carefully analyzed in light of costs and environmental impacts. Findings of this study generally agreed with work by others in different types of streams. The simple procedure developed in this study for quantifying LWD density and its effect on channel resistance may be used for environmental impact assessment and hydraulic engineering analyses. Considerable refinement and site-specific adaptation may be in order, however. The method for prediction of channel roughness coefficients does not account for local losses because of bends or flow expansion and contraction at bridges, debris dams, or riffles.

Recommendations

To refine the methodology used in this study, additional data should be collected from two more stream LWD removal projects. Streams with higher LWD density and different types of bed sediment from that encountered in this study would be preferable. Physical data should be collected over a range of flows varying from normal low-flow to bank-full conditions. Concurrent biological data should be collected at base flow. Data should be collected to document preproject and postproject conditions. Investigation of additional methods of determining LWD density, such as using video recorders or low altitude aerial photography to count and measure the LWD formations, is recommended.

APPENDIX B: BEST MANAGEMENT PRACTICES (BMPs) FOR SELECTIVE CLEARING AND SNAGGING*

Trees and brush that shade streams and stabilize the banks should not be disturbed. In new channel construction, existing trees and brush should be left in place along the tops of banks. No stream work, including bank clearing and excavation or removal of materials, "snags," or other channel obstructions, should be allowed except at specific locations where significant blockages in streams occur. Channel excavation and snag removal should be accomplished with the minimum streambank clearing needed to provide access to the stream and should not be undertaken unless it is absolutely necessary. The following BMPs prescribe the manner in which snag removal and stream channel clearing should be undertaken:

a. Practices for snagging.

(1) Logjam removal. Only those log accumulations that are obstructing flows to a degree that results in flooding or significant ponding or sediment deposition should be removed.

(2) Removal of other logs.

- Affixed logs. Isolated or single logs should not be disturbed if they are embedded, jammed, rooted, or waterlogged in the channel or the floodplain, if they are not subject to displacement by current, and if they are not presently blocking flows. Generally, embedded logs that are parallel to the channel are not considered to cause blockage problems and should not be removed. Affixed logs that are crossways to the flow of waters in the channel and are trapping debris to the extent that could result in significant flooding or sedimentation may be removed.
- Free logs. All logs that are not rooted, embedded, jammed, or sufficiently waterlogged to resist movement by stream currents may be removed from the channel.

(3) Protecting riparian vegetation. No rooted trees, whether alive or dead, should be cut unless:

- They are leaning over the channel at an angle greater than 30 deg of vertical and they are dead or severely undercut, or damaged root systems are relying upon adjacent vegetation for support and it appears they will fall into the channel within 1 year and create blockage to flows; or
- Their removal from the floodplain is required to secure access for equipment to a point where a significant blockage has been selected for removal.

---

* Source: State of New York (1986). The citation for this reference is included with those following the main text of this report.

Trees selected for removal should be cut well above the base, leaving the stump and roots undisturbed. Procedures for removing the felled portion should be the same as for other logs as discussed below.

(4) Equipment for log removal. First consideration should be given to the use of hand-operated equipment to remove log accumulations. When the use of hand-operated equipment is infeasible, vehicular equipment should be used in accordance with the following guidelines:

- Water-based equipment (e.g., a crane or winch mounted on a small, shallow draft barge or other vessel) should be used for removing material from the stream. A small crawler tractor with winch or similar equipment may be used to remove debris from the channel to selected disposal points.
- When stream conditions are inadequate for the use of water-based equipment, the smallest feasible equipment with tracking systems that minimize ground disturbance should be specified for use. Larger equipment may be employed from nonwooded areas where cables could be stretched down to the channel to drag out materials to be removed.
- Access routes for equipment should be selected to minimize disturbance to existing floodplain vegetation, particularly in the riparian zone. Equipment should be selected which will require little or no tree removal in forested areas.

(5) Log disposal practices. All logs or trees designated for removal from a stream or floodplain should be removed or secured in such a manner as to preclude their reentry into the channel by floodwaters. Generally, they should be transported well away from the channel and floodway and positioned parallel to the stream channel so as to reduce flood flow impediment. When large numbers of logs are removed at one location (e.g., logjams), their use for firewood may be most appropriate. Burying of removed material should not be permitted.

b. Practices for stream channel clearing.

(1) Small debris accumulation. Small debris accumulations should be left undisturbed unless they are collected around a log or blockage that should be removed. (Small debris accumulations will not constitute a significant blockage to flows. Upon removal of logs and other blockages under these BMPs and the following completion of the project, the changed water velocities will remove and disperse these small debris accumulations so that no significant blockage of water flows will result.)

(2) Removal of sediment and soils. Major sediment plugs in the channel may be removed if they are presently blocking the channel to a degree that results in ponding and dispersed overland flow through poorly defined or nonexistent channels and, in the opinion of appropriate experts, will not be removed by natural stream or river forces after logs and other obstructions have been removed.

(3) Disposal of spoil material. Conventional excavating equipment may be required for sediment blockages. This equipment should be employed in a manner which will minimize environmental damages as follows:

- Access routes for equipment should be selected to minimize disturbance to existing floodplain vegetation, particularly in the riparian zone.
- Material disposal and necessary tree removal should be limited to one side of the original channel at any given location.
- To the maximum extent possible, excavating equipment should not be employed in the stream channel bed.
- Where feasible, excavated materials should be removed from the floodplain. If floodplain disposal is the only feasible alternative, the spoil material should be placed on the highest practical elevation and no material should be placed in any tributary or distributary channels which provide for ingress and egress of waters to and from the floodplain.
- No continuous spoil pile should be created. It is suggested that no pile exceed 50 ft in length or width and a gap of equal or greater length should be left between adjacent spoil piles.
- Spoil piles should be constructed as high as sediment properties allow.
- The placement of spoil material around the bases of mature trees should be avoided where possible.
- All disturbed areas should be reseeded or replanted with plant species which will stabilize soils and benefit fish and wildlife. Revegetation should be in accordance with County Soil and Water Conservation District recommendations.
- All disturbed areas should be reseeded or replanted with plant species which will stabilize soils and benefit fish and wildlife. Revegetation should be in accordance with County Soil and Water Conservation District recommendations.

Streamflow Rehabilitation Assistance Program

Debris Removal & Processing Recommendations

§ 139-65. Streamflow Rehabilitation Assistance Program, the authorizing legislation for StRAP, states that *"The Commission shall ensure that debris removed from streams with funds provided under this Article are either removed from the 100-year floodplain or processed in such a manner that the debris would not pose a risk of blockage or significant impairment of normal streamflow during a subsequent flood event."*

The Soil & Water Conservation Commission has determined that processing of debris may include any of the following activities:

- Chipping
- Cabling or strapping in a secured manner outside the immediate stream area (minimum of 30 ft. from top of the stream bank)
- Burning (Must comply with all required State Forest Service permits and only under appropriate Air Quality conditions)
- Other processing options approved by the Commission

Removal from the floodplain

- Debris removed from the stream can be hauled away from the floodplain. Debris can be loaded directly into a truck for removal or debris can be floated to a location appropriate for its removal from the stream or floodplain.
- Debris can be removed to a landfill (grantees should confirm that the landfill accepts woody debris), another property, or to another location on the same property as long as it is outside of the floodplain and landowner has granted permission for the debris to be deposited on the site.
- Equipment used for hauling debris from the floodplain should be used in a manner that minimizes the impact to the banks of the stream. Boat mounted equipment may be an effective option for accessing stream debris. Tracked or wheeled equipment should be kept out of the stream channel and may be employed from the bank by using a manipulator arm or cables to drag debris out of the stream channel.[1]
- If garbage (such as wooden construction materials) is contributing to blockages in the stream, it can be removed from the stream and disposed outside of the floodplain.

Chipping or Burning Debris

Debris can be left in the floodplain if it has been chipped or burned so that it does not pose a risk of contributing to future blockages if it is washed back into the stream. Wood chips can be left on site or hauled away.

- Wood chips can be placed on the floodplain starting at the top of the bank. Wood chips should not be placed below the top of the bank or in channels that drain from the floodplain into the stream.[2]

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[1] NRCS Clearing and Snagging Code 326 Practice Standards

[2] USACE Best Management Practices for Selective Clearing and Snagging

- Wheeled chippers and other equipment should be used in a manner that reduces impact to soil and vegetation.
- Wood chips should be distributed across the site in as thin a layer as practical to avoid inhibiting plant growth. Wood chips can be left in a pile at the landowner's request.
- Debris can be burned on site. The grantee/contractor is responsible for obtaining and possessing a valid burn permit (if applicable) and for following any other necessary laws or statutes related to burning.

Cabling/Strapping

Cabling or strapping refers to the practice of anchoring logs and other woody debris in place so that it will not be washed back into the stream in subsequent flood events.

- Cabled/strapped debris should be set back at least 30 feet from the top of the stream bank.
- Woody debris cabled/strapped within the floodplain should be anchored in such a way that it will not significantly affect the flow capacity of the floodplain. Securing logs parallel to the direction of the stream flow can help reduce flood flow impediment.
- Cabling debris to an anchor will ensure woody debris will not be moved back into the stream channel during future flood events. The anchor point should be selected based on site-specific factors, such as availability of natural anchors and cost. Examples of anchors include live trees or soil anchors.
- **Live Trees**- Logs and debris may be cabled to live trees or fresh stumps. Fatal damage to live trees should be avoided. Wedging logs against the live tree before the cable/strap is attached will help ensure the attached log is as immobile as possible.
    - If a strap/cable is looped around a tree, leaving a small amount of slack in the loop around the live tree, and between the live tree and the log, may help protect the tree from girdling and prevent the cable from snapping if the anchored log shifts.
    - If stumps are used, the cable/strap should be secured in a way so that it will not slip off the top of the stump in future flood events.
- **Soil Anchors**- Soil anchors may be useful on sites with few live trees to serve as anchors or in other situations when live trees are not desirable as anchors. For technical guidance on use soil anchors, contractors should use refer to *NRCS Technical Supplement TS14E Soil Anchors*.
- **Cable Material**: A variety of cable, rope, or strap options can be used for securing large woody debris to an anchor point. Material with a break strength of approximately 1,700 pounds or higher should be used. A common example of an appropriate rope would be 1/4 inch braided nylon rope. Contractors should use thicker cables/ropes as necessary to sufficiently secure debris.
- Placing debris as close to the anchor as possible will reduce the amount of rope/cable needed and reduce the risk of landowners tripping over the cable.
- Logs can be anchored individually or in groups. If groups of logs & branches are anchored together, wrapping the cable or rope around the entire bundle of debris can secure the bundle to the anchor.

PROJECT BID SHEET

The County reserves the right to reject any and all bids.

INDIVIDUAL / COMPANY NAME: _____

Group 1:

Sasses Branch – Total project price. $_____

Deep Run – Total project price. $_____

Unnamed Tributary #3 – Total project price. $_____

Group 2:

Beard Creek – Total project price. $_____

East Prong – Total project price. $_____

Cedar Gut – Total project price. $_____

Lower Duck Creek – Total project price. $_____

Group 3:

Whitehurst Creek– Total project price. $_____

Chapel Creek – Total project price. $_____

Smith Creek – Total project price. $_____

Bid responses must include prices for all individual stream segments within each group. Any responses without prices for all individual stream segments and other required information listed below will be deemed unresponsive.

Please include the following items:

- References
- Letters
- Prior stream debris removal work experience
- Equipment list
- Proof of Liability Insurance meeting the minimum requirements listed on the Request for Proposals.