Annual Sampling Protocol – Brook Trout Mark/Recapture
(Staunton River, VA)

United States Department of Agriculture Forest Service
Southern Research Station
Center for Aquatic Technology Transfer
1710 Ramble Rd.
Blacksburg, VA 24060-6349

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Manual prepared by:
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March 2011

Staunton River Mark/Recapture Methods

Fieldwork Performed Annually in May

Site Information:

Staunton River

- Located in Shenandoah National Park near Wolftown, VA.
- Parking area located at: 17 S 729792 4257600

Directions

- See Appendix A

Lodging

- Best Western, 791 Madison Road US Culpeper, VA 22701 540-825-1253
- Located at: 17 S 759958 4260536

Emergency

- Culpeper Regional Hospital, 501 Sunset Lane, Culpeper, VA 22701. (540) 829-4100
- Martha Jefferson Hospital, 459 Locust Ave, Charlottesville, VA 22902. (434) 654-7000
- University Virginia Hospital, 1215 Lee Street, Charlottesville, VA 22908. (434) 924-0211

Logistics:

- Fieldwork can be completed in 1.5 days if there are no delays due to weather and/or equipment.
- Day 1 – drive from Blacksburg to Staunton River (188 miles; ~3 hr 30 min), eat lunch at parking lot, then hike in and begin work. Work until ~6pm then hike out.
- The following can be left hidden in the woods overnight: waders, wading boots, shocker (w/ rain cover on), probes, buckets, unused shocker batteries (in pelican case). Be sure to bring scales out and dry them.
- Day 2 – check out of hotel (unless weather may impede progress or little progress was made on day 1) and drive to Staunton River. Hike in and resume where efish crew paused on day 1.
- Day 3 – have crew available for 3rd day if needed due to delays

CATT - Staunton M/R

Points of interest for the annual mark and recapture of brook trout in the Staunton River.

4 views - Unlisted
Created on May 3, 2010 - Updated Jun 1, 2010
By Colin
Rate this map - Write a comment

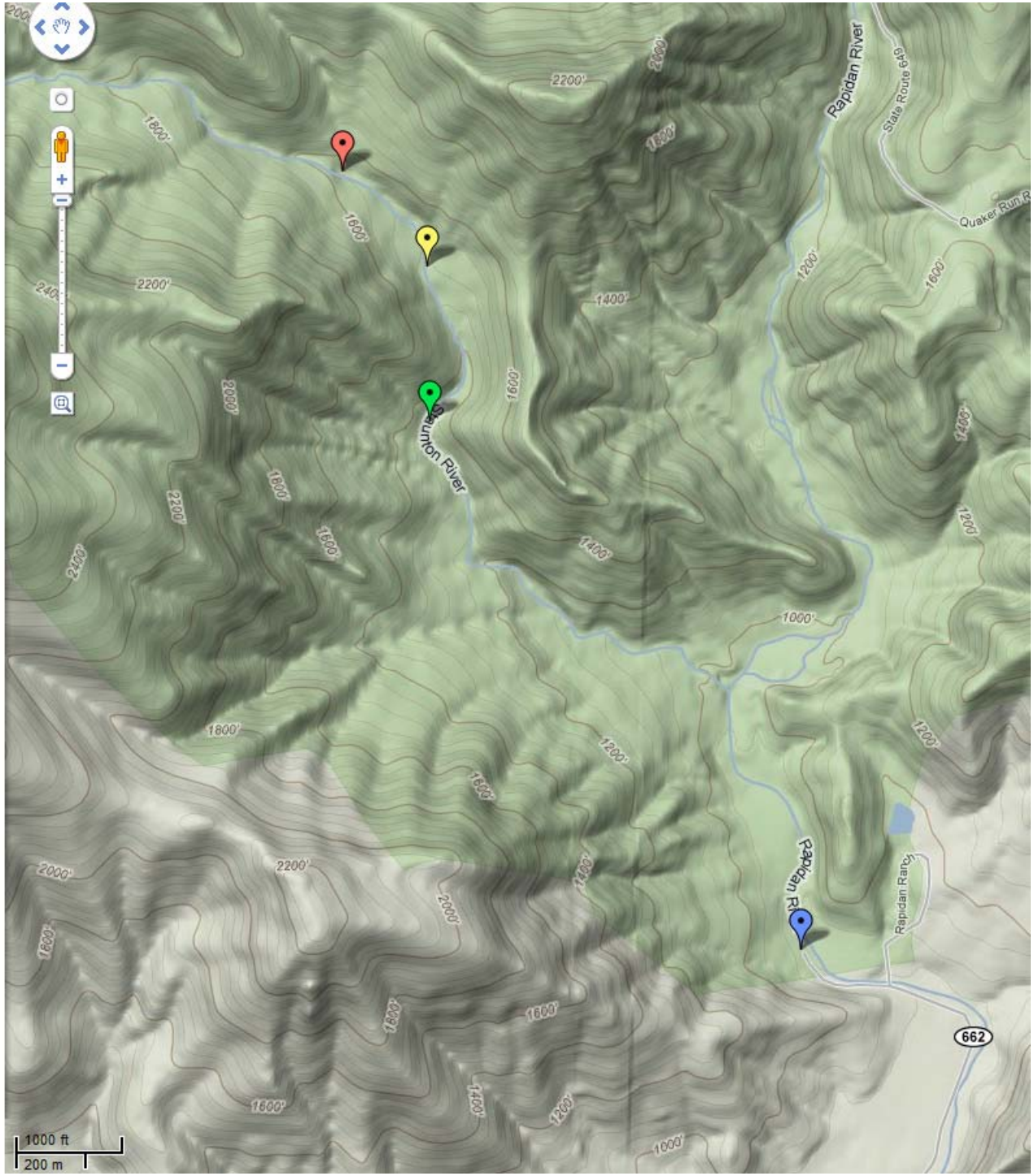
Start of sample reach
Start location for mark/recapture fieldwork. N38.45077 W78.37944

Affected to Unaffected Break
Location where the sample reach changes from affected to unaffected from the flood damage in the 1990s.

End of sample reach
End location for mark/recapture fieldwork. N38.45721 W78.38228

Best Western - Culpeper
Best Western Culpeper Inn 791 Madison Road Culpeper, VA 22701-3325 Phone: 540/825-1253

Parking Lot
Parking and meeting location for Staunton River fieldwork. N38.43712 W78.36720



Equipment List:

	Qty	√
Vehicle GPS		
Field GPS w/ extra batteries		
Laptop		
PDA with data-entry form		
Otter box for PDA		
PDA charger		
Digital camera		
Camera charger		
Scale and extra batteries		
Weighing tray		
Measuring board		
PIT tags		
PIT reader and extra batteries		
PIT needles		
Backpack electrofishing unit		
Efish probes		
Efish batteries		
Pelican case for efish batteries		
Efish battery chargers		
Cigarette lighter power adapter		
Shocker rain cover		
Dipnets		
Aquarium nets		
50 m tape measure		
Thermometer		
Backpack		

	Qty	√
Framepack		
Buckets		
MS-222		
Stylus		
Markers		
Pencils		
RITR paper/notebook		
Scissors		
Flagging		
Water filter		
First aid kit		
Toilet paper		
Tools/fix-it kits		
Hardhats		
Waders		
Wading boots		
Efish gloves		
Water jug for trucks		
radio/cell phone		
Emergency phone numbers		
Directions		
Powerstrip plug		
Sunscreen		
Extra truck keys		
Permits & JHA		

Notes on quantities

PIT Tags: the number of tags inserted ranges from <200 to >600; recommend carrying in 700 PIT tags

Shocker batteries: a shocker battery in good condition lasts >3,000 secs (50 min); recommend carrying in 4 batteries on Day 1 and leaving any unused stashed in the woods for Day 2

Buckets: 10 size 2-gallon buckets are recommended

Methods:

Crew hikes (~1.5 mi) from parking lot (17 S 729792 4257600) to start of mark/recapture reach (17 S 728681 4259084).

Section Layout Crew – 2 crew members

1. 2 crew members walk upriver from the M/R start (17 S 728681 4259084) and hang flagging at each of the 26 photo-documented sampling section-breaks (Appendix A) .
2. Determine the location to place flagging by using the photo-documented section breaks (Appendix A) . Bring a tape-measure as a backup in case confirmation is required.
3. Flags are hung at the upstream end of each reach. Write the section number on the flagging. Make flags long enough to be visible and hang in locations easily seen from the stream channel.
4. At the break between the affected and unaffected (from catastrophic flooding in the 1990s) section #16 at 543.5 m hang additional flagging with a note for efish crew to switch from clipping lower caudal to upper caudal fins.
5. Once final section is flagged, follow hiking trail until efish crew is encountered.

Section #	Length (m)	Total Dist. (m)	Section	Caudal Clip	UTM
Start	0.0	0.0	Affected	Lower	17 S 728681 4259084
1	21.0	21.0	Affected	Lower	17 S 728684 4259105
2	33.0	54.0	Affected	Lower	17 S 728688 4259139
3	19.5	73.5	Affected	Lower	17 S 728702 4259152
4	44.0	117.5	Affected	Lower	17 S 728743 4259167
5	20.5	138.0	Affected	Lower	17 S 728761 4259178
6	26.0	164.0	Affected	Lower	17 S 728778 4259193
7	31.0	195.0	Affected	Lower	17 S 728788 4259206
8	36.0	231.0	Affected	Lower	17 S 728789 4259253
9	41.0	272.0	Affected	Lower	17 S 728780 4259296
10	47.0	319.0	Affected	Lower	17 S 728754 4259340
11	30.5	349.5	Affected	Lower	17 S 728741 4259365
12	45.0	394.5	Affected	Lower	17 S 728712 4259402
13	45.0	439.5	Affected	Lower	17 S 728704 4259445
14	35.0	474.5	Affected	Lower	17 S 728691 4259473
15	23.0	497.5	Affected	Lower	17 S 728671 4259481
16	46.0	543.5	Affected	Lower	17 S 728661 4259529
17	38.0	581.5	Unaffected	Upper	17 S 728658 4259566
18	29.0	610.5	Unaffected	Upper	17 S 728666 4259595
19	50.0	660.5	Unaffected	Upper	17 S 728646 4259635
20	44.0	704.5	Unaffected	Upper	17 S 728619 4259666
21	60.0	764.5	Unaffected	Upper	17 S 728569 4259695
22	32.5	797.0	Unaffected	Upper	17 S 728546 4259715
23	53.0	850.0	Unaffected	Upper	17 S 728518 4259749
24	50.0	900.0	Unaffected	Upper	17 S 728477 4259771
25	41.0	941.0	Unaffected	Upper	17 S 728446 4259791
26	27.5	968.5	Unaffected	Upper	17 S 728413 4259792

Efish Crew – minimum crew size is 4; 1 to shock, 2 to dip-net, 1 to carry bucket

1. Set Appalachian Aquatics shocker to AC and voltage to ~450 V so that amps run at ~10 A. Test fish response downstream of the reach and adjust as needed.
2. Electrofish proceeding upstream and net only brook trout.
3. When flagging is encountered at the upstream end of a section-break, place another piece of flagging with the section number written on it in the bucket with the fish. Each section's fish must be kept separate from each other. Leave the flagging marking the section-break so the work-up crew can return the fish to the correct section (they will remove the section-break flagging).
4. Take breaks as necessary to keep pace with work-up crew.
5. Make sure trout are taken to the work-up crew in a timely manner. Do not leave buckets along the stream for the crew to pick up – these are easily missed.

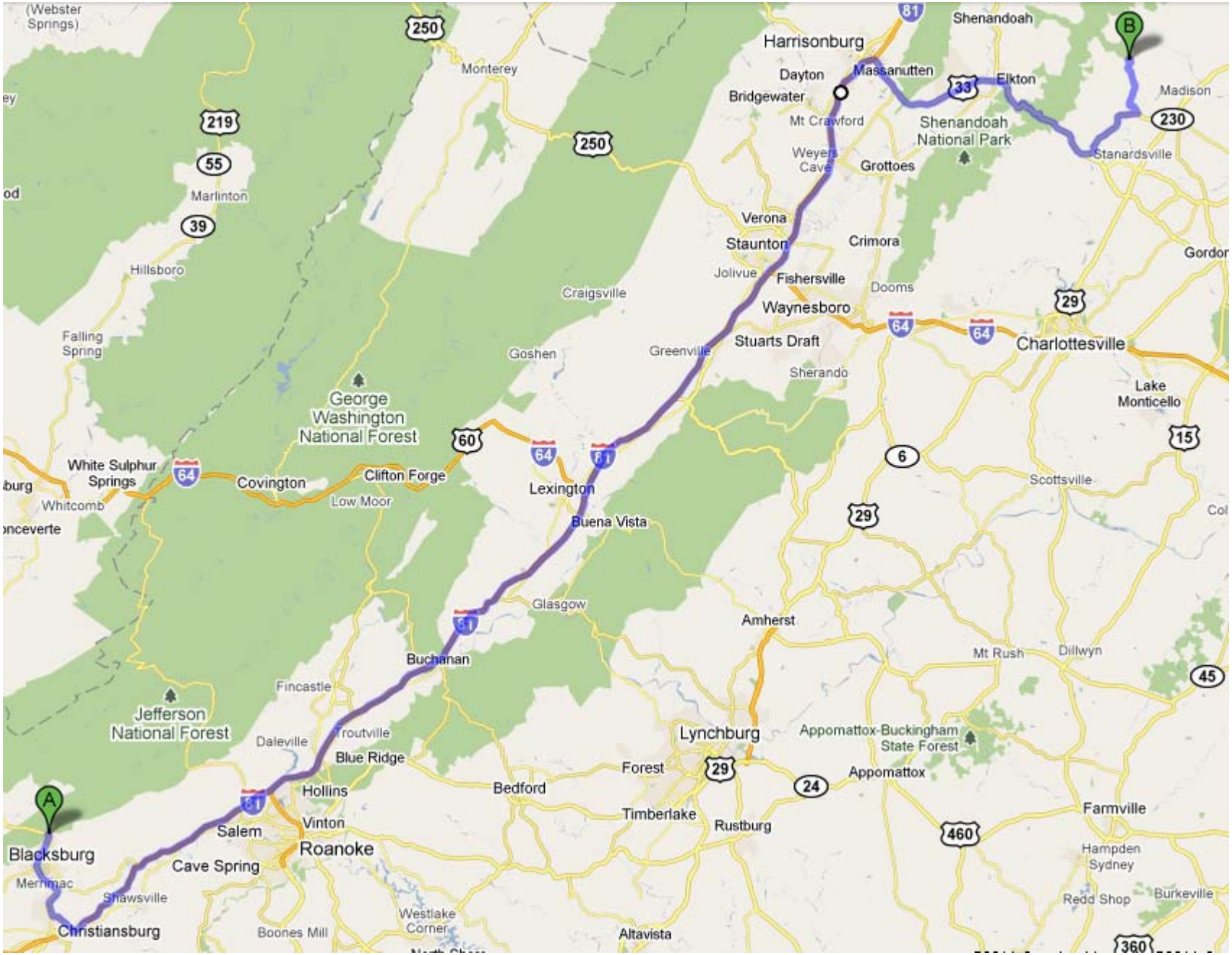
Work-up Crew – minimum crew size is 2, 3 is best; 1 to record data, 1 to measure & weigh, 1 to PIT tag
(1 workup crew will not keep pace with efish crew; best to have 2 crews when possible)

1. On the PDA data-entry form complete header: date, all crew members (efish & work-up), and notes on conditions, etc.
2. Record for each brook trout: section number, weight (0.1 g), total length (mm), fork length (mm), observe for old caudal clip (none/lower/upper), observe for old adipose clip (Y/N), scan for old PIT tag (Y/N) and if yes then record PIT tag number (use MS-222 as necessary, place small batches of trout in the 'dope' bucket).
3. If there is no PIT tag and the total length is >100 mm insert a PIT tag, scan the fish, then record the PIT tag number. Using scissors, remove the adipose fin of all fish marked with PIT tags. If trout is too small for PIT tag, or in poor condition, note this in fish's comment field.
4. In sections downstream of the 'unaffected' reach, clip the lower caudal; upstream of the 'affected' reach, clip the upper caudal.
5. After each trout is worked-up place it in a recovery bucket (water only, no MS-222) marked with their section number. Once the trout have revived return them to the section they were captured in. When all buckets from a given section are returned, remove the flagging marking the section-break.
6. Work-up crew then moves upstream and sets up again to stay within range of efish crew.

Appendix A: Driving Directions

CATT (Blacksburg) to Staunton River

	1. Head **east** on **Brush Mountain Rd/State Route 777** toward **Pandapas Pond Rd**	go 0.1 mi total 0.1 mi
460	2. Turn right at **US-460 E/Pandapas Pond Rd** Continue to follow US-460 E About 15 mins	go 12.3 mi total 12.4 mi
	3. Continue onto **Parkway Dr** About 1 min	go 0.7 mi total 13.1 mi
	4. Take the **I-81 N/US-460 E** ramp to **Salem/Roanoke** About 3 mins	go 2.0 mi total 15.1 mi
81	5. Merge onto **I-81 N** About 2 hours 4 mins	go 128 mi total 143 mi
33	6. Take exit **247A** to merge onto **US-33 E/E Market St** toward **Elkton** Continue to follow US-33 E About 34 mins	go 29.3 mi total 173 mi
33	7. Slight left at **US-33 BUS E/Spotswood Trail** About 3 mins	go 1.1 mi total 174 mi
230	8. Turn left at **VA-230 E/Madison Rd** Continue to follow VA-230 E About 9 mins	go 7.1 mi total 181 mi
662	9. Turn left at **Route 662** About 4 mins	go 1.4 mi total 182 mi
	10. Continue onto **Graves Mill Rd/State Route 662**	go 0.2 mi total 182 mi
662	11. Continue onto **Route 662** About 1 min	go 0.4 mi total 183 mi
662	12. Keep right at the fork About 3 mins	go 1.4 mi total 184 mi
	13. Continue onto **State Route 662** About 5 mins	go 2.0 mi total 186 mi
	14. Turn right to stay on **State Route 662** About 1 min	go 0.5 mi total 187 mi
662	15. Continue onto **Route 662** About 2 mins	go 0.8 mi total 188 mi

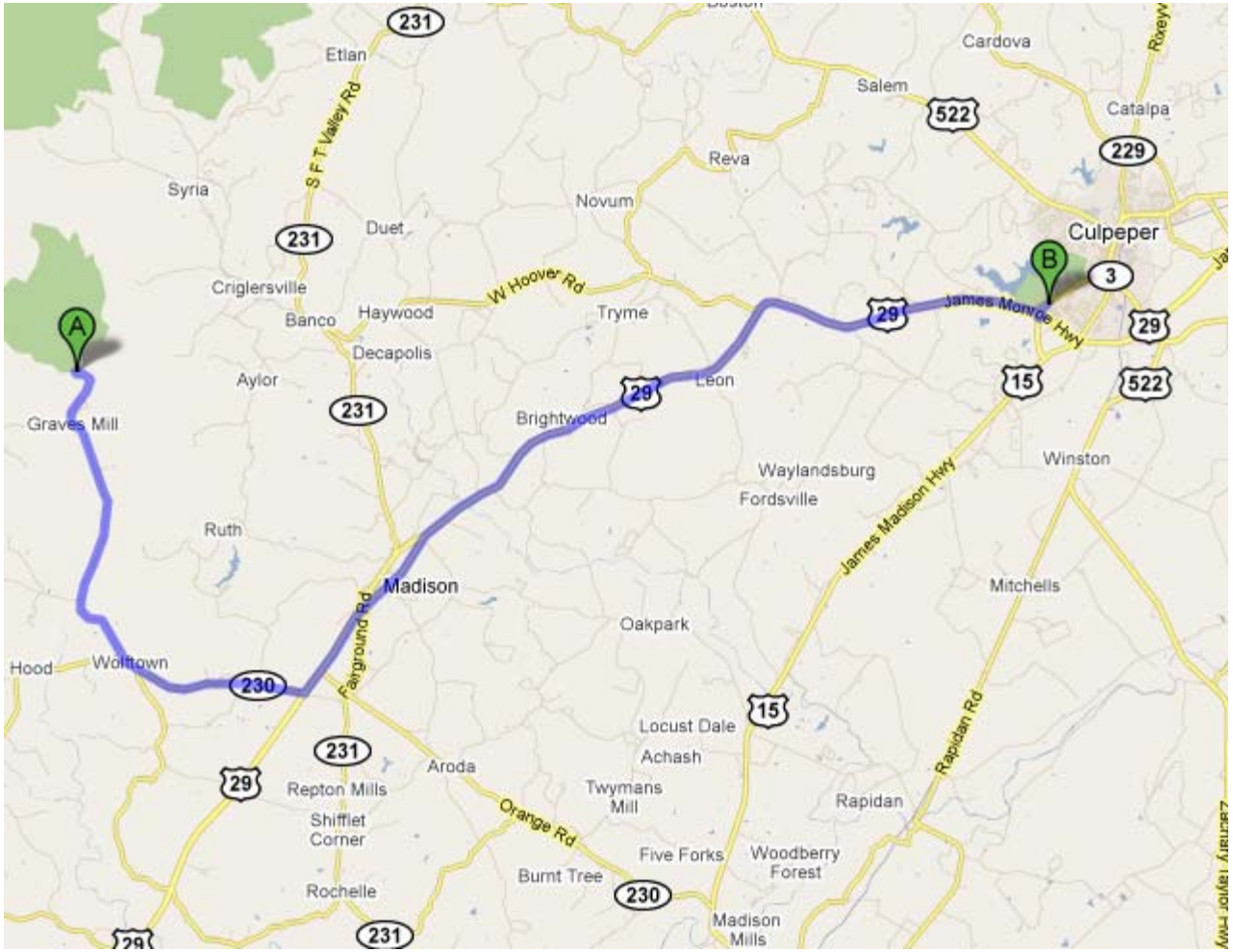

(Webster Springs)
250
Monterey
219
55
Marlinton
39
Hillsboro
Falling Spring
250
Craigsville
Goshen
George Washington National Forest
60
White Sulphur Springs
64
Covington
Clifton Forge
Low Moor
Whitcomb
Lexington
Buena Vista
Glasgow
Buchanan
Fincastle
Jefferson National Forest
Daleville
Troutville
Blue Ridge
Hollins
Salem
Vinton
Roanoke
Blacksburg
Cave Spring
Merrimac
Shawsville
Christiansburg
Boones Mill
Westlake Corner
Altavista
Bedford
Forest
Timberlake
Rustburg
Lynchburg
Amherst
Appomattox-Buckingham State Forest
Appomattox
Farmville
Hampden Sydney
Redd Shop
Burkeville
Mt Rush
Dillwyn
Scottsville
Lake Monticello
Charlottesville
Gordon
Greenville
Stuarts Draft
Sherando
Waynesboro
Fishersville
Dooms
Jolivue
Staunton
Verona
Crimora
Weyers Cave
Grottoes
Mt Crawford
Bridgewater
Dayton
Harrisonburg
Massanutten
Shenandoah National Park
Elkton
Shenandoah
Madison
Stanardsville
81
33
230
29
64
15
6
45
24
460
360

Staunton River to Hotel (Culpeper)

	1. Head **southeast** toward **Rapidan Ranch**	go 0.2 mi total 0.2 mi
662	2. Continue straight onto **Route 662** About 1 min	go 0.6 mi total 0.8 mi
	3. Continue onto **State Route 662** About 1 min	go 0.5 mi total 1.3 mi
↰	4. Turn left to stay on **State Route 662** About 5 mins	go 2.0 mi total 3.3 mi
662	5. Continue onto **Route 662** About 4 mins	go 1.7 mi total 5.1 mi
	6. Continue onto **Graves Mill Rd/State Route 662**	go 0.2 mi total 5.2 mi
662	7. Continue onto **Route 662** About 1 min	go 0.5 mi total 5.7 mi
662	8. Continue straight to stay on **Route 662** About 2 mins	go 0.9 mi total 6.6 mi
230	9. Turn left at **VA-230 E/Wolftown-Hood Rd** About 5 mins	go 3.7 mi total 10.3 mi
29	10. Turn left at **US-29 N/VA-230 E/S Seminole Trail** Continue to follow US-29 N About 24 mins	go 17.6 mi total 28.0 mi
29	11. Merge onto **US-29 BUS N/Madison Rd** via the ramp to **Culpeper** Destination will be on the right About 1 min	go 0.5 mi total 28.5 mi
B	**Best Western Culpeper Inn** 791 Madison Road, Culpeper, VA 22701-3325 - (540) 825-1253	

Hotel to Staunton River (50 min)

1. Head northeast on Madison Rd toward Southridge Pkwy (go 0.2 mi)
2. Make a U-turn at Southridge Pkwy (About 2 mins, go 0.3 mi, total 0.4 mi)
3. Merge onto US-29 S/James Monroe Hwy via the ramp to Charlottesville, Continue to follow US-29 S (About 23 mins, go 17.7 mi, total 18.1 mi)
4. Turn right at VA-230 W/Wolftown-Hood Rd (About 4 mins, go 3.7 mi, total 21.8 mi)
5. Turn right at Route 662 (About 4 mins, go 1.4 mi, total 23.2 mi)
6. Continue onto Graves Mill Rd/State Route 662 (go 0.2 mi, total 23.4 mi)
7. Continue onto Route 662 (About 1 min, go 0.4 mi, total 23.7 mi)
8. Keep right at the fork (About 3 mins, go 1.4 mi, total 25.1 mi)
9. Continue onto State Route 662 (About 5 mins, go 2.0 mi, total 27.1 mi)
10. Turn right to stay on State Route 662 (About 1 min, go 0.5 mi, total 27.7 mi)
11. Continue onto Route 662 (About 2 mins, go 0.8 mi, total 28.4 mi)
12. Road dead-ends, park in trail access parking area


A
B
Etlan
S F T Valley Rd
Syria
Duet
Criglersville
Banco
Haywood
Decapolis
Aylor
Graves Mill
Ruth
Hood
Wolftown
Madison
Fairground Rd
Repton Mills
Shiffler Corner
Rochelle
Aroda
Orange Rd
Brightwood
W Hoover Rd
Tryme
Novum
Reva
Leon
Salem
Cardova
Catalpa
Culpeper
James Monroe Hwy
Waylandsburg
Fordsville
James Madison Hwy
Winston
Mitchells
Oakpark
Locust Dale
Achash
Twymans Mill
Rapidan
Rapidan Rd
Five Forks
Woodberry Forest
Burnt Tree
Madison Mills
231
522
229
3
29
15
230

Appendix B: Photo Documented Section Breaks

Start. New start point as of 2008 **start now at head of nice pool; the pool is not part of the reach anymore**.

Start

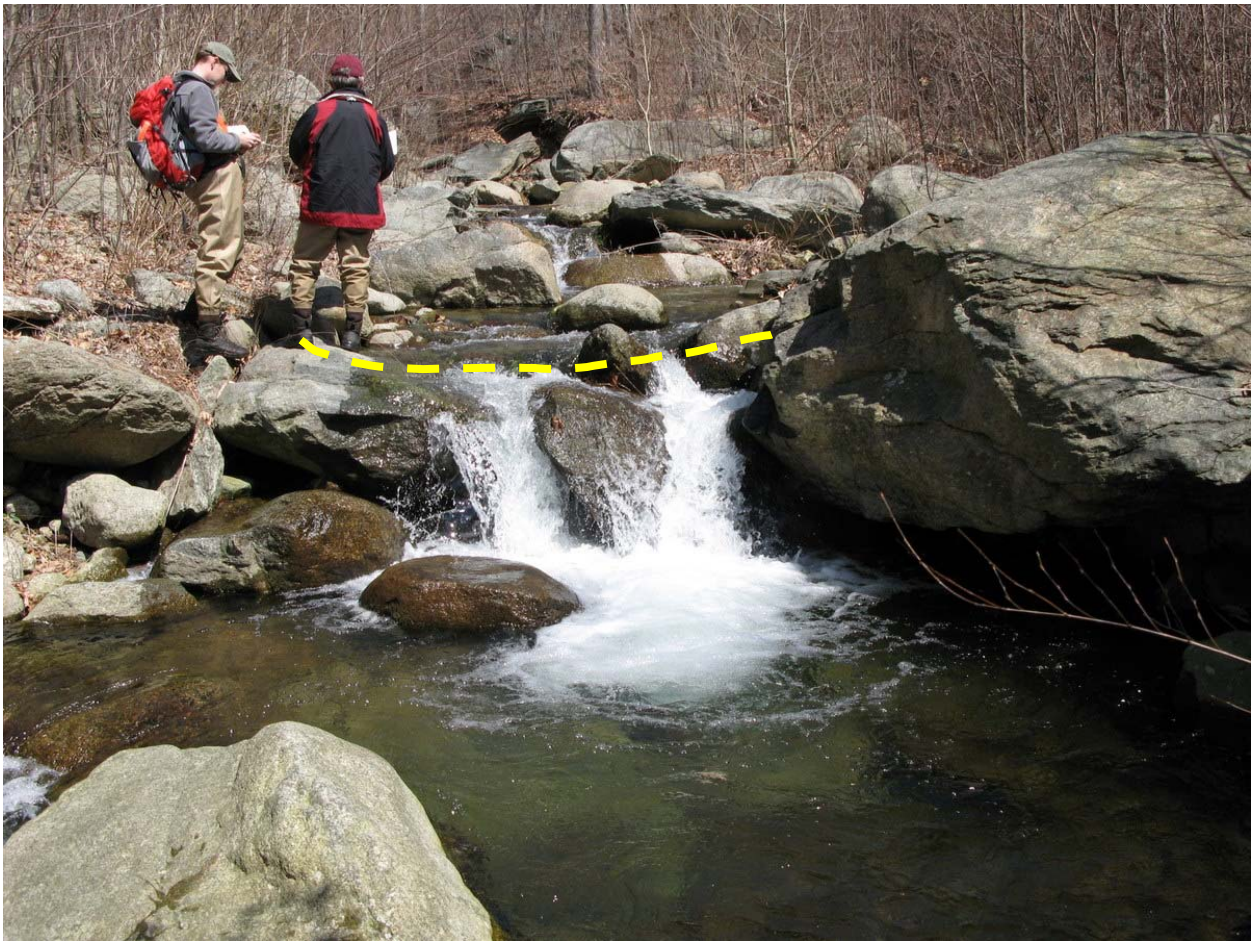
End of Section 1

End of Section 2

End of Section 3

End of Section 4

End of Section 5



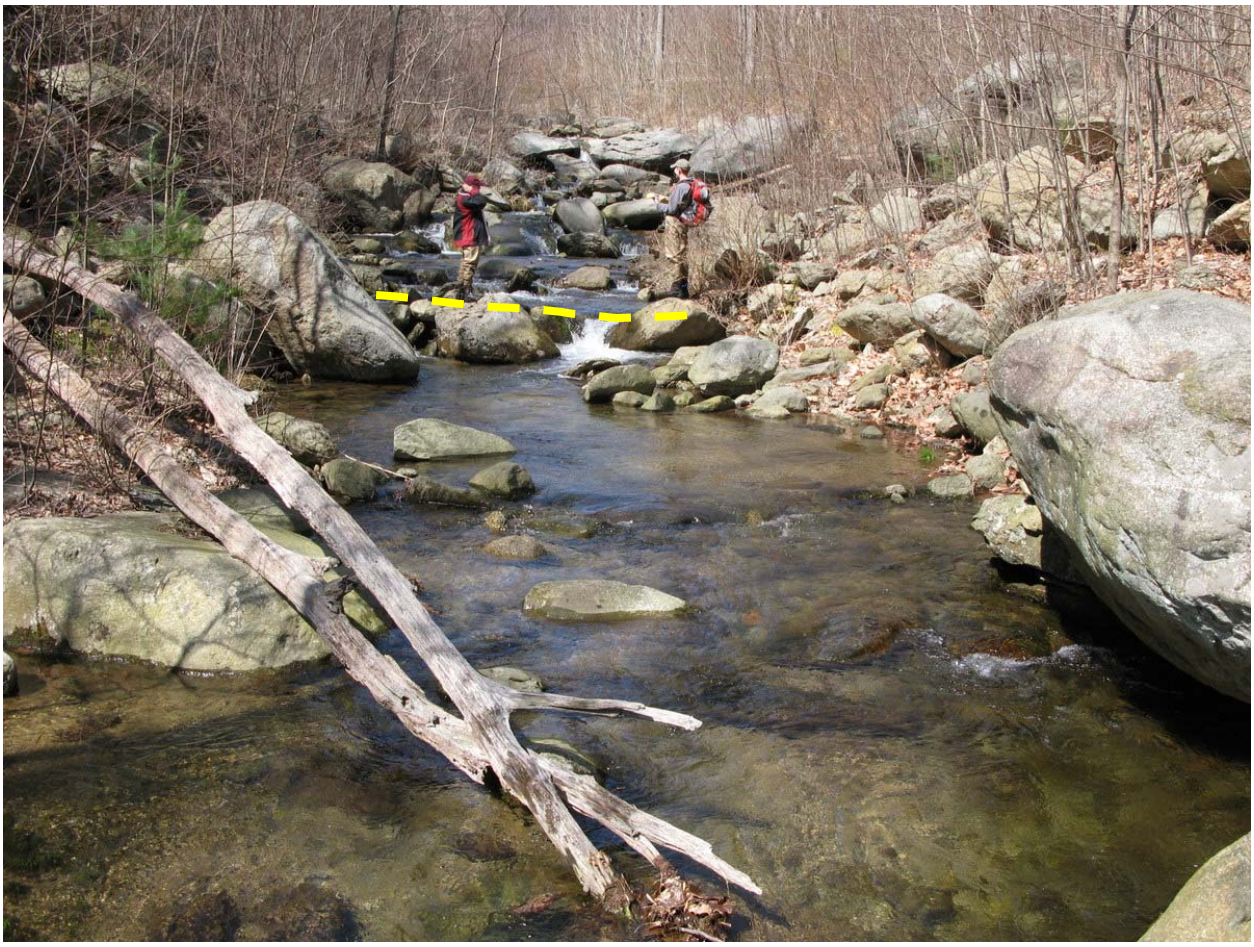
End of Section 6

End of Section 7

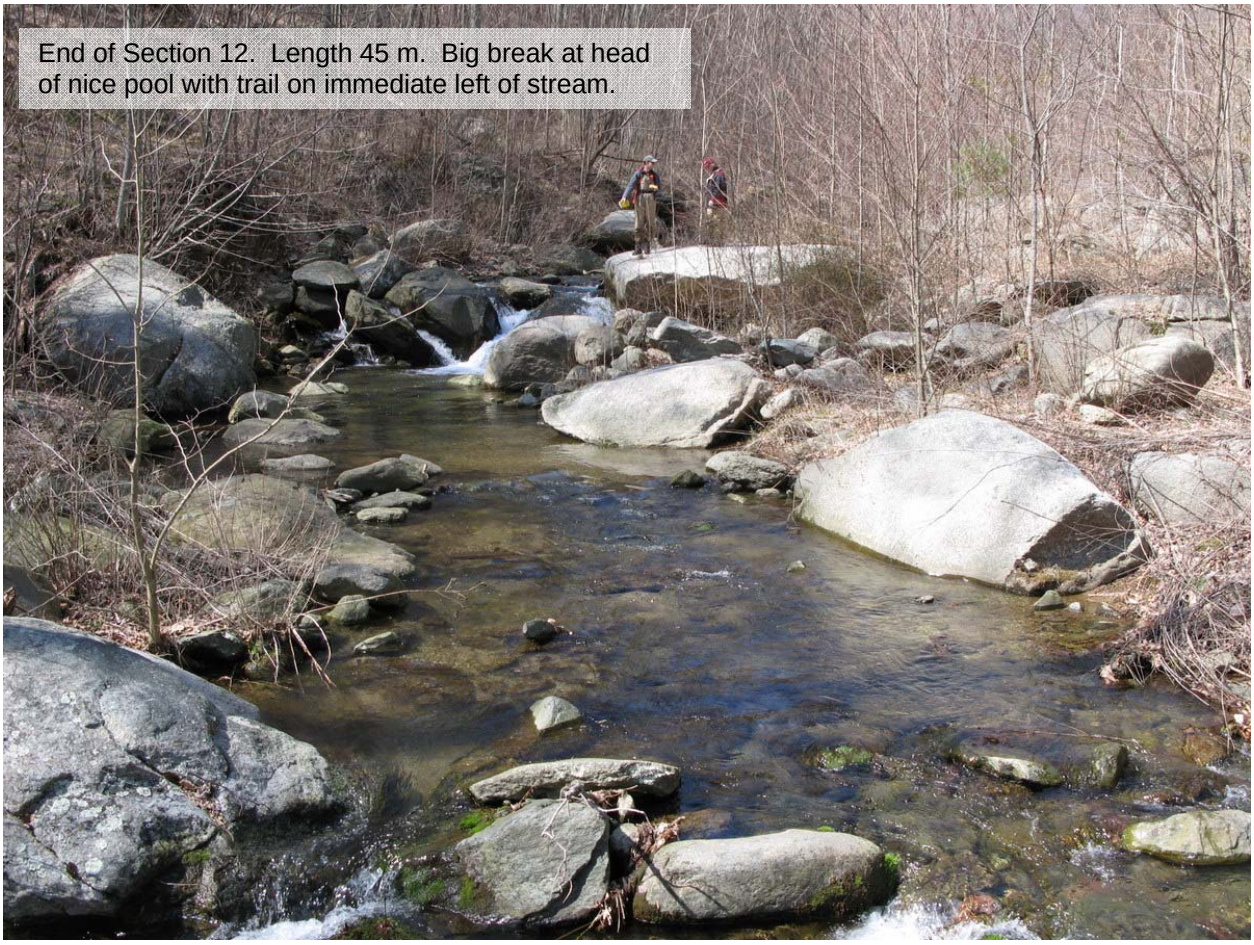
End of Section 8

End of Section 9

End of Section 10

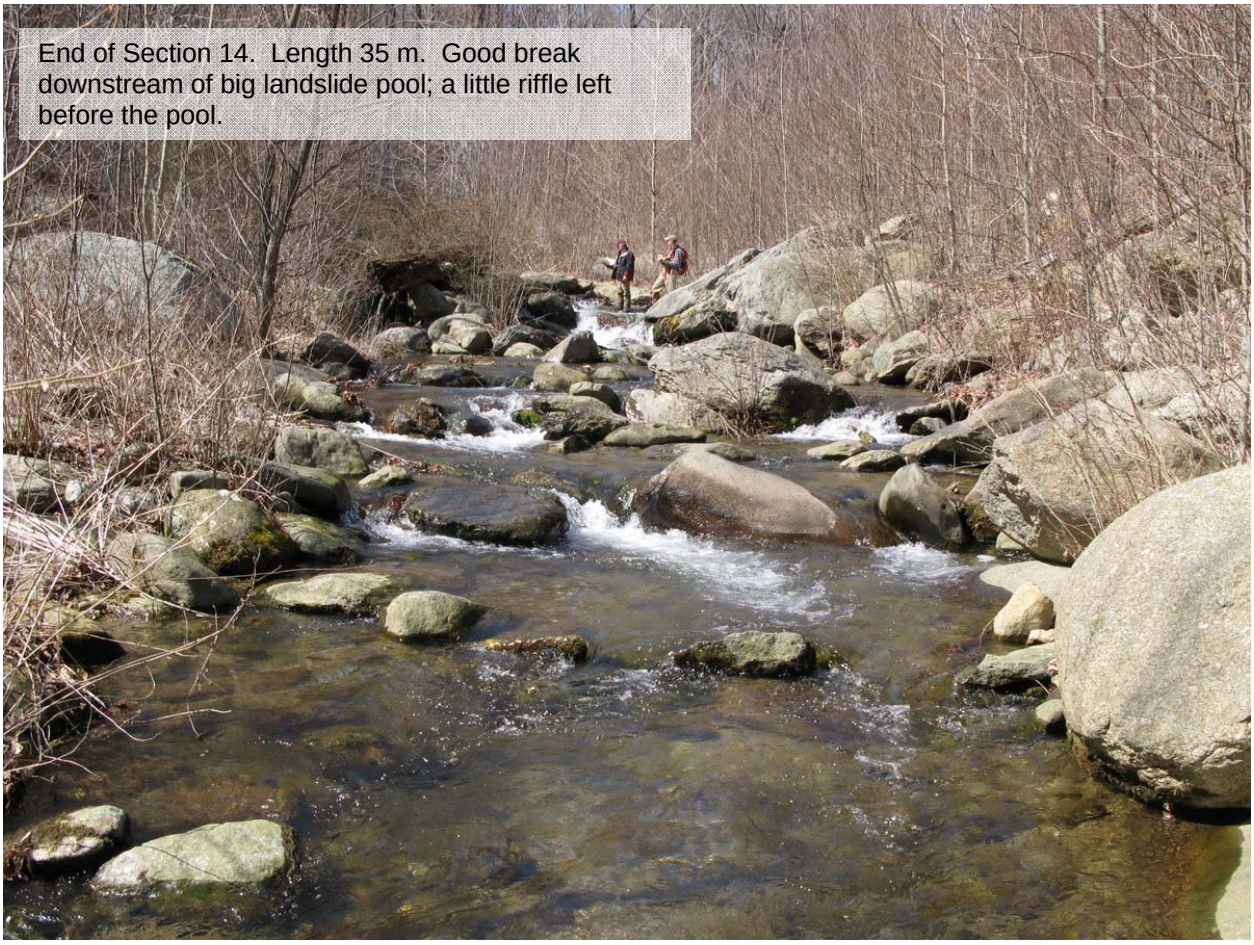


End of Section 11

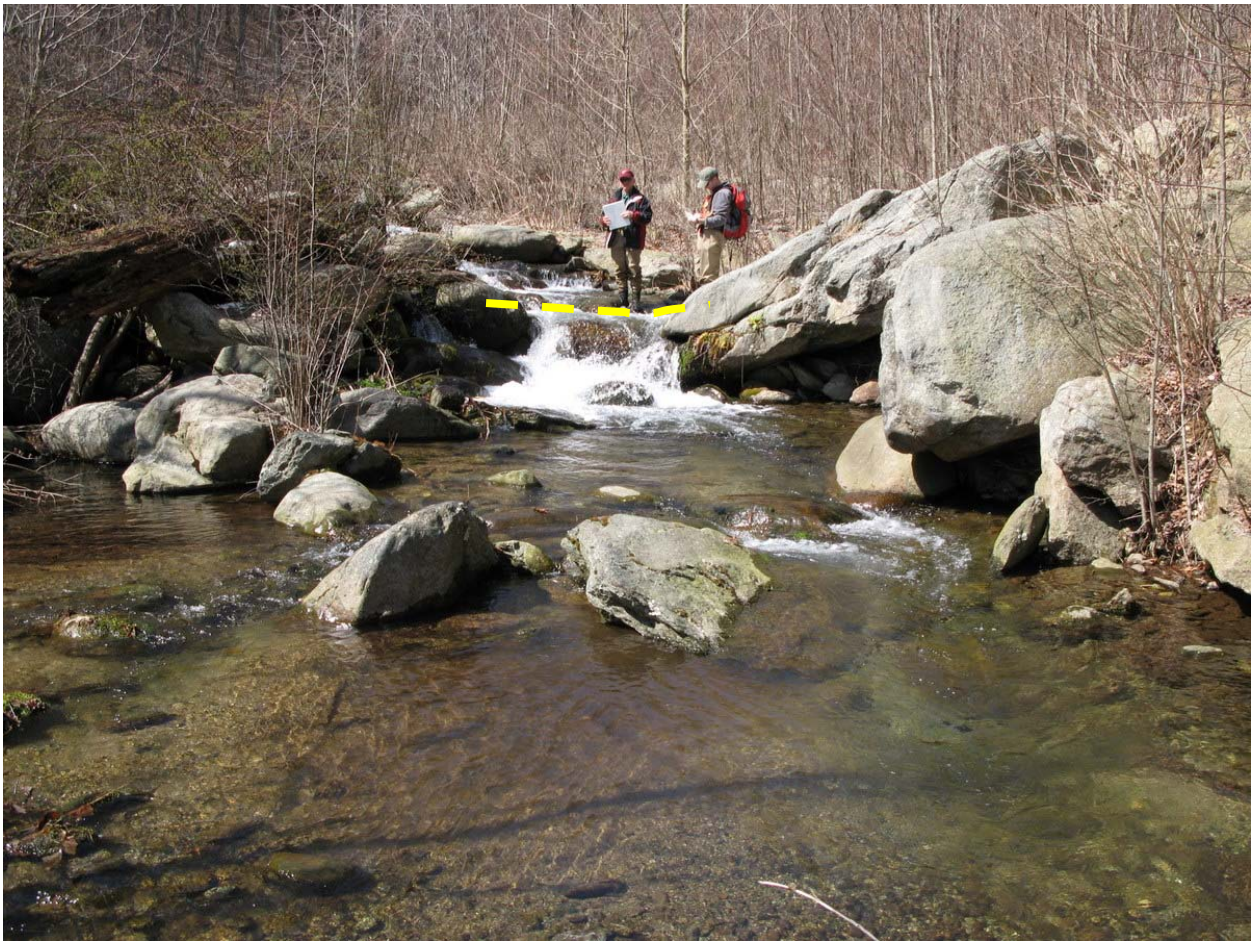


End of Section 12

End of Section 13

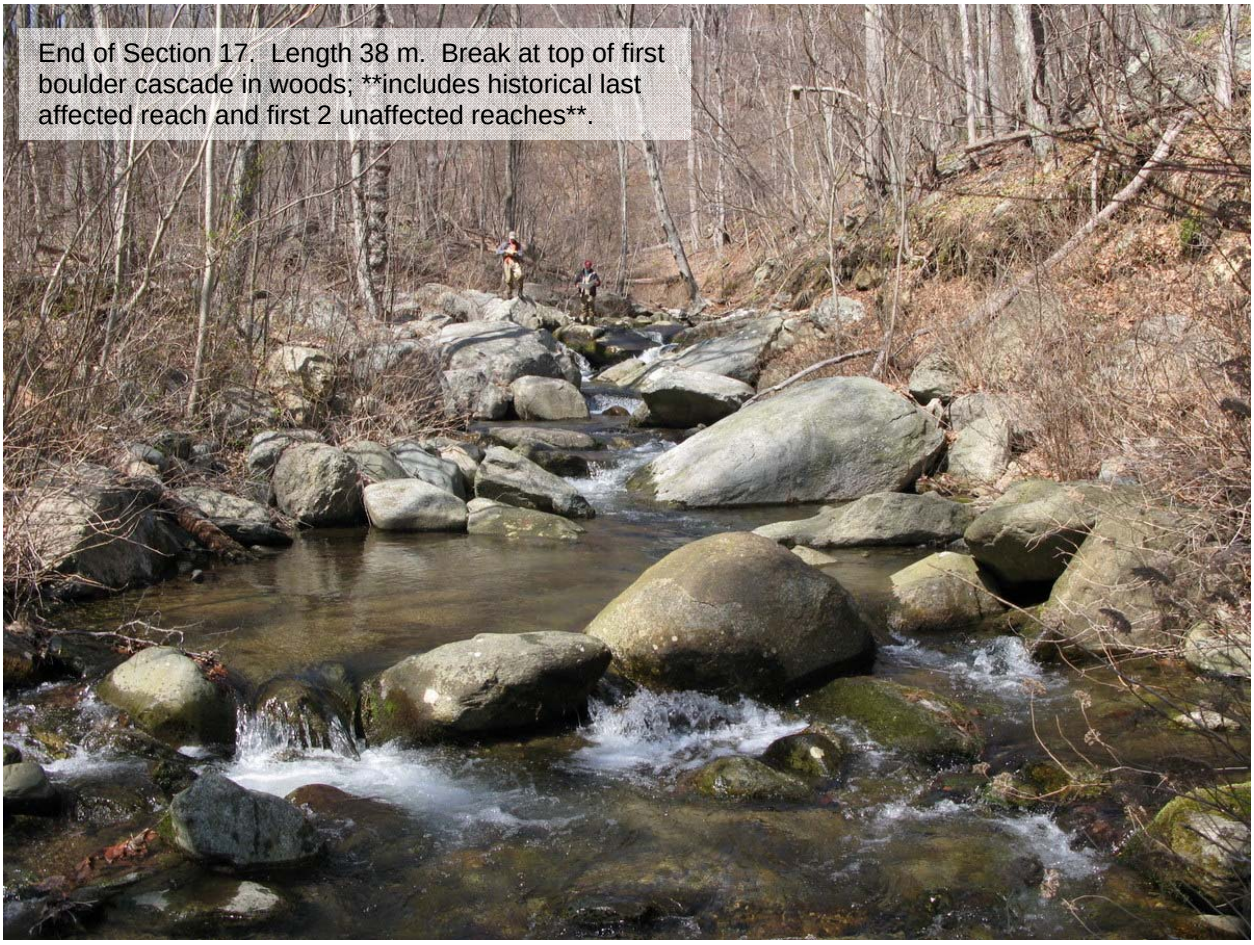


End of Section 14



End of Section 15

End of Section 16



End of Section 17

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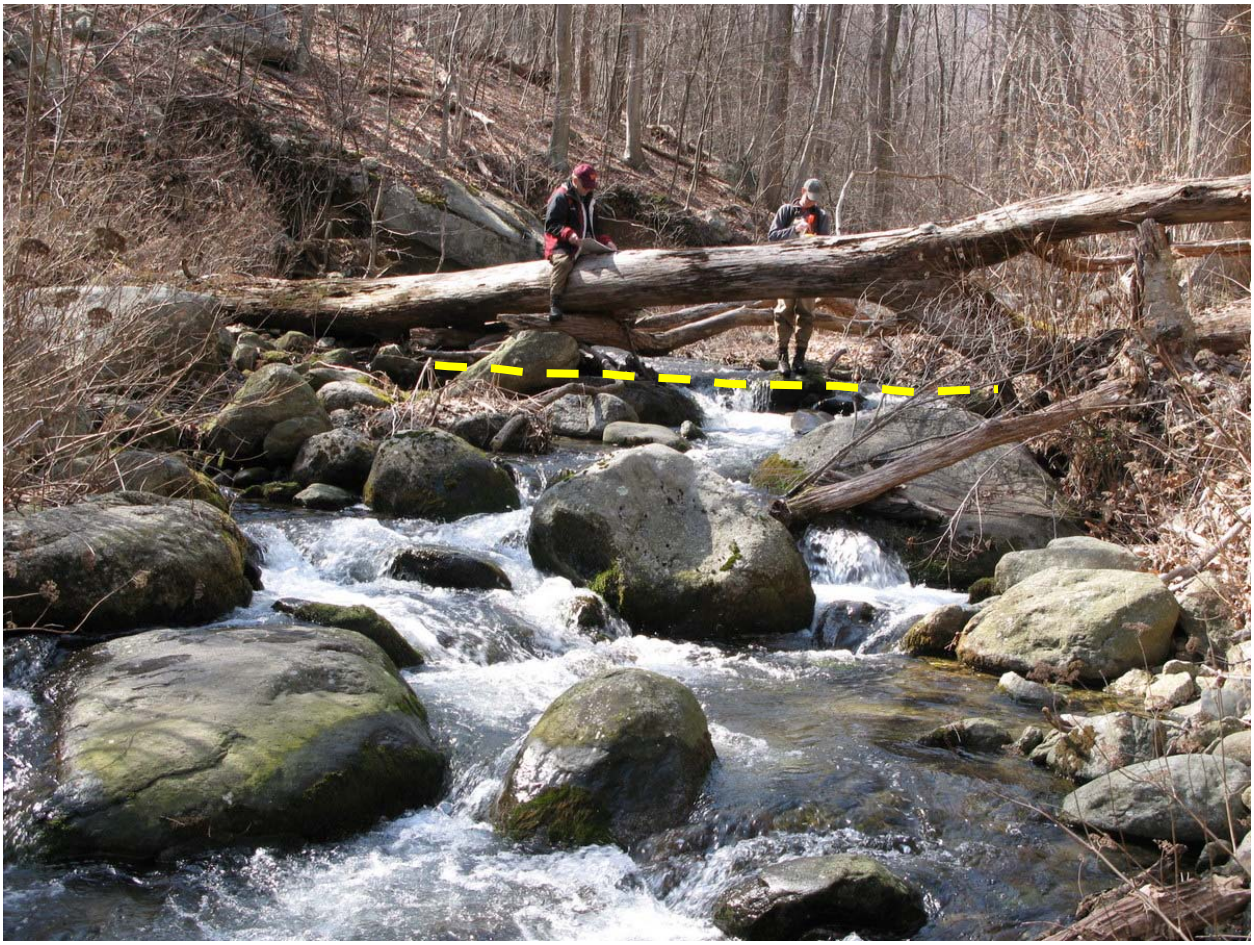
End of Section 19

End of Section 20

End of Section 21

End of Section 22



End of Section 23

End of Section 24

End of Section 25

End of Section 26