

## Danielle Fitzpatrick

---

**From:** John\_Fridell@fws.gov  
**Sent:** Monday, December 06, 2004 1:34 PM  
**To:** Alison Guth  
**Subject:** Toxolasma pullus

Alison,

We found *Toxolasma pullus* at the mouth of Cane Creek, a tributary to Lake Greenwood, near the SC Highway 72 bridge crossing, in Laurens County -- after thinking about, I believe that it was in 1996 or 1997. If there is anything that I can help with, please let me know.

John

John Fridell  
US Fish and Wildlife Service  
160 Zillicoa Street  
Asheville, NC 28801  
PH: (828) 258 3939 ext. 225

## Danielle Fitzpatrick

---

**From:** Alison Guth  
**Sent:** Thursday, December 16, 2004 3:38 PM  
**To:** 'Prescott Brownell'  
**Subject:** RE: Diadromous Fish Meeting Notes

Hi Prescott,  
Hope you are doing well. In response to your question about the website, the url address is [www.saludahydrorelicense.com](http://www.saludahydrorelicense.com). You may already know this, however, because I know that Bill Argentieri is sending a official email out about it sometime soon, if not already. I am forwarding your email to Alan so we can figure out a time to meet about the sturgeons in person or by telephone. I am sure we will be in touch. Take care and I will talk to you soon.

Sincerely, Alison

-----Original Message-----

From: Prescott Brownell [mailto:Prescott.Brownell@noaa.gov]  
Sent: Wednesday, December 15, 2004 4:48 PM  
To: Alison Guth  
Cc: FWS Amanda\_Hill; NMFS Stephania Bolden; SCDNR Richard Christie; SCDNR Doug Cooke  
Subject: Re: Diadromous Fish Meeting Notes

HELLO Alison,  
thank you for sharing the meeting notes. What is the address/url for the Saluda relicensing website??

Lets try to meet during the first or second week in January to discuss sturgeon situation...or have a conference call. I'll stay tuned

Prescott Brownell

> Alison Guth wrote:

>  
> Good morning all,  
>  
> After much deliberation, the final copy of the notes for the  
> Diadromous Fish Study Meeting, that was held on Nov. 10th, has been  
> completed. As well as being attached to this email, the notes will be  
> posted on the official Saluda Hydro Relicensing Website. Thanks again  
> for your continued involvement and participation in regards to this  
> issue.

>  
> Sincerely,  
> Alison

>  
> Alison Guth  
> Licensing Coordinator  
> Kleinschmidt Associates  
> 101 Trade Zone Drive  
> Suite 21A  
> West Columbia, SC 29170  
> P: (803) 822-3177  
> F: (803) 822-3183

>  
> <<Meeting Minutes for Diadromous Fish Study Meeting.doc>>

>  
>  
for  
>  
>  
Meeting.doc

Name: Meeting Minutes  
Diadromous Fish  
Study

> Meeting Minutes for Diadromous Fish Study Meeting.doc Type: Microsoft Word  
> (application/ms  
word)  
> Encoding: base64  
> Download  
> Status: Not downloaded with  
>  
> message

## Kacie Jensen

---

**From:** Dick Christie [dchristie@InfoAve.Net]  
**Sent:** Wednesday, December 08, 2004 5:25 PM  
**To:** Alison Guth  
**Subject:** FW: Saluda sampling



Saluda  
amplng.doc (26 KB)

Hi Alison - here is Amandas concurrence of the proposed sampling plans.

-----Original Message-----

**From:** Amanda\_Hill@fws.gov [mailto:Amanda\_Hill@fws.gov]  
**Sent:** Tuesday, December 07, 2004 11:20 AM  
**To:** Doug Cooke  
**Cc:** Wade Bales; Hal Beard; Dick Christie; Steve Leach; Mark cantrell E-mail; Prescott Brownell E-mail; Ross Self  
**Subject:** Re: Saluda sampling

Doug,

The Service has reviewed your proposed modifications to the spring aquatic sampling regime for the lower Saluda River. We agree it is important to determine the spatial and temporal distributions of alosines in the system and concur with your proposed revisions to the plan including the gillnetting locations, timing, and frequency. We also agree with the proposed American eel sampling and plankton sampling. Additionally, we strongly recommend a fourth location on the Congaree River be sampled by gillnets. The Service would be happy to provide any assistance necessary.

Thanks for your efforts,

Amanda Hill  
Fisheries Biologist  
U.S. Fish and Wildlife Service  
176 Croghan Spur Rd., Suite 200  
Charleston, SC 29407  
843-727-4707 ext. 24  
843-727-4218 fax  
amanda\_hill@fws.gov

"Our mission is working with others to conserve, protect, and enhance fish, wildlife and plants and their habitats for the continuing benefit of the American people."

"Doug Cooke"  
<CookeD@dnr.sc.gov> To: "Mark cantrell"  
(E-mail)" <mark\_a\_cantrell@fws.gov>, "Dick Christie"  
<dchristie@infoave.net>, "Hal  
Beard" <BeardH@dnr.sc.gov>, "Wade Bales"  
<BalesW@dnr.sc.gov>, "Amanda Hill (E-  
mail)" <Amanda\_Hill@fws.gov>, "Prescott  
Brownell (E-mail)"  
<Prescott.Brownell@noaa.gov>  
12/06/2004 04:33  
PM cc: "Steve Leach"  
<LeachS@dnr.sc.gov>, "Ross Self" <SelfR@dnr.sc.gov>  
Subject: Saluda sampling

Folks,

I would like to enclose the proposed sampling methodology for the Saluda River alosid work. Please look at the attached and send me any comments or questions. I'm hoping to get a consensus from Hal and Wade, that we can give to Dick to submit for the DNR. I'm also hoping our suggestions will be in line with the Feds.

Please look over and get back any comments ASAP, but ideally before the end of week. We'd like to get these to SCEG in plenty of time to review, change, get gear, etc.

Thanks,  
Doug

<<Saluda sampling.doc>> (See attached file: Saluda sampling.doc)

## Kacie Jensen

---

**From:** Alison Guth  
**Sent:** Thursday, December 09, 2004 8:52 AM  
**To:** Alan Stuart  
**Subject:** FW: Saluda sampling



Saluda  
ampling.doc (26 KB)

-----Original Message-----  
From: Dick Christie [mailto:dchristie@InfoAve.Net]  
Sent: Wednesday, December 08, 2004 5:25 PM  
To: Alison Guth  
Subject: FW: Saluda sampling

Hi Alison - here is Amandas concurrence of the proposed sampling plans.

-----Original Message-----  
From: Amanda\_Hill@fws.gov [mailto:Amanda\_Hill@fws.gov]  
Sent: Tuesday, December 07, 2004 11:20 AM  
To: Doug Cooke  
Cc: Wade Bales; Hal Beard; Dick Christie; Steve Leach; Mark cantrell E-mail; Prescott Brownell E-mail; Ross Self  
Subject: Re: Saluda sampling

Doug,

The Service has reviewed your proposed modifications to the spring aquatic sampling regime for the lower Saluda River. We agree it is important to determine the spatial and temporal distributions of alosines in the system and concur with your proposed revisions to the plan including the gillnetting locations, timing, and frequency. We also agree with the proposed American eel sampling and plankton sampling. Additionally, we strongly recommend a fourth location on the Congaree River be sampled by gillnets. The Service would be happy to provide any assistance necessary.

Thanks for your efforts,

Amanda Hill  
Fisheries Biologist  
U.S. Fish and Wildlife Service  
176 Croghan Spur Rd., Suite 200  
Charleston, SC 29407  
843-727-4707 ext. 24  
843-727-4218 fax  
amanda\_hill@fws.gov

"Our mission is working with others to conserve, protect, and enhance fish, wildlife and plants and their habitats for the continuing benefit of the American people."

"Doug Cooke"  
<CookeD@dnr.sc.g To: "Mark cantrell  
(E-mail)" <mark\_a\_cantrell@fws.gov>, "Dick Christie"  
ov> <dchristie@infoave.net>, "Hal

Beard" <BeardH@dnr.sc.gov>, "Wade Bales"

mail)" <Amanda\_Hill@fws.gov>, "Prescott

12/06/2004 04:33

<Prescott.Brownell@noaa.gov>

PM

<LeachS@dnr.sc.gov>, "Ross Self" <SelfR@dnr.sc.gov>

<BalesW@dnr.sc.gov>, "Amanda Hill (E-

Brownell (E-mail)"

cc: "Steve Leach"

Subject: Saluda sampling

Folks,

I would like to enclose the proposed sampling methodology for the Saluda River alosid work. Please look at the attached and send me any comments or questions. I'm hoping to get a consensus from Hal and Wade, that we can give to Dick to submit for the DNR. I'm also hoping our suggestions will be in line with the Feds.

Please look over and get back any comments ASAP, but ideally before the end of week. We'd like to get these to SCEG in plenty of time to review, change, get gear, etc.

Thanks,  
Doug

<<Saluda sampling.doc>> (See attached file: Saluda sampling.doc)

## Kacie Jensen

---

**From:** Alison Guth  
**Sent:** Monday, December 06, 2004 1:37 PM  
**To:** 'John\_Fridell@fws.gov'  
**Subject:** RE: Toxolasma pullus

John,

Thanks so much for your help and your time. This will definitely help me in writing the mussels section of the ICD. Take care and have a great holiday.

Alison

Alison Guth  
Licensing Coordinator  
Kleinschmidt Associates  
101 Trade Zone Drive  
Suite 21A  
West Columbia, SC 29170  
P: (803) 822-3177  
F: (803) 822-3183

-----Original Message-----

From: John\_Fridell@fws.gov [mailto:John\_Fridell@fws.gov]  
Sent: Monday, December 06, 2004 1:34 PM  
To: alison.guth@kleinschmidtusa.com  
Subject: Toxolasma pullus

Alison,

We found *Toxolasma pullus* at the mouth of Cane Creek, a tributary to Lake Greenwood, near the SC Highway 72 bridge crossing, in Laurens County -- after thinking about, I believe that it was in 1996 or 1997. If there is anything that I can help with, please let me know.

John

John Fridell  
US Fish and Wildlife Service  
160 Zillicoa Street  
Asheville, NC 28801  
PH: (828) 258 3939 ext. 225



**Kacie Jensen**

---

**From:** Alison Guth  
**Sent:** Monday, December 06, 2004 9:16 AM  
**To:** 'arthur bogan'  
**Subject:** RE: Mussels Data

Thank you for your help on this issue. I am presently checking with DNR, so hopefully I will be able to come up with some information.

Thanks again, Alison.

-----Original Message-----

**From:** arthur bogan [mailto:arthur.bogan@ncmail.net]  
**Sent:** Saturday, December 04, 2004 1:38 PM  
**To:** Alison Guth  
**Subject:** Re: Mussels Data

Dear Ms. Guth,  
We do not have any data on the Saluda River. Please check with SCDNR. Thank you  
Art

Alison Guth wrote:

Dear Dr. Bogan,

Goodmorning, Hal Beard of SCDNR suggested that I contact you about finding data on mussels in the lower Saluda River. I work for a company called Kleinschmidt Associates, we are an energy and water resource consulting firm with a office located here in Columbia, SC. Right now we are working with South Carolina Electric and Gas Company on relicensing their Saluda Hydropower Project. As part of the relicensing process, I am helping to put together an Initial Consultation Document that has, as you may already know, various information about the project, surrounding environment, resources, etc. We would like to put a section together on mussels, however, I am having a hard time locating information and studies for mussels on the lower Saluda River. I was hoping you could provide me with some direction as to where I could look for such information, or if you know of any studies that have been done. Thank you so much in advance for your help. Hope to be hearing from you soon!

Thanks again,  
Alison Guth  
Licensing Coordinator  
*Kleinschmidt Associates*  
101 Trade Zone Drive  
Suite 21A  
West Columbia, SC 29170  
P: (803) 822-3177  
F: (803) 822-3183

--  
--

Arthur E. Bogan, Ph.D.

Curator of Aquatic Invertebrates  
North Carolina State Museum of Natural Sciences  
Research Laboratory  
4301 Reedy Creek Road  
Raleigh, NC 27607

Tel. (919) 733-7450 ext 753  
Fax (919) 715-2294  
email [arthur.bogan@ncmail.net](mailto:arthur.bogan@ncmail.net)

Research Associate, Malacology, Div. of Invertebrate Zoology  
American Museum of Natural History  
<http://research.amnh.org/invertzoo/mollusk/staff/index.html>

Workbook and Key to the freshwater bivalves of North Carolina  
by A.Bogan  
<http://www.naturalsciences.org/research/inverts/bogan.html>

Freshwater Mollusk Bibliography  
Compiled by K. Cummings, A.Bogan, G.T. Watters,  
and C.A. Mayer  
<http://ellipse.inhs.uiuc.edu/mollusk/>

Extinct mollusk list (387 species)  
<http://research.amnh.org/users/mikkell/creo.html>

The Southeastern Naturalist  
a new journal for the southeastern United States  
<http://maine.maine.edu/~eaghill/JSGENINF.html>

**Kacie Jensen**

---

**From:** Jennifer Price [PriceJ@dnr.sc.gov]  
**Sent:** Thursday, December 02, 2004 12:53 PM  
**To:** Alison Guth  
**Cc:** aldermjm@mindspring.com; tsavidge@thecatenagroup.com  
**Subject:** RE: Mussels Info

Dear Ms. Guth,

SCDNR is in the early stages of assembling a database of information about the distribution of mussels in South Carolina. I have some information on mussels, although we know of other surveys that have been conducted, and we do not have data for all of them yet. In looking at the data that we do have, there is not a large amount of information from the lower Saluda. There is some from the Saluda River in Greenville, Pickens, and Anderson Counties (I would call this the Upper Saluda). Two survey sites are listed from the L. Saluda river, but at both, no mussels were found. I do not know how extensive the search was at those particular sites. I have heard that the Savannah lilliput, *Toxolasma pullus*, has been found at Lake Greenwood in the Saluda drainage. It is a Federal Species of concern, and is under consideration for further protection. John Fridell at USFWS may be able to tell you more about its status and distribution. His e-mail address is [John\\_fridell@fws.gov](mailto:John_fridell@fws.gov). I have also copied John Alderman and Tim Savidge on this message. They are environmental consultants that specialize in conducting mussel surveys. They may know of more recent work done in that area or planned for the future, and you may want to contact one of them when it is time to plan some aquatic surveys as part of the relicensing process.

Good luck, and let me know if you have any other questions.

Jennifer Price  
Biologist  
South Carolina DNR  
Fisheries Research  
1921 Vanboklen Road  
Eastover, SC 29044  
phone: 803-353-8232  
fax: 803-353-8552

-----Original Message-----

**From:** Alison Guth [mailto:[Alison.Guth@KleinschmidtUSA.com](mailto:Alison.Guth@KleinschmidtUSA.com)]  
**Sent:** Thursday, December 02, 2004 11:53 AM  
**To:** Jennifer Price  
**Subject:** Mussels Info

Dear Ms. Price,

Goodmorning, Dr. Eversole of Clemson University suggested that I contact you about finding data on mussels in the lower Saluda River. I work for a company called Kleinschmidt Associates, we are an energy and water resource consulting firm with a office located here in Columbia. Right now we are working with South Carolina Electric and Gas on relicensing their Saluda Hydropower Project. As part of the relicensing process, I am helping to put together an Initial Consultation Document that has, as you may already know, various information about the project, surrounding environment, resources, etc. We would like to put a section together on mussels, however, I am having a hard time locating

information and studies for mussels on the lower Saluda River. I was hoping you could provide me with some direction as to where I could look for such information, or if you know of any studies that have been done. Thank you so much in advance for your help. Hope to be hearing from you soon!

Thanks again,  
Alison Guth  
Licensing Coordinator  
*Kleinschmidt Associates*  
*101 Trade Zone Drive*  
*Suite 21A*  
*West Columbia, SC 29170*  
*P: (803) 822-3177*  
*F: (803) 822-3183*

## Kacie Jensen

---

**From:** Alison Guth  
**Sent:** Thursday, December 02, 2004 11:53 AM  
**To:** 'PriceJ@dnr.sc.gov'  
**Subject:** Mussels Info

Dear Ms. Price,

Goodmorning, Dr. Eversole of Clemson University suggested that I contact you about finding data on mussels in the lower Saluda River. I work for a company called Kleinschmidt Associates, we are an energy and water resource consulting firm with a office located here in Columbia. Right now we are working with South Carolina Electric and Gas on relicensing their Saluda Hydropower Project. As part of the relicensing process, I am helping to put together an Initial Consultation Document that has, as you may already know, various information about the project, surrounding environment, resources, etc. We would like to put a section together on mussels, however, I am having a hard time locating information and studies for mussels on the lower Saluda River. I was hoping you could provide me with some direction as to where I could look for such information, or if you know of any studies that have been done. Thank you so much in advance for your help. Hope to be hearing from you soon!

Thanks again,  
Alison Guth  
Licensing Coordinator  
*Kleinschmidt Associates*  
*101 Trade Zone Drive*  
*Suite 21A*  
*West Columbia, SC 29170*  
*P: (803) 822-3177*  
*F: (803) 822-3183*

## Kacie Jensen

---

**From:** Alison Guth  
**Sent:** Thursday, December 02, 2004 11:33 AM  
**To:** 'arthur.bogan@ncmail.net'  
**Subject:** Mussels Data

Dear Dr. Bogan,

Goodmorning, Hal Beard of SCDNR suggested that I contact you about finding data on mussels in the lower Saluda River. I work for a company called Kleinschmidt Associates, we are an energy and water resource consulting firm with a office located here in Columbia, SC. Right now we are working with South Carolina Electric and Gas Company on relicensing their Saluda Hydropower Project. As part of the relicensing process, I am helping to put together an Initial Consultation Document that has, as you may already know, various information about the project, surrounding environment, resources, etc. We would like to put a section together on mussels, however, I am having a hard time locating information and studies for mussels on the lower Saluda River. I was hoping you could provide me with some direction as to where I could look for such information, or if you know of any studies that have been done. Thank you so much in advance for your help. Hope to be hearing from you soon!

Thanks again,  
Alison Guth  
Licensing Coordinator  
[Kleinschmidt Associates](#)  
101 Trade Zone Drive  
Suite 21A  
West Columbia, SC 29170  
P: (803) 822-3177  
F: (803) 822-3183

**Kacie Jensen**

---

**From:** Hal Beard [BeardH@dnr.sc.gov]  
**Sent:** Wednesday, December 01, 2004 1:36 PM  
**To:** Alison Guth  
**Subject:** RE: Mussels Info

Alison,  
I might suggest you contact:

Dr. Arthur Bogan  
NC State Museum of Natural Sciences  
919-733-7450  
Email [arthur.bogan@ncmail.net](mailto:arthur.bogan@ncmail.net)

Dr. Arnie Eversole  
Clemson University  
864-656-5328  
[AVersl@clemson.edu](mailto:AVersl@clemson.edu)

[Hal Beard]

-----Original Message-----

**From:** Alison Guth [mailto:[Alison.Guth@KleinschmidtUSA.com](mailto:Alison.Guth@KleinschmidtUSA.com)]  
**Sent:** Wednesday, December 01, 2004 10:02 AM  
**To:** Hal Beard  
**Subject:** Mussels Info

Hey Hal,  
Hope you are doing well this morning. I am currently looking into putting together a mussels section for the Initial Consultation Package for Saluda Hydro and Alan said that he briefly talked to you about it and you had mentioned the name of a state malacologist. I was just wondering if could send me their contact information if you had it. Thanks so much in advance for your help. Hope to be hearing from you soon!

Thanks again,  
Alison Guth  
Licensing Coordinator  
Kleinschmidt Associates  
(803) 822-3177

## Kacie Jensen

---

**From:** Shane Boring  
**Sent:** Tuesday, December 27, 2005 7:16 AM  
**To:** Shane Boring; "Amanda Hill (amanda\_hill@fws.gov)"; "Hal Beard (BeardH@scdnr.state.sc.us)"; "Prescott Brownell (prescott.brownell@NOAA.gov)"; "Steve Summer (ssummer@scana.com)"; "dchristie@infoave.net"; "Mark A. Cantrell (mark\_a\_cantrell@fws.gov)"; "Steve Leach"  
**Cc:** BARGENTIERI@scana.com; "Steve Summer (ssummer@scana.com)"; Alison Guth; Alan Stuart  
**Subject:** RE: 2005 Lower Saluda/Upper Congaree River Diadromous Fish Study Summary Report -- Draft for Agency Review

Hello All:

After talking with several of you, it looks as if Monday, January 9 is the best day for a conference call to discuss next year's diadromous sampling on the Saluda. Let's shoot for 10:00 AM. Please let me know whether or not this works with your schedule. We will forward an access number/code as soon as we determine whether everyone can meet.

Thank you,  
Shane Boring

-----Original Message-----

**From:** Shane Boring  
**To:** Shane Boring; 'Amanda Hill (amanda\_hill@fws.gov)'; 'Hal Beard (BeardH@scdnr.state.sc.us)'; 'Prescott Brownell (prescott.brownell@NOAA.gov)'; 'Steve Summer (ssummer@scana.com)'; 'dchristie@infoave.net'; 'Mark A. Cantrell (mark\_a\_cantrell@fws.gov)'; 'Steve Leach'  
**Cc:** 'Argentieri, Bill'; 'Steve Summer (ssummer@scana.com)'; Alison Guth; Alan Stuart  
**Sent:** 12/16/05 9:55 AM  
**Subject:** RE: 2005 Lower Saluda/Upper Congaree River Diadromous Fish Study Summary Report -- Draft for Agency Review

Hello Folks:

This is just a reminder that comments on the draft report summarizing SCE&G's diadromous fish sampling efforts in the Lower Saluda and Upper Congaree during 2005 were due on December 14th. Many thanks to those who have provided comments.

Now that our 2005 efforts are drawing to a close, it's time to start gearing up for 2006. As such, we would like to schedule a conference call within the next few weeks to discuss any needed changes to the study plan. Based on feedback I've gotten so far regarding schedules, it looks as if we could have a call next Thursday (December 22nd) or we'll need to wait until the first week of January. If you all could let me know your availability, it would be much appreciated.

Thanks, and if I don't get a chance to speak to you before the end of the year, have a safe and joyous holiday season.

C. Shane Boring  
Environmental Scientist  
Kleinschmidt Associates  
101 Trade Zone Dr., Suite-21A  
West Columbia, SC 29170  
Phone: (803)822-3177  
Fax: (803)822-3183

> -----Original Message-----

>From: Shane Boring  
>Sent: Tuesday, November 22, 2005 5:06 PM



>To: 'Amanda Hill (amanda\_hill@fws.gov)'; 'Hal Beard  
>(BeardH@scdnr.state.sc.us)'; 'Prescott Brownell  
>(prescott.brownell@NOAA.gov)'; 'Steve Summer (ssummer@scana.com)';  
>'dchristie@infoave.net'; Mark A. Cantrell (mark\_a\_cantrell@fws.gov);  
>Steve Leach  
>Cc: 'Argentieri, Bill'; 'Steve Summer (ssummer@scana.com)'; Alison  
>Guth; Alan Stuart  
>Subject: 2005 Lower Saluda/Upper Congaree River Diadromous Fish  
>Study Summary Report -- Draft for Agency Review  
>  
>Hello folks:  
>  
>Attached for your review is the Draft Summary Report of SCE&G's  
>diadromous fish sampling efforts in the Lower Saluda and Upper Congaree  
>Rivers during 2005. Please have your comments back to me by December  
>14, 2005. This will allow sufficient time to incorporate any changes  
>to the 2006 study plan that are deemed necessary based on the 2005  
>results. Thanks for your continued input and interest in the Saluda  
>Diadromous Studies.  
>  
>C. Shane Boring  
>Environmental Scientist  
>Kleinschmidt Associates  
>101 Trade Zone Dr., Suite-21A  
>West Columbia, SC 29170  
>Phone: (803)822-3177  
>Fax: (803)822-3183  
>  
>  
> << File: 2005 Saluda Diadromous Summary Report (draft;11212005).doc >>  
>  
>  
>

## Kacie Jensen

---

**From:** Shane Boring  
**Sent:** Friday, December 16, 2005 9:55 AM  
**To:** Shane Boring; 'Amanda Hill (amanda\_hill@fws.gov)'; 'Hal Beard (BeardH@scdnr.state.sc.us)'; 'Prescott Brownell (prescott.brownell@NOAA.gov)'; 'Steve Summer (ssummer@scana.com)'; 'dchristie@infoave.net'; 'Mark A. Cantrell (mark\_a\_cantrell@fws.gov)'; 'Steve Leach'  
**Cc:** BARGENTIERI@scana.com; 'Steve Summer (ssummer@scana.com)'; Alison Guth; Alan Stuart  
**Subject:** RE: 2005 Lower Saluda/Upper Congaree River Diadromous Fish Study Summary Report -- Draft for Agency Review

Hello Folks:

This is just a reminder that comments on the draft report summarizing SCE&G's diadromous fish sampling efforts in the Lower Saluda and Upper Congaree during 2005 were due on December 14th. Many thanks to those who have provided comments.

Now that our 2005 efforts are drawing to a close, it's time to start gearing up for 2006. As such, we would like to schedule a conference call within the next few weeks to discuss any needed changes to the study plan. Based on feedback I've gotten so far regarding schedules, it looks as if we could have a call next Thursday (December 22nd) or we'll need to wait until the first week of January. If you all could let me know your availability, it would be much appreciated.

Thanks, and if I don't get a chance to speak to you before the end of the year, have a safe and joyous holiday season.

C. Shane Boring  
Environmental Scientist  
Kleinschmidt Associates  
101 Trade Zone Dr., Suite-21A  
West Columbia, SC 29170  
Phone: (803)822-3177  
Fax: (803)822-3183

-----Original Message-----

**From:** Shane Boring  
**Sent:** Tuesday, November 22, 2005 5:06 PM  
**To:** 'Amanda Hill (amanda\_hill@fws.gov)'; 'Hal Beard (BeardH@scdnr.state.sc.us)'; 'Prescott Brownell (prescott.brownell@NOAA.gov)'; 'Steve Summer (ssummer@scana.com)'; 'dchristie@infoave.net'; Mark A. Cantrell (mark\_a\_cantrell@fws.gov); Steve Leach  
**Cc:** 'Argentieri, Bill'; 'Steve Summer (ssummer@scana.com)'; Alison Guth; Alan Stuart  
**Subject:** 2005 Lower Saluda/Upper Congaree River Diadromous Fish Study Summary Report -- Draft for Agency Review

Hello folks:

Attached for your review is the Draft Summary Report of SCE&G's diadromous fish sampling efforts in the Lower Saluda and Upper Congaree Rivers during 2005. Please have your comments back to me by December 14, 2005. This will allow sufficient time to incorporate any changes to the 2006 study plan that are deemed necessary based on the 2005 results. Thanks for your continued input and interest in the Saluda Diadromous Studies.

C. Shane Boring  
Environmental Scientist  
Kleinschmidt Associates  
101 Trade Zone Dr., Suite-21A  
West Columbia, SC 29170  
Phone: (803)822-3177  
Fax: (803)822-3183

<< File: 2005 Saluda Diadromous Summary Report (draft;11212005).doc >>

**Kacie Jensen**

---

**From:** RMAHAN@scana.com  
**Sent:** Tuesday, November 08, 2005 4:58 PM  
**To:** BARGENTIERI@scana.com; Alison Guth  
**Cc:** Shane Boring; Amanda Hill; Hal Beard; Alan Stuart; mark\_a\_cantrell@fws.gov; SUMMER, STEPHEN E; dchristie@infoave.net  
**Subject:** RE: American Eel Report

I saw only a couple of small items. One is the expiration date for the current Saluda license, which is not August 31, 2005, but 2010. And I'm not sure it is correct to say that the Saluda project lies **along** the banks of the Saluda River so much as **astride** the Saluda River – or words to that effect.

---

**From:** ARGENTIERI, WILLIAM R  
**Sent:** Tuesday, November 08, 2005 4:08 PM  
**To:** 'Alison Guth'  
**Cc:** Shane Boring; 'Amanda Hill'; 'Hal Beard'; Alan Stuart; 'mark\_a\_cantrell@fws.gov'; SUMMER, STEPHEN E; MAHAN, RANDOLPH R; 'dchristie@infoave.net'  
**Subject:** RE: American Eel Report

Alison,

Good job on this report. I have added wording and one comment on page 15, just above Table 1 (see attached document).

Bill

---

**From:** Alison Guth [mailto:Alison.Guth@KleinschmidtUSA.com]  
**Sent:** Thursday, November 03, 2005 11:27 AM  
**To:** Shane Boring; 'Amanda Hill'; ARGENTIERI, WILLIAM R; 'Hal Beard'; Alan Stuart; 'mark\_a\_cantrell@fws.gov'; SUMMER, STEPHEN E; MAHAN, RANDOLPH R; 'dchristie@infoave.net'  
**Subject:** American Eel Report

Good Morning,

Attached to this email is a draft copy of the 2005 American Eel Survey Report. Please take a look at it and let me know if you have any comments by November 18th. If at all possible, please put any edits to content in track changes. It is quite a large file, so let me know if you have any problems opening it and I will get it to you another way. Thanks so much for all of your involvement, and as always, give me a call if you have any questions.

Thanks,  
Alison

<<Diad Fish Eel Survey (11-3-2005 acgdraft).doc>>

Alison Guth

Licensing Coordinator

*Kleinschmidt Associates*

101 Trade Zone Drive

Suite 21A

## Kacie Jensen

---

**From:** Alison Guth  
**Sent:** Monday, November 07, 2005 4:39 PM  
**To:** 'Malcolml@gwm.sc.edu'  
**Subject:** RE: New F&W agenda



Fish and Wildlife RCG Agenda.p...  
Water Quality RCG Agenda.pdf (...  
Sure

-----Original Message-----

From: Malcolm Leaphart [mailto:malcolml@mailbox.sc.edu]  
Sent: Monday, November 07, 2005 4:36 PM  
To: Alison Guth  
Subject: Re: New F&W agenda

Alison, I am not getting any of the pdf files with the agendas. Would you please resend those to me at Malcolml@gwm.sc.edu. Sorry for the extra trouble, but my personal mailbox at USC has some attachment restrictions that our business email system does not. Thank You.

Quoting Alison Guth <Alison.Guth@KleinschmidtUSA.com>:

> Hello all:  
>  
> There was a mistake with the previous agenda for the Fish and Wildlife  
> Resource Conservation Group. Please note that Lee Xanthakos will be  
> giving his presentation at 1:00 instead of 10:00. Thanks, Alison  
>  
> <<Fish and Wildlife RCG Agenda.pdf>>  
>  
> Alison Guth  
> Licensing Coordinator  
> Kleinschmidt Associates  
> 101 Trade Zone Drive  
> Suite 21A  
> West Columbia, SC 29170  
> P: (803) 822-3177  
> F: (803) 822-3183  
>  
>  
>

**Kacie Jensen**

---

**From:** Hal Beard [BeardH@dnr.sc.gov]  
**Sent:** Friday, November 04, 2005 8:47 AM  
**To:** Alison Guth  
**Subject:** RE: American Eel Report

Alison,  
Thanks for the report. One minor correction with respect to my work on the LSR. Page 13, Discussion Section stated my electrofishing involved a ten day sampling period. Actually I sample ten sites within the river which usually take me about 3 days to complete. FYI my recent fall sampling resulted in 3 eels one of which was 825mm. Based on the lack of capture success from pots have you considered electrofishing or some other approach?

-----Original Message-----

**From:** Alison Guth [mailto:Alison.Guth@KleinschmidtUSA.com]  
**Sent:** Thursday, November 03, 2005 11:27 AM  
**To:** Shane Boring; 'Amanda Hill'; 'ARGENTIERI, WILLIAM R'; Hal Beard; Alan Stuart; 'mark\_a\_cantrell@fws.gov'; 'SUMMER, STEPHEN E'; 'rmahan@scana.com'; 'dchristie@infoave.net'  
**Subject:** American Eel Report

Good Morning,

Attached to this email is a draft copy of the 2005 American Eel Survey Report. Please take a look at it and let me know if you have any comments by November 18th. If at all possible, please put any edits to content in track changes. It is quite a large file, so let me know if you have any problems opening it and I will get it to you another way. Thanks so much for all of your involvement, and as always, give me a call if you have any questions.

Thanks,  
Alison

<<Diad Fish Eel Survey (11-3-2005 acgdraft).doc>>

Alison Guth  
Licensing Coordinator  
*Kleinschmidt Associates*  
101 Trade Zone Drive  
Suite 21A  
West Columbia, SC 29170  
P: (803) 822-3177  
F: (803) 822-3183

**Kacie Jensen**

---

**From:** Jennifer Price [PriceJ@dnr.sc.gov]  
**Sent:** Tuesday, August 16, 2005 3:38 PM  
**To:** Shane Boring  
**Subject:** RE: Saluda Basin Mussels

Hi Shane,

I do have a copy of the report, but it's paper rather than PDF. I could either copy it and mail it to you or look for someone who has a PDF. The report might be useful if you need to cite it, but if you are looking for info. on what is known about the heelsplitter, it is out of date. Several new populations have been discovered. I believe that the newest discoveries are South Fork Fishing Creek and Bull Run Creek, including an unnamed trib of Bull Run creek. Both populations are in Chester County. I'll send you another e-mail in a minute regarding recently discovered populations.

Jennifer

-----Original Message-----

**From:** Shane Boring [mailto:Shane.Boring@KleinschmidtUSA.com]  
**Sent:** Tuesday, August 16, 2005 3:13 PM  
**To:** Jennifer Price  
**Subject:** Saluda Basin Mussels

Jennifer:

Do you have a copy of the following report that you could pass on to me? A PDF would be fine.

Alderman, J.M. 1998. Survey for the Endangered Carolina Heelsplitter (*Lasmigona decorata*) in South Carolina. Final Report to the South Carolina Department of Natural Resources

Thanks so much for all of the information regarding this issue.  
Shane

C. Shane Boring  
Environmental Scientist  
Kleinschmidt Associates  
101 Trade Zone Dr., Suite-21A  
West Columbia, SC 29170  
Phone: (803)822-3177  
Fax: (803)822-3183

**Kacie Jensen**

---

**From:** Bob Seibels [bseibels@riverbanks.org]  
**Sent:** Friday, August 12, 2005 10:41 AM  
**To:** Alison Guth  
**Subject:** RE: Resource Conservation Group committee interest.

Hello Alison,

As you suggest, Fisheries and Wildlife sounds like the group I want to be in.  
Thanks a bunch!

Bob

Robert E. Seibels  
Curator of Birds  
Riverbanks Zoological Park & Botanical Garden  
PO Box 1060  
Columbia, SC 29202  
Phone: 803.779.8717 x1109  
Fax: 803.253.6381

---

**From:** Alison Guth [mailto:Alison.Guth@KleinschmidtUSA.com]  
**Sent:** Friday, August 12, 2005 9:29 AM  
**To:** Bob Seibels  
**Subject:** RE: Resource Conservation Group committee interest.

Mr. Seibels,

I would be happy to place you in the Resource Conservation Groups, they should be getting started sometime in September. You are more than welcome to join as many groups as you feel you can handle, however if your major concerns are regarding RTE species then I think your topics would be best addressed in the Fisheries and Wildlife Group. Let me know if this sounds good to you and I will add you to the list. Thanks so much.

Alison  
Alison Guth  
Licensing Coordinator  
Kleinschmidt Associates  
101 Trade Zone Drive Suite 21A  
West Columbia, SC 29170  
P: (803) 822-3177  
F: (803) 822-3183

-----Original Message-----

10/31/2007

**From:** Bob Seibels [mailto:bseibels@riverbanks.org]  
**Sent:** Friday, August 12, 2005 9:18 AM  
**To:** alison.guth@kleinschmidtUSA.com  
**Subject:** Resource Conservation Group committee interest.

Hello Alison,

I am interested in being involved with the committee (Operations?) responsible for Endangered/Threatened animal species conservation during the Saluda Hydro relicensing project. My personal information is provided below.

Thanks,

Bob Seibels

Robert E. Seibels

Curator of Birds

Riverbanks Zoological Park & Botanical Garden

PO Box 1060

Columbia, SC 29202

Phone: 803.779.8717 x1109

Fax: 803.253.6381

E-mail: [bseibels@riverbanks.org](mailto:bseibels@riverbanks.org)



**Kacie Jensen**

---

**From:** Shane Boring  
**Sent:** Thursday, May 05, 2005 3:55 PM  
**To:** Alison Guth  
**Subject:** FW: NMFS comments on Draft permit for Shortnose Sturgeon Scientific Research Permit

-----Original Message-----

**From:** Jennifer Jefferies [mailto:Jennifer.Jefferies@noaa.gov]  
**Sent:** Thursday, May 05, 2005 1:48 PM  
**To:** Shane Boring  
**Cc:** Carrie W Hubbard  
**Subject:** NMFS comments on Draft permit for Shortnose Sturgeon Scientific Research Permit

Hi Shane,

I have taken a quick look at your draft application and have several comments. We can discuss this further in the conference call this afternoon. In addition, I would like to encourage you again to use the draft new instructions when you revise your application. I think the guidance provided by the new instructions will help a lot with your revision. I have attached these instructions again just in case they didn't go through the first time.

1. **Applicant/Principal Investigator identities:** There can only be one permit holder and this is a non-transferrable title for the duration of the permit. There can also only be one Principal Investigator listed at any one time although this can be changed if needed at some point during the life of the permit. Everyone else who may act as the PI in the absence of the PI will be listed as a Co-Investigator. They are authorized to do all activities authorized by the permit in the absence of the PI but the PI has ultimate responsibility for what happens under the permit. Up to date CVs must be submitted for everyone who will act as either the PI or a CI. You can add CIs at any time during the life of the permit; you just need to send in a request letter from the PI and include a CV for the requested individual. Turn around time is usually a week or so. Also, if the radio/acoustic tagging is to be done by SCDNR folks, this work either needs to be authorized in their permit (in which case this should be removed from your application ) or they must be listed as CIs under your permit.

2. Do you have any sources for the statements made about the landlocked population in the last paragraph of F.1.?

3. Under Project Methodology, please provide more detail about:

- the sampling plan, specifically will it be conducted year round or vary with season, how often to you plan to sample in general and also at any one site, what is the risk of recapture and can you comment on minimizing cumulative risk of recapture;
- you mention "a variety of standard fishing gears may be employed to capture adult SNS" but only talk about gillnets and trawls - are there any others and, if so, please provide detail of the others including frequency of use and any bycatch issues;
- please provide more detail on the size and type of gillnet (anchored or drift) and type, number and effect of capture on any bycatch;
- please provide more detail on the potential, if any, effects on the habitat of the trawls (you mention the use will be based on bottom topography but you do not provide any detail of it - what

type of habitat with you trawl on, what effects might arise from it) and also please address the bycatch issue with regards to trawls too;

- please provide more detail on the use of radio or acoustic tags, specifically, size and type, methods of attachment (does this differ b/w radio or acoustic tags), how long will they will work, how long are they expected to stay in the sturgeon, how do they get expelled (if at all), when during the year you will attach them, and how you will ensure that spawning females are not used;
- you mention that 25 total over the life of the permit will have these radio/acoustic tags but in the take table you say 25 annually - please clarify this;
- you mention that captured fish will be processed in less than 10 minutes - please comment on whether this is at all dependent upon the amount you catch at any one time and what you would do if you caught a lot of fish at once; and
- in G.3. you say that sturgeon will be anesthetized if thrashing continues but in G.1.c. you say that MS-222 will only be used for tag implantation - please clarify.

4. You will need to justify your take numbers further. We can discuss this further in the conference call this afternoon.

5. Finally, although you put in a sentence that the dam is within the historic range of sturgeon and you need to know what the population is, I think you need a sentence or two to expand on why this information is important.

Ok, I think that is enough for now. Let me know if you have any questions. Hopefully you will get this before the call but if not, we can discuss it further at a later time.

Best,  
Jen Jefferies

Shane Boring wrote:

Hello Folks:

Attached is the draft Shortnose Sturgeon Scientific Research Permit application for use as a reference during our Thursday conference call. This is a draft, so please excuse any rough spots. Look forward to talking with you all on Thursday at 2:30 eastern.

Shane

<<SNS\_Application(050205\_CSB).doc>>

C. Shane Boring  
Environmental Scientist  
Kleinschmidt Associates  
101 Trade Zone Dr., Suite-21A  
West Columbia, SC 29170  
Phone: (803)822-3177  
Fax: (803)822-3183

## Kacie Jensen

---

**From:** Prescott Brownell [Prescott.Brownell@noaa.gov]  
**Sent:** Monday, April 04, 2005 11:17 AM  
**To:** Alison Guth  
**Subject:** Re: Eel Sampling Update

Alison Guth wrote:

> Hello everyone,  
>  
> I just wanted to send out an email to let you know how the eel  
> sampling was progressing.  
>  
> The traps were deployed at the four sampling locations on the 4th of  
> February, and I have been checking them on a weekly basis since that  
> time. The traps have been allowed to continuously fish since they  
> were first deployed, however, no eels have been captured to date. The  
> by-catch from the traps is being recorded. I have had some difficulty  
> with individuals tampering with my traps at the Saluda Shoals location  
> as well as the Corley Mill location. I have talked with the Park  
> Ranger at Saluda Shoals and have hopefully resolved the issue at that  
> location. I have also removed the vandalized trap from the Corley Mill  
> location and have gained access to property owned by Mr. Earhart. He  
> has allowed me to deploy a trap off of his dock, located at the  
> confluence of Twelvemile Creek and the Lower Saluda River, just  
> downstream of the Corley Mill dam.  
>  
> I will keep continue to keep you posted of any developments. Thanks  
> so much and take care.  
>  
> Sincerely,  
> Alison Guth  
>  
>  
> Alison Guth  
> Licensing Coordinator  
> /Kleinschmidt Associates/  
> /101 Trade Zone Drive/  
> /Suite 21A/  
> /West Columbia, SC 29170/  
> /P: (803) 822-3177/  
> /F: (803) 822-3183/  
>  
>

Hi Alison,  
thank you for providing the update on eel sampling. It just occurred to  
me that SCDNR is doing some sampling for eels as well...down at the St.  
Stephen fish lift. You might consider calling Doug Cooke or Steve Leach  
to find out when the eels are moving at that location further  
downstream. I imagine it would take at least 2 weeks for elvers to get  
from St.Stephen to the Saluda....if they are able to pass at St. Stephen  
or Pinopolis. Their number is 843-825-3387.

have a good day

PB

## Kacie Jensen

---

**From:** Alison Guth  
**Sent:** Tuesday, March 15, 2005 1:35 PM  
**To:** 'CookeD@dnr.sc.gov'  
**Subject:** Eel Sampling Update

Hello everyone,

I just wanted to send out an email to let you know how the eel sampling was progressing.

The traps were deployed at the four sampling locations on the 4th of February, and I have been checking them on a weekly basis since that time. The traps have been allowed to continuously fish since they were first deployed, however, no eels have been captured to date. The by-catch from the traps is being recorded. I have had some difficulty with individuals tampering with my traps at the Saluda Shoals location as well as the Corley Mill location. I have talked with the Park Ranger at Saluda Shoals and have hopefully resolved the issue at that location. I have also removed the vandalized trap from the Corley Mill location and have gained access to property owned by Mr. Earhart. He has allowed me to deploy a trap off of his dock, located at the confluence of Twelvemile Creek and the Lower Saluda River, just downstream of the Corley Mill dam.

I will keep continue to keep you posted of any developments. Thanks so much and take care.

Sincerely,  
Alison Guth

Alison Guth  
Licensing Coordinator  
[Kleinschmidt Associates](#)  
101 Trade Zone Drive  
Suite 21A  
West Columbia, SC 29170  
P: (803) 822-3177  
F: (803) 822-3183

## Kacie Jensen

---

**From:** Shane Boring  
**Sent:** Friday, December 29, 2006 9:31 AM  
**To:** Shane Boring; Alan Stuart; Amanda Hill; Bill Argentieri; Bob Perry ; Brandon Stutts ; Buddy Baker ; Dick Christie; Jennifer Summerlin; Jim Glover; Randy Mahan; Ron Ahle  
**Cc:** Tom Murphy (murphyt@dnr.sc.gov)  
**Subject:** RE: Lake Murray Waterfowl Surveys - Update

All:

The second of the Lake Murray Waterfowl Surveys was performed on December 27th, as scheduled, by Warren "Cub" Stephens of the Univ. of GA - Savannah River Ecology Lab. Observations were as follows:

900 scaup  
100 ringneck ducks  
50 mallard  
60 Canada geese  
scattered buffleheads and loons (less than 50 each)

Thanks for your continued interest in the Lake Murray waterfowl surveys.

Shane Boring

**Kacie Jensen**

---

**From:** Shane Boring  
**Sent:** Monday, December 18, 2006 10:56 AM  
**To:** 'Buddy Baker'  
**Cc:** 'Bob Perry'  
**Subject:** RE: Lake Murray Waterfowl Surveys - Update

Buddy:

Actually we did see a few Canada Geese. Cub asked me during the flight if he was supposed to record geese and I responded yes. However, I prepared this morning's e-mail based on his notes, and I see that he did not record the geese. I will have him add those back in ... my recollection was that we saw about 25 in one location. Cub may have it in his notebook, but not on the map that he copied for me.

We were also surprised that we did not see any black and white ducks (scaup, etc). The weather was very mild at the time of the survey, so we were speculating that they might have taken off for the coast. I wish we would have been able to get a survey during the recent cold snap. Have you guys ever documented any short term, regional migrations related to prevailing weather (i.e. migration to cooler areas in NC, VA, etc. for a few weeks during these warm snaps)?

The bulk of the mallards are represented by a single raft of approx 150-200 that we located in a backwater area of the Saluda above the lake. We have also observed wood storks and many other wading birds in this area. It's sort of in the transition area that is basically a flowing river, but is influenced by the reservoir pool; it is near the mouth of BeaverDam Creek above Hwy 395 (Kempsons Bridge) and below Hwy 121 (Newberry HWY).

I'll keep you posted.

Shane

-----Original Message-----

**From:** Buddy Baker [mailto:BakerB@dnr.sc.gov]  
**Sent:** Monday, December 18, 2006 10:28 AM  
**To:** Shane Boring  
**Cc:** Bob Perry  
**Subject:** RE: Lake Murray Waterfowl Surveys - Update

Shane, This is very surprising results. I would expect a good number of Canada Geese and Buffle Heads. The number of mallards is way beyond anything that we ever see. Were they at the head of the lake possible associated with one of the release mallard projects. I understand that there is a release pond across the river from the proposed waterfowl project site. Also surprised that there was not at least a few scaup or ringnecks. It will be interesting to see how this changes on the next flight.

---

**From:** Shane Boring [mailto:Shane.Boring@KleinschmidtUSA.com]  
**Sent:** Monday, December 18, 2006 10:09 AM  
**To:** Shane Boring; Shane Boring; Alan Stuart; Amanda Hill; Bill Argentieri; Bob Perry; Brandon Stutts ; Buddy Baker; Dick Christie; Jennifer Summerlin; Jim Glover; Randy Mahan; Ron Ahle  
**Subject:** RE: Lake Murray Waterfowl Surveys - Update

All:

The Lake Murray waterfowl survey was performed on December 14, 2006, as scheduled. Survey results are summarized below:

Observers: Shane Boring (Kleinschmidt), Warren "Cub" Stephens (Savannah River Ecology Lab)

Duration: 14:45 - 16:15

Weather Conditions: Hazy, Partly Cloudy, Calm, 62 degrees F

Species/Numbers Observed: Mallards (207); Coots (50)

Thanks for your interest in the Lake Murray waterfowl surveys. The next survey is scheduled for December 27th.

C. Shane Boring  
Environmental Scientist  
Kleinschmidt Associates  
101 Trade Zone Dr., Suite-21A  
West Columbia, SC 29170  
Phone: (803)822-3177  
Fax: (803)822-3183

-----Original Message-----

**From:** Shane Boring

**Sent:** Tuesday, December 12, 2006 12:48 PM

**To:** Shane Boring; Alan Stuart; Amanda Hill; Bill Argentieri; Bob Perry ; Brandon Stutts ; Buddy Baker ; Dick Christie; Jennifer Summerlin; Jim Glover; Randy Mahan; Ron Ahle

**Subject:** Lake Murray Waterfowl Surveys - Update

All:

After twice being cancelled due to weather, the initial waterfowl survey for Lake Murray is scheduled for this Thursday, December 14th. The survey will be conducted by Warren Stephens from Savannah River Ecology Lab, and a brief summary of result will be e-mail to the group afterward. After consulting with Bobby Kennamer (SREL) and Buddy Baker (SCDNR), it has been determined that the survey that was twice cancelled due to weather during November will be made up at the end of the survey period, most likely in Mid February.

A survey schedule, which includes a scheduled and weather date for each survey is attached.

Thanks  
C. Shane Boring  
Environmental Scientist  
Kleinschmidt Associates  
101 Trade Zone Dr., Suite-21A  
West Columbia, SC 29170  
Phone: (803)822-3177  
Fax: (803)822-3183

<< File: 2006-2007 L Murray Waterfowl Survey Schedule.xls >>

**Kacie Jensen**

---

**From:** Shane Boring  
**Sent:** Monday, December 18, 2006 3:25 PM  
**To:** 'Jason Bettinger'  
**Cc:** Jennifer Summerlin  
**Subject:** RE: Receiver Locations

Jason:

We've been doing some research with Vemco and think we're getting close to determining which transmitters we need. However, to help address the code collision issue you identified, the objectives of the proposed study are as follows:

**I. Study Objective**

The objective of this study will be to characterize the movements of migrating American shad (*Alosa sappadissima*) in the Lower Saluda, Congaree, and Broad river's for purposes of determining: (1) usage by American shad in the lower Saluda River (LSR) and (2) potential usage of the Columbia fish passage on the Broad River.

Hope this helps.  
Shane

-----Original Message-----

**From:** Jason Bettinger [mailto:BettingerJ@dnr.sc.gov]  
**Sent:** Friday, December 15, 2006 4:14 PM  
**To:** Shane Boring  
**Subject:** RE: Receiver Locations

Shane,

Your best bet is to contact Vemco <http://www.vemco.com/> and get their input. It really depends on the size of fish that you plan to tag, the number of days you want to follow the fish, and the power output needed. You want to keep tag weight (in air) less than 2% of the body weight of the animal you are tagging. So if you think you will be working with shad 0.5 kg and larger keep tag weight to 10 g (in air) or less.

Do you all have some objectives for this study? If so send them along and I may be able to help a little more.

Jason

-----Original Message-----

**From:** Shane Boring [mailto:Shane.Boring@KleinschmidtUSA.com]  
**Sent:** Friday, December 15, 2006 11:10 AM  
**To:** Jason Bettinger  
**Cc:** Jennifer Summerlin  
**Subject:** RE: Receiver Locations

Jason:

If we do go forward with the Am. shad telemetry study, what type of transmitters do you think would be best? Specifically, Jeni is looking for some transmitter info to include in the draft study



plan (transmitter model, etc) Thanks

Shane

-----Original Message-----

**From:** Jason Bettinger [mailto:BettingerJ@dnr.sc.gov]

**Sent:** Tuesday, December 12, 2006 4:18 PM

**To:** Shane Boring

**Subject:** FW: Receiver Locations

<<reciever\_locs.emf>>

Jason

## Kacie Jensen

---

**From:** Shane Boring  
**Sent:** Monday, December 18, 2006 10:09 AM  
**To:** Shane Boring; Shane Boring; Alan Stuart; 'Amanda Hill'; 'Bill Argentieri'; 'Bob Perry'; 'Brandon Stutts'; 'Buddy Baker'; 'Dick Christie'; Jennifer Summerlin; 'Jim Glover'; 'Randy Mahan'; 'Ron Ahle'  
**Subject:** RE: Lake Murray Waterfowl Surveys - Update

All:

The Lake Murray waterfowl survey was performed on December 14, 2006, as scheduled. Survey results are summarized below:

Observers: Shane Boring (Kleinschmidt), Warren "Cub" Stephens (Savannah River Ecology Lab)

Duration: 14:45 - 16:15

Weather Conditions: Hazy, Partly Cloudy, Calm, 62 degrees F

Species/Numbers Observed: Mallards (207); Coots (50)

Thanks for your interest in the Lake Murray waterfowl surveys. The next survey is scheduled for December 27th.

C. Shane Boring  
Environmental Scientist  
Kleinschmidt Associates  
101 Trade Zone Dr., Suite-21A  
West Columbia, SC 29170  
Phone: (803)822-3177  
Fax: (803)822-3183

-----Original Message-----

**From:** Shane Boring  
**Sent:** Tuesday, December 12, 2006 12:48 PM  
**To:** Shane Boring; Alan Stuart; Amanda Hill; Bill Argentieri; Bob Perry; Brandon Stutts; Buddy Baker; Dick Christie; Jennifer Summerlin; Jim Glover; Randy Mahan; Ron Ahle  
**Subject:** Lake Murray Waterfowl Surveys - Update

All:

After twice being cancelled due to weather, the initial waterfowl survey for Lake Murray is scheduled for this Thursday, December 14th. The survey will be conducted by Warren Stephens from Savannah River Ecology Lab, and a brief summary of result will be e-mail to the group afterward. After consulting with Bobby Kennamer (SREL) and Buddy Baker (SCDNR), it has been determined that the survey that was twice cancelled due to weather during November will be made up at the end of the survey period, most likely in Mid February.

A survey schedule, which includes a scheduled and weather date for each survey is attached.

Thanks  
C. Shane Boring  
Environmental Scientist  
Kleinschmidt Associates  
101 Trade Zone Dr., Suite-21A  
West Columbia, SC 29170  
Phone: (803)822-3177  
Fax: (803)822-3183

<< File: 2006-2007 L Murray Waterfowl Survey Schedule.xls >>

**Kacie Jensen**

---

**From:** Shane Boring  
**Sent:** Monday, December 18, 2006 3:01 PM  
**To:** 'Gerrit Jobsis'  
**Subject:** RE: Agenda - Dec 19 Meeting to Discuss Impacts of Saluda Hydro on Congaree Floodplain and Congaree National Park

Hi Gerrit. I wouldn't read too much into the "focus." That was my feeble effort to make sure the Congaree NP folks felt included ... guess I didn't think about the other elements.

Shane

-----Original Message-----

**From:** Gerrit Jobsis [mailto:gjobsis@americanrivers.org]  
**Sent:** Monday, December 18, 2006 2:30 PM  
**To:** Shane Boring; balesw@dnr.sc.gov; Alison Guth; Amanda Hill; BARGENTIERI@scana.com; Bud Badr; Dick Christie; Hal Beard; Jennifer Summerlin; Jim Glover; Malcolm Leaphart; mquattlebaum@scana.com; Prescott Brownell; RMAHAN@scana.com; Ron Ahle; Scott Harder; Steve Summer; Theresa Thom; Brandon Kulik; Alan Stuart  
**Subject:** RE: Agenda - Dec 19 Meeting to Discuss Impacts of Saluda Hydro on Congaree Floodplain and Congaree National Park

Shane,

We are also interested in how Saluda affects the Congaree River aquatic community. I believe a better subject line for the meeting would be to .... Evaluate Effects of Saluda Hydro on the Congaree River and Congaree National Park.

See you tomorrow,

Gerrit

PS – My email has been down most of the day. Hopefully this message will go out soon.

---

Gerrit Jöbsis  
Director of Southeast Conservation  
American Rivers  
2231 Devine Street, Suite 100 • Columbia, S.C. 29205  
803/771-7114  
803/771-7580 Fax  
[gjobsis@americanrivers.org](mailto:gjobsis@americanrivers.org)

[www.AmericanRivers.org](http://www.AmericanRivers.org)

***American Rivers protects and restores healthy natural rivers for the benefit of communities, fish and wildlife.***

---

**From:** Shane Boring [mailto:Shane.Boring@KleinschmidtUSA.com]  
**Sent:** Friday, December 15, 2006 3:35 PM  
**To:** balesw@dnr.sc.gov; Alison Guth; Amanda Hill; Bill Argentieri; Bud Badr; Dick Christie; Gerrit Jobsis; Hal Beard; Jennifer Summerlin; Jim Glover; Malcolm Leaphart; mquattlebaum@scana.com; Prescott Brownell; Randy Mahan; Ron Ahle; Scott Harder; Shane Boring; Steve Summer; Theresa Thom; Brandon

Kulik; Alan Stuart

**Subject:** Agenda - Dec 19 Meeting to Discuss Impacts of Saluda Hydro on Congaree Floodplain and Congaree National Park

Hello Folks:

Attached is a brief agenda for next Tuesday's meeting (Dec 19), which will focus on the requested study on impacts of Saluda Hydro operation on the Congaree Floodplain and Congaree National Park. If you have not already, please let Alison know if you plan to attend.

Thanks and have a good weekend,  
Shane

C. Shane Boring  
Environmental Scientist  
Kleinschmidt Associates  
101 Trade Zone Dr., Suite-21A  
West Columbia, SC 29170  
Phone: (803)822-3177  
Fax: (803)822-3183  
<<LSR IFIM agenda 12-19-2006.doc>>

## Kacie Jensen

---

**From:** Gerrit Jobsis [gjobsis@americanrivers.org]  
**Sent:** Monday, December 18, 2006 2:30 PM  
**To:** Shane Boring; balesw@dnr.sc.gov; Alison Guth; Amanda Hill; BARGENTIERI@scana.com; Bud Badr; Dick Christie; Hal Beard; Jennifer Summerlin; Jim Glover; Malcolm Leaphart; mquattlebaum@scana.com; Prescott Brownell; RMAHAN@scana.com; Ron Ahle; Scott Harder; Steve Summer; Theresa Thom; Brandon Kulik; Alan Stuart  
**Subject:** RE: Agenda - Dec 19 Meeting to Discuss Impacts of Saluda Hydro on Congaree Floodplain and Congaree National Park

Shane,

We are also interested in how Saluda affects the Congaree River aquatic community. I believe a better subject line for the meeting would be to .... Evaluate Effects of Saluda Hydro on the Congaree River and Congaree National Park.

See you tomorrow,

Gerrit

PS – My email has been down most of the day. Hopefully this message will go out soon.

---

Gerrit Jöbsis  
Director of Southeast Conservation  
American Rivers  
2231 Devine Street, Suite 100 • Columbia, S.C. 29205  
803/771-7114  
803/771-7580 Fax  
[gjobsis@americanrivers.org](mailto:gjobsis@americanrivers.org)

[www.AmericanRivers.org](http://www.AmericanRivers.org)

***American Rivers protects and restores healthy natural rivers for the benefit of communities, fish and wildlife.***

---

**From:** Shane Boring [mailto:Shane.Boring@KleinschmidtUSA.com]  
**Sent:** Friday, December 15, 2006 3:35 PM  
**To:** balesw@dnr.sc.gov; Alison Guth; Amanda Hill; Bill Argentieri; Bud Badr; Dick Christie; Gerrit Jobsis; Hal Beard; Jennifer Summerlin; Jim Glover; Malcolm Leaphart; mquattlebaum@scana.com; Prescott Brownell; Randy Mahan; Ron Ahle; Scott Harder; Shane Boring; Steve Summer; Theresa Thom; Brandon Kulik; Alan Stuart  
**Subject:** Agenda - Dec 19 Meeting to Discuss Impacts of Saluda Hydro on Congaree Floodplain and Congaree National Park

Hello Folks:

Attached is a brief agenda for next Tuesday's meeting (Dec 19), which will focus on the requested study on impacts of Saluda Hydro operation on the Congaree Floodplain and Congaree National Park. If you have not already, please let Alison know if you plan to attend.

Thanks and have a good weekend,  
Shane

10/26/2007

C. Shane Boring  
Environmental Scientist  
Kleinschmidt Associates  
101 Trade Zone Dr., Suite-21A  
West Columbia, SC 29170  
Phone: (803)822-3177  
Fax: (803)822-3183  
<<LSR IFIM agenda 12-19-2006.doc>>

## Kacie Jensen

---

**From:** Prescott Brownell [Prescott.Brownell@noaa.gov]  
**Sent:** Friday, December 15, 2006 3:19 PM  
**To:** Alison Guth  
**Cc:** Amanda Hill; BARGENTIERI@scana.com; Dick Christie; Gerrit Jobsis (American Rivers); Jennifer Summerlin; Jim Glover; Shane Boring; Steve Summer; Theresa Thom; Brandon Kulik; Alan Stuart  
**Subject:** Re: IFIM/Aquatic Habitat TWC Meeting



prescott.brownell.v  
cf (401 B)

Hello Alison and team,  
I will be unable to attend the IFIM/Aquatics meeting on Tuesday due to a project deadline. I look forward to the meeting notes and will provide comments at that time.  
P. Brownell

Alison Guth wrote:

>  
> When: Tuesday, December 19, 2006 9:30 AM-3:00 PM (GMT-05:00) Eastern  
> Time (US & Canada).  
> Where: Lake Murray Training Center  
>  
> \*\*\*\*\*  
>  
> Hello All,  
>  
> Just a reminder that we will be having a IFIM/Aquatic Habitat Meeting  
> next Tuesday, December 19th. This meeting will be located at the Lake  
> Murray Training Center and will begin at 9:30. Shane should be  
> sending out a meeting Agenda in the next day or so. Also, please RSVP  
> by the close of business on Friday. Thanks, Alison  
>

## Kacie Jensen

---

**From:** Shane Boring  
**Sent:** Tuesday, December 12, 2006 12:48 PM  
**To:** Shane Boring; Alan Stuart; Amanda Hill; Bill Argentieri; Bob Perry ; Brandon Stutts ; Buddy Baker ; Dick Christie; Jennifer Summerlin; Jim Glover; Randy Mahan; Ron Ahle  
**Subject:** Lake Murray Waterfowl Surveys - Update

All:

After twice being cancelled due to weather, the initial waterfowl survey for Lake Murray is scheduled for this Thursday, December 14th. The survey will be conducted by Warren Stephens from Savannah River Ecology Lab, and a brief summary of result will be e-mail to the group afterward. After consulting with Bobby Kennamer (SREL) and Buddy Baker (SCDNR), it has been determined that the survey that was twice cancelled due to weather during November will be made up at the end of the survey period, most likely in Mid February.

A survey schedule, which includes a scheduled and weather date for each survey is attached.

Thanks  
C. Shane Boring  
Environmental Scientist  
Kleinschmidt Associates  
101 Trade Zone Dr., Suite-21A  
West Columbia, SC 29170  
Phone: (803)822-3177  
Fax: (803)822-3183



2006-2007 L  
Murray Waterfowl S..



**Lake Murray Waterfowl Survey Schedule, Fall 2006/Winter 2007\***

<b>Month</b>	<b>Date</b>	<b>Time**</b>
<b>November</b>		
	Survey #1	11/29/2006 10:00 AM
	Weather Alternate	12/1/2006 3:00 PM
<b>December</b>		
	Survey #1	12/14/2006 3:00 PM
	Weather Alternate	12/15/2006 11:00 AM
	Survey #2	12/27/2006 1:00 PM
	Weather Alternate	12/29/2006 1:00 PM
<b>January</b>		
	Survey #1	1/5/2007 1:00 PM
	Weather Alternate	1/9/2007 1:00 PM
	Survey #2	1/19/2007 1:00 PM
	Weather Alternate	1/23/2007 1:00 PM
<b>February</b>		
	Survey #1	2/6/2007 1:00 PM
	Weather Alternate	2/8/2007 1:00 PM

\*Study plan calls for 1 survey in late Nov., 2 in Dec., 2 in January, and 1 in e

\*\*All surveys scheduled for 3 hrs.

---

**Comments**

---

Cancelled Due to Fog  
Cancelled Due to Weather

---

early Feb.

## Kacie Jensen

---

**From:** Dick Christie [dchristie@InfoAve.Net]  
**Sent:** Monday, December 11, 2006 9:02 AM  
**To:** Shane Boring  
**Cc:** Malcolm Leaphart; Alan Stuart; Brandon Kulik; Theresa Thom; Steve Summer; Scott Harder; Ron Ahle; RMAHAN@scana.com; Prescott Brownell; Jim Glover; Jennifer Summerlin; Hal Beard; Gerrit Jobsis American Rivers; BARGENTIERI@scana.com; Amanda Hill; balesw@dnr.sc.gov  
**Subject:** RE: Saluda Hydro Relicense: Draft Trout Reproduction Paper

Shane - we agree with the ideas presented by Malcolm and greatly appreciate the clarification he offered. Let's focus on things that can be addressed under relicensing, which are mainly environmental issues such as DO and temperature, with a major goal of seeing a higher percentage of "holdover" trout in the future. The need for any further work on the "white paper" may be questionable if we can re-define our list of issues regarding trout. Thanks.

-----Original Message-----

From: Malcolm Leaphart [mailto:malcolml@mailbox.sc.edu]  
Sent: Friday, December 08, 2006 4:40 PM  
To: Shane Boring  
Cc: balesw@dnr.sc.gov; Amanda Hill; Bill Argentieri; Dick Christie; Gerrit Jobsis American Rivers; Hal Beard; Jennifer Summerlin; Jim Glover; Prescott Brownell; Randy Mahan; Ron Ahle; Scott Harder; Steve Summer; Theresa Thom; Brandon Kulik; Alan Stuart  
Subject: Re: Saluda Hydro Relicense: Draft Trout Reproduction Paper

Shane,

I apparently need to clarify in writing the TU request first documented in our letter to Mr. Landreth of August 15, 2005 in response to the ICD. In that letter I requested in the section labeled "Establishment of Coldwater Fishery" the goal for a 'self sustaining' fishery for trout in the "Conclusion" paragraph. I thought we had clarified in several of the Fish and Wildlife RCG and the Flow/Habitat TWC meetings that I was trying to ask for a fishery that allowed for successful reproduction of trout as should be expected in a coldwater river with a water temperature regime suitable for that species. Once trout can knowingly reproduce in the lower Saluda, the issue of a self sustaining trout population could be more appropriately dealt with, including such factors as spawning success, fishing pressure, predation, etc that would determine whether the reproduction is high enough to sustain the fishery without augmentation by SC DNR. While a 'self sustaining' trout fishery would be wonderful, it is not the appropriate issue for relicensing as it is determined by too many factors not controlled by the utility company. The goal that I intended in the TU ICD comments was for fostering the needed conditions that would allow for trout to be able to spawn in the coldwater environment of the lower Saluda.

Sorry for the confusion my terminology has obviously caused. Would you please make any needed changes in the records for the relicensing so that we can move on in sync? And please let me know if I should follow up with any additional requests or statements, including a revision of the ICD comments if you feel that is necessary.

Obviously, the term change also changes the intent which is significant to the white paper. Rather than comment further on the paper at this point based on the research I have done for TU, I suggest that the paper be first evaluated and revised to reflect the goal of trout reproduction rather than a self sustaining trout population. I feel that change in perspective will also eliminate some points of difference. Then it would be best to meet in person as a TWC and review the paper for other changes. I understand that the SC DNR Fisheries staff have been reviewing tailrace fisheries with other southeast states and reviewing the literature for trout needs. I am comfortable with having them advance their suggestions based on their research in a leadership role at the next earliest TWC meeting that they are ready to do that - December 19 would be great if they are ready?

Was glad to receive your comments last week that the white paper was a working document for the TWC to further hone. Again, sorry for the mis-direction I caused. Look forward to us getting back on target quickly and discussing some of the many important issues for

trout reproduction.

Quoting Shane Boring <Shane.Boring@KleinschmidtUSA.com>:

> Dear Instream Flow/Aquatic Habitat TWC Members:  
>  
> Attached for your review is the first draft of the white paper  
> examining the potential for natural trout reproduction in the Lower  
> Saluda River. Please submit your comments, preferably in MS Word track  
> changes, by Tuesday November 21, 2006.  
>  
> Regards,  
> C. Shane Boring  
> Environmental Scientist  
> Kleinschmidt Associates  
> 101 Trade Zone Dr., Suite-21A  
> West Columbia, SC 29170  
> Phone: (803)822-3177  
> Fax: (803)822-3183  
>  
> <<Saluda Trout Paper DRAFT 2006-11-06 CLB.doc>>  
>  
>

## Kacie Jensen

---

**From:** Malcolm Leaphart [malcolml@mailbox.sc.edu]  
**Sent:** Friday, December 08, 2006 4:40 PM  
**To:** Shane Boring  
**Cc:** balesw@dnr.sc.gov; Amanda Hill; BARGENTIERI@scana.com; Dick Christie; Gerrit Jobsis (American Rivers); Hal Beard; Jennifer Summerlin; Jim Glover; Prescott Brownell; RMAHAN@scana.com; Ron Ahle; Scott Harder; Steve Summer; Theresa Thom; Brandon Kulik; Alan Stuart  
**Subject:** Re: Saluda Hydro Relicense: Draft Trout Reproduction Paper

Shane,  
I apparently need to clarify in writing the TU request first documented in our letter to Mr. Landreth of August 15, 2005 in response to the ICD. In that letter I requested in the section labeled "Establishment of Coldwater Fishery" the goal for a 'self sustaining' fishery for trout in the "Conclusion" paragraph. I thought we had clarified in several of the Fish and Wildlife RCG and the Flow/Habitat TWC meetings that I was trying to ask for a fishery that allowed for successful reproduction of trout as should be expected in a coldwater river with a water temperature regime suitable for that species. Once trout can knowingly reproduce in the lower Saluda, the issue of a self sustaining trout population could be more appropriately dealt with, including such factors as spawning success, fishing pressure, predation, etc that would determine whether the reproduction is high enough to sustain the fishery without augmentation by SC DNR. While a 'self sustaining' trout fishery would be wonderful, it is not the appropriate issue for relicensing as it is determined by too many factors not controlled by the utility company. The goal that I intended in the TU ICD comments was for fostering the needed conditions that would allow for trout to be able to spawn in the coldwater environment of the lower Saluda.

Sorry for the confusion my terminology has obviously caused. Would you please make any needed changes in the records for the relicensing so that we can move on in sync? And please let me know if I should follow up with any additional requests or statements, including a revision of the ICD comments if you feel that is necessary.

Obviously, the term change also changes the intent which is significant to the white paper. Rather than comment further on the paper at this point based on the research I have done for TU, I suggest that the paper be first evaluated and revised to reflect the goal of trout reproduction rather than a self sustaining trout population. I feel that change in perspective will also eliminate some points of difference. Then it would be best to meet in person as a TWC and review the paper for other changes. I understand that the SC DNR Fisheries staff have been reviewing tailrace fisheries with other southeast states and reviewing the literature for trout needs. I am comfortable with having them advance their suggestions based on their research in a leadership role at the next earliest TWC meeting that they are ready to do that - December 19 would be great if they are ready?

Was glad to receive your comments last week that the white paper was a working document for the TWC to further hone. Again, sorry for the mis-direction I caused. Look forward to us getting back on target quickly and discussing some of the many important issues for trout reproduction.

Quoting Shane Boring <Shane.Boring@KleinschmidtUSA.com>:

> Dear Instream Flow/Aquatic Habitat TWC Members:  
>

> Attached for your review is the first draft of the white paper  
> examining the potential for natural trout reproduction in the Lower  
> Saluda River. Please submit your comments, preferably in MS Word track changes, by  
> Tuesday November 21, 2006.  
>  
> Regards,  
> C. Shane Boring  
> Environmental Scientist  
> Kleinschmidt Associates  
> 101 Trade Zone Dr., Suite-21A  
> West Columbia, SC 29170  
> Phone: (803)822-3177  
> Fax: (803)822-3183  
>  
> <<Saluda Trout Paper DRAFT 2006-11-06 CLB.doc>>  
>  
>

## Kacie Jensen

---

**From:** Shane Boring  
**Sent:** Wednesday, December 06, 2006 9:40 AM  
**To:** 'Amanda\_Hill@fws.gov'  
**Subject:** RE: FW: Draft IFIM HSI guilding straw man

We have one potential candidate thus far, Miles Hayes, a geomorphologist and sedimentologist based in here Columbia. He is the former head of the Geology Dept. at USC and has taught a geomorphology course on the Congaree for over 30 yrs. He also is a big fisherman and has fished the Saluda extensively, so he could have some good site-specific knowledge. Thanks

Shane

-----Original Message-----

**From:** Amanda\_Hill@fws.gov [mailto:Amanda\_Hill@fws.gov]  
**Sent:** Tuesday, December 05, 2006 11:02 AM  
**To:** Shane Boring  
**Subject:** RE: FW: Draft IFIM HSI guilding straw man

Shane, I have contacted Paul Conrads with USGS and he is going to get back to me with a few names.

Amanda Hill  
Fisheries Biologist  
U.S. Fish and Wildlife Service  
176 Croghan Spur Rd., Suite 200  
Charleston, SC 29407  
843-727-4707 ext. 303  
843-727-4218 fax  
amanda\_hill@fws.gov

\*NOTE NEW PHONE EXTENSION\*

"Our mission is working with others to conserve, protect, and enhance fish, wildlife and plants and their habitats for the continuing benefit of the American people."

"Shane Boring"  
<Shane.Boring@KleinschmidtUSA.com>

12/04/2006 05:36  
PM

<Amanda\_Hill@fws.gov>

"Brandon Kulik"  
<Brandon.Kulik@KleinschmidtUSA.com>  
Subject

RE: FW: Draft IFIM HSI guilding  
straw man

To

cc

Amanda:

You mentioned that there might be a couple of geomorphologists at USGS that might be able to help us out with a potential assessment of the LSR. Do you have names or contact info for these folks? Thanks

Shane

-----Original Message-----

From: Amanda\_Hill@fws.gov [mailto:Amanda\_Hill@fws.gov]  
Sent: Tuesday, November 21, 2006 8:51 AM  
To: Shane Boring  
Cc: Brandon Kulik  
Subject: Re: FW: Draft IFIM HSI guilding straw man

Shane,

I will not be available after 3 pm tomorrow. Can we have the call before 3?

Amanda Hill  
Fisheries Biologist  
U.S. Fish and Wildlife Service  
176 Croghan Spur Rd., Suite 200  
Charleston, SC 29407  
843-727-4707 ext. 303  
843-727-4218 fax  
amanda\_hill@fws.gov

\*NOTE NEW PHONE EXTENSION\*

"Our mission is working with others to conserve, protect, and enhance fish, wildlife and plants and their habitats for the continuing benefit of the American people."

"Brandon Kulik"

<Brandon.Kulik@Kl

einschmidtUSA.com

To

>

"Shane Boring"

<Shane.Boring@KleinschmidtUSA.com>

11/20/2006 04:58

cc

PM

"Amanda Hill"

<amanda\_hill@fws.gov>

Subject

FW: Draft IFIM HSI guilding straw  
man



-----Original Message-----

From: Dick Christie [mailto:dchristie@InfoAve.Net]  
Sent: Monday, November 20, 2006 4:56 PM  
To: Brandon Kulik  
Subject: RE: Draft IFIM HSI guilding straw man

Hi Brandon - 3:00 Wednesday afternoon should work for me.

-----Original Message-----

From: Brandon Kulik [mailto:Brandon.Kulik@KleinschmidtUSA.com]  
Sent: Tuesday, November 14, 2006 4:59 PM  
To: Alison Guth; Amanda Hill; Bill Argentieri; Dick Christie; Gerrit Jobsis American Rivers; Hal Beard; Prescott Brownell; Ron Ahle; Scott Harder; Shane Boring; Alan Stuart  
Subject: Draft IFIM HSI guilding straw man

Hello all,

One of my homework assignments from the October meeting was to assemble a conceptual framework for slotting species and lifestages into habitat use guilds. Attached is a first pass at doing that. Please consider it to be a work in progress, at this point I am primarily seeking input as to whether you think that the way I have slotted species and lifestages according to guild categories seems reasonable. I am sending this out ahead of the meeting so that those of you who have a bit of time can digest this so that we can make the most of our upcoming meeting time.

Fortunately we have prior recent regional studies to draw on that appear to have well-thought-out criteria. As suggested by the TWC, for the most part I followed conventions established in the Catawba and Pee Dee studies. I know that a number of you worked on those studies and therefore probably have an intuitive sense of the applicability of those criteria to this study and thus your input will be very helpful. At this juncture the main thing to look at is columns A-H in the attached spreadsheet, where I have populated the guilds with the species and lifestages discussed in the meeting.

Columns I and J are my initial impressions of specific study sources and criteria that could be plugged in, and are of secondary concern for the moment, though your thoughts are welcome.

A few life stage categories of interest in this study cropped up that were not directly addressed in the Pee Dee and Catawba studies. In such cases, I have suggested what seems reasonable to me a reasonable candidate guild, but of course these are always open to discussion and refinement. In a few cases I

left the criteria blank (marked as "TBD") pending further technical discussion from the team.

As Shane has already noted, I did a quick straw poll by phone with as many of you as I could reach earlier today to get some feedback on various aspects of the study design. There seems to be some interest in viewing and chatting informally about this homework assignment prior to the meeting. The goal is just to gather our thoughts as a study team on the subject, do a sanity-check brainstorm on the matrix structure, but not necessarily reach any formal consensus, since not everyone will likely be able to join in. Probably a short 15-30 minute call. Based on availability, it appears (surprisingly) that Wednesday PM will be relatively convenient for most folks. Shane will handle call coordination.

In the mean time feel free to contact me with any technical questions, and please have a safe and enjoyable Thanksgiving.

Brandon

Brandon H Kulik  
Senior Fisheries Biologist  
Kleinschmidt Energy & Water Resources  
75 Main Street  
Pittsfield, ME 04967  
(207) 487-3328  
Fax: 487-3124

<<guild table.xls>>

**Kacie Jensen**

---

**From:** Brandon Kulik  
**Sent:** Tuesday, December 05, 2006 8:02 AM  
**To:** Shane Boring; 'Wade Bales (balesw@dnr.sc.gov)'; 'Amanda Hill'; 'Bill Argentieri'; 'Bud Badr'; 'Dick Christie'; 'Gerrit Jobsis (American Rivers)'; 'Hal Beard'; Jennifer Summerlin; 'Jim Glover'; 'Malcolm Leaphart'; 'Milton Quattlebaum (mquattlebaum@scana.com)'; 'Prescott Brownell'; 'Randy Mahan'; 'Ron Ahle'; 'Scott Harder'; Shane Boring; 'Steve Summer'; 'Theresa Thom'; Alan Stuart  
**Subject:** Saluda site reconnaissance GPS coordinates

Hi all,

Theresa requested a copy of the GPS coordinates I gathered last week during the site visit. They are attached for everyone's reference as longitude and latitude coordinates in the attached spreadsheet (a few data points are also from an earlier site visit I conducted separately). I used a program call Frontbase GPS V.1.21 to download them. This or any similar program can be used to upload these to another GPS if you so desire.

Hopefully the waypoint names are self-explanatory, but let me know if you have any questions. Thanks again for all your input on the study design and discussion during the site visit.

regards,

Brandon

**Brandon H Kulik**  
**Senior Fisheries Biologist**  
***Kleinschmidt Energy & Water Resources***  
75 Main Street  
Pittsfield, ME 04967  
(207) 487-3328  
Fax: 487-3124

Frontbase\_GPS

<b>Waypoint Name</b>	<b>Lon Deg</b>	<b>Lon Min</b>	<b>Lon Sec</b>	<b>Lat Deg</b>	<b>Lat Min</b>	<b>Lat Sec</b>	<b>Alt</b>
032	-81	4	52	34	0	45.7	170.7239
CQRLEY ISD	-81	10	26.8	34	2	53.4	174.6659
GARDENDALE	-81	8	22	34	1	46.7	281.8986
MILL RACE	-81	4	51.6	34	0	49	165.9929
OH BROTHER	-81	6	3.3	34	1	11.6	186.4929
RUN 1	-81	11	6.7	34	2	44.4	266.9177
SANDYBEACH	-81	11	46.6	34	2	54	194.3778
SHOALSPARK	-81	11	26.6	34	2	48.9	214.8786
STACYLEDGE	-81	5	15.7	34	0	50.6	172.3006
TU-ACCESS	-81	6	11.2	34	1	9.5	184.9161
USGS1	-81	12	35.3	34	3	5.3	204.6284

## Kacie Jensen

---

**From:** Shane Boring  
**Sent:** Thursday, November 30, 2006 3:23 PM  
**To:** 'Malcolm Leaphart'  
**Subject:** RE: Saluda Hydro Relicense: Draft Trout Reproduction Paper

No problem. Glad you're feeling better. We should keep in mind that this is a paper being drafted by the TWC, so the purpose of the draft is to solicit your input as a TWC member and thus co-author. So certainly don't think of this as the final word on the subject and feel free to suggest what needs to be added to make it better. Thanks

Shane

-----Original Message-----

**From:** Malcolm Leaphart [mailto:malcolml@mailbox.sc.edu]  
**Sent:** Thursday, November 30, 2006 3:18 PM  
**To:** Shane Boring  
**Subject:** RE: Saluda Hydro Relicense: Draft Trout Reproduction Paper

Shane,

Have been home sick for several days, missing both the TWC meetings this week and also work. So, am trying to get back to work to begin catching up there, and then to collate comments on the white paper as we discussed previously; starting with a half day today. Initial replies have been very insightful from many with significant amounts of experience in fisheries management. Will try to get them to you by Dec 5 as requested, but if not, by no later than the end of next week Dec 8.

Quoting Shane Boring <Shane.Boring@KleinschmidtUSA.com>:

> Malcolm:

>  
> Thanks for your input on the trout paper. Additional review time is  
> not a problem. Please have comments from these various reviewers  
> consolidated into a single document and have those comments to me by  
> Dec 5 (2 additional weeks). Have a good Thanksgiving.

>  
> C. Shane Boring  
> Environmental Scientist  
> Kleinschmidt Associates  
> 101 Trade Zone Dr., Suite-21A  
> West Columbia, SC 29170  
> Phone: (803)822-3177  
> Fax: (803)822-3183

> -----Original Message-----

> **From:** Malcolm Leaphart [mailto:malcolml@mailbox.sc.edu]  
> **Sent:** Monday, November 13, 2006 4:42 PM  
> **To:** Shane Boring  
> **Cc:** dchristie@dnr.sc.gov; balesw@dnr.sc.gov; ahler@dnr.sc.gov;  
> beardh@dnr.sc.gov  
> **Subject:** Re: Saluda Hydro Relicense: Draft Trout Reproduction Paper

>  
> I am circulating the study to TU staff and several biologists around  
> the

>  
> country for comments, and may need a little more time than November 21  
> allows for comments. That should not be a problem as apparently the  
> current company  
> thinking is that the issue is resolved as far as addressing trout needs,

> and  
> there is no hold-up to the process with later comments. However, in my  
> mind  
> there are many assumptions and seemingly unsupported conclusions that  
> need to  
> be addressed by other fishery professionals to confirm or question.  
> I am making haste as much as I can since other's schedules are the key  
> factor.  
> I am sure that you and the SC DNR relicensing reps will want to consider  
> the TU  
> views and will welcome our comments as soon as I can formulate them.  
> This is  
> certainly a key issue as improved trout habitat generally means better  
> water  
> quality and fisheries habitat for all species, both key goals for a new  
> FERC  
> license. And this is the time window for up to a half century for all  
> viewpoints to be considered...

>  
>  
>  
> Quoting Shane Boring <Shane.Boring@KleinschmidtUSA.com>:

>  
> > Dear Instream Flow/Aquatic Habitat TWC Members:  
> >  
> > Attached for your review is the first draft of the white paper  
> > examining the potential for natural trout reproduction in the Lower  
> > Saluda River. Please submit your comments, preferably in MS Word  
> > track  
> changes, by  
> > Tuesday November 21, 2006.

> >  
> > Regards,  
> > C. Shane Boring  
> > Environmental Scientist  
> > Kleinschmidt Associates  
> > 101 Trade Zone Dr., Suite-21A  
> > West Columbia, SC 29170  
> > Phone: (803)822-3177  
> > Fax: (803)822-3183

> >  
> > <<Saluda Trout Paper DRAFT 2006-11-06 CLB.doc>>

> >  
> >  
>  
>  
>  
>

## Kacie Jensen

---

**From:** Shane Boring  
**Sent:** Tuesday, November 21, 2006 2:35 PM  
**To:** Amanda\_Hill@fws.gov  
**Cc:** Brandon Kulik  
**Subject:** RE: FW: Draft IFIM HSI guilding straw man

Hi Amanda:

Would it be possible for you to provide some comments on the species guild matrix via e-mail (e-mailed by BRandom last week)? After 3 pm is the only time the DNR folks can talk. I would change it, but it leaves us in the same situation with DNR. Also, this is not a meeting where an substantiave decisions are going to be made, just an informal change for us biologists to chat prior to next week's meeting. Thanks

Shane

---

**From:** Amanda\_Hill@fws.gov [mailto:Amanda\_Hill@fws.gov]  
**Sent:** Tue 11/21/2006 8:50 AM  
**To:** Shane Boring  
**Cc:** Brandon Kulik  
**Subject:** Re: FW: Draft IFIM HSI guilding straw man

Shane,

I will not be available after 3 pm tomorrow. Can we have the call before 3?

Amanda Hill  
Fisheries Biologist  
U.S. Fish and Wildlife Service  
176 Croghan Spur Rd., Suite 200  
Charleston, SC 29407  
843-727-4707 ext. 303  
843-727-4218 fax  
amanda\_hill@fws.gov

\*NOTE NEW PHONE EXTENSION\*

"Our mission is working with others to conserve, protect, and enhance fish, wildlife and plants and their habitats for the continuing benefit of the American people."

"Brandon Kulik"  
<Brandon.Kulik@KleinschmidtUSA.com>  
> "Shane Boring"  
<Shane.Boring@KleinschmidtUSA.com>  
11/20/2006 04:58 To  
cc

10/26/2007

PM "Amanda Hill" <amanda\_hill@fws.gov>  
Subject  
FW: Draft IFIM HSI guilding straw  
man

-----Original Message-----

From: Dick Christie [<mailto:dchristie@InfoAve.Net>]  
Sent: Monday, November 20, 2006 4:56 PM  
To: Brandon Kulik  
Subject: RE: Draft IFIM HSI guilding straw man

Hi Brandon - 3:00 Wednesday afternoon should work for me.

-----Original Message-----

From: Brandon Kulik [<mailto:Brandon.Kulik@KleinschmidtUSA.com>]  
Sent: Tuesday, November 14, 2006 4:59 PM  
To: Alison Guth; Amanda Hill; Bill Argentieri; Dick Christie; Gerrit  
Jobsis American Rivers; Hal Beard; Prescott Brownell; Ron Ahle; Scott  
Harder; Shane Boring; Alan Stuart  
Subject: Draft IFIM HSI guilding straw man

Hello all,

One of my homework assignments from the October meeting was to assemble a conceptual framework for slotting species and lifestages into habitat use guilds. Attached is a first pass at doing that. Please consider it to be a work in progress, at this point I am primarily seeking input as to whether you think that the way I have slotted species and lifestages according to guild categories seems reasonable. I am sending this out ahead of the meeting so that those of you who have a bit of time can digest this so that we can make the most of our upcoming meeting time.

Fortunately we have prior recent regional studies to draw on that appear to have well-thought-out criteria. As suggested by the TWC, for the most part I followed conventions established in the Catawba and Pee Dee studies. I know that a number of you worked on those studies and therefore probably have an intuitive sense of the applicability of those criteria to this study and thus your input will be very helpful. At this juncture the main thing to look at is columns A-H in the attached spreadsheet, where I have populated the guilds with the species and lifestages discussed in the meeting.

Columns I and J are my initial impressions of specific study



sources and criteria that could be plugged in, and are of secondary concern for the moment, though your thoughts are welcome.

A few life stage categories of interest in this study cropped up that were not directly addressed in the Pee Dee and Catawba studies. In such cases, I have suggested what seems reasonable to me a reasonable candidate guild, but of course these are always open to discussion and refinement. In a few cases I left the criteria blank (marked as "TBD") pending further technical discussion from the team.

As Shane has already noted, I did a quick straw poll by phone with as many of you as I could reach earlier today to get some feedback on various aspects of the study design. There seems to be some interest in viewing and chatting informally about this homework assignment prior to the meeting. The goal is just to gather our thoughts as a study team on the subject, do a sanity-check brainstorm on the matrix structure, but not necessarily reach any formal consensus, since not everyone will likely be able to join in. Probably a short 15-30 minute call. Based on availability, it appears (surprisingly) that Wednesday PM will be relatively convenient for most folks. Shane will handle call coordination.

In the mean time feel free to contact me with any technical questions, and please have a safe and enjoyable Thanksgiving.

Brandon

Brandon H Kulik  
Senior Fisheries Biologist  
Kleinschmidt Energy & Water Resources  
75 Main Street  
Pittsfield, ME 04967  
(207) 487-3328  
Fax: 487-3124

<<guild table.xls>>

## Kacie Jensen

---

**Subject:** TENTATIVE: IFIM/Aquatic Habitat Field Day  
**Location:** TBD  
**Start:** Tue 11/28/2006 9:30 AM  
**End:** Tue 11/28/2006 3:00 PM  
**Show Time As:** Tentative  
**Recurrence:** (none)  
**Meeting Status:** Not yet responded  
**Required Attendees:** Fish & Wildlife TWC - IFIM/Aquatic Habitat; mpqandrhq@bellsouth.net

Hello All,

We have a **tentative** field day scheduled for November 28th. More details to be decided after our meeting on the 27th.  
Thanks, Alison

**Kacie Jensen**

---

**From:** Shane Boring  
**Sent:** Monday, November 20, 2006 5:16 PM  
**To:** Shane Boring; Ron Ahle (ahler@dnr.sc.gov); Amanda Hill (amanda\_hill@fws.gov); Dick Christie (dchristie@infoave.com); Gerrit Jobsis (gjobsis@americanrivers.org); Prescott Brownell (prescott.brownell@NOAA.gov); Scott Harder  
**Cc:** Argentieri, Bill; Steve Summer; Alan Stuart; Brandon Kulik  
**Subject:** RE: Informal Conference call to discuss Saluda IFIM target species/guilds

All:

Just a reminder of the internal biologists' conference call schedules for this Wednesday to discuss the species guilding for the Saluda IFIM Study. To access the Kleinschmidt conference line, please dial 207-487-3328 and ask the operator for the Saluda IFIM call. **Please note that the time has been changed to 3:00 PM to allow a few more folks to attend.** Thanks.

Shane Boring

---

**From:** Shane Boring  
**Sent:** Tue 11/14/2006 4:21 PM  
**To:** Ron Ahle (ahler@dnr.sc.gov); Amanda Hill (amanda\_hill@fws.gov); Dick Christie (dchristie@infoave.com); Gerrit Jobsis (gjobsis@americanrivers.org); Prescott Brownell (prescott.brownell@NOAA.gov); Scott Harder  
**Cc:** Argentieri, Bill; Steve Summer  
**Subject:** Informal Conference call to discuss Saluda IFIM target species/guilds

Hello folks,

Brandon Kulik has been in touch with several of you today via phone regarding the developing target species/guild list for the Saluda IFIM Study. We were hoping to convene a short (1/2 hour), informal conference call of the involved biologists next week, in hopes of getting the list a little closer to the final product before the TWC meeting on Nov 27th & 28th. How does next Wednesday, Nov 22nd, from 1:30 - 2:00 PM sound? If folks are available, I can schedule a conference bridge through Kleinschmidt.

Brandon will be sending out the draft target list in the near future, most likely tomorrow. Thanks

Shane

C. Shane Boring  
Environmental Scientist  
Kleinschmidt Associates  
101 Trade Zone Dr., Suite-21A  
West Columbia, SC 29170  
Phone: (803)822-3177  
Fax: (803)822-3183

## Kacie Jensen

---

**From:** Shane Boring  
**Sent:** Tuesday, November 14, 2006 4:22 PM  
**To:** 'Ron Ahle (ahler@dnr.sc.gov)'; 'Amanda Hill (amanda\_hill@fws.gov)'; 'Dick Christie (dchristie@infoave.com)'; 'Gerrit Jobsis (gjobsis@americanrivers.org)'; 'Prescott Brownell (prescott.brownell@NOAA.gov)'; 'Scott Harder'  
**Cc:** 'Argentieri, Bill'; 'Steve Summer'  
**Subject:** Informal Conference call to discuss Saluda IFIM target species/guilds

Hello folks,

Brandon Kulik has been in touch with several of you today via phone regarding the developing target species/guild list for the Saluda IFIM Study. We were hoping to convene a short (1/2 hour), informal conference call of the involved biologists next week, in hopes of getting the list a little closer to the final product before the TWC meeting on Nov 27th & 28th. How does next Wednesday, Nov 22nd, from 1:30 - 2:00 PM sound? If folks are available, I can schedule a conference bridge through Kleinschmidt.

Brandon will be sending out the draft target list in the near future, most likely tomorrow. Thanks

Shane

C. Shane Boring  
Environmental Scientist  
Kleinschmidt Associates  
101 Trade Zone Dr., Suite-21A  
West Columbia, SC 29170  
Phone: (803)822-3177  
Fax: (803)822-3183

**Kacie Jensen**

---

**From:** Gerrit Jobsis [gjobsis@americanrivers.org]  
**Sent:** Tuesday, November 14, 2006 1:52 PM  
**To:** Shane Boring; balesw@dnr.sc.gov; Amanda Hill; BARGENTIERI@scana.com; Dick Christie; Hal Beard; Jennifer Summerlin; Jim Glover; Malcolm Leaphart; Prescott Brownell; RMAHAN@scana.com; Ron Ahle; Scott Harder; Steve Summer; Theresa Thom; Brandon Kulik; Alan Stuart  
**Cc:** Jennifer Summerlin; Alison Guth  
**Subject:** RE: Saluda Hydro Relicense: Next Instream Flow Meeting

Shane,

Thanks for providing a copy of the draft study plan for the lower Saluda River. I will be prepared to discuss Nov 27/28.

We also agreed at the last meeting to discuss Congaree River flows and study needs during the next meeting. Please provide time on the Nov 27/28 agenda for that.

Regards,

Gerrit

---

Gerrit Jöbsis  
Director of Southeast Conservation  
American Rivers  
2231 Devine Street, Suite 100 • Columbia, S.C. 29205  
803/771-7114  
803/771-7580 Fax  
[gjobsis@americanrivers.org](mailto:gjobsis@americanrivers.org)

[www.AmericanRivers.org](http://www.AmericanRivers.org)

***American Rivers protects and restores healthy natural rivers for the benefit of communities, fish and wildlife.***

---

**From:** Shane Boring [mailto:Shane.Boring@KleinschmidtUSA.com]  
**Sent:** Wednesday, November 08, 2006 3:03 PM  
**To:** balesw@dnr.sc.gov; Amanda Hill; Bill Argentieri; Dick Christie; Gerrit Jobsis; Hal Beard; Jennifer Summerlin; Jim Glover; Malcolm Leaphart; Prescott Brownell; Randy Mahan; Ron Ahle; Scott Harder; Shane Boring; Steve Summer; Theresa Thom; Brandon Kulik; Alan Stuart  
**Cc:** Jennifer Summerlin; Alison Guth  
**Subject:** Saluda Hydro Relicense: Draft Instream Flow Study Plan

All:

Attached for your review is the draft Instream Flow Study Plan for Saluda Hydro. Please review the plan prior to our next Instream Flow TWC meeting, scheduled for Nov 27-28, and be prepared to discuss any concerns regarding the study design. Thanks to all who contributed to development of the draft plan.

Please note that, due to file format issues, Appendix A of the plan is included as a separate file.

10/29/2007

C. Shane Boring  
Environmental Scientist  
Kleinschmidt Associates  
101 Trade Zone Dr., Suite-21A  
West Columbia, SC 29170  
Phone: (803)822-3177  
Fax: (803)822-3183

<<Instream Flow Study of Lower Saluda River DRAFT 2006-11-08.doc>>

<<Saluda IFIM study plan - appendix a.pdf>>

## Kacie Jensen

---

**From:** Shane Boring  
**Sent:** Tuesday, November 14, 2006 3:53 PM  
**To:** 'Malcolm Leaphart'  
**Cc:** Alan Stuart; Alison Guth; Jennifer Summerlin  
**Subject:** RE: Saluda Hydro Relicense: Draft Trout Reproduction Paper

Malcolm:

Thanks for your input on the trout paper. Additional review time is not a problem. Please have comments from these various reviewers consolidated into a single document and have those comments to me by Dec 5 (2 additional weeks). Have a good Thanksgiving.

C. Shane Boring  
Environmental Scientist  
Kleinschmidt Associates  
101 Trade Zone Dr., Suite-21A  
West Columbia, SC 29170  
Phone: (803)822-3177  
Fax: (803)822-3183

-----Original Message-----

**From:** Malcolm Leaphart [mailto:malcolml@mailbox.sc.edu]  
**Sent:** Monday, November 13, 2006 4:42 PM  
**To:** Shane Boring  
**Cc:** dchristie@dnr.sc.gov; balesw@dnr.sc.gov; ahler@dnr.sc.gov; beardh@dnr.sc.gov  
**Subject:** Re: Saluda Hydro Relicense: Draft Trout Reproduction Paper

I am circulating the study to TU staff and several biologists around the country for comments, and may need a little more time than November 21 allows for comments. That should not be a problem as apparently the current company thinking is that the issue is resolved as far as addressing trout needs, and there is no hold-up to the process with later comments. However, in my mind there are many assumptions and seemingly unsupported conclusions that need to be addressed by other fishery professionals to confirm or question. I am making haste as much as I can since other's schedules are the key factor. I am sure that you and the SC DNR relicensing reps will want to consider the TU views and will welcome our comments as soon as I can formulate them. This is certainly a key issue as improved trout habitat generally means better water quality and fisheries habitat for all species, both key goals for a new FERC license. And this is the time window for up to a half century for all viewpoints to be considered...

Quoting Shane Boring <Shane.Boring@KleinschmidtUSA.com>:

> Dear Instream Flow/Aquatic Habitat TWC Members:  
>  
> Attached for your review is the first draft of the white paper  
> examining the potential for natural trout reproduction in the Lower  
> Saluda River. Please submit your comments, preferably in MS Word track changes, by  
> Tuesday November 21, 2006.  
>  
> Regards,  
> C. Shane Boring  
> Environmental Scientist  
> Kleinschmidt Associates  
> 101 Trade Zone Dr., Suite-21A  
> West Columbia, SC 29170  
> Phone: (803)822-3177

> Fax: (803)822-3183

>

> <<Saluda Trout Paper DRAFT 2006-11-06 CLB.doc>>

>

>



## Kacie Jensen

---

**From:** Shane Boring  
**Sent:** Tuesday, November 14, 2006 1:57 PM  
**To:** Alan Stuart  
**Subject:** FW: Saluda Hydro Relicense: Draft Trout Reproduction Paper

This could be a problem.

Shane

-----Original Message-----

From: Malcolm Leaphart [mailto:malcolml@mailbox.sc.edu]  
Sent: Monday, November 13, 2006 4:42 PM  
To: Shane Boring  
Cc: dchristie@dnr.sc.gov; balesw@dnr.sc.gov; ahler@dnr.sc.gov; beardh@dnr.sc.gov  
Subject: Re: Saluda Hydro Relicense: Draft Trout Reproduction Paper

I am circulating the study to TU staff and several biologists around the country for comments, and may need a little more time than November 21 allows for comments. That should not be a problem as apparently the current company thinking is that the issue is resolved as far as addressing trout needs, and there is no hold-up to the process with later comments. However, in my mind there are many assumptions and seemingly unsupported conclusions that need to be addressed by other fishery professionals to confirm or question. I am making haste as much as I can since other's schedules are the key factor. I am sure that you and the SC DNR relicensing reps will want to consider the TU views and will welcome our comments as soon as I can formulate them. This is certainly a key issue as improved trout habitat generally means better water quality and fisheries habitat for all species, both key goals for a new FERC license. And this is the time window for up to a half century for all viewpoints to be considered...

Quoting Shane Boring <Shane.Boring@KleinschmidtUSA.com>:

> Dear Instream Flow/Aquatic Habitat TWC Members:  
>  
> Attached for your review is the first draft of the white paper  
> examining the potential for natural trout reproduction in the Lower  
> Saluda River. Please submit your comments, preferably in MS Word track changes, by  
> Tuesday November 21, 2006.  
>  
> Regards,  
> C. Shane Boring  
> Environmental Scientist  
> Kleinschmidt Associates  
> 101 Trade Zone Dr., Suite-21A  
> West Columbia, SC 29170  
> Phone: (803)822-3177  
> Fax: (803)822-3183  
>  
> <<Saluda Trout Paper DRAFT 2006-11-06 CLB.doc>>  
>  
>

## Kacie Jensen

---

**From:** Shane Boring  
**Sent:** Friday, November 10, 2006 5:44 PM  
**To:** Shane Boring; Alan Stuart; Amanda Hill; Bill Argentieri; Bob Perry ; Brandon Stutts ; Buddy Baker ; Dick Christie; Jennifer Summerlin; Jim Glover; Randy Mahan; Ron Ahle; Tom Eppink; Bob Seibels (bseibels@yahoo.com); Gerrit Jobsis (American Rivers)  
**Cc:** 'Tom Murphy'; 'Ed\_Eudaly@fws.gov'; Cheryl Balitz  
**Subject:** Saluda Hydro: Oct 06 wood stork update



Oct 06 wood stork  
update.pdf (...)

All:

The October 2006 Lake Murray (Saluda Hydro Project) wood stork survey was flown by Tom Murphy with SC Department of Natural Resources on Thursday, the 26th. While a number of bald eagles, great blue herons and great egrets were sighted, no wood storks were observed during the survey. Tom noted that many of the isolated wetlands adjacent to the Saluda River above Lake Murray were dry. Tom added in recent correspondence that 2006 appears to have been an exceptional nesting season for wood storks, with about 10,000 nests reported rangewide (approx. 2,010 in South Carolina). Thank you for your continued interest in the Lake Murray wood stork project.

A memo summarizing the survey observations is attached and will be posted to the Saluda relicensing website.

C. Shane Boring  
Environmental Scientist  
Kleinschmidt Associates  
101 Trade Zone Dr., Suite-21A  
West Columbia, SC 29170  
Phone: (803)822-3177  
Fax: (803)822-3183

Cheryl: Please post to the website.

**MEMORANDUM**

*TO:* Saluda Hydro Project Relicensing Stakeholders

*FROM:* Shane Boring

*DATE:* November 10, 2006

*RE:* October 2006 Wood Stork Aerial Survey Observations

---

Dear Relicensing Stakeholder:

The October 2006 Lake Murray (Saluda Hydro Project) wood stork survey was flown by Tom Murphy with SC Department of Natural Resources on Thursday, the 26th. While a number of bald eagles, great blue herons and great egrets were sighted, no wood storks were observed during the survey. Tom noted that many of the isolated wetlands adjacent to the Saluda River above Lake Murray were dry. Tom added in recent correspondence that 2006 appears to have been an exceptional nesting season for wood storks, with about 10,000 nests reported rangewide (approx. 2,010 in South Carolina). Thank you for your continued interest in the Lake Murray wood stork project.

C. Shane Boring  
Environmental Scientist  
Kleinschmidt Associates  
101 Trade Zone Dr., Suite-21A  
West Columbia, SC 29170  
Phone: (803)822-3177  
Fax: (803)822-3183

**Kacie Jensen**

---

**From:** Alan Stuart  
**Sent:** Wednesday, November 01, 2006 10:45 AM  
**To:** Amanda\_hill@fws.gov; Prescott Brownell (Prescott.Brownell@noaa.gov); jdjaco@columbiasc.net; dabennett@columbiasc.net; DChristie@infoave.net; HMoxely@scana.com; Steve Summer; Jennifer Summerlin; Bret Hoffman; Shane Boring; Alison Guth  
**Cc:** BArgentieri@scana.com  
**Subject:** Agenda for the November 2 meeting

Good morning all,

Attached is the agenda for tomorrows meeting to discuss Diadromous Fish monitoring in the lower Saluda River and Fishway monitoring efforts at Columbia Hydro. I have received confirmation of their attendance from the following people:

Alan Stuart - Kleinschmidt  
Steve Summer - SCE&G  
Jennifer Summerlin - Kleinschmidt  
Harold Moxley - SCE&G  
Dick Christie - SCDNR  
Ross Self - SCDNR  
Amanda Hill - USFWS  
Prescott Brownell - NOAA  
Bret Hoffman - Kleinschmidt  
Shane Boring - Kleinschmidt  
Alison Guth - Kleinschmidt

If anyone else from your respective companies or agencies is planning to attend please let me know so we can make sure we have enough lunches for everyone. The meeting is scheduled to begin at 9:30 at SCE&G's Office at Carolina Research Park off of Farrow Road. If you have questions please give me a call or drop me an email.

Look forward to seeing you all and thank you for your efforts on these projects.

regards,  
Alan

***Alan Stuart***

**Senior Licensing Coordinator**  
**Kleinschmidt Energy and Water Resources**  
**101 Trade Zone Drive Suite 21A**  
**West Columbia, SC 29170**

**Office: 803-822-3177**  
**Cell: 803-640-8765**  
**Fax: 803-822-3183**

**email: [Alan.Stuart@kleinschmidtusa.com](mailto:Alan.Stuart@kleinschmidtusa.com)**

10/29/2007

**Columbia Hydro Fishway/ Saluda Hydro Relicensing  
Joint Diadromous Fish Meeting**

**Meeting Agenda**

**November 2, 2006**

**9:30 AM**

**Carolina Research Park**

---

- **9:30 to 9:45** Introductions Alan Stuart
- **9:45 to 10:30** Columbia Operations and Maintenance Plan Bret Hoffman
- **10:30 to 10:45** Break
- **10:45 to 12:00** Discuss Sampling Plans for Columbia Group
- **12:00 to 12:45** Lunch
- **12:45 to 1:30** lower Saluda River Sturgeon Sampling 2008 Shane Boring
- **1:30 to 1:45** Break
- **1:45 to 3:30** Discuss Need/Type LSR Diadromous Fish sampling 2008 Group
- **Adjourn**

## Kacie Jensen

---

**From:** Shane Boring  
**Sent:** Tuesday, October 17, 2006 1:04 PM  
**To:** 'Jeff\_Duncan@nps.gov'  
**Subject:** RE: Instream flow meeting

Having you guys do a presentation regarding observed impacts at the park of various flows is definitely a good idea ... I'll let Alan know. Also, might help define the research question that we are trying to answer relative to Congaree NO more specifically. Thanks

Shane

-----Original Message-----

**From:** Jeff\_Duncan@nps.gov [mailto:Jeff\_Duncan@nps.gov]  
**Sent:** Tuesday, October 17, 2006 12:02 PM  
**To:** Shane Boring  
**Subject:** RE: Instream flow meeting

Saving me from boredom is always appreciated. Glad Gerrit was able to carry the torch on our behalf. Let me know if you want us to present on flow issues associated with the park in November.

Thanks, Jeff

Jeffrey R. Duncan, Ph.D.  
National Park Service--RTCA  
175 Hamm Rd. Suite C, Chattanooga, TN 37405  
Ph. (423) 266-1150 Fax. (423) 266-2558

"Shane Boring"  
<Shane.Boring@Kleinschm  
idtUSA.com>

**To:** <Jeff\_Duncan@nps.gov>  
**cc:**  
**Subject:** RE: Instream flow meeting

10/17/2006 11:08 AM AST

JEFF:

My apologies for not sending the call in number, but the meeting was yesterday. To briefly summarize what happened at the meeting, after SCDNR provided some additional clarification regarding their flow proposal, SCE&G decided that funding a new IFIM study to provide updated, site-specific information is most appropriate. At this point, we have a deadline of Nov 1 to send around a modified target species list and study plan for review.

Probably of most significance to you, Gerrit Jobsis noted that the issue of flow impacts to Congaree NP needs to be taken up in earnest at some point and asked agenda time be dedicated to this issue at the next meeting. SCE&G agreed to include this on the agenda for the next meeting, which will be a 2-day meeting on Nov 27-28.

Again, my apologies regarding the call-in number, but I think I saved you a lot of boredom with the above summary.

Shane

I will add you to the distribution list for the IFIM TWC so that receive further communications/meeting announcements.

-----Original Message-----

From: Jeff\_Duncan@nps.gov [mailto:Jeff\_Duncan@nps.gov]  
Sent: Tuesday, October 17, 2006 10:34 AM  
To: Shane Boring  
Cc: Theresa\_Thom@nps.gov; Bill\_Hulslander@nps.gov  
Subject: Instream flow meeting

Shane--

I neglected to capture in my notes or calendar when the instream meeting is. Have I already missed it? If not I'd like to dial in if possible.

Thanks, Jeff

Jeffrey R. Duncan, Ph.D.  
National Park Service--RTCA  
175 Hamm Rd. Suite C, Chattanooga, TN 37405  
Ph. (423) 266-1150 Fax. (423) 266-2558

## Kacie Jensen

---

**From:** Jeff\_Duncan@nps.gov  
**Sent:** Tuesday, October 17, 2006 12:02 PM  
**To:** Shane Boring  
**Subject:** RE: Instream flow meeting

Saving me from boredom is always appreciated. Glad Gerrit was able to carry the torch on our behalf. Let me know if you want us to present on flow issues associated with the park in November.

Thanks, Jeff

Jeffrey R. Duncan, Ph.D.  
National Park Service--RTCA  
175 Hamm Rd. Suite C, Chattanooga, TN 37405  
Ph. (423) 266-1150 Fax. (423) 266-2558

"Shane Boring"  
<Shane.Boring@Kleinschm  
idtUSA.com>  
  
10/17/2006 11:08 AM AST

To: <Jeff\_Duncan@nps.gov>  
cc:  
Subject: RE: Instream flow meeting

JEFF:

My apologies for not sending the call in number, but the meeting was yesterday. To briefly summarize what happened at the meeting, after SCDNR provided some additional clarification regarding their flow proposal, SCE&G decided that funding a new IFIM study to provide updated, site-specific information is most appropriate. At this point, we have a deadline of Nov 1 to send around a modified target species list and study plan for review.

Probably of most significance to you, Gerrit Jobsis noted that the issue of flow impacts to Congaree NP needs to be taken up in earnest at some point and asked agenda time be dedicated to this issue at the next meeting. SCE&G agreed to include this on the agenda for the next meeting, which will be a 2-day meeting on Nov 27-28.

Again, my aplogies regarding the call-in number, but I think I saved you a lot of boredom with the above summary.

Shane

I will add you to the distribution list for the IFIM TWC so that receive further communications/meeting announcements.

-----Original Message-----

From: Jeff\_Duncan@nps.gov [mailto:Jeff\_Duncan@nps.gov]  
Sent: Tuesday, October 17, 2006 10:34 AM  
To: Shane Boring  
Cc: Theresa\_Thom@nps.gov; Bill\_Hulslander@nps.gov  
Subject: Instream flow meeting

Shane--



I neglected to capture in my notes or calendar when the instream meeting is. Have I already missed it? If not I'd like to dial in if possible.

Thanks, Jeff

Jeffrey R. Duncan, Ph.D.  
National Park Service--RTCA  
175 Hamm Rd. Suite C, Chattanooga, TN 37405  
Ph. (423) 266-1150 Fax. (423) 266-2558

## Kacie Jensen

---

**From:** Shane Boring  
**Sent:** Tuesday, October 17, 2006 11:08 AM  
**To:** 'Jeff\_Duncan@nps.gov'  
**Subject:** RE: Instream flow meeting

JEFF:

My apologies for not sending the call in number, but the meeting was yesterday. To briefly summarize what happened at the meeting, after SCDNR provided some additional clarification regarding their flow proposal, SCE&G decided that funding a new IFIM study to provide updated, site-specific information is most appropriate. At this point, we have a deadline of Nov 1 to send around a modified target species list and study plan for review.

Probably of most significance to you, Gerrit Jobsis noted that the issue of flow impacts to Congaree NP needs to be taken up in earnest at some point and asked agenda time be dedicated to this issue at the next meeting. SCE&G agreed to include this on the agenda for the next meeting, which will be a 2-day meeting on Nov 27-28.

Again, my apologies regarding the call-in number, but I think I saved you a lot of boredom with the above summary.

Shane

I will add you to the distribution list for the IFIM TWC so that receive further communications/meeting announcements.

-----Original Message-----

From: Jeff\_Duncan@nps.gov [mailto:Jeff\_Duncan@nps.gov]  
Sent: Tuesday, October 17, 2006 10:34 AM  
To: Shane Boring  
Cc: Theresa\_Thom@nps.gov; Bill\_Hulslander@nps.gov  
Subject: Instream flow meeting

Shane--

I neglected to capture in my notes or calendar when the instream meeting is. Have I already missed it? If not I'd like to dial in if possible.

Thanks, Jeff

Jeffrey R. Duncan, Ph.D.  
National Park Service--RTCA  
175 Hamm Rd. Suite C, Chattanooga, TN 37405  
Ph. (423) 266-1150 Fax. (423) 266-2558

**Kacie Jensen**

---

**From:** Shane Boring  
**Sent:** Thursday, October 05, 2006 2:41 PM  
**To:** 'Gerrit Jobsis'; Brandon Kulik  
**Subject:** RE: IFIM HSI criteria

I may have them in some of the files that I photocopies from DNR. If I don't have them, I can get in touch with Ron and maybe dig a little deeper in the files.

Shane

-----Original Message-----

**From:** Gerrit Jobsis [mailto:gjobsis@americanrivers.org]  
**Sent:** Thursday, October 05, 2006 1:03 PM  
**To:** Brandon Kulik  
**Cc:** Shane Boring  
**Subject:** IFIM HSI criteria

Brandon,

I have looked through my computer and paper files and cannot find the HSI curves used for the Saluda IFIM. It is likely they are in the DNR's paper files.

Gerrit

---

Gerrit Jöbsis  
Director of Southeast Conservation  
American Rivers  
2231 Devine Street, Suite 100 • Columbia, S.C. 29205  
803/771-7114  
803/771-7580 Fax  
[gjobsis@americanrivers.org](mailto:gjobsis@americanrivers.org)

[www.AmericanRivers.org](http://www.AmericanRivers.org)

***American Rivers protects and restores healthy natural rivers for the benefit of communities, fish and wildlife.***

## Kacie Jensen

---

**From:** Shane Boring  
**Sent:** Tuesday, October 03, 2006 1:55 PM  
**To:** Shane Boring; 'Steve Summer'; Alan Stuart; 'Amanda Hill'; 'Bill Argentieri'; 'Gerrit Jobsis (American Rivers)'; 'Jennifer Price'; Jennifer Summerlin; 'Jim Glover'; 'Randy Mahan'; 'Ron Ahle'; Shane Boring  
**Cc:** 'Wade Bales (balesw@dnr.sc.gov)'; Alison Guth; 'Bill East'; 'Bill Hulslander'; 'Bill Marshall'; 'Bob Perry'; 'Bob Seibels (bseibels@yahoo.com)'; 'Charlene Coleman'; 'Daniel Tufford'; 'Dick Christie'; 'Ed Diebold'; 'George Duke'; 'Gina Kirkland'; 'Hal Beard'; 'Jeff Duncan'; 'Jennifer O'Rourke'; 'Jim Goller'; 'Joe Logan'; 'Joy Downs'; 'Larry Turner (turnerle@dhec.sc.gov)'; 'Laura Boos (laura.mccary@gmail.com)'; 'Malcolm Leaphart'; 'Mark Leao'; 'Mike Sloan'; 'Norman Ferris'; 'Patrick Moore'; 'Prescott Brownell'; 'Ralph Crafton'; 'Reed Bull (rbull@davisfloyd.com)'; 'Robert Lavisky'; 'Sam Drake'; 'Scott Harder'; 'Steve Bell'; 'Steve Leach'; 'Suzanne Rhodes'; 'Tom Bowles (tbowles@scana.com)'  
**Subject:** RE: Saluda Hydro Relicense: Mussel Report Draft



kleinschmidt2006dr  
aft060808.pdf...

Dear Freshwater Mussel/Macroinvertebrate TWC Members:

Comments on the agency draft of the Saluda Hydro freshwater mussel report were due yesterday, October 2nd. If there are any additional comments, please have those to me by close of business this Thursday, October 5th. Thanks for your continued participation in the Saluda Hydro relicensing process.

C. Shane Boring  
Environmental Scientist  
Kleinschmidt Associates  
101 Trade Zone Dr., Suite-21A  
West Columbia, SC 29170  
Phone: (803)822-3177  
Fax: (803)822-3183

-----Original Message-----

**From:** Shane Boring  
**Sent:** Wednesday, September 13, 2006 1:19 PM  
**To:** Steve Summer; Alan Stuart; Amanda Hill; Bill Argentieri; Gerrit Jobsis (American Rivers); Jennifer Price; Jennifer Summerlin; Jim Glover; Randy Mahan; Ron Ahle; Shane Boring  
**Cc:** Wade Bales (balesw@dnr.sc.gov); Alison Guth; Bill East; Bill Hulslander; Bill Marshall; Bob Perry; Bob Seibels (bseibels@yahoo.com); Charlene Coleman; Daniel Tufford; Dick Christie; Ed Diebold; George Duke; Gina Kirkland; Hal Beard; Jeff Duncan; Jennifer O'Rourke; Jim Goller; Joe Logan; Joy Downs; Larry Turner (turnerle@dhec.sc.gov); Laura Boos (laura.mccary@gmail.com); Malcolm Leaphart; Mark Leao; Mike Sloan; Norman Ferris; Patrick Moore; Prescott Brownell; Ralph Crafton; Reed Bull (rbull@davisfloyd.com); Robert Lavisky; Sam Drake; Scott Harder; Steve Bell; Steve Leach; Suzanne Rhodes; Tom Bowles (tbowles@scana.com)  
**Subject:** Saluda Hydro Relicense: Mussel Report Draft

Dear Freshwater Mussel/Macroinvertebrate TWC Members:

Attached for your review is the "agency draft" of the report summarizing findings of the freshwater mussel survey performed on the Lake Murray and the Lower Saluda and Congaree rivers by John Alderman. Please have comments on the draft report by Monday, October 2nd. Please accept our apologies for only providing the report in PDF format; the maps will not display properly in MS Word. Thanks and please don't hesitate to call should you have any questions regarding the study.

**PROJECT: Reconnaissance Survey of the Freshwater Mussel Fauna of the Lower Saluda and Congaree River, Lake Murray, and Selected Tributaries**

**STATION: 20060712.6jma**

**BIOLOGISTS: John M. Alderman  
Jeffrey West  
Joseph D. Alderman  
Christopher S. Boring  
Jennifer M. Summerlin**

**U.S. FISH AND WILDLIFE SERVICE ES PERMIT: TE065756-0**

**S.C. DEPARTMENT OF NATURAL RESOURCES AUTHORIZATION:  
November 25, 2002**

**LOCATION: Congaree River, Lexington/Richland county line, South Carolina;  
33.97967 N, 81.04757 W; see Figure 4**

**SURVEY DATE: July 12, 2006**

**SITE COMMENTS: Saluda River side of Congaree River**

**HABITAT:**

WATERBODY TYPE:	River
FLOW:	Run
RELATIVE DEPTH:	Shallow
DEPTH (%<2 FEET):	50
SUBSTRATE:	Silt, <b>sand, gravel</b> , cobble, boulder
COMPACTNESS:	Normal
SAND/GRAVEL BARS:	None
WOODY DEBRIS:	Low
BEAVER ACTIVITY:	Evidence (gnawed sticks)
WINDTHROW:	Low
TEMPORARY POOLS:	-
CHANNEL WIDTH:	275+ meters
BANK HEIGHT:	3+ meters

**HABITAT (cont.):**

BANK STABILITY:	Very stable
BUFFER WIDTH:	Moderate
RIPARIAN VEGETATION:	Wooded, shrub-brush
LAND USE:	Urban
PERCENT COVER:	1
WOODLAND EXTENT:	Intermediate
NATURAL LEVEES:	-
VISIBILITY:	Slightly turbid
WATER LEVEL:	Low
WEATHER:	Sun-Cloud, hot

**TECHNIQUES AND SURVEY TIME:**

TECHNIQUES:	Visual
SURVEY TIME:	0.83 person-hours

**FRESHWATER MUSSELS:**

*Elliptio roanokensis* – 2 live (90, 105 mm)

*Elliptio angustata* – 1 live (58 mm)

**OTHER DOCUMENTED TAXA:**

*Elimia catenaria*

*Corbicula fluminea*

**PROJECT: Reconnaissance Survey of the Freshwater Mussel Fauna of the Lower Saluda and Congaree River, Lake Murray, and Selected Tributaries**

**STATION: 20060712.7jma**

**BIOLOGISTS: John M. Alderman  
Joseph D. Alderman  
Christopher S. Boring**

**U.S. FISH AND WILDLIFE SERVICE ES PERMIT: TE065756-0**

**S.C. DEPARTMENT OF NATURAL RESOURCES AUTHORIZATION:  
November 25, 2002**

**LOCATION: Congaree River, Lexington/Richland county line, South Carolina;  
33.98031 N, 81.04546 W; see Figure 4**

**SURVEY DATE: July 12, 2006**

**SITE COMMENTS: Broad River side of Congaree River**

**HABITAT:**

WATERBODY TYPE:	River
FLOW:	Slack
RELATIVE DEPTH:	Shallow
DEPTH (% < 2 FEET):	20
SUBSTRATE:	<b>Silt, sand, gravel</b> , cobble, boulder, bedrock
COMPACTNESS:	Normal
SAND/GRAVEL BARS:	Present
WOODY DEBRIS:	Low
BEAVER ACTIVITY:	Evidence (gnawed sticks)
WINDTHROW:	Low
TEMPORARY POOLS:	-
CHANNEL WIDTH:	275+ meters
BANK HEIGHT:	3+ meters

**HABITAT (cont.):**

BANK STABILITY:	Very stable
BUFFER WIDTH:	Moderate
RIPARIAN VEGETATION:	Wooded, shrub-brush
LAND USE:	Urban
PERCENT COVER:	0
WOODLAND EXTENT:	Intermediate
NATURAL LEVEES:	-
VISIBILITY:	Slightly turbid
WATER LEVEL:	Low
WEATHER:	Sun-Cloud, hot

**TECHNIQUES AND SURVEY TIME:**

TECHNIQUES:	Visual
SURVEY TIME:	0.5 person-hours

**FRESHWATER MUSSELS:**

*Elliptio roanokensis* – 19 live (120, 106, 109, 118, 107, 88, 83, 102, 117, 111, 97, 91, 100, 113, 116, 89, 91, 92, 87 mm)

*Elliptio complanata* – 5 live (77, 68, 73, 65, 55 mm)

*Elliptio congaraea* – 2 live (65, 68 mm)

*Strophitus undulatus* – 1 live (53 mm)

*Elliptio angustata* – 9 live (92, 82, 78, 70, 69, 66, 82, 77, 65 mm)

*Villosa delumbis* – 1 male shell (37 mm)

*Lampsilis splendida* – 1 live female (66 mm)

*Lampsilis cariosa* – 2 live males (98, 90 mm)

**OTHER DOCUMENTED TAXA:**

*Corbicula fluminea*



**PROJECT: Reconnaissance Survey of the Freshwater Mussel Fauna of the Lower Saluda and Congaree River, Lake Murray, and Selected Tributaries**

**STATION: 20060712.8jma**

**BIOLOGISTS: John M. Alderman  
Jeffrey West  
Joseph D. Alderman  
Christopher S. Boring  
Jennifer M. Summerlin**

**U.S. FISH AND WILDLIFE SERVICE ES PERMIT: TE065756-0**

**S.C. DEPARTMENT OF NATURAL RESOURCES AUTHORIZATION:  
November 25, 2002**

**LOCATION: Congaree River, Lexington/Richland county line, South Carolina;  
33.96535 N, 81.03777 W; see Figure 4**

**SURVEY DATE: July 12, 2006**

**SITE COMMENTS: Saluda River side of Congaree River**

**HABITAT:**

<b>WATERBODY TYPE:</b>	River
<b>FLOW:</b>	Run
<b>RELATIVE DEPTH:</b>	Shallow
<b>DEPTH (%&lt;2 FEET):</b>	75
<b>SUBSTRATE:</b>	Silt, sand, gravel
<b>COMPACTNESS:</b>	Normal
<b>SAND/GRAVEL BARS:</b>	None
<b>WOODY DEBRIS:</b>	Low
<b>BEAVER ACTIVITY:</b>	Evidence (gnawed sticks)
<b>WINDTHROW:</b>	Low
<b>TEMPORARY POOLS:</b>	None
<b>CHANNEL WIDTH:</b>	275+ meters
<b>BANK HEIGHT:</b>	4+ meters

**HABITAT (cont.):**

BANK STABILITY:	Very stable
BUFFER WIDTH:	Narrow
RIPARIAN VEGETATION:	Wooded, shrub-brush
LAND USE:	Urban
PERCENT COVER:	1
WOODLAND EXTENT:	Not extensive
NATURAL LEVEES:	-
VISIBILITY:	Slightly turbid
WATER LEVEL:	Low
WEATHER:	Sun-Cloud, hot

**TECHNIQUES AND SURVEY TIME:**

TECHNIQUES:	Visual
SURVEY TIME:	0.67 person-hours

**FRESHWATER MUSSELS:**

None

**OTHER DOCUMENTED TAXA:**

*Corbicula fluminea* - rare

**PROJECT: Reconnaissance Survey of the Freshwater Mussel Fauna of the Lower Saluda and Congaree River, Lake Murray, and Selected Tributaries**

**STATION: 20060804.1jma**

**BIOLOGISTS: John M. Alderman  
Jeffrey West  
Christopher S. Boring**

**U.S. FISH AND WILDLIFE SERVICE ES PERMIT: TE065756-0**

**S.C. DEPARTMENT OF NATURAL RESOURCES AUTHORIZATION:  
November 25, 2002**

**LOCATION: Saluda River, Lexington/Richland county line, South Carolina; 34.02287 N, 81.10009 W; see Figure 4**

**SURVEY DATE: August 4, 2006**

**SITE COMMENTS: Around islands**

**HABITAT:**

WATERBODY TYPE:	River
FLOW:	Run, slack
RELATIVE DEPTH:	Very Shallow
DEPTH (% < 2 FEET):	90
SUBSTRATE:	Silt, sand, gravel, cobble, boulder, Bedrock
COMPACTNESS:	Compact and Normal
SAND/GRAVEL BARS:	Present
WOODY DEBRIS:	Low
BEAVER ACTIVITY:	None
WINDTHROW:	Low
TEMPORARY POOLS:	--
CHANNEL WIDTH:	Varies
BANK HEIGHT:	Varies

**HABITAT (cont.):**

BANK STABILITY:	Very stable
BUFFER WIDTH:	Narrow
RIPARIAN VEGETATION:	Wooded, shrub-brush
LAND USE:	Natural, timber, urban
PERCENT COVER:	1
WOODLAND EXTENT:	Intermediate
NATURAL LEVEES:	-
VISIBILITY:	Clear
WATER LEVEL:	Low
WEATHER:	Sunny, hot

**TECHNIQUES AND SURVEY TIME:**

TECHNIQUES:	Visual/tactile
SURVEY TIME:	1.5 person-hours

**FRESHWATER MUSSELS:**

None

**OTHER DOCUMENTED TAXA:**

*Corbicula fluminea* – abundant

*Physa* sp. – common

*Helisoma anceps* - abundant

**PROJECT: Reconnaissance Survey of the Freshwater Mussel Fauna of the Lower Saluda and Congaree River, Lake Murray, and Selected Tributaries**

**STATION: 20060804.2jma**

**BIOLOGISTS: John M. Alderman  
Jeffrey West  
Christopher S. Boring**

**U.S. FISH AND WILDLIFE SERVICE ES PERMIT: TE065756-0**

**S.C. DEPARTMENT OF NATURAL RESOURCES AUTHORIZATION:  
November 25, 2002**

**LOCATION: Saluda River, Lexington/Richland county line, South Carolina; 34.01835 N, 81.09807 W; see Figure 4**

**SURVEY DATE: August 4, 2006**

**SITE COMMENTS: Good mix of substrates in places, relatively warm water at base of large area of rapids; potential stocking site for *Elliptio complanata***

**HABITAT:**

WATERBODY TYPE:	River
FLOW:	Run, riffle, slack
RELATIVE DEPTH:	Very shallow
DEPTH (%<2 FEET):	90
SUBSTRATE:	Silt, sand, gravel, cobble, boulder, bedrock
COMPACTNESS:	Normal
SAND/GRAVEL BARS:	Present
WOODY DEBRIS:	Low
BEAVER ACTIVITY:	Evidence (gnawed sticks)
WINDTHROW:	Low
TEMPORARY POOLS:	None
CHANNEL WIDTH:	Varies
BANK HEIGHT:	Varies

**HABITAT (cont.):**

BANK STABILITY:	Very stable
BUFFER WIDTH:	Moderate
RIPARIAN VEGETATION:	Wooded, shrub-brush
LAND USE:	Natural, timber, urban
PERCENT COVER:	1
WOODLAND EXTENT:	Intermediate
NATURAL LEVEES:	-
VISIBILITY:	Clear
WATER LEVEL:	Low
WEATHER:	Sunny, hot

**TECHNIQUES AND SURVEY TIME:**

TECHNIQUES:	Visual
SURVEY TIME:	1.75 person-hours

**FRESHWATER MUSSELS:**

None

**OTHER DOCUMENTED TAXA:**

*Corbicula fluminea*

*Helisoma anceps*

*Physa* sp.

**PROJECT: Reconnaissance Survey of the Freshwater Mussel Fauna of the Lower Saluda and Congaree River, Lake Murray, and Selected Tributaries**

**STATION: 20060804.3jma**

**BIOLOGISTS: John M. Alderman  
Jeffrey West  
Christopher S. Boring**

**U.S. FISH AND WILDLIFE SERVICE ES PERMIT: TE065756-0**

**S.C. DEPARTMENT OF NATURAL RESOURCES AUTHORIZATION:  
November 25, 2002**

**LOCATION: Rawls Creek, Lexington County, South Carolina; 34.07949 N, 81.20251 W; see Figure 4**

**SURVEY DATE: August 4, 2006**

**SITE COMMENTS: Very poor water quality; odor of sewage and effluent**

**HABITAT:**

<b>WATERBODY TYPE:</b>	Stream
<b>FLOW:</b>	Run, riffle, slack, pool
<b>RELATIVE DEPTH:</b>	Very shallow
<b>DEPTH (%&lt;2 FEET):</b>	99
<b>SUBSTRATE:</b>	Clay, silt, sand, gravel, cobble, boulder, bedrock
<b>COMPACTNESS:</b>	Normal and unconsolidated
<b>SAND/GRAVEL BARS:</b>	Rare
<b>WOODY DEBRIS:</b>	Low
<b>BEAVER ACTIVITY:</b>	None
<b>WINDTHROW:</b>	Low
<b>TEMPORARY POOLS:</b>	-
<b>CHANNEL WIDTH:</b>	8+ meters
<b>BANK HEIGHT:</b>	2+ meters

**HABITAT (cont.):**

BANK STABILITY:	Some erosion/undercutting
BUFFER WIDTH:	Narrow to moderate
RIPARIAN VEGETATION:	Wooded, shrub-brush
LAND USE:	Urban
PERCENT COVER:	80
WOODLAND EXTENT:	Not extensive
NATURAL LEVEES:	At least one
VISIBILITY:	Slightly turbid
WATER LEVEL:	Low
WEATHER:	Sunny, hot

**TECHNIQUES AND SURVEY TIME:**

TECHNIQUES:	Visual
SURVEY TIME:	0.75 person-hours

**FRESHWATER MUSSELS:**

None

**OTHER DOCUMENTED TAXA:**

*Corbicula fluminea* - rare



**PROJECT: Reconnaissance Survey of the Freshwater Mussel Fauna of the Lower Saluda and Congaree River, Lake Murray, and Selected Tributaries**

**STATION: 20060804.4jma**

**BIOLOGISTS: John M. Alderman  
Jeffrey West  
Christopher S. Boring**

**U.S. FISH AND WILDLIFE SERVICE ES PERMIT: TE065756-0**

**S.C. DEPARTMENT OF NATURAL RESOURCES AUTHORIZATION:  
November 25, 2002**

**LOCATION: Twelve Mile Creek, Lexington County, South Carolina; 34.03275 N,  
81.16173 W; see Figure 4**

**SURVEY DATE: August 4, 2006**

**SITE COMMENTS: Effluent odor, very poor water quality**

**HABITAT:**

WATERBODY TYPE:	Stream
FLOW:	Run, riffle, slack, pool
RELATIVE DEPTH:	Very shallow
DEPTH (% < 2 FEET):	98
SUBSTRATE:	Silt, sand, gravel, cobble, boulder
COMPACTNESS:	Normal
SAND/GRAVEL BARS:	Present
WOODY DEBRIS:	Average
BEAVER ACTIVITY:	None
WINDTHROW:	Low
TEMPORARY POOLS:	--
CHANNEL WIDTH:	10+ meters
BANK HEIGHT:	2+ meters

**HABITAT (cont.):**

BANK STABILITY:	Very stable
BUFFER WIDTH:	Wide
RIPARIAN VEGETATION:	Wooded, shrub-brush
LAND USE:	Natural, timber, rural
PERCENT COVER:	90
WOODLAND EXTENT:	Extensive
NATURAL LEVEES:	At least one
VISIBILITY:	Slightly turbid
WATER LEVEL:	Low
WEATHER:	Sunny, hot

**TECHNIQUES AND SURVEY TIME:**

TECHNIQUES:	Visual
SURVEY TIME:	0.5 person-hours

**FRESHWATER MUSSELS:**

None

**OTHER DOCUMENTED TAXA:**

None (no *Corbicula fluminea*!)

## Kacie Jensen

---

**From:** Prescott Brownell [Prescott.Brownell@noaa.gov]  
**Sent:** Tuesday, October 03, 2006 3:43 PM  
**To:** Shane Boring  
**Subject:** Re: Saluda Hydro Relicense: Mussel Report Draft



prescott.brownell.v  
cf (401 B)

Hello Shane,  
NOAA Fisheries has no comments on the mussel report.

PB

Shane Boring wrote:

> Dear Freshwater Mussel/Macroinvertebrate TWC Members:  
>  
> Comments on the agency draft of the Saluda Hydro freshwater mussel  
> report were due yesterday, October 2nd. If there are any additional  
> comments, please have those to me by close of business this Thursday,  
> October 5th. Thanks for your continued participation in the Saluda  
> Hydro relicensing process.  
>  
> C. Shane Boring  
> Environmental Scientist  
> Kleinschmidt Associates  
> 101 Trade Zone Dr., Suite-21A  
> West Columbia, SC 29170  
> Phone: (803)822-3177  
> Fax: (803)822-3183  
>  
>  
> -----Original Message-----  
> From: Shane Boring  
> Sent: Wednesday, September 13, 2006 1:19 PM  
> To: Steve Summer; Alan Stuart; Amanda Hill; Bill Argentieri; Gerrit  
> Jobsis (American Rivers); Jennifer Price ; Jennifer Summerlin; Jim  
> Glover; Randy Mahan; Ron Ahle; Shane Boring  
> Cc: Wade Bales (balesw@dnr.sc.gov); Alison Guth; Bill East; Bill  
> Hulslander; Bill Marshall; Bob Perry ; Bob Seibels (bseibels@yahoo.com);  
> Charlene Coleman; Daniel Tufford; Dick Christie; Ed Diebold; George  
> Duke; Gina Kirkland; Hal Beard; Jeff Duncan; Jennifer O'Rourke; Jim  
> Goller; Joe Logan; Joy Downs; Larry Turner (turnerle@dhec.sc.gov); Laura  
> Boos (laura.mccary@gmail.com); Malcolm Leaphart; Mark Leao; Mike Sloan;  
> Norman Ferris; Patrick Moore; Prescott Brownell; Ralph Crafton; Reed  
> Bull (rbull@davisfloyd.com); Robert Lavisky; Sam Drake; Scott Harder;  
> Steve Bell; Steve Leach; Suzanne Rhodes; Tom Bowles (tbowles@scana.com)  
> Subject: Saluda Hydro Relicense: Mussel Report Draft  
>  
>  
>  
> Dear Freshwater Mussel/Macroinvertebrate TWC Members:  
>  
> Attached for your review is the "agency draft" of the report  
> summarizing findings of the freshwater mussel survey performed on the  
> Lake Murray and the Lower Saluda and Congaree rivers by John Alderman.  
> Please have comments on the draft report by Monday, October 2nd.  
> Please accept our apologies for only providing the report in PDF  
> format; the maps will not display properly in MS Word. Thanks and  
> please don't hesitate to call should you have any questions regarding  
> the study.

>  
> C. Shane Boring  
> Environmental Scientist  
> Kleinschmidt Associates  
> 101 Trade Zone Dr., Suite-21A  
> West Columbia, SC 29170  
> Phone: (803)822-3177  
> Fax: (803)822-3183  
>

## Cheryl Balitz

---

**From:** Alison Guth  
**Sent:** Tuesday, October 03, 2006 4:54 PM  
**To:** Steve Summer; Alan Stuart; Amanda Hill; Bill Argentieri; Dick Christie; Gerrit Jobsis (American Rivers); Jennifer Summerlin; Jim Glover; Prescott Brownell; Randy Mahan; Shane Boring; Steve Leach  
**Subject:** FW: Eel ramp near USGS gage on lower Saluda River

-----Original Message-----

**From:** Bret Hoffman  
**Sent:** Tuesday, October 03, 2006 4:52 PM  
**To:** Alison Guth  
**Subject:** Eel ramp near USGS gage on lower Saluda River

Good afternoon,

Per the approved study plan, the second eel sampling ramp (near the USGS gage on the Saluda River below the dam) has been installed and is in operation. Attached are a few photos of the equipment and ramp.

Thanks,

---

Bret Hoffman, P.E.  
Mechanical Engineer  
Kleinschmidt  
Energy & Water Resource Consultants  
101 Trade Zone Drive, Suite 21A  
West Columbia, SC 29170  
(803) 822-3177  
FAX (803) 822-3183  
Bret.Hoffman@KleinschmidtUSA.com

ladder 1.jpg (277 KB) ladder 2.jpg (360 KB) ladder 3.jpg (374 KB) ladder 4.jpg (194 KB) pump housing.jpg (270 KB)



*LADDER 1*



*LADDER 2*



*LADDER 3*



*LADDER 4*



*PUMP HOUSING*





*LADDER 1*



*LADDER 2*



*LADDER 3*



*LADDER 4*



*PUMP HOUSING*

## Kacie Jensen

---

**From:** Shane Boring  
**Sent:** Monday, October 02, 2006 3:00 PM  
**To:** Tom Eppink; Alan Stuart; Amanda Hill; Bill Argentieri; Bob Seibels (bseibels@yahoo.com); Gerrit Jobsis (American Rivers); Jennifer Summerlin; Jim Glover; Randy Mahan; Ron Ahle; Shane Boring; Bob Perry ; Brandon Stutts ; Buddy Baker ; Dick Christie  
**Cc:** 'Tom Murphy (murphyt@dnr.sc.gov)'; 'Ed\_Eudaly@fws.gov'; Cheryl Balitz  
**Subject:** Saluda Hydro: September 2006 Lake Murray Wood Stork Survey Observations

All:

The September 2006 Lake Murray wood stork survey was conducted on Friday, September 15th. Approximately 8 wood storks were observed foraging in a farm pond south of the Saluda's main channel just downstream of the Highway 121 Bridge. An additional 4-6 (4 confirmed, 2 suspected) storks were also observed foraging and soaring above the easternmost wetland adjacent to the wood chipping plant near Silverstreet, near where storks were previously observed in 2004. A memo summarizing the survey observations, as well as a map of the observation sites, is attached for your records.

As always, thanks for your interest in the Lake Murray Wood Stork Study and please feel free to give me a call should you have any questions.

C. Shane Boring  
Environmental Scientist  
Kleinschmidt Associates  
101 Trade Zone Dr., Suite-21A  
West Columbia, SC 29170  
Phone: (803)822-3177  
Fax: (803)822-3183



Sept 06 wood stork  
update.pdf ...

Cheryl: Please post the attached to the Saluda Relicense website with the other wood stork updates. Thanks.

**MEMORANDUM**

**TO:** Saluda Hydro Project Relicensing Stakeholders

**FROM:** Shane Boring

**DATE:** September 18, 2006

**RE:** September 2006 Wood Stork Aerial Survey Observations

---

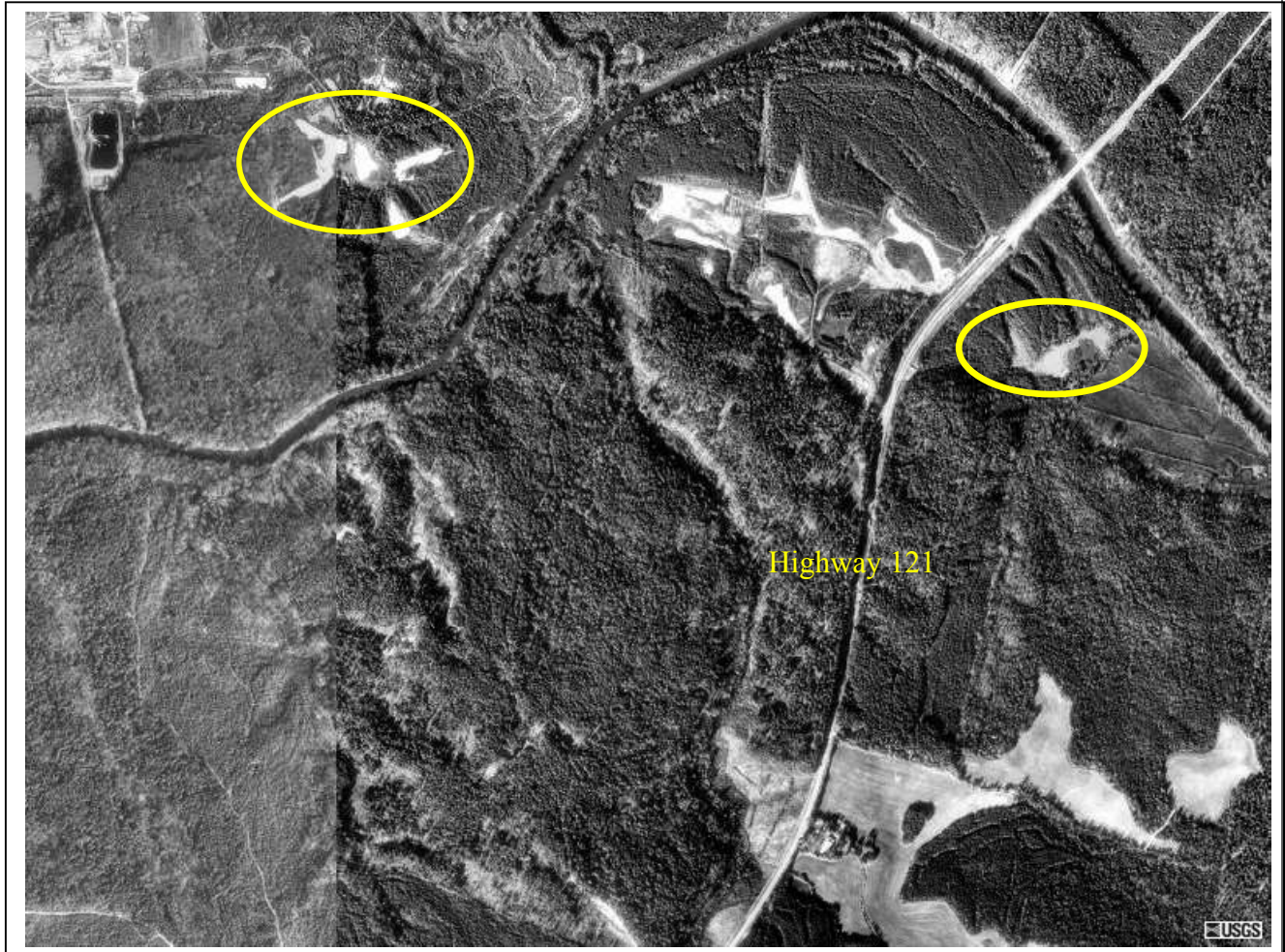
Dear Relicensing Stakeholder:

The September 2006 Lake Murray wood stork survey was conducted on Friday, September 15th. Moderate wading bird activity was observed, with numerous great egrets foraging in the Saluda River floodplain upstream of the reservoir and in backwaters of reservoir coves. In addition, approximately 8 wood storks were observed foraging in a farm pond south of the Saluda's main channel just downstream of the Highway 121 Bridge. Approximately 4-6 (4 confirmed, 2 suspected) storks were also observed foraging and soaring above the easternmost wetland adjacent to the wood chipping plant near Silverstreet, near where storks were previously observed in 2004. Both of the sites where storks were observed were located off of the Saluda's main channel (see Figure 1). The timing of these observations suggests that these birds are likely part of the extensive post-breeding dispersal. Storks dispersing post-breeding from southern US colonies have been documented as far north as New York, Maine, and Southern Canada and as far west as Tennessee (USFWS Recovery Plan, 1997).

Thank you for your continued interest in the Lake Murray Wood Stork Study, and as always, please feel free to contact me should you have any questions.

C. Shane Boring  
Environmental Scientist  
Kleinschmidt Associates  
101 Trade Zone Dr., Suite-21A  
West Columbia, SC 29170  
Phone: (803)822-3177  
Fax: (803)822-3183

Figure 1. Aerial Photograph of Locations of Wood Stork Sightings During September 2006 Survey  
(Circles denote locations where wood storks were observed)



## Kacie Jensen

---

**From:** Shane Boring  
**Sent:** Tuesday, September 12, 2006 5:17 PM  
**To:** 'theresa\_thom@nps.gov'  
**Cc:** Wade Bales (balesw@dnr.sc.gov); Amanda Hill; Bill Argentieri; Dick Christie; Gerrit Jobsis (American Rivers); Hal Beard; Jennifer Summerlin; Jim Glover; Malcolm Leaphart; Prescott Brownell; Randy Mahan; Ron Ahle; Scott Harder; Shane Boring; Steve Summer; Brandon Kulik; Alan Stuart  
**Subject:** Congaree Flow Studies

Theresa:

As discussed in the Instream Flow TWC meeting last week, I have compiled the available studies that I could find on potential influences of the Lower Saluda (an in turn Saluda Hydro) on Congaree flows at the National Park (see attached). I'm interested to see what additional studies/data are available from NPS; I'm certain you guys have many more sources than I was able to locate. Thanks.

Shane

C. Shane Boring  
Environmental Scientist  
Kleinschmidt Associates  
101 Trade Zone Dr., Suite-21A  
West Columbia, SC 29170  
Phone: (803)822-3177  
Fax: (803)822-3183



Congaree  
oodplain Bibliograp.

## **Congaree Flow Studies with Potential Relevance to Saluda Hydro**

Compiled by: Shane Boring, Kleinschmidt Associates

Molnia, B. 1971. Methods employed in studying the mixing mechanism at the confluence of the Broad And Saluda Rivers, Columbia, South Carolina. South Carolina Division Of Geology Geologic Notes, Vol 15, No 2, P 29-38, June 1971. 10 P, 4 Fig, 8 Ref.

### Abstract:

The mixing mechanism active at the confluence of two rivers in Columbia, South Carolina is investigated by analyzing the suspended sediment load, color, turbidity, temperature and specific conductance of the waters as they mix. river samples are taken across the mixing zone from the three bridges. samples are obtained using a U.S. Geological Survey dh-59 depth-integrating sediment sampler. this sampler continuously collects and accumulates the sample as it is lowered to the bottom of the river and raised back to the water surface. Such a sample should give a vertical representation of the river throughout the water column at that particular river station. AT each station, temperature and depth of water measurement are taken. IN the laboratory, turbidity, specific conductance, color, and suspended sediment load measurements are made. (KNAPP-USGS)

Patterson, GG, Speiran, GK, Whetstone, BH. 1985. Hydrology and its effects on distribution of vegetation in Congaree Swamp National Monument, South Carolina. Water-Resources Investigations - U. S. Geological Survey, Reston, VA. Report: WRI 85-4256, 31 pp.

### Abstract:

Not available

Rikard, MW. 1989. Hydrologic and vegetative relationships of the Congaree Swamp National Monument DISS. ABST. INT. PT. B - SCI. & ENG. Vol. 50, no. 4, 113 pp. Oct 1989.

### Abstract:

The Congaree Swamp National Monument was established in 1976 to preserve a "near-virgin southern hardwood forest." The vegetative community of this bottomland hardwood forest is directly influenced by flood waters of the Congaree River. A study was conducted to determine whether flood frequency and duration during the months of March through June influenced the vegetative community of the area. This study also examined the possible effects that the upstream construction of the Lake Murray Dam on the Saluda River might have on the vegetative communities. Calculations indicated that basal area increased



with an increase in the frequency of flooding. Soils analysis of the top six inches of the study plots indicated fertile soils except for the possibility that phosphorus may be limiting and that pH generally increased with a decrease in flooding. Cluster analyses of the plots based on their species composition were conducted to determine whether differences were indicated between flooding zones and study areas. Flooding zone 1, the most frequently flooded zone, was dominated by baldcypress and water tupelo. Study area 1, which was below but near the floodplain boundary, was differentiated by the presence of loblolly pine. Study areas 2 and 3, which were nearer the river were dominated by sweetgum. An analysis of diameter distributions of sugarberry and water oak indicated these dry site species may be advancing to sites of lower elevation, which may be due to the upstream construction of the Lake Murray Dam and the subsequent change in flooding frequency. However, this should be substantiated by aging studies of these species (DBO).

Plewa, MP, Graf, WL. 2005. Hydrologic variation of the Congaree River near Congaree National Park, South Carolina. Report for the National Park Service, January 29, 2005. University of SC – Dept. of Geography, Columbia, SC. 25pp.

**Abstract:**

Hydrologic investigations based on gage data in the Saluda, Broad, and Congaree rivers reveal the relationships between river flows near Congaree National Park and their upstream dams. The connections are important because the hardwood floodplain forest ecosystem of the park is closely associated with the Congaree River. Streamflow data illustrate that the Broad River contributes two-thirds of the flow of the Congaree River, and is the primary determinant of the hydrologic conditions at the park. The Saluda River contributes about one-third of the Congaree flow. Large volumes of the flow in the Broad commonly wash out the daily or hourly variations in the Saluda from the downstream perspective. However, operations of the Saluda Dam cause fluctuations of 0.25 to 0.5 feet at the gage on the Congaree River at the park. During construction operations at Saluda Dam in the 2002-2004 period, gage data indicate that operations of the dam pursued a modified run-of-river strategy to maintain a consistent lake level. Waves or pulses of water from Parr Shoals Dam on the Broad River reach the Congaree River at the park in about a day, while travel time from the Saluda Dam on the Saluda River is about 15 hours. When stage levels in the Congaree River at the park reach about 8 feet, water from the main river substantially influences flows at the Cedar Creek stream gage, illustrating the connection between tributary flows and main river flows in the park.

## Kacie Jensen

---

**From:** Shane Boring  
**Sent:** Friday, September 08, 2006 12:37 PM  
**To:** Wade Bales (balesw@dnr.sc.gov); Amanda Hill; Bill Argentieri; Dick Christie; Gerrit Jobsis (American Rivers); Hal Beard; Jennifer Summerlin; Jim Glover; Malcolm Leaphart; Prescott Brownell; Randy Mahan; Ron Ahle; Scott Harder; Shane Boring; Steve Summer; Theresa Thom; Brandon Kulik; Alan Stuart  
**Subject:** FW: Saluda Hydro: 1987 Lower Saluda Macroinvert Study

All:

The study done by Younginer et al. on the Lower Saluda in 1987, which was referenced by Malcolm Leapheart at yesterday's meeting of the Instream Flow TWC is attached for your records. This study was originally provided to the Macroinvertebrate TWC by Dr. Jim Glover at DHEC. An additional fisheries study provided by Jim is also attached. Have a nice weekend.

Shane

C. Shane Boring  
Environmental Scientist  
Kleinschmidt Associates  
101 Trade Zone Dr., Suite-21A  
West Columbia, SC 29170  
Phone: (803)822-3177  
Fax: (803)822-3183

-----Original Message-----

**From:** Shane Boring  
**Sent:** Tuesday, May 09, 2006 5:25 PM  
**To:** Argentieri, Bill  
**Subject:** FW: Saluda Hydro: 1987 Lower Saluda Macroinvert Study

Bill:

The documents are attached. I have not heard of anyone else having trouble with the link; I double checked it and it seems to be working fine. Let me know if there are others having problems and I will send them the files as well.

Shane



Younginer  
87(DHEC LSR study)



Crane LSR study  
(from J Glover...)

-----Original Message-----

**From:** Shane Boring  
**Sent:** Tuesday, May 09, 2006 4:30 PM  
**To:** Steve Summer; Amanda Hill; Bill Argentieri; Gerrit Jobsis (American Rivers); Jennifer Price ; Jim Glover; Randy Mahan; Ron Ahle; Shane Boring  
**Subject:** Saluda Hydro: 1987 Lower Saluda Macroinvert Study

All:

Jim Glover has provided a copy of the 1987 SCDHEC Lower Saluda River macroinvertebrate study that was discussed recently in our Freshwater Mussels/Benthic Macroinvertebrate TWC meetings (See March 8 meeting notes action items). In addition, Jim also provided a 1987 SCDNR fisheries report for the LSR that provides some additional information. Due to file size, PDF's of both reports have been uploaded to the Kleinschmidt ftp site under the folder entitled "1987 SCDHEC LSR Invert Study" - <ftp://ftp.kleinschmidtusa.com/>.

Thanks for your participation in the Freshwater Mussels/Benthic Macroinverts TWC.

Shane

C. Shane Boring  
Environmental Scientist  
Kleinschmidt Associates  
101 Trade Zone Dr., Suite-21A  
West Columbia, SC 29170  
Phone: (803)822-3177  
Fax: (803)822-3183

## Kacie Jensen

---

**From:** Shane Boring  
**Sent:** Wednesday, September 06, 2006 1:46 PM  
**To:** Shane Boring; Alan Stuart; Amanda Hill; Bill Argentieri; Bob Perry ; Brandon Stutts ; Buddy Baker ; Dick Christie; Jennifer Summerlin; Jim Glover; Randy Mahan; Ron Ahle  
**Cc:** 'Tom Murphy (murphyt@dnr.sc.gov)'; 'Ed\_Eudaly@fws.gov '  
**Subject:** Saluda Hydro Relicense: Lake Murray August Wood Stork Survey Observations

All:

The August 2006 Lake Murray wood stork survey was conducted on Saturday, August 26th. Moderate wading bird activity was observed, with numerous great egrets foraging in the Saluda River floodplain upstream of the reservoir and in backwaters of reservoir coves. In addition, a single juvenile wood stork was observed soaring above the Saluda River upstream of the reservoir. After being followed for approximately 5 minutes by our aircraft, the juvenile wood stork perched in a tall snag at the Tossity Creek site, a floodplain wetland located off of the Saluda's main channel just upstream of the mouth of Tossity Creek (see 2005 Wood Stork Report for site location). The stork remained perched at this site until the end of the survey.

Thank you for your continued interest in the Lake Murray Wood Stork Study, and as always, please feel free to contact me should you have any questions.

C. Shane Boring  
Environmental Scientist  
Kleinschmidt Associates  
101 Trade Zone Dr., Suite-21A  
West Columbia, SC 29170  
Phone: (803)822-3177  
Fax: (803)822-3183

**Kacie Jensen**

---

**From:** Gerrit Jobsis [gjobsis@americanrivers.org]  
**Sent:** Wednesday, September 06, 2006 3:45 PM  
**To:** Shane Boring; Steve Summer; Alan Stuart; Amanda Hill; BARGENTIERI@scana.com; Jennifer Price ; Jennifer Summerlin; Jim Glover; RMAHAN@scana.com; Ron Ahle  
**Cc:** Cheryl Balitz  
**Subject:** RE: Saluda Hydro Relicense: Macroinvertebrate Study Plan

Thanks for the study plan Shane. I'm glad that water quality data will be reported. Including flows data is also needed since this year has been somewhat of an operational anomaly due to the draw down and drought-like inflows. Our goal is, of course, to evaluate operational effects.

Thanks for adding sampling locations at Corley Island and Ocean Blvd to the plan. I don't see a symbol demarking the Corley island site on the map however.

Gerrit

---

Gerrit Jöbsis  
Director of Southeast Conservation  
American Rivers  
2231 Devine Street, Suite 100 • Columbia, S.C. 29205  
803/771-7114  
803/771-7580 Fax  
[gjobsis@americanrivers.org](mailto:gjobsis@americanrivers.org)

[www.AmericanRivers.org](http://www.AmericanRivers.org)

***American Rivers protects and restores healthy natural rivers for the benefit of communities, fish and wildlife.***

---

**From:** Shane Boring [mailto:Shane.Boring@KleinschmidtUSA.com]  
**Sent:** Thursday, August 24, 2006 10:31 AM  
**To:** Steve Summer; Alan Stuart; Amanda Hill; Bill Argentieri; Gerrit Jobsis; Jennifer Price ; Jennifer Summerlin; Jim Glover; Randy Mahan; Ron Ahle; Shane Boring  
**Cc:** Cheryl Balitz  
**Subject:** Saluda Hydro Relicense: Macroinvertebrate Study Plan

All:

Attached is the final study plan for the macroinvertebrate studies that will be performed on the Lower Saluda this fall. Thanks to all who provided comments. As always, the final study plan will be posted to the Saluda Relicense Website.

Thanks,  
Shane

C. Shane Boring  
Environmental Scientist  
Kleinschmidt Associates  
101 Trade Zone Dr., Suite-21A

10/29/2007

West Columbia, SC 29170

Phone: (803)822-3177

Fax: (803)822-3183

<<LSR Macroinvert Study Plan \_final\_.pdf>>

Cheryl:

Please post to the website under the Freshwater Mussels/Benthic Macroinvertebrates TWC, which is part of the Fish and Wildlife RCG. Thanks.

**Kacie Jensen**

---

**From:** Shane Boring  
**Sent:** Thursday, August 31, 2006 5:26 PM  
**To:** Shane Boring; 'theresa\_thom@nps.gov'; 'Wade Bales (balesw@dnr.sc.gov)'; 'Amanda Hill'; 'Bill Argentieri'; 'Dick Christie'; 'Gerrit Jobsis (American Rivers)'; 'Hal Beard'; Jennifer Summerlin; 'Jim Glover'; 'Prescott Brownell'; 'Randy Mahan'; 'Ron Ahle'; 'Scott Harder'; 'Steve Summer'; Brandon Kulik; Alan Stuart; 'Malcolm Leaphart '  
**Cc:** Brandon Kulik; Alison Guth; Jennifer Summerlin  
**Subject:** RE: Saluda Hydro Relicense: Sept 7th Instream Flow and Aquatic Habitat TWC

All:

This is just a reminder that the next meeting of the Instream Flow/Aquatic Habitat TWC will be held on Thursday, Sept 7th, beginning at 9:30 AM at SCE&G's offices at Carolina Research Park. A meeting agenda and directions are attached.

So far the following folks have confirmed:

Bill Argentieri  
Alan Stuart  
Shane Boring  
Prescott Brownell  
Amanda Hill  
Ron Ahle  
Gerrit Jobsis  
Randy Mahan  
Theresa Thom  
Dick Christie  
Brandon Kulik  
Hal Beard  
Malcolm Leaphart

If there are others planning to attend, please let Alison or I know as soon as possible. Thanks and have a good weekend.

Shane

---

**From:** Shane Boring  
**Sent:** Fri 8/18/2006 12:01 PM  
**To:** Shane Boring; 'theresa\_thom@nps.gov'; 'Wade Bales (balesw@dnr.sc.gov)'; 'Amanda Hill'; 'Bill Argentieri'; 'Dick Christie'; 'Gerrit Jobsis (American Rivers)'; 'Hal Beard'; Jennifer Summerlin; 'Jim Glover'; 'Prescott Brownell'; 'Randy Mahan'; 'Ron Ahle'; 'Scott Harder'; 'Steve Summer'; Brandon Kulik; Alan Stuart; 'Malcolm Leaphart '  
**Cc:** Brandon Kulik  
**Subject:** Saluda Hydro Relicense: Sept 7th Instream Flow and Aquatic Habitat TWC

Hello all:

This is to confirm that our next of the Instream Flow/Aquatic Habitat TWC will be on Thursday, September 7th, from 9:30 am to 3:30 pm. This may turn out be one of our most well-attended Instream Flow TWC's. So far the

10/29/2007

following folks have indicated they will be attending:

Amanda Hill  
Dick Christie  
Brandon Kulik  
Alan Stuart  
Shane Boring  
Randy Mahan  
Prescott Brownell  
Hal Beard  
Bill Argentieri  
Gerrit Jobsis

Details regarding the meeting location will be forthcoming.

Thanks,

C. Shane Boring  
Environmental Scientist  
Kleinschmidt Associates  
101 Trade Zone Dr., Suite-21A  
West Columbia, SC 29170  
Phone: (803)822-3177  
Fax: (803)822-3183

-----Original Message-----

**From:** Shane Boring

**Sent:** Wednesday, August 09, 2006 2:19 PM

**To:** Shane Boring; 'theresa\_thom@nps.gov'; Wade Bales (balesw@dnr.sc.gov); Amanda Hill; Bill Argentieri; Dick Christie; Gerrit Jobsis (American Rivers); Hal Beard; Jennifer Summerlin; Jim Glover; Prescott Brownell; Randy Mahan; Ron Ahle; Scott Harder; Shane Boring; Steve Summer; Brandon Kulik; Alan Stuart

**Cc:** Brandon Kulik

**Subject:** RE: Saluda Hydro Relicense: Review of 1990 Saluda IFIM Study

Hello folks:

After speaking with several of you, it now looks as if Wednesday, September 7th may be a better date for the proposed Instream Flow TWC meeting. This will allow folks that are traveling from out of state not to have to travel over the holiday weekend. Also, Brandon Kulik from Kleinschmidt's Maine office would like at least a day to see the river before the meeting. Please let me know if your availability. Please feel free to propose alternate dates during this week if the 7th won't work for you. Thanks.

Shane

C. Shane Boring  
Environmental Scientist  
Kleinschmidt Associates  
101 Trade Zone Dr., Suite-21A  
West Columbia, SC 29170

10/29/2007



Phone: (803)822-3177

Fax: (803)822-3183

-----Original Message-----

**From:** Shane Boring

**Sent:** Tuesday, August 01, 2006 5:04 PM

**To:** 'theresa\_thom@nps.gov'; Wade Bales (balesw@dnr.sc.gov); Amanda Hill; Bill Argentieri; Dick Christie; Gerrit Jobsis (American Rivers); Hal Beard; Jennifer Summerlin; Jim Glover; Prescott Brownell; Randy Mahan; Ron Ahle; Scott Harder; Shane Boring; Steve Summer; Brandon Kulik; Alan Stuart

**Cc:** Brandon Kulik

**Subject:** Saluda Hydro Relicense: Review of 1990 Saluda IFIM Study

Dear Saluda Relicensing Instream Flow/Aquatic Habitat Technical Working Committee Member:

Per our discussions at the June 14th meeting, Brandon Kulik (instream flow specialist at Kleinschmidt) has prepared a memo summarizing the 1990 IFIM study and its applicability to the current relicensing effort (see attached). This memo is intended to serve as a starting point for technical discussion regarding the need for and/or scope of additional relicensing-related flow studies. Once everyone has had a couple of weeks to review the memo, we would like to schedule a meeting in early September for Brandon to come and meet with the group. How about **Tuesday, September 5th**? This will likely be an all-day meeting. Thanks in advance for your input.

C. Shane Boring  
Environmental Scientist  
Kleinschmidt Associates  
101 Trade Zone Dr., Suite-21A  
West Columbia, SC 29170  
Phone: (803)822-3177  
Fax: (803)822-3183

<< File: 2006-06-30 Memo - Review of LSR Instream Flow Study.pdf >>

**Saluda Hydro Relicensing**  
**Instream Flow/Aquatic Habitat and Technical Working Committee**

**Meeting Agenda**

**September 7, 2006**

**9:30 AM**

**SCE&G Offices at Carolina Research Park**

---

- **9:30 to 9:45** Welcome, Review of Action Items and Meeting Purpose
- **9:30 to 9:45** Review of Specific IFIM Goals
  - Related Aquatic Management Goals
  - Explicit Water Management Objective
    - Habitat
    - Lake Levels
    - Power Generation
    - *Other?*
- **9:45 to 10:30** Instream Species and Lifestages
  - Months and/or Seasons Present
- **10:30 to 10:45** Break
- **10:45 to 11:15** HSI Criteria
- **11:15 to 12:00** Critical or Representative Mesohabitats
- **12:00 to 12:45** Lunch
- **12:45 to 1:15** Study Area Boundaries
- **1:15 to 1:45** Flow Range of Interest
- **1:45 to 3:00** Review Of Prior IFIM Study
  - Elements Applicable to the Current Relicensing
  - Elements That Should Be Revised or Replaced
- **3:00 to 3:30** Next steps
- **3:30** Adjourn



SCE&G  
111 Research Drive  
Columbia, SC 29203

#### **From Columbia Airport**

- Head WEST on I-26 (towards Spartanburg)
- Take I-20 East (towards Florence) Exit 107
- Take Exit 73, I-77 (Charlotte)
- Take Parklane Road exit
- Make a left at the stoplight, onto Parklane Road
- Cross the RR tracks and cross the intersection (Farrow Road and Parklane Road) into Carolina Research Park
- At the stop sign, make a left
- Make the next right
- The second building on the right is the SCE&G office.

#### **From Charlotte**

- Head South on I-77 (towards Columbia)
- Take Exit 19, Research Industrial Park and bear right onto Farrow Rd.
- Take the first right, which leads into the Research Industrial Park.
- At the stop sign, make a left
- Make the next right
- The second building on the right is the SCE&G office.

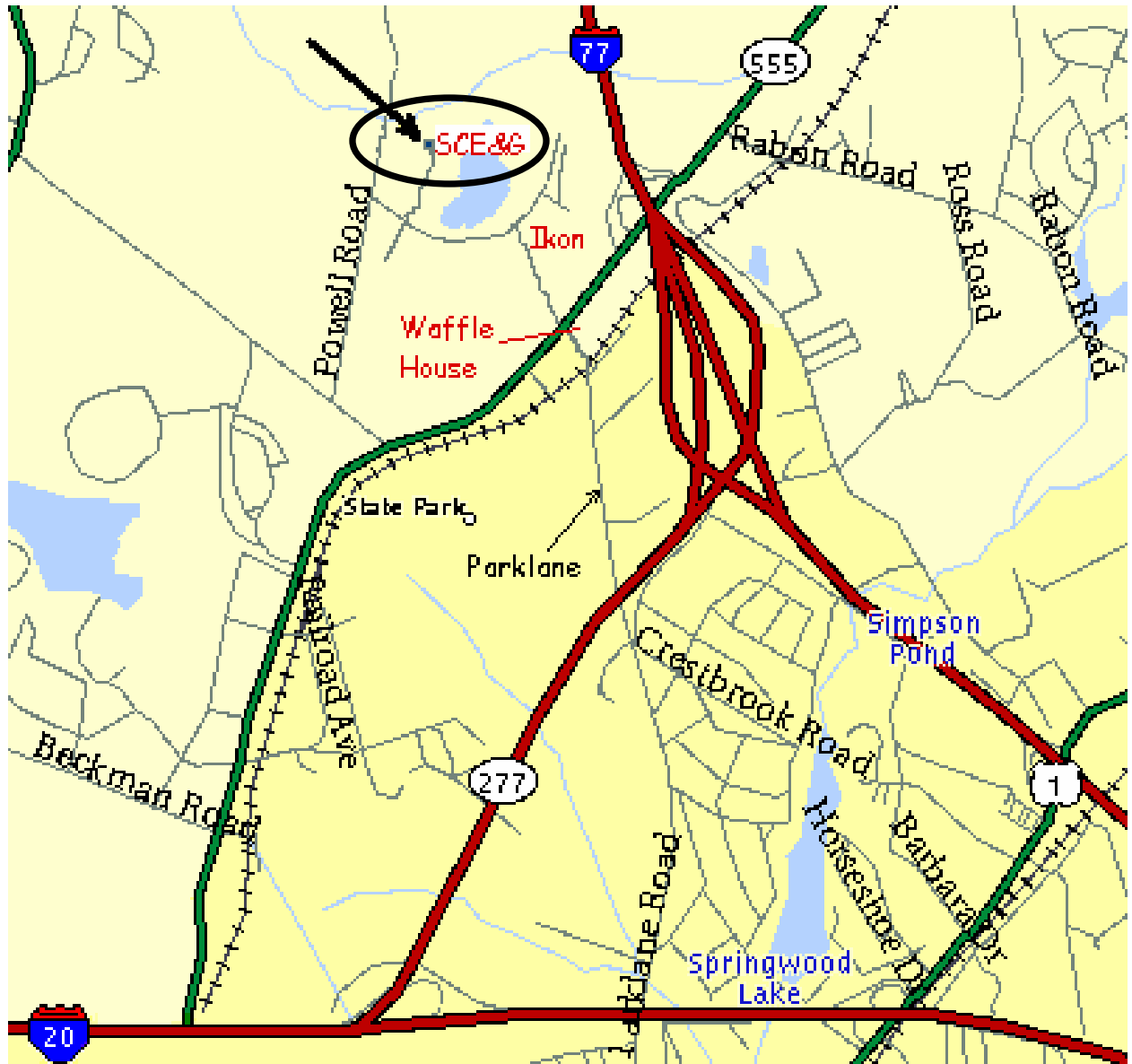
#### **From Downtown Columbia**

- Take Bull Street to I-277
- Take Parklane Road exit
- Make a left at the stoplight, onto Parklane Road
- Cross the RR tracks and cross the intersection (Farrow Road and Parklane Road)
- This takes you into Carolina Research Park
- At the stop sign, make a left
- Make the next right
- The second building on the right is the SCE&G office.

#### **Directions from Charleston**

- Take I-26 West to I-77 North
- I-77 to Farrow Road Exit, Bear right
- At the stoplight, turn right (into Carolina Research Park)
- At the stop sign, turn left
- Take the next right
- Second building on the right

**MAP OF CAROLINA RESEARCH PARK**



## Kacie Jensen

---

**From:** Malcolm Leaphart [malcolml@mailbox.sc.edu]  
**Sent:** Thursday, August 31, 2006 10:23 AM  
**To:** Shane Boring  
**Subject:** Fwd: Instream Flow and Aquatic Habitat TWC

Subject: Instream Flow and Aquatic Habitat TWC

Shane,  
Would you please send me a copy of Brandon Kulik's report on the DNR IFIM as requested last week?

Also, please forward any other information for the instream flow TWC not on the relicensing website to help me catch up by Sept 7.

And be sure that my email is on your mailing list for this committee now after Alison added me to it earlier this month.

Thanks.

----- Forwarded message from Malcolm Leaphart <malcolml@mailbox.sc.edu> -----  
Date: Mon, 21 Aug 2006 10:51:09 -0400  
From: Malcolm Leaphart <malcolml@mailbox.sc.edu>  
Reply-To: Malcolm Leaphart <malcolml@mailbox.sc.edu>  
Subject: Re: Saluda Hydro Relicense: Sept 7th Instream Flow and Aquatic Habitat TWC  
To: Shane Boring <Shane.Boring@KleinschmidtUSA.com>

Shane,  
I plan to attend the next Instream Flow TWC. Thanks for the notice.

Also, I need a copy of Brandon Kulik's memo on the previous IFIM by SC DNR as I catch up from missing the last meeting.

And, I have embedded below in this reply the July article by Pat Robertson regarding the Corps solution to dissolved oxygen in Lake Russell to make sure that all on this TWC learns of this effort. You may also want to share, or have Alison share it with those on other appropriate groups, such as the Operations RCG.

Quoting Shane Boring <Shane.Boring@KleinschmidtUSA.com>:

> Hello all:  
>  
> This is to confirm that our next of the Instream Flow/Aquatic Habitat  
> TWC will be on Thursday, September 7th, from 9:30 am to 3:30 pm. This  
> may turn out be one of our most well-attended Instream Flow TWC's. So  
> far the following folks have indicated they will be attending:  
>  
> Amanda Hill  
> Dick Christie  
> Brandon Kulik  
> Alan Stuart  
> Shane Boring  
> Randy Mahan  
> Prescott Brownell  
> Hal Beard  
> Bill Argentieri  
> Gerrit Jobsis  
>  
> Details regarding the meeting location will be forthcoming.

>  
> Thanks,  
>  
> C. Shane Boring  
> Environmental Scientist  
> Kleinschmidt Associates  
> 101 Trade Zone Dr., Suite-21A  
> West Columbia, SC 29170  
> Phone: (803)822-3177  
> Fax: (803)822-3183  
>  
>  
>  
> > -----Original Message-----  
> > From: Shane Boring  
> > Sent: Wednesday, August 09, 2006 2:19 PM  
> > To: Shane Boring; 'theresa\_thom@nps.gov'; Wade Bales  
> > (balesw@dnr.sc.gov); Amanda Hill; Bill Argentieri; Dick Christie;  
> > Gerrit Jobsis (American Rivers); Hal Beard; Jennifer Summerlin; Jim  
> > Glover; Prescott Brownell; Randy Mahan; Ron Ahle; Scott Harder;  
> > Shane Boring; Steve Summer; Brandon Kulik; Alan Stuart  
> > Cc: Brandon Kulik  
> > Subject: RE: Saluda Hydro Relicense: Review of 1990 Saluda IFIM  
> > Study  
> >  
> > Hello folks:  
> >  
> > After speaking with several of you, it now looks as if Wednesday,  
> > September 7th may be a better date for the proposed Instream Flow  
> > TWC meeting. This will allow folks that are traveling from out of  
> > state not to have to travel over the holiday weekend. Also, Brandon  
> > Kulik from Kleinschmidt's Maine office would like at least a day to  
> > see the river before the meeting. Please let me know if your  
> > availability. Please feel free to propose alternate dates during  
> > this week if the 7th won't work for you. Thanks.  
> >  
> > Shane  
> >  
> > C. Shane Boring  
> > Environmental Scientist  
> > Kleinschmidt Associates  
> > 101 Trade Zone Dr., Suite-21A  
> > West Columbia, SC 29170  
> > Phone: (803)822-3177  
> > Fax: (803)822-3183  
> >  
> >  
> > -----Original Message-----  
> > From: Shane Boring  
> > Sent: Tuesday, August 01, 2006 5:04 PM  
> > To: 'theresa\_thom@nps.gov'; Wade Bales (balesw@dnr.sc.gov);  
> > Amanda Hill; Bill Argentieri; Dick Christie; Gerrit Jobsis (American  
> > Rivers); Hal Beard; Jennifer Summerlin; Jim Glover; Prescott  
> > Brownell; Randy Mahan; Ron Ahle; Scott Harder; Shane Boring; Steve  
> > Summer; Brandon Kulik; Alan Stuart  
> > Cc: Brandon Kulik  
> > Subject: Saluda Hydro Relicense: Review of 1990 Saluda  
> > IFIM Study  
> >  
> > Dear Saluda Relicensing Instream Flow/Aquatic Habitat Technical  
> > Working Committee Member:  
> >  
> > Per our discussions at the June 14th meeting, Brandon Kulik  
> > (instream flow specialist at Kleinschmidt) has prepared a memo  
> > summarizing the 1990 IFIM study and its applicability to the current  
> > relicensing effort (see attached). This memo is intended to serve  
> > as a starting point for technical discussion regarding the need for

> > and/or scope of additional relicensing-related flow studies. Once  
> > everyone has had a couple of weeks to review the memo, we would like  
> > to schedule a meeting in early September for Brandon to come and  
> > meet with the group. How about Tuesday, September 5th? This will  
> > likely be an all-day meeting. Thanks in advance for your input.

> >  
> > C. Shane Boring  
> > Environmental Scientist  
> > Kleinschmidt Associates  
> > 101 Trade Zone Dr., Suite-21A  
> > West Columbia, SC 29170  
> > Phone: (803)822-3177  
> > Fax: (803)822-3183

> >  
> > << File: 2006-06-30 Memo - Review of LSR Instream Flow Study.pdf

> > >>  
> >

> Posted on Sun, Jul. 16, 2006email thisprint this

Outdoors

Club wants fish to breath a little easier

By PAT ROBERTSON

Columnist

STRIPED BASS AND other fish species in Lake Thurmond will breathe easier in the hot summer when oxygen levels are depleted, thanks to the efforts of the Clark Hill Striper Club.

Heeding appeals of the striper club and others, the U.S. Senate has restored funding in the fiscal 2007 Energy and Water Appropriations Bill for a system designed to provide oxygen-enriched habitat for fish in the lower end of Lake Thurmond during hot weather.

Funding had been cut in the House version of the bill. When word reached the striper club and other area fishermen of the House action, the striper fishermen mobilized an effort to get the funds restored.

They began a letter-writing and e-mail campaign to senators and U.S. House members in both Georgia and South Carolina, took the issue to the Augusta-area press, and organized a petition drive that garnered 13 pages of signatures in a one-day radio broadcast from West Marine in Augusta.

The Senate version provides \$4.6 million for the project, lower than the \$5.5 million the U.S. Army Corps of Engineers sought, but adequate to complete the system, which is 90 percent design complete. The budget now goes to a Senate- House Conference Committee to work out details, and Washington sources said the House is not expected to object to the reinstated funding.

The oxygen-infusion system, called a "bubble line," is expected to be completed and operational by late 2008, said Ed Lepley a striper club member from Martinez, Ga.

The project will consist of several miles of submerged pipes, perforated with tiny holes, located about five miles up the lake from Thurmond Dam in the Hamilton Branch-Modoc area. During times of low oxygen levels in the lake, pure oxygen will be released along this bubble line.

The cold, oxygenated water will offer opportunities for striped bass and baitfish to congregate in the Modoc area. Currently, big stripers, and the herring and shad they eat, often stay upriver toward the Russell Dam tailrace during hot weather.

"As water quality begins to deteriorate on the lower end of the lake during the hot summer months, they will be able to turn the oxygen on and provide oxygenated habitat for striped bass, hybrids, largemouths and other species," Lepley said.

"The bigger stripers now move up to the Lake Russell Dam tailrace this time of year because Russell Dam had a system to inject oxygen into the tail race when

it is generating. That was done because, when the water is pumped back up into Russell, it loses oxygen."

The corps agreed to build the bubble line to offset the loss of baitfish that are killed when Russell Dam's reversible turbines are operated. Currently, a court order allows the corps to use only two of Russell's four reversible units until the oxygen system is in place.

If the corps could use all four turbines, they could make more electricity and further slow the decline of lake levels, which is one reason the corps wants the oxygen system as badly as the fishermen do.

Augusta Chronicle outdoor columnist Rob Pavey noted that the recent declaration of drought across most of Georgia, and predictions that water levels at Thurmond Lake will soon plummet, makes the oxygen system even more important.

There is precedent for the oxygen infusion system, Lepley noted. A similar system was placed in Tennessee's Lake Cherokee which gets really hot and oxygen deficient in the summer months.

"It worked so well there they had to put in an off-limit fishing zone around it for that time of year because the fish would bunch up around it and fishermen were catching too many," Lepley said.

----- End forwarded message -----

----- End forwarded message -----



## Kacie Jensen

---

**From:** Shane Boring  
**Sent:** Friday, August 25, 2006 1:12 PM  
**To:** Tom Murphy (murphyt@dnr.sc.gov); Amanda Hill (amanda\_hill@fws.gov); Argentieri, Bill; Boozer Tommy (tboozer@scana.com); Dick Christie (dchristie@infoave.com); Ed\_Eudaly@fws.gov; Hal Beard (BeardH@scdnr.state.sc.us); HOFFMAN, VAN B; Laura Blake (E-mail); MAHAN, RANDOLPH R; Ron Ahle (ahler@dnr.sc.gov); Steve Summer (ssummer@scana.com); Alison Guth; Alan Stuart; Shane Boring; Alan Stuart; Bob Perry ; Brandon Stutts ; Buddy Baker ; Dick Christie; Jennifer Summerlin; Jim Glover; Tom Eppink; Bob Seibels (bseibels@yahoo.com); Gerrit Jobsis (American Rivers)  
**Cc:** Jennifer Summerlin; Cheryl Balitz  
**Subject:** Saluda Hydro: July 2006 Lake Murray Wood Stork Survey

Hello Folks:

Due to issues with aircraft availability, the July 2006 Lake Murray wood stork aerial survey was flown on Friday, August 4<sup>th</sup>. The weather was extremely hot and hazy during the survey (101 °F) and overall wading bird activity was limited. Several great egrets were observed feeding in wetlands fringing the Saluda River above Lake Murray, just downstream of the Highway 121 Bridge; however, no wood storks were observed. Thank you for your continued interest in the Lake Murray Wood Stork Study, and as always, please feel free to contact us should you have any questions regarding the surveys.

A memo summarizing the survey observations will be posted to the Saluda Relicensing Website. Have a nice weekend.

C. Shane Boring  
Environmental Scientist  
Kleinschmidt Associates  
101 Trade Zone Dr., Suite-21A  
West Columbia, SC 29170  
Phone: (803)822-3177  
Fax: (803)822-3183



July 06 wood stork  
update.pdf ...

Cheryl: Please post the attached memo to the Saluda Relicensing Website under Documents/Study Reports/Rare, Threatened and Endangered Species. Thanks

**MEMORANDUM**

*TO:* Saluda Hydro Project Relicensing Stakeholders

*FROM:* Shane Boring and Jennifer Summerlin

*DATE:* August 24, 2006

*RE:* July 2006 Wood Stork Aerial Survey Observations

---

Dear Relicensing Stakeholder:

Due to issues with aircraft availability, the July 2006 Lake Murray wood stork aerial survey was flown on Friday, August 4<sup>th</sup>. The weather was extremely hot and hazy during the survey (101 °F) and overall wading bird activity was limited. Several great egrets were observed feeding in wetlands fringing the Saluda River above Lake Murray, just downstream of the Highway 121 Bridge; however, no wood storks were observed. Thank you for your continued interest in the Lake Murray Wood Stork Study, and as always, please feel free to contact us should you have any questions regarding the surveys.

C. Shane Boring  
Environmental Scientist

Jennifer Summerlin  
Scientist Technician

Kleinschmidt Associates  
101 Trade Zone Dr., Suite-21A  
West Columbia, SC 29170  
Phone: (803)822-3177  
Fax: (803)822-3183

## Kacie Jensen

---

**From:** Malcolm Leaphart [malcolml@mailbox.sc.edu]  
**Sent:** Monday, August 21, 2006 10:51 AM  
**To:** Shane Boring  
**Cc:** Alison Guth; theresa\_thom@nps.gov; balesw@dnr.sc.gov; Amanda Hill; BARGENTIERI@scana.com; Dick Christie; Gerrit Jobsis (American Rivers); Hal Beard; Jennifer Summerlin; Jim Glover; Prescott Brownell; RMAHAN@scana.com; Ron Ahle; Scott Harder; Steve Summer; Brandon Kulik; Alan Stuart  
**Subject:** Re: Saluda Hydro Relicense: Sept 7th Instream Flow and Aquatic Habitat TWC

Shane,  
I plan to attend the next Instream Flow TWC. Thanks for the notice.

Also, I need a copy of Brandon Kulik's memo on the previous IFIM by SC DNR as I catch up from missing the last meeting.

And, I have embedded below in this reply the July article by Pat Robertson regarding the Corps solution to dissolved oxygen in Lake Russell to make sure that all on this TWC learns of this effort. You may also want to share, or have Alison share it with those on other appropriate groups, such as the Operations RCG.

Quoting Shane Boring <Shane.Boring@KleinschmidtUSA.com>:

> Hello all:  
>  
> This is to confirm that our next of the Instream Flow/Aquatic Habitat  
> TWC will be on Thursday, September 7th, from 9:30 am to 3:30 pm. This  
> may turn out be one of our most well-attended Instream Flow TWC's. So  
> far the following folks have indicated they will be attending:  
>  
> Amanda Hill  
> Dick Christie  
> Brandon Kulik  
> Alan Stuart  
> Shane Boring  
> Randy Mahan  
> Prescott Brownell  
> Hal Beard  
> Bill Argentieri  
> Gerrit Jobsis  
>  
> Details regarding the meeting location will be forthcoming.  
>  
> Thanks,  
>  
> C. Shane Boring  
> Environmental Scientist  
> Kleinschmidt Associates  
> 101 Trade Zone Dr., Suite-21A  
> West Columbia, SC 29170  
> Phone: (803)822-3177  
> Fax: (803)822-3183  
>  
>  
>  
> > -----Original Message-----  
> > From: Shane Boring  
> > Sent: Wednesday, August 09, 2006 2:19 PM  
> > To: Shane Boring; 'theresa\_thom@nps.gov'; Wade Bales  
> > (balesw@dnr.sc.gov); Amanda Hill; Bill Argentieri; Dick Christie;  
> > Gerrit Jobsis (American Rivers); Hal Beard; Jennifer Summerlin; Jim  
> > Glover; Prescott Brownell; Randy Mahan; Ron Ahle; Scott Harder;

> > Shane Boring; Steve Summer; Brandon Kulik; Alan Stuart  
> > Cc: Brandon Kulik  
> > Subject: RE: Saluda Hydro Relicense: Review of 1990 Saluda IFIM  
> > Study  
> >  
> > Hello folks:  
> >  
> > After speaking with several of you, it now looks as if Wednesday,  
> > September 7th may be a better date for the proposed Instream Flow  
> > TWC meeting. This will allow folks that are traveling from out of  
> > state not to have to travel over the holiday weekend. Also, Brandon  
> > Kulik from Kleinschmidt's Maine office would like at least a day to  
> > see the river before the meeting. Please let me know if your  
> > availability. Please feel free to propose alternate dates during  
> > this week if the 7th won't work for you. Thanks.  
> >  
> > Shane  
> >  
> > C. Shane Boring  
> > Environmental Scientist  
> > Kleinschmidt Associates  
> > 101 Trade Zone Dr., Suite-21A  
> > West Columbia, SC 29170  
> > Phone: (803)822-3177  
> > Fax: (803)822-3183  
> >  
> >  
> > -----Original Message-----  
> > From: Shane Boring  
> > Sent: Tuesday, August 01, 2006 5:04 PM  
> > To: 'theresa\_thom@nps.gov'; Wade Bales (balesw@dnr.sc.gov);  
> > Amanda Hill; Bill Argentieri; Dick Christie; Gerrit Jobsis (American  
> > Rivers); Hal Beard; Jennifer Summerlin; Jim Glover; Prescott  
> > Brownell; Randy Mahan; Ron Ahle; Scott Harder; Shane Boring; Steve  
> > Summer; Brandon Kulik; Alan Stuart  
> > Cc: Brandon Kulik  
> > Subject: Saluda Hydro Relicense: Review of 1990 Saluda  
> > IFIM Study  
> >  
> > Dear Saluda Relicensing Instream Flow/Aquatic Habitat Technical  
> > Working Committee Member:  
> >  
> > Per our discussions at the June 14th meeting, Brandon Kulik  
> > (instream flow specialist at Kleinschmidt) has prepared a memo  
> > summarizing the 1990 IFIM study and its applicability to the current  
> > relicensing effort (see attached). This memo is intended to serve  
> > as a starting point for technical discussion regarding the need for  
> > and/or scope of additional relicensing-related flow studies. Once  
> > everyone has had a couple of weeks to review the memo, we would like  
> > to schedule a meeting in early September for Brandon to come and  
> > meet with the group. How about Tuesday, September 5th? This will  
> > likely be an all-day meeting. Thanks in advance for your input.  
> >  
> > C. Shane Boring  
> > Environmental Scientist  
> > Kleinschmidt Associates  
> > 101 Trade Zone Dr., Suite-21A  
> > West Columbia, SC 29170  
> > Phone: (803)822-3177  
> > Fax: (803)822-3183  
> >  
> > << File: 2006-06-30 Memo - Review of LSR Instream Flow Study.pdf  
> > >>  
> >  
> > Posted on Sun, Jul. 16, 2006email thisprint this  
Outdoors  
Club wants fish to breath a little easier

By PAT ROBERTSON

Columnist

STRIPED BASS AND other fish species in Lake Thurmond will breathe easier in the hot summer when oxygen levels are depleted, thanks to the efforts of the Clark Hill Striper Club.

Heeding appeals of the striper club and others, the U.S. Senate has restored funding in the fiscal 2007 Energy and Water Appropriations Bill for a system designed to provide oxygen-enriched habitat for fish in the lower end of Lake Thurmond during hot weather.

Funding had been cut in the House version of the bill. When word reached the striper club and other area fishermen of the House action, the striper fishermen mobilized an effort to get the funds restored.

They began a letter-writing and e-mail campaign to senators and U.S. House members in both Georgia and South Carolina, took the issue to the Augusta-area press, and organized a petition drive that garnered 13 pages of signatures in a one-day radio broadcast from West Marine in Augusta.

The Senate version provides \$4.6 million for the project, lower than the \$5.5 million the U.S. Army Corps of Engineers sought, but adequate to complete the system, which is 90 percent design complete. The budget now goes to a Senate- House Conference Committee to work out details, and Washington sources said the House is not expected to object to the reinstated funding.

The oxygen-infusion system, called a "bubble line," is expected to be completed and operational by late 2008, said Ed Lepley a striper club member from Martinez, Ga.

The project will consist of several miles of submerged pipes, perforated with tiny holes, located about five miles up the lake from Thurmond Dam in the Hamilton Branch-Modoc area. During times of low oxygen levels in the lake, pure oxygen will be released along this bubble line.

The cold, oxygenated water will offer opportunities for striped bass and baitfish to congregate in the Modoc area. Currently, big stripers, and the herring and shad they eat, often stay upriver toward the Russell Dam tailrace during hot weather.

"As water quality begins to deteriorate on the lower end of the lake during the hot summer months, they will be able to turn the oxygen on and provide oxygenated habitat for striped bass, hybrids, largemouths and other species," Lepley said.

"The bigger stripers now move up to the Lake Russell Dam tailrace this time of year because Russell Dam had a system to inject oxygen into the tail race when it is generating. That was done because, when the water is pumped back up into Russell, it loses oxygen."

The corps agreed to build the bubble line to offset the loss of baitfish that are killed when Russell Dam's reversible turbines are operated. Currently, a court order allows the corps to use only two of Russell's four reversible units until the oxygen system is in place.

If the corps could use all four turbines, they could make more electricity and further slow the decline of lake levels, which is one reason the corps wants the oxygen system as badly as the fishermen do.

Augusta Chronicle outdoor columnist Rob Pavey noted that the recent declaration of drought across most of Georgia, and predictions that water levels at Thurmond Lake will soon plummet, makes the oxygen system even more important.

There is precedent for the oxygen infusion system, Lepley noted. A similar system was placed in Tennessee's Lake Cherokee which gets really hot and oxygen deficient in the summer months.

"It worked so well there they had to put in an off-limit fishing zone around it for that time of year because the fish would bunch up around it and fishermen were catching too many," Lepley said.

**Kacie Jensen**

---

**From:** ARGENTIERI, WILLIAM R [BARGENTIERI@scana.com]  
**Sent:** Sunday, August 20, 2006 3:42 PM  
**To:** Shane Boring; theresa\_thom@nps.gov; balesw@dnr.sc.gov; Amanda Hill; Dick Christie; Gerrit Jobsis (American Rivers); Hal Beard; Jennifer Summerlin; Jim Glover; Prescott Brownell; RMAHAN@scana.com; Ron Ahle; Scott Harder; SUMMER, STEPHEN E; Brandon Kulik; Alan Stuart; Malcolm Leaphart  
**Subject:** RE: Saluda Hydro Relicense: Sept 7th Instream Flow and Aquatic Habitat TWC

To all,

I have reserved the large conference room at our Carolina Research Park Office, 111 Research Dr., Columbia, SC 29203 for this meeting. Please mark your calendars with this location for the meeting.

Bill

---

**From:** Shane Boring [mailto:Shane.Boring@KleinschmidtUSA.com]  
**Sent:** Friday, August 18, 2006 12:02 PM  
**To:** Shane Boring; theresa\_thom@nps.gov; balesw@dnr.sc.gov; Amanda Hill; ARGENTIERI, WILLIAM R; Dick Christie; Gerrit Jobsis (American Rivers); Hal Beard; Jennifer Summerlin; Jim Glover; Prescott Brownell; MAHAN, RANDOLPH R; Ron Ahle; Scott Harder; SUMMER, STEPHEN E; Brandon Kulik; Alan Stuart; Malcolm Leaphart  
**Cc:** Brandon Kulik  
**Subject:** Saluda Hydro Relicense: Sept 7th Instream Flow and Aquatic Habitat TWC

Hello all:

This is to confirm that our next of the Instream Flow/Aquatic Habitat TWC will be on Thursday, September 7th, from 9:30 am to 3:30 pm. This may turn out be one of our most well-attended Instream Flow TWC's. So far the following folks have indicated they will be attending:

Amanda Hill  
Dick Christie  
Brandon Kulik  
Alan Stuart  
Shane Boring  
Randy Mahan  
Prescott Brownell  
Hal Beard  
Bill Argentieri  
Gerrit Jobsis

Details regarding the meeting location will be forthcoming.

Thanks,

C. Shane Boring  
Environmental Scientist

10/29/2007

Kleinschmidt Associates  
101 Trade Zone Dr., Suite-21A  
West Columbia, SC 29170  
Phone: (803)822-3177  
Fax: (803)822-3183

-----Original Message-----

**From:** Shane Boring  
**Sent:** Wednesday, August 09, 2006 2:19 PM  
**To:** Shane Boring; 'theresa\_thom@nps.gov'; Wade Bales (balesw@dnr.sc.gov); Amanda Hill; Bill Argentieri; Dick Christie; Gerrit Jobsis (American Rivers); Hal Beard; Jennifer Summerlin; Jim Glover; Prescott Brownell; Randy Mahan; Ron Ahle; Scott Harder; Shane Boring; Steve Summer; Brandon Kulik; Alan Stuart  
**Cc:** Brandon Kulik  
**Subject:** RE: Saluda Hydro Relicense: Review of 1990 Saluda IFIM Study

Hello folks:

After speaking with several of you, it now looks as if Wednesday, September 7th may be a better date for the proposed Instream Flow TWC meeting. This will allow folks that are traveling from out of state not to have to travel over the holiday weekend. Also, Brandon Kulik from Kleinschmidt's Maine office would like at least a day to see the river before the meeting. Please let me know if your availability. Please feel free to propose alternate dates during this week if the 7th won't work for you. Thanks.

Shane

C. Shane Boring  
Environmental Scientist  
Kleinschmidt Associates  
101 Trade Zone Dr., Suite-21A  
West Columbia, SC 29170  
Phone: (803)822-3177  
Fax: (803)822-3183

-----Original Message-----

**From:** Shane Boring  
**Sent:** Tuesday, August 01, 2006 5:04 PM  
**To:** 'theresa\_thom@nps.gov'; Wade Bales (balesw@dnr.sc.gov); Amanda Hill; Bill Argentieri; Dick Christie; Gerrit Jobsis (American Rivers); Hal Beard; Jennifer Summerlin; Jim Glover; Prescott Brownell; Randy Mahan; Ron Ahle; Scott Harder; Shane Boring; Steve Summer; Brandon Kulik; Alan Stuart  
**Cc:** Brandon Kulik  
**Subject:** Saluda Hydro Relicense: Review of 1990 Saluda IFIM Study

Dear Saluda Relicensing Instream Flow/Aquatic Habitat Technical Working Committee Member:

Per our discussions at the June 14th meeting, Brandon Kulik (instream flow specialist at Kleinschmidt) has prepared a memo summarizing the 1990 IFIM study and its applicability to the current relicensing effort (see attached). This memo is intended to serve as a starting point for technical discussion regarding the need for and/or scope of additional relicensing-related flow studies. Once everyone has had a couple of weeks to review the memo, we would like to



schedule a meeting in early September for Brandon to come and meet with the group. How about **Tuesday, September 5th**? This will likely be an all-day meeting. Thanks in advance for your input.

C. Shane Boring  
Environmental Scientist  
Kleinschmidt Associates  
101 Trade Zone Dr., Suite-21A  
West Columbia, SC 29170  
Phone: (803)822-3177  
Fax: (803)822-3183

<< File: 2006-06-30 Memo - Review of LSR Instream Flow Study.pdf >>

## Kacie Jensen

---

**From:** Shane Boring  
**Sent:** Friday, August 18, 2006 12:02 PM  
**To:** Shane Boring; 'theresa\_thom@nps.gov'; 'Wade Bales (balesw@dnr.sc.gov)'; 'Amanda Hill'; 'Bill Argentieri'; 'Dick Christie'; 'Gerrit Jobsis (American Rivers)'; 'Hal Beard'; Jennifer Summerlin; 'Jim Glover'; 'Prescott Brownell'; 'Randy Mahan'; 'Ron Ahle'; 'Scott Harder'; 'Steve Summer'; Brandon Kulik; Alan Stuart; 'Malcolm Leaphart '  
**Cc:** Brandon Kulik  
**Subject:** Saluda Hydro Relicense: Sept 7th Instream Flow and Aquatic Habitat TWC

Hello all:

This is to confirm that our next of the Instream Flow/Aquatic Habitat TWC will be on Thursday, September 7th, from 9:30 am to 3:30 pm. This may turn out be one of our most well-attended Instream Flow TWC's. So far the following folks have indicated they will be attending:

Amanda Hill  
Dick Christie  
Brandon Kulik  
Alan Stuart  
Shane Boring  
Randy Mahan  
Prescott Brownell  
Hal Beard  
Bill Argentieri  
Gerrit Jobsis

Details regarding the meeting location will be forthcoming.

Thanks,

C. Shane Boring  
Environmental Scientist  
Kleinschmidt Associates  
101 Trade Zone Dr., Suite-21A  
West Columbia, SC 29170  
Phone: (803)822-3177  
Fax: (803)822-3183

-----Original Message-----

**From:** Shane Boring  
**Sent:** Wednesday, August 09, 2006 2:19 PM  
**To:** Shane Boring; 'theresa\_thom@nps.gov'; Wade Bales (balesw@dnr.sc.gov); Amanda Hill; Bill Argentieri; Dick Christie; Gerrit Jobsis (American Rivers); Hal Beard; Jennifer Summerlin; Jim Glover; Prescott Brownell; Randy Mahan; Ron Ahle; Scott Harder; Shane Boring; Steve Summer; Brandon Kulik; Alan Stuart  
**Cc:** Brandon Kulik  
**Subject:** RE: Saluda Hydro Relicense: Review of 1990 Saluda IFIM Study

Hello folks:

After speaking with several of you, it now looks as if Wednesday, September 7th may be a better date for the proposed Instream Flow TWC meeting. This will allow folks that are traveling from out of state not to have to travel over the holiday weekend. Also, Brandon Kulik from Kleinschmidt's Maine office would like at least a day to see the river before the meeting. Please let me know if your availability. Please feel free to propose alternate dates during this week if the 7th won't work for you. Thanks.

Shane

C. Shane Boring

Environmental Scientist  
Kleinschmidt Associates  
101 Trade Zone Dr., Suite-21A  
West Columbia, SC 29170  
Phone: (803)822-3177  
Fax: (803)822-3183

-----Original Message-----

**From:** Shane Boring  
**Sent:** Tuesday, August 01, 2006 5:04 PM  
**To:** 'theresa\_thom@nps.gov'; Wade Bales (balesw@dnr.sc.gov); Amanda Hill; Bill Argentieri; Dick Christie; Gerrit Jobsis (American Rivers); Hal Beard; Jennifer Summerlin; Jim Glover; Prescott Brownell; Randy Mahan; Ron Ahle; Scott Harder; Shane Boring; Steve Summer; Brandon Kulik; Alan Stuart  
**Cc:** Brandon Kulik  
**Subject:** Saluda Hydro Relicense: Review of 1990 Saluda IFIM Study

Dear Saluda Relicensing Instream Flow/Aquatic Habitat Technical Working Committee Member:

Per our discussions at the June 14th meeting, Brandon Kulik (instream flow specialist at Kleinschmidt) has prepared a memo summarizing the 1990 IFIM study and its applicability to the current relicensing effort (see attached). This memo is intended to serve as a starting point for technical discussion regarding the need for and/or scope of additional relicensing-related flow studies. Once everyone has had a couple of weeks to review the memo, we would like to schedule a meeting in early September for Brandon to come and meet with the group. How about **Tuesday, September 5th**? This will likely be an all-day meeting. Thanks in advance for your input.

C. Shane Boring  
Environmental Scientist  
Kleinschmidt Associates  
101 Trade Zone Dr., Suite-21A  
West Columbia, SC 29170  
Phone: (803)822-3177  
Fax: (803)822-3183

<< File: 2006-06-30 Memo - Review of LSR Instream Flow Study.pdf >>

## Kacie Jensen

---

**From:** Hal Beard [BeardH@dnr.sc.gov]  
**Sent:** Monday, August 07, 2006 7:58 AM  
**To:** Jennifer Summerlin  
**Cc:** Ron Ahle  
**Subject:** FW: Saluda Relicensing: striped bass stocking rates

Jennifer,

The present management strategy involves the annual stocking of approximately one million STB fingerlings each year (20/acre).

Exceptions to this include this past year when only 750,000 were stocked due to the lake draw down (reduced volume).

-----Original Message-----

**From:** Ron Ahle  
**Sent:** Friday, August 04, 2006 4:11 PM  
**To:** Hal Beard  
**Subject:** FW: Saluda Relicensing: striped bass stocking rates

Hal,

Could you help me with this request?

Thanks,

Ron

---

**From:** Jennifer Summerlin [mailto:Jennifer.Summerlin@KleinschmidtUSA.com]  
**Sent:** Friday, August 04, 2006 12:26 PM  
**To:** Ron Ahle  
**Subject:** Saluda Relicensing: striped bass stocking rates

Ron,

I am currently working on the Saluda Fish Entrainment Study. I need some information on stocking rates for striped bass on Lake Murray. Any information you have would be greatly appreciated!

Thanks,

Jennifer Summerlin  
Research Technician  
*Kleinschmidt Associates*  
101 Trade Zone Drive  
Suite 21 A  
West Columbia, SC 29170  
P: (803) 822.3177  
F: (803) 822.3183

## Kacie Jensen

---

**From:** Shane Boring  
**Sent:** Thursday, August 03, 2006 11:36 AM  
**To:** Shane Boring; 'Steve Summer'; 'Amanda Hill'; 'Bill Argentieri'; 'Gerrit Jobsis (American Rivers)'; 'Jennifer Price'; Jennifer Summerlin; 'Jim Glover'; 'Randy Mahan'; 'Ron Ahle'; Shane Boring  
**Subject:** RE: Saluda Hydro: Follow-up mussel survey

Please let me know if you plan to attend so that we won't leave anyone behind.

Shane

-----Original Message-----

**From:** Shane Boring  
**Sent:** Thursday, August 03, 2006 10:31 AM  
**To:** Steve Summer; Amanda Hill; Bill Argentieri; Gerrit Jobsis (American Rivers); Jennifer Price ; Jennifer Summerlin; Jim Glover; Randy Mahan; Ron Ahle; Shane Boring  
**Subject:** Saluda Hydro: Follow-up mussel survey

All:

John Alderman will be in town tomorrow to complete the additional mussel surveys requested for the Ocean Blvd. shoal area of the Lower Saluda and its tributaries. During the TWC meeting on the July 23rd, it was requested that TWC members be invited to any additional field work that is conducted. If you're interested, we'll be leaving the Hampton Inn on Harbison Blvd. at 8:00 am sharp tomorrow morning. We'll probably launch canoes at the Gardendale landing and take out at the zoo, so if you plan to attend, please bring a canoe or kayak and lunch. This is likely to be an all-day outing. My apologies for the late notification, I just got the call this morning from John.

Thanks,  
Shane

C. Shane Boring  
Environmental Scientist  
Kleinschmidt Associates  
101 Trade Zone Dr., Suite-21A  
West Columbia, SC 29170  
Phone: (803)822-3177  
Fax: (803)822-3183

## Kacie Jensen

---

**From:** Shane Boring  
**Sent:** Thursday, August 03, 2006 10:31 AM  
**To:** Steve Summer; Amanda Hill; Bill Argentieri; Gerrit Jobsis (American Rivers); Jennifer Price ; Jennifer Summerlin; Jim Glover; Randy Mahan; Ron Ahle; Shane Boring  
**Subject:** Saluda Hydro: Follow-up mussel survey

All:

John Alderman will be in town tomorrow to complete the additional mussel surveys requested for the Ocean Blvd. shoal area of the Lower Saluda and its tributaries. During the TWC meeting on the July 23rd, it was requested that TWC members be invited to any additional field work that is conducted. If you're interested, we'll be leaving the Hampton Inn on Harbison Blvd. at 8:00 am sharp tomorrow morning. We'll probably launch canoes at the Gardendale landing and take out at the zoo, so if you plan to attend, please bring a canoe or kayak and lunch. This is likely to be an all-day outing. My apologies for the late notification, I just got the call this morning from John.

Thanks,  
Shane

C. Shane Boring  
Environmental Scientist  
Kleinschmidt Associates  
101 Trade Zone Dr., Suite-21A  
West Columbia, SC 29170  
Phone: (803)822-3177  
Fax: (803)822-3183

**Kacie Jensen**

---

**From:** Shane Boring  
**Sent:** Thursday, August 03, 2006 12:24 PM  
**To:** 'Gerrit Jobsis'  
**Subject:** RE: Saluda Hydro Relicense: Draft Macroinvertebrate Study Plan for the Lower Saluda River

Gerrit:

The intent of this particular study plan is to continue and augment the Hester-Dendy sampling that has been performed for SCE&G by Shealy for the past several years. Dan Carnegay's expertise is in the actual sampling and taxonomy of the inverts; therefore for him to be able to execute the study plan in it's entirety (from sampling to final report), it's important to keep the IHA methodology as a separate discussion from the field sampling. So this is really more of a contractual issue for us.

That said, I understand that the IHA methodology is emerging throughout the country as a viable tool for identifying potential negative impacts of altered flow regimes, so it is important that we discuss it. In our internal discussions on the methodology, it was noted by several folks that we would probably want to use this for fisheries as well as inverts. I would encourage you to bring it up at the next Instream Flow TWC meeting (proposed for Sept 5) in order to formally bring the discussion into the relicensing fold.

Thanks  
Shane

C. Shane Boring  
Environmental Scientist  
Kleinschmidt Associates  
101 Trade Zone Dr., Suite-21A  
West Columbia, SC 29170  
Phone: (803)822-3177  
Fax: (803)822-3183

-----Original Message-----

**From:** Gerrit Jobsis [mailto:gjobsis@americanrivers.org]  
**Sent:** Tuesday, August 01, 2006 5:16 PM  
**To:** Shane Boring  
**Subject:** RE: Saluda Hydro Relicense: Draft Macroinvertebrate Study Plan for the Lower Saluda River

Shane,

This is applicable to the macroinvert study because we need to understand the flow conditions to which the macroinvertebrates colonizing the H-D samplers were exposed during the 8 weeks of deployment. The IFIM study will let us understand the relationship between flow and habitat, but not what occurred during period of deployment.

Thanks for asking - Gerrit

---

Gerrit Jöbsis  
Director of Southeast Conservation  
American Rivers  
2231 Devine Street, Suite 100 • Columbia, S.C. 29205  
803/771-7114  
803/771-7580 Fax  
[gjobsis@americanrivers.org](mailto:gjobsis@americanrivers.org)

[www.AmericanRivers.org](http://www.AmericanRivers.org)

***American Rivers protects and restores healthy natural rivers for the benefit of communities, fish and wildlife.***

---

**From:** Shane Boring [mailto:Shane.Boring@KleinschmidtUSA.com]  
**Sent:** Tuesday, August 01, 2006 3:08 PM  
**To:** Gerrit Jobsis  
**Subject:** RE: Saluda Hydro Relicense: Draft Macroinvertebrate Study Plan for the Lower Saluda River

Gerri:

In your comments on data analysis, you suggest analyzing flow using the IHA model (for rate of change, reversals, etc). Wouldn't this be more appropriate in the overall IFIM discussion rather than specifically in the macroinvert study plan? Thanks.

Shane

-----Original Message-----

**From:** Gerrit Jobsis [mailto:gjobsis@americanrivers.org]  
**Sent:** Thursday, July 20, 2006 2:15 PM  
**To:** Shane Boring; Steve Summer; Amanda Hill; Bill Argentieri; Jennifer Price; Jennifer Summerlin; Jim Glover; Randy Mahan; Ron Ahle  
**Subject:** RE: Saluda Hydro Relicense: Draft Macroinvertebrate Study Plan for the Lower Saluda River

Here are my comments Shane.

---

Gerrit Jöbsis  
Director of Southeast Conservation  
American Rivers  
2231 Devine Street, Suite 100 \* Columbia, S.C. 29205  
803/771-7114  
803/771-7580 Fax  
[gjobsis@americanrivers.org](mailto:gjobsis@americanrivers.org)

[www.AmericanRivers.org](http://www.AmericanRivers.org)

***American Rivers protects and restores healthy natural rivers for the benefit of communities, fish and wildlife.***

---

**From:** Shane Boring [mailto:Shane.Boring@KleinschmidtUSA.com]  
**Sent:** Wednesday, July 19, 2006 5:06 PM  
**To:** Steve Summer; Amanda Hill; Bill Argentieri; Gerrit Jobsis; Jennifer Price; Jennifer Summerlin; Jim Glover; Randy Mahan; Ron Ahle; Shane Boring  
**Subject:** Saluda Hydro Relicense: Draft Macroinvertebrate Study Plan for the Lower Saluda River

Hello Folks:

Attached for your review is the first cut at the Lower Saluda Macroinvertebrate Study Plan. As discussed in our May 3rd meeting, the study plan incorporates the existing methods from the studies performed by Shealy Env., as well as the recommended multi-habitat component. Please have your comments/suggestions on the plan back to me by Wednesday, August 2nd. I'm particularly



interested in any suggestions regarding sampling locations; the 2005 sampling by Shealy sampled 4 locations, which are primarily in the upper and lower reaches of the LSR. Thanks.

Shane

C. Shane Boring  
Environmental Scientist  
Kleinschmidt Associates  
101 Trade Zone Dr., Suite-21A  
West Columbia, SC 29170  
Phone: (803)822-3177  
Fax: (803)822-3183

<<LSR Macroinvert Study Plan (draft;07-19-2006).doc>>

## Kacie Jensen

---

**From:** Malcolm Leaphart [malcolml@mailbox.sc.edu]  
**Sent:** Wednesday, August 02, 2006 4:08 PM  
**To:** Alison Guth  
**Cc:** Shane Boring; RMAHAN@scana.com; Alan Stuart  
**Subject:** Instream Flow/Habitat Fisheries TWC

Alison, Shane:

Please add me to this TWC. I'm catching up from the meeting summaries posted to date and updates from several that attended. My initial thinking was that it would be a committee of scientists only, but have heard from many that my long time efforts and knowledge of the river, including of the IFIM Gerrit explained June 14 and past TU funded studies I coordinated, are reasons I should be on-board just as Randy indicated last fall.  
Thanks, Malcolm.

**Kacie Jensen**

---

**From:** Gerrit Jobsis [gjobsis@americanrivers.org]  
**Sent:** Tuesday, August 01, 2006 5:16 PM  
**To:** Shane Boring  
**Subject:** RE: Saluda Hydro Relicense: Draft Macroinvertebrate Study Plan for the Lower Saluda River

Shane,

This is applicable to the macroinvert study because we need to understand the flow conditions to which the macroinvertebrates colonizing the H-D samplers were exposed during the 8 weeks of deployment. The IFIM study will let us understand the relationship between flow and habitat, but not what occurred during period of deployment.

Thanks for asking - Gerrit

---

Gerrit Jöbsis  
Director of Southeast Conservation  
American Rivers  
2231 Devine Street, Suite 100 • Columbia, S.C. 29205  
803/771-7114  
803/771-7580 Fax  
[gjobsis@americanrivers.org](mailto:gjobsis@americanrivers.org)

[www.AmericanRivers.org](http://www.AmericanRivers.org)

***American Rivers protects and restores healthy natural rivers for the benefit of communities, fish and wildlife.***

---

**From:** Shane Boring [mailto:Shane.Boring@KleinschmidtUSA.com]  
**Sent:** Tuesday, August 01, 2006 3:08 PM  
**To:** Gerrit Jobsis  
**Subject:** RE: Saluda Hydro Relicense: Draft Macroinvertebrate Study Plan for the Lower Saluda River

Gerri:

In your comments on data analysis, you suggest analyzing flow using the IHA model (for rate of change, reversals, etc). Wouldn't this be more appropriate in the overall IFIM discussion rather than specifically in the macroinvert study plan? Thanks.

Shane

-----Original Message-----

**From:** Gerrit Jobsis [mailto:gjobsis@americanrivers.org]  
**Sent:** Thursday, July 20, 2006 2:15 PM  
**To:** Shane Boring; Steve Summer; Amanda Hill; Bill Argentieri; Jennifer Price; Jennifer Summerlin; Jim Glover; Randy Mahan; Ron Ahle  
**Subject:** RE: Saluda Hydro Relicense: Draft Macroinvertebrate Study Plan for the Lower Saluda River

Here are my comments Shane.

---

Gerrit Jöbsis  
Director of Southeast Conservation

American Rivers  
2231 Devine Street, Suite 100 \* Columbia, S.C. 29205  
803/771-7114  
803/771-7580 Fax  
[gjobsis@americanrivers.org](mailto:gjobsis@americanrivers.org)

[www.AmericanRivers.org](http://www.AmericanRivers.org)

***American Rivers protects and restores healthy natural rivers for the benefit of communities, fish and wildlife.***

---

**From:** Shane Boring [mailto:Shane.Boring@KleinschmidtUSA.com]

**Sent:** Wednesday, July 19, 2006 5:06 PM

**To:** Steve Summer; Amanda Hill; Bill Argentieri; Gerrit Jobsis; Jennifer Price; Jennifer Summerlin; Jim Glover; Randy Mahan; Ron Ahle; Shane Boring

**Subject:** Saluda Hydro Relicense: Draft Macroinvertebrate Study Plan for the Lower Saluda River

Hello Folks:

Attached for your review is the first cut at the Lower Saluda Macroinvertebrate Study Plan. As discussed in out May 3rd meeting, the study plan incorporates the existing methods from the studies performed by Shealy Env., as well as the recommended multi-habitat component. Please have your comments/suggestions on the plan back to me by Wednesday, August 2nd. I'm particularly interested in any suggestions regarding sampling locations; the 2005 sampling by Shealy sampled 4 locations, which are primarily in the upper and lower reaches of the LSR. Thanks.

Shane

C. Shane Boring  
Environmental Scientist  
Kleinschmidt Associates  
101 Trade Zone Dr., Suite-21A  
West Columbia, SC 29170  
Phone: (803)822-3177  
Fax: (803)822-3183

<<LSR Macroinvert Study Plan (draft;07-19-2006).doc>>

**Kacie Jensen**

---

**From:** Shane Boring  
**Sent:** Tuesday, August 01, 2006 3:08 PM  
**To:** 'Gerrit Jobsis'  
**Subject:** RE: Saluda Hydro Relicense: Draft Macroinvertebrate Study Plan for the Lower Saluda River

Gerri:

In your comments on data analysis, you suggest analyzing flow using the IHA model (for rate of change, reversals, etc). Wouldn't this be more appropriate in the overall IFIM discussion rather than specifically in the macroinvert study plan? Thanks.

Shane

-----Original Message-----

**From:** Gerrit Jobsis [mailto:gjobsis@americanrivers.org]  
**Sent:** Thursday, July 20, 2006 2:15 PM  
**To:** Shane Boring; Steve Summer; Amanda Hill; Bill Argentieri; Jennifer Price; Jennifer Summerlin; Jim Glover; Randy Mahan; Ron Ahle  
**Subject:** RE: Saluda Hydro Relicense: Draft Macroinvertebrate Study Plan for the Lower Saluda River

Here are my comments Shane.

---

Gerrit Jöbsis  
Director of Southeast Conservation  
American Rivers  
2231 Devine Street, Suite 100 • Columbia, S.C. 29205  
803/771-7114  
803/771-7580 Fax  
[gjobsis@americanrivers.org](mailto:gjobsis@americanrivers.org)

[www.AmericanRivers.org](http://www.AmericanRivers.org)

***American Rivers protects and restores healthy natural rivers for the benefit of communities, fish and wildlife.***

---

**From:** Shane Boring [mailto:Shane.Boring@KleinschmidtUSA.com]  
**Sent:** Wednesday, July 19, 2006 5:06 PM  
**To:** Steve Summer; Amanda Hill; Bill Argentieri; Gerrit Jobsis; Jennifer Price; Jennifer Summerlin; Jim Glover; Randy Mahan; Ron Ahle; Shane Boring  
**Subject:** Saluda Hydro Relicense: Draft Macroinvertebrate Study Plan for the Lower Saluda River

Hello Folks:

Attached for your review is the first cut at the Lower Saluda Macroinvertebrate Study Plan. As discussed in out May 3rd meeting, the study plan incorporates the existing methods from the studies performed by Shealy Env., as well as the recommended multi-habitat component. Please have your comments/suggestions on the plan back to me by Wednesday, August 2nd. I'm particularly interested in any suggestions regarding sampling locations; the 2005 sampling by Shealy sampled 4 locations, which are primarily in the upper and lower reaches of the LSR. Thanks.

Shane

C. Shane Boring  
Environmental Scientist  
Kleinschmidt Associates  
101 Trade Zone Dr., Suite-21A  
West Columbia, SC 29170  
Phone: (803)822-3177  
Fax: (803)822-3183

<<LSR Macroinvert Study Plan (draft;07-19-2006).doc>>

## Kacie Jensen

---

**From:** SUMMER, STEPHEN E [SSUMMER@scana.com]  
**Sent:** Friday, July 21, 2006 11:11 AM  
**To:** Gerrit Jobsis; Shane Boring; Amanda Hill; BARGENTIERI@scana.com; Jennifer Price; Jennifer Summerlin; Jim Glover; RMAHAN@scana.com; Ron Ahle  
**Subject:** RE: Saluda Hydro Relicense: Draft Macroinvertebrate Study Plan for the Lower Saluda River

I've added some comments/responses to Gerrit's.  
Steve

---

**From:** Gerrit Jobsis [mailto:gjobsis@americanrivers.org]  
**Sent:** Thursday, July 20, 2006 2:15 PM  
**To:** Shane Boring; SUMMER, STEPHEN E; Amanda Hill; ARGENTIERI, WILLIAM R; Jennifer Price; Jennifer Summerlin; Jim Glover; MAHAN, RANDOLPH R; Ron Ahle  
**Subject:** RE: Saluda Hydro Relicense: Draft Macroinvertebrate Study Plan for the Lower Saluda River

Here are my comments Shane.

---

Gerrit Jöbsis  
Director of Southeast Conservation  
American Rivers  
2231 Devine Street, Suite 100 • Columbia, S.C. 29205  
803/771-7114  
803/771-7580 Fax  
[gjobsis@americanrivers.org](mailto:gjobsis@americanrivers.org)

[www.AmericanRivers.org](http://www.AmericanRivers.org)

***American Rivers protects and restores healthy natural rivers for the benefit of communities, fish and wildlife.***

---

**From:** Shane Boring [mailto:Shane.Boring@KleinschmidtUSA.com]  
**Sent:** Wednesday, July 19, 2006 5:06 PM  
**To:** Steve Summer; Amanda Hill; Bill Argentieri; Gerrit Jobsis; Jennifer Price; Jennifer Summerlin; Jim Glover; Randy Mahan; Ron Ahle; Shane Boring  
**Subject:** Saluda Hydro Relicense: Draft Macroinvertebrate Study Plan for the Lower Saluda River

Hello Folks:

Attached for your review is the first cut at the Lower Saluda Macroinvertebrate Study Plan. As discussed in our May 3rd meeting, the study plan incorporates the existing methods from the studies performed by Shealy Env., as well as the recommended multi-habitat component. Please have your comments/suggestions on the plan back to me by Wednesday, August 2nd. I'm particularly interested in any suggestions regarding sampling locations; the 2005 sampling by Shealy sampled 4 locations, which are primarily in the upper and lower reaches of the LSR. Thanks.

Shane

C. Shane Boring

10/29/2007

Environmental Scientist  
Kleinschmidt Associates  
101 Trade Zone Dr., Suite-21A  
West Columbia, SC 29170  
Phone: (803)822-3177  
Fax: (803)822-3183

<<LSR Macroinvert Study Plan (draft;07-19-2006).doc>>



**Kacie Jensen**

---

**From:** Shane Boring  
**Sent:** Thursday, July 20, 2006 9:40 AM  
**To:** 'Scott Harder'  
**Subject:** RE: Saluda Hydro Relicense

Hi Scott:

We have not yet begun to transcribe the data from the previous Saluda IFIM study. I was not at the last meeting, but it is my understanding that the TWC was going to review the study for applicability to the current relicensing before undertaking the rather large effort of transcribing the data. That does remind me, however, I probably need to try and get the review phase moving along a little faster ... so thanks for the heads-up. Thanks

C. Shane Boring  
Environmental Scientist  
Kleinschmidt Associates  
101 Trade Zone Dr., Suite-21A  
West Columbia, SC 29170  
Phone: (803)822-3177  
Fax: (803)822-3183

-----Original Message-----

**From:** Scott Harder [mailto:HarderS@dnr.sc.gov]  
**Sent:** Thursday, July 20, 2006 8:27 AM  
**To:** Shane Boring  
**Subject:** RE: Saluda Hydro Relicense

Hi Shane. I was wondering if anybody from Kleinschmidt had started transcribing data (from the previous Saluda River IFIM study) to electronic format and if so, when I could possibly get some copies. And if not do you guys have a time frame in which you hope to get that done? thanks.

Scott Harder  
Hydrologist  
SCDNR  
803-734-4764

## Kacie Jensen

---

**From:** Shane Boring  
**Sent:** Friday, July 07, 2006 2:30 PM  
**To:** Shane Boring; 'Wade Bales (balesw@dnr.sc.gov)'; Alan Stuart; Alison Guth; 'Amanda Hill'; BARGENTIERI@scana.com; 'Bill East'; 'Bill Hulslander'; 'Bill Marshall'; 'Bob Perry'; 'Bob Seibels'; 'Charlene Coleman'; 'Daniel Tufford'; 'Dick Christie'; 'Ed Diebold'; 'George Duke'; 'Gerrit Jobsis (American Rivers)'; 'Gina Kirkland'; 'Hal Beard'; 'Jeff Duncan'; 'Jennifer O'Rourke'; 'Jim Glover'; 'Jim Goller'; 'Joe Logan'; 'Joy Downs'; 'Larry Turner (turnerle@dhec.sc.gov)'; 'Malcolm Leaphart'; 'Mark Leao'; 'Mike Sloan'; 'Norman Ferris'; 'Patrick Moore'; 'Prescott Brownell'; 'Ralph Crafton'; RMAHAN@scana.com; 'Reed Bull (rbull@davisfloyd.com)'; 'Robert Lavisky'; 'Ron Ahle'; 'Sam Drake'; 'Steve Bell'; 'Steve Leach'; 'Steve Summer'; 'Suzanne Rhodes'; 'Tom Bowles (tbowles@scana.com)'; 'Tom Bowles (tbowles@scana.com)'; 'Ed\_Eudaly@fws.gov'  
**Cc:**  
**Subject:** Saluda Hydro Relicense: June 2006 Wood Stork Survey Observations

Hello Folks:

The June 2006 Lake Murray wood stork survey was conducted on Friday, June 30th. The weather was extremely hot and hazy during the survey and overall wading bird activity was limited to scattered sighting foraging great egrets and great blue herons. No wood storks were observed. Thank you for your continued interest in the Lake Murray Wood Stork Study, and please feel free to contact me should you have any questions. As always, a memo summarizing the survey observations will be posted to the Saluda Relicensing Website.

Shane

C. Shane Boring  
Environmental Scientist  
Kleinschmidt Associates  
101 Trade Zone Dr., Suite-21A  
West Columbia, SC 29170  
Phone: (803)822-3177  
Fax: (803)822-3183

**Kacie Jensen**

---

**From:** Bob Perry [PerryB@dnr.sc.gov]  
**Sent:** Monday, June 19, 2006 11:08 AM  
**To:** BARGENTIERI@scana.com  
**Cc:** Ed Duncan; Alison Guth  
**Subject:** RE: Saluda Hydro Waterfowl Hunting Area - Draft Trip Report

Bill,

Ed Duncan did not get this email. I looked at his address in your original, and it is wrong. Please change Ed's address to [duncane@mrd.dnr.state.sc.us](mailto:duncane@mrd.dnr.state.sc.us). This is a little different than most of the DNR email addresses, and you may find that as soon as you do this update our IT people may change him again. Anyway, I am letting you know because Ed didn't know about the meeting change. Thanks,  
Bob

---

**From:** ARGENTIERI, WILLIAM R [mailto:BARGENTIERI@scana.com]  
**Sent:** Monday, June 12, 2006 8:07 AM  
**To:** Bob Perry; Buddy Baker; MAHAN, RANDOLPH R; BOOZER, THOMAS C; Alan Stuart; STOCKMAN, CURTIS H  
**Cc:** Dick Christie; Amanda\_Hill@fws.gov; SUMMER, MICHAEL C  
**Subject:** Saluda Hydro Waterfowl Hunting Area - Draft Trip Report

To all,

On Tuesday, June 6 SCE&G and SCDNR met to discuss potential waterfowl hunting areas and conduct a site visit to a few of the recommended areas associated with the Saluda Hydroelectric Project as required by the FERC Order dated June 23, 2004. Attached is a draft of the trip report for this site visit. I request that the addressees in attendance at the meeting and on the site visit review the meeting minutes and provide any comments by next Thursday, June 22. After I have received all of the comments, I will issue a final copy of the meeting minutes for your records.

Thank you for your assistance on this matter.

**William R. Argentieri**  
South Carolina Electric & Gas Company  
111 Research Drive  
Columbia, SC 29203

Phone - (803) 217-9162  
Fax - (803) 933-7849  
Cell - (803) 331-0179

## Cheryl Balitz

---

**From:** Bret Hoffman  
**Sent:** Wednesday, June 07, 2006 1:48 PM  
**To:** Alison Guth; 'Steve Summer'; Alan Stuart; 'Amanda Hill'; BARGENTIERI@scana.com; 'Dick Christie'; 'Gerrit Jobsis (American Rivers)'; Jennifer Summerlin; 'Jim Glover'; 'Prescott Brownell'; RMAHAN@scana.com; Shane Boring; 'Steve Leach'  
**Subject:** Spillway Eel Ramp installation

Good afternoon,

Shane Boring and I constructed the eel ramp in the spillway channel on Friday, June 2nd; photos of the setup are attached. The other site will be constructed soon, and we will forward photos upon its completion.

Thanks,

---

Bret Hoffman, P.E.  
Mechanical Engineer  
Kleinschmidt  
Energy & Water Resource Consultants  
101 Trade Zone Drive, Suite 21A  
West Columbia, SC 29170  
(803) 822-3177  
FAX (803) 822-3183  
Bret.Hoffman@KleinschmidtUSA.com

Eel ramp 001.jpg (1 MB) Eel ramp 004.jpg (1 MB) Eel ramp 006.jpg (1 MB) Eel ramp 011.jpg (1 MB)



















## Kacie Jensen

---

**From:** Shane Boring  
**Sent:** Sunday, June 04, 2006 9:08 AM  
**To:** Shane Boring; 'Wade Bales (balesw@dnr.sc.gov)'; Alan Stuart; Alison Guth; 'Amanda Hill'; BARGENTIERI@scana.com; 'Bill East'; 'Bill Hulslander'; 'Bill Marshall'; 'Bob Perry'; 'Bob Seibels'; 'Charlene Coleman'; 'Daniel Tufford'; 'Dick Christie'; 'Ed Diebold'; 'George Duke'; 'Gerrit Jobsis (American Rivers)'; 'Gina Kirkland'; 'Hal Beard'; 'Jeff Duncan'; 'Jennifer O'Rourke'; 'Jim Glover'; 'Jim Goller'; 'Joe Logan'; 'Joy Downs'; 'Larry Turner (turnerle@dhec.sc.gov)'; 'Malcolm Leaphart'; 'Mark Leao'; 'Mike Sloan'; 'Norman Ferris'; 'Patrick Moore'; 'Prescott Brownell'; 'Ralph Crafton'; RMAHAN@scana.com; 'Reed Bull (rbull@davisfloyd.com)'; 'Robert Lavisky'; 'Ron Ahle'; 'Sam Drake'; 'Steve Bell'; 'Steve Leach'; 'Steve Summer'; 'Suzanne Rhodes'; 'Tom Bowles (tbowles@scana.com)'; 'Tom Bowles (tbowles@scana.com)'; 'Ed\_Eudaly@fws.gov'  
**Cc:**  
**Subject:** Saluda Hydro Relicense: May 2006 Wood Stork Survey Observations

Hello Folks:

The May 2006 Lake Murray wood stork survey was conducted on Wednesday, May 31st. Two flocks of wading birds were observed foraging in drying pools off of the Saluda's main channel above Lake Murray; however, none were wood storks. The approximately 40 great blue heron nests observed during the May survey at the Tossity Creek and Silverstreet colony sites appear to have fledged, and the nests were empty at the time of the survey. Thank you for your continued interest in the Lake Murray Wood Stork Study, and as always, please feel free to contact me should you have any questions.

Shane

C. Shane Boring  
Environmental Scientist  
Kleinschmidt Associates  
101 Trade Zone Dr., Suite-21A  
West Columbia, SC 29170  
Phone: (803)822-3177  
Fax: (803)822-3183



Shane,

Please make sure the two rocky shoals spider lily plants found at "Ocean Blvd." on the Saluda River are entered into the record. I can point out the exact location on a map if that is helpful. Unfortunately, the map Amanda and I were marking got wet and ruined.

It also appeared that habitat within the Ocean Blvd channel would be good for lily restoration efforts.

Thanks for making the arrangements for a good day afield.

Gerrit

***We have moved! Please see our new address below.***

<:;>>><

Gerrit Jöbsis  
*American Rivers \* Southeast Office*  
2231 Devine Street, Suite 100 \* Columbia, S.C. 29205  
Telephone (803) 771-7114 \* Fax (803) 771-7580  
[gjobsis@americanrivers.org](mailto:gjobsis@americanrivers.org)

**Kacie Jensen**

---

**From:** Shane Boring  
**Sent:** Friday, June 02, 2006 5:17 PM  
**To:** 'Gerrit Jobsis'  
**Subject:** RE: Saluda Hydro Relicense: May 31 RSSL survey

Gerrit:

No problem. We'll make sure it makes it in the record.

One additional item I've been meaning to mention to you: at our Instream Flow/Aquatic Habitat TWC meeting on May 3, several members expressed an interest in having authors of the 1990 IFIM study give a presentation so that we can better understand what was done. I will also contact Jeff Isely, but I was hoping you could help with this. The meeting is scheduled for June 14, I believe. Is this a possibility? Any help are able to offer would be great.

Thanks  
Shane

-----Original Message-----

**From:** Gerrit Jobsis [mailto:gjobsis@americanrivers.org]  
**Sent:** Friday, June 02, 2006 10:30 AM  
**To:** Shane Boring  
**Cc:** Tom Eppink; Amanda Hill; Bill Argentieri; bseibels@yahoo.com; Ron Ahle; Randy Mahan  
**Subject:** RE: Saluda Hydro Relicense: May 31 RSSL survey

Shane,

Please make sure the two rocky shoals spider lily plants found at "Ocean Blvd." on the Saluda River are entered into the record. I can point out the exact location on a map if that is helpful. Unfortunately, the map Amanda and I were marking got wet and ruined.

It also appeared that habitat within the Ocean Blvd channel would be good for lily restoration efforts.

Thanks for making the arrangements for a good day afield.

Gerrit

***We have moved! Please see our new address below.***

<:;>>><

Gerrit Jobsis  
American Rivers • Southeast Office  
2231 Devine Street, Suite 100 • Columbia, S.C. 29205  
Telephone (803) 771-7114 • Fax (803) 771-7580  
[gjobsis@americanrivers.org](mailto:gjobsis@americanrivers.org)



## Kacie Jensen

**From:** Shane Boring  
**Sent:** Tuesday, May 30, 2006 9:37 AM  
**To:** BARGENTIERI@scana.com; 'Bob Seibels (bseibels@yahoo.com)'; Bret Hoffman; 'Gerrit Jobsis (American Rivers)'; RMAHAN@scana.com; 'Ron Ahle'; 'Amanda Hill'; 'Tom Eppink'  
**Cc:** Alan Stuart; Jennifer Summerlin; Alison Guth; Kelly Miller  
**Subject:** Saluda Hydro Spider Lily Float Trip

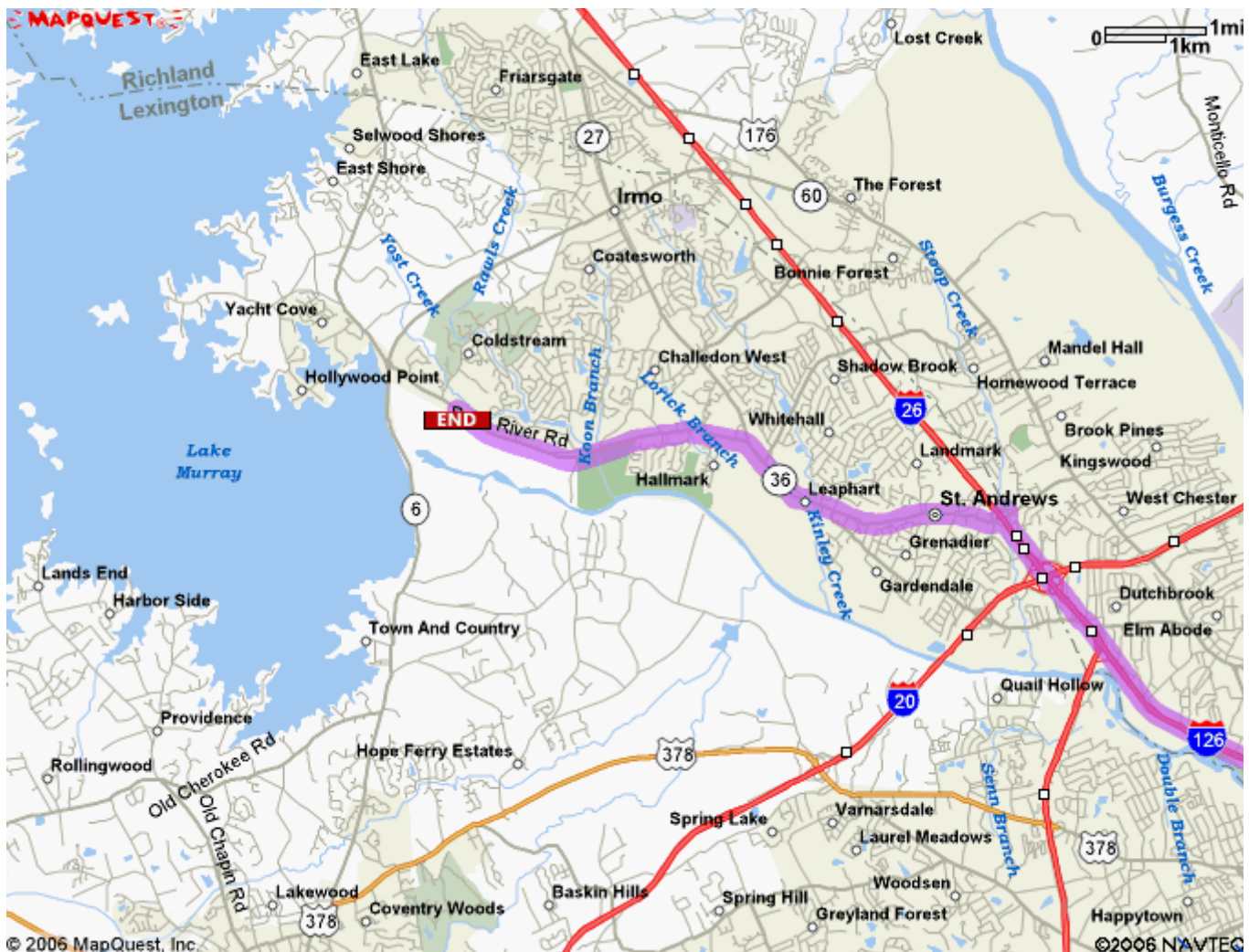
Hello Folks:

Just a last-minute reminder of tomorrow's float trip to view the rocky shoals spider lilies in the Broad/Saluda confluence. We will meet at the Saluda Hydro Guard Shack on Bush River Rd @ 9:00 AM. Lunch, canoes, and transportation back to your cars will be provided. Directions are provided below. If anyone has trouble finding the guard shack or needs to contact us in the field, my cell phone # is (803) 269-4039. Please do not hesitate to call.

Shane

### Directions for Interstate 26

- 1) From I-26, Take the ST ANDREWS ROAD WEST exit- EXIT 106A.
- 2) Continue west on St. Andrews Rd. for approx. 2.7 miles.
- 3) Make a slight left onto Bush River Rd. (at the light just past the Aldi store)
- 4) Continue for approx 3 miles to the Saluda Hydro guard shack, located on the left (6065 Bush River Rd.)





## Kacie Jensen

---

**From:** Amanda\_Hill@fws.gov  
**Sent:** Wednesday, May 17, 2006 3:00 PM  
**To:** Shane Boring  
**Subject:** RE: FW: FW: (Saluda Hydro) Mussel Recon Survey Study Plan (draft; 0419 2006 ) alderman comments.doc

Shane,

Okay, just include language in the plan describing that procedure. thanks.

Amanda Hill  
Fisheries Biologist  
U.S. Fish and Wildlife Service  
176 Croghan Spur Rd., Suite 200  
Charleston, SC 29407  
843-727-4707 ext. 303  
843-727-4218 fax  
amanda\_hill@fws.gov

\*NOTE NEW PHONE EXTENSION\*

"Our mission is working with others to conserve, protect, and enhance fish, wildlife and plants and their habitats for the continuing benefit of the American people."

Shane Boring  
<Shane.Boring@KleinschmidtUSA.com>

05/17/2006 02:22 PM

" 'Amanda\_Hill@fws.gov' "  
<Amanda\_Hill@fws.gov>

To

cc

Subject

RE: FW: FW: (Saluda Hydro) Mussel Recon Survey Study Plan (draft; 0419 2006 ) alderman comments.doc

Amanda:

John has indicated 3 days to survey the lake, unless significant fauna is found. As noted below, he will focus primarily on areas of suitable Savannah lilliput habitat (shoreline habitats of the coves adjacent to tributary streams), as well as other areas opportunistically as he moves between the tributary sites indicated in the study plan. I wonder if having a look at the reservoir from air during one of our wood stork surveys might be beneficial to quickly identifying areas where we should focus effort?

Shane

-----Original Message-----

From: Amanda\_Hill@fws.gov [mailto:Amanda\_Hill@fws.gov]  
Sent: Wednesday, May 17, 2006 10:51 AM  
To: Shane Boring  
Subject: Re: FW: FW: (Saluda Hydro) Mussel Recon Survey Study Plan (draft;0419 2006 )  
alderman comments.doc

Shane,

I still would like the study plan to include some type of estimation either by time or area of how much reservoir will be surveyed. I realize John must investigate the shoreline to determine adequate locations, however, we would like the study plan to include at least an estimation. Or does John intend on evaluating the entire reservoir shoreline before selecting survey locations?

Amanda Hill  
Fisheries Biologist  
U.S. Fish and Wildlife Service  
176 Croghan Spur Rd., Suite 200  
Charleston, SC 29407  
843-727-4707 ext. 303  
843-727-4218 fax  
amanda\_hill@fws.gov

\*NOTE NEW PHONE EXTENSION\*

"Our mission is working with others to conserve, protect, and enhance fish, wildlife and plants and their habitats for the continuing benefit of the American people."

Shane Boring  
<Shane.Boring@Kle  
inschmidtUSA.com>

05/09/2006 11:06  
AM

" 'Amanda\_Hill@fws.gov' "  
<Amanda\_Hill@fws.gov>, 'Gerrit  
Jobsis'  
<gjobsis@americanrivers.org>

To

cc

Subject

FW: FW: (Saluda Hydro) Mussel Recon  
Survey Study Plan (draft;0419 2006  
) alderman comments.doc

Amanda/Gerrit:

See John Alderman's clarifications regarding the mussel study plan below. If these are acceptable, we would like to finalize the study plan as soon as possible so that we can get into the field. As I have indicated in recent e-mails, John is concerned that, if Savannah lilliput is present, rising reservoir levels may cause the species to be missed as it may take several weeks to months to relocate to the shoreline.

I hope this info helps,  
Shane

C. Shane Boring  
Environmental Scientist  
Kleinschmidt Associates  
101 Trade Zone Dr., Suite-21A  
West Columbia, SC 29170  
Phone: (803)822-3177  
Fax: (803)822-3183

-----Original Message-----

From: John Alderman [mailto:aldermjm@mindspring.com]  
Sent: Tuesday, May 09, 2006 10:50 AM  
To: Shane Boring  
Cc: John Alderman  
Subject: Re: FW: (Saluda Hydro) Mussel Recon Survey Study Plan (draft;04192006 ) alderman comments.doc

Good morning, Shane. I'll gladly provide additional clarifications:

The Savannah lilliput (*Toxolasma pullus*), once named the Savannah shoremussel, is a very high priority federal species of concern with very few remaining extant populations in GA, SC, and NC. This should be the primary target species within the reservoir. Within North Carolina and South Carolina reservoirs, this species is most closely associated with shoreline habitats of the coves adjacent to tributary streams. This has been consistently observed within Lake Greenwood, Lake Marion, and Tuckertown Reservoir. Therefore, such cove habitats will be the primary focus during the Survey of Lake Murray. However, we will also survey other habitats as we move from cove to cove. Where good habitats with significant faunas exist along shore and into deeper waters, we will survey these areas using various techniques, including snorkeling and SCUBA, where necessary.

We do plan to survey lotic habitats within tributaries. We already know that tributaries of Lake Murray, such as Clouds Creek and Bear Creek, provide significant mussel habitat. Hopefully, other tributaries will provide significant habitats.

My comments to Gerrit's questions are seen in CAPS within his message below.

Good luck.

John

Shane Boring wrote:

John:

See Gerrit's comments below. Also, Amanda Hill from USFWS has asked for the following clarifications as well:

- 1) What criteria will determine which sites in the reservoir will be surveyed? (i.e. what types of habitat and how many representative sites?)
- 2) How are deeper areas of the reservoir going to be surveyed?

I have also attached the study plan as it was submitted to the agencies.  
Clarification you might be able to offer regarding any of these items is greatly appreciated. Thanks again.

Shane

C. Shane Boring

Environmental Scientist  
Kleinschmidt Associates  
101 Trade Zone Dr., Suite-21A  
West Columbia, SC 29170  
Phone: (803)822-3177  
Fax: (803)822-3183

-----Original Message-----

From: Gerrit Jobsis [mailto:gjobsis@americanrivers.org]  
Sent: Wednesday, April 26, 2006 1:13 PM  
To: Shane Boring; Steve Summer; Amanda Hill; Bill Argentieri;  
Jennifer  
Price; Jim Glover; Randy Mahan; Ron Ahle  
Cc: Jennifer Summerlin  
Subject: RE: (Saluda Hydro) Mussel Recon Survey Study Plan  
(draft;04192006)  
alderman comments.doc

Shane,

This is a very general study plan without much detail.

I agree with the geographic area. I count 13 Lake Murray tributaries plus the lower Saluda and the Congaree rivers.

I agree with the temporal scope (late May - early June) for an initial effort. Based on the results, additional survey work may be needed in fall 2005 or perhaps a repeat of the survey in 2007.

I am concerned there may be future disagreement as to the adequacy of effort if more detail is not provided. How much time will be expended at each site? 10 MINUTES TO 2 HOURS How far upstream will the surveys extend at the headwater tribs? IT DEPENDS UPON WHAT WE FIND WITHIN ANY PARTICULAR TRIBUTARY. To include unimpounded reaches? DEFINITELY. How will the Lake Murray shoreline be surveyed with the current 6 to 7 foot drawdown? BY BOAT TRANSPORT AS WE MOVE FROM STATION TO STATION. THESE ARE IDEAL CONDITIONS FOR A QUICK AND EFFICIENT SURVEY OF THE RESERVOIR.

Also we have about 10 miles of the lower Saluda and 10 miles of the Congaree below the dam. How much effort will be expended at each of these rivers? SEVERAL DAYS TOTAL. What habitats will be surveyed? AS MANY AS POSSIBLE. These things need detail before the study begins. A map of proposed study sites is also needed. WE WILL TRAVEL THE ENTIRE LENGTH OF THESE RIVERS WITHIN THE STUDY REACHES. STUDY SITES WILL BE SELECTED BASED UPON OUR FINDINGS AS WE ASSESS HABITATS WITHIN THESE REACHES. NOTE: I'VE IMPLEMENTED SUCH A STRATEGY FOR 20+ YEARS AS A PROFESSIONAL AQUATIC ENDANGERED SPECIES BIOLOGIST. USING THIS STRATEGY, I'VE DISCOVERED MORE EXTANT POPULATIONS OF RARE MUSSELS WITHIN NC AND SC COMPARED WITH ANY OTHER LIVING AQUATIC BIOLOGIST. HARD WORK, A THIRST FOR KNOWLEDGE, AND NOT WANTING TO MISS ANYTHING OF SIGNIFICANCE ARE THE DRIVING FORCES BEHIND SUCH SUCCESSES. You asked for a quick turnaround, so I have provided one. Due to our move

and other workload I have not been able to discuss this with other stakeholder and agencies. I am especially interested in the opinion of the DNR and USFWS re the plan.

Gerrit

We have moved! Please see our new address below.

<:;>><

Gerrit Jöbsis

American Rivers \* Southeast Office

2231 Devine Street, Suite 100 \* Columbia, S.C. 29205

Telephone (803) 771-7114 \* Fax (803) 771-7580

gjobsis@americanrivers.org

-----Original Message-----

From: Shane Boring [mailto:Shane.Boring@KleinschmidtUSA.com]  
Sent: Monday, April 24, 2006 9:49 AM  
To: Steve Summer; Amanda Hill; Bill Argentieri; Gerrit Jobsis; Jennifer Price; Jim Glover; Randy Mahan; Ron Ahle; Shane Boring  
Cc: Jennifer Summerlin  
Subject: (Saluda Hydro) Mussel Recon Survey Study Plan (draft;04192006) alderman comments.doc

Dear Freshwater Mussels/Benthic Macroinvertebrate TWC Member:

Attached for your review is the draft study plan for the freshwater mussel reconnaissance survey on Lake Murray and the Lower Saluda and Congaree Rivers. The draft has been reviewed by John Alderman, and his comments have been incorporated. We have tried to keep the study plan as brief as possible to facilitate a quick review, as John would like to get this study started ASAP while the rivers and Lake are still low and clear. We will discuss the study plan and hopefully get final approval from the TWC at next week's meeting (May 3 at Research Park). Thanks in advance for your input.

C. Shane Boring  
Environmental Scientist  
Kleinschmidt Associates  
101 Trade Zone Dr., Suite-21A  
West Columbia, SC 29170  
Phone: (803)822-3177  
Fax: (803)822-3183

Mussel Recon Survey Study Plan (draft;04192006) alderman comments.doc  
<<Mussel Recon Survey Study Plan (draft;04192006) alderman

comments.doc>>



## Kacie Jensen

---

**From:** Shane Boring  
**Sent:** Wednesday, May 17, 2006 2:23 PM  
**To:** 'Amanda\_Hill@fws.gov'  
**Subject:** RE: FW: FW: (Saluda Hydro) Mussel Recon Survey Study Plan (draft;0419 2006 )  
alderman comments.doc

Amanda:

John has indicated 3 days to survey the lake, unless significant fauna is found. As noted below, he will focus primarily on areas of suitable Savannah lilliput habitat (shoreline habitats of the coves adjacent to tributary streams), as well as other areas opportunistically as he moves between the tributary sites indicated in the study plan. I wonder if having a look at the reservoir from air during one of our wood stork surveys might be beneficial to quickly identifying areas where we should focus effort?

Shane

-----Original Message-----

From: Amanda\_Hill@fws.gov [mailto:Amanda\_Hill@fws.gov]  
Sent: Wednesday, May 17, 2006 10:51 AM  
To: Shane Boring  
Subject: Re: FW: FW: (Saluda Hydro) Mussel Recon Survey Study Plan (draft;0419 2006 )  
alderman comments.doc

Shane,

I still would like the study plan to include some type of estimation either by time or area of how much reservoir will be surveyed. I realize John must investigate the shoreline to determine adequate locations, however, we would like the study plan to include at least an estimation. Or does John intend on evaluating the entire reservoir shoreline before selecting survey locations?

Amanda Hill  
Fisheries Biologist  
U.S. Fish and Wildlife Service  
176 Croghan Spur Rd., Suite 200  
Charleston, SC 29407  
843-727-4707 ext. 303  
843-727-4218 fax  
amanda\_hill@fws.gov

\*NOTE NEW PHONE EXTENSION\*

"Our mission is working with others to conserve, protect, and enhance fish, wildlife and plants and their habitats for the continuing benefit of the American people."

Shane Boring  
<Shane.Boring@Kle  
inschmidtUSA.com>

05/09/2006 11:06  
AM

" 'Amanda\_Hill@fws.gov' "  
<Amanda\_Hill@fws.gov>, 'Gerrit  
Jobsis'  
<gjobsis@americanrivers.org>

To

cc

Subject

FW: FW: (Saluda Hydro) Mussel Recon  
Survey Study Plan (draft;0419 2006  
) alderman comments.doc

Amanda/Gerrit:

See John Alderman's clarifications regarding the mussel study plan below. If these are acceptable, we would like to finalize the study plan as soon as possible so that we can get into the field. As I have indicated in recent e-mails, John is concerned that, if Savannah lilliput is present, rising reservoir levels may cause the species to be missed as it may take several weeks to months to relocate to the shoreline.

I hope this info helps,  
Shane

C. Shane Boring  
Environmental Scientist  
Kleinschmidt Associates  
101 Trade Zone Dr., Suite-21A  
West Columbia, SC 29170  
Phone: (803)822-3177  
Fax: (803)822-3183

-----Original Message-----

From: John Alderman [mailto:aldermjm@mindspring.com]  
Sent: Tuesday, May 09, 2006 10:50 AM  
To: Shane Boring  
Cc: John Alderman  
Subject: Re: FW: (Saluda Hydro) Mussel Recon Survey Study Plan (draft;04192006 ) alderman comments.doc

Good morning, Shane. I'll gladly provide additional clarifications:

The Savannah lilliput (*Toxolasma pullus*), once named the Savannah shoremussel, is a very high priority federal species of concern with very few remaining extant populations in GA, SC, and NC. This should be the primary target species within the reservoir. Within North Carolina and South Carolina reservoirs, this species is most closely associated with shoreline habitats of the coves adjacent to tributary streams. This has been consistently observed within Lake Greenwood, Lake Marion, and Tuckertown Reservoir. Therefore, such cove habitats will be the primary focus during the Survey of Lake Murray. However, we will also survey other habitats as we move from cove to cove. Where good habitats with significant faunas exist along shore and into deeper waters, we will survey these areas using various techniques, including snorkeling and SCUBA, where necessary.

We do plan to survey lotic habitats within tributaries. We already know that tributaries of Lake Murray, such as Clouds Creek and Bear Creek, provide significant mussel habitat. Hopefully, other tributaries will provide significant habitats.

My comments to Gerrit's questions are seen in CAPS within his message below.

Good luck.

John

Shane Boring wrote:  
John:

See Gerrit's comments below. Also, Amanda Hill from USFWS has asked for the following clarifications as well:

- 1) What criteria will determine which sites in the reservoir will be surveyed? (i.e. what types of habitat and how many representative sites?)
- 2) How are deeper areas of the reservoir going to be surveyed?

I have also attached the study plan as it was submitted to the agencies. Clarification you might be able to offer regarding any of these items is greatly appreciated. Thanks again.

Shane

C. Shane Boring  
Environmental Scientist  
Kleinschmidt Associates  
101 Trade Zone Dr., Suite-21A  
West Columbia, SC 29170  
Phone: (803)822-3177  
Fax: (803)822-3183

-----Original Message-----

From: Gerrit Jobsis [mailto:gjobsis@americanrivers.org]  
Sent: Wednesday, April 26, 2006 1:13 PM  
To: Shane Boring; Steve Summer; Amanda Hill; Bill Argentieri; Jennifer Price; Jim Glover; Randy Mahan; Ron Ahle  
Cc: Jennifer Summerlin  
Subject: RE: (Saluda Hydro) Mussel Recon Survey Study Plan (draft;04192006)  
alderman comments.doc

Shane,

This is a very general study plan without much detail.

I agree with the geographic area. I count 13 Lake Murray tributaries plus the lower Saluda and the Congaree rivers.

I agree with the temporal scope (late May - early June) for an initial effort. Based on the results, additional survey work may be needed in fall 2005 or perhaps a repeat of the survey in 2007.

I am concerned there may be future disagreement as to the adequacy of effort if more detail is not provided. How much time will be expended at each site? 10 MINUTES TO 2 HOURS How far upstream will the surveys extend at the headwater tribs? IT DEPENDS UPON WHAT WE FIND WITHIN

ANY PARTICULAR TRIBUTARY. To include unimpounded reaches? DEFINITELY. How will the Lake Murray shoreline be surveyed with the current 6 to 7 foot drawdown? BY BOAT TRANSPORT AS WE MOVE FROM STATION TO STATION. THESE ARE IDEAL CONDITIONS FOR A QUICK AND EFFICIENT SURVEY OF THE RESERVOIR.

Also we have about 10 miles of the lower Saluda and 10 miles of the Congaree below the dam. How much effort will be expended at each of these rivers? SEVERAL DAYS TOTAL. What habitats will be surveyed? AS MANY AS POSSIBLE. These things need detail before the study begins. A map of proposed study sites is also needed. WE WILL TRAVEL THE ENTIRE LENGTH OF THESE RIVERS WITHIN THE STUDY REACHES. STUDY SITES WILL BE SELECTED BASED UPON OUR FINDINGS AS WE ASSESS HABITATS WITHIN THESE REACHES. NOTE: I'VE IMPLEMENTED SUCH A STRATEGY FOR 20+ YEARS AS A PROFESSIONAL AQUATIC ENDANGERED SPECIES BIOLOGIST. USING THIS STRATEGY, I'VE DISCOVERED MORE EXTANT POPULATIONS OF RARE MUSSELS WITHIN NC AND SC COMPARED WITH ANY OTHER LIVING AQUATIC BIOLOGIST. HARD WORK, A THIRST FOR KNOWLEDGE, AND NOT WANTING TO MISS ANYTHING OF SIGNIFICANCE ARE THE DRIVING FORCES BEHIND SUCH SUCCESSES. You asked for a quick turnaround, so I have provided one. Due to our move and other workload I have not been able to discuss this with other stakeholder and agencies. I am especially interested in the opinion of the DNR and USFWS re the plan.

Gerrit

We have moved! Please see our new address below.

<:;>><

Gerrit Jöbsis

American Rivers \* Southeast Office  
2231 Devine Street, Suite 100 \* Columbia, S.C. 29205  
Telephone (803) 771-7114 \* Fax (803) 771-7580  
gjobsis@americanrivers.org

-----Original Message-----

From: Shane Boring [mailto:Shane.Boring@KleinschmidtUSA.com]  
Sent: Monday, April 24, 2006 9:49 AM  
To: Steve Summer; Amanda Hill; Bill Argentieri; Gerrit Jobsis; Jennifer Price; Jim Glover; Randy Mahan; Ron Ahle; Shane Boring  
Cc: Jennifer Summerlin  
Subject: (Saluda Hydro) Mussel Recon Survey Study Plan (draft;04192006) alderman comments.doc

Dear Freshwater Mussels/Benthic Macroinvertebrate TWC Member:

Attached for your review is the draft study plan for the freshwater mussel reconnaissance survey on Lake Murray and the Lower Saluda and Congaree

Rivers. The draft has been reviewed by John Alderman, and his comments have been incorporated. We have tried to keep the study plan as brief as possible to facilitate a quick review, as John would like to get this study started ASAP while the rivers and Lake are still low and clear. We will discuss the study plan and hopefully get final approval from the TWC at next week's meeting (May 3 at Research Park). Thanks in advance for your input.

C. Shane Boring  
Environmental Scientist  
Kleinschmidt Associates  
101 Trade Zone Dr., Suite-21A  
West Columbia, SC 29170  
Phone: (803)822-3177  
Fax: (803)822-3183

Mussel Recon Survey Study Plan (draft;04192006) alderman  
comments.doc  
<<Mussel Recon Survey Study Plan (draft;04192006) alderman  
comments.doc>>

## Kacie Jensen

---

**From:** Jason Giovannone [jgiovannone@riverbanks.org]  
**Sent:** Wednesday, May 17, 2006 7:53 AM  
**To:** Shane Boring  
**Subject:** re: Fwd: Bird Data for LSR and Lake Murray

Shane,

I don't know if you have my data from the areas around Riverbanks Zoo. I also have data from a soon to be formal Christmas Bird Count that encompasses much of the area that you are talking about. Last year I did a trial run, and I will register it this year. I'll be glad to give you all the data that I have, and keep you updated if need be. Good Birding!

Jason Giovannone  
Coordinator of After School Programs  
Riverbanks Zoo & Gardens  
P.O. Box 1060  
Columbia, SC 29202-1060  
(803) 779-8717 ext 1140  
jgiovannone@riverbanks.org

>From: Dan Tufford <dtufford@bellsouth.net>  
>To: carolinabirds@duke.edu  
>CC: Shane.Boring@KleinschmidtUSA.com  
>Subject: Fwd: Bird Data for LSR and Lake Murray  
>Date: Tue, 16 May 2006 17:21:56 -0400  
>  
>SCE&G is in the midst of the FERC relicensing process for the Saluda Dam.  
>One of the resource groups is tasked with acquiring as much data as they  
>can on birds of Lake Murray and the Lower Saluda River. I received this  
  
>request and am passing it along. They have already acquired quite a lot of  
>data from the expected sources. If you can provide more data please respond  
>directly to Shane.  
>  
>Dan Tufford  
>Columbia, SC  
>  
>  
>>Date: Tue, 16 May 2006 07:59:51 -0400  
>>From: Dan Tufford <tufford@sc.edu>  
>>To: Shane Boring <Shane.Boring@KleinschmidtUSA.com>  
>>  
>>>Dan:  
>>>The Terrestrial Resources TWC is in the process of trying to finalize a  
>>>species list for birdlife occurring in the vicinity of Lake Murray and  
>>>the LSR. I am aware of the checklist provided for Dreher Island State  
>>>Park on the Columbia Audubon website. Are you aware of any more  
>>>up-to-date data for Dreher Island (the data currently posted is through  
>>>2001) or other data that might be useful for this purpose. Thanks.  
>>>Shane  
>>>  
>>>C. Shane Boring  
>>>Environmental Scientist

>>>Kleinschmidt Associates  
>>>101 Trade Zone Dr., Suite-21A  
>>>West Columbia, SC 29170  
>>>Phone: (803)822-3177  
>>>Fax: (803)822-3183  
>

---

Express yourself instantly with MSN Messenger! Download today - it's FREE!  
<http://messenger.msn.click-url.com/go/onm00200471ave/direct/01/>

## Kacie Jensen

---

**From:** Shane Boring  
**Sent:** Tuesday, May 16, 2006 4:52 PM  
**To:** 'Amanda\_Hill@fws.gov'  
**Subject:** RE: Fish Entrainment Desktop Study Plan-Final

Amanda:

Did you see my e-mail from last week regarding Alderman's clarification on the mussel study plan? Let me know if it will suffice. Thanks

Shane

-----Original Message-----

**From:** Amanda\_Hill@fws.gov [mailto:Amanda\_Hill@fws.gov]  
**Sent:** Tuesday, May 16, 2006 1:25 PM  
**To:** Jennifer Summerlin  
**Cc:** Alan Stuart; Wade Bales (balesw@dnr.sc.gov); Bill Argentieri; Hal Beard; Jim Glover; Randy Mahan; Shane Boring; Tom Bowles (tbowles@scana.com)  
**Subject:** Re: Fish Entrainment Desktop Study Plan-Final

Jennifer,

I have reviewed the Fish Entrainment Desktop Study Plan and concur with the proposed methodologies. good job.

Amanda Hill  
Fisheries Biologist  
U.S. Fish and Wildlife Service  
176 Croghan Spur Rd., Suite 200  
Charleston, SC 29407  
843-727-4707 ext. 303  
843-727-4218 fax  
amanda\_hill@fws.gov

\*NOTE NEW PHONE EXTENSION\*

"Our mission is working with others to conserve, protect, and enhance fish, wildlife and plants and their habitats for the continuing benefit of the American people."

Jennifer  
Summerlin  
<Jennifer.Summerlin@KleinschmidtUSA.com>

05/15/2006 04:18  
PM

To  
"Wade Bales (balesw@dnr.sc.gov)"  
<balesw@dnr.sc.gov>, Amanda Hill  
<amanda\_hill@fws.gov>, Bill  
Argentieri <bargentieri@scana.com>,  
Hal Beard <beardh@dnr.sc.gov>, Jim  
Glover <GloverJB@dhec.sc.gov>,  
Randy Mahan <rmahan@scana.com>,  
Shane Boring  
<shane.boring@kleinschmidtusa.com>,  
"Tom Bowles (tbowles@scana.com)"  
<tbowles@scana.com>, Alan Stuart  
<Alan.Stuart@KleinschmidtUSA.com>

cc



Subject  
Fish Entrainment Desktop Study  
Plan-Final

Dear Fish Entrainment TWC Members,

Attached is the final copy of the fish entrainment desktop study plan. If anyone has any further comments, please let me know ASAP. Thanks!

<<2006 Saluda Fish Entrainment Desktop Study Plan-final.doc>> Jennifer Summerlin Scientist  
Technician Kleinschmidt Associates 101 Trade Zone Dr., Suite-21A West Columbia, SC 29170  
Phone: (803)822-3177  
Fax: (803)822-3183 (See attached file: 2006 Saluda Fish Entrainment Desktop Study Plan-  
final.doc)

## Kacie Jensen

---

**From:** Amanda\_Hill@fws.gov  
**Sent:** Tuesday, May 16, 2006 1:25 PM  
**To:** Jennifer Summerlin  
**Cc:** Alan Stuart; Wade Bales (balesw@dnr.sc.gov); BARGENTIERI@scana.com; Hal Beard; Jim Glover; RMAHAN@scana.com; Shane Boring; Tom Bowles (tbowles@scana.com)  
**Subject:** Re: Fish Entrainment Desktop Study Plan-Final



2006 Saluda Fish  
Entrainment D...

Jennifer,

I have reviewed the Fish Entrainment Desktop Study Plan and concur with the proposed methodologies. good job.

Amanda Hill  
Fisheries Biologist  
U.S. Fish and Wildlife Service  
176 Croghan Spur Rd., Suite 200  
Charleston, SC 29407  
843-727-4707 ext. 303  
843-727-4218 fax  
amanda\_hill@fws.gov

\*NOTE NEW PHONE EXTENSION\*

"Our mission is working with others to conserve, protect, and enhance fish, wildlife and plants and their habitats for the continuing benefit of the American people."

Jennifer  
Summerlin  
<Jennifer.Summerlin@KleinschmidtUSA.com>

05/15/2006 04:18  
PM

To  
"Wade Bales (balesw@dnr.sc.gov)"  
<balesw@dnr.sc.gov>, Amanda Hill  
<amanda\_hill@fws.gov>, Bill  
Argentieri <bargentieri@scana.com>,  
Hal Beard <beardh@dnr.sc.gov>, Jim  
Glover <GloverJB@dhec.sc.gov>,  
Randy Mahan <rmahan@scana.com>,  
Shane Boring  
<shane.boring@kleinschmidtusa.com>,  
"Tom Bowles (tbowles@scana.com)"  
<tbowles@scana.com>, Alan Stuart  
<Alan.Stuart@KleinschmidtUSA.com>

cc

Subject  
Fish Entrainment Desktop Study  
Plan-Final

Dear Fish Entrainment TWC Members,

Attached is the final copy of the fish entrainment desktop study plan. If anyone has any further comments, please let me know ASAP. Thanks!

<<2006 Saluda Fish Entrainment Desktop Study Plan-final.doc>> Jennifer Summerlin Scientist  
Technician Kleinschmidt Associates 101 Trade Zone Dr., Suite-21A West Columbia, SC 29170  
Phone: (803)822-3177  
Fax: (803)822-3183 (See attached file: 2006 Saluda Fish Entrainment Desktop Study Plan-  
final.doc)

## Kacie Jensen

---

**From:** Jennifer Summerlin  
**Sent:** Monday, May 15, 2006 4:35 PM  
**To:** 'Tom Eppink'; 'Amanda Hill'; 'Bill Argentieri'; 'Bob Seibels'; 'Gerrit Jobsis (American Rivers)'; 'Jim Glover'; 'Randy Mahan'; 'Ron Ahle'; Shane Boring  
**Subject:** Rocky Shoals Spider Lilly Float Trip

RT&E species TWC Members:

We have a float trip scheduled for May 31, 2006 to view the beautiful Rocky Shoals Spider Lilly population on the river! We are asking that everyone RSVP by Monday, May 22nd so we can rent the appropriate number of canoes. I will email everyone more specific information (time, location, etc) next week sometime. Thanks!

Jennifer Summerlin  
Scientist Technician  
Kleinschmidt Associates  
101 Trade Zone Dr., Suite-21A  
West Columbia, SC 29170  
Phone: (803)822-3177  
Fax: (803)822-3183

## Kacie Jensen

---

**From:** Shane Boring  
**Sent:** Friday, May 12, 2006 6:09 PM  
**To:** 'theresa\_thom@nps.gov'  
**Subject:** Saluda Technical Working Committees

Theresa:

My apologies for all of the meeting announcement e-mails today; however, I wasn't sure which of these group you might want to be a part of and didn't want to leave you out. The Instream Flow/Aquatic Habitat TWC is dealing with the floodplain flow and Ecologically Sustainable Water Management study requests from NPS, so I assume you would like to be a member of this group? The other fish and wildlife TWCs are: Rare, Threatened and Endangered Species; Freshwater Mussels/Benthic Macroinvertebrates; and Terrestrial Resources. Are you interested in joining any of these? I'm asking because I need to update my distribution lists. Thanks and look forward to seeing you at future meetings.

Shane

C. Shane Boring  
Environmental Scientist  
Kleinschmidt Associates  
101 Trade Zone Dr., Suite-21A  
West Columbia, SC 29170  
Phone: (803)822-3177  
Fax: (803)822-3183

**Kacie Jensen**

---

**From:** Buddy Baker [BakerB@dnr.sc.gov]  
**Sent:** Friday, May 12, 2006 2:59 PM  
**To:** Shane Boring  
**Cc:** Bob Perry; Ron Ahle; Dick Christie; Tim Ivey; Bob Harkins  
**Subject:** RE: Lake Murray Waterfowl Survey-FERC

Shane, We recommend 6 annual surveys initially. If our observations reveal very few waterfowl we may be able to reduce the number to 4. They should be spaced out such that there is 1 in late November, 2 in December, 2 in January, and 1 in early February. We suggest that the surveys be repeated for 5 years. If there is little variability to the data we could reduce the survey period to 3 years. We recommend an aerial survey of the entire lake pool. There are few enough waterfowl on the lake that these flights can be conducted at a relatively high altitude and rate of speed. I estimate that the entire lake can be surveyed in 2 - 2.5 hours. It takes about 3 hours for us to survey Lakes Marion and Moultrie together. From a contractual standpoint it may be most fair to reevaluate after the first survey.

-----Original Message-----

**From:** Shane Boring [mailto:Shane.Boring@KleinschmidtUSA.com]  
**Sent:** Friday, May 12, 2006 8:25 AM  
**To:** Buddy Baker  
**Subject:** Lake Murray Waterfowl Survey

Buddy:

I spoke with Bobby Kennamer at SREL this morning and he indicated that they are interested in doing the surveys. At this point, what he needs from us is some additional information regarding the scope so that they can give us a price. I'm thinking 5 surveys equally spaced during the period from late-October through January. Would this be satisfactory?

Also, Bobby wanted a little better idea of what sort of coverage you are looking for on the lake. He noted that PAR Pond can take 1.5-2 hrs to fly, so undoubtedly Murray will take considerably longer. That said, are we looking for whole lake coverage or are there specific areas where you would like to see effort focused?

Finally, what objectives would you like to see the study address and over what time period?

In closing, Bobby made one interesting observation --- he noted that scaup and other divers often depend heavily on Corbicula in southeastern reservoir. He mentioned that the reduced number of waterfowl may be influenced, at least in part, by the loss of corbicula and other invertebrate species during the long drawdown associated with the dam remediation. Just a factor that we may want to consider in looking at longer-term trends.

Thanks for your input,  
Shane

C. Shane Boring  
Environmental Scientist  
Kleinschmidt Associates  
101 Trade Zone Dr., Suite-21A  
West Columbia, SC 29170  
Phone: (803)822-3177  
Fax: (803)822-3183

## Kacie Jensen

---

**From:** Shane Boring  
**Sent:** Tuesday, May 09, 2006 11:51 AM  
**To:** Wade Bales (balesw@dnr.sc.gov); Alan Stuart; Alison Guth; Amanda Hill; BARGENTIERI@scana.com; Bill East; Bill Hulslander; Bill Marshall; Bob Perry ; Bob Seibels; Charlene Coleman; Daniel Tufford; Dick Christie; Ed Diebold; George Duke; Gerrit Jobsis (American Rivers); Gina Kirkland; Hal Beard; Jeff Duncan; Jennifer O'Rourke; Jim Glover; Jim Goller; Joe Logan; Joy Downs; Larry Turner (turnerle@dhec.sc.gov); Malcolm Leaphart; Mark Leao; Mike Sloan; Norman Ferris; Patrick Moore; Prescott Brownell; Ralph Crafton; RMAHAN@scana.com; Reed Bull (rbull@davisfloyd.com); Robert Lavisky; Ron Ahle; Sam Drake; Shane Boring; Steve Bell; Steve Leach; Steve Summer; Suzanne Rhodes; Tom Bowles (tbowles@scana.com)  
**Cc:** 'Tom Bowles (tbowles@scana.com)'; 'Ed Eudaly (Business Fax)'

Hello folks:

The April 2006 Lake Murray wood stork survey was conducted on April 28th by Tom Murphy of SCDNR in coordination with his bald eagle work. Tom noted that the aerial survey included the Middle Saluda River, from Lake Greenwood to the headwaters of Lake Murray, as well as the reservoir itself. Although there was significant suitable habitat for storks available in the Middle Saluda (i.e., falling river levels with many drying pools), no wood storks were observed. Approximately 40 great blue heron nests were observed at the Tossity Creek and Silverstreet colony sites. A memo summarizing the survey observations will also be posted to the Saluda relicensing website. Thank you for your continued interest in the Lake Murray Wood Stork Study, and as always, please feel free to contact me should you have any questions.

C. Shane Boring  
Environmental Scientist  
Kleinschmidt Associates  
101 Trade Zone Dr., Suite-21A  
West Columbia, SC 29170  
Phone: (803)822-3177  
Fax: (803)822-3183



## Kacie Jensen

---

**From:** Shane Boring  
**Sent:** Tuesday, May 09, 2006 11:54 AM  
**To:** Shane Boring; 'Wade Bales (balesw@dnr.sc.gov)'; Alan Stuart; Alison Guth; 'Amanda Hill'; BARGENTIERI@scana.com; 'Bill East'; 'Bill Hulslander'; 'Bill Marshall'; 'Bob Perry'; 'Bob Seibels'; 'Charlene Coleman'; 'Daniel Tufford'; 'Dick Christie'; 'Ed Diebold'; 'George Duke'; 'Gerrit Jobsis (American Rivers)'; 'Gina Kirkland'; 'Hal Beard'; 'Jeff Duncan'; 'Jennifer O'Rourke'; 'Jim Glover'; 'Jim Goller'; 'Joe Logan'; 'Joy Downs'; 'Larry Turner (turnerle@dhec.sc.gov)'; 'Malcolm Leaphart'; 'Mark Leao'; 'Mike Sloan'; 'Norman Ferris'; 'Patrick Moore'; 'Prescott Brownell'; 'Ralph Crafton'; RMAHAN@scana.com; 'Reed Bull (rbull@davisfloyd.com)'; 'Robert Lavisky'; 'Ron Ahle'; 'Sam Drake'; Shane Boring; 'Steve Bell'; 'Steve Leach'; 'Steve Summer'; 'Suzanne Rhodes'; 'Tom Bowles (tbowles@scana.com)'  
**Cc:** 'Tom Bowles (tbowles@scana.com)'; 'Ed\_Eudaly@fws.gov'  
**Subject:** Saluda Hydro Relicense: April 2006 Wood Stork Survey Observations

-----Original Message-----

**From:** Shane Boring  
**Sent:** Tuesday, May 09, 2006 11:51 AM  
**To:** Wade Bales (balesw@dnr.sc.gov); Alan Stuart; Alison Guth; Amanda Hill; Bill Argentieri; Bill East; Bill Hulslander; Bill Marshall; Bob Perry ; Bob Seibels; Charlene Coleman; Daniel Tufford; Dick Christie; Ed Diebold; George Duke; Gerrit Jobsis (American Rivers); Gina Kirkland; Hal Beard; Jeff Duncan; Jennifer O'Rourke; Jim Glover; Jim Goller; Joe Logan; Joy Downs; Larry Turner (turnerle@dhec.sc.gov); Malcolm Leaphart; Mark Leao; Mike Sloan; Norman Ferris; Patrick Moore; Prescott Brownell; Ralph Crafton; Randy Mahan; Reed Bull (rbull@davisfloyd.com); Robert Lavisky; Ron Ahle; Sam Drake; Shane Boring; Steve Bell; Steve Leach; Steve Summer; Suzanne Rhodes; Tom Bowles (tbowles@scana.com)  
**Cc:** Tom Bowles (tbowles@scana.com); Ed Eudaly (Business Fax)  
**Subject:**

Hello folks:

The April 2006 Lake Murray wood stork survey was conducted on April 28th by Tom Murphy of SCDNR in coordination with his bald eagle work. Tom noted that the aerial survey included the Middle Saluda River, from Lake Greenwood to the headwaters of Lake Murray, as well as the reservoir itself. Although there was significant suitable habitat for storks available in the Middle Saluda (i.e., falling river levels with many drying pools), no wood storks were observed. Approximately 40 great blue heron nests were observed at the Tossity Creek and Silverstreet colony sites. A memo summarizing the survey observations will also be posted to the Saluda relicensing website. Thank you for your continued interest in the Lake Murray Wood Stork Study, and as always, please feel free to contact me should you have any questions.

C. Shane Boring  
Environmental Scientist  
Kleinschmidt Associates  
101 Trade Zone Dr., Suite-21A  
West Columbia, SC 29170  
Phone: (803)822-3177  
Fax: (803)822-3183

**Kacie Jensen**

---

**From:** Shane Boring  
**Sent:** Tuesday, May 09, 2006 11:07 AM  
**To:** 'Amanda\_Hill@fws.gov'; 'Gerrit Jobsis'  
**Subject:** FW: FW: (Saluda Hydro) Mussel Recon Survey Study Plan (draft;04192006 ) alderman comments.doc

Amanda/Gerrit:

See John Alderman's clarifications regarding the mussel study plan below. If these are acceptable, we would like to finalize the study plan as soon as possible so that we can get into the field. As I have indicated in recent e-mails, John is concerned that, if Savannah lilliput is present, rising reservoir levels may cause the species to be missed as it may take several weeks to months to relocate to the shoreline.

I hope this info helps,  
Shane

C. Shane Boring  
Environmental Scientist  
Kleinschmidt Associates  
101 Trade Zone Dr., Suite-21A  
West Columbia, SC 29170  
Phone: (803)822-3177  
Fax: (803)822-3183

-----Original Message-----

**From:** John Alderman [mailto:aldermjm@mindspring.com]  
**Sent:** Tuesday, May 09, 2006 10:50 AM  
**To:** Shane Boring  
**Cc:** John Alderman  
**Subject:** Re: FW: (Saluda Hydro) Mussel Recon Survey Study Plan (draft;04192006 ) alderman comments.doc

Good morning, Shane. I'll gladly provide additional clarifications:

The Savannah lilliput (*Toxolasma pullus*), once named the Savannah shore mussel, is a very high priority federal species of concern with very few remaining extant populations in GA, SC, and NC. This should be the primary target species within the reservoir. Within North Carolina and South Carolina reservoirs, this species is most closely associated with shoreline habitats of the coves adjacent to tributary streams. This has been consistently observed within Lake Greenwood, Lake Marion, and Tuckertown Reservoir. Therefore, such cove habitats will be the primary focus during the Survey of Lake Murray. However, we will also survey other habitats as we move from cove to cove. Where good habitats with significant faunas exist along shore and into deeper waters, we will survey these areas using various techniques, including snorkeling and SCUBA, where necessary.

We do plan to survey lotic habitats within tributaries. We already know that tributaries of Lake Murray, such as Clouds Creek and Bear Creek, provide significant mussel habitat. Hopefully, other tributaries will provide significant habitats.

My comments to Gerrit's questions are seen in **CAPS** within his message below.

Good luck.

John

Shane Boring wrote:

John:

See Gerrit's comments below. Also, Amanda Hill from USFWS has asked for the following clarifications as well:

- 1) What criteria will determine which sites in the reservoir will be surveyed? (i.e. what types of habitat and how many representative sites?)
- 2) How are deeper areas of the reservoir going to be surveyed?

I have also attached the study plan as it was submitted to the agencies. Clarification you might be able to offer regarding any of these items is greatly appreciated. Thanks again.

Shane

C. Shane Boring  
Environmental Scientist  
Kleinschmidt Associates  
101 Trade Zone Dr., Suite-21A  
West Columbia, SC 29170  
Phone: (803)822-3177  
Fax: (803)822-3183

-----Original Message-----

From: Gerrit Jobsis [<mailto:gjobsis@americanrivers.org>]  
Sent: Wednesday, April 26, 2006 1:13 PM  
To: Shane Boring; Steve Summer; Amanda Hill; Bill Argentieri; Jennifer Price; Jim Glover; Randy Mahan; Ron Ahle  
Cc: Jennifer Summerlin  
Subject: RE: (Saluda Hydro) Mussel Recon Survey Study Plan (draft;04192006) alderman comments.doc

Shane,

This is a very general study plan without much detail.

I agree with the geographic area. I count 13 Lake Murray tributaries plus the lower Saluda and the Congaree rivers.

I agree with the temporal scope (late May - early June) for an initial effort. Based on the results, additional survey work may be needed in fall 2005 or perhaps a repeat of the survey in 2007.

I am concerned there may be future disagreement as to the adequacy of effort if more detail is not provided. How much time will be expended at each site? **10 MINUTES TO 2 HOURS** How far upstream will the surveys extend at the h include unimpounded reaches? **DEFINITELY.** How will the Lake Murray shoreline b with the current 6 to 7 foot drawdown? **BY BOAT TRANSPORT AS WE MOVE FROM STATI**

Also we have about 10 miles of the lower Saluda and 10 miles of the Congaree below the dam. How much effort will be expended at each of these rivers? **SEVE** What habitats will be surveyed? **AS MANY AS POSSIBLE.** These things need detail begins. A map of proposed study sites is also needed. **WE WILL TRAVEL THE ENTI** You asked for a quick turnaround, so I have provided one. Due to our move and other workload I have not been able to discuss this with other stakeholder and agencies. I am especially interested in the opinion of the DNR and USFWS re the plan.

Gerrit

We have moved! Please see our new address below.

<:;>><

Gerrit Jöbsis

American Rivers \* Southeast Office

2231 Devine Street, Suite 100 \* Columbia, S.C. 29205

Telephone (803) 771-7114 \* Fax (803) 771-7580

[gjobsis@americanrivers.org](mailto:gjobsis@americanrivers.org)

-----Original Message-----

From: Shane Boring [<mailto:Shane.Boring@KleinschmidtUSA.com>]  
Sent: Monday, April 24, 2006 9:49 AM  
To: Steve Summer; Amanda Hill; Bill Argentieri; Gerrit Jobsis; Jennifer Price; Jim Glover; Randy Mahan; Ron Ahle; Shane Boring  
Cc: Jennifer Summerlin  
Subject: (Saluda Hydro) Mussel Recon Survey Study Plan (draft;04192006) alderman comments.doc

Dear Freshwater Mussels/Benthic Macroinvertebrate TWC Member:

Attached for your review is the draft study plan for the freshwater mussel reconnaissance survey on Lake Murray and the Lower Saluda and Congaree Rivers. The draft has been reviewed by John Alderman, and his comments have been incorporated. We have tried to keep the study plan as brief as possible to facilitate a quick review, as John would like to get this study started ASAP while the rivers and Lake are still low and clear. We will discuss the study plan and hopefully get final approval from the TWC at next week's meeting (May 3 at Research Park). Thanks in advance for your input.

C. Shane Boring  
Environmental Scientist  
Kleinschmidt Associates  
101 Trade Zone Dr., Suite-21A

West Columbia, SC 29170  
Phone: (803)822-3177  
Fax: (803)822-3183

Mussel Recon Survey Study Plan (draft;04192006) alderman comments.doc  
<<Mussel Recon Survey Study Plan (draft;04192006) alderman comments.doc>>

## Kacie Jensen

---

**From:** Shane Boring  
**Sent:** Tuesday, May 09, 2006 10:38 AM  
**To:** 'Gerrit Jobsis'  
**Subject:** RE: (Saluda Hydro) Mussel Recon Survey Study Plan (draft;04192006) alderman comments.doc

Gerrit:

I spoke with John Alderman regarding the mussel survey this morning. He is preparing a couple of paragraphs to hopefully clear up some of your concerns regarding the study plan. He indicated to me that it will be very difficult to say how much time will be spent at each sampling location. For example, if he pulls up to a site and there is very little habitat, he may only take 5 minutes. In contrast, if he finds mussels, he could spend 4-5 hours at a site.

Similar to other Santee Basin project (Santee-Cooper, Catawba-Wateree), John indicated that the keystone species we'll likely be looking for at Saluda is the Savannah lilliput. John is concerned that if the lake starts to rise due to significant rainfall events, this species may not be detected as it may take weeks to months to relocate to more shallow areas of the reservoir. As such, he is very anxious to get the study plan finalized and the work started.

Thanks for your input,  
Shane

C. Shane Boring  
Environmental Scientist  
Kleinschmidt Associates  
101 Trade Zone Dr., Suite-21A  
West Columbia, SC 29170  
Phone: (803)822-3177  
Fax: (803)822-3183

-----Original Message-----

From: Gerrit Jobsis [mailto:gjobsis@americanrivers.org]  
Sent: Wednesday, April 26, 2006 1:13 PM  
To: Shane Boring; Steve Summer; Amanda Hill; Bill Argentieri; Jennifer Price; Jim Glover; Randy Mahan; Ron Ahle  
Cc: Jennifer Summerlin  
Subject: RE: (Saluda Hydro) Mussel Recon Survey Study Plan (draft;04192006) alderman comments.doc

Shane,

This is a very general study plan without much detail.

I agree with the geographic area. I count 13 Lake Murray tributaries plus the lower Saluda and the Congaree rivers.

I agree with the temporal scope (late May - early June) for an initial effort. Based on the results, additional survey work may be needed in fall 2005 or perhaps a repeat of the survey in 2007.

I am concerned there may be future disagreement as to the adequacy of effort if more detail is not provided. How much time will be expended at each site? How far upstream will the surveys extend at the headwater tribs? To include unimpounded reaches? How will the Lake Murray shoreline be surveyed with the current 6 to 7 foot drawdown?

Also we have about 10 miles of the lower Saluda and 10 miles of the Congaree below the dam. How much effort will be expended at each of these rivers? What habitats will be surveyed? These things need detail before the study begins. A map of proposed study sites is also needed.

You asked for a quick turnaround, so I have provided one. Due to our move and other workload I have not been able to discuss this with other stakeholder and agencies. I am especially interested in the opinion of the DNR and USFWS re the plan.

Gerrit

We have moved! Please see our new address below.

<:;>>><

Gerrit Jöbsis

American Rivers \* Southeast Office

2231 Devine Street, Suite 100 \* Columbia, S.C. 29205

Telephone (803) 771-7114 \* Fax (803) 771-7580

gjobsis@americanrivers.org

-----Original Message-----

From: Shane Boring [mailto:Shane.Boring@KleinschmidtUSA.com]  
Sent: Monday, April 24, 2006 9:49 AM  
To: Steve Summer; Amanda Hill; Bill Argentieri; Gerrit Jobsis; Jennifer Price; Jim Glover; Randy Mahan; Ron Ahle; Shane Boring  
Cc: Jennifer Summerlin  
Subject: (Saluda Hydro) Mussel Recon Survey Study Plan (draft;04192006) alderman comments.doc

Dear Freshwater Mussels/Benthic Macroinvertebrate TWC Member:

Attached for your review is the draft study plan for the freshwater mussel reconnaissance survey on Lake Murray and the Lower Saluda and Congaree Rivers. The draft has been reviewed by John Alderman, and his comments have been incorporated. We have tried to keep the study plan as brief as possible to facilitate a quick review, as John would like to get this study started ASAP while the rivers and Lake are still low and clear. We will discuss the study plan and hopefully get final approval from the TWC at next week's meeting (May 3 at Research Park). Thanks in advance for your input.

C. Shane Boring  
Environmental Scientist  
Kleinschmidt Associates  
101 Trade Zone Dr., Suite-21A  
West Columbia, SC 29170  
Phone: (803)822-3177  
Fax: (803)822-3183

Mussel Recon Survey Study Plan (draft;04192006) alderman comments.doc <<Mussel Recon Survey Study Plan (draft;04192006) alderman comments.doc>>

## Kacie Jensen

---

**From:** Jennifer Summerlin  
**Sent:** Tuesday, May 09, 2006 10:23 AM  
**To:** Jennifer Summerlin; 'Wade Bales (balesw@dnr.sc.gov)'; 'Amanda Hill'; BARGENTIERI@scana.com; 'Hal Beard'; 'Jim Glover'; RMAHAN@scana.com; Shane Boring; 'Tom Bowles (tbowles@scana.com)'; Alan Stuart  
**Subject:** RE: Saluda Relicensing: Fish Entrainment Desktop Study Plan

Hello Folks:

Just a reminder that comments on the fish entrainment desktop study plan draft are due by today. If anyone needs a few extra days, please let me know.

Thanks, Jennifer Summerlin

-----Original Message-----

**From:** Jennifer Summerlin  
**Sent:** Monday, April 17, 2006 5:06 PM  
**To:** Wade Bales (balesw@dnr.sc.gov); Amanda Hill; Bill Argentieri; Hal Beard; Jim Glover; Randy Mahan; Shane Boring; Tom Bowles (tbowles@scana.com); Alan Stuart  
**Subject:** Saluda Relicensing: Fish Entrainment Desktop Study Plan

All:

Please disregard the previous fish entrainment desktop study plan email. Attached for your review is the draft study plan for the fish entrainment desktop study. Please provide comments (preferably in track changes) by Tuesday, May 16th or earlier. Thanks your for your continued participation and dedication to the Saluda relicensing process.

<< File: Saluda Entrainment Study Plan (Draft 04-14-06hgm).doc >>

Jennifer Summerlin  
Scientist Technician  
Kleinschmidt Associates  
101 Trade Zone Dr., Suite-21A  
West Columbia, SC 29170  
Phone: (803)822-3177  
Fax: (803)822-3183



## Kacie Jensen

---

**From:** ARGENTIERI, WILLIAM R [BARGENTIERI@scana.com]  
**Sent:** Tuesday, May 09, 2006 9:47 AM  
**To:** Jeff\_Duncan@nps.gov  
**Cc:** Bill\_Hulslander@nps.gov; MAHAN, RANDOLPH R; Alan Stuart; Shane Boring  
**Subject:** RE: ESWM

Jeff,

It's good that you are back at work. I hope your wife and child are doing fine.

We discussed the ESWM Model program at our last Fish & Wildlife Instream Flow/ Aquatic Habitat TWC and decided to wait until we finished the Instream Flow Incremental Model (IFIM) studies and Floodplain Flow Evaluations study before determining the need for the ESWM model as part of our relicensing process. During the TWC meeting, it was suggested by DNR that even if we don't use the ESWM Model as part of the relicensing process, there might be an opportunity to have a two or three day conference with SCE&G, Duke, and the "experts" that are needed to provide the input to the model in order to help with its development. We still need to explore that possibility more. I believe we can set up a conference call to discuss the issues you raised prior to your absence from work and try to answer our questions, determine where to go from here, and if there is a need for you to make a presentation to our Instream Flow/AH TWC about the ESWM model. Our next IF/AH TWC meeting is scheduled for June 14. The earliest Randy, Alan, and I are available for a conference call is on Thursday, May 18 from 1:00 pm to 3:00 pm or any time on Friday, May 19. Let me know which of those times will work for you. Otherwise, we will have to look at an opening during the week of May 22 or 29.

Bill

-----Original Message-----

**From:** Jeff\_Duncan@nps.gov [mailto:Jeff\_Duncan@nps.gov]  
**Sent:** Monday, May 08, 2006 1:59 PM  
**To:** ARGENTIERI, WILLIAM R; MAHAN, RANDOLPH R  
**Cc:** Bill\_Hulslander@nps.gov  
**Subject:** ESWM

Gentlemen--

I'm back on the job full time after a longer than planned absence. We remain very interested about exploring the possible use of TNC's ESWM process. Quite honestly, I've heard that there is growing frustration among some of the stakeholder groups regarding the current relicensing process. I believe the ESWM process has the potential to make the relicensing of Saluda Dam a win-win for SCE&G and the other stakeholders. Please let me know if you remain interested in exploring the opportunity.

Thanks, Jeff

Jeffrey R. Duncan, Ph.D.  
National Park Service--RTCA  
175 Hamm Rd. Suite C, Chattanooga, TN 37405  
Ph. (423) 266-1150 Fax. (423) 266-2558

## Kacie Jensen

---

**From:** Shane Boring  
**Sent:** Tuesday, May 09, 2006 4:30 PM  
**To:** Steve Summer; Amanda Hill; Bill Argentieri; Gerrit Jobsis (American Rivers); Jennifer Price ; Jim Glover; Randy Mahan; Ron Ahle; Shane Boring  
**Subject:** Saluda Hydro: 1987 Lower Saluda Macroinvert Study

All:

Jim Glover has provided a copy of the 1987 SCDHEC Lower Saluda River macroinvertebrate study that was discussed recently in our Freshwater Mussels/Benthic Macroinvertebrate TWC meetings (See March 8 meeting notes action items). In addition, Jim also provided a 1987 SCDNR fisheries report for the LSR that provides some additional information. Due to file size, PDF's of both reports have been uploaded to the Kleinschmidt ftp site under the folder entitled "1987 SCDHEC LSR Invert Study" - <ftp://ftp.kleinschmidtusa.com/>.

Thanks for your participation in the Freshwater Mussels/Benthic Macroinverts TWC.

Shane

C. Shane Boring  
Environmental Scientist  
Kleinschmidt Associates  
101 Trade Zone Dr., Suite-21A  
West Columbia, SC 29170  
Phone: (803)822-3177  
Fax: (803)822-3183

## Kacie Jensen

---

**From:** Shane Boring  
**Sent:** Thursday, May 04, 2006 7:40 AM  
**To:** 'Dick Christie'  
**Subject:** RE: Meeting notification

Dick:

My apologies regarding Bob Perry. Prior to the last meeting, Buddy Baker called and asked if it was ok for Bob to come along with him to the meeting. He didn't indicate that he would like to join the TWC or that he would attend future meetings. Thus I mistakenly assumed that he would work on his one action item (a waterfowl study request) through Buddy. Sorry for the long explanation, but I want you to know it was not intentional. I spoke with Buddy yesterday and Bob has been added to the TWC.

I met Scott yesterday and made a note to add him to the Instream Flow group.

Thanks for the heads up,  
Shane

-----Original Message-----

**From:** Dick Christie [mailto:dchristie@InfoAve.Net]  
**Sent:** Wednesday, May 03, 2006 3:13 PM  
**To:** Alan Stuart; Shane Boring; Alison Guth  
**Cc:** Buddy Baker; Bob Perry; Breck Carmichael  
**Subject:** Meeting notification

Hi Alan, Shane and Alison - please be advised that we are still having mix ups regarding meeting notifications and Technical Working Committee membership. Please include Scott Harder on the instream flow technical working committee and in all correspondence related to that committee, and Bob Perry needs to be included on the terrestrial working committee. Although Bob had an action item assigned to him at the last terrestrial TWC, he was left out of the correspondence for today's (May 3) meeting.

If you have any questions, please let me know. Thanks.

**Kacie Jensen**

---

**From:** Shane Boring  
**Sent:** Tuesday, May 02, 2006 4:42 PM  
**To:** 'Gerrit Jobsis'  
**Subject:** RE: (Saluda Hydro) Mussel Recon Survey Study Plan (draft;04192006) alderman comments.doc

No problem. The ability to have folks join by phone is something that I just found out about, so I wanted to present it as an option. Thanks again and have a good trip. The workshop sounds interesting.

Shane

-----Original Message-----  
**From:** Gerrit Jobsis [mailto:gjobsis@americanrivers.org]  
**Sent:** Tuesday, May 02, 2006 4:35 PM  
**To:** Shane Boring  
**Subject:** RE: (Saluda Hydro) Mussel Recon Survey Study Plan (draft;04192006) alderman comments.doc

Thanks Shane, but it won't work for me. I can discuss the results of the meeting w you next week.

Gerrit

We have moved! Please see our new address below.

<:;>>><

Gerrit Jöbsis  
American Rivers \* Southeast Office  
2231 Devine Street, Suite 100 \* Columbia, S.C. 29205  
Telephone (803) 771-7114 \* Fax (803) 771-7580  
gjobsis@americanrivers.org

-----Original Message-----  
**From:** Shane Boring [mailto:Shane.Boring@KleinschmidtUSA.com]  
**Sent:** Tuesday, May 02, 2006 4:29 PM  
**To:** Gerrit Jobsis  
**Subject:** RE: (Saluda Hydro) Mussel Recon Survey Study Plan (draft;04192006) alderman comments.doc

Gerrit:

I know that you will be in NH for the hydropower reform workshop and will not be able to make it to the TWC meetings tomorrow; However, we would like to address your concerns regarding the mussel study plan as soon as possible. One option is to have you and John Alderman join us via phone for a few minutes at our meeting tomorrow. Is this a possibility for you? Also, if there is another time during the day that would be better for you, we certainly will try to accommodate that.

Thanks for your input,

Shane

-----Original Message-----

From: Gerrit Jobsis [mailto:gjobsis@americanrivers.org]  
Sent: Wednesday, April 26, 2006 1:13 PM  
To: Shane Boring; Steve Summer; Amanda Hill; Bill Argentieri; Jennifer Price; Jim Glover;  
Randy Mahan; Ron Ahle  
Cc: Jennifer Summerlin  
Subject: RE: (Saluda Hydro) Mussel Recon Survey Study Plan (draft;04192006) alderman  
comments.doc

Shane,

This is a very general study plan without much detail.

I agree with the geographic area. I count 13 Lake Murray tributaries plus the lower Saluda and the Congaree rivers.

I agree with the temporal scope (late May - early June) for an initial effort. Based on the results, additional survey work may be needed in fall 2005 or perhaps a repeat of the survey in 2007.

I am concerned there may be future disagreement as to the adequacy of effort if more detail is not provided. How much time will be expended at each site? How far upstream will the surveys extend at the headwater tribs? To include unimpounded reaches? How will the Lake Murray shoreline be surveyed with the current 6 to 7 foot drawdown?

Also we have about 10 miles of the lower Saluda and 10 miles of the Congaree below the dam. How much effort will be expended at each of these rivers? What habitats will be surveyed? These things need detail before the study begins. A map of proposed study sites is also needed.

You asked for a quick turnaround, so I have provided one. Due to our move and other workload I have not been able to discuss this with other stakeholder and agencies. I am especially interested in the opinion of the DNR and USFWS re the plan.

Gerrit

We have moved! Please see our new address below.

<:~>>><

Gerrit Jöbsis

American Rivers \* Southeast Office  
2231 Devine Street, Suite 100 \* Columbia, S.C. 29205  
Telephone (803) 771-7114 \* Fax (803) 771-7580  
gjobsis@americanrivers.org

-----Original Message-----

From: Shane Boring [mailto:Shane.Boring@KleinschmidtUSA.com]  
Sent: Monday, April 24, 2006 9:49 AM  
To: Steve Summer; Amanda Hill; Bill Argentieri; Gerrit Jobsis; Jennifer Price; Jim Glover;  
Randy Mahan; Ron Ahle; Shane Boring  
Cc: Jennifer Summerlin  
Subject: (Saluda Hydro) Mussel Recon Survey Study Plan (draft;04192006) alderman  
comments.doc

Dear Freshwater Mussels/Benthic Macroinvertebrate TWC Member:

Attached for your review is the draft study plan for the freshwater mussel reconnaissance survey on Lake Murray and the Lower Saluda and Congaree Rivers. The draft has been reviewed by John Alderman, and his comments have been incorporated. We have tried to keep the study plan as brief as possible to facilitate a quick review, as John would like to get this study started ASAP while the rivers and Lake are still low and clear. We will discuss the study plan and hopefully get final approval from the TWC at next week's meeting (May 3 at Research Park). Thanks in advance for your input.

C. Shane Boring  
Environmental Scientist  
Kleinschmidt Associates  
101 Trade Zone Dr., Suite-21A  
West Columbia, SC 29170  
Phone: (803)822-3177  
Fax: (803)822-3183

Mussel Recon Survey Study Plan (draft;04192006) alderman comments.doc <<Mussel Recon Survey Study Plan (draft;04192006) alderman comments.doc>>

# Kacie Jensen

---

**From:** Shane Boring  
**Sent:** Tuesday, May 02, 2006 4:29 PM  
**To:** 'Gerrit Jobsis'  
**Subject:** RE: (Saluda Hydro) Mussel Recon Survey Study Plan (draft;04192006) alderman comments.doc

Gerrit:

I know that you will be in NH for the hydropower reform workshop and will not be able to make it to the TWC meetings tomorrow; However, we would like to address your concerns regarding the mussel study plan as soon as possible. One option is to have you and John Alderman join us via phone for a few minutes at our meeting tomorrow. Is this a possibility for you? Also, if there is another time during the day that would be better for you, we certainly will try to accommodate that.

Thanks for your input,  
 Shane

-----Original Message-----

From: Gerrit Jobsis [mailto:gjobsis@americanrivers.org]  
 Sent: Wednesday, April 26, 2006 1:13 PM  
 To: Shane Boring; Steve Summer; Amanda Hill; Bill Argentieri; Jennifer Price; Jim Glover; Randy Mahan; Ron Ahle  
 Cc: Jennifer Summerlin  
 Subject: RE: (Saluda Hydro) Mussel Recon Survey Study Plan (draft;04192006) alderman comments.doc

Shane,

This is a very general study plan without much detail.

I agree with the geographic area. I count 13 Lake Murray tributaries plus the lower Saluda and the Congaree rivers.

I agree with the temporal scope (late May - early June) for an initial effort. Based on the results, additional survey work may be needed in fall 2005 or perhaps a repeat of the survey in 2007.

I am concerned there may be future disagreement as to the adequacy of effort if more detail is not provided. How much time will be expended at each site? How far upstream will the surveys extend at the headwater tribs? To include unimpounded reaches? How will the Lake Murray shoreline be surveyed with the current 6 to 7 foot drawdown?

Also we have about 10 miles of the lower Saluda and 10 miles of the Congaree below the dam. How much effort will be expended at each of these rivers? What habitats will be surveyed? These things need detail before the study begins. A map of proposed study sites is also needed.

You asked for a quick turnaround, so I have provided one. Due to our move and other workload I have not been able to discuss this with other stakeholder and agencies. I am especially interested in the opinion of the DNR and USFWS re the plan.

Gerrit

We have moved! Please see our new address below.

<:;>><

Gerrit Jöbsis

American Rivers \* Southeast Office

2231 Devine Street, Suite 100 \* Columbia, S.C. 29205

Telephone (803) 771-7114 \* Fax (803) 771-7580

gjobsis@americanrivers.org

-----Original Message-----

From: Shane Boring [mailto:Shane.Boring@KleinschmidtUSA.com]

Sent: Monday, April 24, 2006 9:49 AM

To: Steve Summer; Amanda Hill; Bill Argentieri; Gerrit Jobsis; Jennifer Price; Jim Glover; Randy Mahan; Ron Ahle; Shane Boring

Cc: Jennifer Summerlin

Subject: (Saluda Hydro) Mussel Recon Survey Study Plan (draft;04192006) alderman comments.doc

Dear Freshwater Mussels/Benthic Macroinvertebrate TWC Member:

Attached for your review is the draft study plan for the freshwater mussel reconnaissance survey on Lake Murray and the Lower Saluda and Congaree Rivers. The draft has been reviewed by John Alderman, and his comments have been incorporated. We have tried to keep the study plan as brief as possible to facilitate a quick review, as John would like to get this study started ASAP while the rivers and Lake are still low and clear. We will discuss the study plan and hopefully get final approval from the TWC at next week's meeting (May 3 at Research Park). Thanks in advance for your input.

C. Shane Boring

Environmental Scientist

Kleinschmidt Associates

101 Trade Zone Dr., Suite-21A

West Columbia, SC 29170

Phone: (803)822-3177

Fax: (803)822-3183

Mussel Recon Survey Study Plan (draft;04192006) alderman comments.doc <<Mussel Recon Survey Study Plan (draft;04192006) alderman comments.doc>>



Kacie Jensen

From: Gerrit Jobsis [gjobsis@americanrivers.org]
Sent: Thursday, April 27, 2006 1:47 PM
To: Jennifer Summerlin; Steve Summer; Amanda Hill; BARGENTIERI@scana.com; Jennifer Price ; Jim Glover; RMAHAN@scana.com; Ron Ahle; Shane Boring
Cc: Shane Boring
Subject: RE: Saluda Relicensing: SCDHEC Macroinvert. Data

Jim,

DO you have a map of where the sampling sites are located that you can send us?

Gerrit

We have moved! Please see our new address below.

<.:>>><

Gerrit Jobsis
American Rivers • Southeast Office
2231 Devine Street, Suite 100 • Columbia, S.C. 29205
Telephone (803) 771-7114 • Fax (803) 771-7580
gjobsis@americanrivers.org

From: Jennifer Summerlin [mailto:Jennifer.Summerlin@KleinschmidtUSA.com]
Sent: Thursday, April 27, 2006 11:19 AM
To: Jennifer Summerlin; 'Steve Summer'; 'Amanda Hill'; 'Bill Argentieri'; Gerrit Jobsis; 'Jennifer Price '; 'Jim Glover'; 'Randy Mahan'; 'Ron Ahle'; Shane Boring
Cc: Shane Boring
Subject: RE: Saluda Relicensing: SCDHEC Macroinvert. Data

Sorry, forgot to attach!
<<Lower Saluda Tributaries.xls>>

-----Original Message-----

From: Jennifer Summerlin
Sent: Thursday, April 27, 2006 11:00 AM
To: Steve Summer; Amanda Hill; Bill Argentieri; Gerrit Jobsis (American Rivers); Jennifer Price ; Jim Glover; Randy Mahan; Ron Ahle; Shane Boring
Cc: Shane Boring
Subject: Saluda Relicensing: SCDHEC Macroinvert. Data

Hello Everyone:

As promised in our March 8 Freshwater Mussel/Macroinvertebrates Technical Working Committee meeting, here is the data from Jim Glover (SCDHEC) regarding macroinvertebrate sampling from Tributaries of the Lower Saluda River collected by the SCDHEC. The data is attached for your review and reference.

Jennifer Summerlin
Scientist Technician

Kleinschmidt Associates  
101 Trade Zone Dr., Suite-21A  
West Columbia, SC 29170  
Phone: (803)822-3177  
Fax: (803)822-3183

## Kacie Jensen

---

**From:** Jennifer Price [PriceJ@dnr.sc.gov]  
**Sent:** Thursday, April 27, 2006 5:01 PM  
**To:** Shane Boring  
**Subject:** RE: (Saluda Hydro) Mussel Recon Survey Study Plan (draft;04192006) alderman comments.doc

Shane,

I am fine with the study as written. It isn't too detailed, but I trust that if John is doing the work, he'll do a good and thorough job. It incorporates the major areas affected by the dam including the lake and the area below the dam- and goes far enough downstream that you can get an idea of the species composition in areas less affected by the dam. This is important to determine if there are mussels that may recolonize if there are any problems that need to be corrected.

There is one potential problem though. I heard that John was in the hospital. I don't know the extent of his condition and when he'll be back to work. I certainly hope it isn't serious but this could hold things up. If John can't do it, and alternative could be to consult either Tim Savidge at the Catena Group or Jim Williams who just retired from USGS, and is interested in doing some consulting work-he doesn't SCUBA dive though. However, I'd wait a few weeks and see what is up with John first. He's certainly a good person to work with.

Thanks.

Jennifer

-----Original Message-----

**From:** Shane Boring [mailto:Shane.Boring@KleinschmidtUSA.com]  
**Sent:** Monday, April 24, 2006 9:49 AM  
**To:** Steve Summer; Amanda Hill; Bill Argentieri; Gerrit Jobsis (American Rivers); Jennifer Price; Jim Glover; Randy Mahan; Ron Ahle; Shane Boring  
**Cc:** Jennifer Summerlin  
**Subject:** (Saluda Hydro) Mussel Recon Survey Study Plan (draft;04192006) alderman comments.doc

Dear Freshwater Mussels/Benthic Macroinvertebrate TWC Member:

Attached for your review is the draft study plan for the freshwater mussel reconnaissance survey on Lake Murray and the Lower Saluda and Congaree Rivers. The draft has been reviewed by John Alderman, and his comments have been incorporated. We have tried to keep the study plan as brief as possible to facilitate a quick review, as John would like to get this study started ASAP while the rivers and Lake are still low and clear. We will discuss the study plan and hopefully get final approval from the TWC at next week's meeting (May 3 at Research Park). Thanks in advance for your input.

C. Shane Boring  
Environmental Scientist  
Kleinschmidt Associates  
101 Trade Zone Dr., Suite-21A  
West Columbia, SC 29170  
Phone: (803)822-3177  
Fax: (803)822-3183

Mussel Recon Survey Study Plan (draft;04192006) alderman comments.doc <<Mussel Recon Survey Study Plan (draft;04192006) alderman comments.doc>>

## Kacie Jensen

---

**Subject:** FW: Saluda Hydro: May 3 Terrestrial, RT&E Species, Instream Flow, Freshwater Mussels/Benthic Inverts Technical Working Committee Meetings  
**Location:** SCE&G offices at Carolina Research Park (111 REsearch Dr, Columbia, SC 29203)  
**Start:** Wed 5/3/2006 9:00 AM  
**End:** Wed 5/3/2006 4:00 PM  
**Show Time As:** Tentative  
**Recurrence:** (none)  
**Meeting Status:** Not yet responded

Jeni:

We'll need 15 copies of the attached agenda for next Wednesday's meeting. Thanks  
Shane

-----Original Appointment-----

**From:** Shane Boring  
**Sent:** Thursday, April 06, 2006 10:17 AM  
**To:** Fish & Wildlife TWC - IFIM/Aquatic Habitat; 'Jennifer Price'; Buddy Baker ; Tom Bowles (tbowles@scana.com); 'Brandon Stutts '  
Bob Seibels; EPPINK, THOMAS G  
**Cc:** Alan Stuart; Brandon Kulik  
**Subject:** Saluda Hydro: May 3 Terrestrial, RT&E Species, Instream Flow, Freshwater Mussels/Benthic Inverts Technical Working Committee Meetings  
**When:** Wednesday, May 03, 2006 9:00 AM-4:00 PM (GMT-05:00) Eastern Time (US & Canada).  
**Where:** SCE&G offices at Carolina Research Park (111 REsearch Dr, Columbia, SC 29203)

Just a reminder that the following Fish and Wildlife Technical Working Committees (TWCs) are scheduled to meet on Wednesday, May 3 at the SCE&G offices at Carolina Research Park:  
**Freshwater Mussels/Benthic Macroinvertebrates ( 9:00 - 10:00 AM); Instream Flow/Aquatic Habitat (10:00 AM - 12:00 PM); Rare, Threatened and Endangered Species (12:30 - 2:00 PM); and Terrestrial Resources (2:00 - 3:30 PM).** The meeting agenda is attached below. Thanks for your continued participation, and I look forward to seeing you on May 3.

C. Shane Boring  
Environmental Scientist  
Kleinschmidt Associates  
101 Trade Zone Dr., Suite-21A  
West Columbia, SC 29170  
Phone: (803)822-3177  
Fax: (803)822-3183



Fish and Wildlife  
TWC Agenda 5...



## Kacie Jensen

---

**Subject:** Clarification -- Saluda Hydro: May 3 Terrestrial, RT&E Species, Instream Flow, Freshwater Mussels/Benthic Inverts Technical Working Committee Meetings  
**Location:** SCE&G offices at Carolina Research Park (111 REsearch Dr, Columbia, SC 29203)  
**Start:** Wed 5/3/2006 9:00 AM  
**End:** Wed 5/3/2006 4:00 PM  
**Show Time As:** Tentative  
**Recurrence:** (none)  
**Meeting Status:** Not yet responded

All:

This message is to clarify that the [Fish and Wildlife TWC meetings noted below are still scheduled for Wednesday, May 3, beginning at 9:00 am](#) (see reminder and agenda below). Through some glitch in Outlook, some of you may have received an update with the word "cancelled" in the subject line. Again, the meetings are not cancelled. Thank you.

C. Shane Boring  
Environmental Scientist  
Kleinschmidt Associates  
101 Trade Zone Dr., Suite-21A  
West Columbia, SC 29170  
Phone: (803)822-3177  
Fax: (803)822-3183

-----Original Appointment-----

**From:** Shane Boring  
**Sent:** Wednesday, April 26, 2006 4:17 PM  
**To:** 'Jennifer Price'; Buddy Baker ; Tom Bowles (tbowles@scana.com); 'Brandon Stutts '; Bob Seibels; EPPINK, THOMAS G; Wade Bales (balesw@dnr.sc.gov); Amanda Hill; Bill Argentieri; Dick Christie; Gerrit Jobsis (American Rivers); Hal Beard; Jim Glover; Prescott Brownell; Randy Mahan; Ron Ahle; Shane Boring; Steve Summer; Brandon Kulik; Alan Stuart  
**Subject:** Updated: Saluda Hydro: May 3 Terrestrial, RT&E Species, Instream Flow, Freshwater Mussels/Benthic Inverts Technical Working Committee Meetings  
**When:** Wednesday, May 03, 2006 9:00 AM-4:00 PM (GMT-05:00) Eastern Time (US & Canada).  
**Where:** SCE&G offices at Carolina Research Park (111 REsearch Dr, Columbia, SC 29203)

Just a reminder that the following Fish and Wildlife Technical Working Committees (TWCs) are scheduled to meet on Wednesday, May 3 at the SCE&G offices at Carolina Research Park:  
**Freshwater Mussels/Benthic Macroinvertebrates ( 9:00 - 10:00 AM); Instream Flow/Aquatic Habitat (10:00 AM - 12:00 PM); Rare, Threatened and Endangered Species (12:30 - 2:00 PM); and Terrestrial Resources (2:00 - 3:30 PM).** The meeting agenda is attached below. Thanks for your continued participation, and I look forward to seeing you on May 3.

C. Shane Boring  
Environmental Scientist  
Kleinschmidt Associates  
101 Trade Zone Dr., Suite-21A  
West Columbia, SC 29170  
Phone: (803)822-3177  
Fax: (803)822-3183



Fish and Wildlife  
TWC Agenda 5...

## Kacie Jensen

---

**Subject:** FW: Saluda Hydro: May 3 Terrestrial, RT&E Species, Instream Flow, Freshwater Mussels/Benthic Inverts Technical Working Committee Meetings  
**Location:** SCE&G offices at Carolina Research Park (111 REsearch Dr, Columbia, SC 29203)  
**Start:** Wed 5/3/2006 9:00 AM  
**End:** Wed 5/3/2006 4:00 PM  
**Show Time As:** Tentative  
**Recurrence:** (none)  
**Meeting Status:** Not yet responded

Theresa:

I though you might be interested in the below referenced meetings. Please let me know if you plan to attend so that we can plan for the appropriate number of attendees. Also, I looked through my e-mails; I never received your comments on the temperature study plan. Please them along if you would like.

Thanks and it was good meeting you last week,  
Shane

C. Shane Boring  
Environmental Scientist  
Kleinschmidt Associates  
101 Trade Zone Dr., Suite-21A  
West Columbia, SC 29170  
Phone: (803)822-3177  
Fax: (803)822-3183

-----Original Appointment-----

**From:** Shane Boring  
**Sent:** Wednesday, April 26, 2006 4:17 PM  
**To:** 'Jennifer Price'; Buddy Baker ; Tom Bowles (tbowles@scana.com); 'Brandon Stutts '; Bob Seibels; EPPINK, THOMAS G; Wade Bales (balesw@dnr.sc.gov); Amanda Hill; Bill Argentieri; Dick Christie; Gerrit Jobsis (American Rivers); Hal Beard; Jim Glover; Prescott Brownell; Randy Mahan; Ron Ahle; Shane Boring; Steve Summer; Brandon Kulik; Alan Stuart  
**Subject:** Updated: Saluda Hydro: May 3 Terrestrial, RT&E Species, Instream Flow, Freshwater Mussels/Benthic Inverts Technical Working Committee Meetings  
**When:** Wednesday, May 03, 2006 9:00 AM-4:00 PM (GMT-05:00) Eastern Time (US & Canada).  
**Where:** SCE&G offices at Carolina Research Park (111 REsearch Dr, Columbia, SC 29203)

Just a reminder that the following Fish and Wildlife Technical Working Committees (TWCs) are scheduled to meet on Wednesday, May 3 at the SCE&G offices at Carolina Research Park:  
**Freshwater Mussels/Benthic Macroinvertebrates ( 9:00 - 10:00 AM); Instream Flow/Aquatic Habitat (10:00 AM - 12:00 PM); Rare, Threatened and Endangered Species (12:30 - 2:00 PM); and Terrestrial Resources (2:00 - 3:30 PM).** The meeting agenda is attached below. Thanks for your continued participation, and I look forward to seeing you on May 3.

C. Shane Boring  
Environmental Scientist  
Kleinschmidt Associates  
101 Trade Zone Dr., Suite-21A  
West Columbia, SC 29170  
Phone: (803)822-3177  
Fax: (803)822-3183





Fish and Wildlife  
TWC Agenda 5...

## Kacie Jensen

---

**From:** Shane Boring  
**Sent:** Wednesday, April 26, 2006 2:17 PM  
**To:** 'Gerrit Jobsis'  
**Subject:** RE: (Saluda Hydro) Mussel Recon Survey Study Plan (draft;04192006) alderman comments.doc

Hi Gerrit,

Thanks for your comments. I had similar thoughts about the general nature of the study plan. Unfortunately, this was about as much detail as was provided to me by John Alderman. He basically said that the amount of time expended at each site would be dependant on the quality of the potential habitat (see his attached proposal to do the work). Also bear in mind that this is a reconnaissance survey with the purpose of determining whether further studies are needed, so I think the potential for future studies is inherent depending on the outcome. I think we could add some language that would provide a few more assurance that additional surveys will be conducted if deemed necessary by the TWC. It may be beneficial to have John join us, either in person or on the phone, for the meeting next week and hopefully he can provide the needed level of detail. I have, to date, not gotten and agency comments, but they may have similar concerns.

In regards to how the reservoir shoreline will be surveyed considering the current 6-7 ft drawdown -- John seemed to think that it was advantageous to survey under such conditions and is anxious to get started before the lake comes up (hence the quick turnaround on the study plan).

In regards to the headwater tribs --- many of freeflowing reaches above the reservoir have been surveyed by Alderman in recent years (see data provided by J. Price). In fact, I believe some of these surveys are the basis for the tribs that he chose.

In regards to a map of the study area -- I wanted to quickly get something out to you guys last week to review, so I didn't have time to pull together a figure, but I agree that one is needed.

Many thanks and my apologies for the quick turnaround; as I noted, John is very anxious to get started while the rivers are still low and clear.

Thanks again for your input,  
Shane

C. Shane Boring  
Environmental Scientist  
Kleinschmidt Associates  
101 Trade Zone Dr., Suite-21A  
West Columbia, SC 29170  
Phone: (803)822-3177  
Fax: (803)822-3183

-----Original Message-----

From: Gerrit Jobsis [mailto:gjobsis@americanrivers.org]  
Sent: Wednesday, April 26, 2006 1:13 PM  
To: Shane Boring; Steve Summer; Amanda Hill; Bill Argentieri; Jennifer Price; Jim Glover; Randy Mahan; Ron Ahle  
Cc: Jennifer Summerlin  
Subject: RE: (Saluda Hydro) Mussel Recon Survey Study Plan (draft;04192006) alderman comments.doc

Shane,

This is a very general study plan without much detail.

I agree with the geographic area. I count 13 Lake Murray tributaries plus the lower Saluda and the Congaree rivers.

I agree with the temporal scope (late May - early June) for an initial effort. Based on the results, additional survey work may be needed in fall 2005 or perhaps a repeat of the survey in 2007.

I am concerned there may be future disagreement as to the adequacy of effort if more detail is not provided. How much time will be expended at each site? How far upstream will the surveys extend at the headwater tribs? To include unimpounded reaches? How will the Lake Murray shoreline be surveyed with the current 6 to 7 foot drawdown?

Also we have about 10 miles of the lower Saluda and 10 miles of the Congaree below the dam. How much effort will be expended at each of these rivers? What habitats will be surveyed? These things need detail before the study begins. A map of proposed study sites is also needed.

You asked for a quick turnaround, so I have provided one. Due to our move and other workload I have not been able to discuss this with other stakeholder and agencies. I am especially interested in the opinion of the DNR and USFWS re the plan.

Gerrit

We have moved! Please see our new address below.

<:;>><

Gerrit Jöbsis

American Rivers \* Southeast Office  
2231 Devine Street, Suite 100 \* Columbia, S.C. 29205  
Telephone (803) 771-7114 \* Fax (803) 771-7580  
gjjobsis@americanrivers.org

-----Original Message-----

From: Shane Boring [mailto:Shane.Boring@KleinschmidtUSA.com]  
Sent: Monday, April 24, 2006 9:49 AM  
To: Steve Summer; Amanda Hill; Bill Argentieri; Gerrit Jobsis; Jennifer Price; Jim Glover; Randy Mahan; Ron Ahle; Shane Boring  
Cc: Jennifer Summerlin  
Subject: (Saluda Hydro) Mussel Recon Survey Study Plan (draft;04192006) alderman comments.doc

Dear Freshwater Mussels/Benthic Macroinvertebrate TWC Member:

Attached for your review is the draft study plan for the freshwater mussel reconnaissance survey on Lake Murray and the Lower Saluda and Congaree Rivers. The draft has been reviewed by John Alderman, and his comments have been incorporated. We have tried to keep the study plan as brief as possible to facilitate a quick review, as John would like to get this study started ASAP while the rivers and Lake are still low and clear. We will discuss the study plan and hopefully get final approval from the TWC at next week's meeting (May 3 at Research Park). Thanks in advance for your input.

C. Shane Boring  
Environmental Scientist  
Kleinschmidt Associates

101 Trade Zone Dr., Suite-21A  
West Columbia, SC 29170  
Phone: (803)822-3177  
Fax: (803)822-3183

Mussel Recon Survey Study Plan (draft;04192006) alderman comments.doc <<Mussel Recon  
Survey Study Plan (draft;04192006) alderman comments.doc>>

**Kacie Jensen**

---

**From:** Gerrit Jobsis [gjobsis@americanrivers.org]  
**Sent:** Wednesday, April 26, 2006 1:13 PM  
**To:** Shane Boring; Steve Summer; Amanda Hill; BARGENTIERI@scana.com; Jennifer Price; Jim Glover; RMAHAN@scana.com; Ron Ahle  
**Cc:** Jennifer Summerlin  
**Subject:** RE: (Saluda Hydro) Mussel Recon Survey Study Plan (draft;04192006) alderman comments.doc

Shane,

This is a very general study plan without much detail.

I agree with the geographic area. I count 13 Lake Murray tributaries plus the lower Saluda and the Congaree rivers.

I agree with the temporal scope (late May - early June) for an initial effort. Based on the results, additional survey work may be needed in fall 2005 or perhaps a repeat of the survey in 2007.

I am concerned there may be future disagreement as to the adequacy of effort if more detail is not provided. How much time will be expended at each site? How far upstream will the surveys extend at the headwater tribs? To include unimpounded reaches? How will the Lake Murray shoreline be surveyed with the current 6 to 7 foot drawdown?

Also we have about 10 miles of the lower Saluda and 10 miles of the Congaree below the dam. How much effort will be expended at each of these rivers? What habitats will be surveyed? These things need detail before the study begins. A map of proposed study sites is also needed.

You asked for a quick turnaround, so I have provided one. Due to our move and other workload I have not been able to discuss this with other stakeholder and agencies. I am especially interested in the opinion of the DNR and USFWS re the plan.

Gerrit

We have moved! Please see our new address below.

<:;>><

Gerrit Jöbsis

American Rivers \* Southeast Office  
2231 Devine Street, Suite 100 \* Columbia, S.C. 29205  
Telephone (803) 771-7114 \* Fax (803) 771-7580  
gjobsis@americanrivers.org

-----Original Message-----  
**From:** Shane Boring [mailto:Shane.Boring@KleinschmidtUSA.com]  
**Sent:** Monday, April 24, 2006 9:49 AM  
**To:** Steve Summer; Amanda Hill; Bill Argentieri; Gerrit Jobsis; Jennifer Price; Jim Glover; Randy Mahan; Ron Ahle; Shane Boring  
**Cc:** Jennifer Summerlin  
**Subject:** (Saluda Hydro) Mussel Recon Survey Study Plan (draft;04192006) alderman comments.doc

Dear Freshwater Mussels/Benthic Macroinvertebrate TWC Member:

Attached for your review is the draft study plan for the freshwater mussel reconnaissance survey on Lake Murray and the Lower Saluda and Congaree Rivers. The draft has been reviewed by John Alderman, and his comments have been incorporated. We have tried to keep the study plan as brief as possible to facilitate a quick review, as John would like to get this study started ASAP while the rivers and Lake are still low and clear. We will discuss the study plan and hopefully get final approval from the TWC at next week's meeting (May 3 at Research Park). Thanks in advance for your input.

C. Shane Boring  
Environmental Scientist  
Kleinschmidt Associates  
101 Trade Zone Dr., Suite-21A  
West Columbia, SC 29170  
Phone: (803)822-3177  
Fax: (803)822-3183

Mussel Recon Survey Study Plan (draft;04192006) alderman comments.doc <<Mussel Recon Survey Study Plan (draft;04192006) alderman comments.doc>>

## Kacie Jensen

---

**From:** Jennifer Summerlin  
**Sent:** Monday, April 17, 2006 8:46 AM  
**To:** 'Wade Bales (balesw@dnr.sc.gov)'; 'Amanda Hill'; 'Bill Argentieri'; 'Hal Beard'; 'Jim Glover'; 'Randy Mahan'; Shane Boring; 'Tom Bowles (tbowles@scana.com)'; Alan Stuart  
**Cc:** Shane Boring  
**Subject:** Saluda relicensing: Fish Entrainment Desktop Study Plan-draft

All:  
Attached for your review is the draft study plan for the fish entrainment desktop study. Please provide comments (preferably in track changes) by Tuesday, May 16th or earlier. Thanks your for your continued participation and dedication to the Saluda relicensing process.



Saluda Entrainment  
Study Plan ...

Jennifer Summerlin  
Scientist Technician  
Kleinschmidt Associates  
101 Trade Zone Dr., Suite-21A  
West Columbia, SC 29170  
Phone: (803)822-3177  
Fax: (803)822-3183

**Kacie Jensen**

---

**From:** Shane Boring  
**Sent:** Thursday, April 13, 2006 12:17 PM  
**To:** 'Samnancydrake@aol.com'  
**Subject:** RE: Updated: Saluda Hydro: May 3 Terrestrial, RT&E Species, Freshwater Muss...

Mr. Drake:

Thanks for your interest in the Saluda (Lake Murray) Fish and Wildlife Technical Working Committee meetings. While you are certainly welcome to attend, I should note that these will be meetings of the Rare, Threatened and Endangered Species; Instream Flow; Terrestrial Resources; and Freshwater Mussels/Benthic Macroinvertebrate Technical Working Committees, which primarily consist of agency experts (See list of TWC members below) and will focus on specific technical issues (i.e. reviewing available data, developing study plans, etc.). Again you are certainly welcome to come; however, there has been some confusion between the Technical Working Committees (TWCs) and the larger Resource Conservation Groups (RCGs), and I didn't want you to drive all the way over for a meeting that is not really of interest to you. If you're still interested, we look forward to seeing you on May 3 at Research Park.

Regards,

C. Shane Boring  
 Environmental Scientist  
 Kleinschmidt Associates  
 101 Trade Zone Dr., Suite-21A  
 West Columbia, SC 29170  
 Phone: (803)822-3177  
 Fax: (803)822-3183

**Fish and Wildlife Technical Working Committees**

<u>Mussels/ Invertebrates</u>	<u>Terrestrial Resources</u>	<u>RT&amp;E species</u>	<u>Instream Flow/Aquatic Habitat</u>
Shane Boring	Shane Boring	Shane Boring	Alan Stuart
Ron Ahle	Dick Christie	Gerrit Jobsis	Shane Boring
Amanda Hill	Amanda Hill	Ron Ahle	Steve Summers
Gerrit Jobsis	Ron Ahle	Amanda Hill	Ron Ahle
Steve Summer	Buddy Baker	Bob Seibels	Hal Beard
Jennifer Price	Brandon Stutts	Tom Eppink	Brandon Kulik
Jim Glover			Wade Bales
			Gerrit Jobsis
			Amanda Hill
			Dick Christie
			Prescott Brownell



-----Original Message-----

**From:** Samnancydrake@aol.com [mailto:Samnancydrake@aol.com]

**Sent:** Thursday, April 13, 2006 9:45 AM

**To:** Shane.Boring@KleinschmidtUSA.com

**Subject:** Re: Updated: Saluda Hydro: May 3 Terrestrial, RT&E Species, Freshwater Muss...

I plan on attending this meeting. Sam Drake

## Kacie Jensen

---

**From:** James Glover [GLOVERJB@dhec.sc.gov]  
**Sent:** Wednesday, April 12, 2006 8:47 AM  
**To:** Jennifer Summerlin  
**Subject:** Re: Saluda Relicensing:SCDHEC Report/Data

Jennifer,

Sorry it has taken me so long to get this information. I've been out of the office for much of the past month and am traveling today to NC State for a meeting today. I will get the information to you early next week.

Jim

James B. Glover, Ph.D.  
South Carolina Department of Health and Environmental Control Aquatic Biology Section 2600  
Bull Street Columbia SC 29201  
Phone- 803-898-4081  
Fax- 803-898-4200  
E-Mail- GloverJB@DHEC.SC.Gov

>>> Jennifer Summerlin <Jennifer.Summerlin@KleinschmidtUSA.com>  
>>> 4/11/2006 2:41 PM >>>

Jim,  
Shane Boring asked me to follow up on the action items that were discussed in the March 8th Freshwater Mussel/Benthic Macroinvertebrate TWC meeting notes. You mentioned that you could provide: 1. Raw data on tributaries that were sampled along the LSR by DHEC 2. 1986 SCDHEC macroinvertebrate report for LSR When you get a chance, could you send this information to me? Thanks for your continued interest in the Saluda relicensing process.

Jennifer Summerlin  
Scientist Technician  
Kleinschmidt Associates  
101 Trade Zone Dr., Suite-21A  
West Columbia, SC 29170  
Phone: (803)822-3177  
Fax: (803)822-3183

## Kacie Jensen

---

**From:** Jennifer Summerlin  
**Sent:** Tuesday, April 11, 2006 2:42 PM  
**To:** 'GloverJB@dhec.sc.gov'  
**Cc:** Shane Boring  
**Subject:** Saluda Relicensing:SCDHEC Report/Data

Jim,

Shane Boring asked me to follow up on the action items that were discussed in the March 8th Freshwater Mussel/Benthic Macroinvertebrate TWC meeting notes. You mentioned that you could provide:

1. Raw data on tributaries that were sampled along the LSR by DHEC
2. 1986 SCDHEC macroinvertebrate report for LSR

When you get a chance, could you send this information to me? Thanks for your continued interest in the Saluda relicensing process.

Jennifer Summerlin  
Scientist Technician  
Kleinschmidt Associates  
101 Trade Zone Dr., Suite-21A  
West Columbia, SC 29170  
Phone: (803)822-3177  
Fax: (803)822-3183

## Kacie Jensen

---

**From:** Jennifer Summerlin  
**Sent:** Tuesday, April 11, 2006 3:08 PM  
**To:** 'ahler@dnr.sc.gov'  
**Cc:** Shane Boring  
**Subject:** Saluda Relicensing: Striped Bass Information

Ron,

Shane Boring asked me to follow up on the action items that were discussed in the February 21st Water Quality TWC meeting notes. You mentioned that you could provide:

1. Historical information pertaining to the fish kills on Lake Murray
2. Stocking rates of striped bass in Lake Murray

When you get a chance, could you send this information to me? Thanks for your continued interest in the Saluda relicensing process.

Jennifer Summerlin  
Scientist Technician  
Kleinschmidt Associates  
101 Trade Zone Dr., Suite-21A  
West Columbia, SC 29170  
Phone: (803)822-3177  
Fax: (803)822-3183

## Kacie Jensen

---

**From:** Jennifer Summerlin  
**Sent:** Tuesday, April 11, 2006 2:04 PM  
**To:** 'Tom Eppink'; 'Amanda Hill'; 'Bill Argentieri'; 'Bob Seibels'; 'Gerrit Jobsis (American Rivers)'; 'Jim Glover'; 'Randy Mahan'; 'Ron Ahle'; Shane Boring; 'Brandon Stutts'; 'Buddy Baker'; 'Dick Christie'  
**Cc:** Shane Boring  
**Subject:** Saluda Hydro Relicensing: Rocky Shoals Spider Lilly Report

Dear Saluda Hydro RT&E and Terrestrial Resources TWC Members,

Shane Boring asked me to follow up on action items that were previously mentioned in the RT&E and Terrestrial TWC meeting notes. At the March 8th Fish & Wildlife TWC meeting, the RT&E members discussed SCE&G's 1998 Rocky Shoals Spider Lilly report from the Columbia Hydro project prepared by Kleinschmidt. I have uploaded this report on the Kleinschmidt ftp website (link is below). The report is located in the "Columbia RSSL report" folder. Thanks for your continued interest in the Saluda relicensing process.

<ftp://ftp.kleinschmidtusa.com/>

Jennifer Summerlin  
Scientist Technician  
Kleinschmidt Associates  
101 Trade Zone Dr., Suite-21A  
West Columbia, SC 29170  
Phone: (803)822-3177  
Fax: (803)822-3183

**Kacie Jensen**

---

**From:** Shane Boring  
**Sent:** Thursday, April 06, 2006 2:00 PM  
**To:** 'Gerrit Jobsis'  
**Subject:** RE: Saluda Hydro Relicense: May

Thanks for the heads up. You should have gotten an update with the correct date/time. Sorry for the error --- too many things to try and juggle! Cheers

Shane

-----Original Message-----

**From:** Gerrit Jobsis [mailto:gjobsis@americanrivers.org]  
**Sent:** Thursday, April 06, 2006 1:15 PM  
**To:** Shane Boring  
**Subject:** RE: Saluda Hydro Relicense: May

Shane,

This email is confusing to me. The "When" says from midnight May 3 to midnight May 4. The text below says Wednesday, May 5 (which is actually a Friday) and 9 AM.

I am unlikely to be able to attend regardless, but perhaps you can clarify for others.

Gerrit

<:;>>><  
Gerrit Jobsis  
*American Rivers • Southeast Office*  
1207 Lincoln Street, Suite 203-C • Columbia, S.C. 29201  
Telephone (803) 771-7114 • Fax (803) 771-7580  
[gjobsis@americanrivers.org](mailto:gjobsis@americanrivers.org)

---

**From:** Shane Boring [mailto:Shane.Boring@KleinschmidtUSA.com]  
**Sent:** Thursday, April 06, 2006 10:18 AM  
**To:** Steve Summer; Amanda Hill; Bill Argentieri; Gerrit Jobsis; Jennifer Price; Jim Glover; Randy Mahan; Ron Ahle; Shane Boring; Tom Eppink; Bob Seibels; Brandon Stutts; Buddy Baker; Dick Christie  
**Cc:** Wade Bales (balesw@dnr.sc.gov); Alan Stuart; Alison Guth; Bill East; Bill Hulslander; Bill Marshall; Charlene Coleman; Daniel Tufford; Ed Diebold; George Duke; Gina Kirkland; Hal Beard; Jeff Duncan; Jennifer O'Rourke; Jim Goller; Joe Logan; Joy Downs; Larry Turner (turnerle@dhec.sc.gov); Malcolm Leaphart; Mark Leao; Mike Sloan; Norman Ferris; Patrick Moore; Prescott Brownell; Ralph Crafton; Reed Bull (rbull@davisfloyd.com); Robert Lavisky; Sam Drake; Steve Bell; Steve Leach; Suzanne Rhodes; Tom Bowles (tbowles@scana.com)  
**Subject:** Saluda Hydro Relicense: May

When: Wednesday, May 03, 2006 12:00 AM to Thursday, May 04, 2006 12:00 AM (GMT-05:00) Eastern Time (US & Canada).  
Where: SCE&G offices at Carolina Research Park (111 REsearch Dr, Columbia, SC 29203)

\*~\*~\*~\*~\*~\*~\*~\*~\*~\*

Hello folks:

As discussed at the March 8th Fish and Wildlife Technical Working Committee meetings, our next set of TWC meetings will be held Wednesday, May 5th starting at 9:00 AM at the SCE&G offices at Carolina Research Park. Similar to the last session, we will meet the Terrestrial, RT&E Species, and Freshwater Mussel/Benthic Macroinvertebrate groups on the same day to help cut down on travel. Please let me know if you plan to attend so that we can plan for lunches. For those on multiple groups, I apologize for the duplicate e-mails. Thanks.

C. Shane Boring  
Environmental Scientist  
Kleinschmidt Associates  
101 Trade Zone Dr., Suite-21A  
West Columbia, SC 29170  
Phone: (803)822-3177  
Fax: (803)822-3183

Kacie Jensen

---

**From:** Shane Boring  
**Sent:** Thursday, April 06, 2006 4:16 PM  
**To:** 'Gerrit Jobsis'  
**Subject:** RE: related to Saluda hydro relicensing

Gerrit:

Thanks for the information. If it's ok with you, I'll forward this info on to the TWC.

Shane

-----Original Message-----

**From:** Jennifer Summerlin  
**Sent:** Thursday, April 06, 2006 3:52 PM  
**To:** Shane Boring  
**Subject:** FW: related to Saluda hydro relicensing

Just received this email from Gerrit! Jeni

-----Original Message-----

**From:** Gerrit Jobsis [mailto:gjobsis@americanrivers.org]  
**Sent:** Thursday, April 06, 2006 2:46 PM  
**To:** Jennifer Summerlin  
**Subject:** RE: related to Saluda hydro relicensing

Hi Jennifer:

I forwarded a copy of Dr. Barnhart's presentation previously and offered to walk folks through it at a future meeting. I also have his written testimony for a Coosa River (AL) relicensing (attached). This is the only written info I have about mussels and DO. Dr. Barnhart is one of the few scientists in the nation who study mussels and DO effects. It may be good for the committee to ask him for additional information.

As for the Saluda Darter it was considered a separate species when the DNR collected it below the Saluda dam in the late 1980s. It has now been reclassified as a form of the Carolina darter, *Etheostoma collis*, and considered a rare species. See the DNR paper at the link below. Jason Bettinger with the DNR (803.353.8232) may be the best local contact. The specimen collected in the Saluda was in the DNR's fish collection at the Eastover Office and may still be there.

<http://www.dnr.sc.gov/wcp/pdfhigh/HighestOther.pdf>

Gerrit

<.:>><

Gerrit Jobsis  
*American Rivers • Southeast Office*  
1207 Lincoln Street, Suite 203-C • Columbia, S.C. 29201  
Telephone (803) 771-7114 • Fax (803) 771-7580  
[gjobsis@americanrivers.org](mailto:gjobsis@americanrivers.org)

---

**From:** Jennifer Summerlin [mailto:Jennifer.Summerlin@KleinschmidtUSA.com]  
**Sent:** Thursday, April 06, 2006 2:07 PM  
**To:** Gerrit Jobsis; Gerrit Jobsis  
**Subject:** related to Saluda hydro relicensing



Hello Gerrit,

Shane Boring asked me to review action items that were discussed in previous Technical Working Committee meeting notes. You mentioned that you could provide:

1. Information regarding impacts of dissolved oxygen on freshwater mussels
2. Historical information on the Saluda Darter

When you get a chance, could you send this information to me? Thank you for your time and have a good afternoon!

Jennifer Summerlin  
Scientist Technician  
Kleinschmidt Associates  
101 Trade Zone Dr., Suite-21A  
West Columbia, SC 29170  
Phone: (803)822-3177  
Fax: (803)822-3183

**Kacie Jensen**

---

**From:** Jennifer Summerlin  
**Sent:** Thursday, April 06, 2006 3:52 PM  
**To:** Shane Boring  
**Subject:** FW: related to Saluda hydro relicensing

[Just received this email from Gerrit! Jeni](#)

-----Original Message-----

**From:** Gerrit Jobsis [mailto:gjobsis@americanrivers.org]  
**Sent:** Thursday, April 06, 2006 2:46 PM  
**To:** Jennifer Summerlin  
**Subject:** RE: related to Saluda hydro relicensing

Hi Jennifer:

I forwarded a copy of Dr. Barnhart's presentation previously and offered to walk folks through it at a future meeting. I also have his written testimony for a Coosa River (AL) relicensing (attached). This is the only written info I have about mussels and DO. Dr. Barnhart is one of the few scientists in the nation who study mussels and DO effects. It may be good for the committee to ask him for additional information.

As for the Saluda Darter it was considered a separate species when the DNR collected it below the Saluda dam in the late 1980s. It has now been reclassified as a form of the Carolina darter, *Etheostoma collis*, and considered a rare species. See the DNR paper at the link below. Jason Bettinger with the DNR (803.353.8232) may be the best local contact. The specimen collected in the Saluda was in the DNR's fish collection at the Eastover Office and may still be there.

<http://www.dnr.sc.gov/wcp/pdfhigh/HighestOther.pdf>

Gerrit

<:;>>><  
Gerrit Jöbsis  
American Rivers • Southeast Office  
1207 Lincoln Street, Suite 203-C • Columbia, S.C. 29201  
Telephone (803) 771-7114 • Fax (803) 771-7580  
[gjobsis@americanrivers.org](mailto:gjobsis@americanrivers.org)

---

**From:** Jennifer Summerlin [mailto:Jennifer.Summerlin@KleinschmidtUSA.com]  
**Sent:** Thursday, April 06, 2006 2:07 PM  
**To:** Gerrit Jobsis; Gerrit Jobsis  
**Subject:** related to Saluda hydro relicensing

Hello Gerrit,  
Shane Boring asked me to review action items that were discussed in previous Technical Working Committee meeting notes. You mentioned that you could provide:

- 1. Information regarding impacts of dissolved oxygen on freshwater mussels
- 2. Historical information on the Saluda Darter

When you get a chance, could you send this information to me? Thank you for your time and have a good afternoon!

Jennifer Summerlin  
Scientist Technician  
Kleinschmidt Associates  
101 Trade Zone Dr., Suite-21A  
West Columbia, SC 29170  
Phone: (803)822-3177  
Fax: (803)822-3183

## Kacie Jensen

---

**Subject:** Saluda Hydro Relicense: May  
**Location:** SCE&G offices at Carolina Research Park (111 REsearch Dr, Columbia, SC 29203)

**Start:** Wed 5/3/2006 12:00 AM  
**End:** Thu 5/4/2006 12:00 AM  
**Show Time As:** Tentative

**Recurrence:** (none)

**Meeting Status:** Not yet responded

**Required Attendees:** Fish & Wildlife TWC - Mussels/Inverts; Fish & Wildlife TWC - RT&E Species; Fish & Wildlife TWC - Terrestrial  
**Optional Attendees:** Fisheries and Wildlife RCG

Hello folks:

As discussed at the March 8th Fish and Wildlife Technical Working Committee meetings, our next set of TWC meetings will be held Wednesday, May 5th starting at 9:00 AM at the SCE&G offices at Carolina Research Park. Similar to the last session, we will meet the Terrestrial, RT&E Species, and Freshwater Mussel/Benthic Macroinvert groups on the same day to help cut down on travel. Please let me know if you plan to attend so that we can plan for lunches. For those on multiple groups, I apologize for the duplicate e-mails. Thanks.

C. Shane Boring  
Environmental Scientist  
Kleinschmidt Associates  
101 Trade Zone Dr., Suite-21A  
West Columbia, SC 29170  
Phone: (803)822-3177  
Fax: (803)822-3183

## Kacie Jensen

---

**Subject:** Updated: Saluda Hydro: May 3 Terrestrial, RT&E Species, Freshwater Mussels/Benthic Inverts Technical Working Committee Meetings  
**Location:** SCE&G offices at Carolina Research Park (111 REsearch Dr, Columbia, SC 29203)  
**Start:** Wed 5/3/2006 9:00 AM  
**End:** Wed 5/3/2006 4:00 PM  
**Show Time As:** Tentative  
**Recurrence:** (none)  
**Meeting Status:** Not yet responded  
**Required Attendees:** Fish & Wildlife TWC - Mussels/Inverts; Fish & Wildlife TWC - RT&E Species; Fish & Wildlife TWC - Terrestrial  
**Optional Attendees:** Fisheries and Wildlife RCG

Just a clarification on my prior e-mail: The meetings are scheduled for Wednesday, May 3, starting at 9:00 AM. I mentioned May 5th in error in the body of my previous message. Also, the meeting time has been updated (previously it was listed as an 'all day event').

Thanks and sorry for the confusion.

C. Shane Boring  
Environmental Scientist  
Kleinschmidt Associates  
101 Trade Zone Dr., Suite-21A  
West Columbia, SC 29170  
Phone: (803)822-3177  
Fax: (803)822-3183

## Kacie Jensen

---

**From:** Shane Boring  
**Sent:** Tuesday, April 04, 2006 2:53 PM  
**To:** Wade Bales (balesw@dnr.sc.gov); Alan Stuart; Alison Guth; Amanda Hill; BARGENTIERI@scana.com; Bill East; Bill Hulslander; Bill Marshall; Bob Seibels; Charlene Coleman; Daniel Tufford; Dick Christie; Ed Diebold; George Duke; Gerrit Jobsis (American Rivers); Gina Kirkland; Hal Beard; Jeff Duncan; Jennifer O'Rourke; Jim Glover; Jim Goller; Joe Logan; Joy Downs; Larry Turner (turnerle@dhec.sc.gov); Malcolm Leaphart; Mark Leao; Mike Sloan; Norman Ferris; Patrick Moore; Prescott Brownell; Ralph Crafton; RMAHAN@scana.com; Reed Bull (rbull@davisfloyd.com); Robert Lavisky; Ron Ahle; Sam Drake; Shane Boring; Steve Bell; Steve Leach; Steve Summer; Suzanne Rhodes; Tom Bowles (tbowles@scana.com)  
**Cc:** Jennifer Summerlin  
**Subject:** Saluda Hydro Relicense: March 8th Rare, Threatened and Endangered Species TWC Draft Meeting Notes

Hi folks:

One correction -- the notes sent in Jeni's previous e-mail (and also attached below) are for the March 8th Rare, Threatened and Endangered Species Technical Working Committee (TWC) meeting. As noted, please provide comments by April 18th. Thanks.

Shane

C. Shane Boring  
Environmental Scientist  
Kleinschmidt Associates  
101 Trade Zone Dr., Suite-21A  
West Columbia, SC 29170  
Phone: (803)822-3177  
Fax: (803)822-3183

-----Original Message-----

**From:** Jennifer Summerlin  
**Sent:** Tuesday, April 04, 2006 2:45 PM  
**To:** Tom Eppink; Amanda Hill; Bill Argentieri; Bob Seibels; Gerrit Jobsis (American Rivers); Jim Glover; Randy Mahan; Ron Ahle; Shane Boring  
**Subject:**

All:

Attached for your review are the draft notes from the March 8th Fish and Wildlife TWC meeting. For those in attendance, please provide comments (preferably in track changes) by Tuesday, April 18th. Thanks your for your continued participation and dedication to the Saluda relicensing process.



2006-03-08 Draft  
Meeting Notes...

Jennifer Summerlin  
Scientist Technician  
Kleinschmidt Associates  
101 Trade Zone Dr., Suite-21A  
West Columbia, SC 29170  
Phone: (803)822-3177  
Fax: (803)822-3183

## Kacie Jensen

---

**From:** Shane Boring  
**Sent:** Thursday, March 30, 2006 9:01 AM  
**To:** Wade Bales (balesw@dnr.sc.gov); Alan Stuart; Alison Guth; Amanda Hill; BARGENTIERI@scana.com; Bill East; Bill Hulslander; Bill Marshall; Bob Seibels; Charlene Coleman; Daniel Tufford; Dick Christie; Ed Diebold; George Duke; Gerrit Jobsis (American Rivers); Gina Kirkland; Hal Beard; Jeff Duncan; Jennifer O'Rourke; Jim Glover; Jim Goller; Joe Logan; Joy Downs; Larry Turner (turnerle@dhec.sc.gov); Malcolm Leaphart; Mark Leao; Mike Sloan; Norman Ferris; Patrick Moore; Prescott Brownell; Ralph Crafton; RMAHAN@scana.com; Reed Bull (rbull@davisfloyd.com); Robert Lavisky; Ron Ahle; Sam Drake; Shane Boring; Steve Bell; Steve Leach; Steve Summer; Suzanne Rhodes; Tom Bowles (tbowles@scana.com)  
**Subject:** Saluda Hydro Relicense: March 8 Freshwater Mussels/Benthic Macroinverts TWC Meeting Notes

Hello All:

Attached for your review are the draft notes from the March 8th meeting of the Freshwater Mussels/Benthic Macroinvertebrates TWC. For those who attended, please provide comments on the draft notes by Thursday, April, 13th. Thanks for your participation in the meeting.

C. Shane Boring  
Environmental Scientist  
Kleinschmidt Associates  
101 Trade Zone Dr., Suite-21A  
West Columbia, SC 29170  
Phone: (803)822-3177  
Fax: (803)822-3183

## Kacie Jensen

---

**From:** Shane Boring  
**Sent:** Wednesday, March 29, 2006 9:16 AM  
**To:** Wade Bales (balesw@dnr.sc.gov); Alan Stuart; Alison Guth; Amanda Hill; BARGENTIERI@scana.com; Bill East; Bill Hulslander; Bill Marshall; Bob Seibels; Charlene Coleman; Daniel Tufford; Dick Christie; Ed Diebold; George Duke; Gerrit Jobsis (American Rivers); Gina Kirkland; Hal Beard; Jeff Duncan; Jennifer O'Rourke; Jim Glover; Jim Goller; Joe Logan; Joy Downs; Larry Turner (turnerle@dhec.sc.gov); Malcolm Leaphart; Mark Leao; Mike Sloan; Norman Ferris; Patrick Moore; Prescott Brownell; Ralph Crafton; RMAHAN@scana.com; Reed Bull (rbull@davisfloyd.com); Robert Laviscky; Ron Ahle; Sam Drake; Shane Boring; Steve Bell; Steve Leach; Steve Summer; Suzanne Rhodes; Tom Bowles (tbowles@scana.com)  
**Cc:** Cheryl Balitz; 'Tom Murphy'; 'Ed\_Eudaly@fws.gov'  
**Subject:** February and March 2006 Lake Murray Wood Stork Surveys

All:

Tom Murphy with SCDNR performed the first of the 2006 Lake Murray wood stork surveys on February 22nd and March 20th in coordination with his bald eagle work. No wood storks were observed. Memos summarizing Tom's observations are attached and will be posted to the Saluda relicensing website. Thanks for your interest in the Lake Murray wood stork surveys.

Shane

C. Shane Boring  
Environmental Scientist  
Kleinschmidt Associates  
101 Trade Zone Dr., Suite-21A  
West Columbia, SC 29170  
Phone: (803)822-3177  
Fax: (803)822-3183



March 06 wood  
stork update.pdf...



Feb 06 wood stork  
update.pdf (...)

Cheryl:

Could you please post these to the Saluda Relicensing website. Thanks.



**MEMORANDUM**

*TO:* Saluda Hydro Project Relicensing Stakeholders

*FROM:* Shane Boring

*DATE:* March 27, 2006

*RE:* February 2006 Wood Stork Aerial Survey Observations

---

Dear Relicensing Stakeholder:

Tom Murphy with SC Department of Natural Resources flew the first of the 2006 Lake Murray (Saluda Hydro Project) wood stork survey on February 22, 2006 in coordination with his bald eagle work. No wood storks were observed. The nesting sites at Tossity Creek and Silverstreet were occupied by nesting great blue herons. Thank you for your continued interest in this issue, and as always, please feel free to contact me should you have any questions.

C. Shane Boring  
Environmental Scientist  
Kleinschmidt Associates  
101 Trade Zone Dr., Suite-21A  
West Columbia, SC 29170  
Phone: (803)822-3177  
Fax: (803)822-3183

**MEMORANDUM**

*TO:* Saluda Hydro Project Relicensing Stakeholders

*FROM:* Shane Boring

*DATE:* March 27, 2006

*RE:* March 2006 Wood Stork Aerial Survey Observations

---

Dear Relicensing Stakeholder:

The March 2006 Lake Murray (Saluda Hydro Project) wood stork survey was flown by Tom Murphy with SC Department of Natural Resources on March 20<sup>th</sup>. No wood storks were observed during the survey. Tom noted that the nesting sites at Tossity Creek and Silverstreet were occupied by nesting great blue herons. He also noted that storks have arrived in numbers along the SC coast and at their colony sites. Thank you for your continued interest in the Lake Murray wood stork project.

C. Shane Boring  
Environmental Scientist  
Kleinschmidt Associates  
101 Trade Zone Dr., Suite-21A  
West Columbia, SC 29170  
Phone: (803)822-3177  
Fax: (803)822-3183

## Kacie Jensen

---

**From:** Shane Boring  
**Sent:** Wednesday, March 15, 2006 4:41 PM  
**To:** 'Ron Ahle'  
**Cc:** 'Gerrit Jobsis (gjobsis@americanrivers.org)'  
**Subject:** Data from 1989 Saluda IFIM study

Ron:

I was looking over my action items and noticed that I had agreed to try and get the raw data from the 1989 Saluda IFIM study into some sort of usable format. If I'm remembering correctly, you guys only have the report and the raw (unkeyed) data. Is this correct? Having some familiarity with the data, what do you think is needed to get it into a usable format? Seems like I also remember someone mentioning the possibility of have a student from USC key in the data. Thanks

Shane

C. Shane Boring  
Environmental Scientist  
Kleinschmidt Associates  
101 Trade Zone Dr., Suite-21A  
West Columbia, SC 29170  
Phone: (803)822-3177  
Fax: (803)822-3183

## Kacie Jensen

---

**From:** Steve Leach [LeachS@dnr.sc.gov]  
**Sent:** Monday, March 13, 2006 5:31 PM  
**To:** Steven R Johnson; SUMMER, STEPHEN E; djcoughl@duke-energy.com; Shane Boring; Alison Guth; Gene E Vaughan  
**Cc:** Dick Christie; Val Nash  
**Subject:** informal update of anadromous fish run

All,

Please forward this to anyone that I missed who may be interested:

The American shad run appears to be in full, with water temperatures at St. Stephen above 18 C today. I would expect the peak to extend for the next few weeks, with variability related to physical changes (and the other parameters we don't pretend to understand).

Inflows are currently very low, and as a result turbine discharge from St. Stephen Dam is curtailed to 3 h / d, and it is unclear how this will effect the run. Meanwhile preliminary total estimate of the run through Pinopolis Lock is 68 metric tons (translates to approximately 500,000 herring units).

Also, several shortnose sturgeon have made forays to the gravel bar area downstream of I77 on the Congaree, and a few have been at least as far as Rosewood with one confirmed having spent some time above Gramby Dam.

If you have any questions, please feel free to contact me.

Thanks

*Steven D. Leach*

South Carolina Department of Natural Resources  
Dennis Wildlife Center  
305 Black Oak Rd.  
Bonneau, SC 29431  
(843) 825-3388

## Kacie Jensen

---

**From:** Alan Stuart  
**Sent:** Tuesday, March 07, 2006 3:26 PM  
**To:** Alison Guth; Jennifer Summerlin  
**Subject:** FW: Representative at Technical meeting tomorrow

-----Original Message-----

**From:** Gina Kirkland  
**To:** Alan.Stuart@KleinschmidtUSA.com; Shane.Boring@KleinschmidtUSA.com  
**Cc:** James Glover  
**Sent:** 3/7/06 3:14 PM  
**Subject:** Representative at Technical meeting tomorrow

Alan and Shane,

I apologize for the late notification, but please put Dr. James Glover down as the Department's representative on the Fish and Wildlife technical working committees. I'll let Jim decide on which working groups he'd like to participate, but I know that one of the groups is meeting tomorrow and he'll be there. Please send him the agenda and time and place and put him on your list of attendees. Sorry for the late notice. Thank you.

Gina

**Kacie Jensen**

---

**From:** Shane Boring  
**Sent:** Monday, March 06, 2006 12:52 PM  
**To:** 'Ron Ahle'  
**Subject:** RE: Saluda (Lake Murray) Relicensing: Terrestrial; Freshwater Mussel/Benthic Inverts; and Rare, Threatened and Endangered Species Technical Working Committee Meetings

Sorry about that, Ron. The scheduling conflict was not intentional on my part. If there are items you wish to have discussed, please feel free to pass those along via e-mail; although I assume you are coordinating with other agency folks to assure your views are properly represented. Thanks for letting me know.

Shane

-----Original Message-----

**From:** Ron Ahle [mailto:AhleR@dnr.sc.gov]  
**Sent:** Monday, March 06, 2006 10:51 AM  
**To:** Shane Boring  
**Subject:** RE: Saluda (Lake Murray) Relicensing: Terrestrial; Freshwater Mussel/Benthic Inverts; and Rare, Threatened and Endangered Species Technical Working Committee Meetings

Hi Shane,

Just wanted to let you know that I am unable to attend this inaugural meeting because of a schedule conflict.

Later,

Ron

---

**From:** Shane Boring [mailto:Shane.Boring@KleinschmidtUSA.com]  
**Sent:** Thursday, March 02, 2006 12:06 PM  
**To:** Amanda Hill (amanda\_hill@fws.gov); Jennifer Price; Ron Ahle; EPPINK, THOMAS G; Bob Seibels; Dick Christie; Gerrit Jobsis (American Rivers); Gerrit Jobsis (CCL); Steve Summer; Alan Stuart; Alison Guth; Bill Argentieri; Randy Mahan; Buddy Baker; 'bstutts@scana.com'  
**Subject:** Saluda (Lake Murray) Relicensing: Terrestrial; Freshwater Mussel/Benthic Inverts; and Rare, Threatened and Endangered Species Technical Working Committee Meetings

When: Wednesday, March 08, 2006 9:00 AM-3:00 PM (GMT-05:00) Eastern Time (US & Canada).

Where: Lake Murray Training Center

\*~\*~\*~\*~\*~\*~\*~\*~\*~\*

Hello Folks:

As discussed in the Fish and Wildlife Resource Conservation Group (RCG) meeting last week, the inaugural meetings of the Terrestrial, Freshwater Mussel/Benthic Invert, and Rare, Threatened and Endangered Species Technical Working Committees (TWCs) will be held on Wednesday March 8 at the Lake Murray Training Center. Throughout the relicensing process, similar efforts will be made to combine meeting to a single day to ease the travel burden on involved stakeholders and agency staff. A draft agenda is provided below for those who only want to attend the committees for which they are a member. Finally, please RSVP so that we can make the proper arrangements for lunch.

Thanks for you continued participation in the Saluda Relicensing.

C. Shane Boring  
Environmental Scientist  
Kleinschmidt Associates  
101 Trade Zone Dr., Suite-21A  
West Columbia, SC 29170  
Phone: (803)822-3177  
Fax: (803)822-3183

<<Fish and Wildlife TWC Agenda 3-08-06.doc>>

## Kacie Jensen

---

**From:** Malcolm Leaphart [malcolml@mailbox.sc.edu]  
**Sent:** Monday, March 06, 2006 12:09 PM  
**To:** Jim Bulak  
**Cc:** nashv@dnr.sc.gov; selfr@dnr.sc.gov; marshallb@dnr.sc.gov; dchristie@infoave.net; duncane@dnr.sc.gov; amanda\_hill@fws.us.gov; rmahan@scana.com; Dave Anderson; Alan Stuart; Shane Boring; KIRKLAGL@dhec.sc.gov; bargentieri@scana.com  
**Subject:** Re: flow

Quoting Jim Bulak <BulakJ@dnr.sc.gov>:

> Malcolm,  
>  
> I have a hard copy of 'Instream Flow Requirements for the fishes of  
> the Lower Saluda River" by Isely, Jobsis, and Gilbert (March 1985). If  
> you or anyone else needs a copy, let me know. Jim.  
>  
> James S. Bulak, Ph.D.  
> Research Coordinator - Freshwater Fisheries  
> SC Department of Natural Resources  
> 1921 Van Boklen Road  
> Eastover, SC 29044  
> 803-353-8232  
> bulakj@dnr.sc.gov  
>  
>

Thanks, Jim . I have a copy I got from Dr. Sandifer after I learned it was sent to DHEC as input for their TMDL. I also sent a copy to Dick, but will let others involved in the licensing process know of your offer.

I am on a 'technical working committee' along with Ron and Amanda for flows and aquatic habitat assessments. That is a committee for the Water Quality licensing group and also for the Fish and Wildlife group as these are inter-related issues. The research of the agency over the past 20 years that you have been involved in has really help to set the stage for continued science based fisheries management. The study on the Congaree drainage that included the Wateree and the Saluda, and the AFS symposium held in Columbia in the late 80's both fostered the approach that Trout Unlimited and SC DNR have mutually advocated and practiced over the years. Hopefully that approach will continue in our committee and in the new license so that significant improvements are made for the fisheries. We have world class fishery waiting to break out for both the striped bass and trout...

Below is an excerpt from the August, 05 ICD response from DNR. Bill Marshall is discussing the downstream navigation flow with Steve DeKozlowski. Maybe you can share what you know of the other recommendations, especially as to when, why, and how those were formulated??

see - <http://www.saludahydrorelicense.com/documents/SCDNRICDP516.pdf>

The DNR has previously conducted site-specific flow studies to evaluate the needs of aquatic habitat and navigation for the Lower Saluda River. In those studies, we determined that an instantaneous flow of at least 470 cfs is needed to support one-way downstream navigation, and flows of 590 cfs (July - November), 1170 cfs (Jan-April), and 880 cfs (May, June and December) are needed to provide seasonal aquatic habitat. Based on the State Water Plan, the higher of these flows should be provided to meet all uses. In lieu of implementing these recommendations, site-specific studies may be conducted in coordination with the Resource agencies. These studies could include wetted perimeter, Instream Flow Incremental Methodology (IFIM), Physical Habitat Simulation (PHABSIM), or other at a variety of flow conditions. These studies would provide information to further identify the relationship between discharge and channel characteristics such as water depth and velocity, substrate, cover, available habitat for fish and other aquatic



organisms and the effects of drought and flooding. Also, the effects of peaking operations on habitat should be evaluated using a dual flow analysis.

**Kacie Jensen**

**From:** Gerrit Jobsis [gjobsis@americanrivers.org]  
**Sent:** Thursday, March 02, 2006 12:57 PM  
**To:** Shane Boring; amanda\_hill@fws.gov; Jennifer Price; ahler@dnr.sc.gov; EPPINK, THOMAS G; Bob Seibels; Dick Christie; Gerrit Jobsis; Steve Summer; Alan Stuart; Alison Guth; BARGENTIERI@scana.com; RMAHAN@scana.com; BakerB@dnr.sc.gov; bstutts@scana.com  
**Subject:** RE: Saluda (Lake Murray) Relicensing: Terrestrial; Freshwater Mussel/Benthic Inverts; and Rare, Threatened and Endangered Species Technical Working Committee Meetings

Shane,

Please add me to the Fw Mussel/Benthic TWC. I asked to be on the group at the last meetings.

Thanks - Gerrit

<:;>>><  
Gerrit Jobsis  
American Rivers • Southeast Office  
1207 Lincoln Street, Suite 203-C • Columbia, S.C. 29201  
Telephone (803) 771-7114 • Fax (803) 771-7580  
[gjobsis@americanrivers.org](mailto:gjobsis@americanrivers.org)

---

**From:** Shane Boring [mailto:Shane.Boring@KleinschmidtUSA.com]  
**Sent:** Thursday, March 02, 2006 12:06 PM  
**To:** Amanda Hill (amanda\_hill@fws.gov); Jennifer Price; Ron Ahle (ahler@dnr.sc.gov); EPPINK, THOMAS G; Bob Seibels; Dick Christie; Gerrit Jobsis; Steve Summer; Alan Stuart; Alison Guth; Bill Argentieri; Randy Mahan; 'BakerB@dnr.sc.gov'; 'bstutts@scana.com'  
**Subject:** Saluda (Lake Murray) Relicensing: Terrestrial; Freshwater Mussel/Benthic Inverts; and Rare, Threatened and Endangered Species Technical Working Committee Meetings

When: Wednesday, March 08, 2006 9:00 AM-3:00 PM (GMT-05:00) Eastern Time (US & Canada).  
Where: Lake Murray Training Center

\*~\*~\*~\*~\*~\*~\*~\*~\*~\*

Hello Folks:

As discussed in the Fish and Wildlife Resource Conservation Group (RCG) meeting last week, the inaugural meetings of the Terrestrial, Freshwater Mussel/Benthic Invert, and Rare, Threatened and Endangered Species Technical Working Committees (TWCs) will be held on Wednesday March 8 at the Lake Murray Training Center. Throughout the relicensing process, similar efforts will be made to combine meeting to a single day to ease the travel burden on involved stakeholders and agency staff. A draft agenda is provided below for those who only want to attend the committees for which they are a member. Finally, please RSVP so that we can make the proper arrangements for lunch.

Thanks for you continued participation in the Saluda Relicensing.

C. Shane Boring

Environmental Scientist  
Kleinschmidt Associates  
101 Trade Zone Dr., Suite-21A  
West Columbia, SC 29170  
Phone: (803)822-3177  
Fax: (803)822-3183

<<Fish and Wildlife TWC Agenda 3-08-06.doc>>

## Kacie Jensen

---

**From:** Steve Leach [LeachS@dnr.sc.gov]  
**Sent:** Tuesday, February 28, 2006 10:06 AM  
**To:** Alison Guth; Shane Boring; Alan Stuart  
**Cc:** Dick Christie  
**Subject:** Eel fisherman

Alison:

Per our earlier conversation. I contacted Mr. Livingston, a licensed eel fisherman from Moncks Corner, and described the potential that you may want to talk with him about most-likely sites to fish eels in the Lower Saluda River. He was enthusiastic, and had no problems with me giving his phone number to you.

Business: LivingTees, Santee Circle, SC (843) 761-1407

*Steven D. Leach*

South Carolina Department of Natural Resources  
Dennis Wildlife Center  
305 Black Oak Rd.  
Bonneau, SC 29431  
(843) 825-3388

**Kacie Jensen**

---

**From:** Steve Leach [LeachS@dnr.sc.gov]  
**Sent:** Monday, February 27, 2006 12:08 PM  
**To:** Steven R Johnson; SUMMER, STEPHEN E; djcoughl@duke-energy.com; Shane Boring; Alison Guth; Gene E Vaughan  
**Cc:** Dick Christie; Val Nash  
**Subject:** Shad passage report

All,

Please forward this to anyone that I missed who may be interested:

My estimation is that the shad run into the Santee Cooper system began in earnest yesterday, with several thousand passed at St. Stephen, and continuing operations for passage through Pinopolis Lock. Water temperature at St. Stephen reached 12 C during the afternoon yesterday.

Also, three shortnose sturgeon are making a move upstream, upon last location (2/24, they were in the reach between the Hwy 601 crossing of the Congaree River and the Congaree Swamp National Park put-in. We will be looking to locate those fish starting at Rosewood and working downstream tomorrow.

If you have any questions, please feel free to contact me.

Thanks

*Steven D. Leach*

South Carolina Department of Natural Resources  
Dennis Wildlife Center  
305 Black Oak Rd.  
Bonneau, SC 29431  
(843) 825-3388

## Kacie Jensen

---

**Subject:** Final Fish and Wildlife Resource Group Date  
**Location:** Lake Murray Training Center

**Start:** Wed 2/22/2006 9:00 AM  
**End:** Wed 2/22/2006 3:00 PM  
**Show Time As:** Tentative

**Recurrence:** (none)

**Meeting Status:** Not yet responded

**Required Attendees:** Amanda\_Hill@fws.gov; bill\_hulslander@nps.gov; bseibels@riverbanks.org; cheetahtrk@yahoo.com; dchristie@infoave.net; ediebold@riverbanks.org; kayakduke@bellsouth.net; gjobsis@americanrivers.org; KIRKLAGL@dhec.sc.gov; Jeff\_Duncan@NPS.gov; wildlife@sc.rr.com; Malcolml@mailbox.sc.edu; mark\_Leao@fws.gov; lucky8lady@aol.com; Norm@sc.rr.com; PatrickM@scccl.org; Prescott.Brownell@noaa.gov; crafton@usit.net; ahler@dnr.sc.gov; samnancydrake@aol.com; Shane Boring; bellsteve9339@bellsouth.net; leachs@dnr.sc.gov; ssummer@scana.com; suzrhodes@juno.com; BeardH@dnr.sc.gov; BalesW@dnr.sc.gov; dianlog8@aol.com; marshallb@dnr.sc.gov; billeast@sc.rr.com; RLavisky@BBandT.com; Elymay2@aol.com; tufford@sc.edu; rbull@davisfloyd.com; bargentieri@scana.com; Alan Stuart; Shane Boring; teppink@SCANA.com; MAHAN, RANDOLPH R; Jennifer Summerlin

Hello Fish and Wildlife Group,

The verdict is in, the final Fish and Wildlife RCG Meeting Date has been scheduled for February 22nd at **9:00** am at the Lake Murray Training Center. Thanks to all of you for your responses to the proposed date change and for your flexibility. Please let me know if you are attending by Feb. 15th so that I can get the lunches ordered. Hope to see all of you soon.  
Alison

## Kacie Jensen

---

**From:** Alison Guth  
**Sent:** Tuesday, January 31, 2006 11:55 AM  
**To:** 'Amanda\_Hill@fws.gov'; 'bill\_hulslander@nps.gov'; 'cheetahtrk@yahoo.com'; 'dchristie@infoave.net'; 'ediebold@riverbanks.org'; 'kayakduke@bellsouth.net'; 'gjobsis@americanrivers.org'; 'KIRKLAGL@dhec.sc.gov'; 'Jeff\_Duncan@NPS.gov'; 'Malcolml@mailbox.sc.edu'; 'mark\_Leao@fws.gov'; 'Norm@sc.rr.com'; 'PatrickM@scccl.org'; 'Prescott.Brownell@noaa.gov'; 'crafton@usit.net'; 'ahler@dnr.sc.gov'; Shane Boring; 'bellsteve9339@bellsouth.net'; 'ssummer@scana.com'; 'suzrhodes@juno.com'; 'marshallb@dnr.sc.gov'; 'Elymay2@aol.com'; 'tufford@sc.edu'; RMAHAN@scana.com; BARGENTIERI@scana.com; 'teppink@SCANA.com'; Alan Stuart; Jennifer Summerlin; 'bseibels@riverbanks.org'; 'wildlife@sc.rr.com'; 'lucky8lady@aol.com'; 'samnancydrake@aol.com'; 'leachs@dnr.sc.gov'; 'BeardH@dnr.sc.gov'; 'BalesW@dnr.sc.gov'; 'dianlog8@aol.com'; 'billeast@sc.rr.com'; 'RLavisky@BBandT.com'  
**Subject:** Thursday

Hello Fish and Wildlife RCG...

Just a reminder that your Fish and Wildlife RCG meeting originally scheduled for Thursday (Feb 2nd) has been postponed. The tentative date for this meeting as of now is February 22nd. Thank you and I will let you know of the final date in the next day or so when all of the votes are in. Thanks, Alison

Alison Guth  
Licensing Coordinator  
*Kleinschmidt Associates*  
101 Trade Zone Drive  
Suite 21A  
West Columbia, SC 29170  
P: (803) 822-3177  
F: (803) 822-3183

## Cheryl Balitz

---

**From:** Dan Tufford [tufford@sc.edu]  
**Sent:** Monday, January 30, 2006 8:03 AM  
**To:** Alison Guth  
**Subject:** RCG participation

Alison,

Please include me as a member of the Fish and Wildlife RCG.

Regards,  
Daniel L. Tufford, Ph.D.  
Research Assistant Professor  
University of South Carolina  
Department of Biological Sciences  
Sumwalt 209A (office)  
701 Sumter Street, Room 401 (mail)  
Columbia, SC 29208  
e-mail: tufford@sc.edu  
web: <http://www.biol.sc.edu/~tufford>  
Ph: 803.777.3292 Fx: 803.777.3292



## Kacie Jensen

---

**Subject:** Fish and Wildlife RCG  
**Location:** Lake Murray Training Center

**Start:** Thu 2/2/2006 9:00 AM  
**End:** Thu 2/2/2006 3:00 PM  
**Show Time As:** Tentative

**Recurrence:** (none)

**Meeting Status:** Not yet responded

**Required Attendees:** Amanda\_Hill@fws.gov; bill\_hulslander@nps.gov; bseibels@riverbanks.org; cheetahtrk@yahoo.com; dchristie@infoave.net; ediebold@riverbanks.org; kayakduke@bellsouth.net; gjobsis@americanrivers.org; KIRKLAGL@dhec.sc.gov; Jeff\_Duncan@NPS.gov; wildlife@sc.rr.com; MalcolmI@mailbox.sc.edu; mark\_Leao@fws.gov; lucky8lady@aol.com; Norm@sc.rr.com; PatrickM@scccl.org; Prescott.Brownell@noaa.gov; crafton@usit.net; ahler@dnr.sc.gov; samnancydrake@aol.com; Shane Boring; bellsteve9339@bellsouth.net; leachs@dnr.sc.gov; ssummer@scana.com; suzrhodes@juno.com; BeardH@dnr.sc.gov; BalesW@dnr.sc.gov; dianlog8@aol.com; marshallb@dnr.sc.gov; billeast@sc.rr.com; RLavisky@BBandT.com; Elymay2@aol.com; 'rmahan@scana.com'; Alan Stuart; ARGENTIERI, WILLIAM R

Hello All,

On Thursday, February 2nd we will be having our next Fish and Wildlife RCG meeting at the Lake Murray Training Center. Remember, it will be at **9:00** in the morning. If you plan on attending just let me know, it will help me to know how many lunches to order. Thanks so much and I hope you have a great weekend. Alison

**Kacie Jensen**

---

**From:** Dick Christie [dchristie@InfoAve.Net]  
**Sent:** Friday, January 20, 2006 2:35 PM  
**To:** Alison Guth  
**Cc:** Steve Leach  
**Subject:** FW: American Eel Report

Hi Alison -

Our comments regarding the AEL report are attached. They are very brief!

In the discussion, the conclusion is made that the number of eels are fairly low in the LSR. While this may be true, no counter-discussion of the effectiveness of the gear is given. Since we know eels are present in the River, a zero catch should be thoroughly explained. We recommend that some discussion be given to gear effectiveness. Also, recommendations for altering the techniques based on the experience gained in the 2005 study would be useful.

We further recommend that if possible, upcoming sampling methods should be increased and effort should be focused in the vicinity of the Saluda Dam. Thanks.

---

**From:** Alison Guth [mailto:Alison.Guth@KleinschmidtUSA.com]  
**Sent:** Monday, December 19, 2005 11:34 AM  
**To:** Steve Leach; 'Prescott.Brownell@NOAA.gov'  
**Subject:** FW: American Eel Report

Pres and Steve,

I was going back through comments and such and came to a shocking realization, somehow you guys were left off of the distribution list. I apologize for the oversight, take a few weeks and let me know if you have any comments. Could you have comments back to me by the first week in January? Thanks so much and I hope you have a wonderful holiday season. Alison

-----Original Message-----

**From:** Alison Guth  
**Sent:** Thursday, November 03, 2005 11:27 AM  
**To:** Shane Boring; 'Amanda Hill'; 'ARGENTIERI, WILLIAM R'; 'Hal Beard'; Alan Stuart; 'mark\_a\_cantrell@fws.gov'; 'SUMMER, STEPHEN E'; 'rmahan@scana.com'; 'dchristie@infoave.net'

**Subject:** American Eel Report

Good Morning,

Attached to this email is a draft copy of the 2005 American Eel Survey Report. Please take a look at it and let me know if you have any comments by November 18th. If at all possible, please put any edits to content in track changes. It is quite a large file, so let me know if you have any problems opening it and I will get it to you another way. Thanks so much for all of your involvement, and as always, give me a call if you have any questions.

10/31/2007

Thanks,  
Alison

<<Diad Fish Eel Survey (11-3-2005 acgdraft).doc>>

Alison Guth

Licensing Coordinator

*Kleinschmidt Associates*

101 Trade Zone Drive

Suite 21A

West Columbia, SC 29170

P: (803) 822-3177

F: (803) 822-3183

## Kacie Jensen

---

**From:** bellsteve9339@bellsouth.net  
**Sent:** Friday, January 06, 2006 1:21 PM  
**To:** Ed Diebold; Alison Guth  
**Cc:** Amanda\_Hill@fws.gov; bill\_hulslander@nps.gov; Bob Seibels; cheetahrk@yahoo.com; dchristie@infoave.net; kayakduke@bellsouth.net; gjobsis@americanrivers.org; KIRKLAGL@dhec.sc.gov; Jeff\_Duncan@NPS.gov; wildlife@sc.rr.com; Malcolm1@mailbox.sc.edu; mark\_Leao@fws.gov; lucky8lady@aol.com; Norm@sc.rr.com; PatrickM@scccl.org; Prescott.Brownell@noaa.gov; crafton@usit.net; ahler@dnr.sc.gov; samnancydrake@aol.com; Shane Boring; bellsteve9339@bellsouth.net; leachs@dnr.sc.gov; ssummer@scana.com; suzrhodes@juno.com; BeardH@dnr.sc.gov; BalesW@dnr.sc.gov; dianlog8@aol.com; marshallb@dnr.sc.gov; billeast@sc.rr.com; RLavisky@BBandT.com; Elymay2@aol.com  
**Subject:** Re: RE: Draft Fish and Wildlife Mission Statement

Alison- I support this recommended change.

Steve Bell  
Lake Murray Watch  
730-8121

>  
> From: "Ed Diebold" <ediebold@riverbanks.org>  
> Date: 2006/01/06 Fri PM 12:00:07 EST  
> To: "Alison Guth" <Alison.Guth@KleinschmidtUSA.com>  
> CC: <Amanda\_Hill@fws.gov>,  
> <bill\_hulslander@nps.gov>,  
> "Bob Seibels" <bseibels@riverbanks.org>,  
> <cheetahrk@yahoo.com>,  
> <dchristie@infoave.net>,  
> <kayakduke@bellsouth.net>,  
> <gjobsis@americanrivers.org>,  
> <KIRKLAGL@dhec.sc.gov>,  
> <Jeff\_Duncan@NPS.gov>,  
> <wildlife@sc.rr.com>,  
> <Malcolm1@mailbox.sc.edu>,  
> <mark\_Leao@fws.gov>,  
> <lucky8lady@aol.com>,  
> <Norm@sc.rr.com>,  
> <PatrickM@scccl.org>,  
> <Prescott.Brownell@noaa.gov>,  
> <crafton@usit.net>,  
> <ahler@dnr.sc.gov>,  
> <samnancydrake@aol.com>,  
> "Shane Boring" <Shane.Boring@KleinschmidtUSA.com>,  
> <bellsteve9339@bellsouth.net>,  
> <leachs@dnr.sc.gov>,  
> <ssummer@scana.com>,  
> <suzrhodes@juno.com>,  
> <BeardH@dnr.sc.gov>,  
> <BalesW@dnr.sc.gov>,  
> <dianlog8@aol.com>,  
> <marshallb@dnr.sc.gov>,  
> <billeast@sc.rr.com>,  
> <RLavisky@BBandT.com>,  
> <Elymay2@aol.com>  
> Subject: RE: Draft Fish and Wildlife Mission Statement  
>  
> Hi Alison,  
>  
> Here are suggestions from Bob Seibels and me.  
>  
> Best Wishes,

>  
> Ed Diebold, Director of Animal Collections  
> Riverbanks Zoo & Botanical Garden  
> P.O. Box 1060  
> Columbia, SC 29202-1060  
> Phone: 803-779-8717, extension 1135  
> FAX: 803-253-6381  
> E-mail: ediebold@riverbanks.org  
>  
>  
> -----Original Message-----  
> From: Alison Guth [mailto:Alison.Guth@KleinschmidtUSA.com]  
> Sent: Thursday, January 05, 2006 4:45 PM  
> To: 'Amanda\_Hill@fws.gov'; 'bill\_hulslander@nps.gov'; Bob Seibels;  
> 'cheetahtrk@yahoo.com'; 'dchristie@infoave.net'; Ed Diebold; 'kayakduke@bellsouth.net';  
> 'gjobsis@americanrivers.org'; 'KIRKLAGL@dhec.sc.gov'; 'Jeff\_Duncan@NPS.gov';  
> 'wildlife@sc.rr.com'; 'Malcolml@mailbox.sc.edu'; 'mark\_Leao@fws.gov';  
> 'lucky8lady@aol.com'; 'Norm@sc.rr.com'; 'PatrickM@scccl.org';  
> 'Prescott.Brownell@noaa.gov'; 'crafton@usit.net'; 'ahler@dnr.sc.gov';  
> 'samnancydrake@aol.com'; Shane Boring; 'bellsteve9339@bellsouth.net'; 'leachs@dnr.sc.gov';  
> 'ssummer@scana.com'; 'suzrhodes@juno.com'; 'BeardH@dnr.sc.gov'; 'BalesW@dnr.sc.gov';  
> 'dianlog8@aol.com'; 'marshallb@dnr.sc.gov'; 'billeast@sc.rr.com'; 'RLavisky@BBandT.com';  
> 'Elymay2@aol.com'  
> Subject: Draft Fish and Wildlife Mission Statement  
>  
>  
>  
> Hello All,  
>  
> In our first Fish and Wildlife RCG meeting we discussed some of the  
> components that the group felt should be included in a mission  
> statement. Taking those components, the group tasked Randy with the  
> job of developing a draft statement. Please look over the draft  
> mission statement and let me know of any comments that you may have by  
> January 19th. Thanks for your participation and let me know if you  
> have any questions. ~ Alison  
>  
>  
> <<Fish and Wildlife RCG Mission Statement doc.doc>>  
> Alison Guth  
> Licensing Coordinator  
> Kleinschmidt Associates  
> 101 Trade Zone Drive  
> Suite 21A  
> West Columbia, SC 29170  
> P: (803) 822-3177  
> F: (803) 822-3183  
>  
>  
>  
>

## Kacie Jensen

---

**Subject:** Updated: Conference call with agencies to discuss 2006 Saluda diadromous fish sampling  
**Location:** via conference call

**Start:** Mon 1/9/2006 10:00 AM  
**End:** Mon 1/9/2006 11:00 AM  
**Show Time As:** Tentative

**Recurrence:** (none)

**Meeting Status:** Not yet responded

**Required Attendees:** 'Amanda Hill (amanda\_hill@fws.gov)'; 'Hal Beard (BeardH@scdnr.state.sc.us)'; 'Prescott Brownell (prescott.brownell@NOAA.gov)'; 'Steve Summer (ssummer@scana.com)'; 'dchristie@infoave.net'; 'Mark A. Cantrell (mark\_a\_cantrell@fws.gov)'; 'Steve Leach'; Alan Stuart; Alison Guth; Argentieri, Bill; MAHAN, RANDOLPH R; Shane Boring

Hello all:

Just a reminder of our diadromous fish conference call scheduled for 10 AM on Monday (see access number below). The following will serve as a brief agenda for our discussion:

10:00 - 10:15 Results of 2005 sampling (Summary Report attached, this is the same document that was distributed earlier in the week).

10:15 - 10:45 2006 Sampling: Potential Modifications to 2005 Study Plan (attached)

10:45 - 11:00 Status of Shortnose Sturgeon Sampling Permit Application

Access number for conference call: 800-504-8071, then enter the access code of 2179162 followed by the # sign.

Thanks,

Shane



Diadromous\_Fish\_S  
tudy\_Plan\_011...



2005 Saluda  
adromous Summary

## Danielle Fitzpatrick

---

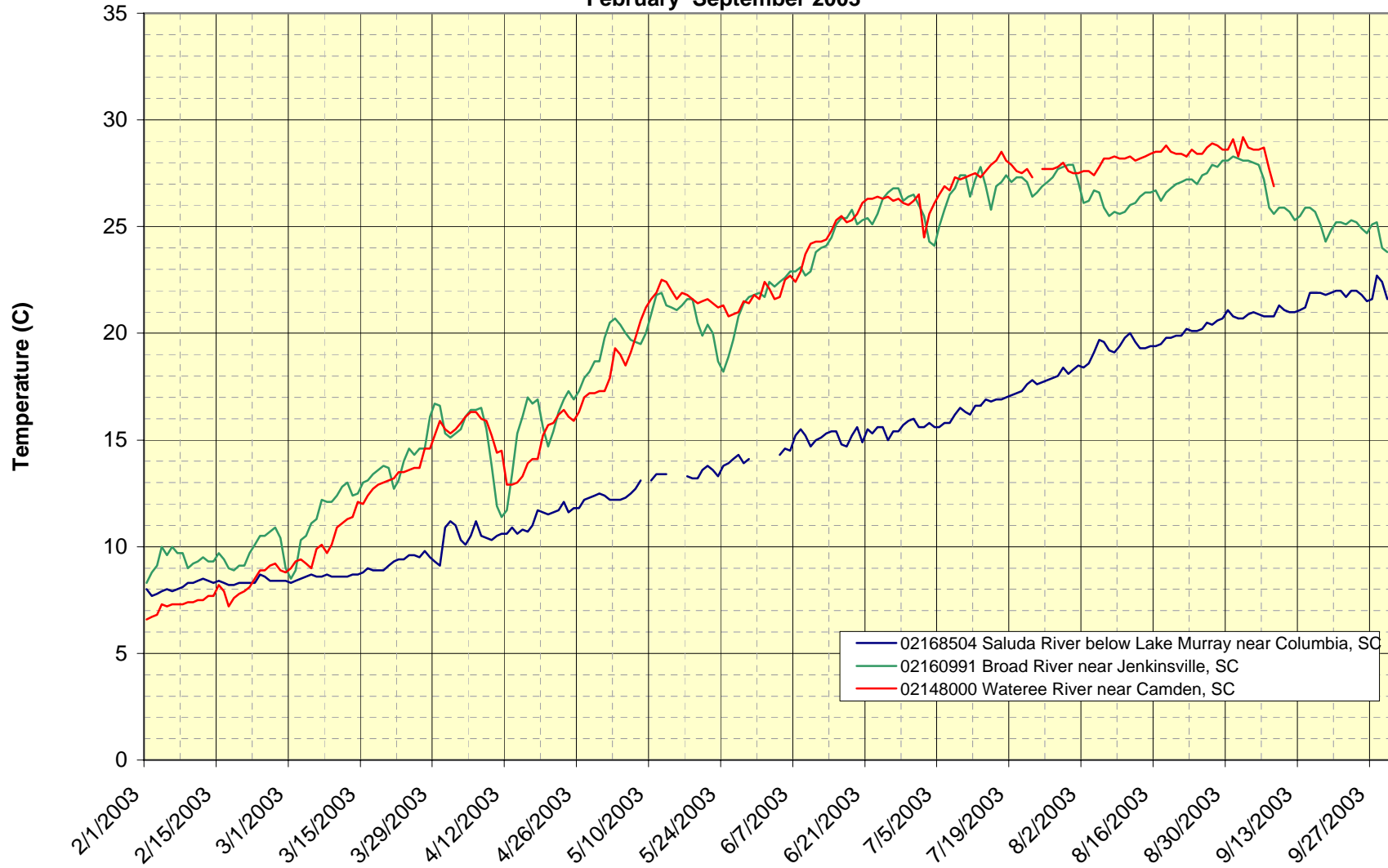
**From:** Mark\_A\_Cantrell@fws.gov  
**Sent:** Monday, January 09, 2006 11:16 AM  
**To:** Shane Boring  
**Cc:** Alan Stuart; Alison Guth; 'Amanda Hill (amanda\_hill@fws.gov)'; BARGENTIERI@scana.com; 'Hal Beard (BeardH@scdnr.state.sc.us)'; 'dchristie@infoave.net'; 'Steve Leach'; 'Prescott Brownell (prescott.brownell@NOAA.gov)'; RMAHAN@scana.com; 'Steve Summer (ssummer@scana.com)'  
**Subject:** Conference call with agencies to discuss 2006 Saluda dia dromous fish sampling

Per the conference call, here are some graphs that compare stream temperature vicinity of Saluda. Some other analyses of more recent years show variability in temperature at Saluda depending on volume of cold water storage below the thermocline at Lake Murray.

Mark A. Cantrell  
U.S. Fish & Wildlife Service  
160 Zillicoa Street  
Asheville, NC 28801  
828/258-3939, ext 227  
fax: 828/258-5330  
mobile: 828/215-1739  
mark\_a\_cantrell@fws.gov

"Our mission is working with others to conserve, protect, and enhance fish, wildlife, and plants and their habitats for the continuing benefit of the American people."

**River Temperature Comparison**  
Saluda R, Broad R, Wateree R  
February September 2003





**Kacie Jensen**

---

**From:** Shane Boring  
**Sent:** Thursday, August 23, 2007 9:20 AM  
**To:** Alan Stuart; Jennifer Summerlin  
**Subject:** FW: Santee Basin Shortnose Sturgeon Movements

-----Original Message-----

**From:** Jarrett Gibbons [mailto:GibbonsJ@dnr.sc.gov]  
**Sent:** Thursday, August 23, 2007 8:44 AM  
**To:** Shane Boring  
**Subject:** RE: Santee Basin Shortnose Sturgeon Movements

Shane,

None of our transmitted sturgeon showed up on any of the receivers in the Saluda River.

Jarrett

---

**From:** Shane Boring [mailto:Shane.Boring@KleinschmidtUSA.com]  
**Sent:** Wednesday, August 22, 2007 2:40 PM  
**To:** Jason Bettinger; Jarrett Gibbons  
**Cc:** Alan Stuart  
**Subject:** Santee Basin Shortnose Sturgeon Movements

Jason/Jarret:

Did any of your receivers in the Lower Saluda River get any hits from tagged sturgeon?

Thanks  
Shane

Shane Boring  
Environmental Scientist  
Kleinschmidt Associates  
101 Trade Zone Dr., Suite-21A  
West Columbia, SC 29170  
Phone: (803)822-3177  
Fax: (803)822-3183

## Kacie Jensen

---

**From:** LEAPHART, JR., MALCOLML [MALCOLML@mailbox.sc.edu]  
**Sent:** Tuesday, July 17, 2007 3:41 PM  
**To:** Shane Boring; Alison Guth; Amanda Hill; BARGENTIERI@scana.com; Bud Badr; Dick Christie; Gerrit Jobsis (American Rivers); Hal Beard; Jennifer Summerlin; Jim Glover; mquattlebaum@scana.com; Prescott Brownell; RMAHAN@scana.com; Ron Ahle; Scott Harder; Steve Summer; Theresa Thom; Brandon Kulik; Alan Stuart; mwaddell@esri.scedu; dengff@al.com; selfr@dnr.sc.gov; marshallb@dnr.sc.gov; tbeber@scprt.com; ben@scwf.org; beasleyb@dnr.sc.gov; dekozrowskis@dnr.sc.gov  
**Cc:** bellsteve9339@bellsouth.net; kayakduke@bellsouth.net; keithcloud@yahoo.com; lmccaryvt@yahoo.com; tomcatmc@bellsouth.net; carmichaelb@dnr.sc.gov; jenko@scwf.org  
**Subject:** Saluda Hydro Relicensing

Shane and others,

These comments from a story on Philpott Dam in Virginia sum up the concerns of the devastating effects on aquatic life and fish from high 'scouring' flows. See the national Trout Unlimited website, Conservation page, Local News - for the full story - <http://www.tu.org/site/apps/nl/content2.asp?c=7dJEKTNuFmG&b=901105&ct=3659293> \*\*\* excerpt below... I only wish we only had 'a surge of 1,400 cubic feet per second (CFS) of water' to deal with...

The scouring also erodes the river, widening and shallowing channels like has been witness over the years at the 'Oh Brother' rapids stretch on the lower Saluda; and, also can 'blow out' fish spawning sites as has been so well documented on the White below Bull Shoals and many other rivers. If the lower Saluda River is to be managed with any real concern for fisheries and aquatic life from degradation from scouring flows, a dual flow analysis should be done in the current IFIM study to quantify the effects that can be easily seen to scientifically set upper release limits from the hydro for the new FERC license. And safety will be dramatically improved with some upper release limits in not only the lower Saluda, but also in the affected confluence and the upper Congaree stretches where the new greenways have spawned huge increases in river use with new access (the River Alliance certainly deserves many kudoes!).

Look forward to discussing flow and other aquatic life needs in the lower Saluda in future Fisheries RGC and TWC meetings, including the critical need for aquatic habitat improvements as has been done at other large tailraces such as the White River in Arkansas. Larry Rider is the AK Aquatic Habitat Manager if anyone would like to discuss some of their successes directly with him, including bendway weirs, root wads, revetments, and even gravel bed building with weighted upper tree trunks and branches! Larry's office number is 1-877-967-7577, or email Larry at [l rider@agfc.state.ar.us](mailto:l rider@agfc.state.ar.us). All of those proven alternatives should be noted in the white paper as it is updated during the relicensing process based on the continuing studies and research..

\*\*\* excerpt

*David Jones of Henry County, who has been instrumental in bringing the Trout in the Classroom project to area schools, also attended Wednesday's meeting and said he was "extremely pleased. It's wonderful we're even talking at all. A few years back a meeting like that probably wouldn't have happened."*

*He said the problem is that the wild brown trout in the Smith River are not big enough to attract fishermen and build ecotourism in the area. When the two generators in the dam both are operating, it creates a surge of 1,400 cubic feet per second (CFS) of water that shocks the fish and scours the bottom of the river, he said. Conversely, when the generators are off, the CFS goes below 100 and the water warms up, he added.*

*"It mainly affects the insect life. Their daily cycles are interrupted" and there is a lack of food for the brown trout, Jones said.*

10/24/2007

*H.G. Vaughn, chairman of the Henry County Board of Supervisors, who also attended the meeting, said there still are trout in the river "but their size is down dramatically. In the early 1970s the state record was broken three times" in a short period below Philpott Dam, he said, adding that the record was 19 pounds.*

*"Now I understand it's hard to find" a brown trout that weighs more than 2 pounds, Vaughn said.*

*Still, the river attracts fishermen from North Carolina and "if the river got a little better, we would have a large increase in fishermen coming here," Jones said.*

*He added that studies in other states have put a value on trout streams by the mile. **In today's terms, the value of the Smith River from Philpott to Ridgeway would be about \$2 million per year in ecotourism, he said.***

## Kacie Jensen

---

**From:** LEAPHART, JR., MALCOLML [MALCOLML@mailbox.sc.edu]  
**Sent:** Tuesday, July 17, 2007 3:41 PM  
**To:** Shane Boring; Alison Guth; Amanda Hill; BARGENTIERI@scana.com; Bud Badr; Dick Christie; Gerrit Jobsis (American Rivers); Hal Beard; Jennifer Hand; Jim Glover; mquattlebaum@scana.com; Prescott Brownell; RMAHAN@scana.com; Ron Ahle; Scott Harder; Steve Summer; Theresa Thom; Brandon Kulik; Alan Stuart; mwaddell@esri.scedu; dengff@al.com; selfr@dnr.sc.gov; marshallb@dnr.sc.gov; tbebber@scprt.com; ben@scwf.org; beasleyb@dnr.sc.gov; dekozlrowskis@dnr.sc.gov  
**Cc:** bellsteve9339@bellsouth.net; kayakduke@bellsouth.net; keithcloud@yahoo.com; lmccaryvt@yahoo.com; tomcatmc@bellsouth.net; carmichaelb@dnr.sc.gov; jenko@scwf.org  
**Subject:** Saluda Hydro Relicensing

Shane and others,

These comments from a story on Philpott Dam in Virginia sum up the concerns of the devastating effects on aquatic life and fish from high 'scouring' flows. See the national Trout Unlimited website, Conservation page, Local News - for the full story - <http://www.tu.org/site/apps/nl/content2.asp?c=7dJEKTNuFmG&b=901105&ct=3659293> \*\*\* excerpt below... I only wish we only had 'a surge of 1,400 cubic feet per second (CFS) of water' to deal with...

The scouring also erodes the river, widening and shallowing channels like has been witness over the years at the 'Oh Brother' rapids stretch on the lower Saluda; and, also can 'blow out' fish spawning sites as has been so well documented on the White below Bull Shoals and many other rivers. If the lower Saluda River is to be managed with any real concern for fisheries and aquatic life from degradation from scouring flows, a dual flow analysis should be done in the current IFIM study to quantify the effects that can be easily seen to scientifically set upper release limits from the hydro for the new FERC license. And safety will be dramatically improved with some upper release limits in not only the lower Saluda, but also in the affected confluence and the upper Congaree stretches where the new greenways have spawned huge increases in river use with new access (the River Alliance certainly deserves many kudoes!).

Look forward to discussing flow and other aquatic life needs in the lower Saluda in future Fisheries RGC and TWC meetings, including the critical need for aquatic habitat improvements as has been done at other large tailraces such as the White River in Arkansas. Larry Rider is the AK Aquatic Habitat Manager if anyone would like to discuss some of their successes directly with him, including bendway weirs, root wads, revetments, and even gravel bed building with weighted upper tree trunks and branches! Larry's office number is 1-877-967-7577, or email Larry at [l rider@agfc.state.ar.us](mailto:l rider@agfc.state.ar.us). All of those proven alternatives should be noted in the white paper as it is updated during the relicensing process based on the continuing studies and research..

\*\*\* excerpt

*David Jones of Henry County, who has been instrumental in bringing the Trout in the Classroom project to area schools, also attended Wednesday's meeting and said he was "extremely pleased. It's wonderful we're even talking at all. A few years back a meeting like that probably wouldn't have happened."*

*He said the problem is that the wild brown trout in the Smith River are not big enough to attract fishermen and build ecotourism in the area. When the two generators in the dam both are operating, it creates a surge of 1,400 cubic feet per second (CFS) of water that shocks the fish and scours the bottom of the river, he said. Conversely, when the generators are off, the CFS goes below 100 and the water warms up, he added.*

*"It mainly affects the insect life. Their daily cycles are interrupted" and there is a lack of food for the brown trout, Jones said.*

*H.G. Vaughn, chairman of the Henry County Board of Supervisors, who also attended the meeting, said there still are trout in the river "but their size is down dramatically. In the early 1970s the state record was broken three times" in a short period below Philpott Dam, he said, adding that the record was 19 pounds.*

*"Now I understand it's hard to find" a brown trout that weighs more than 2 pounds, Vaughn said.*

*Still, the river attracts fishermen from North Carolina and "if the river got a little better, we would have a large increase in fishermen coming here," Jones said.*

*He added that studies in other states have put a value on trout streams by the mile. **In today's terms, the value of the Smith River from Philpott to Ridgeway would be about \$2 million per year in ecotourism, he said.***

## Kacie Jensen

---

**From:** Shane Boring  
**Sent:** Friday, June 22, 2007 9:45 AM  
**To:** Theresa Thom; Alison Guth; Amanda Hill; Bill Argentieri; Bud Badr; Dick Christie; Gerrit Jobsis (American Rivers); Hal Beard; Jennifer Summerlin; Jim Glover; Malcolm Leaphart; Mike Waddell; Milton Quattlebaum (mquattlebaum@scana.com); Prescott Brownell; Randy Mahan; Ron Ahle; Scott Harder; Shane Boring; Steve Summer; Brandon Kulik; Alan Stuart  
**Subject:** Follow Up IFIM Work Next Week

All:

I wanted to give you all a heads up and let you know that we will be conducting some follow-up field work for the Saluda IFIM on Tues and Wed of next week (June 26 & 27). If anyone is interested in helping out, give me a call and I can tell you when and where we plan to meet on a given day. Thanks

Shane Boring

Environmental Scientist  
Kleinschmidt Associates  
101 Trade Zone Dr., Suite-21A  
West Columbia, SC 29170  
Phone: (803)822-3177  
Fax: (803)822-3183

## Kacie Jensen

---

**From:** Shane Boring  
**Sent:** Friday, June 22, 2007 9:45 AM  
**To:** Theresa Thom; Alison Guth; Amanda Hill; Bill Argentieri; Bud Badr; Dick Christie; Gerrit Jobsis (American Rivers); Hal Beard; Jennifer Hand; Jim Glover; Malcolm Leaphart; Mike Waddell; Milton Quattlebaum (mquattlebaum@scana.com); Prescott Brownell; Randy Mahan; Ron Ahle; Scott Harder; Shane Boring; Steve Summer; Brandon Kulik; Alan Stuart  
**Subject:** Follow Up IFIM Work Next Week

All:

I wanted to give you all a heads up and let you know that we will be conducting some follow-up field work for the Saluda IFIM on Tues and Wed of next week (June 26 & 27). If anyone is interested in helping out, give me a call and I can tell you when and where we plan to meet on a given day. Thanks

Shane Boring

Environmental Scientist  
Kleinschmidt Associates  
101 Trade Zone Dr., Suite-21A  
West Columbia, SC 29170  
Phone: (803)822-3177  
Fax: (803)822-3183

**MEETING NOTES**

**SOUTH CAROLINA ELECTRIC & GAS COMPANY  
SALUDA HYDRO PROJECT RELICENSING  
Instream Flow/Aquatic Habitat Technical Working Committee  
Via Conference Call  
April 10, 2007**

Draft CSB 04-23-07

---

**MEETING NOTES:**

*These notes serve as a summary of the major points presented during the meeting and are not intended to be a transcript or analysis of the meeting.*

Shane Boring opened the meeting at approximately 9:00 AM. Shane noted that, at the January 22<sup>nd</sup> meeting of the Instream Flow/Aquatic Habitat Technical Working Committee (TWC), the TWC had agreed upon Habitat Suitability Criteria (HSC) for depth and velocity for several target species (smallmouth bass, brown trout, and rainbow trout adults). Shane added that the purpose of today's meeting would be to finalize the HSC selection process by selecting substrate criteria for these species.

Shane enquired as to whether there was any follow-up discussion regarding the depth/velocity criteria selection process or other TWC housekeeping items in need of attention. Hal Beard noted that, at the previous meeting, there was an action item assigned to determine whether HSC curves were available for gizzard shad in riverine systems. Hal added that, after discussing this issue with colleagues at SCDNR, he did not think this species was as much of a priority as he had once thought.

Dick Christie reminded the group that DNR manages the lower Saluda as a put-grow-take trout fishery, and as such, he and other DNR staffers had requested at previous TWC meetings that the habitat modeling for trout focus on adult lifestages (i.e. not include spawning, juvenile, fry). He added that, while DNR certainly welcomes any improvements to water quality or habitat that might benefit these early-lifestages, flow recommendations resulting from the IFIM process should not come at the detriment of providing quality growing conditions for stocked adult and sub-adult trout. Dick added that, while looking at early lifestages in the modeling might be good to have for informational purposes, these lifestages were not within the DNR's management strategy for the lower Saluda. Mike Waddell noted that Trout Unlimited does not agree with DNR's strategy of managing only for adult lifestages.

The group then turned their attention to the memo prepared by Shane Boring and Brandon Kulik (Attachment A), which summarized potential source HSC for substrate from a number of regional studies. After reviewing the source HSC plots for applicability to the lower Saluda, TWC members agreed on substrate HSC for the following species and lifestages:



**MEETING NOTES**

**SOUTH CAROLINA ELECTRIC & GAS COMPANY  
SALUDA HYDRO PROJECT RELICENSING  
Instream Flow/Aquatic Habitat Technical Working Committee  
Via Conference Call  
April 10, 2007**

Draft CSB 04-23-07

<b>Species</b>	<b>Life Stage</b>	<b>Curve Source</b>	<b>Modifications</b>
brown trout	adult	Deerfield	Change 'Ledge' to 'Irregular Bedrock' and change SI of this category to 1.0
	juvenile	Deerfield	Change 'Ledge' to 'Irregular Bedrock' and change SI of this category to 1.0
	Fry	Deerfield	Change 'Ledge' to 'Irregular Bedrock'
rainbow trout	Spawning	Deerfield	Change 'Ledge' to 'Irregular Bedrock' and change SI of this category to 1.0; Lower SI for 'Roots, Snags, Undercut banks, Overhead Cover' to 0.2
	Adult	Deerfield	
smallmouth bass	Adult	Deerfield	Change 'Ledge' to 'Irregular Bedrock'
	Juvenile	Deerfield	Change 'Ledge' to 'Irregular Bedrock'
	YOY	Deerfield	Change 'Ledge' to 'Irregular Bedrock'
	spawning	Deerfield	Change 'Ledge' to 'Irregular Bedrock'

The group was not able to reach consensus on an acceptable substrate HSC for rainbow trout juveniles, fry or spawning due to limited source information (i.e., only the Raleigh et al. "Blue Book" value were presented). Mike Waddell, expressed interest in evaluating the curves used in the Catawba-Wateree IFIM Study before making a final selection for these lifestages. Dick Christie noted that these curves were presented in the Catawba-Wateree Final IFIM Report, but added that the legends needed to interpret the plots were not included. Dick agreed to contact the authors regarding the legends. Shane agreed to distribute the curves to the TWC once all of the information is gathered.

The meeting adjourned at approximately 11:00 AM.

***MEETING NOTES***

***SOUTH CAROLINA ELECTRIC & GAS COMPANY  
SALUDA HYDRO PROJECT RELICENSING  
Instream Flow/Aquatic Habitat Technical Working Committee  
Via Conference Call  
April 10, 2007***

Draft CSB 04-23-07

---

Attachment A

Memo Summarizing Potential Source Habitat Suitability Curves for Substrate for Smallmouth Bass and Rainbow and Brown Trout Lifestages

***MEETING NOTES***

***SOUTH CAROLINA ELECTRIC & GAS COMPANY  
SALUDA HYDRO PROJECT RELICENSING  
Instream Flow/Aquatic Habitat Technical Working Committee  
Via Conference Call  
April 10, 2007***

Draft CSB 04-23-07

---

## MEMORANDUM

TO: Saluda Hydro: Instream Flow/Aquatic Habitat TWC  
 FROM: Shane Boring, Brandon Kulik  
 DATE: March 30, 2007  
 RE: **INSTREAM FLOW STUDY: HABITAT SUITABILITY CRITERIA**

On January 22<sup>nd</sup>, 2007, the Instream Flow/Aquatic Habitat Technical Working Committee (TWC) agreed upon Habitat Suitability Criteria (HSC ) depth and velocity criteria for target species and lifestages (smallmouth bass, brown trout, and rainbow trout adults, juveniles, young-of-year, and spawning). Criteria from various source studies were evaluated based on transferability to the lower Saluda River (Table 1);

Although depth and velocity HSC were adapted for adult, juvenile, fry/young-of-year, and spawning smallmouth bass, as well as brown and rainbow trout (Table 2), the TWC did not time to completely evaluate substrate suitability. The purpose of this memo is to build upon the decisions made at the January 22<sup>nd</sup> 2007 TWC meeting by summarizing HSC for substrate and embeddedness for rainbow and brown trout, and smallmouth bass.

**Table 1: Summary of Source Studies Evaluated for Depth and Velocity Habitat Suitability Criteria**

SPECIES	SOURCE	RIVER	ECO-REGION	PHYSIOGRAPHIC REGION
Smallmouth bass	Leonard <i>et al.</i> (1986)	Upper James (VA)	Mid-Atlantic	Appalachian Ridge and Valley
Smallmouth bass	NEP (1990)	Deerfield (MA)	New England	New England Upland
Smallmouth bass	Lockhart IFIM study	Broad (SC)	Southeastern	Piedmont
Smallmouth bass	Groshens and Orth (1994)	N. Anna and Craig Creek	Southeastern Plains	Appalachian Ridge and Valley and Piedmont
Smallmouth bass	Edwards, <i>et al</i> (1983)	Generic		
Rainbow trout	KA (2001)	Lackawaxen, (PA)	Mid-Atlantic	Appalachian Plateau
Rainbow trout	NEP (1990)	Deerfield (MA)	New England	New England Upland
Rainbow trout	Raleigh, <i>et al</i> (1986)	Generic “Blue Book” data		
Brown trout	KA (2001)	Lackawaxen, (PA)	Mid-Atlantic	Appalachian Plateau

Brown trout	NEP (1990)	Deerfield (MA)	New England	New England Upland
Brown trout	Strakosh, <i>et al.</i> 2003	Farmington (CT)	New England	New England Upland
Brown trout	CT DEP	Housatonic (CT)	New England	New England Upland
Brown trout	Raleigh, <i>et al</i> (1984)	Generic "Blue Book" data		

Table 2. Summary of Acceptable HSC Curves as Identified By The TWC

Species	Life Stage	Parameter	SI Curve Source
brown trout	adult	Depth	Combination: Housatonic (poor cover), Deerfield
	adult	Velocity	Lackawaxen, w/modifications
brown trout	fry/YOY	Depth	Deerfield
	fry/YOY	Velocity	Deerfield
brown trout	juvenile	Depth	Combination: Deerfield, Raleigh
	juvenile	Velocity	Combination: Lackawaxen, Deerfield
brown trout	spawning	Depth	Raleigh
	spawning	Velocity	Raleigh w/modifications
rainbow trout	adult	Depth	Deerfield
		Velocity	Deerfield (abundant)
rainbow trout	fry/YOY	Depth	Raleigh
		Velocity	Raleigh
rainbow trout	juvenile	Depth	Lackawaxen
		Velocity	Lackawaxen
rainbow trout	spawning	Depth	Raleigh
		Velocity	Raleigh
smallmouth bass	adult	Depth	Combination: Groshens & Orth, Bain Combination: Groshens & Orth, Deerfield
		Velocity	(abundant velocity refuge)
smallmouth bass	juvenile	Depth	Combination: Bain, Deerfield w/modifications
		Velocity	Deerfield (abundant velocity refuge)
smallmouth bass	spawning	Depth	Lockhart
		Velocity	Lockhart
smallmouth bass	YOY	Depth	Combination: Groshens & Orth, Bain
		Velocity	Combination: Deerfield, Bain

## **SUBSTRATE CRITERIA OPTIONS**

### **Brown Trout**

We obtained HSC successfully applied in IFIM studies from the Farmington (CT) (Strakosh, et al. 2003), Deerfield (MA) (NEP, 1990), and Housatonic (CT) (CT DEP) rivers, as well as the generalized “Bluebook” criteria (Raleigh, *et al.*, 1986) that have been employed in several regional PHABSIM studies. Appendix A contains graphical representations of substrate criteria for juvenile and adult lifestages. For brown trout juveniles and adults, substrates ranging from gravel/pebble to cobble/small boulder were generally found to be the most suitable, along with undercut banks and vegetation for some studies. The degree of substrate embeddedness is also a sub-criterion.

### **Rainbow Trout**

HSC criteria developed for the Deerfield River (MA) and generalized “Bluebook” criteria (Raleigh, *et al.*, 1984) are presented in Appendix B. Although the studies varied in how some substrate sizes were classified, habitat suitability was generally similar between studies, with gravel, cobble and boulder substrates being more suitable than silt, sand and mud. This was particularly true of the early lifestages, i.e. spawning, fry, juvenile. The degree of substrate embeddedness is also a sub-criterion.

### **Smallmouth Bass**

Substrate HSC criteria developed for the Deerfield River (MA), James (VA) (Leonard, et al., 1986) and generalized “Bluebook” criteria (Edwards, *et al.*, 1993) are presented in Appendix C. There is relatively good general agreement among all curves relative to substrate and cover suitability, with large cobble/boulder tending to be optimal, and silt/sand/organics being less suitable.

## LITERATURE CITED

- Edwards, E.A., G. Gebhart, and O.E. Maughan. 1983. Habitat suitability information: smallmouth bass. U.S. Dept. Int., Fish Wildl. Serv. FWS/oES-32/10.36 47 pp.
- Connecticut Dept. of Environmental Protection. (unpublished data). Housatonic River IFIM SI criteria. Peter Aarestad, CTDEP, personal communication.
- Groshens, T.P. and D.J. and Orth. 1994. Transferability of habitat suitability criteria for smallmouth bass, *Micropterus dolomieu*. Rivers (4)3:194-212
- Leonard, P.M., D.J. Orth, and C.J. Goodreau. 1986. Development of a method for recommending instream flows for fishes in the upper James River, Virginia. VA poly Inst. and State Univ., Blacksburg, VA. Bull. 152, 109 pp.
- New England Power Company. 1990. New England Power Company, Deerfield River Project IFIM Study. Stetson-Harza, Weare, NH.
- Newcomb, T.J., S.A. Perry and W.B. Perry. 1995. Comparison of habitat suitability criteria for smallmouth bass (*Micropterus dolomieu*) from three West Virginia rivers. Rivers 5(3):170-183.
- Perry, S.A., W.B. Perry, D.L. Graham and N.H. Sagalkin. 1993. Verification and transferability studies for smallmouth bass in West Virginia streams. West Virginia Coop. Fish and Wildl. Res. unit, West Virginia Univ., Morgantown, WV. WVCFRUWRU Cooperative Agreement 14-16-0009-1563. 25 pp. plus appendices.
- Raleigh, R.F., L.D. Zuckerman, and P.C. Nelson. 1986. Habitat suitability index models and instream flow suitability curves: Brown trout, revised. U.S. Fish and Wildl. Serv. FWS/OBS-82(10.124). 65 pp..
- Raleigh, R.F., T Hickman, R.C. Solomon and P.C. Nelson. 1984. Habitat suitability information: Rainbow trout. U.S. Fish and Wildl. Serv. FWS/OBS-82/10.60 64 pp.
- Strakosh, T.R., R.M. Neumann, and R.A. Jacobsen. 2003. Development and assessment of habitat suitability criteria for adult brown trout in southern New England rivers. Ecology of Freshwater Fish 12:265-274. Blackwell Munksgaards, 2003.

Appendix A  
Brown Trout Substrate Habitat Suitability Criteria



**Appendix A, Table 1: Substrate Classification Codes - Raleigh**

<b>Substrate Codes from Bovee (1982)</b>			
<b>Code</b>	<b>Description</b>	<b>Size (mm)</b>	<b>Size (in)</b>
1	plant/detritus/organic material		
2	mud/soft clay		
3	silt	<0.062	
4	sand	0.062 – 2.0	
5	gravel	2.0 - 64	
6	cobble	64 - 250	
7	boulder	250 – 4000	
8	bedrock	solid	

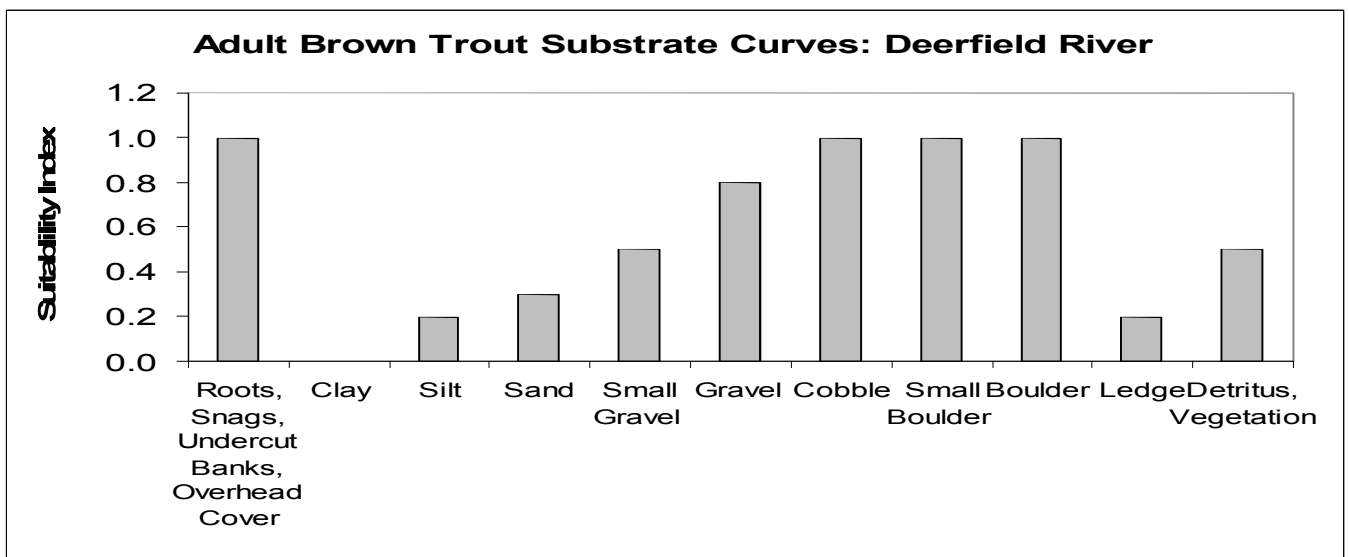
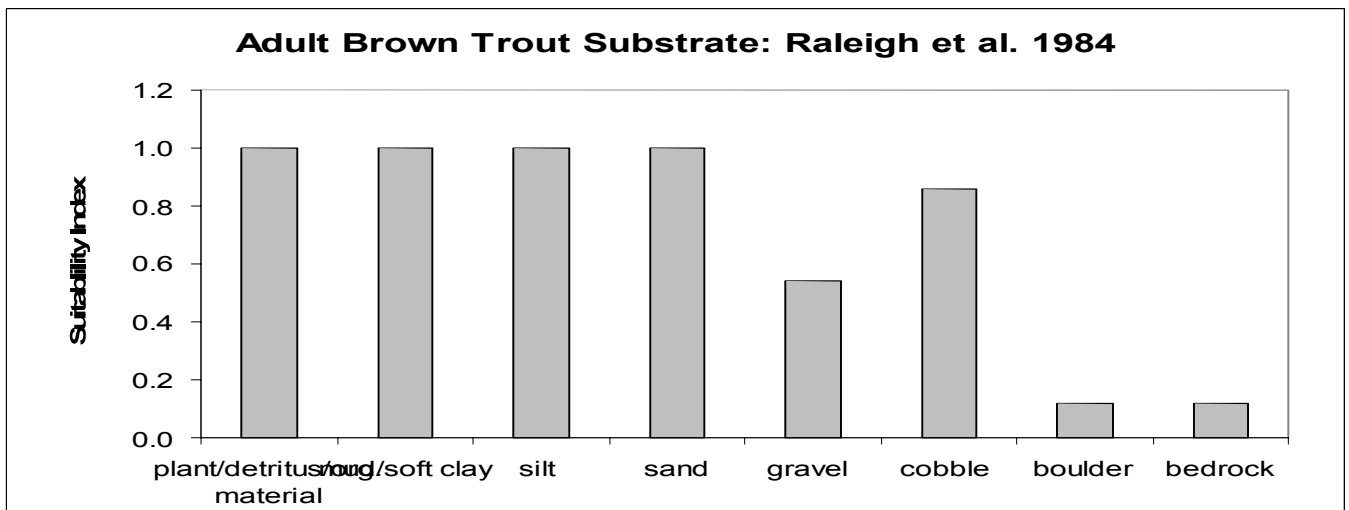
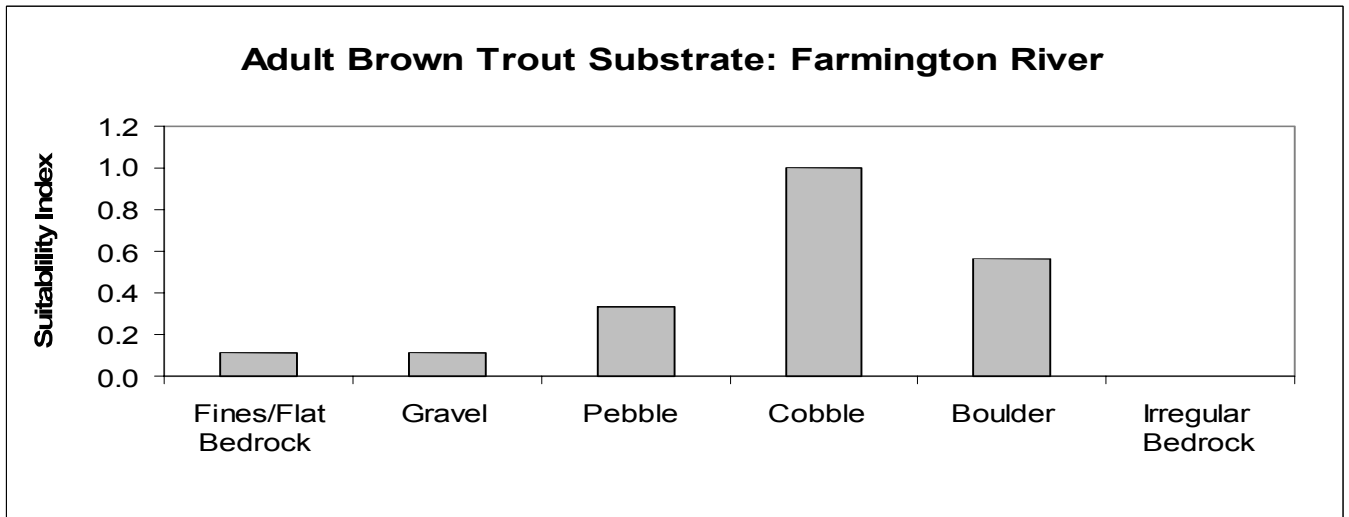
**Appendix A, Table 2: Substrate Classification Codes - Deerfield & Housatonic**

<b>Code</b>	<b>Description</b>	<b>Size (mm)</b>	<b>Size (in)</b>
1	Roots, Snags, Undercut Banks, Overhead Cover		
2	Clay		
3	Silt		
4	Sand		
5	Small Gravel	< 5.1	< 2
6	Gravel	5.1 - 10.2	2-4
7	Cobel	10.2 - 25.4	4 - 10
8	Boulder	25.4 - 61	10 in - 2 ft
9	Boulder	>61	> 2 ft
10	Ledge		
11	Detritus, Vegetation		

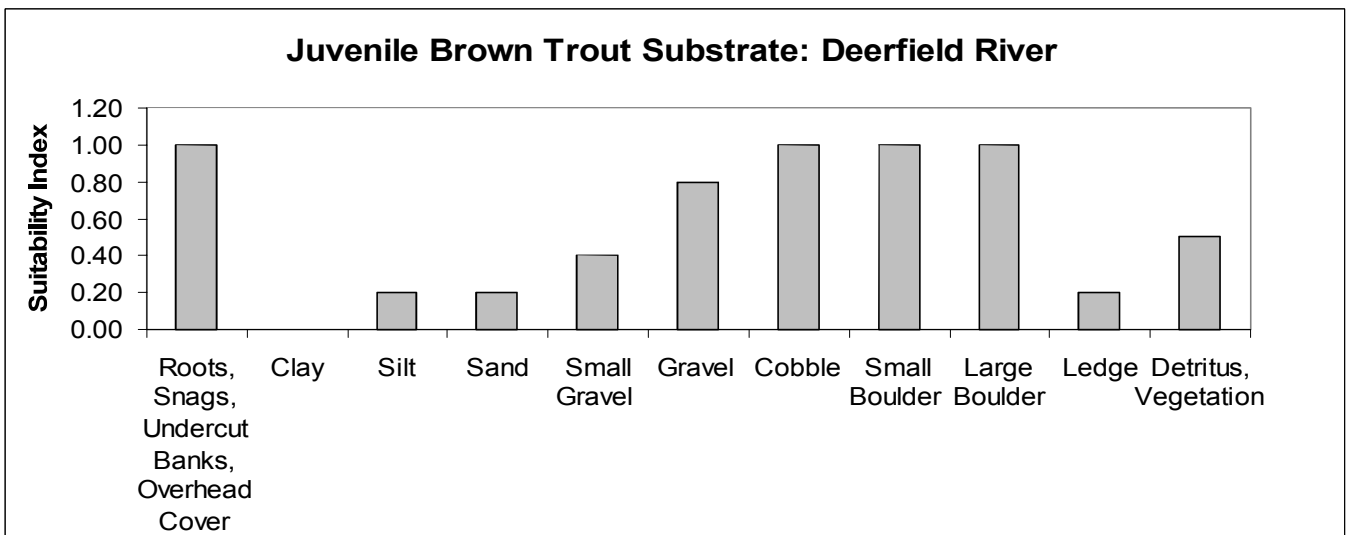
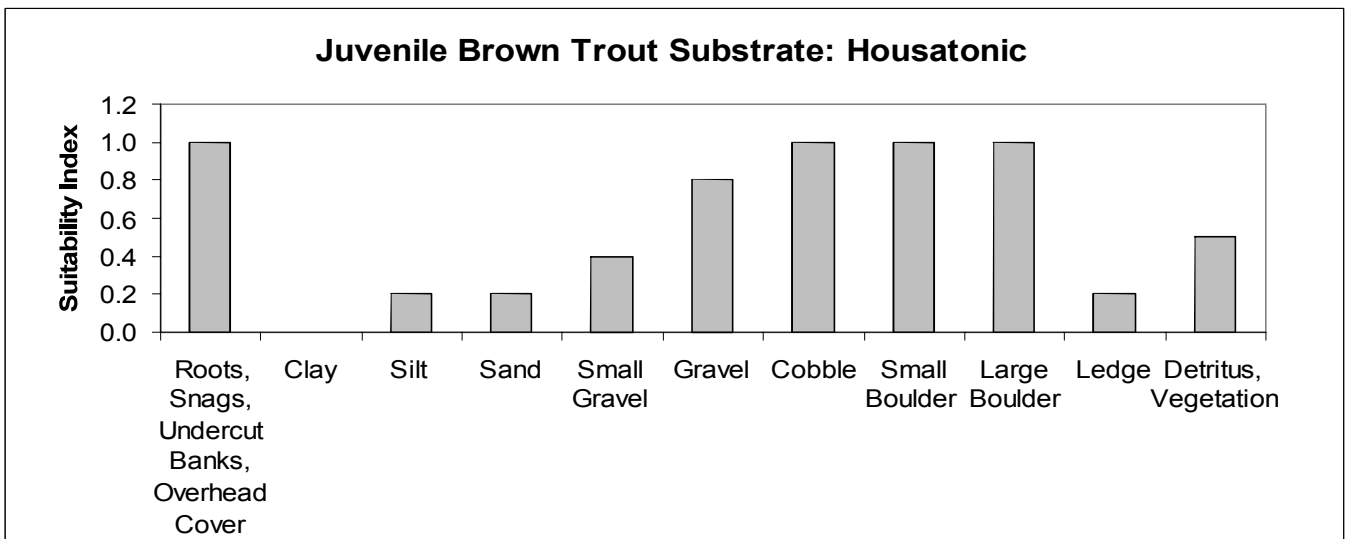
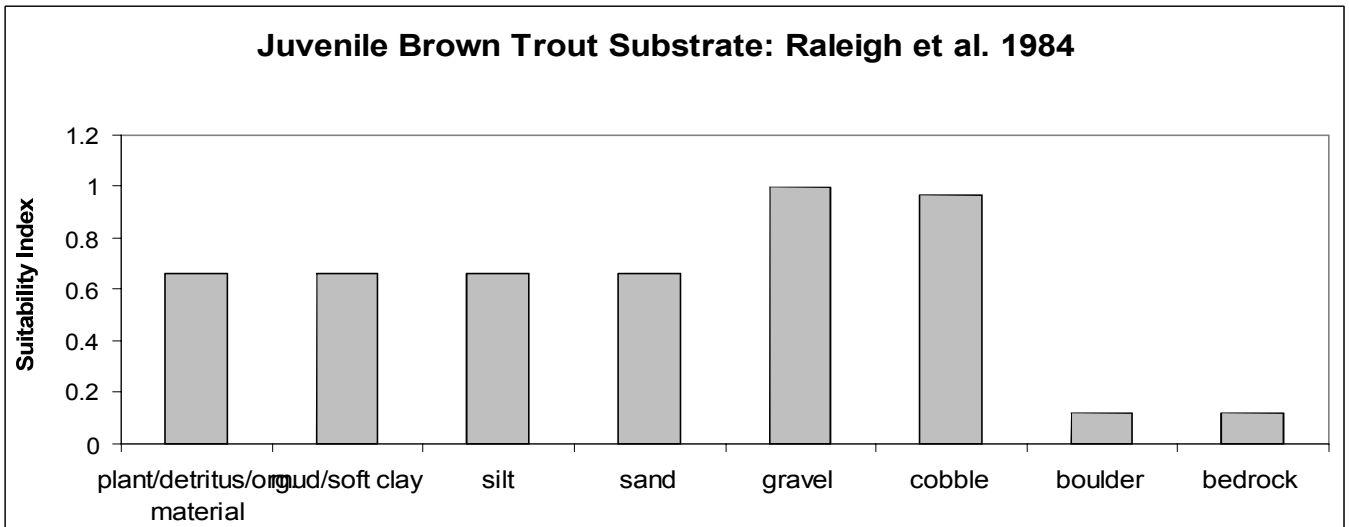
**Appendix A, Table 3: Substrate Classification Codes - Farmington**

<b>Code</b>	<b>Description</b>	<b>Size (mm)</b>	<b>Size (in)</b>
1	Fines/Flat Bedrock	< 2	< .08
2	Gravel	2 - 16	0.08 - 0.63
3	Pebble	16 - 64	0.63 - 2.52
4	Cobble	64 - 256	2.52 - 10.08
5	Boulder	> 256	> 10.08
6	Irregular Bedrock		

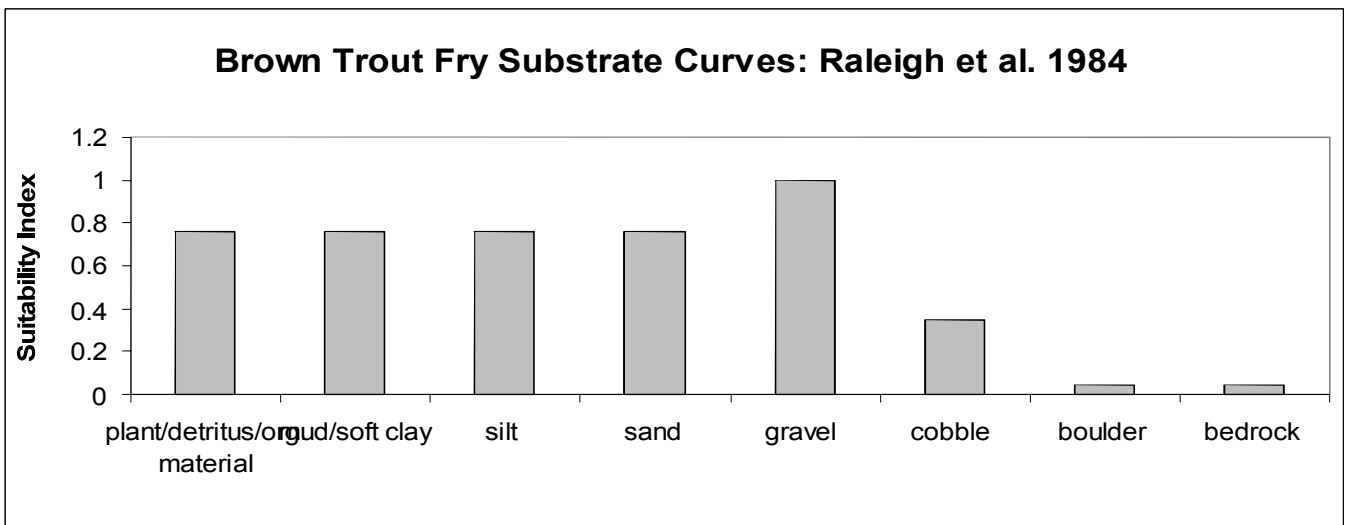
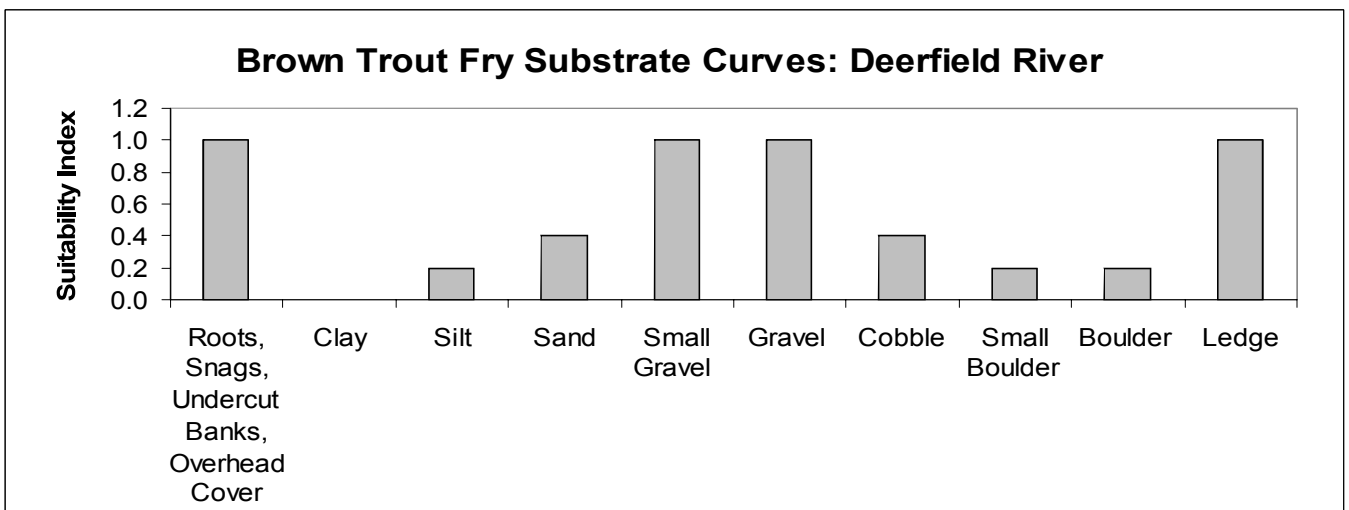
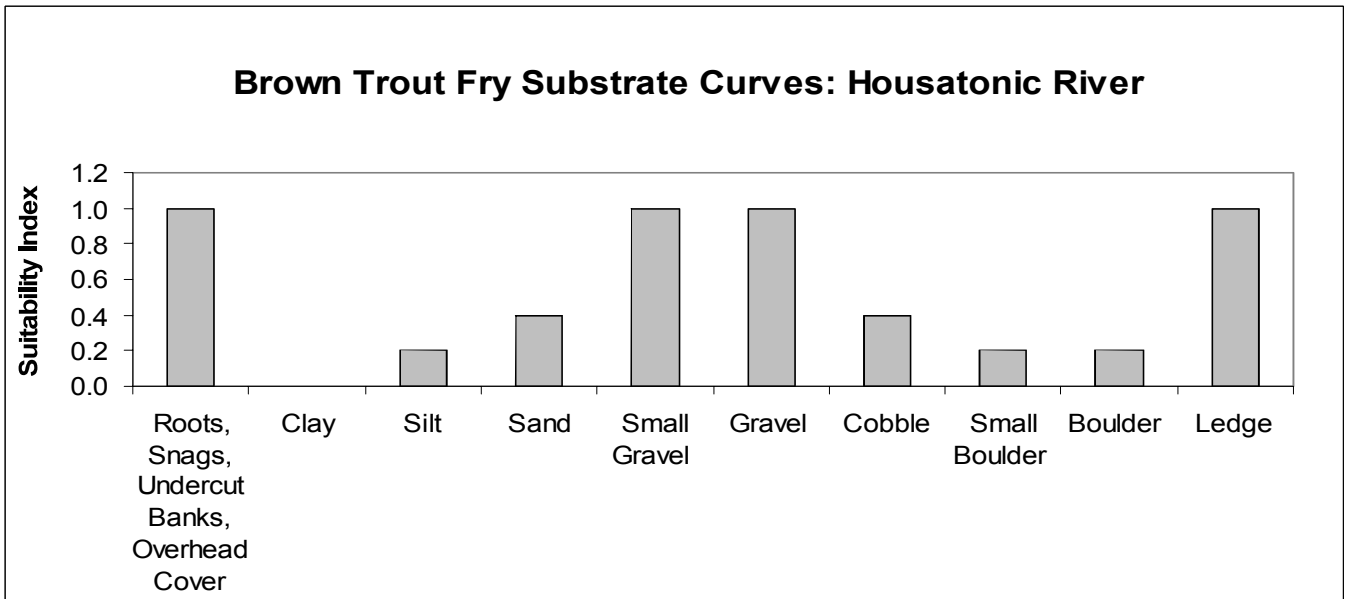
Adult Brown Trout



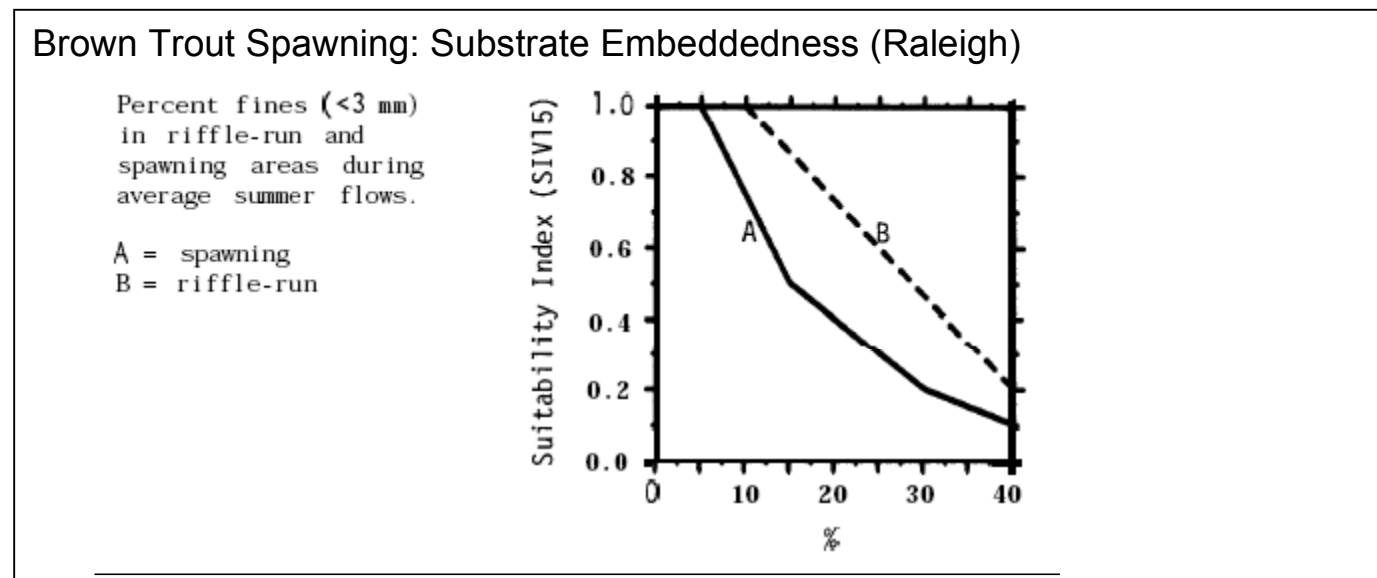
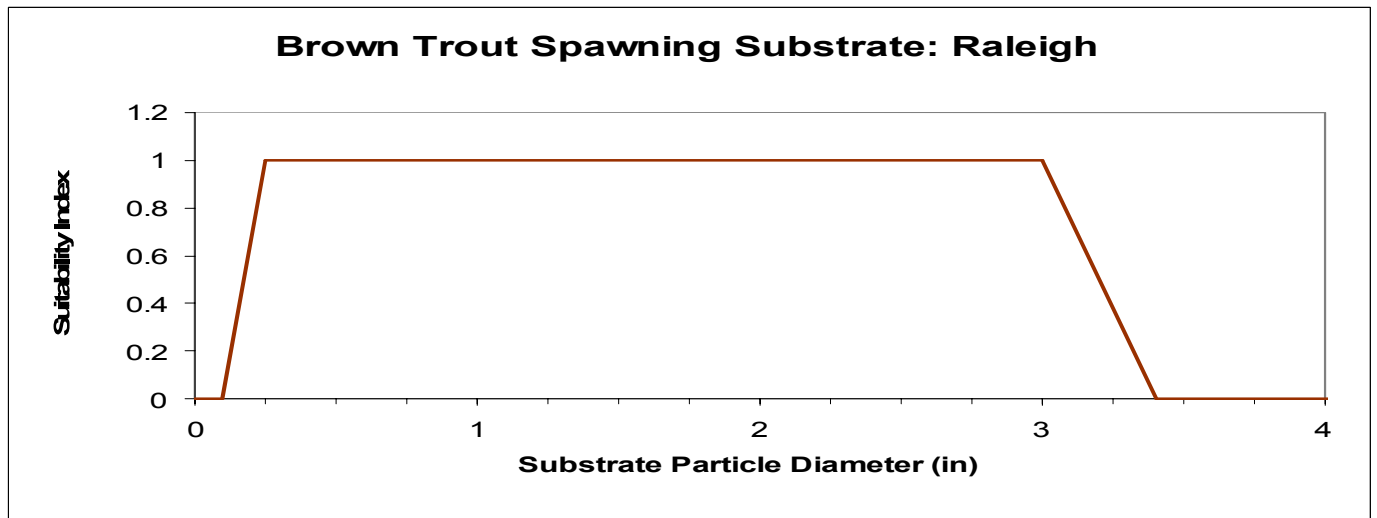
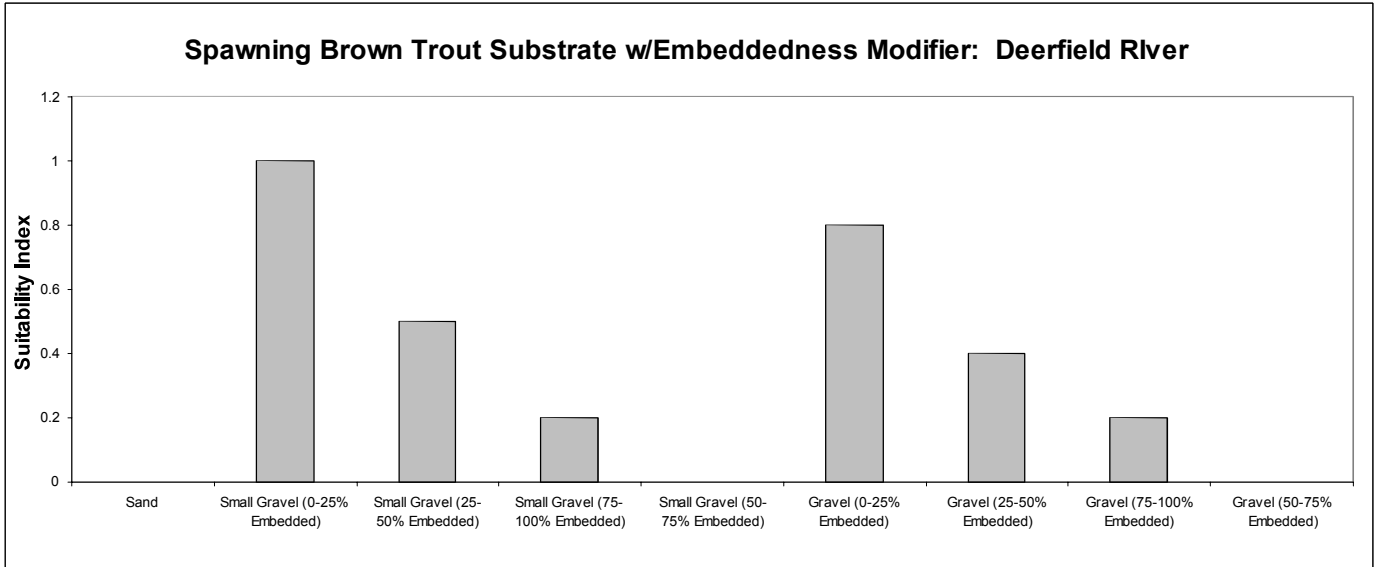
Juvenile Brown Trout



Brown Trout Fry

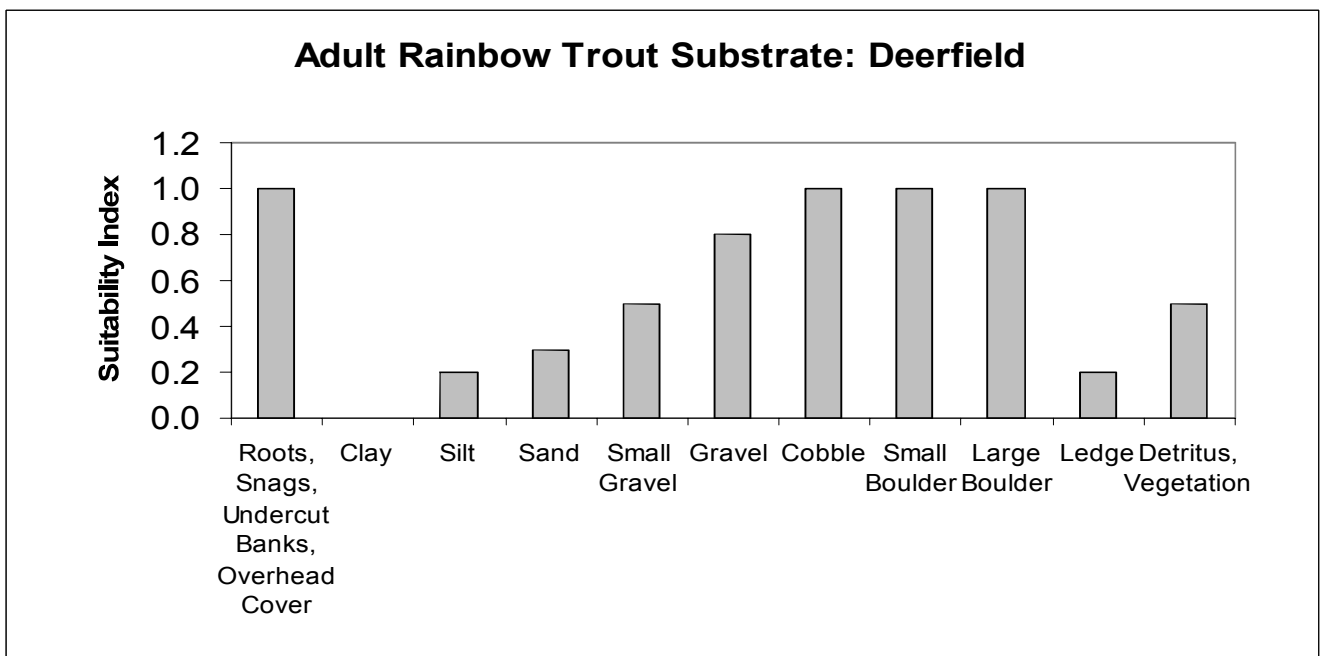
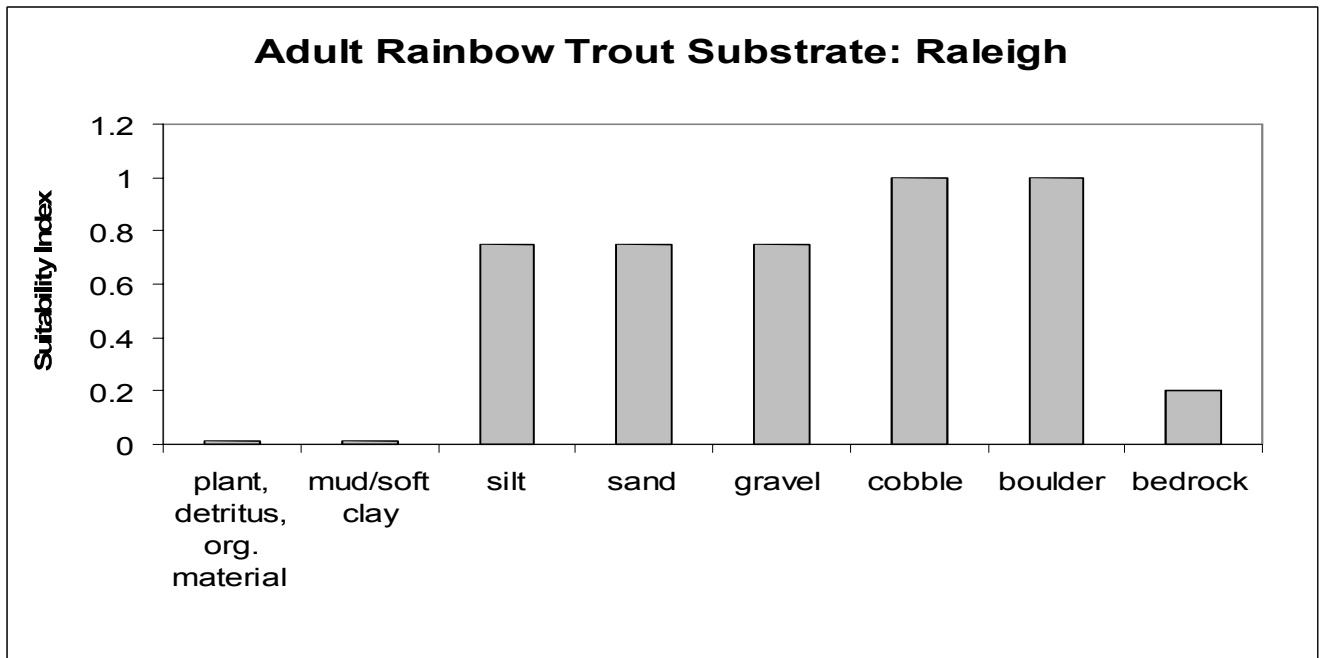


## Spawning Brown Trout



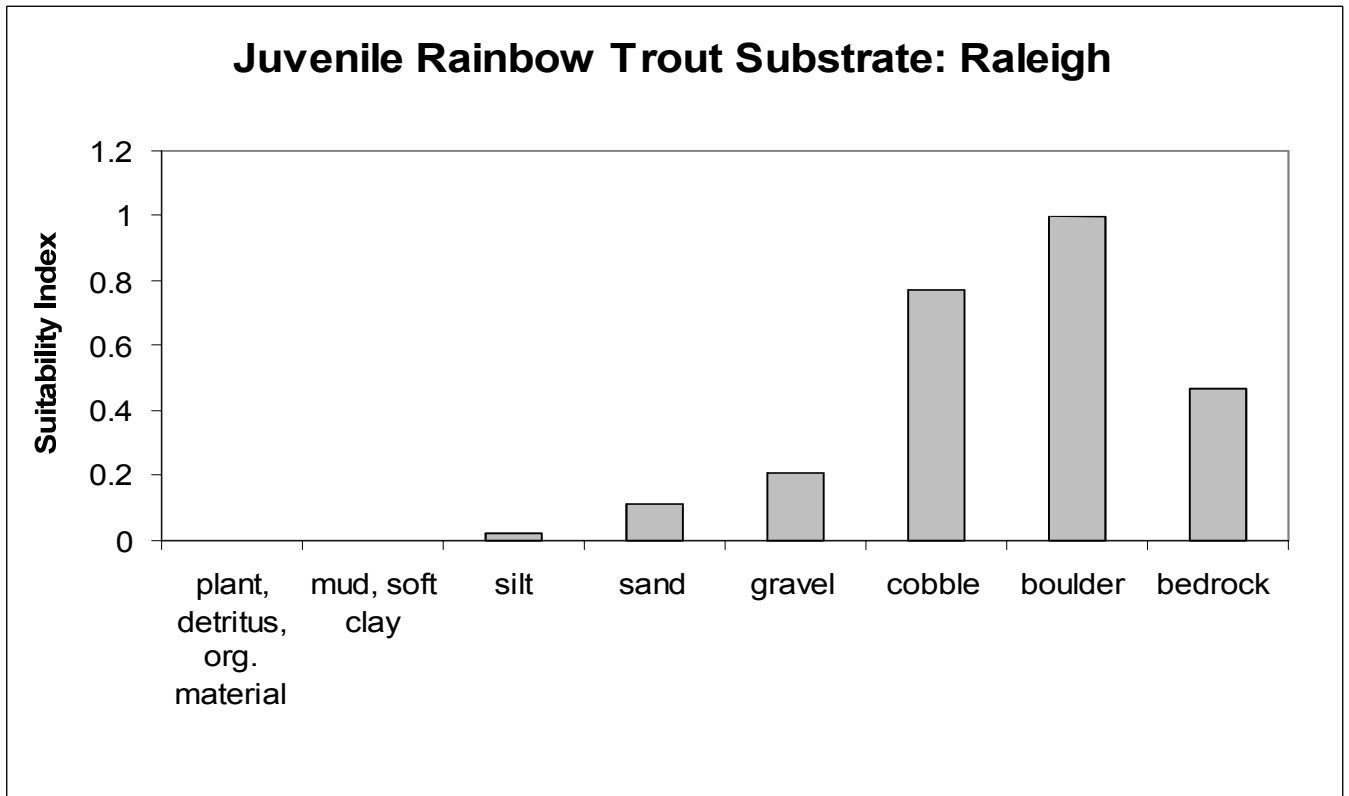
Appendix B  
Rainbow Trout Substrate Habitat Suitability Criteria

Adult Rainbow Trout<sup>1</sup>



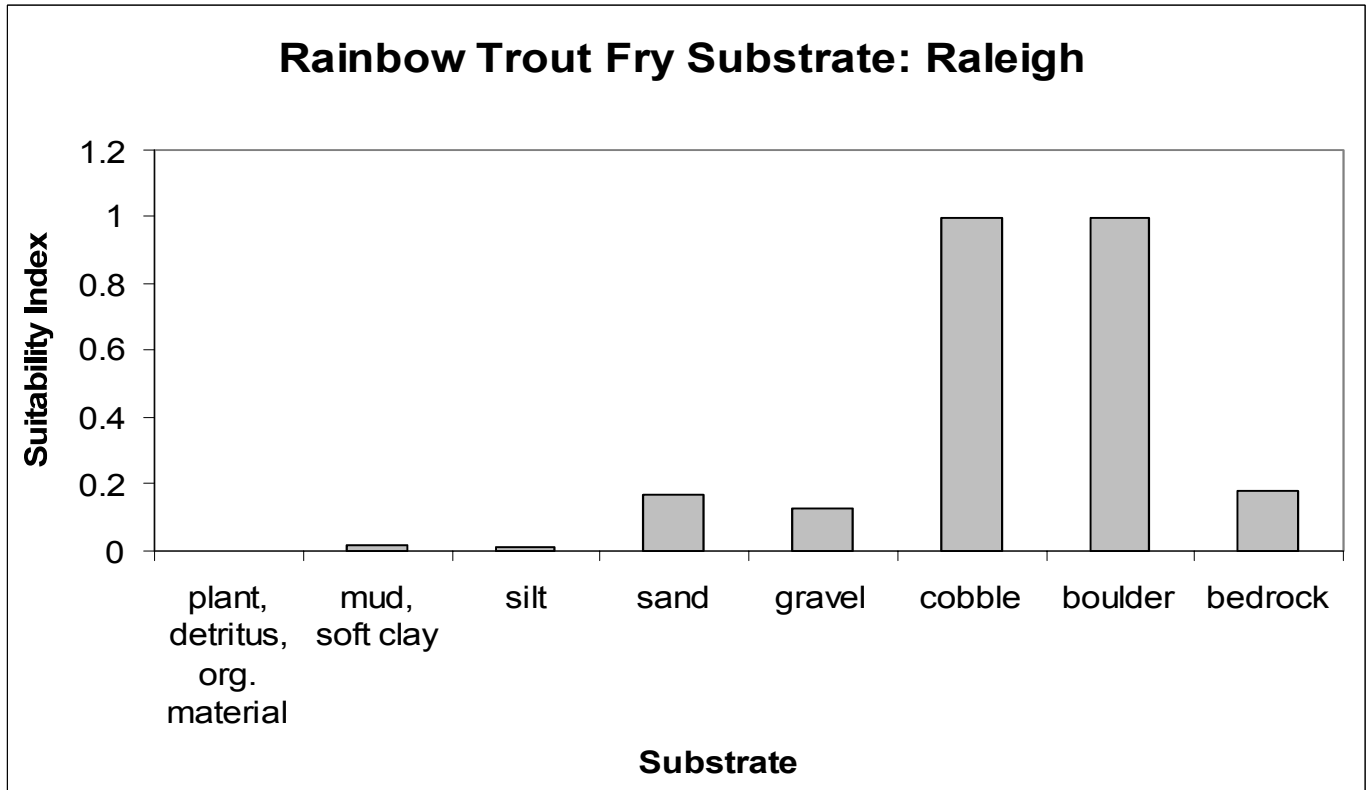
<sup>1</sup> See Appendix A for substrate codes and descriptions.

Juvenile Rainbow Trout

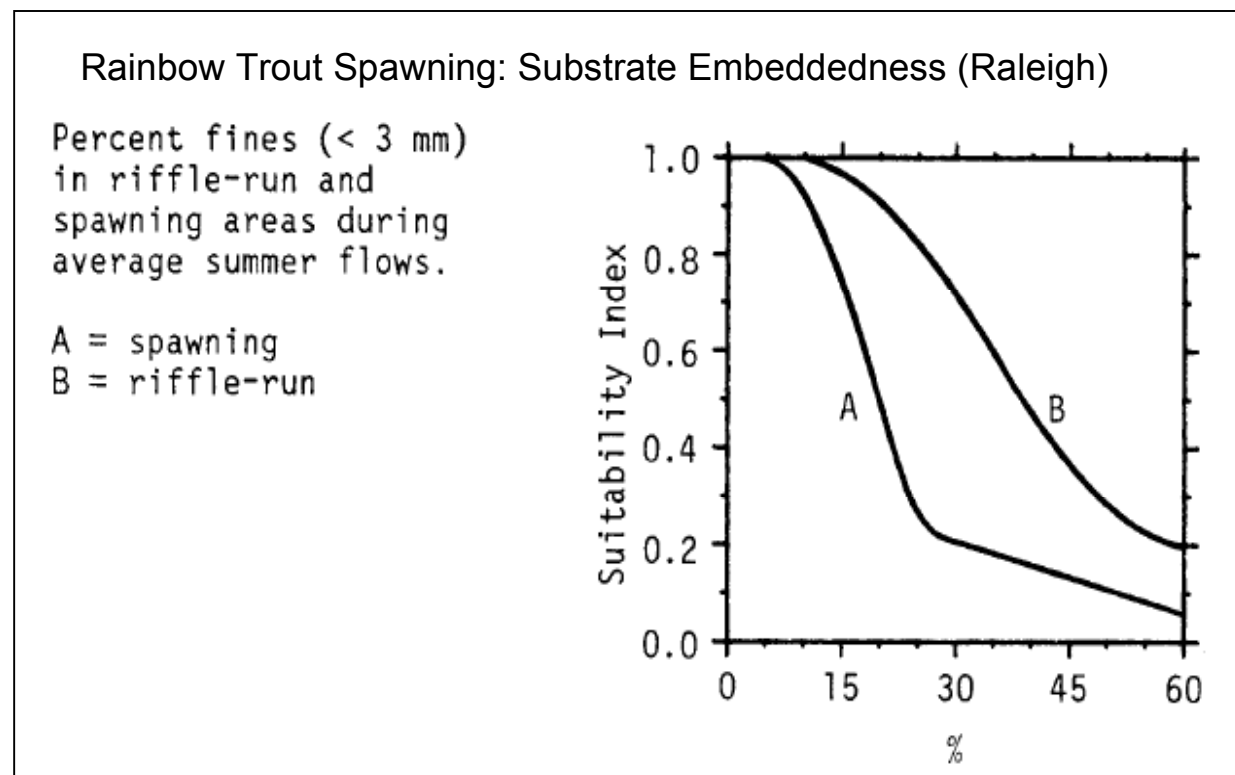
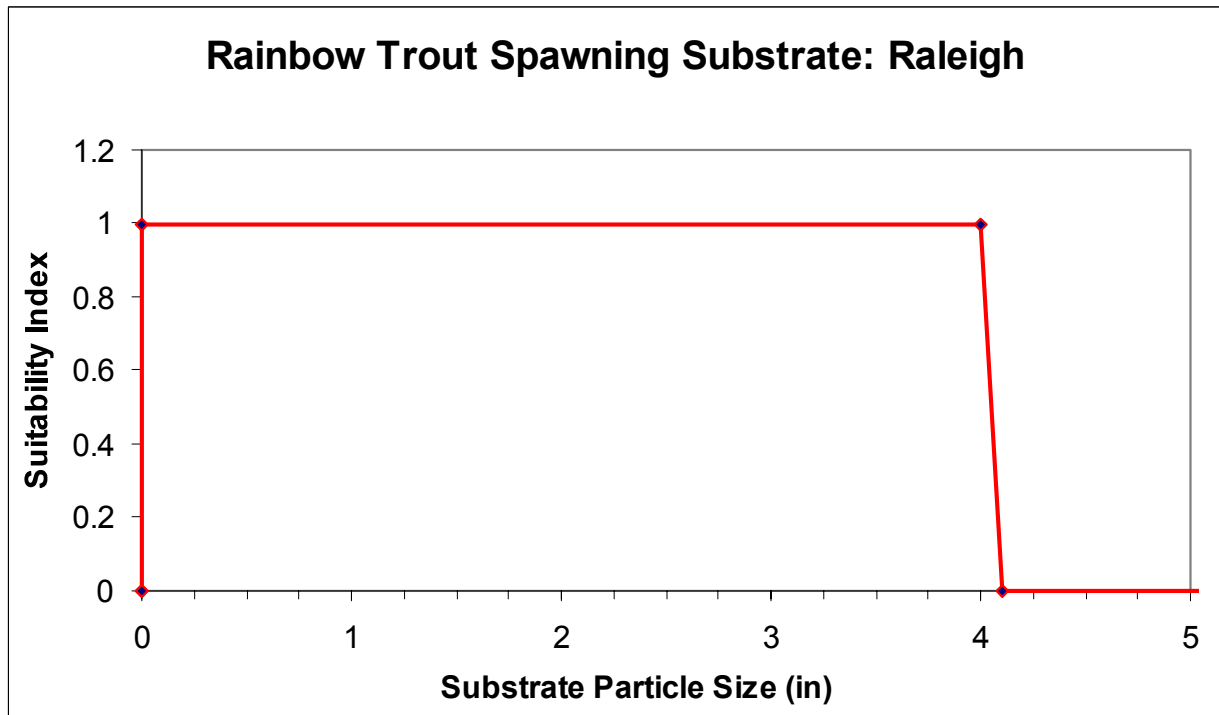




Rainbow Trout Fry



## Rainbow Trout Spawning



Appendix C  
Smallmouth Bass Substrate Habitat Suitability Criteria

**Appendix C, Table 1: Substrate Classification Codes - Bain**

Code	Description	Size (mm)	Size (in)
	Silt		
	Sand		
	Gravel	4-75	< 3 in. diam,
	Rubble	75-300	3-12 in. diam.
	Boulder	300-600	1-3 ft. diam.
	Bedrock		

**Appendix C, Table 2: Substrate Classification Codes - Deerfield**

Code	Description	Size (mm)	Size (in)
1	Roots, Snags, Undercut Banks, Overhead Cover		
2	Clay		
3	Silt		
4	Sand		
5	Small Gravel	< 5.1	< 2
6	Gravel	5.1 - 10.2	2-4
7	Cobel	10.2 - 25.4	4 - 10
8	Boulder	25.4 - 61	10 in - 2 ft
9	Boulder	>61	> 2 ft
10	Ledge		
11	Detritus, Vegetation		

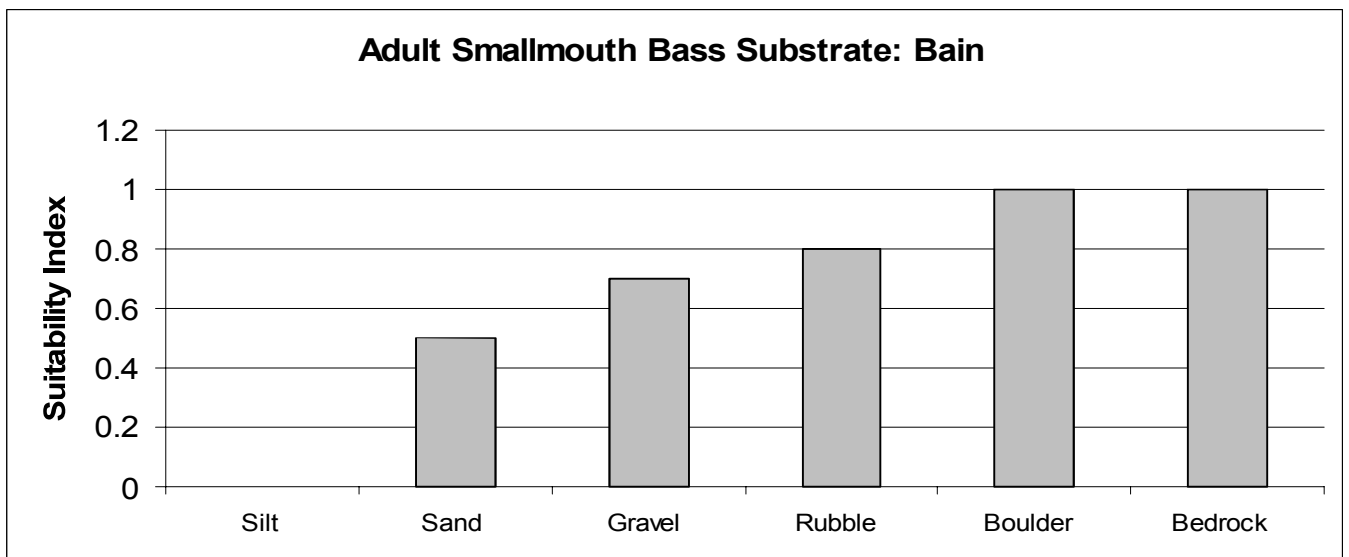
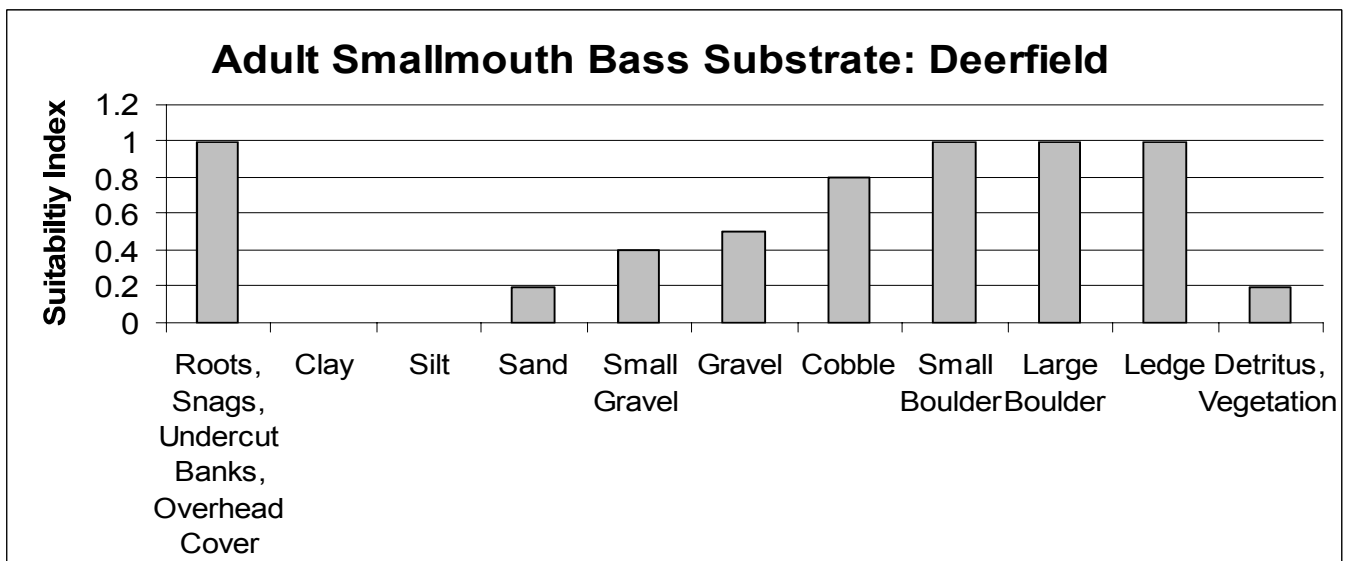
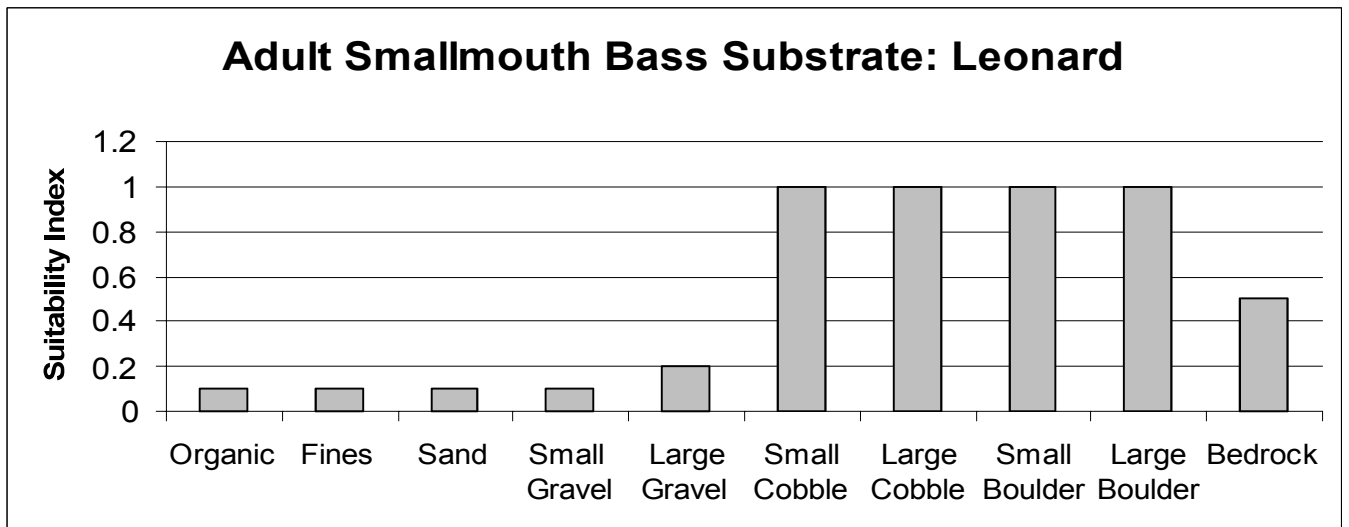
**Appendix C, Table 3: Substrate Classification Codes - Leonard**

Code	Description	Size (mm)	Size (in)
1	Organic		
2	Fines		
3	Sand		
4	Small Gravel		<2 inches diam.
5	Large Gravel		2-4 inches diam.
6	Small Cobble		4-7 inches diam.
7	Large Cobble		8-10 inches diam.
8	Small Boulder		10-24inches diam.
9	Large Boulder		> 2 ft diameter
10	Bedrock		

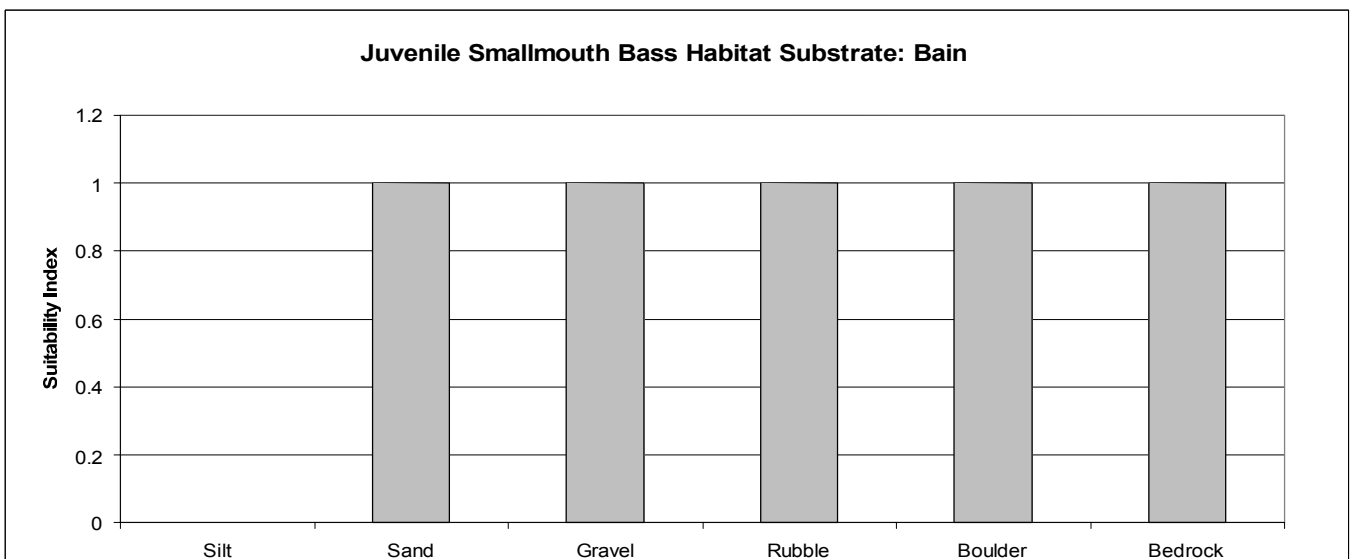
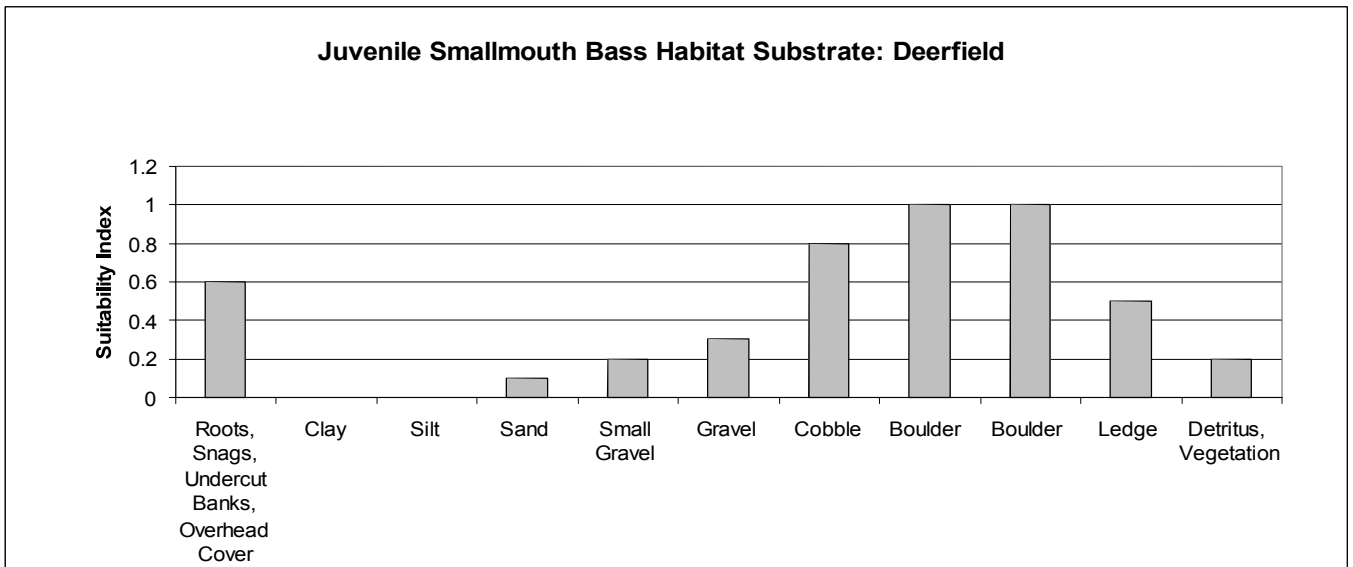
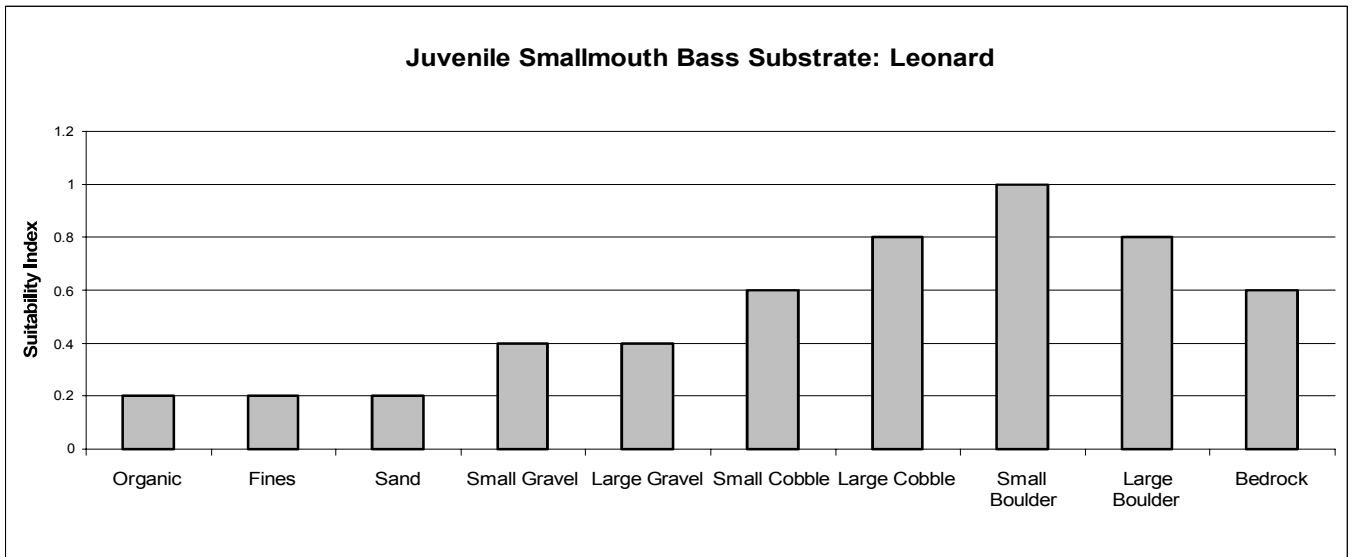
**Appendix C, Table 4: Substrate Classification Codes - Lockhart**

Code	Description	Size (mm)	Size (in)
1	mud	<1	< 0.4
2	sand	1 - 2	0.4 - 0.8
3	small gravel	2 - 16	0.8 - 6.3
4	large gravel	16 - 64	6.3 - 25.2
5	small cobble	64 - 128	25.2 - 50.4
6	large cobble	128 - 256	50.4 - 100.8
7	small boulder	256 - 512	100.8 - 201.6
8	large boudler	> 512	> 201.6
9	bedrock	-	

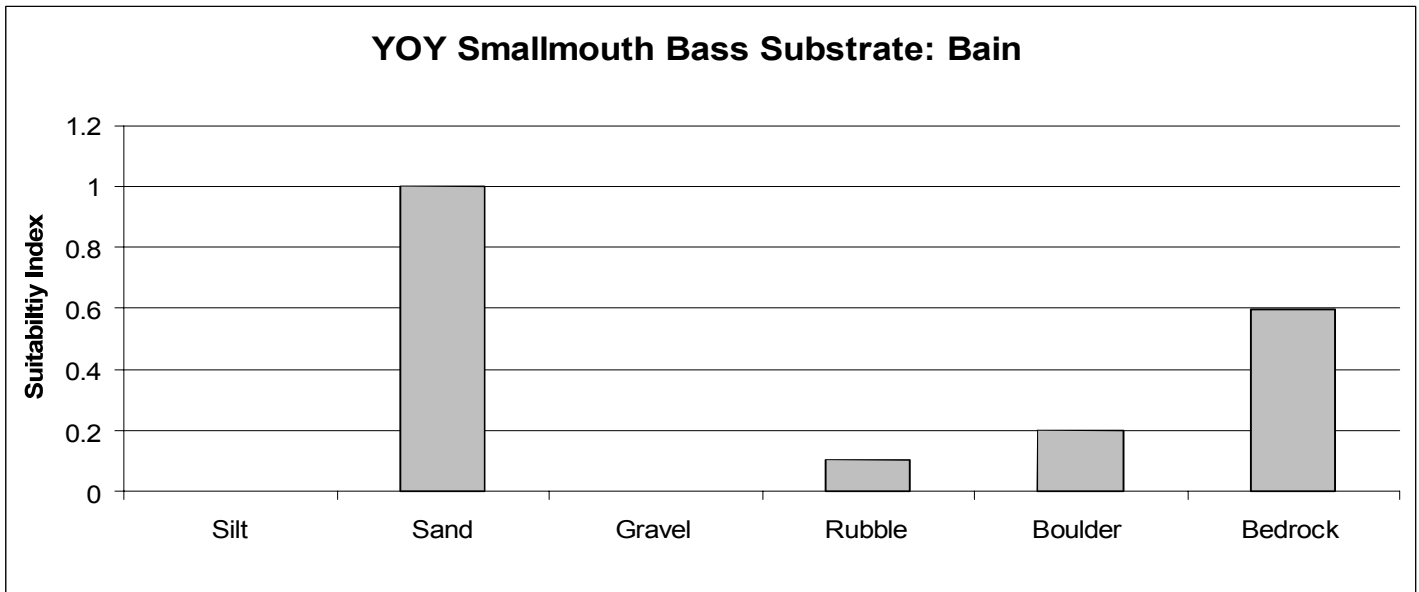
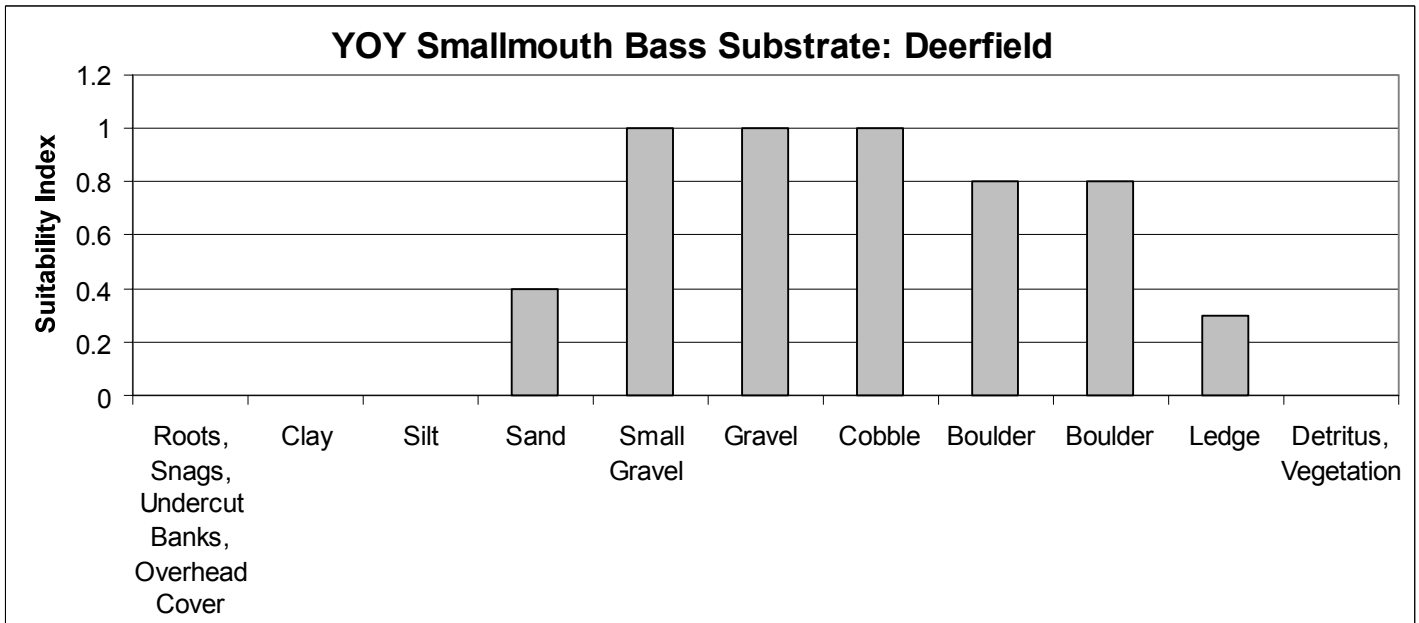
Adult Smallmouth Bass



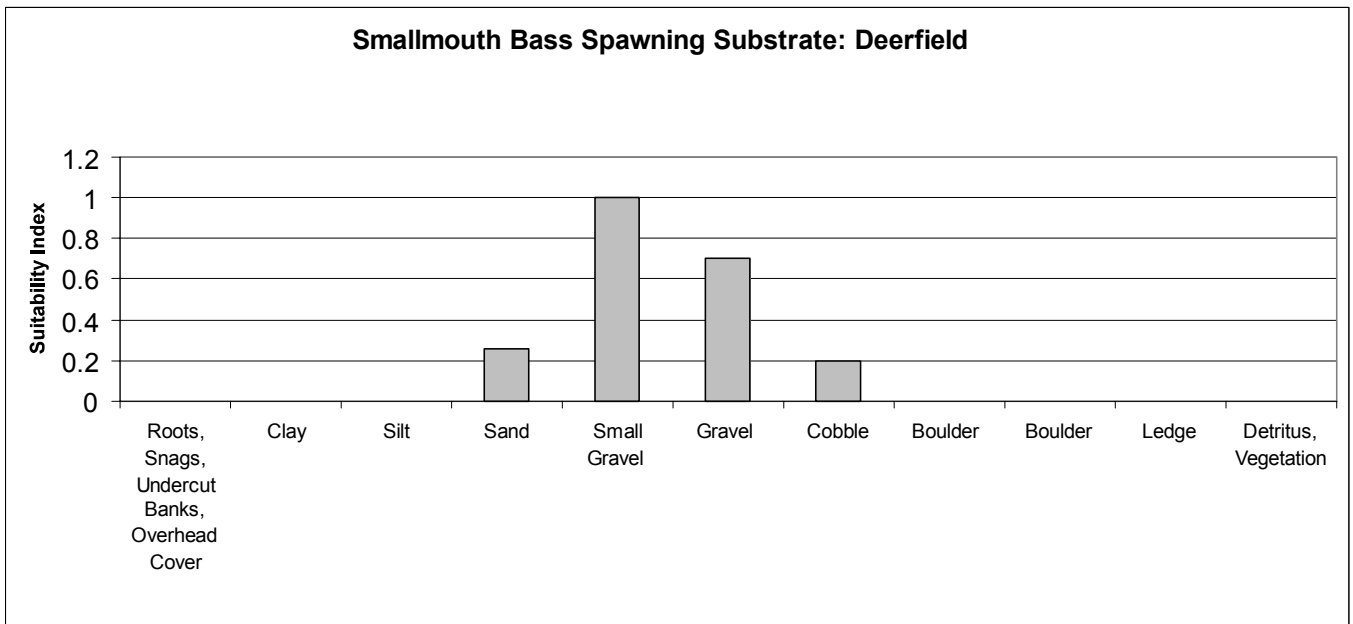
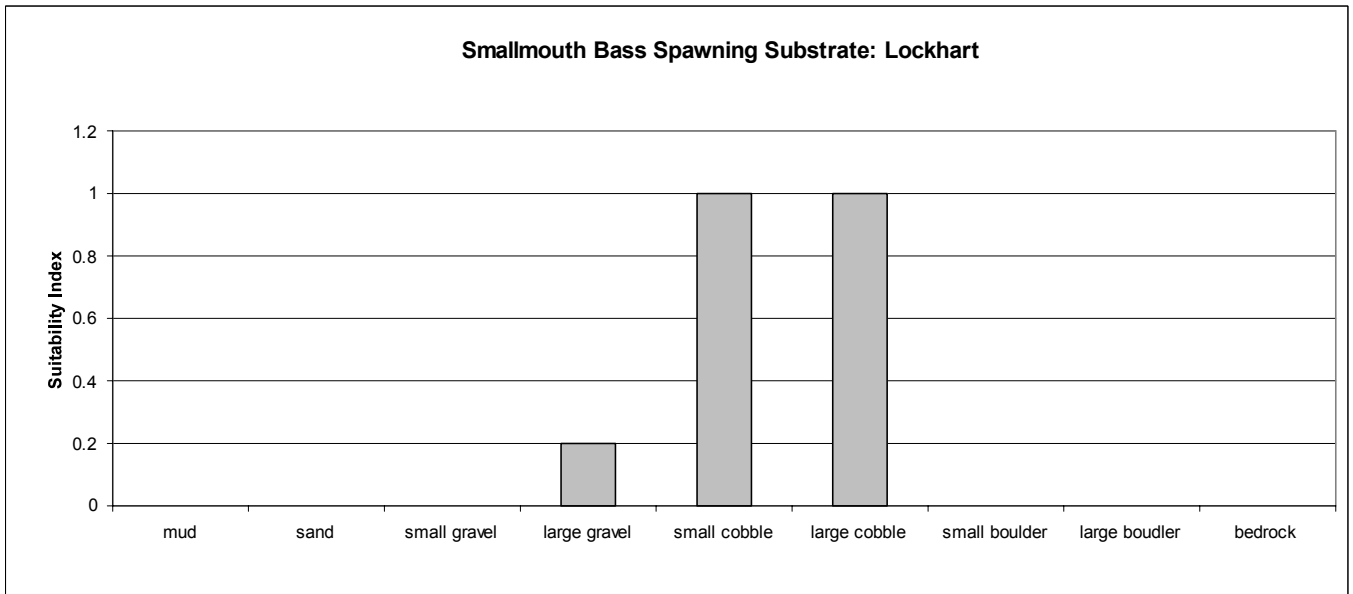
## Juvenile Smallmouth Bass



Smallmouth Bass YOY



## Smallmouth Bass Spawning







01/16/07 – CLB  
0455029.00-93-03

Z:\SCO\455\029\2007-01-16 Saluda Instream Flow Study - Habitat Suitability Criteria.doc

**MEETING NOTES**

**SOUTH CAROLINA ELECTRIC & GAS COMPANY  
SALUDA HYDRO PROJECT RELICENSING  
Instream Flow/Aquatic Habitat Technical Working Committee  
Via Conference Call  
April 10, 2007**

Draft CSB 04-23-07

---

**MEETING NOTES:**

*These notes serve as a summary of the major points presented during the meeting and are not intended to be a transcript or analysis of the meeting.*

Shane Boring opened the meeting at approximately 9:00 AM. Shane noted that, at the January 22<sup>nd</sup> meeting of the Instream Flow/Aquatic Habitat Technical Working Committee (TWC), the TWC had agreed upon Habitat Suitability Criteria (HSC) for depth and velocity for several target species (smallmouth bass, brown trout, and rainbow trout adults). Shane added that the purpose of today's meeting would be to finalize the HSC selection process by selecting substrate criteria for these species.

Shane enquired as to whether there was any follow-up discussion regarding the depth/velocity criteria selection process or other TWC housekeeping items in need of attention. Hal Beard noted that, at the previous meeting, there was an action item assigned to determine whether HSC curves were available for gizzard shad in riverine systems. Hal added that, after discussing this issue with colleagues at SCDNR, he did not think this species was as much of a priority as he had once thought.

Dick Christie reminded the group that DNR manages the lower Saluda as a put-grow-take trout fishery, and as such, he and other DNR staffers had requested at previous TWC meetings that the habitat modeling for trout focus on adult lifestages (i.e. not include spawning, juvenile, fry). He added that, while DNR certainly welcomes any improvements to water quality or habitat that might benefit these early-lifestages, flow recommendations resulting from the IFIM process should not come at the detriment of providing quality growing conditions for stocked adult and sub-adult trout. Dick added that, while looking at early lifestages in the modeling might be good to have for informational purposes, these lifestages were not within the DNR's management strategy for the lower Saluda. Mike Waddell noted that Trout Unlimited does not agree with DNR's strategy of managing only for adult lifestages.

The group then turned their attention to the memo prepared by Shane Boring and Brandon Kulik (Attachment A), which summarized potential source HSC for substrate from a number of regional studies. After reviewing the source HSC plots for applicability to the lower Saluda, TWC members agreed on substrate HSC for the following species and lifestages:

**MEETING NOTES**

**SOUTH CAROLINA ELECTRIC & GAS COMPANY  
SALUDA HYDRO PROJECT RELICENSING  
Instream Flow/Aquatic Habitat Technical Working Committee  
Via Conference Call  
April 10, 2007**

Draft CSB 04-23-07

<b>Species</b>	<b>Life Stage</b>	<b>Curve Source</b>	<b>Modifications</b>
brown trout	adult	Deerfield	Change 'Ledge' to 'Irregular Bedrock' and change SI of this category to 1.0
	juvenile	Deerfield	Change 'Ledge' to 'Irregular Bedrock' and change SI of this category to 1.0
	Fry	Deerfield	Change 'Ledge' to 'Irregular Bedrock'
rainbow trout	Spawning	Deerfield	Change 'Ledge' to 'Irregular Bedrock' and change SI of this category to 1.0; Lower SI for 'Roots, Snags, Undercut banks, Overhead Cover' to 0.2
	Adult	Deerfield	
smallmouth bass	Adult	Deerfield	Change 'Ledge' to 'Irregular Bedrock'
	Juvenile	Deerfield	Change 'Ledge' to 'Irregular Bedrock'
	YOY	Deerfield	Change 'Ledge' to 'Irregular Bedrock'
	spawning	Deerfield	Change 'Ledge' to 'Irregular Bedrock'

The group was not able to reach consensus on an acceptable substrate HSC for rainbow trout juveniles, fry or spawning due to limited source information (i.e., only the Raleigh et al. "Blue Book" value were presented). Mike Waddell, expressed interest in evaluating the curves used in the Catawba-Wateree IFIM Study before making a final selection for these lifestages. Dick Christie noted that these curves were presented in the Catawba-Wateree Final IFIM Report, but added that the legends needed to interpret the plots were not included. Dick agreed to contact the authors regarding the legends. Shane agreed to distribute the curves to the TWC once all of the information is gathered.

The meeting adjourned at approximately 11:00 AM.

***MEETING NOTES***

***SOUTH CAROLINA ELECTRIC & GAS COMPANY  
SALUDA HYDRO PROJECT RELICENSING  
Instream Flow/Aquatic Habitat Technical Working Committee  
Via Conference Call  
April 10, 2007***

Draft CSB 04-23-07

---

Attachment A

Memo Summarizing Potential Source Habitat Suitability Curves for Substrate for Smallmouth Bass and Rainbow and Brown Trout Lifestages

***MEETING NOTES***

***SOUTH CAROLINA ELECTRIC & GAS COMPANY  
SALUDA HYDRO PROJECT RELICENSING  
Instream Flow/Aquatic Habitat Technical Working Committee  
Via Conference Call  
April 10, 2007***

Draft CSB 04-23-07

---

## MEMORANDUM

TO: Saluda Hydro: Instream Flow/Aquatic Habitat TWC  
 FROM: Shane Boring, Brandon Kulik  
 DATE: March 30, 2007  
 RE: **INSTREAM FLOW STUDY: HABITAT SUITABILITY CRITERIA**

On January 22<sup>nd</sup>, 2007, the Instream Flow/Aquatic Habitat Technical Working Committee (TWC) agreed upon Habitat Suitability Criteria (HSC ) depth and velocity criteria for target species and lifestages (smallmouth bass, brown trout, and rainbow trout adults, juveniles, young-of-year, and spawning). Criteria from various source studies were evaluated based on transferability to the lower Saluda River (Table 1);

Although depth and velocity HSC were adapted for adult, juvenile, fry/young-of-year, and spawning smallmouth bass, as well as brown and rainbow trout (Table 2), the TWC did not time to completely evaluate substrate suitability. The purpose of this memo is to build upon the decisions made at the January 22<sup>nd</sup> 2007 TWC meeting by summarizing HSC for substrate and embeddedness for rainbow and brown trout, and smallmouth bass.

**Table 1: Summary of Source Studies Evaluated for Depth and Velocity Habitat Suitability Criteria**

SPECIES	SOURCE	RIVER	ECO-REGION	PHYSIOGRAPHIC REGION
Smallmouth bass	Leonard <i>et al.</i> (1986)	Upper James (VA)	Mid-Atlantic	Appalachian Ridge and Valley
Smallmouth bass	NEP (1990)	Deerfield (MA)	New England	New England Upland
Smallmouth bass	Lockhart IFIM study	Broad (SC)	Southeastern	Piedmont
Smallmouth bass	Groshens and Orth (1994)	N. Anna and Craig Creek	Southeastern Plains	Appalachian Ridge and Valley and Piedmont
Smallmouth bass	Edwards, <i>et al</i> (1983)	Generic		
Rainbow trout	KA (2001)	Lackawaxen, (PA)	Mid-Atlantic	Appalachian Plateau
Rainbow trout	NEP (1990)	Deerfield (MA)	New England	New England Upland
Rainbow trout	Raleigh, <i>et al</i> (1986)	Generic “Blue Book” data		
Brown trout	KA (2001)	Lackawaxen, (PA)	Mid-Atlantic	Appalachian Plateau

Brown trout	NEP (1990)	Deerfield (MA)	New England	New England Upland
Brown trout	Strakosh, <i>et al.</i> 2003	Farmington (CT)	New England	New England Upland
Brown trout	CT DEP	Housatonic (CT)	New England	New England Upland
Brown trout	Raleigh, <i>et al</i> (1984)	Generic "Blue Book" data		

Table 2. Summary of Acceptable HSC Curves as Identified By The TWC

Species	Life Stage	Parameter	SI Curve Source
brown trout	adult	Depth	Combination: Housatonic (poor cover), Deerfield
		Velocity	Lackawaxen, w/modifications
brown trout	fry/YOY	Depth	Deerfield
		Velocity	Deerfield
brown trout	juvenile	Depth	Combination: Deerfield, Raleigh
		Velocity	Combination: Lackawaxen, Deerfield
brown trout	spawning	Depth	Raleigh
		Velocity	Raleigh w/modifications
rainbow trout	adult	Depth	Deerfield
		Velocity	Deerfield (abundant)
rainbow trout	fry/YOY	Depth	Raleigh
		Velocity	Raleigh
rainbow trout	juvenile	Depth	Lackawaxen
		Velocity	Lackawaxen
rainbow trout	spawning	Depth	Raleigh
		Velocity	Raleigh
smallmouth bass	adult	Depth	Combination: Groshens & Orth, Bain Combination: Groshens & Orth, Deerfield
		Velocity	(abundant velocity refuge)
smallmouth bass	juvenile	Depth	Combination: Bain, Deerfield w/modifications
		Velocity	Deerfield (abundant velocity refuge)
smallmouth bass	spawning	Depth	Lockhart
		Velocity	Lockhart
smallmouth bass	YOY	Depth	Combination: Groshens & Orth, Bain
		Velocity	Combination: Deerfield, Bain



## **SUBSTRATE CRITERIA OPTIONS**

### **Brown Trout**

We obtained HSC successfully applied in IFIM studies from the Farmington (CT) (Strakosh, et al. 2003), Deerfield (MA) (NEP, 1990), and Housatonic (CT) (CT DEP) rivers, as well as the generalized “Bluebook” criteria (Raleigh, *et al.*, 1986) that have been employed in several regional PHABSIM studies. Appendix A contains graphical representations of substrate criteria for juvenile and adult lifestages. For brown trout juveniles and adults, substrates ranging from gravel/pebble to cobble/small boulder were generally found to be the most suitable, along with undercut banks and vegetation for some studies. The degree of substrate embeddedness is also a sub-criterion.

### **Rainbow Trout**

HSC criteria developed for the Deerfield River (MA) and generalized “Bluebook” criteria (Raleigh, *et al.*, 1984) are presented in Appendix B. Although the studies varied in how some substrate sizes were classified, habitat suitability was generally similar between studies, with gravel, cobble and boulder substrates being more suitable than silt, sand and mud. This was particularly true of the early lifestages, i.e. spawning, fry, juvenile. The degree of substrate embeddedness is also a sub-criterion.

### **Smallmouth Bass**

Substrate HSC criteria developed for the Deerfield River (MA), James (VA) (Leonard, et al., 1986) and generalized “Bluebook” criteria (Edwards, *et al.*, 1993) are presented in Appendix C. There is relatively good general agreement among all curves relative to substrate and cover suitability, with large cobble/boulder tending to be optimal, and silt/sand/organics being less suitable.

## LITERATURE CITED

- Edwards, E.A., G. Gebhart, and O.E. Maughan. 1983. Habitat suitability information: smallmouth bass. U.S. Dept. Int., Fish Wildl. Serv. FWS/oES-32/10.36 47 pp.
- Connecticut Dept. of Environmental Protection. (unpublished data). Housatonic River IFIM SI criteria. Peter Aarestad, CTDEP, personal communication.
- Groshens, T.P. and D.J. and Orth. 1994. Transferability of habitat suitability criteria for smallmouth bass, *Micropterus dolomieu*. Rivers (4)3:194-212
- Leonard, P.M., D.J. Orth, and C.J. Goodreau. 1986. Development of a method for recommending instream flows for fishes in the upper James River, Virginia. VA poly Inst. and State Univ., Blacksburg, VA. Bull. 152, 109 pp.
- New England Power Company. 1990. New England Power Company, Deerfield River Project IFIM Study. Stetson-Harza, Weare, NH.
- Newcomb, T.J., S.A. Perry and W.B. Perry. 1995. Comparison of habitat suitability criteria for smallmouth bass (*Micropterus dolomieu*) from three West Virginia rivers. Rivers 5(3):170-183.
- Perry, S.A., W.B. Perry, D.L. Graham and N.H. Sagalkin. 1993. Verification and transferability studies for smallmouth bass in West Virginia streams. West Virginia Coop. Fish and Wildl. Res. unit, West Virginia Univ., Morgantown, WV. WVCFRUWRU Cooperative Agreement 14-16-0009-1563. 25 pp. plus appendices.
- Raleigh, R.F., L.D. Zuckerman, and P.C. Nelson. 1986. Habitat suitability index models and instream flow suitability curves: Brown trout, revised. U.S. Fish and Wildl. Serv. FWS/OBS-82(10.124). 65 pp..
- Raleigh, R.F., T Hickman, R.C. Solomon and P.C. Nelson. 1984. Habitat suitability information: Rainbow trout. U.S. Fish and Wildl. Serv. FWS/OBS-82/10.60 64 pp.
- Strakosh, T.R., R.M. Neumann, and R.A. Jacobsen. 2003. Development and assessment of habitat suitability criteria for adult brown trout in southern New England rivers. Ecology of Freshwater Fish 12:265-274. Blackwell Munksgaards, 2003.

Appendix A  
Brown Trout Substrate Habitat Suitability Criteria

**Appendix A, Table 1: Substrate Classification Codes - Raleigh**

<b>Substrate Codes from Bovee (1982)</b>			
<b>Code</b>	<b>Description</b>	<b>Size (mm)</b>	<b>Size (in)</b>
1	plant/detritus/organic material		
2	mud/soft clay		
3	silt	<0.062	
4	sand	0.062 – 2.0	
5	gravel	2.0 - 64	
6	cobble	64 - 250	
7	boulder	250 – 4000	
8	bedrock	solid	

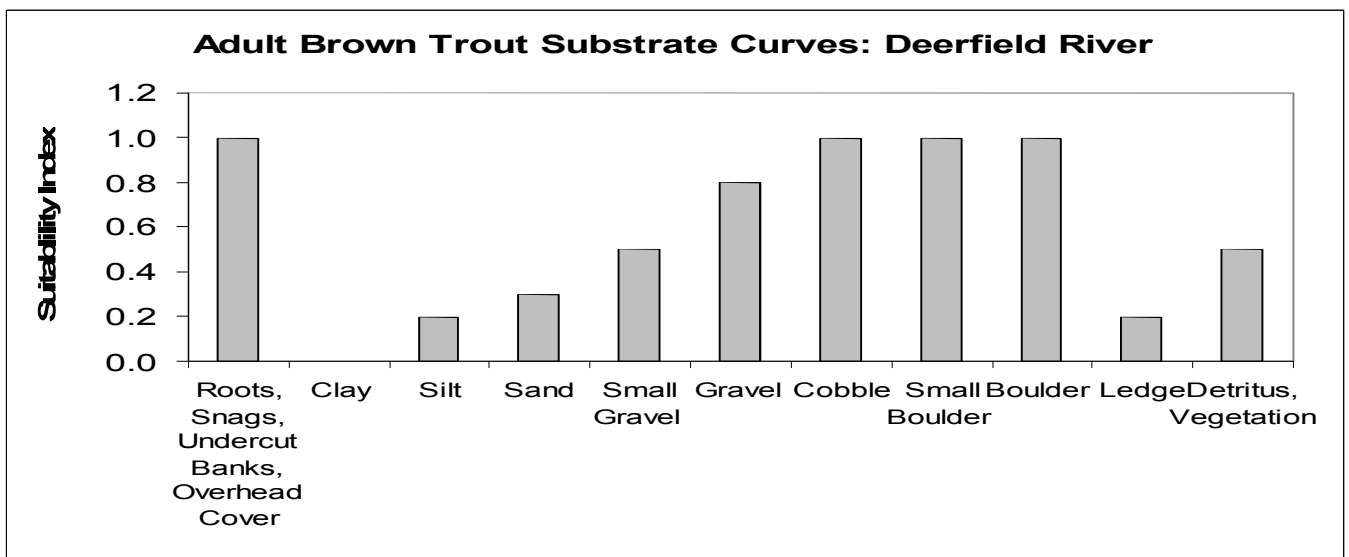
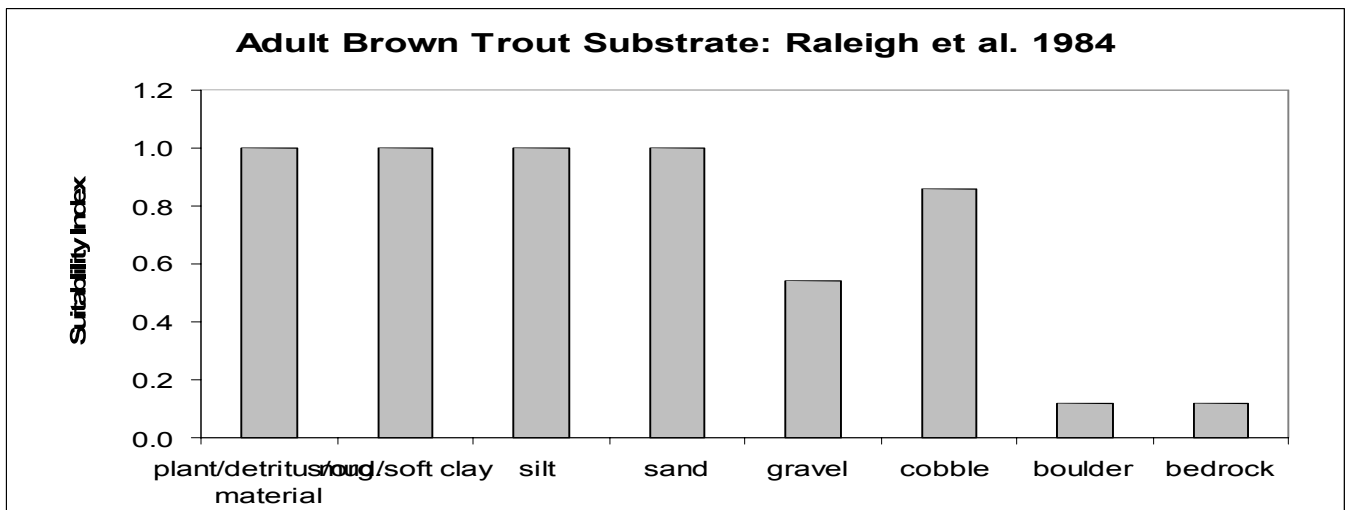
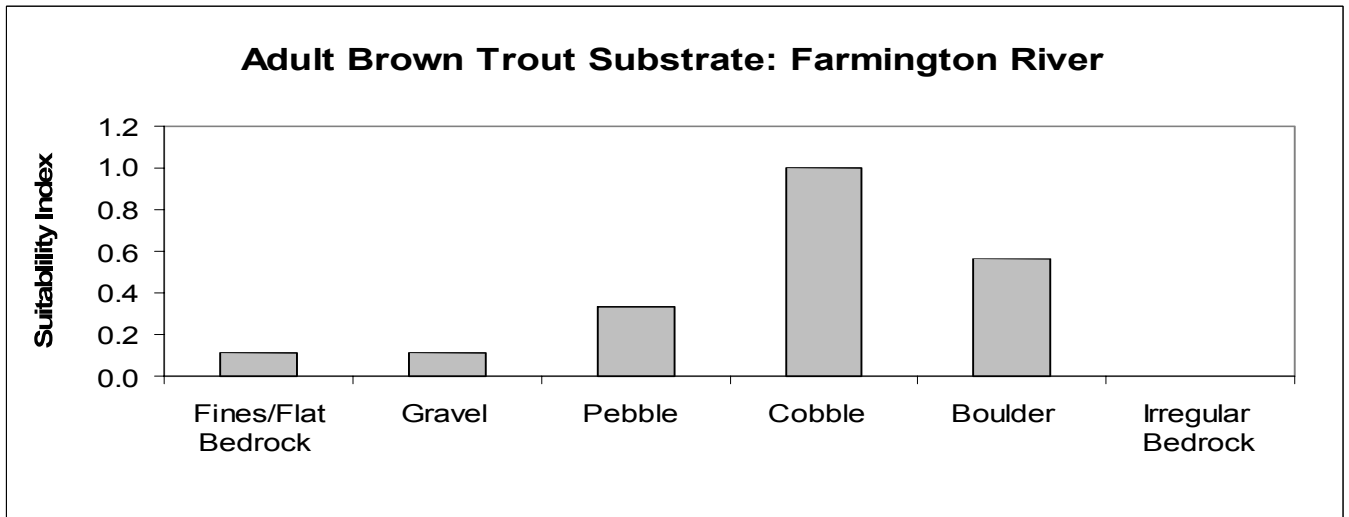
**Appendix A, Table 2: Substrate Classification Codes - Deerfield & Housatonic**

<b>Code</b>	<b>Description</b>	<b>Size (mm)</b>	<b>Size (in)</b>
1	Roots, Snags, Undercut Banks, Overhead Cover		
2	Clay		
3	Silt		
4	Sand		
5	Small Gravel	< 5.1	< 2
6	Gravel	5.1 - 10.2	2-4
7	Cobel	10.2 - 25.4	4 - 10
8	Boulder	25.4 - 61	10 in - 2 ft
9	Boulder	>61	> 2 ft
10	Ledge		
11	Detritus, Vegetation		

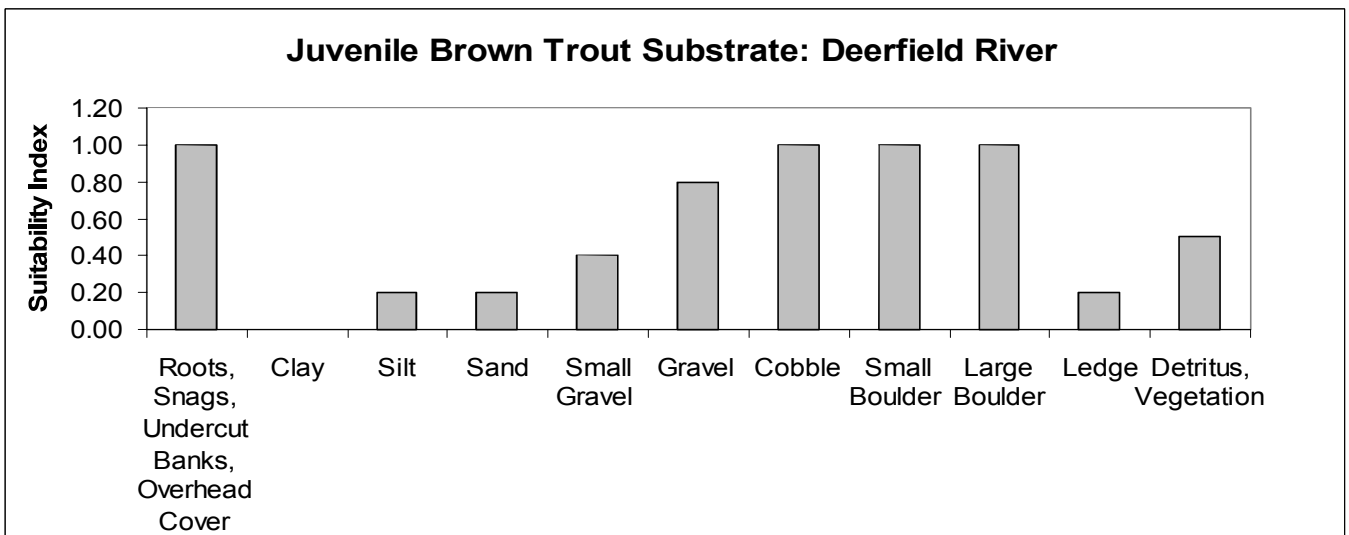
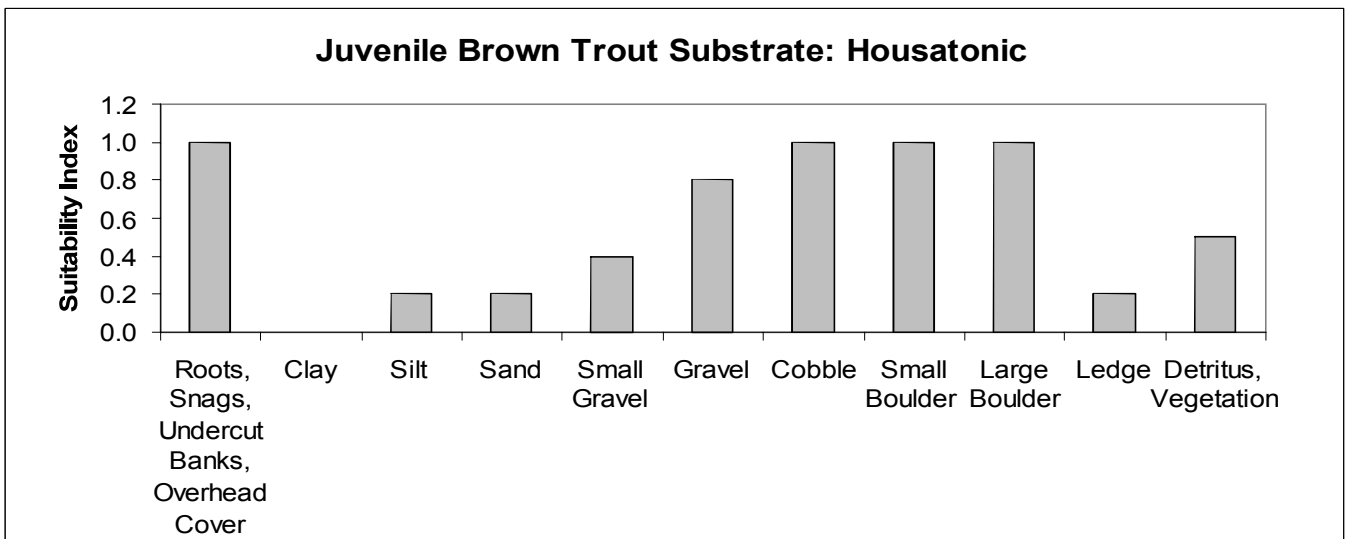
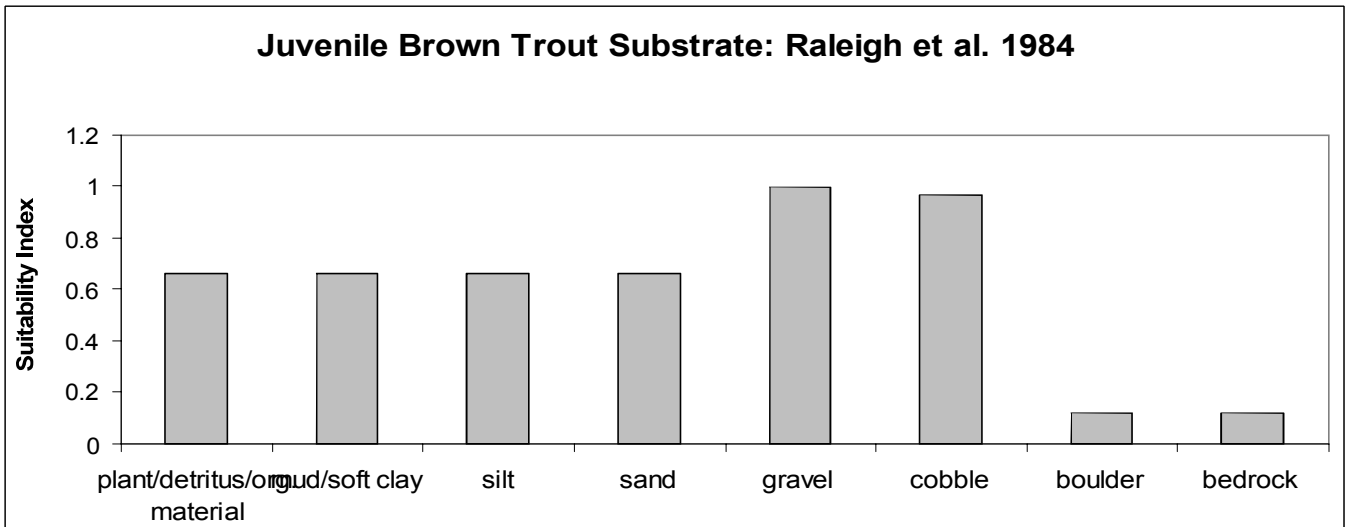
**Appendix A, Table 3: Substrate Classification Codes - Farmington**

<b>Code</b>	<b>Description</b>	<b>Size (mm)</b>	<b>Size (in)</b>
1	Fines/Flat Bedrock	< 2	< .08
2	Gravel	2 - 16	0.08 - 0.63
3	Pebble	16 - 64	0.63 - 2.52
4	Cobble	64 - 256	2.52 - 10.08
5	Boulder	> 256	> 10.08
6	Irregular Bedrock		

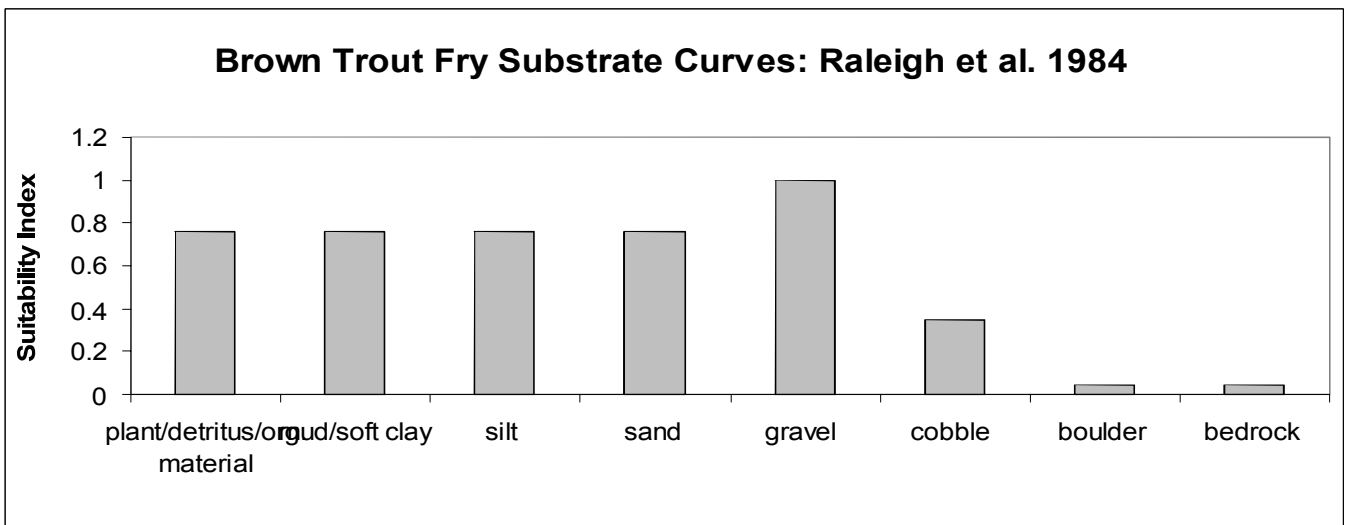
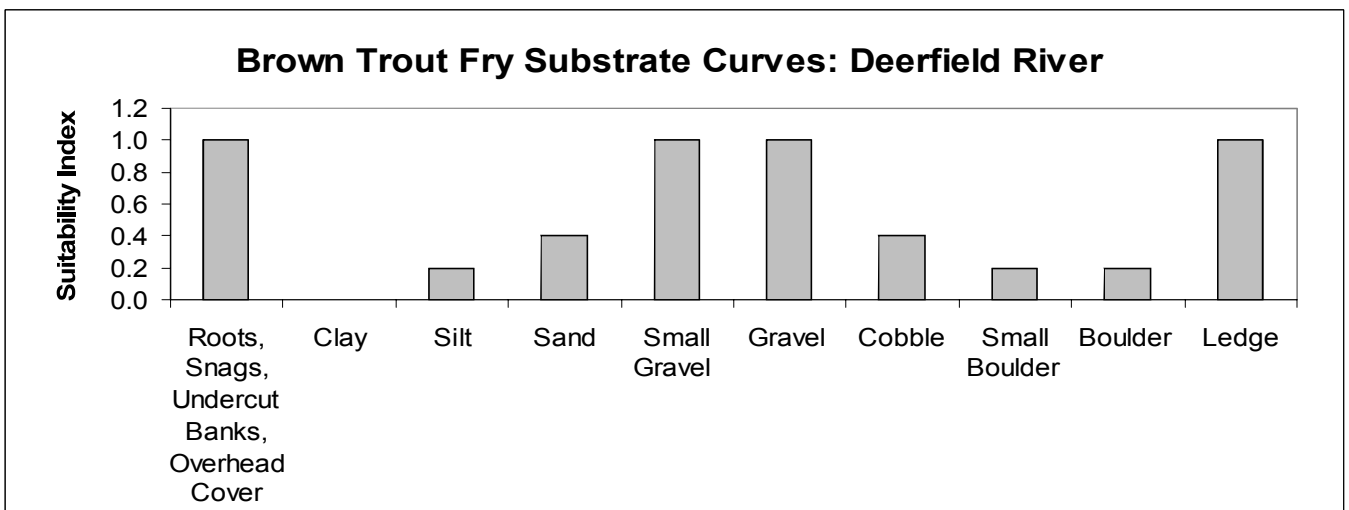
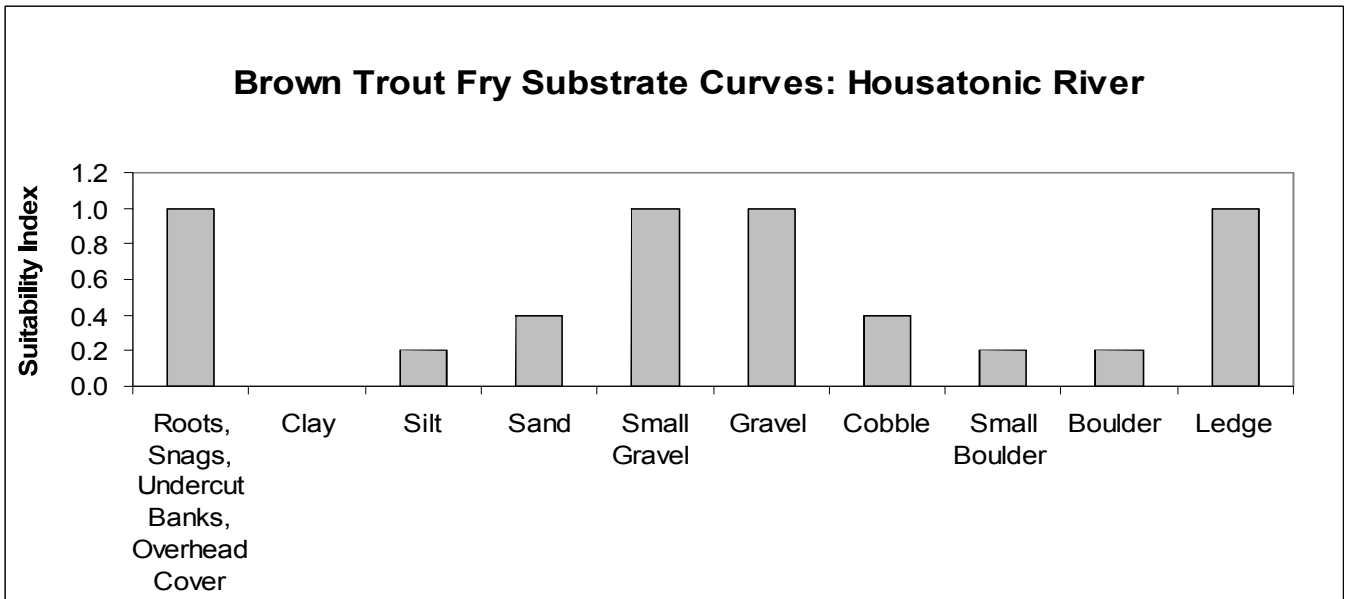
Adult Brown Trout



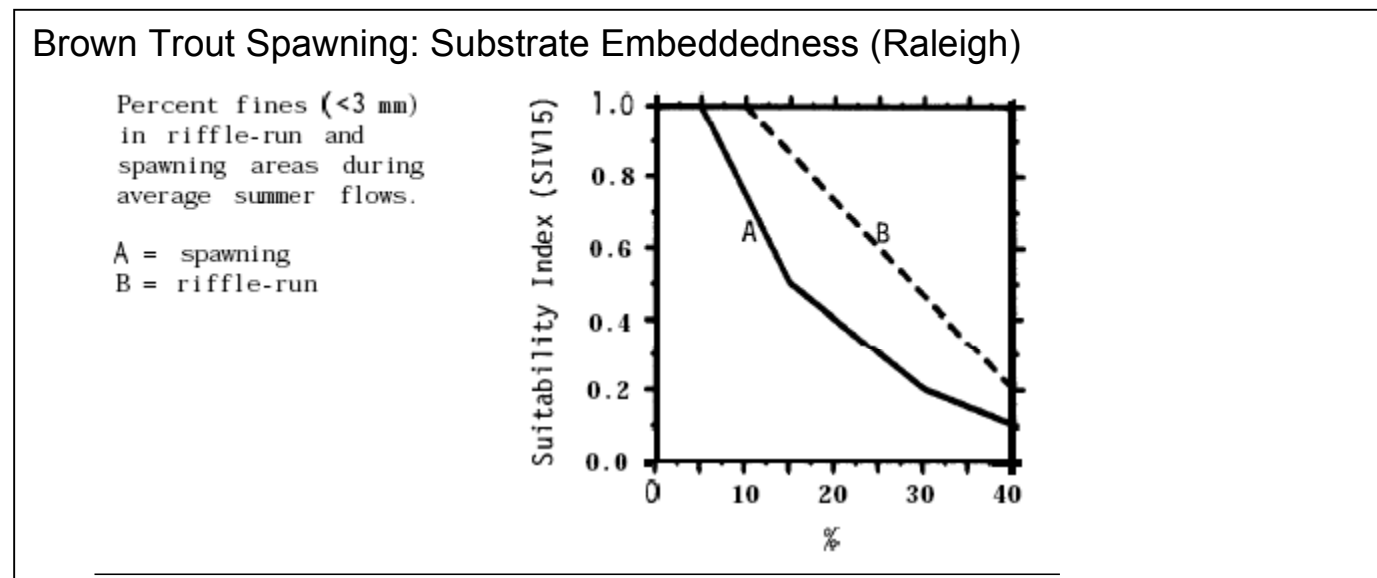
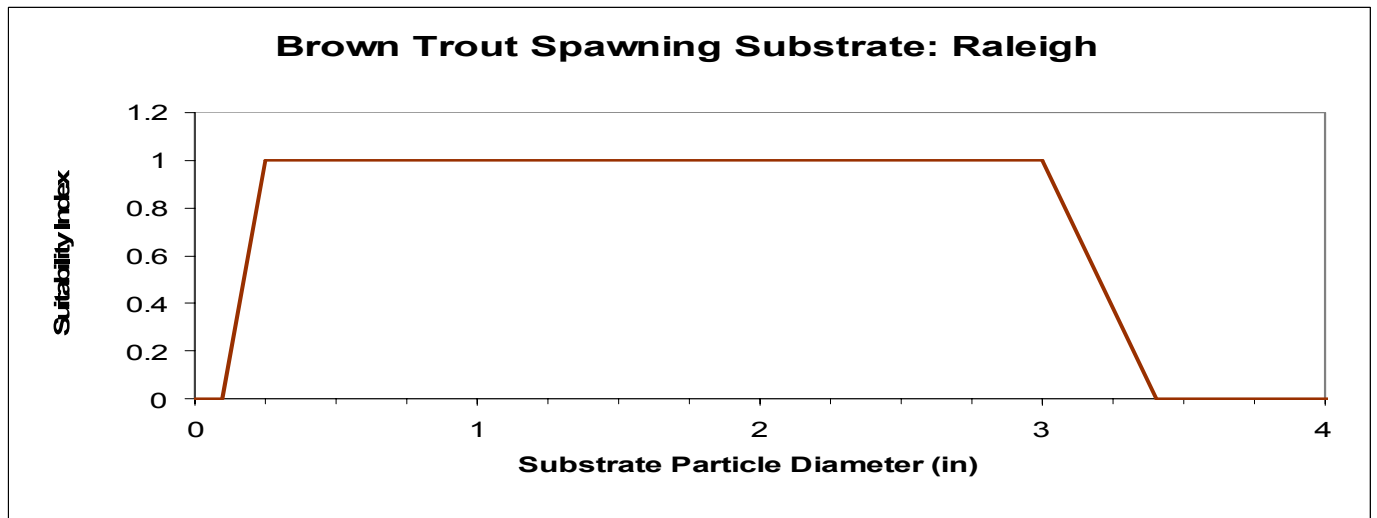
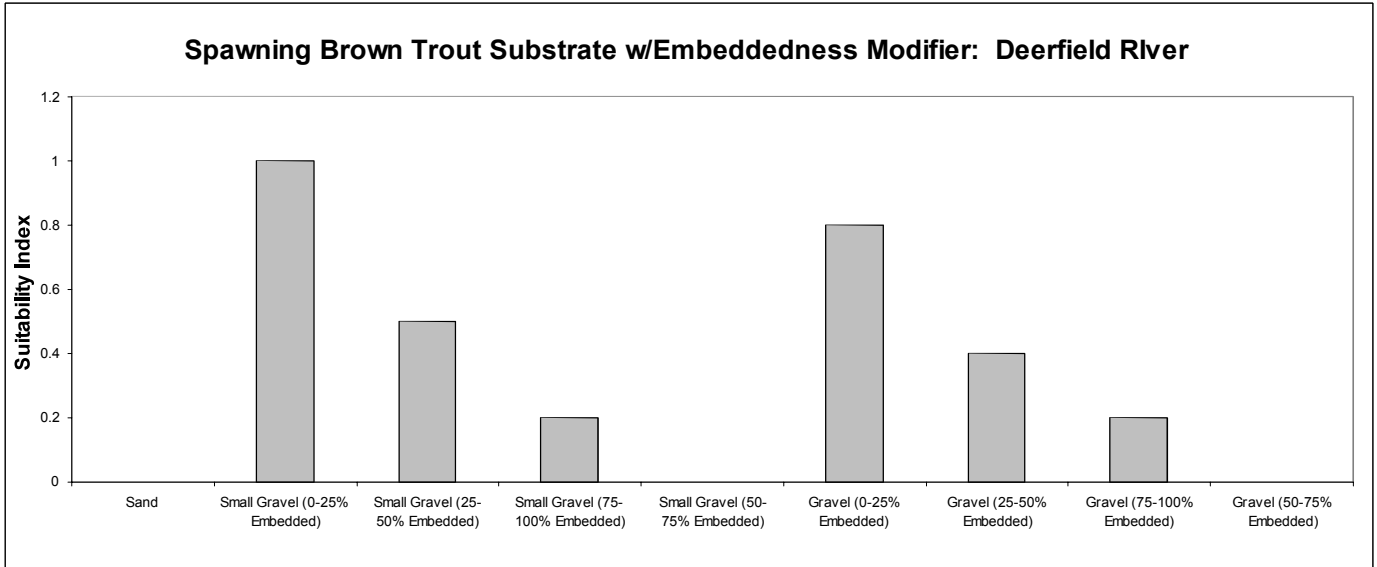
Juvenile Brown Trout



Brown Trout Fry



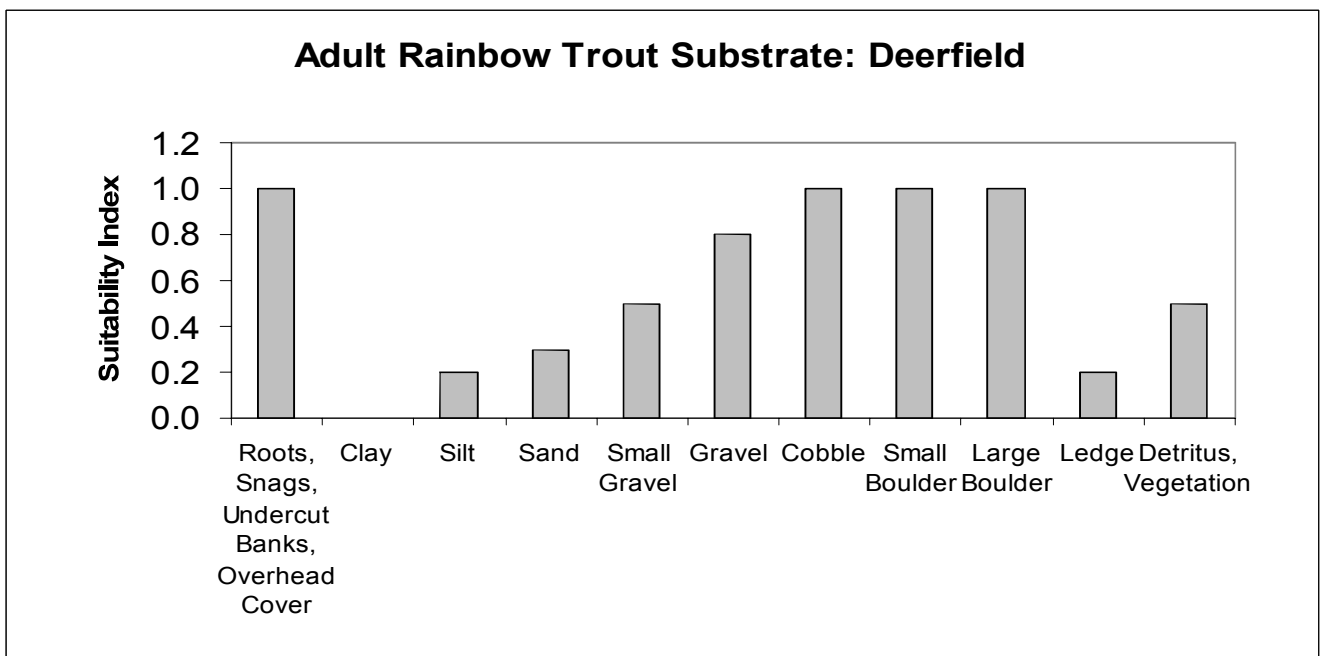
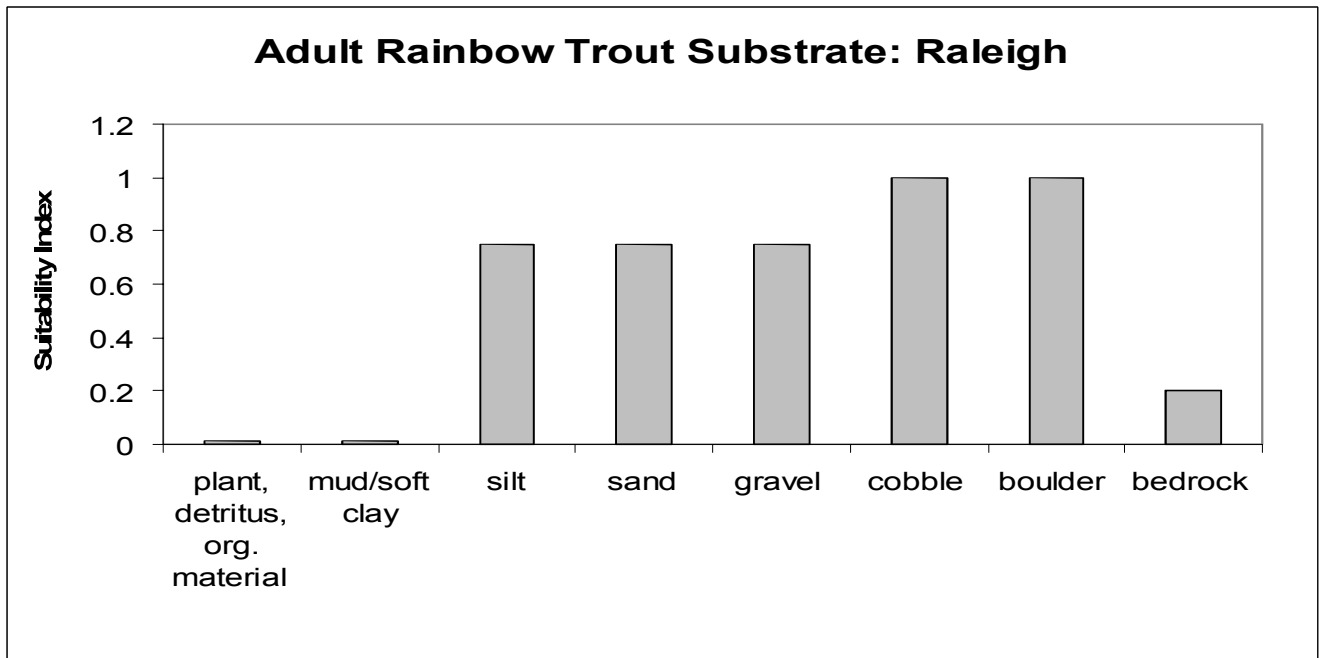
## Spawning Brown Trout





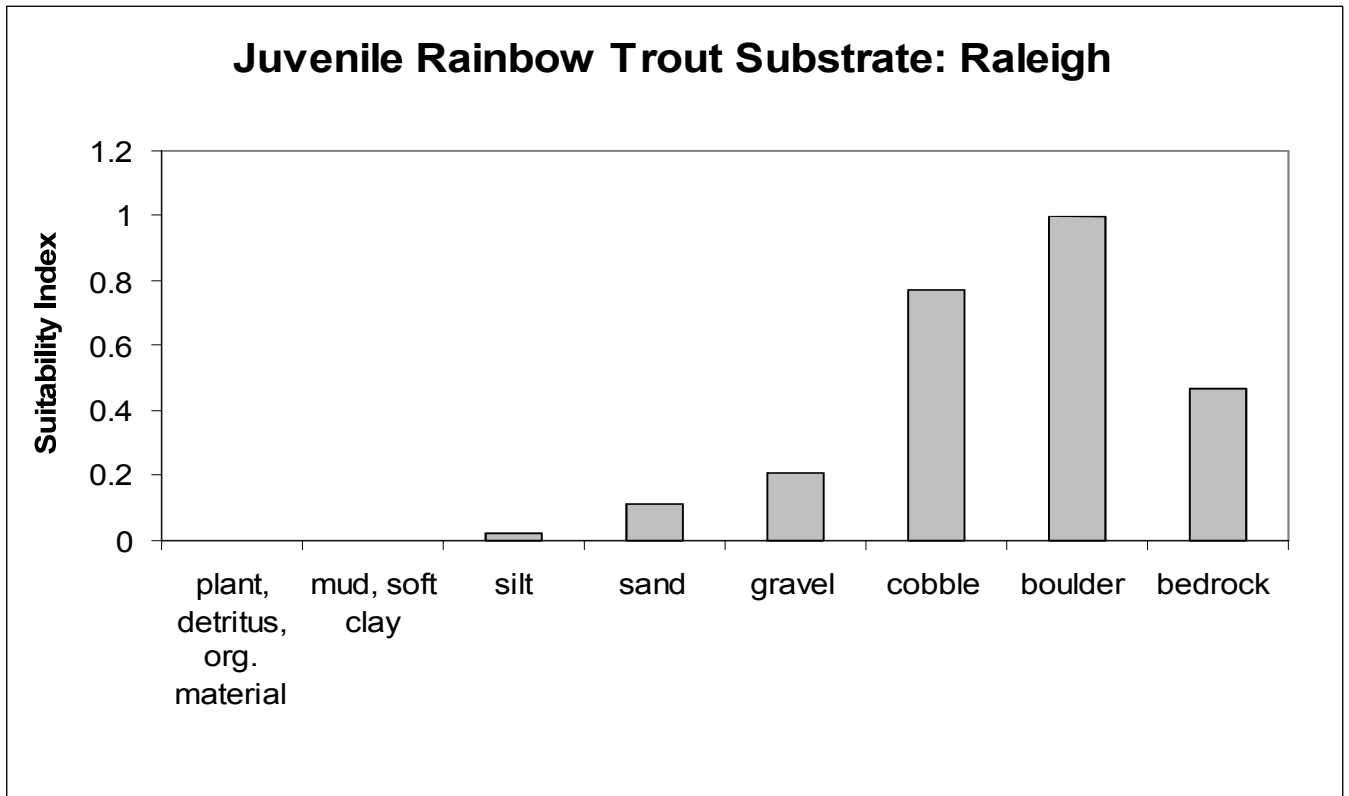
Appendix B  
Rainbow Trout Substrate Habitat Suitability Criteria

Adult Rainbow Trout<sup>1</sup>

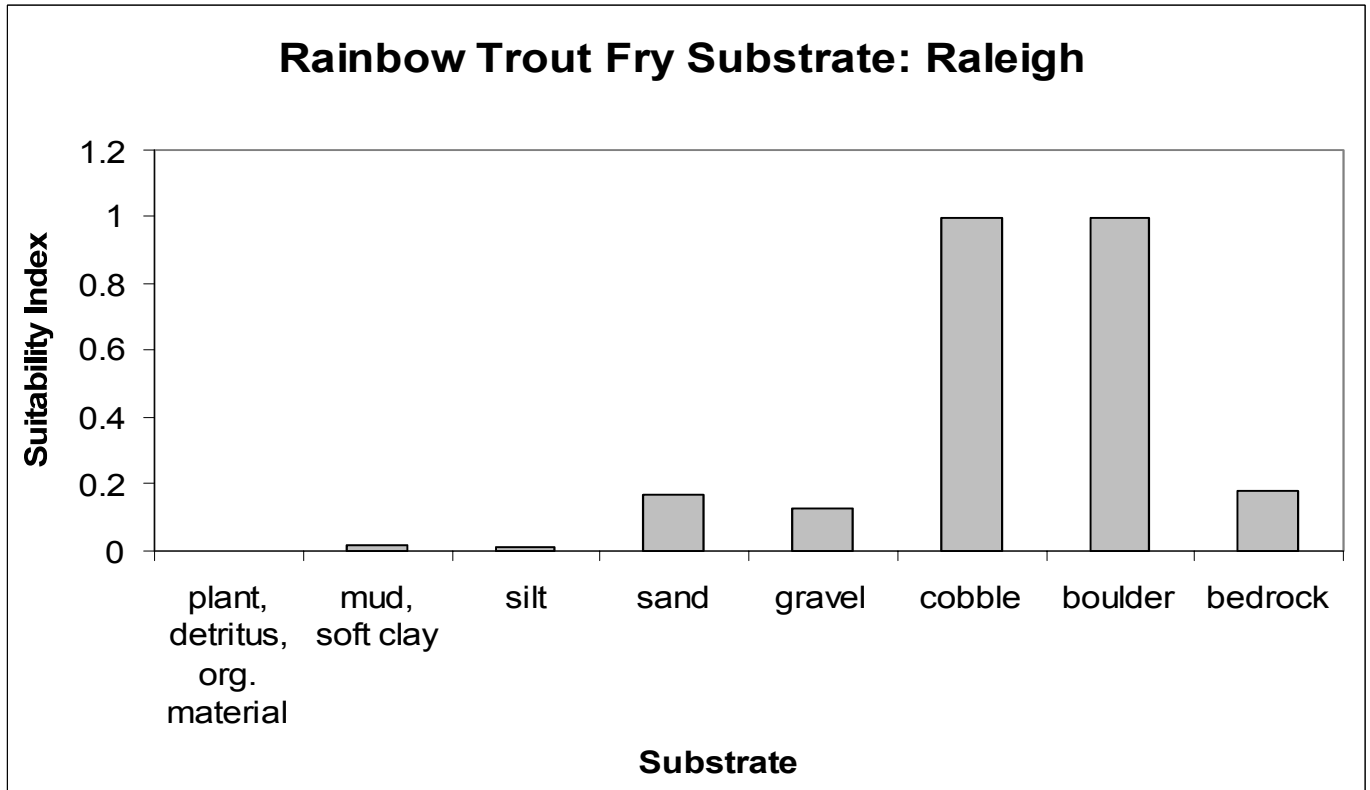


<sup>1</sup> See Appendix A for substrate codes and descriptions.

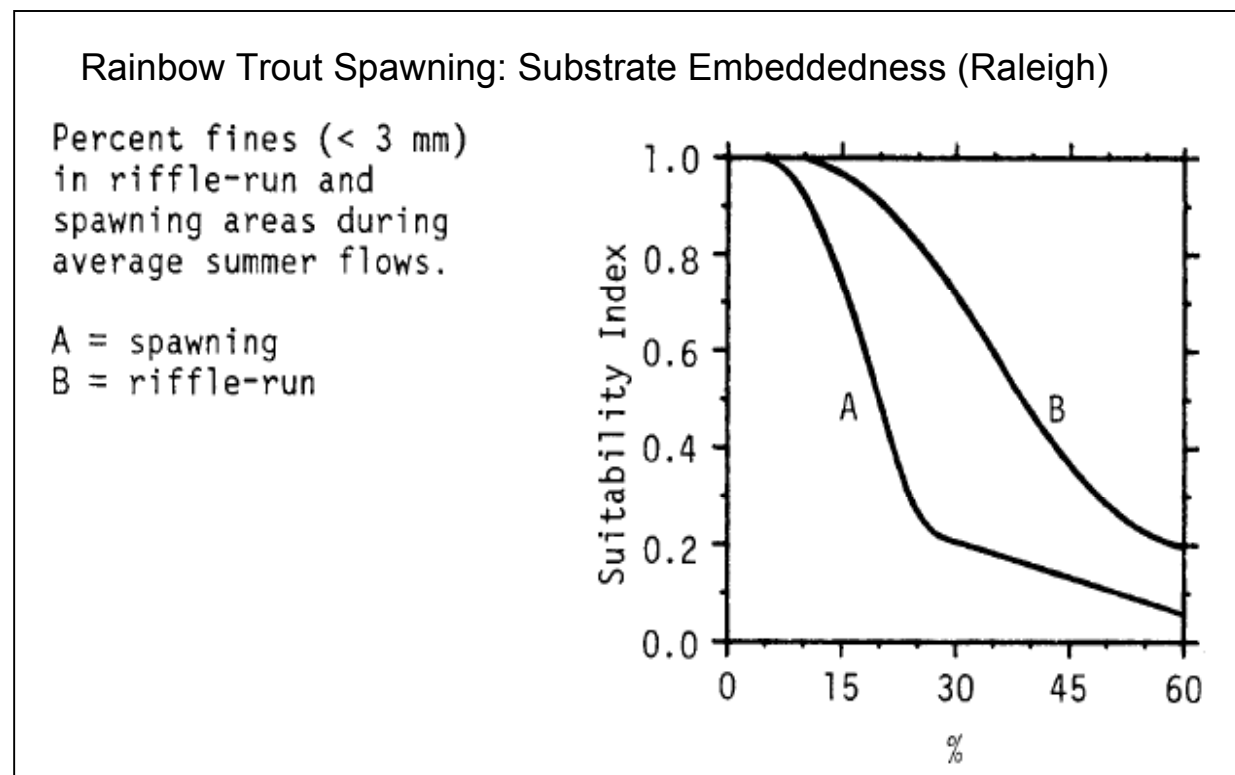
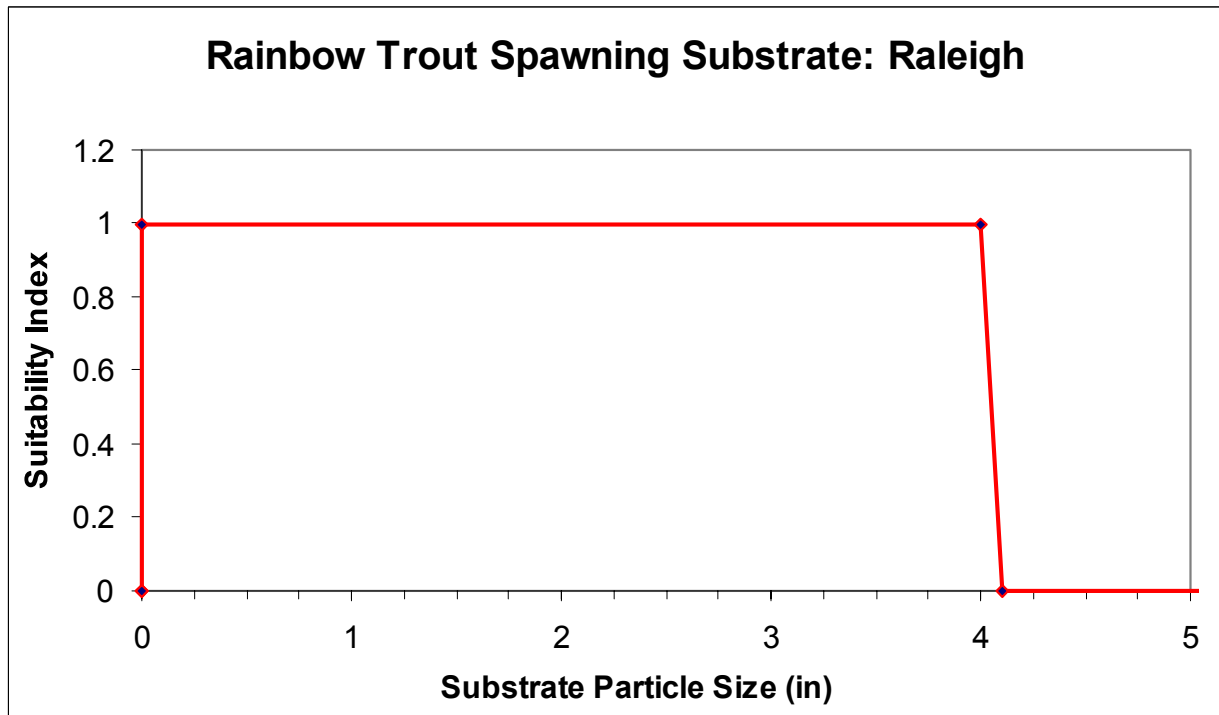
Juvenile Rainbow Trout



Rainbow Trout Fry



## Rainbow Trout Spawning



Appendix C  
Smallmouth Bass Substrate Habitat Suitability Criteria

**Appendix C, Table 1: Substrate Classification Codes - Bain**

Code	Description	Size (mm)	Size (in)
	Silt		
	Sand		
	Gravel	4-75	< 3 in. diam,
	Rubble	75-300	3-12 in. diam.
	Boulder	300-600	1-3 ft. diam.
	Bedrock		

**Appendix C, Table 2: Substrate Classification Codes - Deerfield**

Code	Description	Size (mm)	Size (in)
1	Roots, Snags, Undercut Banks, Overhead Cover		
2	Clay		
3	Silt		
4	Sand		
5	Small Gravel	< 5.1	< 2
6	Gravel	5.1 - 10.2	2-4
7	Cobel	10.2 - 25.4	4 - 10
8	Boulder	25.4 - 61	10 in - 2 ft
9	Boulder	>61	> 2 ft
10	Ledge		
11	Detritus, Vegetation		

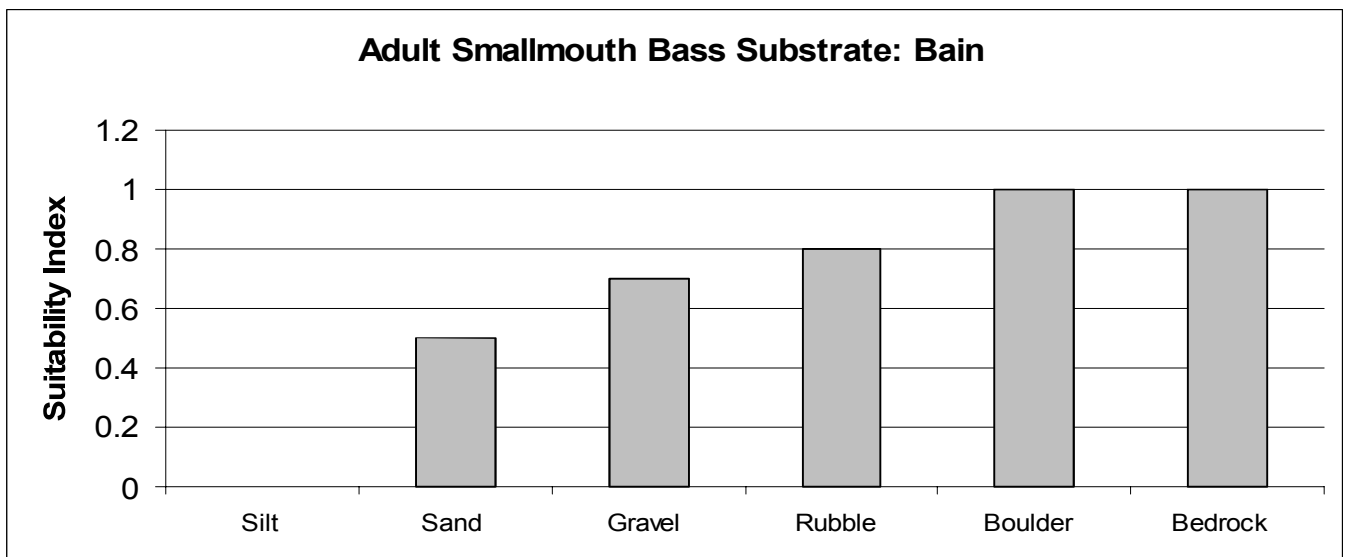
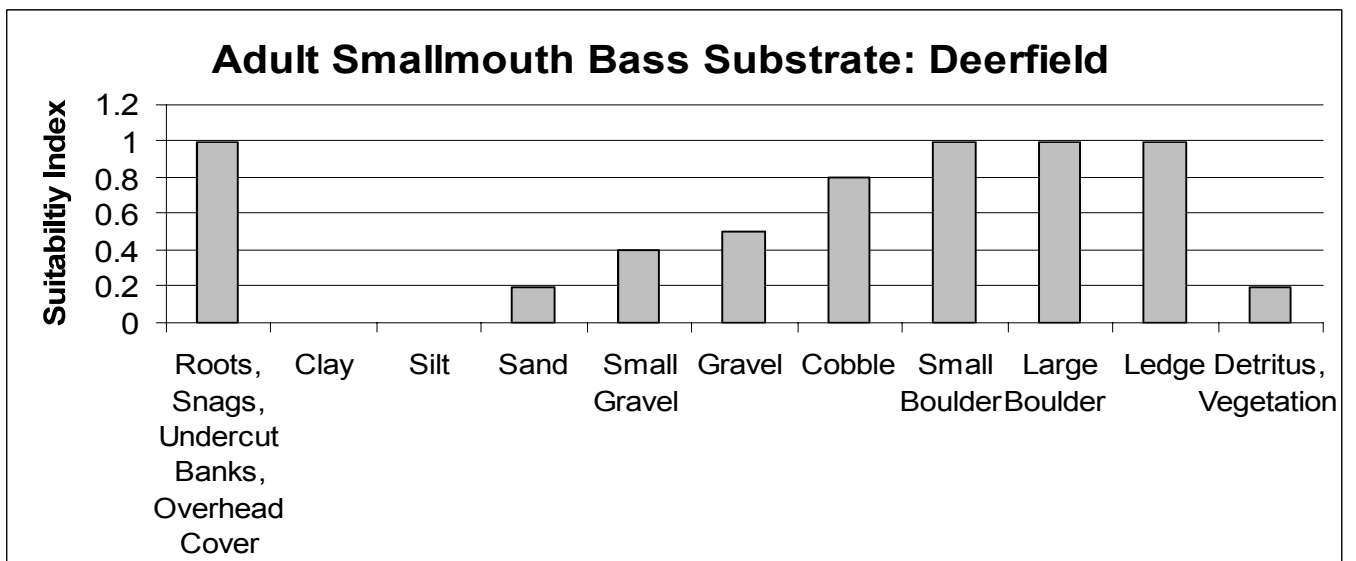
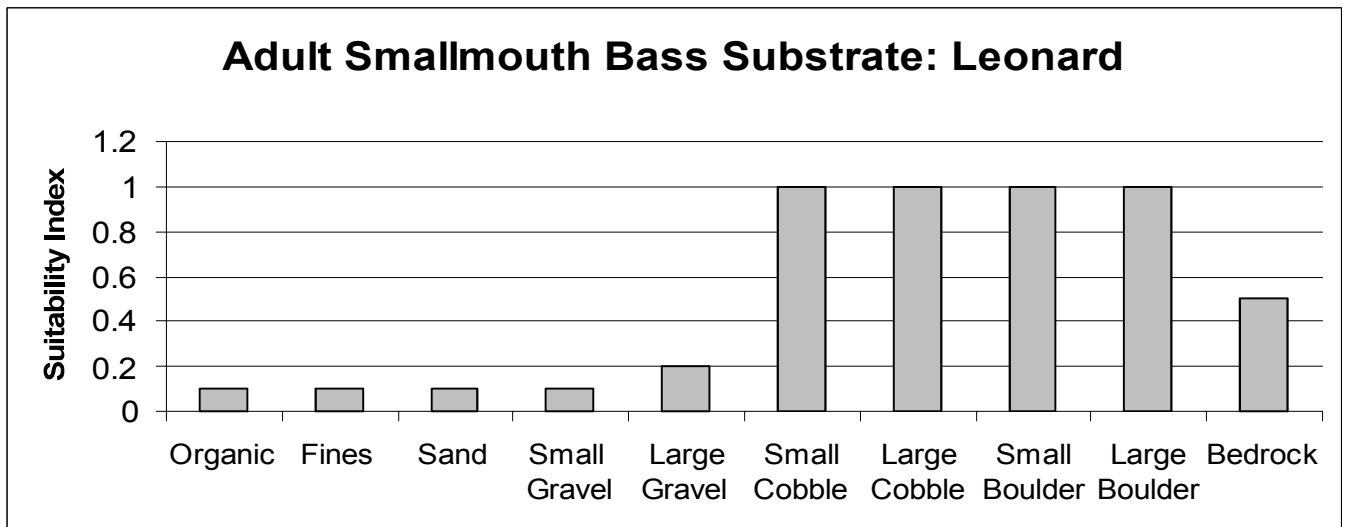
**Appendix C, Table 3: Substrate Classification Codes - Leonard**

Code	Description	Size (mm)	Size (in)
1	Organic		
2	Fines		
3	Sand		
4	Small Gravel		<2 inches diam.
5	Large Gravel		2-4 inches diam.
6	Small Cobble		4-7 inches diam.
7	Large Cobble		8-10 inches diam.
8	Small Boulder		10-24inches diam.
9	Large Boulder		> 2 ft diameter
10	Bedrock		

**Appendix C, Table 4: Substrate Classification Codes - Lockhart**

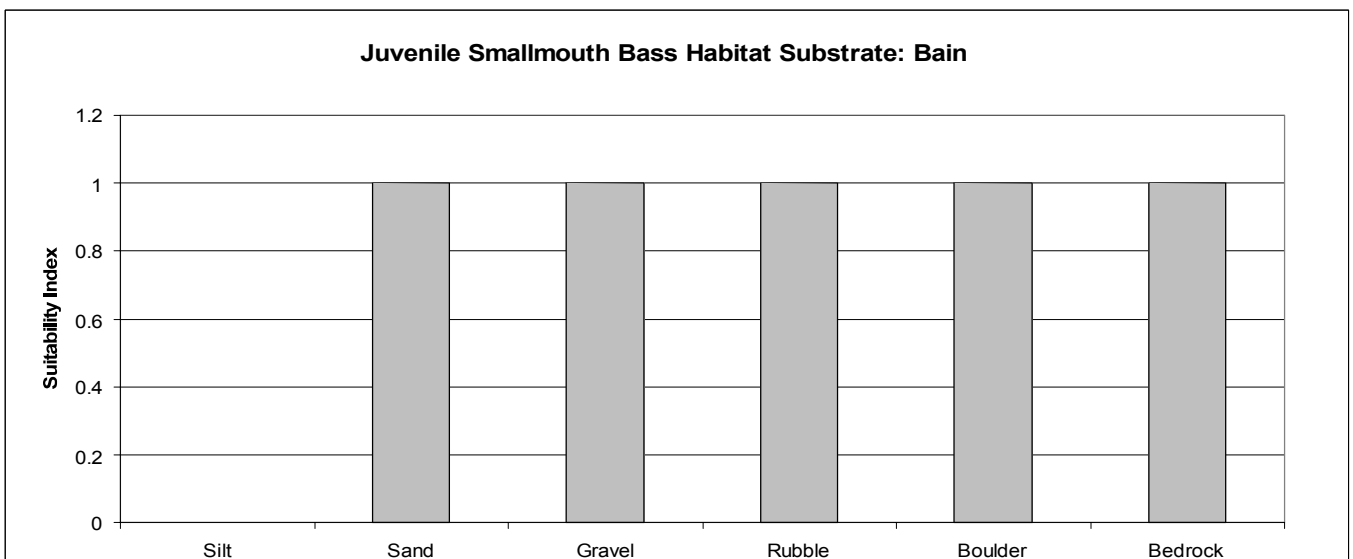
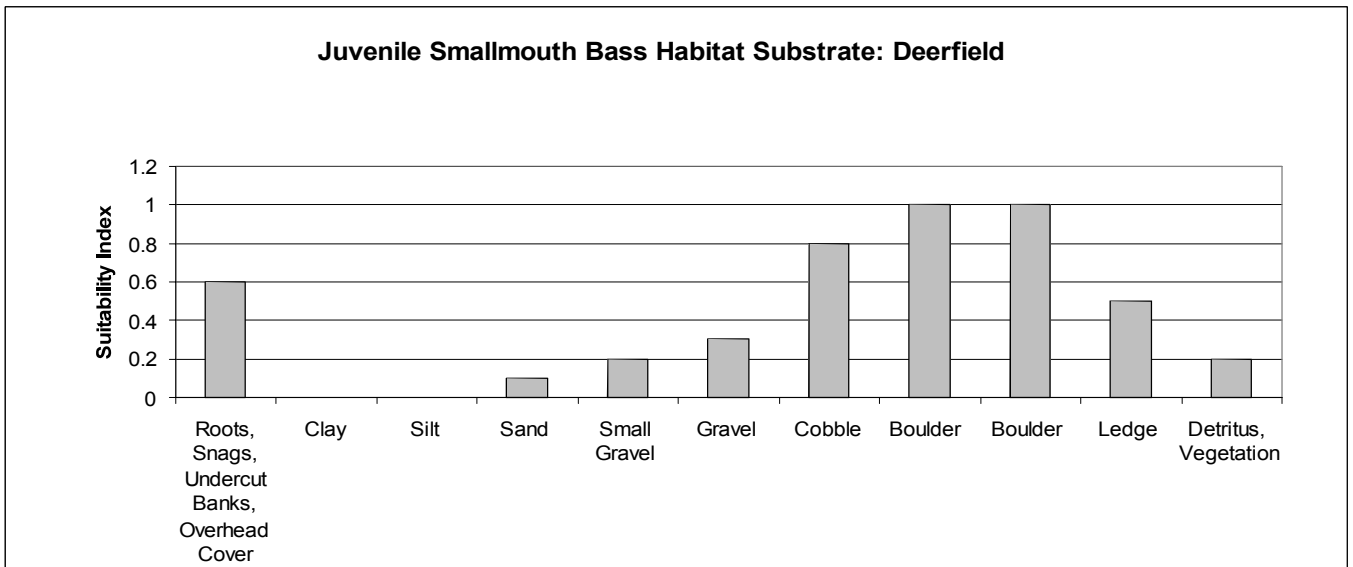
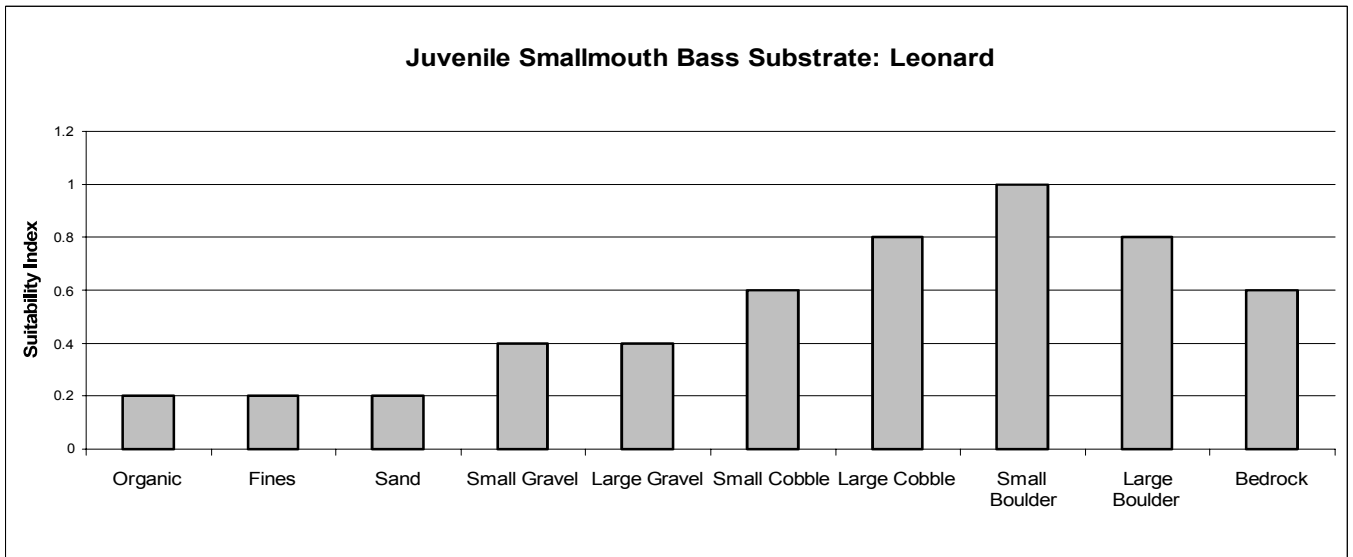
Code	Description	Size (mm)	Size (in)
1	mud	<1	< 0.4
2	sand	1 - 2	0.4 - 0.8
3	small gravel	2 - 16	0.8 - 6.3
4	large gravel	16 - 64	6.3 - 25.2
5	small cobble	64 - 128	25.2 - 50.4
6	large cobble	128 - 256	50.4 - 100.8
7	small boulder	256 - 512	100.8 - 201.6
8	large boudler	> 512	> 201.6
9	bedrock	-	

Adult Smallmouth Bass

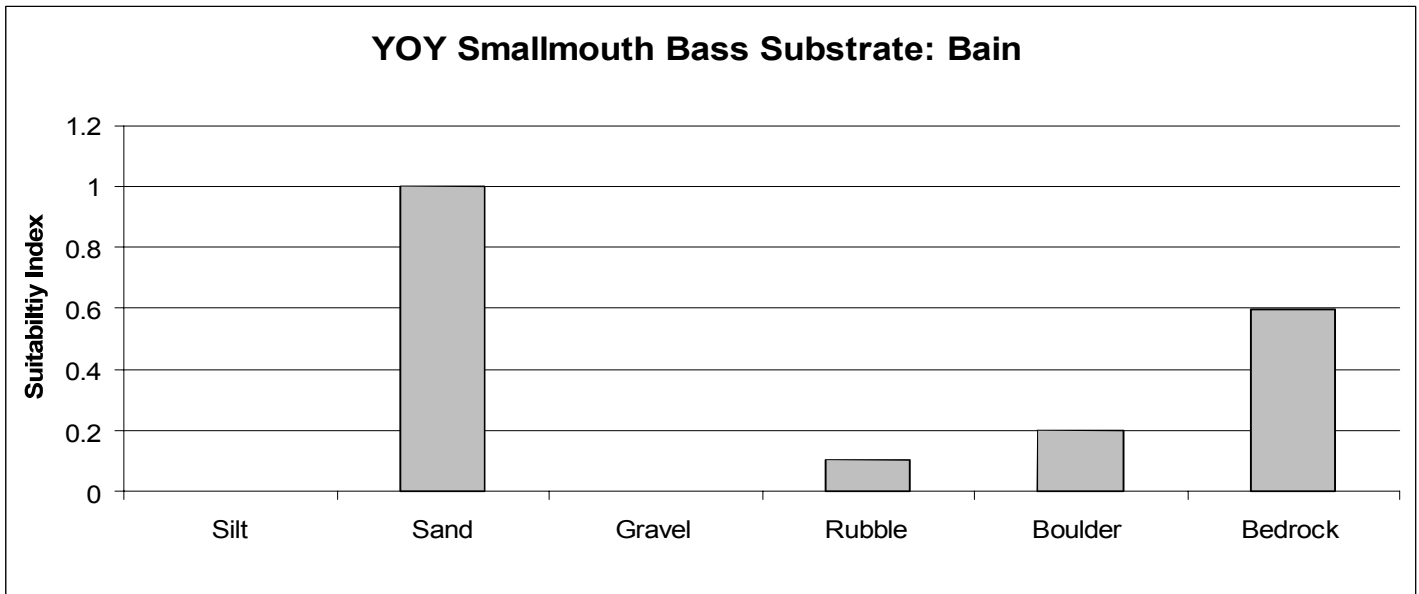
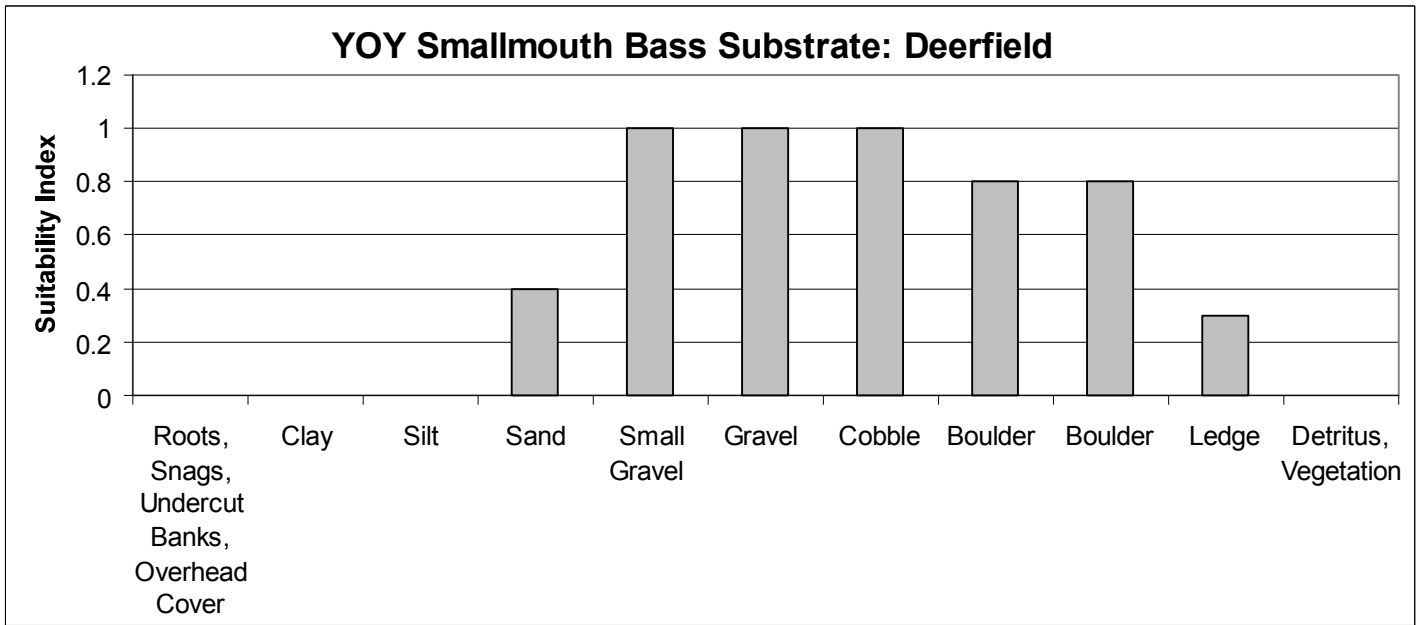




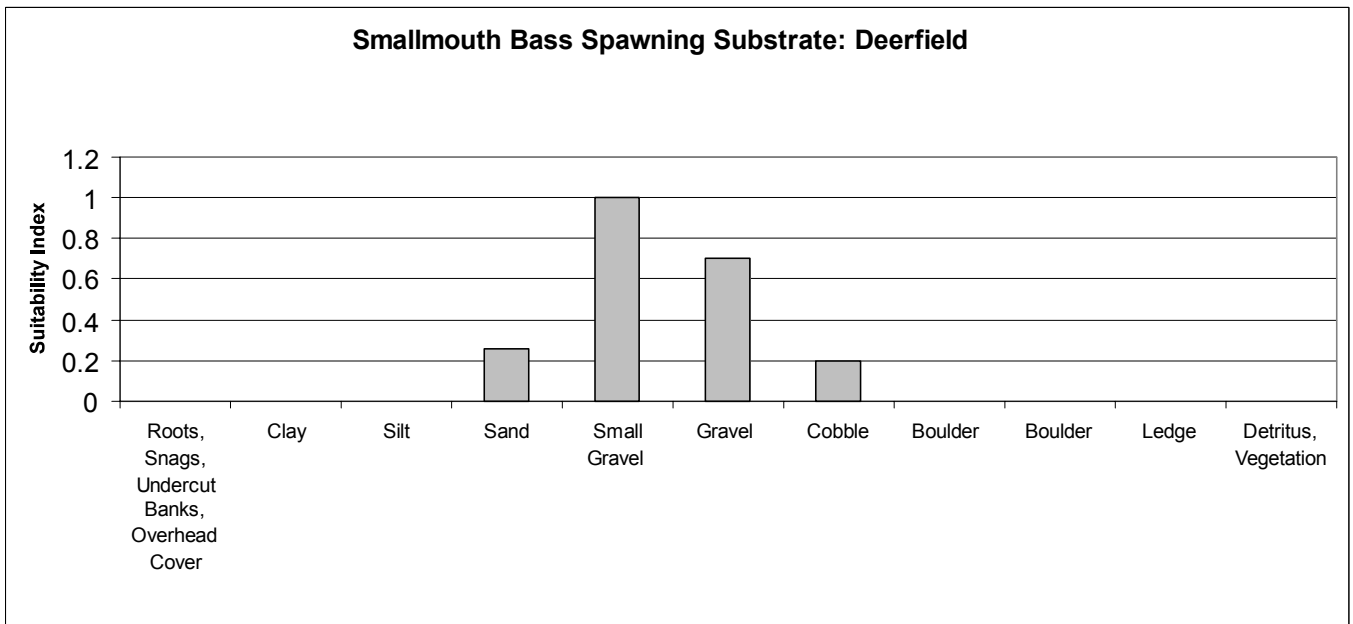
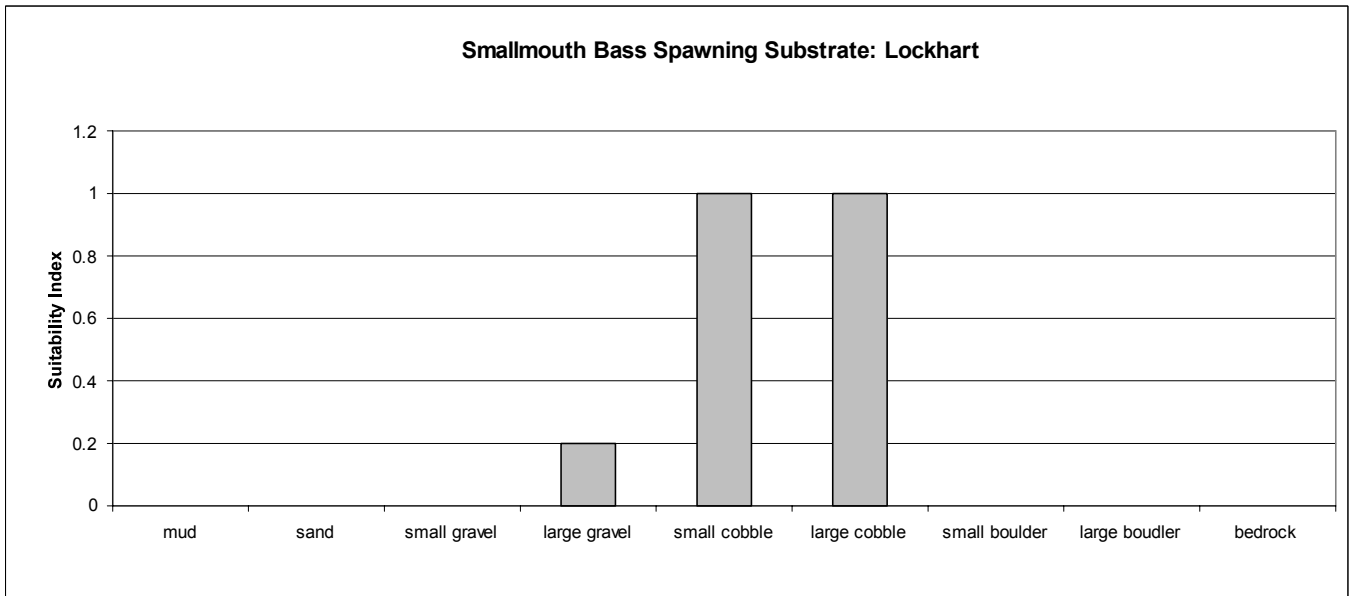
## Juvenile Smallmouth Bass



Smallmouth Bass YOY



## Smallmouth Bass Spawning





01/16/07 – CLB  
0455029.00-93-03

Z:\SCO\455\029\2007-01-16 Saluda Instream Flow Study - Habitat Suitability Criteria.doc

## Kacie Jensen

---

**From:** Shane Boring  
**Sent:** Friday, April 20, 2007 11:04 AM  
**To:** Theresa Thom; Alison Guth; Amanda Hill; Bill Argentieri; Bud Badr; Dick Christie; Gerrit Jobsis (American Rivers); Hal Beard; Jennifer Summerlin; Jim Glover; Malcolm Leaphart; Mike Waddell; Milton Quattlebaum (mquattlebaum@scana.com); Prescott Brownell; Randy Mahan; Ron Ahle; Scott Harder; Shane Boring; Steve Summer; Brandon Kulik; Alan Stuart  
**Subject:** Saluda Instream Flow Study: Brown Trout Habitat Suitability Information

All:

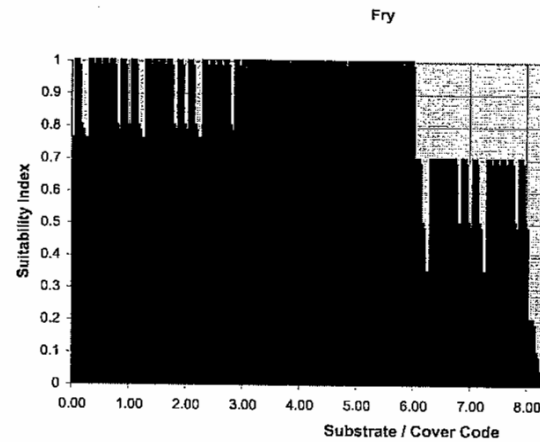
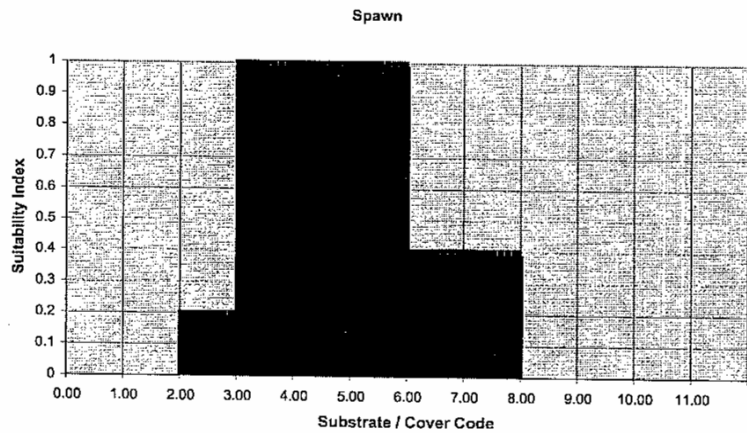
As you may remember, the Instream Flow TWC met via conference call last Tuesday (May 10) and selected substrate Habitat Suitability Criteria for a number of target species and lifestages (smallmouth bass and brown and rainbow trout). At that conference call, the group reached consensus on source substrate for all the lifestages discussed, with the exception of brown trout juveniles, spawning and fry. HSC criteria were not selected for these lifestages due to limited source study information (i.e. only the Raleigh et al. "Blue Book" values were available). At the request of Mike Waddell and others, included below are the substrate HSC criteria used for the Catawba-Wateree Study (originally developed for the Tuckaseegee and Nantahala IFIM Studies), along with a legend that describes the substrate codes. To facilitate closing out the HSC selection process, please provide feedback regarding the acceptability of these curves versus the Raleigh et al. curves by COB next Friday, April 27th. When providing feedback, please use the "reply to all" option so that we can maintain an open forum.

Many thanks to Dick Christie for getting in touch with the original authors to acquire the legends needed to interpret the Catawba-Wateree data. The graphs included below are excerpted from the final Catawba-Wateree IFIM report (Page 250).

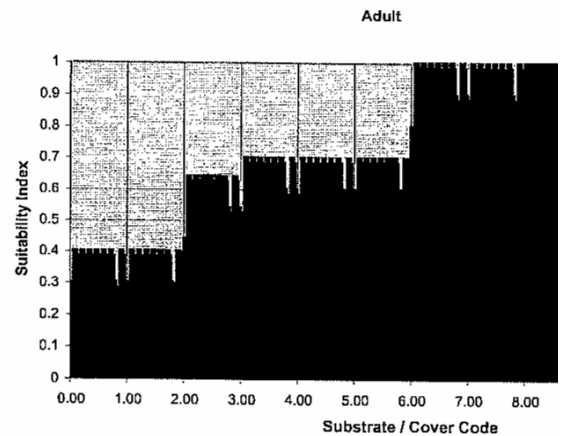
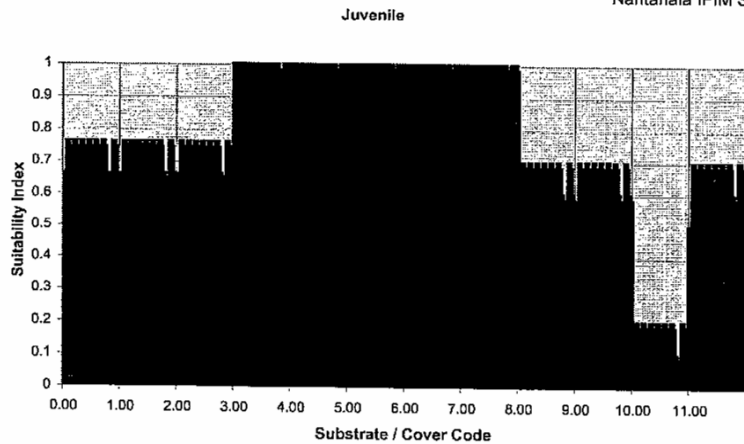
Thanks and have a good weekend,  
Shane Boring

Environmental Scientist  
Kleinschmidt Associates  
101 Trade Zone Dr., Suite-21A  
West Columbia, SC 29170  
Phone: (803)822-3177  
Fax: (803)822-3183

## Brown trout habitat suitability Substrate/cover



Source: Duke Power - Tuckaseegee and  
Nantahala IFIM Study.



Substrate Code	Substrate Type
0.0 – 0.94	Organic Matter
1.0 – 1.94	Silt
2.0 – 2.94	Sand
3.0 – 3.94	Small Gravel
4.0 – 4.94	Medium Gravel
5.0 – 5.94	Large Gravel
6.0 – 6.94	Small Cobble
7.0 – 7.94	Large Cobble
8.0 – 8.94	Small Boulder
9.0 – 9.94	Large Boulder
10.0 – 10.94	Smooth Bedrock
11.0 – 11.94	Irregular Bedrock





## Kacie Jensen

---

**From:** Prescott Brownell [Prescott.Brownell@noaa.gov]  
**Sent:** Wednesday, April 11, 2007 9:52 AM  
**To:** Shane Boring  
**Cc:** Theresa Thom; Alison Guth; Amanda\_Hill@fws.gov; BARGENTIERI@scana.com; Dick Christie; Gerrit Jobsis (American Rivers); Hal Beard; Jennifer Summerlin; Jim Glover; Malcolm Leaphart; Mike Waddell; Ron Ahle; Scott Harder; Steve Summer; Brandon Kulik; Alan Stuart  
**Subject:** Re: Saluda IFIM Study: Field Visit for Transect Selection



prescott.brownell.v  
cf (547 B)

Hello Shane,

I will be attending my son's graduation from Clemson on May 10/11. If you keep those dates I'm sure the TWC's selection of transects will be acceptable to us. If you change dates to suit other's schedules let me know and I may be able to attend.

regards  
PB

Shane Boring wrote:

>  
> When: Thursday, May 10, 2007 9:00 AM to Friday, May 11, 2007 5:00 PM  
> (GMT-05:00) Eastern Time (US & Canada).  
> Where: Saluda Hydro Guard Shack  
>  
> \*\*\*\*\*  
>  
> Hello folks:  
>  
> As discussed at our conference call this morning, we have tentatively  
> planned to conduct a field visit on May 10th and 11th to select  
> transect locations for the upcoming Saluda IFIM study. For now, let's  
> plan to meet at the Saluda Hydro guard shack at 9:00 am on Thursday,  
> May 10. As Brandon mentioned, this will likely be a two-day session.  
>  
> Also, the mesohabitat mapping is being completed by our GIS department  
> and should be available to the TWC within the next 2 weeks. Based on  
> feedback from the group, field logistics may need to be adjusted to  
> provide access to those areas of the rivers that the TWC is most  
> interested, so stay tuned for updates. I mainly wanted to get the  
> dates on everyone's radar screen before things start to get booked  
> up. Thanks to all of you for your contribution to the Saluda IFIM study.  
>  
> Shane  
>  
>  
>

## Kacie Jensen

---

**Full Name:** Prescott Brownell, Staff Fishery Biologist  
**Last Name:** Brownell  
**First Name:** Prescott  
**Job Title:** Fishery Biologist  
**Department:** South Atlantic Branch Office  
**Company:** National Marine Fisheries Service

**Other Address:** 219 Fort Johnson Road  
Charleston, SC 29412  
USA

**Business:** 843-953-7204  
**Business Fax:** 843-953-7205

**E-mail:** prescott.brownell@noaa.gov  
**E-mail Display As:** prescott.brownell@noaa.gov

Anadromous Fish Restoration  
Energy Activities  
Wetlands, Essential Fish Habitats

## Kacie Jensen

---

**Subject:** Saluda IFIM Study: Field Visit for Transect Selection  
**Location:** Saluda Hydro Guard Shack  
**Start:** Thu 5/10/2007 9:00 AM  
**End:** Fri 5/11/2007 5:00 PM  
**Show Time As:** Tentative  
**Recurrence:** (none)  
**Meeting Status:** Not yet responded  
**Required Attendees:** Fish & Wildlife TWC - IFIM/Aquatic Habitat

Hello folks:

As discussed at our conference call this morning, we have tentatively planned to conduct a field visit on May 10th and 11th to select transect locations for the upcoming Saluda IFIM study. For now, let's plan to meet at the Saluda Hydro guard shack at 9:00 am on Thursday, May 10. As Brandon mentioned, this will likely be a two-day session.

Also, the mesohabitat mapping is being completed by our GIS department and should be available to the TWC within the next 2 weeks. Based on feedback from the group, field logistics may need to be adjusted to provide access to those areas of the rivers that the TWC is most interested, so stay tuned for updates. I mainly wanted to get the dates on everyone's radar screen before things start to get booked up. Thanks to all of you for your contribution to the Saluda IFIM study.

Shane

## Kacie Jensen

---

**From:** Alison Guth  
**Sent:** Friday, April 06, 2007 12:29 PM  
**To:** Theresa Thom; Alison Guth; Amanda Hill; Bill Argentieri; Bud Badr; Dick Christie; Gerrit Jobsis (American Rivers); Hal Beard; Jennifer Summerlin; Jim Glover; Malcolm Leaphart; Mike Waddell; Milton Quattlebaum (mquattlebaum@scana.com); Prescott Brownell; Randy Mahan; Ron Ahle; Scott Harder; Shane Boring; Steve Summer; Brandon Kulik; Alan Stuart  
**Subject:** IFIM Conference Call Number

Hello All,

The call-in information for the IFIM conference call on Tuesday, April 10th at 9:00 AM is as follows:

- Participants outside the SCE&G system can dial either 217-6565 or 1-888-500-7717 followed by the meeting ID of 1690 when prompted
- SCE&G participants can dial 76565 and should enter the meeting ID 1690 when prompted for access to the conference call

Thanks, Alison

**Alison Guth**  
**Licensing Coordinator**  
**Kleinschmidt Associates**  
**101 Trade Zone Drive**  
**Suite 21A**  
**West Columbia, SC 29170**  
**P: (803) 822-3177**  
**F: (803) 822-3183**

## Kacie Jensen

---

**From:** Mike Waddell [mwaddell@esri.sc.edu]

**Sent:** Thursday, April 05, 2007 8:07 AM

**To:** Shane Boring; Shane Boring; Theresa Thom; Alison Guth; BARGENTIERI@scana.com; Bud Badr; Dick Christie; Jennifer Summerlin; Jim Glover; Malcolm Leaphart; mquattlebaum@scana.com; Prescott Brownell; RMAHAN@scana.com; Ron Ahle; Scott Harder; Steve Summer; Brandon Kulik; Alan Stuart; Hal Beard

**Subject:** Saluda IFIM Study: Proposed Conference Call to Discuss Substrate Habitat Suitability Criteria

Shane I have to agree with Hal on this one. Discussion on Habitat Suitability Criteria should be at a sit down meeting not a conference call. This far to important.

Mike

Michael G. Waddell  
Research Associate Professor  
Earth Sciences and Resources Institute  
University of South Carolina  
Office (803) 777-6484

## Kacie Jensen

---

**Subject:** IFIM Conference Call  
**Location:** Conf. Call - phone number information forthcoming  
**Start:** Tue 4/10/2007 9:00 AM  
**End:** Tue 4/10/2007 11:00 AM  
**Show Time As:** Tentative  
**Recurrence:** (none)  
**Meeting Status:** Not yet responded  
**Required Attendees:** Fish & Wildlife TWC - IFIM/Aquatic Habitat

Hello All,

At Shane's request, I am issuing the formal meeting notice for the IFIM conference call to discuss substrate criteria. It has been scheduled for next Tuesday from 9:00am to 11:00am. The discussion information is included in the memo attached to Shane's previous email (sent 3-30). We will be using the SCE&G 1-800 number for our call and I will send you that information by Monday. Thanks, and feel free to email Shane or I with any questions that you may have regarding this call.  
Alison

## Kacie Jensen

---

**From:** Shane Boring  
**Sent:** Friday, March 30, 2007 4:36 PM  
**To:** Theresa Thom; Alison Guth; Amanda Hill; Bill Argentieri; Bud Badr; Dick Christie; Gerrit Jobsis (American Rivers); Hal Beard; Jennifer Summerlin; Jim Glover; Malcolm Leaphart; Mike Waddell; Milton Quattlebaum (mquattlebaum@scana.com); Prescott Brownell; Randy Mahan; Ron Ahle; Scott Harder; Shane Boring; Steve Summer; Brandon Kulik; Alan Stuart  
**Subject:** Saluda IFIM Study: Proposed Conference Call to Discuss Substrate Habitat Suitability Criteria

All:

As you may remember, the Instream Flow/Aquatic Habitat Technical Working Committee (TWC) met on January 22<sup>nd</sup>, 2007 and agreed upon Habitat Suitability Criteria (HSC) for depth and velocity for target species and lifestages for the upcoming Saluda IFIM study. To close out the HSC selection process, we would like to propose a conference call for Tuesday April 10th at 10:00 am to discuss HSC information for substrate. An alternative would be Wednesday April 11th. Please let us know of your availability, and after we receive input from the TWC, we will send out a formal meeting invitation with the final date, time, and conference call access numbers.

To facilitate our substrate discussion, Brandon Kulik and I have prepared a memo that summarizes substrate habitat suitability from a number of potential source studies (attached). We thought it would be good get the memo to everyone in advance to make our discussion more productive.

Have a good weekend,  
Shane

C. Shane Boring  
Environmental Scientist  
Kleinschmidt Associates  
101 Trade Zone Dr., Suite-21A  
West Columbia, SC 29170  
Phone: (803)822-3177  
Fax: (803)822-3183



Saluda IFIM Study -  
Habitat Su...

## MEMORANDUM

TO: Saluda Hydro: Instream Flow/Aquatic Habitat TWC  
 FROM: Shane Boring, Brandon Kulik  
 DATE: March 30, 2007  
 RE: **INSTREAM FLOW STUDY: HABITAT SUITABILITY CRITERIA**

On January 22<sup>nd</sup>, 2007, the Instream Flow/Aquatic Habitat Technical Working Committee (TWC) agreed upon Habitat Suitability Criteria (HSC) depth and velocity criteria for target species and lifestages (smallmouth bass, brown trout, and rainbow trout adults, juveniles, young-of-year, and spawning). Criteria from various source studies were evaluated based on transferability to the lower Saluda River (Table 1);

Although depth and velocity HSC were adapted for adult, juvenile, fry/young-of-year, and spawning smallmouth bass, as well as brown and rainbow trout (Table 2), the TWC did not time to completely evaluate substrate suitability. The purpose of this memo is to build upon the decisions made at the January 22<sup>nd</sup> 2007 TWC meeting by summarizing HSC for substrate and embeddedness for rainbow and brown trout, and smallmouth bass.

**Table 1: Summary of Source Studies Evaluated for Depth and Velocity Habitat Suitability Criteria**

SPECIES	SOURCE	RIVER	ECO-REGION	PHYSIOGRAPHIC REGION
Smallmouth bass	Leonard <i>et al.</i> (1986)	Upper James (VA)	Mid-Atlantic	Appalachian Ridge and Valley
Smallmouth bass	NEP (1990)	Deerfield (MA)	New England	New England Upland
Smallmouth bass	Lockhart IFIM study	Broad (SC)	Southeastern	Piedmont
Smallmouth bass	Groshens and Orth (1994)	N. Anna and Craig Creek	Southeastern Plains	Appalachian Ridge and Valley and Piedmont
Smallmouth bass	Edwards, <i>et al</i> (1983)	Generic		
Rainbow trout	KA (2001)	Lackawaxen, (PA)	Mid-Atlantic	Appalachian Plateau
Rainbow trout	NEP (1990)	Deerfield (MA)	New England	New England Upland
Rainbow trout	Raleigh, <i>et al</i> (1986)	Generic "Blue Book" data		
Brown trout	KA (2001)	Lackawaxen, (PA)	Mid-Atlantic	Appalachian Plateau



Brown trout	NEP (1990)	Deerfield (MA)	New England	New England Upland
Brown trout	Strakosh, <i>et al.</i> 2003	Farmington (CT)	New England	New England Upland
Brown trout	CT DEP	Housatonic (CT)	New England	New England Upland
Brown trout	Raleigh, <i>et al</i> (1984)	Generic "Blue Book" data		

Table 2. Summary of Acceptable HSC Curves as Identified By The TWC

Species	Life Stage	Parameter	SI Curve Source
brown trout	adult	Depth	Combination: Housatonic (poor cover), Deerfield
		Velocity	Lackawaxen, w/modifications
brown trout	fry/YOY	Depth	Deerfield
		Velocity	Deerfield
brown trout	juvenile	Depth	Combination: Deerfield, Raleigh
		Velocity	Combination: Lackawaxen, Deerfield
brown trout	spawning	Depth	Raleigh
		Velocity	Raleigh w/modifications
rainbow trout	adult	Depth	Deerfield
		Velocity	Deerfield (abundant)
rainbow trout	fry/YOY	Depth	Raleigh
		Velocity	Raleigh
rainbow trout	juvenile	Depth	Lackawaxen
		Velocity	Lackawaxen
rainbow trout	spawning	Depth	Raleigh
		Velocity	Raleigh
smallmouth bass	adult	Depth	Combination: Groshens & Orth, Bain Combination: Groshens & Orth, Deerfield
		Velocity	(abundant velocity refuge)
smallmouth bass	juvenile	Depth	Combination: Bain, Deerfield w/modifications
		Velocity	Deerfield (abundant velocity refuge)
smallmouth bass	spawning	Depth	Lockhart
		Velocity	Lockhart
smallmouth bass	YOY	Depth	Combination: Groshens & Orth, Bain
		Velocity	Combination: Deerfield, Bain

## **SUBSTRATE CRITERIA OPTIONS**

### **Brown Trout**

We obtained HSC successfully applied in IFIM studies from the Farmington (CT) (Strakosh, et al. 2003), Deerfield (MA) (NEP, 1990), and Housatonic (CT) (CT DEP) rivers, as well as the generalized “Bluebook” criteria (Raleigh, *et al.*, 1986) that have been employed in several regional PHABSIM studies. Appendix A contains graphical representations of substrate criteria for juvenile and adult lifestages. For brown trout juveniles and adults, substrates ranging from gravel/pebble to cobble/small boulder were generally found to be the most suitable, along with undercut banks and vegetation for some studies. The degree of substrate embeddedness is also a sub-criterion.

### **Rainbow Trout**

HSC criteria developed for the Deerfield River (MA) and generalized “Bluebook” criteria (Raleigh, *et al.*, 1984) are presented in Appendix B. Although the studies varied in how some substrate sizes were classified, habitat suitability was generally similar between studies, with gravel, cobble and boulder substrates being more suitable than silt, sand and mud. This was particularly true of the early lifestages, i.e. spawning, fry, juvenile. The degree of substrate embeddedness is also a sub-criterion.

### **Smallmouth Bass**

Substrate HSC criteria developed for the Deerfield River (MA), James (VA) (Leonard, et al., 1986) and generalized “Bluebook” criteria (Edwards, *et al.*, 1993) are presented in Appendix C. There is relatively good general agreement among all curves relative to substrate and cover suitability, with large cobble/boulder tending to be optimal, and silt/sand/organics being less suitable.

## LITERATURE CITED

- Edwards, E.A., G. Gebhart, and O.E. Maughan. 1983. Habitat suitability information: smallmouth bass. U.S. Dept. Int., Fish Wildl. Serv. FWS/oES-32/10.36 47 pp.
- Connecticut Dept. of Environmental Protection. (unpublished data). Housatonic River IFIM SI criteria. Peter Aarestad, CTDEP, personal communication.
- Groshens, T.P. and D.J. and Orth. 1994. Transferability of habitat suitability criteria for smallmouth bass, *Micropterus dolomieu*. Rivers (4)3:194-212
- Leonard, P.M., D.J. Orth, and C.J. Goodreau. 1986. Development of a method for recommending instream flows for fishes in the upper James River, Virginia. VA poly Inst. and State Univ., Blacksburg, VA. Bull. 152, 109 pp.
- New England Power Company. 1990. New England Power Company, Deerfield River Project IFIM Study. Stetson-Harza, Weare, NH.
- Newcomb, T.J., S.A. Perry and W.B. Perry. 1995. Comparison of habitat suitability criteria for smallmouth bass (*Micropterus dolomieu*) from three West Virginia rivers. Rivers 5(3):170-183.
- Perry, S.A., W.B. Perry, D.L. Graham and N.H. Sagalkin. 1993. Verification and transferability studies for smallmouth bass in West Virginia streams. West Virginia Coop. Fish and Wildl. Res. unit, West Virginia Univ., Morgantown, WV. WVCFRUWRU Cooperative Agreement 14-16-0009-1563. 25 pp. plus appendices.
- Raleigh, R.F., L.D. Zuckerman, and P.C. Nelson. 1986. Habitat suitability index models and instream flow suitability curves: Brown trout, revised. U.S. Fish and Wildl. Serv. FWS/OBS-82(10.124). 65 pp..
- Raleigh, R.F., T Hickman, R.C. Solomon and P.C. Nelson. 1984. Habitat suitability information: Rainbow trout. U.S. Fish and Wildl. Serv. FWS/OBS-82/10.60 64 pp.
- Strakosh, T.R., R.M. Neumann, and R.A. Jacobsen. 2003. Development and assessment of habitat suitability criteria for adult brown trout in southern New England rivers. Ecology of Freshwater Fish 12:265-274. Blackwell Munksgaards, 2003.

Appendix A  
Brown Trout Substrate Habitat Suitability Criteria

**Appendix A, Table 1: Substrate Classification Codes - Raleigh**

<b>Substrate Codes from Bovee (1982)</b>			
<b>Code</b>	<b>Description</b>	<b>Size (mm)</b>	<b>Size (in)</b>
1	plant/detritus/organic material		
2	mud/soft clay		
3	silt	<.08	<.03
4	sand	0.8 - 4.8	0.3 - 1.9
5	gravel	4.8 - 75	1.9 -29.5
6	cobble	75 - 300	29.5 - 118
7	boulder	> 300 mm	> 118
8	bedrock		

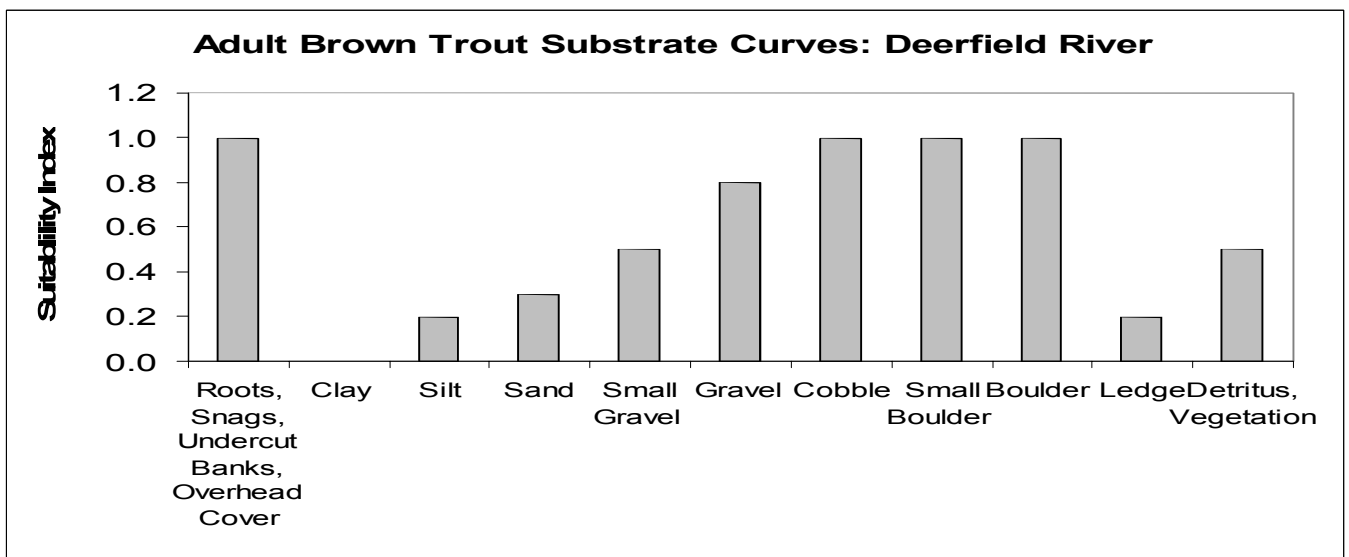
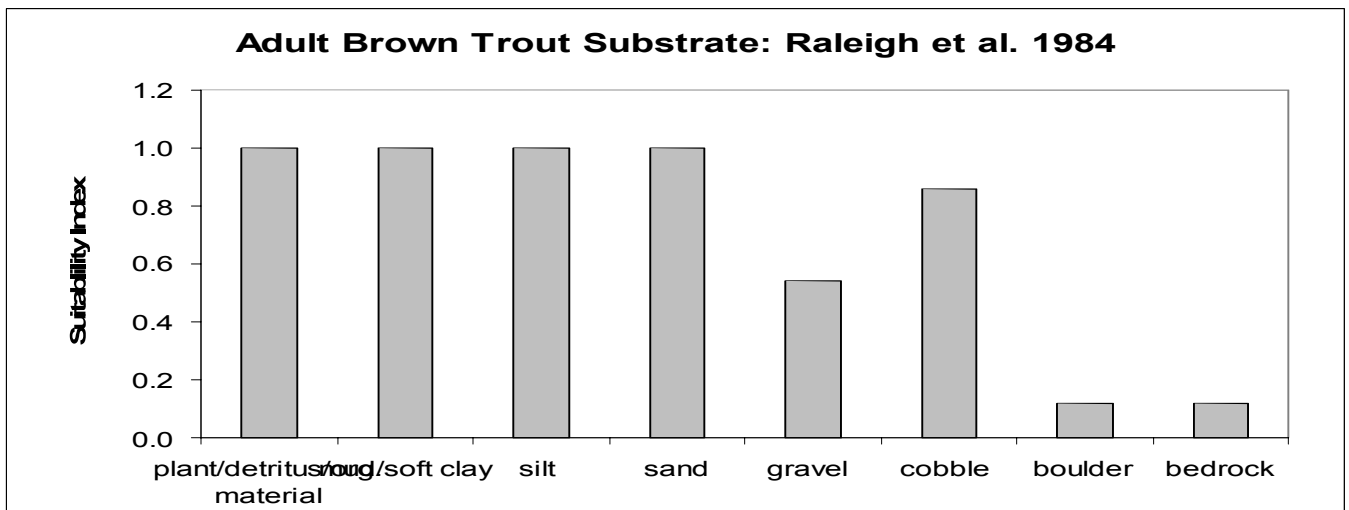
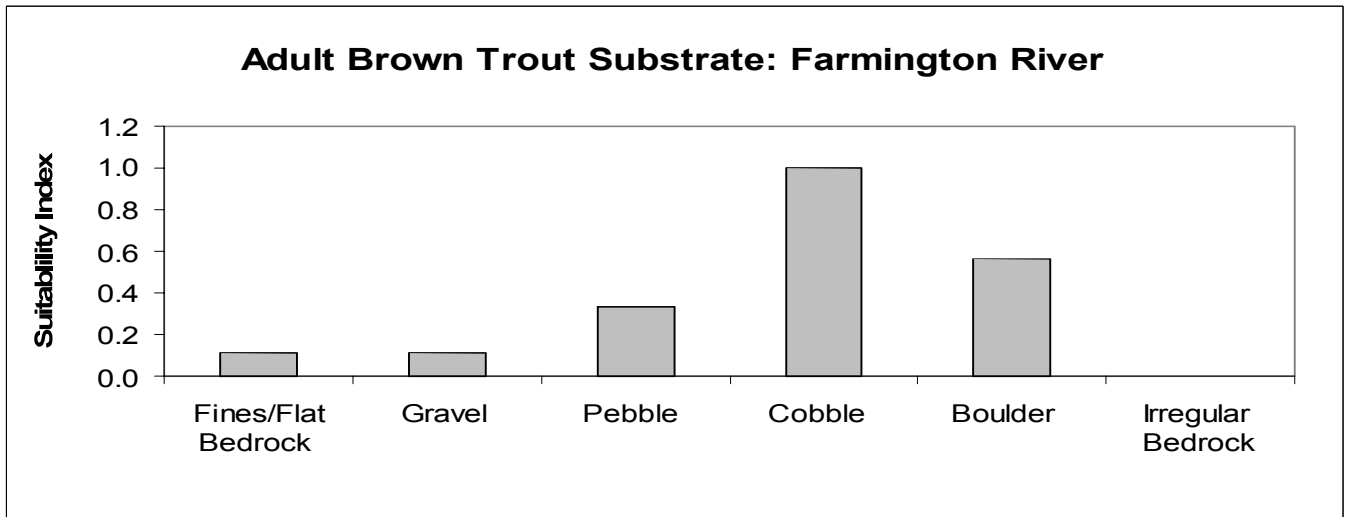
**Appendix A, Table 2: Substrate Classification Codes - Deerfield & Housatonic**

<b>Code</b>	<b>Description</b>	<b>Size (mm)</b>	<b>Size (in)</b>
1	Roots, Snags, Undercut Banks, Overhead Cover		
2	Clay		
3	Silt		
4	Sand		
5	Small Gravel	< 5.1	< 2
6	Gravel	5.1 - 10.2	2-4
7	Cobel	10.2 - 25.4	4 - 10
8	Boulder	25.4 - 61	10 in - 2 ft
9	Boulder	>61	> 2 ft
10	Ledge		
11	Detritus, Vegetation		

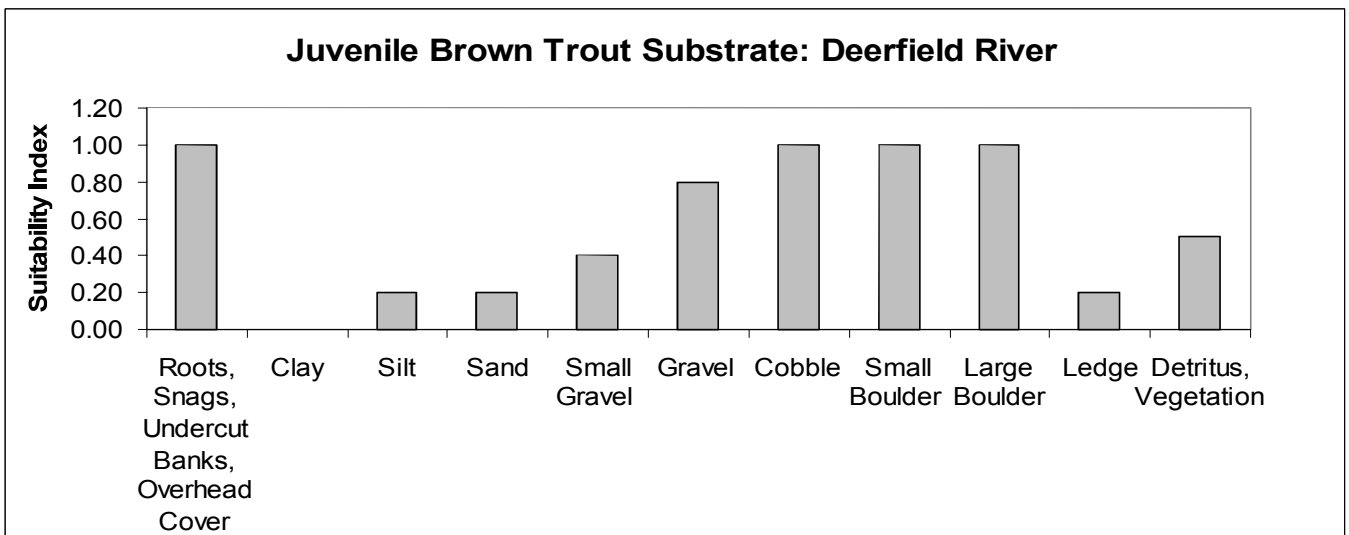
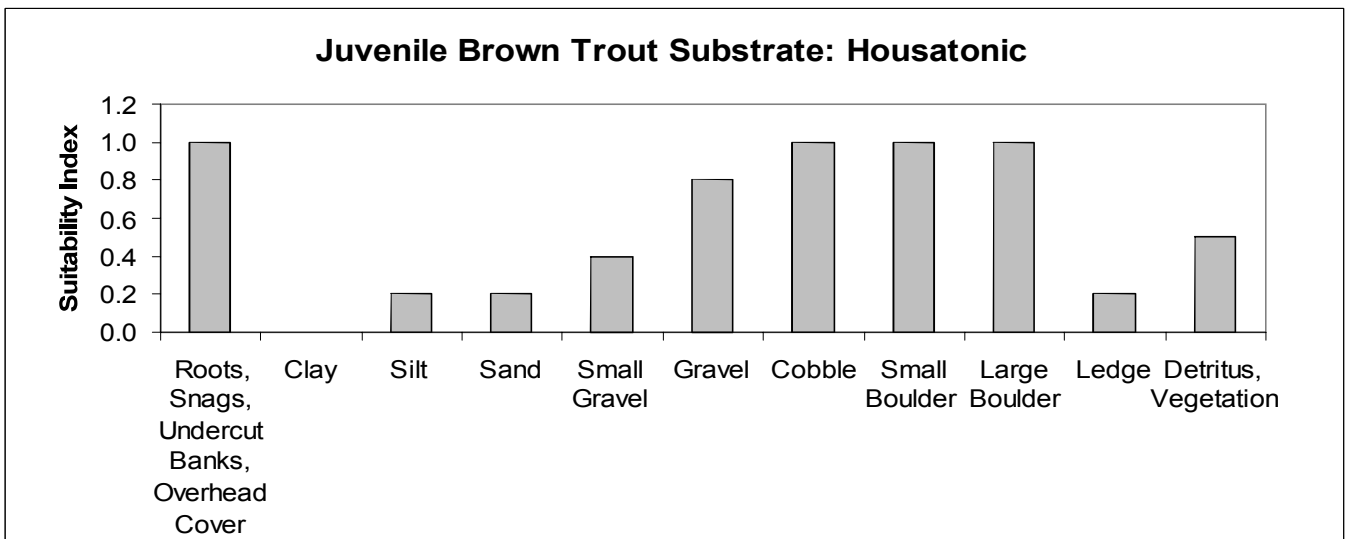
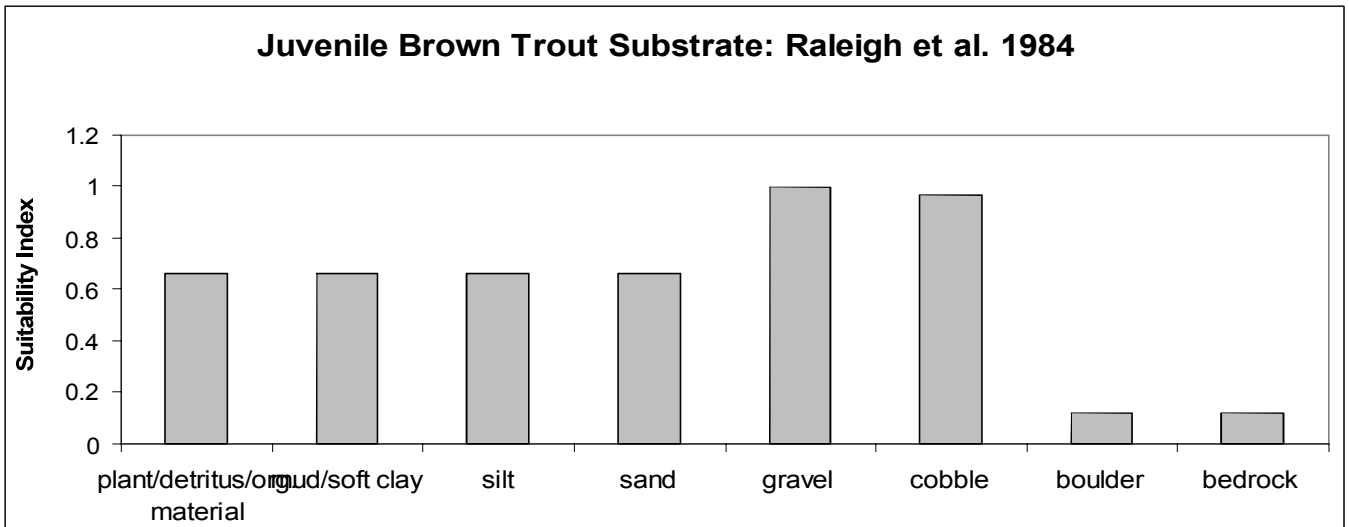
**Appendix A, Table 3: Substrate Classification Codes - Farmington**

<b>Code</b>	<b>Description</b>	<b>Size (mm)</b>	<b>Size (in)</b>
1	Fines/Flat Bedrock	< 2	< .08
2	Gravel	2 - 16	0.08 - 0.63
3	Pebble	16 - 64	0.63 - 2.52
4	Cobble	64 - 256	2.52 - 10.08
5	Boulder	> 256	> 10.08
6	Irregular Bedrock		

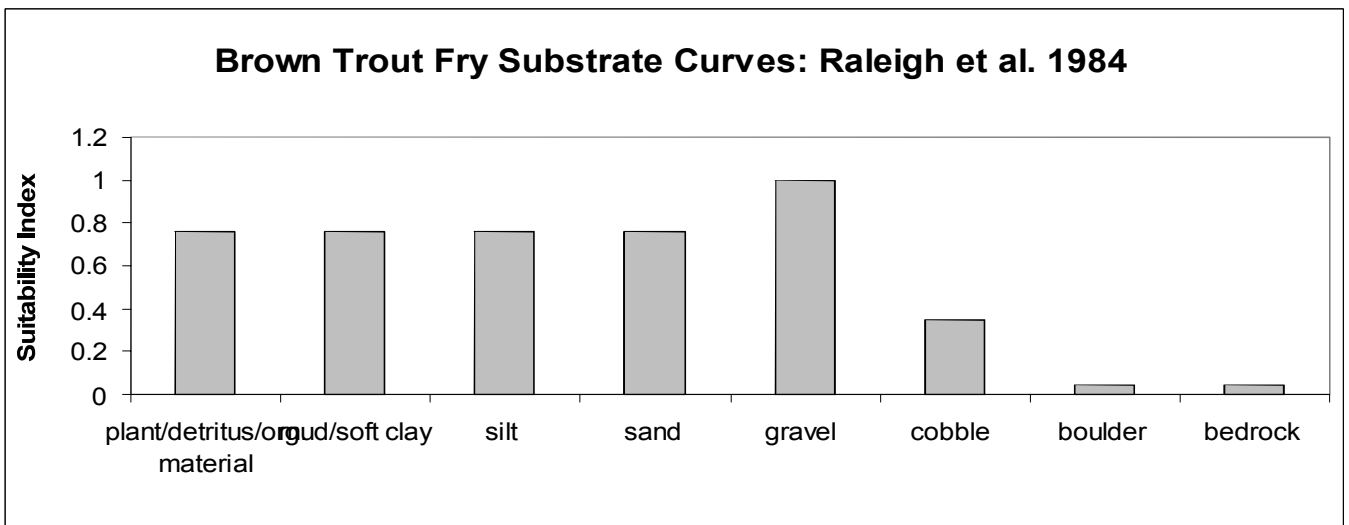
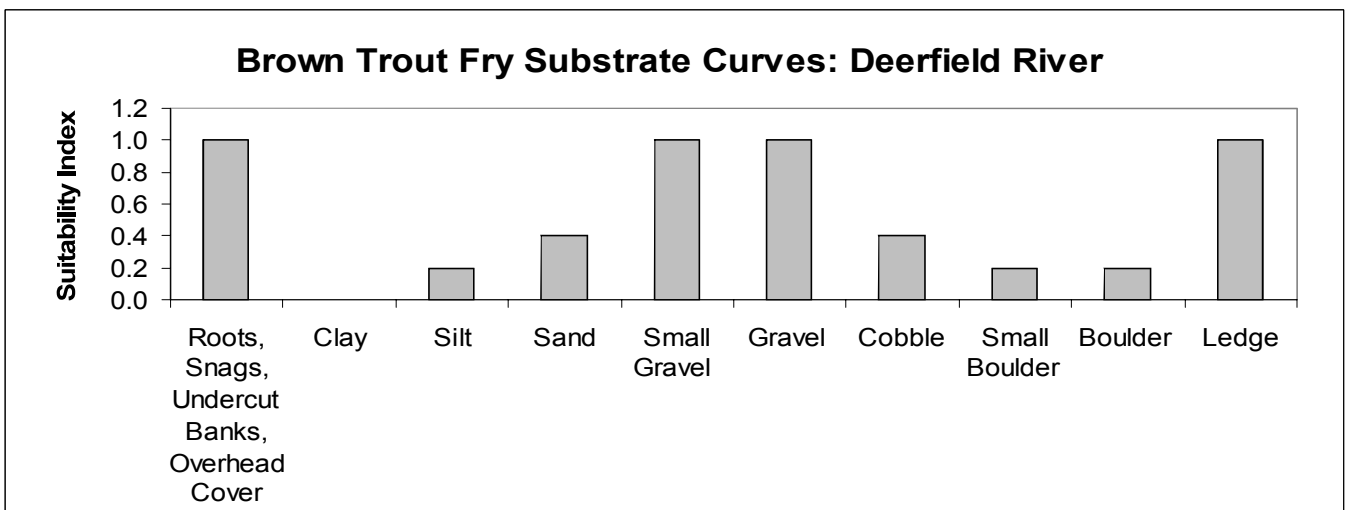
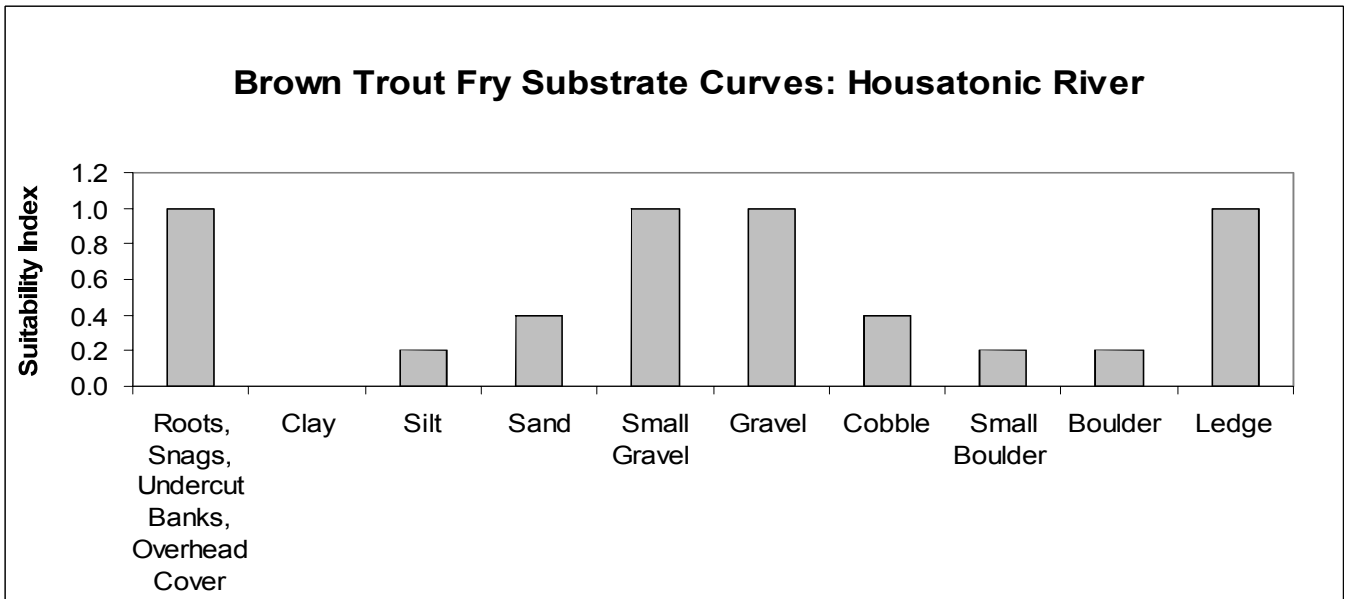
Adult Brown Trout



Juvenile Brown Trout

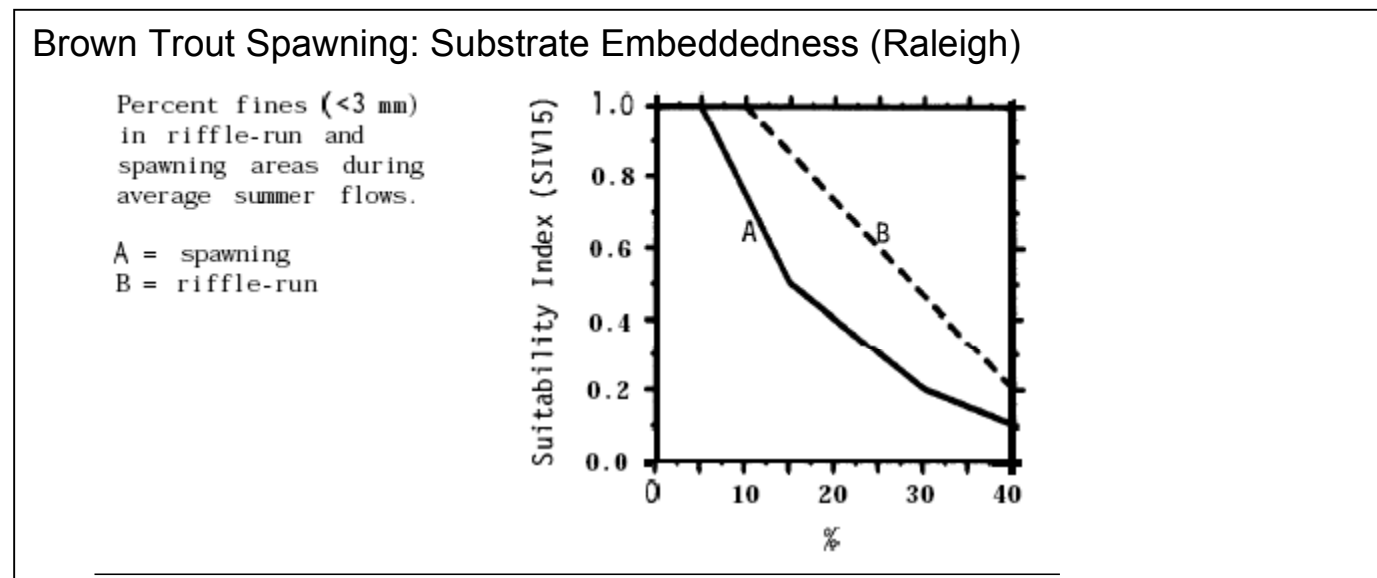
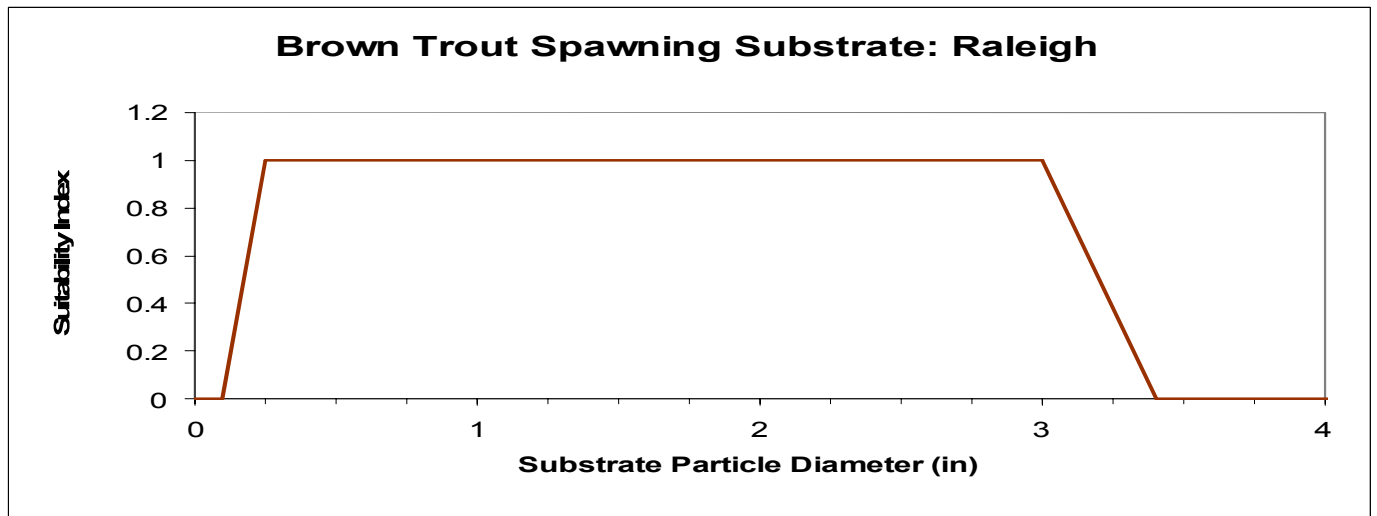
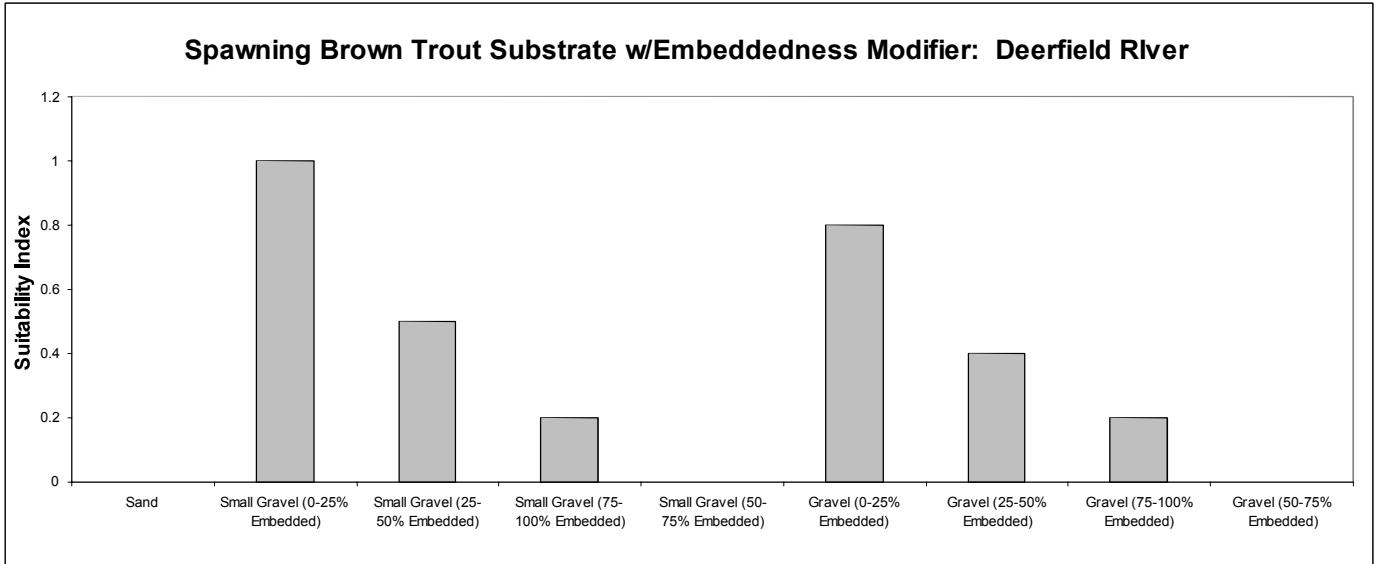


Brown Trout Fry



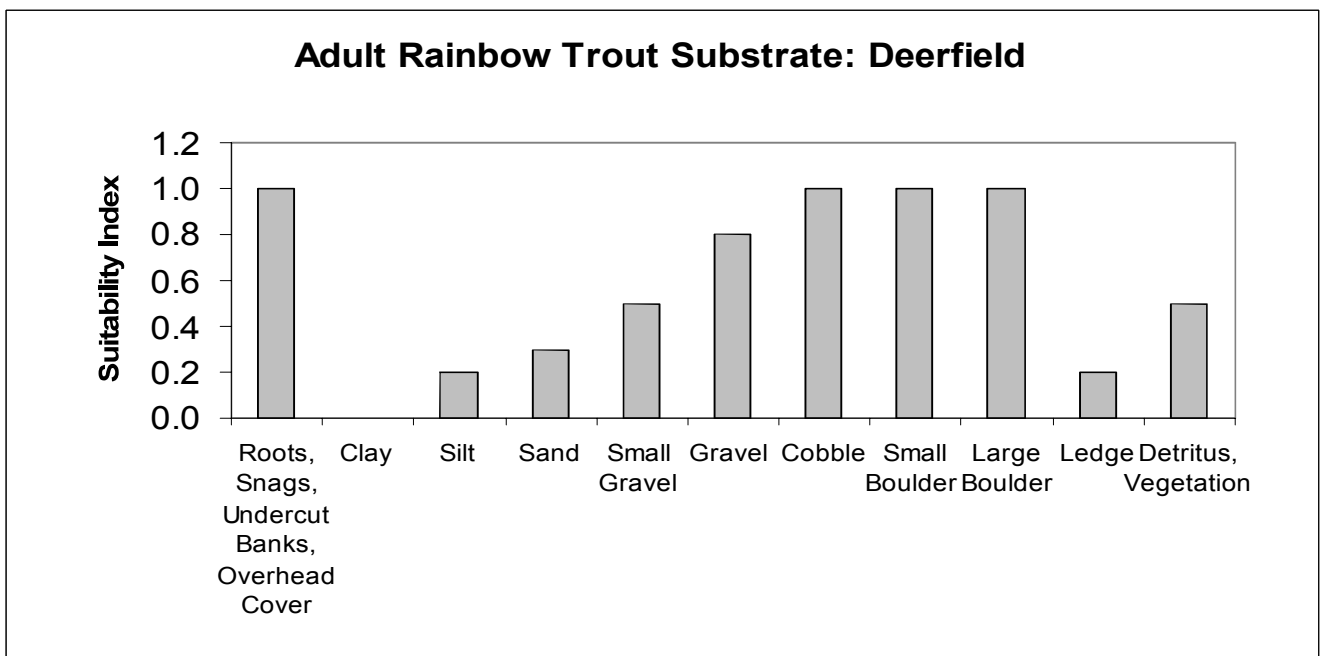
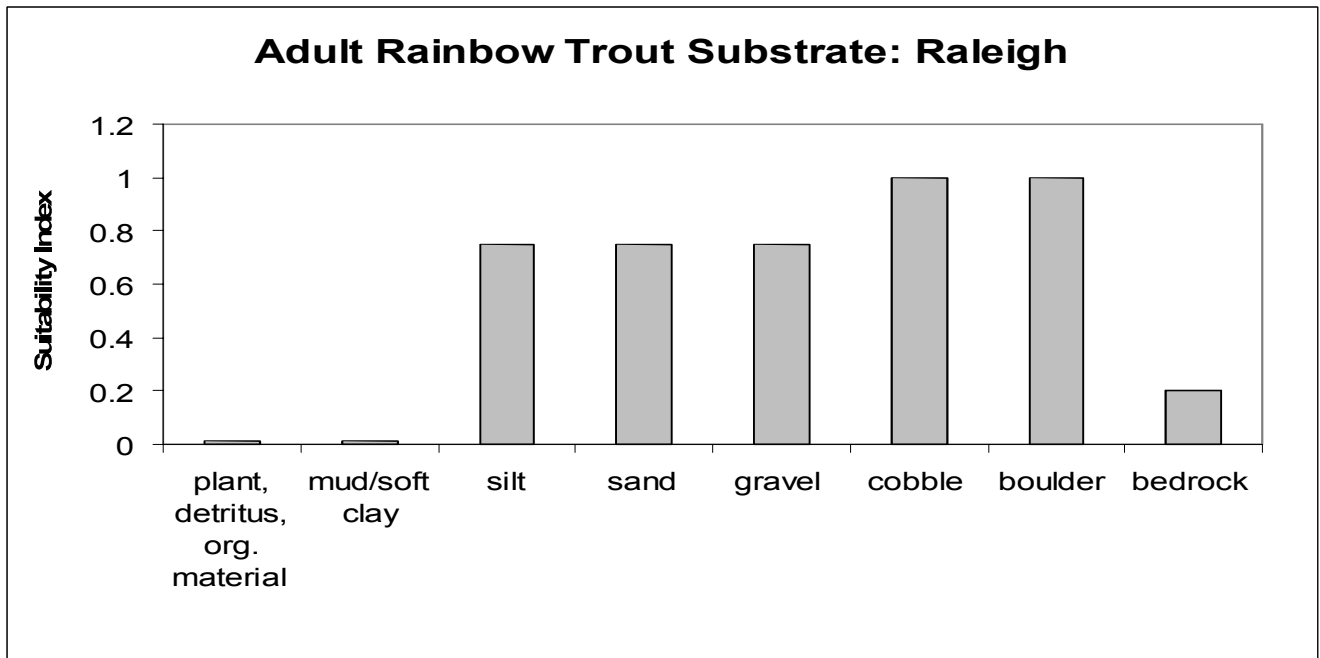


## Spawning Brown Trout



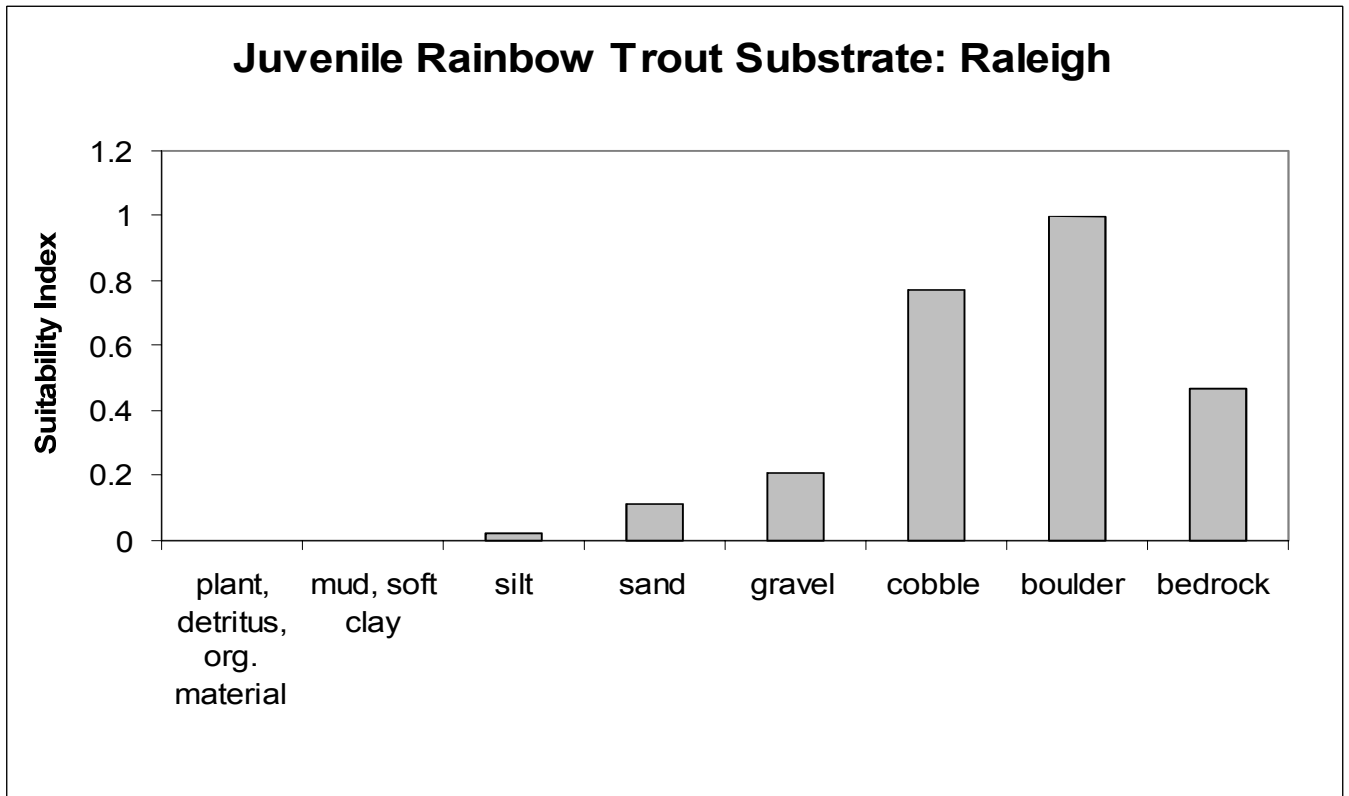
Appendix B  
Rainbow Trout Substrate Habitat Suitability Criteria

Adult Rainbow Trout<sup>1</sup>

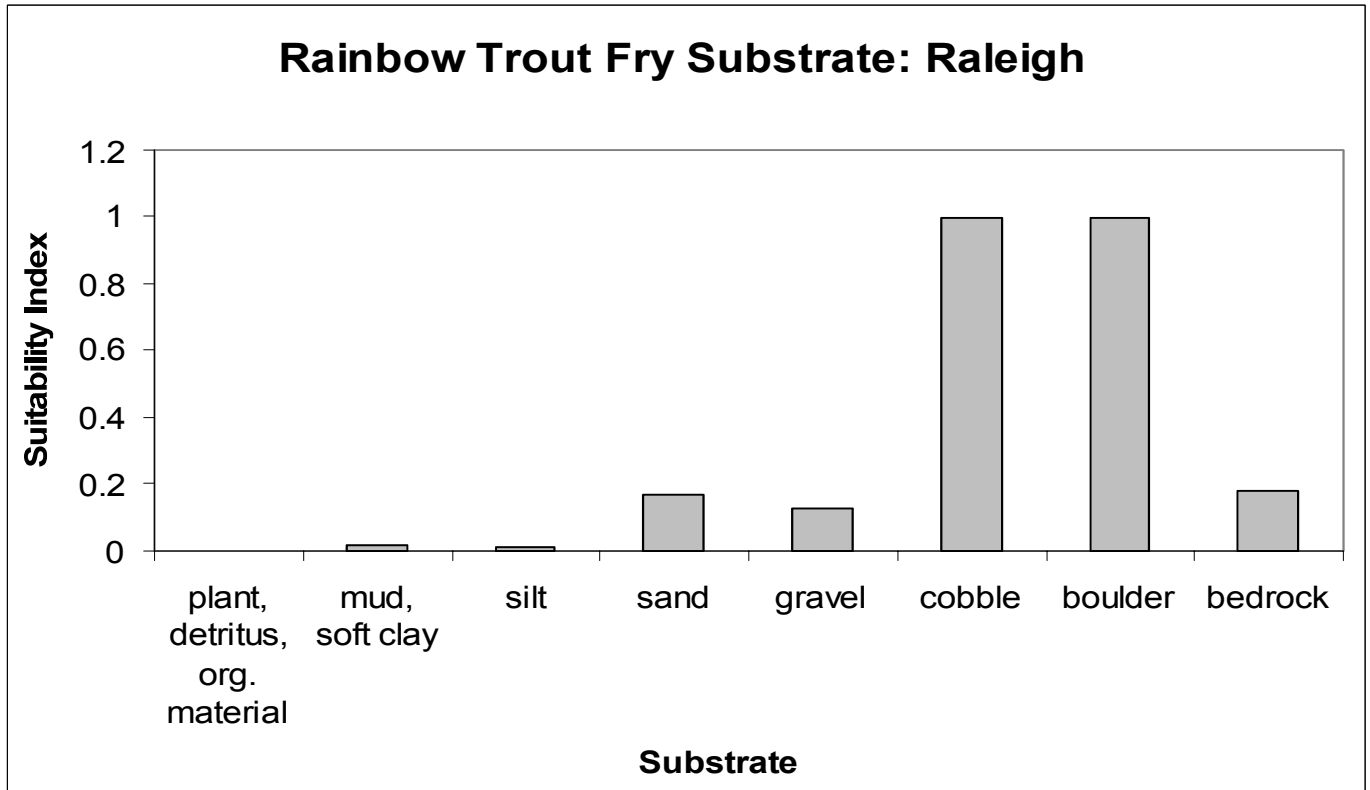


<sup>1</sup> See Appendix A for substrate codes and descriptions.

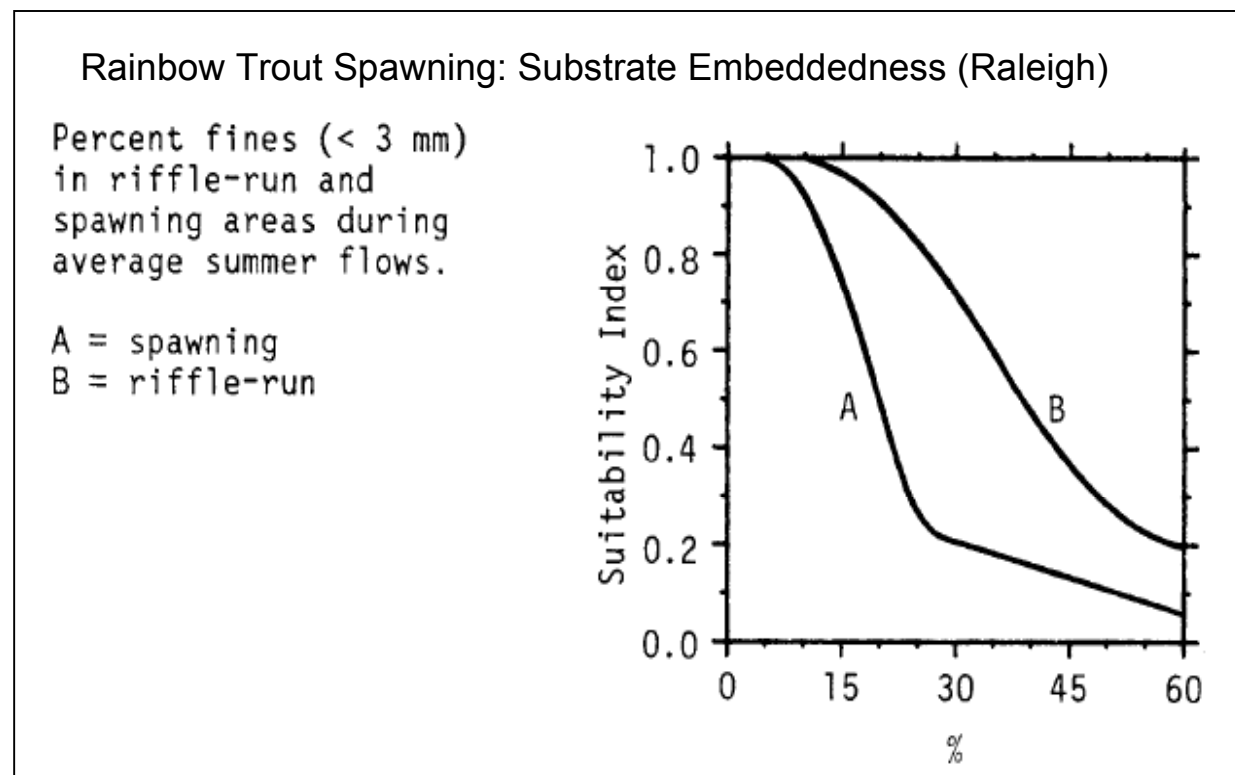
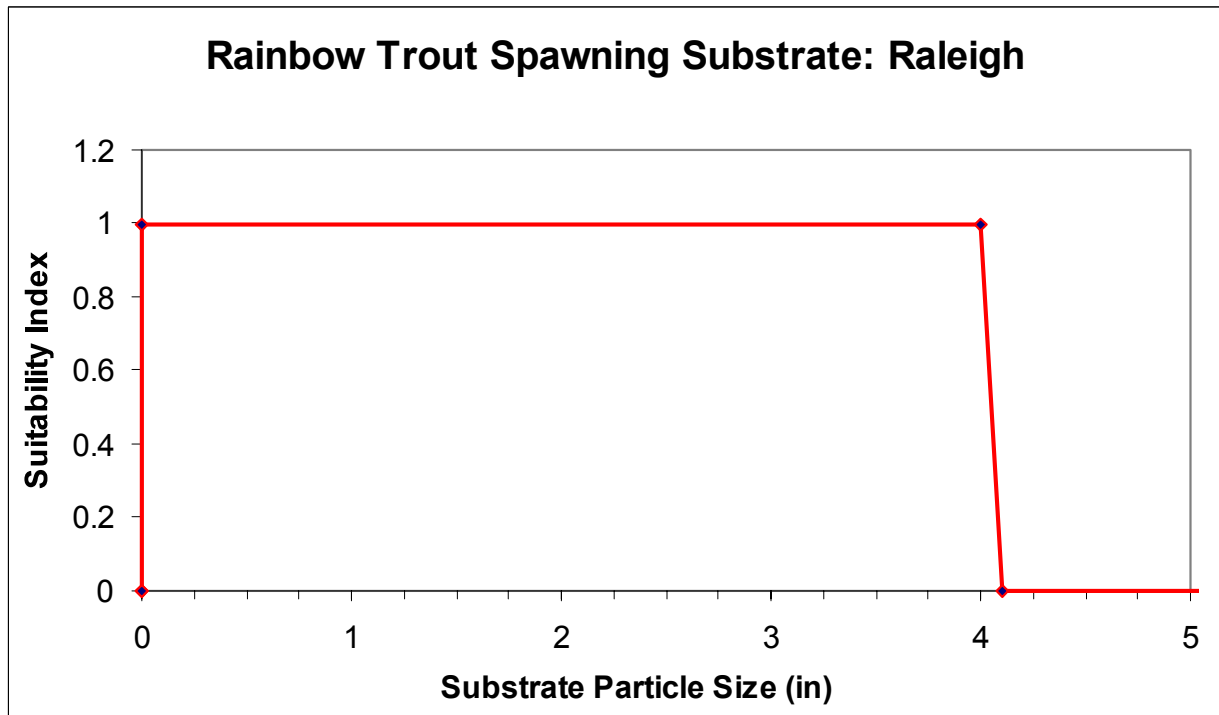
Juvenile Rainbow Trout



Rainbow Trout Fry



## Rainbow Trout Spawning



Appendix C  
Smallmouth Bass Substrate Habitat Suitability Criteria

**Appendix C, Table 1: Substrate Classification Codes - Bain**

Code	Description	Size (mm)	Size (in)
	Silt		
	Sand		
	Gravel	4-75	< 3 in. diam,
	Rubble	75-300	3-12 in. diam.
	Boulder	300-600	1-3 ft. diam.
	Bedrock		

**Appendix C, Table 2: Substrate Classification Codes - Deerfield**

Code	Description	Size (mm)	Size (in)
1	Roots, Snags, Undercut Banks, Overhead Cover		
2	Clay		
3	Silt		
4	Sand		
5	Small Gravel	< 5.1	< 2
6	Gravel	5.1 - 10.2	2-4
7	Cobel	10.2 - 25.4	4 - 10
8	Boulder	25.4 - 61	10 in - 2 ft
9	Boulder	>61	> 2 ft
10	Ledge		
11	Detritus, Vegetation		

**Appendix C, Table 3: Substrate Classification Codes - Leonard**

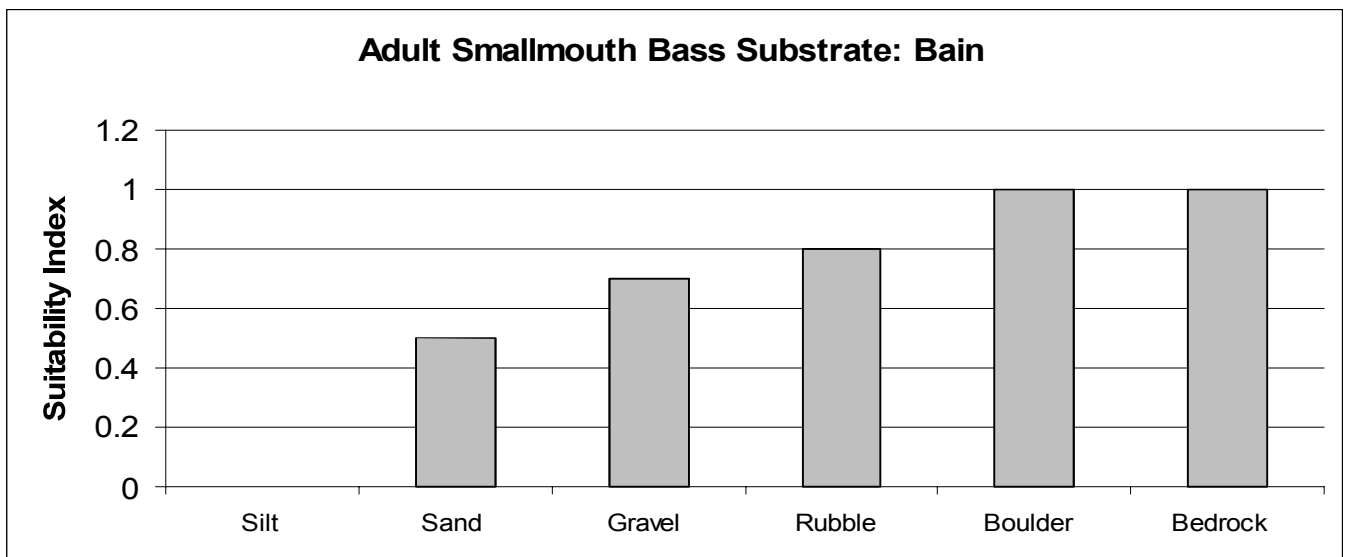
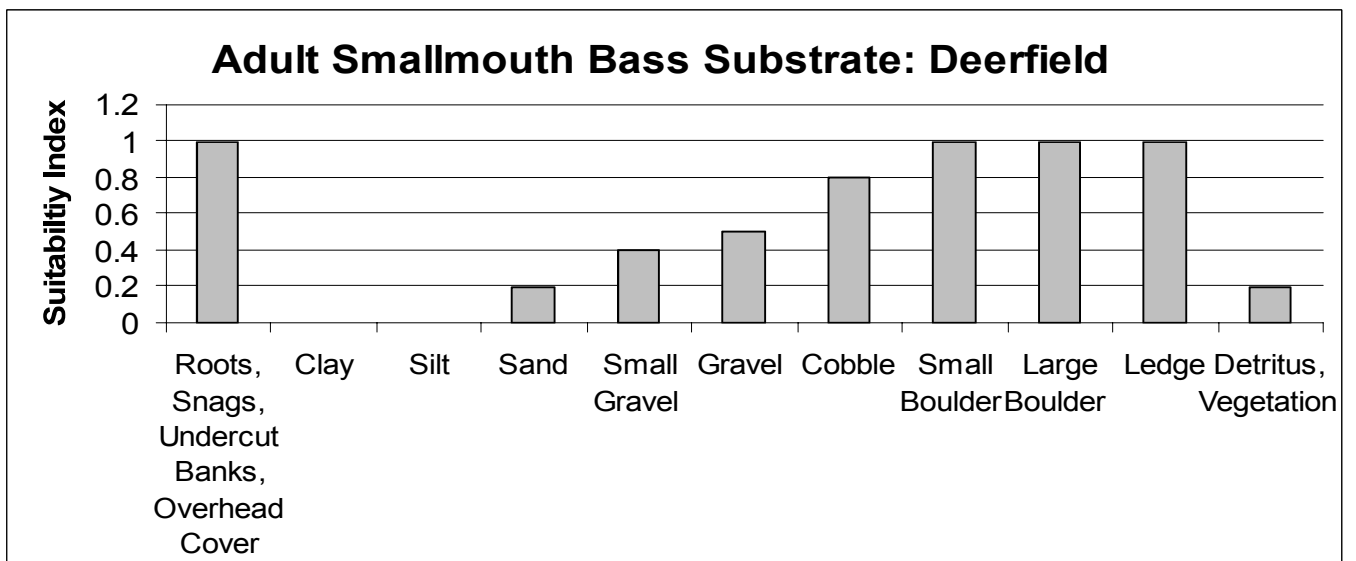
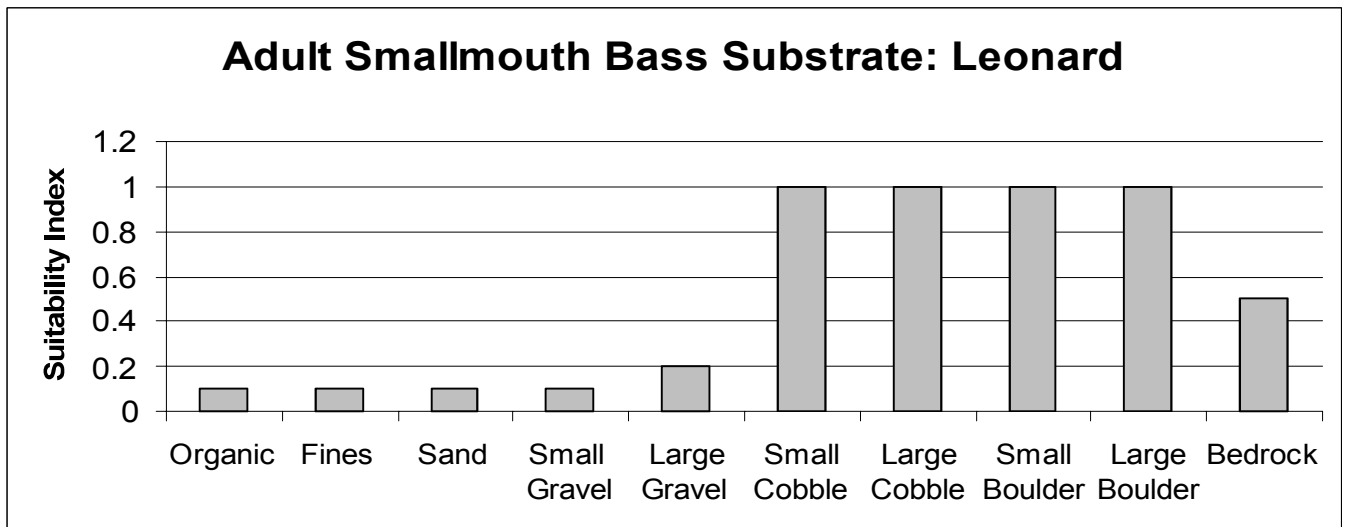
Code	Description	Size (mm)	Size (in)
1	Organic		
2	Fines		
3	Sand		
4	Small Gravel		<2 inches diam.
5	Large Gravel		2-4 inches diam.
6	Small Cobble		4-7 inches diam.
7	Large Cobble		8-10 inches diam.
8	Small Boulder		10-24inches diam.
9	Large Boulder		> 2 ft diameter
10	Bedrock		

**Appendix C, Table 4: Substrate Classification Codes - Lockhart**

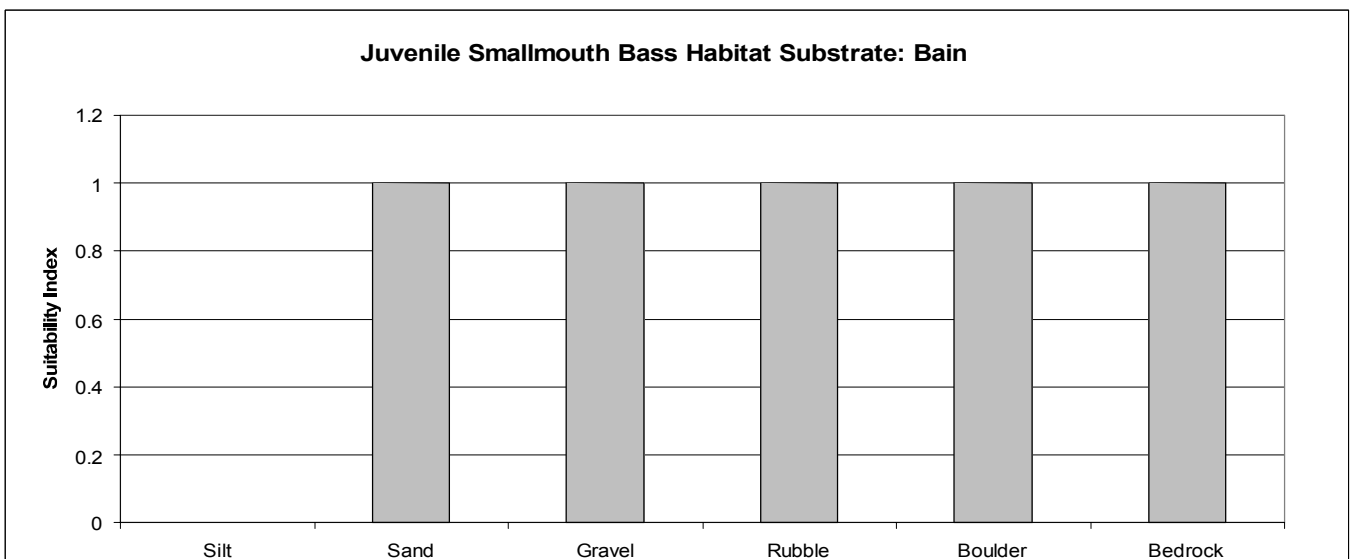
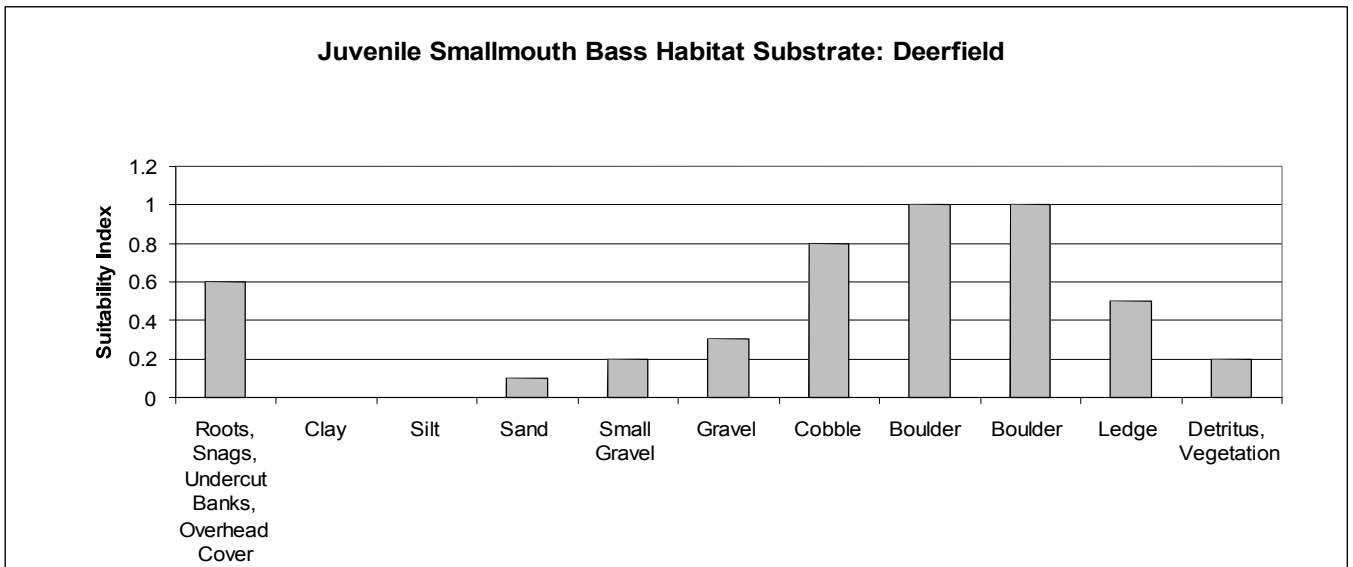
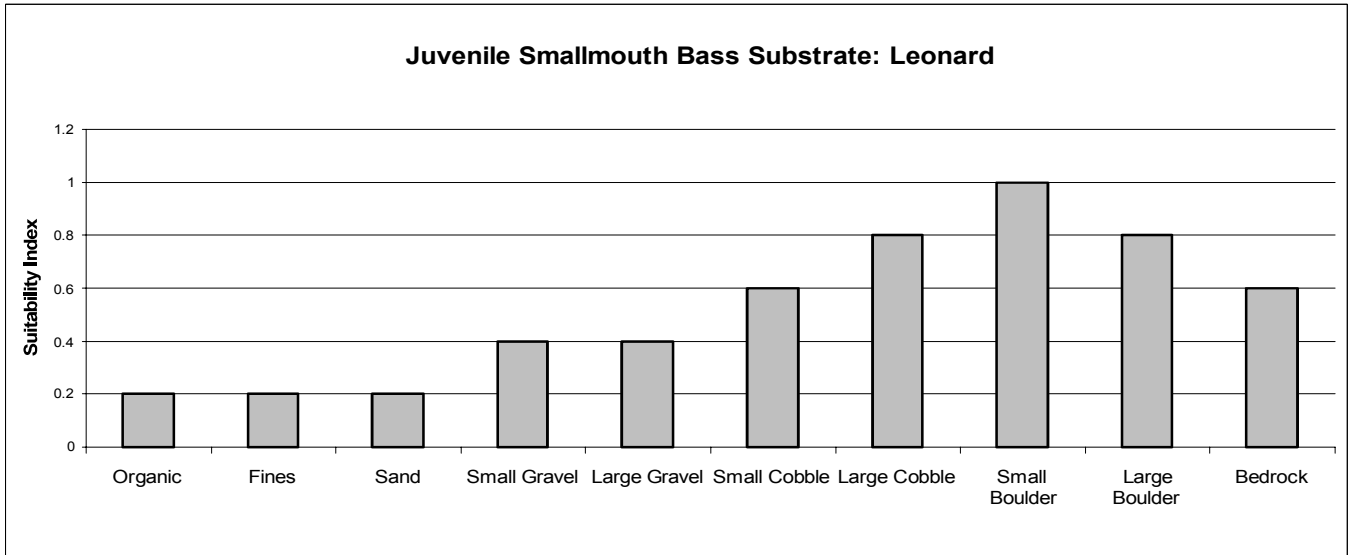
Code	Description	Size (mm)	Size (in)
1	mud	<1	< 0.4
2	sand	1 - 2	0.4 - 0.8
3	small gravel	2 - 16	0.8 - 6.3
4	large gravel	16 - 64	6.3 - 25.2
5	small cobble	64 - 128	25.2 - 50.4
6	large cobble	128 - 256	50.4 - 100.8
7	small boulder	256 - 512	100.8 - 201.6
8	large boudler	> 512	> 201.6
9	bedrock	-	



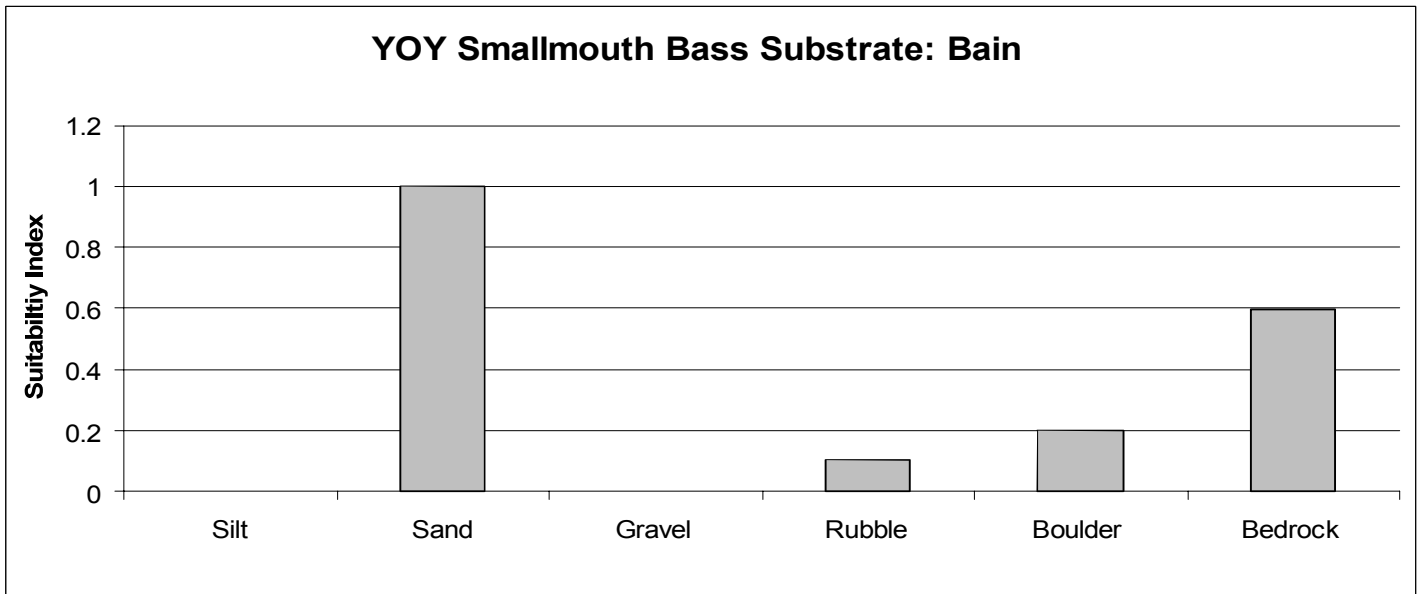
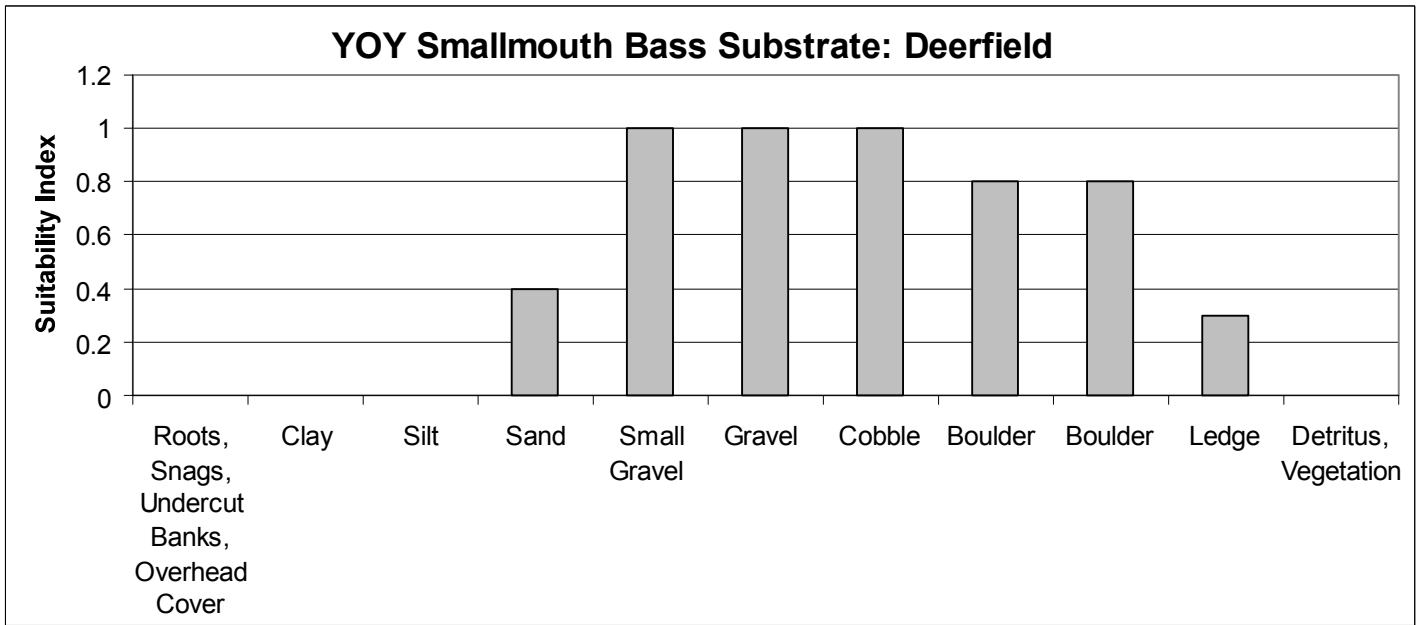
Adult Smallmouth Bass



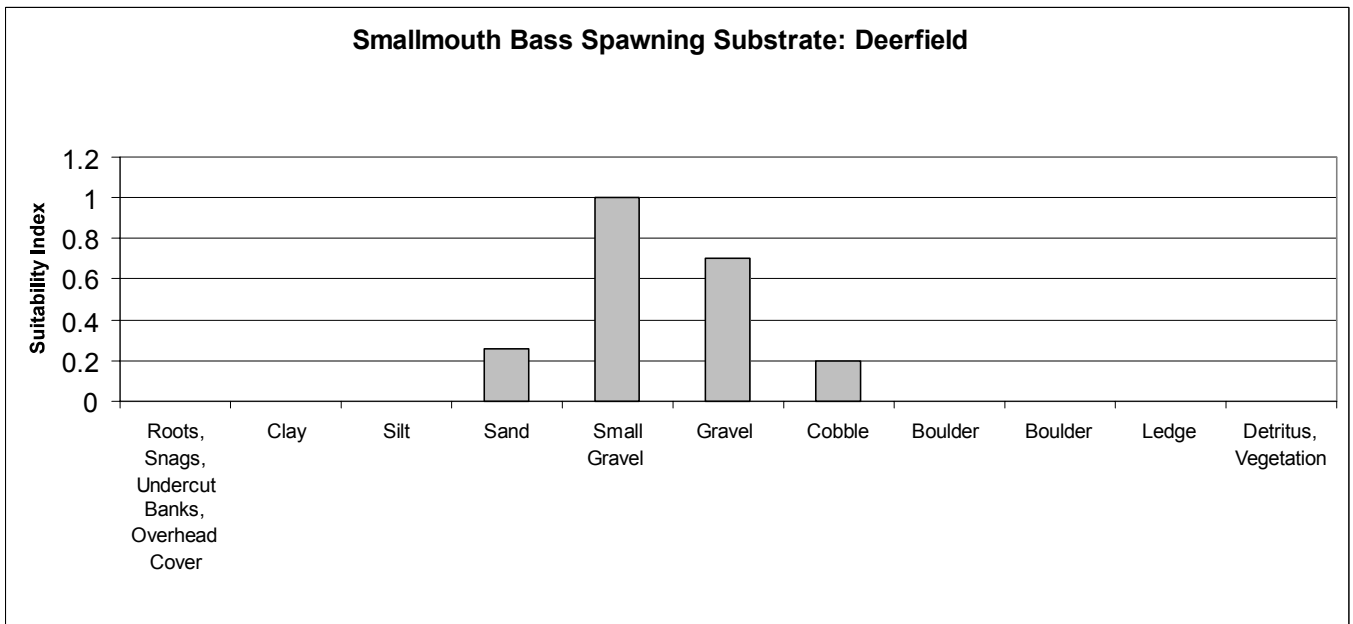
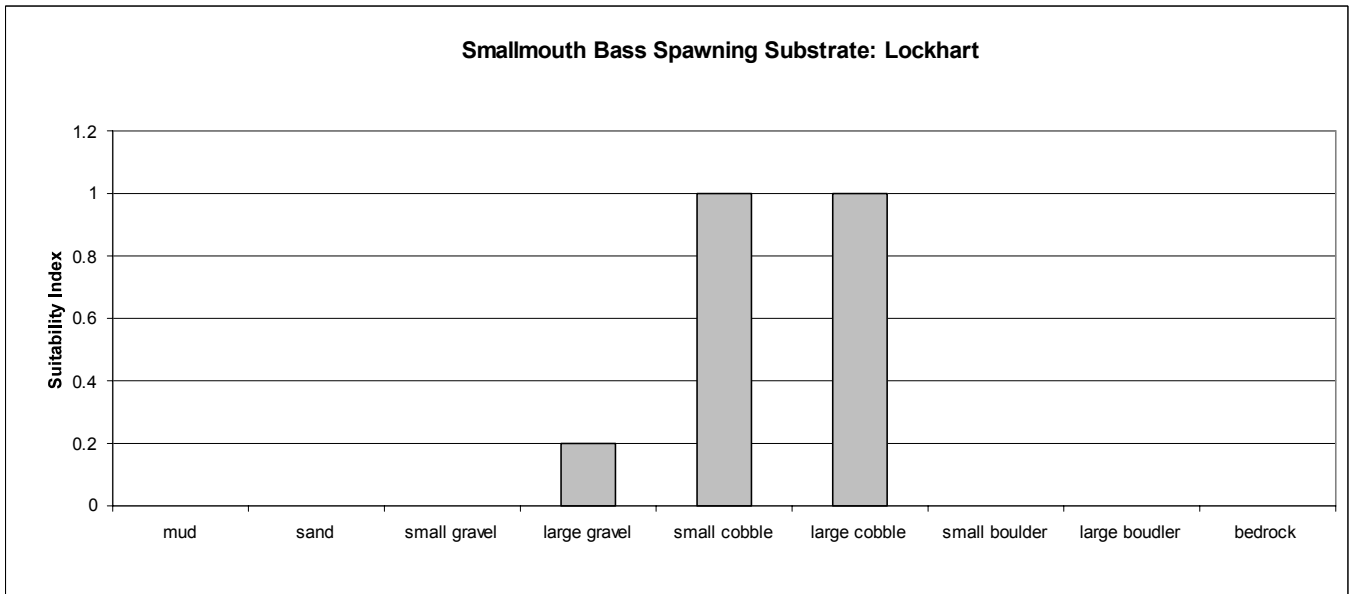
## Juvenile Smallmouth Bass



Smallmouth Bass YOY



## Smallmouth Bass Spawning



## Kacie Jensen

---

**From:** Prescott Brownell [Prescott.Brownell@noaa.gov]  
**Sent:** Thursday, March 22, 2007 1:24 PM  
**To:** Jennifer Summerlin  
**Subject:** Re: Saluda Relicensing: 2007 American Shad Telemetry Study Plan



prescott.brownell.v  
cf (401 B)

Hello Jeni,

I envy you being able to get out on the water to do telemetry work. I generally don't get a chance to do field work because of being spread too thin among the states. However it is really interesting to follow the various studies ongoing.

Have a good week out there

P Brownell

Jennifer Summerlin wrote:

>  
> Hey Prescott,  
>  
> I will certainly update you on the shad telemetry study. I will be  
> taking many pictures of us tagging the shad and will send them to you  
> first chance I get. We deployed the receivers on Tuesday and will  
> most likely tag the shad in the next two weeks. I believe St.  
> Stephen's has had over 10,000 shad pass, which means we better get a  
> move on it. I'm having so much fun with all of the fisheries work  
> that is going on right now....It certainly is a passion! It was nice  
> talking with you the other day at the Columbia Fishway. Hope to talk  
> again soon Prescott!

>  
> Jennifer...most people call me Jeni

>  
> -----Original Message-----

> From: Prescott Brownell [mailto:Prescott.Brownell@noaa.gov]  
> Sent: Wed 3/21/2007 10:26 AM  
> To: Jennifer Summerlin  
> Subject: Re: Saluda Relicensing: 2007 American Shad Telemetry Study  
> Plan

> Hello Jennifer,  
> I think I commented on your study plan in January, so this email may  
> be redundant. In any case, NMFS has reviewed and approved your study  
> plan for the 2007 shad telemetry work. It will be interesting to see  
> how the shad behave in relation to the cooler water discharge from  
> Saluda, and whether they are attracted to the Broad River reach below  
> the Diversion Dam. Let us know how the work progresses.

>  
> regards  
> Prescott Brownell  
> National Marine Fisheries Service  
> 843-953-7204

> Jennifer Summerlin wrote:

> >  
> > All:  
> >  
> > Attached for your review is the 2007 American Shad Telemetry Study

> > Plan. Please review and have comments back to me by January 29,  
> > 2007.  
> >  
> > <<American Shad Telemetry Study Plan 01-8-2007 (jms\_csb\_aws).doc>>  
> >  
> > Thanks,  
> >  
> > Jennifer Summerlin  
> > Scientist Technician  
> > \*Kleinschmidt Associates\*  
> > 101 Trade Zone Drive, Suite 21A  
> > West Columbia, SC 29170  
> > P:803.822.3177  
> > F:803.822.3183  
> >  
> >  
>

## Kacie Jensen

---

**Full Name:** Prescott Brownell  
**Last Name:** Brownell  
**First Name:** Prescott  
**Job Title:** Fishery Biologist  
**Department:** South Atlantic Branch Office  
**Company:** National Marine Fisheries Service

**Other Address:** 219 Fort Johnson Road  
Charleston, SC 29422  
USA

**Business:** 843-953-7204  
**Business Fax:** 843-953-7205

**E-mail:** prescott.brownell@noaa.gov  
**E-mail Display As:** prescott.brownell@noaa.gov

## Kacie Jensen

---

**From:** Prescott Brownell [Prescott.Brownell@noaa.gov]  
**Sent:** Wednesday, March 21, 2007 9:27 AM  
**To:** Jennifer Summerlin  
**Subject:** Re: Saluda Relicensing: 2007 American Shad Telemetry Study Plan



prescott.brownell.v  
cf (401 B)

Hello Jennifer,

I think I commented on your study plan in January, so this email may be redundant. In any case, NMFS has reviewed and approved your study plan for the 2007 shad telemetry work. It will be interesting to see how the shad behave in relation to the cooler water discharge from Saluda, and whether they are attracted to the Broad River reach below the Diversion Dam. Let us know how the work progresses.

regards  
Prescott Brownell  
National Marine Fisheries Service  
843-953-7204

Jennifer Summerlin wrote:

>  
> All:  
>  
> Attached for your review is the 2007 American Shad Telemetry Study  
> Plan. Please review and have comments back to me by January 29, 2007.  
>  
> <<American Shad Telemetry Study Plan 01-8-2007 (jms\_csb\_aws).doc>>  
>  
> Thanks,  
>  
> Jennifer Summerlin  
> Scientist Technician  
> \*Kleinschmidt Associates\*  
> 101 Trade Zone Drive, Suite 21A  
> West Columbia, SC 29170  
> P:803.822.3177  
> F:803.822.3183  
>  
>



**Kacie Jensen**

---

**From:** Jason Bettinger [BettingerJ@dnr.sc.gov]  
**Sent:** Friday, March 16, 2007 10:34 AM  
**To:** SUMMER, STEPHEN E; Shane Boring  
**Cc:** Jennifer Summerlin; QUATTLEBAUM, MILTON; Alan Stuart  
**Subject:** RE: Gill netting - upper Congaree

Steve,

No the fish are not PIT tagged. They are implanted with acoustic transmitters and are fitted with an external tag for identification.

Shane, how much striped bass bycatch are you getting and what are you doing with the fish? You all are fishing nets perfect for capturing adult striped bass in an area that will be thick with stripers during the next few months. Your striped bass catch is likely to increase dramatically over the next few weeks. I'm not only concerned about our tagged fish, but the total amount of striper bycatch. In my experience striped bass do not tolerate gill nets. How are you all fishing the nets? The study proposal states that the nets will initially be checked every two hours. Is that the method or are you all actually sitting on the nets and pulling them when activity is observed? Are you all recording information on your bycatch? Sorry for all the questions, but I just stumbled onto the proposals.

On another note, I went by the Cola fish ladder this morning hoping to get a look at the viewing window, but the window was closed and no one was around. When would be a good time to visit the ladder and get a look through the viewing window?

Thanks,  
Jason

-----Original Message-----

**From:** SUMMER, STEPHEN E [mailto:SSUMMER@scana.com]  
**Sent:** Friday, March 16, 2007 9:38 AM  
**To:** Jason Bettinger  
**Cc:** Jennifer Summerlin; QUATTLEBAUM, MILTON; Jason Bettinger; Alan Stuart; Shane Boring  
**Subject:** RE: Gill netting - upper Congaree

Jason,  
Are the fish PIT tagged?  
Steve

---

**From:** Shane Boring [mailto:Shane.Boring@KleinschmidtUSA.com]  
**Sent:** Friday, March 16, 2007 9:45 AM  
**To:** SUMMER, STEPHEN E  
**Cc:** Jennifer Summerlin; QUATTLEBAUM, MILTON; Jason Bettinger; Alan Stuart  
**Subject:** RE: Gill netting - upper Congaree

Jason/Steve:

We actually ran into Treye Byars in the field yesterday and he made us aware of the tagged striped bass. To date, we have not captured any of the tagged fish. If we do, we will record the tag number and capture site, and carefully return it to the water ASAP. We have gotten some stripped bass bycatch, so it is certainly possible that we would catch one of your fish. We will be terminating sampling at the end of April. Hope this info helps.

Shane

-----Original Message-----

**From:** SUMMER, STEPHEN E [mailto:SSUMMER@scana.com]  
**Sent:** Thursday, March 15, 2007 5:23 PM  
**To:** BettingerJ@dnr.sc.gov  
**Cc:** QUATTLEBAUM, MILTON; Shane Boring  
**Subject:** Re: Gill netting - upper Congaree

I'll have to check the termination date. We are getting striper bycatch, but I know of no tags seen yet. We'll be sure to look for tags.  
Steve

----- Original Message -----

From: Jason Bettinger <BettingerJ@dnr.sc.gov>  
To: SUMMER, STEPHEN E  
Sent: Thu Mar 15 17:16:31 2007  
Subject: Gill netting - upper Congaree

Hello Steve,

I was looking over the study plan for your Sturgeon project and was wondering in which month you would terminate sampling. My main interest is that I have instrumented striped bass that will be using the areas (Saluda and upper Congaree) that are targeted for gillnetting. Do you expect much striped bass bycatch in your nets? Please advise whoever (Kleinschmidt?) is doing the netting to be on the lookout for tagged striped bass, if they should collect one I would appreciate it if they recorded the tag number before carefully returning the fish to the water. The instrumented fish will (should) have an anchor tag with an external yellow streamer dangling from the abdomen.

Thanks,

Jason Bettinger

Fisheries Biologist

SCDNR

1921 Vanboklen Road

Eastover, SC 29044

803-353-8232

BettingerJ@dnr.sc.gov

**Kacie Jensen**

---

**From:** Patrick Moore [PatrickM@scccl.org]  
**Sent:** Monday, March 12, 2007 4:17 PM  
**To:** Jennifer Summerlin  
**Subject:** RE: Saluda Relicensing: Fish Entrainment and Turbine Mortality Report, TWC Final Version

Thanks Jeni,

What a cool part of your job.

Patrick Moore  
Project Manager  
Coastal Conservation League  
2231 Devine St. Suite 100  
Columbia, S.C. 29205  
803.771.7750

-----Original Message-----

**From:** Jennifer Summerlin [mailto:Jennifer.Summerlin@KleinschmidtUSA.com]  
**Sent:** Monday, March 12, 2007 5:13 PM  
**To:** Patrick Moore  
**Subject:** RE: Saluda Relicensing: Fish Entrainment and Turbine Mortality Report, TWC Final Version

Hey Patrick,

Yes, I will be handling the monitoring at the Columbia Fishway this Spring. I will be monitoring two days a week (shift 1: 6:00am-10:00am and 4:00pm-8:00pm, shift 2: 10:00am-6:00pm) until I see 50 shad per day. Once I see 50 shad, then I will be monitoring 7 days a week alternating between the two schedules I just mentioned. The time of my shifts may vary, due to available day light hours. However, I will monitor a total of 8 hours per shift. Unfortunately I do not have a set schedule, because of other projects I have going on right now. Problems that I will most likely encounter are inclement weather and bad water clarity. Hopefully we won't encounter too much of this during the American shad migration (right now). If you have any other questions, please let me know!

Thanks,

Jennifer-most people call me Jeni

-----Original Message-----

**From:** Patrick Moore [mailto:PatrickM@scccl.org]  
**Sent:** Monday, March 12, 2007 3:12 PM  
**To:** Jennifer Summerlin  
**Subject:** RE: Saluda Relicensing: Fish Entrainment and Turbine Mortality Report, TWC Final Version

Hi Jennifer,  
I believe I heard that you were going to handle the monitoring at the fishway this Spring. I was wondering when the monitoring period begins, what hours etc.

Any word?

Thanks

Patrick Moore

Project Manager  
Coastal Conservation League  
2231 Devine St. Suite 100  
Columbia, S.C. 29205  
803.771.7750

-----Original Message-----

**From:** Jennifer Summerlin [mailto:Jennifer.Summerlin@KleinschmidtUSA.com]

**Sent:** Monday, March 12, 2007 2:47 PM

**To:** balesw@dnr.sc.gov; Alan Stuart; Alison Guth; Amanda Hill; Bill Argentieri; Bill East; Bill Hulslander; Bill Marshall; Bob Perry ; bseibels@yahoo.com; Charlene Coleman; Daniel Tufford; Dick Christie; Ed Diebold; George Duke; Gerrit Jobsis (American Rivers); Gina Kirkland; Hal Beard; Jeff Duncan; Jennifer O'Rourke; Jennifer Summerlin; Jim Glover; Jim Goller; Joe Logan; Joy Downs; turnerle@dhec.sc.gov; laura.mccary@gmail.com; Malcolm Leaphart; Mark Leao; Mike Sloan; Norman Ferris; Patrick Moore; Prescott Brownell; Ralph Crafton; Randy Mahan; rbull@davisfloyd.com; Robert Laviscky; Ron Ahle; Sam Drake; Scott Harder; Shane Boring; Steve Bell; Steve Leach; Steve Summer; Suzanne Rhodes; tbowles@scana.com

**Subject:** Saluda Relicensing: Fish Entrainment and Turbine Mortality Report, TWC Final Version

All:

Attached for your reference is the Final Technical Working Committee Version of the Saluda Hydro Fish Entrainment and Turbine Mortality Report. The report will be posted on the Saluda Hydro Relicensing Website. Thank-you for your continued cooperation in the Saluda relicensing process.

<<Saluda Hydro Entrainment-Mortality Report 2007-03-12 FINAL TWC Version.pdf>>

Thanks,

Jennifer Summerlin  
Scientist Technician  
**Kleinschmidt Associates**  
101 Trade Zone Drive, Suite 21A  
West Columbia, SC 29170  
P:803.822.3177  
F:803.822.3183

## Kacie Jensen

---

**From:** Patrick Moore [PatrickM@sccl.org]  
**Sent:** Monday, March 12, 2007 2:12 PM  
**To:** Jennifer Summerlin  
**Subject:** RE: Saluda Relicensing: Fish Entrainment and Turbine Mortality Report, TWC Final Version

Hi Jennifer,  
I believe I heard that you were going to handle the monitoring at the fishway this Spring. I was wondering when the monitoring period begins, what hours etc.

Any word?

Thanks

Patrick Moore  
Project Manager  
Coastal Conservation League  
2231 Devine St. Suite 100  
Columbia, S.C. 29205  
803.771.7750

-----Original Message-----

**From:** Jennifer Summerlin [mailto:Jennifer.Summerlin@KleinschmidtUSA.com]  
**Sent:** Monday, March 12, 2007 2:47 PM  
**To:** balesw@dnr.sc.gov; Alan Stuart; Alison Guth; Amanda Hill; Bill Argentieri; Bill East; Bill Hulslander; Bill Marshall; Bob Perry ; bseibels@yahoo.com; Charlene Coleman; Daniel Tufford; Dick Christie; Ed Diebold; George Duke; Gerrit Jobsis (American Rivers); Gina Kirkland; Hal Beard; Jeff Duncan; Jennifer O'Rourke; Jennifer Summerlin; Jim Glover; Jim Goller; Joe Logan; Joy Downs; turnerle@dhec.sc.gov; laura.mccary@gmail.com; Malcolm Leaphart; Mark Leao; Mike Sloan; Norman Ferris; Patrick Moore; Prescott Brownell; Ralph Crafton; Randy Mahan; rbull@davisfloyd.com; Robert Lavisky; Ron Ahle; Sam Drake; Scott Harder; Shane Boring; Steve Bell; Steve Leach; Steve Summer; Suzanne Rhodes; tbowles@scana.com  
**Subject:** Saluda Relicensing: Fish Entrainment and Turbine Mortality Report, TWC Final Version

All:

Attached for your reference is the Final Technical Working Committee Version of the Saluda Hydro Fish Entrainment and Turbine Mortality Report. The report will be posted on the Saluda Hydro Relicensing Website. Thank-you for your continued cooperation in the Saluda relicensing process.

<<Saluda Hydro Entrainment-Mortality Report 2007-03-12 FINAL TWC Version.pdf>>

Thanks,

Jennifer Summerlin  
Scientist Technician  
**Kleinschmidt Associates**  
101 Trade Zone Drive, Suite 21A  
West Columbia, SC 29170  
P:803.822.3177

F:803.822.3183

**Kacie Jensen**

---

**From:** Alan Stuart  
**Sent:** Friday, March 09, 2007 9:31 AM  
**To:** Jennifer Summerlin; Wade Bales (balesw@dnr.sc.gov); Amanda Hill; Bill Argentieri; Hal Beard; Jim Glover; Randy Mahan; Shane Boring; Tom Bowles (tbowles@scana.com)  
**Cc:** Dick Christie  
**Subject:** RE: Saluda Relicensing: March 1st Fish Entrainment TWC meeting notes

Hal,

Please don't forget you need to coordinate with Dick prior to us releasing this report to the larger Resource Conservation Group. Once you and receive Dick's concurrence (or additional comments etc) please let us know ASAP so we can move this along in the relicensing process.

Thanks,  
Alan

PS Have a great weekend all !!

---

**From:** Jennifer Summerlin  
**Sent:** Fri 3/9/2007 9:22 AM  
**To:** Wade Bales (balesw@dnr.sc.gov); Amanda Hill; Bill Argentieri; Hal Beard; Jim Glover; Randy Mahan; Shane Boring; Tom Bowles (tbowles@scana.com); Alan Stuart  
**Cc:** Dick Christie  
**Subject:** Saluda Relicensing: March 1st Fish Entrainment TWC meeting notes

All:

Attached for your review are the March 1, 2007 Fish Entrainment TWC draft meeting notes. Please have comments back to me by March 20th.

<<2007-03-01 Fish Entrainment TWC draft meeting notes (JMS).doc>>

Thanks,

Jennifer Summerlin  
Scientist Technician  
**Kleinschmidt Associates**  
101 Trade Zone Drive, Suite 21A  
West Columbia, SC 29170  
P:803.822.3177  
F:803.822.3183

**Kacie Jensen**

---

**From:** Prescott Brownell [Prescott.Brownell@noaa.gov]  
**Sent:** Wednesday, March 07, 2007 8:23 AM  
**To:** QUATTLEBAUM, MILTON  
**Cc:** amanda\_hill@fws.gov; dchristie@infoave.net; SUMMER, STEPHEN E;  
BARGENTIERI@scana.com; Alan Stuart; Shane Boring; Jennifer Summerlin  
**Subject:** Re: Sturgeon Sampling

Thank you for your note, Milton

I've been watching the Alston gage as the flow went up to almost 60K a few days ago and figured you might not be able to do any sampling. As you know, those flow spikes are probably what trigger upstream movements of sturgeon, and would be the most likely times when they are present in the shoals during the spawning season. After the flow goes down to levels where it is possible to fish for sturgeon, and track them...they are more likely to have moved back downstream. Not much we can do about that situation.

P. Brownell

QUATTLEBAUM, MILTON wrote:

Amanda, Dick, and Prescott,

Due to high flows and velocities in the Congaree River our scheduled sampling for the Shortnose sturgeon will be cancelled today March 7, 2007. If you have any questions please give me a call.

Milton Quattlebaum  
Environmental Specialist  
SCANA Corp.  
6248 Bush River Road  
Columbia, SC 29212  
Business Phone: (803) 217 - 8262  
Fax: (803) 217 - 7349



## Kacie Jensen

---

**From:** QUATTLEBAUM, MILTON [MQUATTLEBAUM@scana.com]  
**Sent:** Wednesday, March 07, 2007 7:49 AM  
**To:** amanda\_hill@fws.gov; dchristie@infoave.net; prescott.brownell@noaa.gov  
**Cc:** SUMMER, STEPHEN E; BARGENTIERI@scana.com; Alan Stuart; Shane Boring; Jennifer Summerlin  
**Subject:** Sturgeon Sampling

Amanda, Dick, and Prescott,

Due to high flows and velocities in the Congaree River our scheduled sampling for the Shortnose sturgeon will be cancelled today March 7, 2007. If you have any questions please give me a call.

Milton Quattlebaum  
Environmental Specialist  
SCANA Corp.  
6248 Bush River Road  
Columbia, SC 29212  
Business Phone: (803) 217 - 8262  
Fax: (803) 217 - 7349

**Kacie Jensen**

---

**From:** Dick Christie [dchristie@InfoAve.Net]  
**Sent:** Wednesday, March 07, 2007 9:32 AM  
**To:** Jennifer Summerlin  
**Subject:** RE: Saluda Relicensing: Fish Entrainment/Turbine Mortality Report

Thanks, Jeni!

-----Original Message-----

**From:** Jennifer Summerlin [mailto:Jennifer.Summerlin@KleinschmidtUSA.com]  
**Sent:** Tuesday, March 06, 2007 4:55 PM  
**To:** dchristie@InfoAve.Net  
**Subject:** FW: Saluda Relicensing: Fish Entrainment/Turbine Mortality Report

Hey Dick,

I forgot to include you on the email. Below is the Final Saluda Entrainment/Mortality Report with TWC comments incorporated.

Jeni Summerlin

-----Original Message-----

**From:** Jennifer Summerlin  
**Sent:** Tuesday, March 06, 2007 4:15 PM  
**To:** Wade Bales (balesw@dnr.sc.gov); Amanda Hill; Bill Argentieri; Hal Beard; Jim Glover; Randy Mahan; Shane Boring; Tom Bowles (tbowles@scana.com); Alan Stuart  
**Subject:** Saluda Relicensing: Fish Entrainment/Turbine Mortality Report

All:

Attached for your review is the Final Saluda Entrainment and Turbine Mortality Report. I have incorporated comments that were discussed in the March 1st conference call. If you have any further comments, please have them to me by March 13, 2007.

<<Saluda Hydro Entrainment-Mortality Report 2007-03-06 FINAL.pdf>> <<Saluda Hydro Entrainment-Mortality Report (JMS) 2007-03-06 FINAL.doc>>

Thanks,

Jennifer Summerlin  
Scientist Technician  
**Kleinschmidt Associates**  
101 Trade Zone Drive, Suite 21A  
West Columbia, SC 29170  
P:803.822.3177  
F:803.822.3183

## Kacie Jensen

---

**From:** James Glover [GLOVERJB@dhec.sc.gov]  
**Sent:** Monday, March 05, 2007 3:14 PM  
**To:** Shane Boring  
**Subject:** Re: Saluda Hydro Relicense: 2006 Lower Saluda Macroinvertreport

Shane,

I reviewed the above referenced study today and have no edits. I do have a few comments but they will not result in any changes or edits in the report.

Best Wishes,

Jim

James B. Glover, Ph.D., Manager  
Aquatic Biology Section  
South Carolina Department of Health and Environmental Control 2600 Bull Street Columbia SC 29201  
Phone- 803-898-4081  
Fax- 803-898-4200  
E-Mail- GloverJB@DHEC.SC.Gov

>>> "Shane Boring" <Shane.Boring@KleinschmidtUSA.com> 2/9/2007 1:18 PM  
>>> >>>

Dear Freshwater Mussel/Aquatic Macroinvertebrate TWC Members:

Attached for your review is the draft 2006 Lower Saluda River Macroinvertebrate Assessment, prepared by Dan Carnagey of Carnagey Biological (formerly with Shealy). Please review the draft document and provide comments to me (preferably in MS Word track changes) by March 2, 2007. Thanks to all who contributed to development of the study plan and thanks in advance for you comments.

Have a good weekend,  
Shane

C. Shane Boring  
Environmental Scientist  
Kleinschmidt Associates  
101 Trade Zone Dr., Suite-21A  
West Columbia, SC 29170  
Phone: (803)822-3177  
Fax: (803)822-3183

2006 Lower Saluda Macroinvert report (agency review draft.doc;020907).doc <<2006 Lower Saluda Macroinvert report (agency review draft.doc;020907).doc>>

## Kacie Jensen

---

**From:** Robert Kennamer [Kennamer@srel.edu]  
**Sent:** Friday, March 02, 2007 10:15 AM  
**To:** Buddy Baker  
**Cc:** Shane Boring  
**Subject:** RE: Historical info on waterfowl use of Lk. Murray, etc.

Hi Buddy,

I'm in the process of writing our report for Kleinschmidt about the waterfowl aerial surveys we conducted over Lk. Murray this fall/winter and I could any info you may have or know of (already published or otherwise) for Lk. Murray about (1) historical waterfowl use of the lake, (2) aquatic vegetation/invertebrate (especially freshwater mussels-corbicula) surveys for the lake, (3) recreational use (especially boating activities) levels for the lake, and (4) historical water level variation in the lake. This type of information will be useful to help characterize and explain our observed levels of waterfowl use of Lk. Murray. Your help, as always, is much appreciated.

Bob Kennamer

++++  
Robert A. Kennamer

Research Professional I

The University of Georgia

Phone: (803) 725-0387

Savannah River Ecology Laboratory

FAX: (803) 725-3309

P.O. Drawer E

Aiken, South Carolina 29802, USA

E-mail: kennamer@srel.edu

++++

## Kacie Jensen

---

**From:** Jennifer Summerlin  
**Sent:** Wednesday, February 28, 2007 11:06 AM  
**To:** 'Wade Bales (balesw@dnr.sc.gov)'; 'Amanda Hill'; 'Bill Argentieri'; 'Hal Beard'; 'Jim Glover'; 'Randy Mahan'; Shane Boring; 'Tom Bowles (tbowles@scana.com)'; Alan Stuart  
**Cc:** Jennifer Summerlin  
**Subject:** Saluda Relicensing: Fish Entrainment Conference Call

All:

As many of you are aware, we have a Saluda Fish Entrainment conference call scheduled tomorrow, March 1st. **The phone number to join the conference call tomorrow has changed.** If you are an SCE&G employee please dial 76565. Other participants please dial 1-888-500-7717. The access number is 6371. If you have any questions, please give me a call. Thanks, and we will talk to you at 2:00 PM on Thursday.

Jennifer Summerlin  
Scientist Technician  
[Kleinschmidt Associates](#)  
101 Trade Zone Drive, Suite 21A  
West Columbia, SC 29170  
P:803.822.3177  
F:803.822.3183

## Kacie Jensen

---

**From:** Dick Christie [dchristie@InfoAve.Net]  
**Sent:** Wednesday, February 28, 2007 11:38 AM  
**To:** Jennifer Summerlin  
**Subject:** RE: Saluda Relicensing: Final Saluda Hydro Fish Entrainment/Turbine Mortality Report

Thanks!

-----Original Message-----

**From:** Jennifer Summerlin [mailto:Jennifer.Summerlin@KleinschmidtUSA.com]  
**Sent:** Wednesday, February 28, 2007 11:14 AM  
**To:** dchristie@InfoAve.Net  
**Subject:** FW: Saluda Relicensing: Final Saluda Hydro Fish Entrainment/Turbine Mortality Report

Hey Dick,

Below is the latest version of the Saluda Fish Entrainment/Mortality Report. There are a few mistakes that need to be corrected in this report. We have a conference call scheduled tomorrow from 2:00 PM - 3:30 PM to discuss any issues. If you would like to join us please dial 1-888-500-7717. The access number is 6371. Hope all is well!

Thanks,

Jennifer Summerlin

-----Original Message-----

**From:** Jennifer Summerlin  
**Sent:** Tuesday, February 13, 2007 4:47 PM  
**To:** Wade Bales (balesw@dnr.sc.gov); Amanda Hill; Bill Argentieri; Hal Beard; Jim Glover; Randy Mahan; Shane Boring; Tom Bowles (tbowles@scana.com); Alan Stuart  
**Subject:** Saluda Relicensing: Final Saluda Hydro Fish Entrainment/Turbine Mortality Report

Hello Folks,

Attached for your reference is the Final Saluda Hydro Fish Entrainment/Turbine Mortality Report. This document will also be posted on the Saluda Hydro Relicensing Website. Thank-You for your efforts and have a wonderful afternoon!

<<SaludaHydroEntrainment-MoratlityReport2007-02-13FINALJMS.pdf>>

Jennifer Summerlin  
Scientist Technician  
**Kleinschmidt Associates**  
101 Trade Zone Drive, Suite 21A  
West Columbia, SC 29170  
P:803.822.3177  
F:803.822.3183



## Kacie Jensen

---

**From:** Jennifer Summerlin  
**Sent:** Tuesday, February 27, 2007 10:16 AM  
**To:** 'Wade Bales (balesw@dnr.sc.gov)'; 'Amanda Hill'; 'Bill Argentieri'; 'Hal Beard'; 'Jim Glover'; 'Randy Mahan'; Shane Boring; 'Tom Bowles (tbowles@scana.com)'; Alan Stuart  
**Cc:** Jennifer Summerlin  
**Subject:** Saluda Relicensing: Fish Entrainment/Turbine Mortality Conference Call

All:

This is just a reminder that we have a Saluda Fish Entrainment/Turbine Mortality conference call scheduled for Thursday, March 1st. We will be discussing Lake Murray stratification, fish entrainment for units 1-4 and unit 5, and mitigation. The conference call will begin at 2:00 PM. In order to join the conference call, please call 207-487-3328 and request conference bridge 205.

Thanks,

Jennifer Summerlin  
Scientist Technician  
**Kleinschmidt Associates**  
101 Trade Zone Drive, Suite 21A  
West Columbia, SC 29170  
P:803.822.3177  
F:803.822.3183



## Kacie Jensen

---

**Subject:** Canceled: POSTPONED - IFIM Meeting - Changed to Conference Call  
**Location:** Via Conference Call

**Start:** Wed 2/21/2007 10:00 AM  
**End:** Wed 2/21/2007 12:00 PM  
**Show Time As:** Free

**Recurrence:** (none)

**Meeting Status:** Not yet responded

**Required Attendees:** Fish & Wildlife TWC - IFIM/Aquatic Habitat  
**Optional Attendees:** Brandon Kulik; 'ARGENTIERI, WILLIAM R'; Shane Boring; 'MAHAN, RANDOLPH R'; Alan Stuart; 'QUATTLEBAUM, MILTON'; 'LEAPHART, JR., MALCOLM L'; 'Gerrit Jobsis'; 'Mike Waddell'; Hal Beard

**Importance:** High

Hello All,

It appears that only a couple people will be able to attend the conference call tomorrow. Therefore, since it is important that we convene the majority of the group to discuss this issue, **the meeting tomorrow will be postponed**. We will keep you posted of when this meeting will be rescheduled. Thanks, Alison

Hello All,

As many of you are aware, we have an IFIM meeting scheduled for next Wednesday, February 21st. However, the meeting agenda has been substantially shortened due to the unavailability of the speakers and presentations that were planned. Therefore, **we will be holding this meeting as a conference call**. We will be reviewing the HSI curves for substrate, and we will be emailing those out to you before the meeting for your review. The conference call will begin at 10:00 am. In order to join the conference call, please call 207-487-3328 and request conference bridge 206. Thanks, and we will talk to you on Wednesday. Alison

**Kacie Jensen**

---

**From:** Shane Boring  
**Sent:** Wednesday, February 14, 2007 1:23 PM  
**To:** Scott Harder  
**Cc:** Alan Stuart  
**Subject:** RE: Lower Saluda IFIM Study

Scott:

We can cover these sort of items, no problem. In fact, if we can start developing a list, Jeni and I can begin compiling supplies and have everything ready when the study starts. Just let me know what you need.

Shane

---

**From:** Scott Harder [mailto:HarderS@dnr.sc.gov]  
**Sent:** Wed 2/14/2007 8:41 AM  
**To:** Shane Boring  
**Subject:** RE: Lower Saluda IFIM Study

Hi. There is not a rental fee. I am thinking more along the lines of general supplies like batteries, fuel, duct tape :),.. etc. There may not even be any additional costs at all. Scott

---

**From:** Shane Boring [mailto:Shane.Boring@KleinschmidtUSA.com]  
**Sent:** Tuesday, February 13, 2007 4:40 PM  
**To:** Scott Harder  
**Cc:** Alan Stuart  
**Subject:** RE: Lower Saluda IFIM Study

Absolutely, is there a rental fee or something to that effect?

-----Original Message-----

**From:** Scott Harder [mailto:HarderS@dnr.sc.gov]  
**Sent:** Tuesday, February 13, 2007 4:09 PM  
**To:** Shane Boring  
**Subject:** RE: Lower Saluda IFIM Study

Hi. How's it goin? The ADCP equipment is available to use along with our resident "expert". However, we wanted to make sure that any additional resources or costs that may arise with its use on this particular project would be covered by Kleinschmidt or SCEG. This is probably something we will need to discuss at some point. Scott

---

**From:** Shane Boring [mailto:Shane.Boring@KleinschmidtUSA.com]  
**Sent:** Tuesday, February 13, 2007 3:45 PM  
**To:** Scott Harder  
**Cc:** Alan Stuart  
**Subject:** RE: Lower Saluda IFIM Study

Hi Scott. Thanks for your interest in the field teams for the IFIM; we certainly can use all the help we can get. One follow-up --- did you ever find out whether your ADCP equipment will be available for the study?

Thanks  
Shane

-----Original Message-----

**From:** Scott Harder [mailto:HarderS@dnr.sc.gov]

**Sent:** Monday, February 05, 2007 8:30 AM

**To:** Shane Boring

**Subject:** RE: Lower Saluda IFIM Study

Hi Shane. I am interested in participating on one of the field teams. I have talked it over with my supervisor (Bud Badr) and he agreed it would be a good idea. We do have an ADCP and one of my coworkers has a great deal of training and experience with it. I need to talk to him and some other DNR folks about using the ADCP for the this study. I'll let you know hopefully this week for sure.

Scott

---

**From:** Shane Boring [mailto:Shane.Boring@KleinschmidtUSA.com]

**Sent:** Friday, February 02, 2007 1:19 PM

**To:** Scott Harder

**Subject:** Lower Saluda IFIM Study

Scott:

We're looking at sometime in May for the field data collection phase of the Saluda IFIM. Would you be interested in participating on one of the field teams? Also, as we may have briefly discussed at some point, we're interested in potential use of Acoustic Doppler Current Profiling technology for some areas. Did you mention that SCDNR has an ADCP unit? If so, would it be possible to use it for the Saluda study?

Thanks

Shane

C. Shane Boring  
Environmental Scientist  
Kleinschmidt Associates  
101 Trade Zone Dr., Suite-21A  
West Columbia, SC 29170  
Phone: (803)822-3177  
Fax: (803)822-3183

**Kacie Jensen**

---

**From:** Scott Harder [HarderS@dnr.sc.gov]  
**Sent:** Wednesday, February 14, 2007 8:42 AM  
**To:** Shane Boring  
**Subject:** RE: Lower Saluda IFIM Study

Hi. There is not a rental fee. I am thinking more along the lines of general supplies like batteries, fuel, duct tape :),.. etc. There may not even be any additional costs at all. Scott

---

**From:** Shane Boring [mailto:Shane.Boring@KleinschmidtUSA.com]  
**Sent:** Tuesday, February 13, 2007 4:40 PM  
**To:** Scott Harder  
**Cc:** Alan Stuart  
**Subject:** RE: Lower Saluda IFIM Study

Absolutely, is there a rental fee or something to that effect?

-----Original Message-----

**From:** Scott Harder [mailto:HarderS@dnr.sc.gov]  
**Sent:** Tuesday, February 13, 2007 4:09 PM  
**To:** Shane Boring  
**Subject:** RE: Lower Saluda IFIM Study

Hi. How's it goin? The ADCP equipment is available to use along with our resident "expert". However, we wanted to make sure that any additional resources or costs that may arise with its use on this particular project would be covered by Kleinschmidt or SCEG. This is probably something we will need to discuss at some point. Scott

---

**From:** Shane Boring [mailto:Shane.Boring@KleinschmidtUSA.com]  
**Sent:** Tuesday, February 13, 2007 3:45 PM  
**To:** Scott Harder  
**Cc:** Alan Stuart  
**Subject:** RE: Lower Saluda IFIM Study

Hi Scott. Thanks for your interest in the field teams for the IFIM; we certainly can use all the help we can get. One follow-up --- did you ever find out whether your ADCP equipment will be available for the study?

Thanks  
Shane

-----Original Message-----

**From:** Scott Harder [mailto:HarderS@dnr.sc.gov]  
**Sent:** Monday, February 05, 2007 8:30 AM  
**To:** Shane Boring  
**Subject:** RE: Lower Saluda IFIM Study

Hi Shane. I am interested in participating on one of the field teams. I have talked it over with my supervisor (Bud Badr) and he agreed it would be a good idea. We do have an ADCP and one of my coworkers has a great deal of training and experience with it. I need to talk to him and some other DNR folks about using the ADCP for the this study. I'll let you know hopefully this week for sure.

Scott

---

**From:** Shane Boring [mailto:Shane.Boring@KleinschmidtUSA.com]  
**Sent:** Friday, February 02, 2007 1:19 PM  
**To:** Scott Harder  
**Subject:** Lower Saluda IFIM Study

Scott:

We're looking at sometime in May for the field data collection phase of the Saluda IFIM. Would you be interested in participating on one of the field teams? Also, as we may have briefly discussed at some point, we're interested in potential use of Acoustic Doppler Current Profiling technology for some areas. Did you mention that SCDNR has an ADCP unit? If so, would it be possible to use it for the Saluda study?

Thanks  
Shane

C. Shane Boring  
Environmental Scientist  
Kleinschmidt Associates  
101 Trade Zone Dr., Suite-21A  
West Columbia, SC 29170  
Phone: (803)822-3177  
Fax: (803)822-3183

**Kacie Jensen**

---

**From:** Hal Beard [BeardH@dnr.sc.gov]  
**Sent:** Tuesday, February 13, 2007 10:42 AM  
**To:** Jennifer Summerlin; Wade Bales; Amanda Hill; BARGENTIERI@scana.com; Jim Glover; RMAHAN@scana.com; Shane Boring; tbowles@scana.com; Alan Stuart  
**Subject:** RE: Saluda Relicensing: Saluda Hydro Fish Entrainment/Turbine Mortality Report

Jenni,

I have reviewed the report and my response comes in the manner of several questions from someone who admittedly has limited knowledge in entrainment issues. It is a foregone conclusion that fish mortalities will continue to occur as a result of impingement and/or entrainment at the Saluda facility. As to whether the report's mortality estimates accurately reflect the situation, ( with or w/o the stratification filter) and which estimate is to be accepted, may be subject to debate.

Regardless, I am curious as to how, if any, future monitoring will be conducted and what mitigation plans will be proposed based on the species and numbers involved?

-----Original Message-----

**From:** Jennifer Summerlin [mailto:Jennifer.Summerlin@KleinschmidtUSA.com]  
**Sent:** Monday, February 12, 2007 1:15 PM  
**To:** Wade Bales; Amanda Hill; Bill Argentieri; Hal Beard; Jim Glover; Randy Mahan; Shane Boring; tbowles@scana.com; Alan Stuart  
**Subject:** FW: Saluda Relicensing: Saluda Hydro Fish Entrainment/Turbine Mortality Report

All:

I have not received any comments on the Saluda Fish Entrainment and Turbine Mortality Report. I would like to have this report finalized by close of business hours tomorrow (January 13th). Please email me if you have comments or do not have comments on the report. Thank you for your continued participation in the Saluda Relicensing process. Have a great day!

Jennifer Summerlin  
Scientist Technician  
**Kleinschmidt Associates**  
101 Trade Zone Drive, Suite 21A  
West Columbia, SC 29170  
P:803.822.3177  
F:803.822.3183

-----Original Message-----

**From:** Jennifer Summerlin  
**Sent:** Monday, January 29, 2007 3:51 PM  
**To:** Wade Bales (balesw@dnr.sc.gov); Amanda Hill; Bill Argentieri; Hal Beard; Jim Glover; Randy Mahan; Shane Boring; Tom Bowles (tbowles@scana.com); Alan Stuart

**Subject:** Saluda Relicensing: Saluda Hydro Fish Entrainment/Turbine Mortality Report

Hello Everyone,  
Attached for your review is the Saluda Hydro Fish Entrainment and Turbine Mortality Report. Please

have comments back to me by February 12, 2007. The attached PDF file is a copy of the Turbine Passage Survival Database. Once the report is finalized, the table will be placed in Appendix E.

<<Saluda Hydro Entrainment-Mortality Report 2007-1-29 (JMS)draft.doc>> <<Mortality Database.pdf>>

Jennifer Summerlin  
Scientist Technician

**Kleinschmidt Associates**

101 Trade Zone Drive, Suite 21A  
West Columbia, SC 29170

P:803.822.3177

F:803.822.3183

**Kacie Jensen**

---

**From:** Scott Harder [HarderS@dnr.sc.gov]  
**Sent:** Tuesday, February 13, 2007 4:09 PM  
**To:** Shane Boring  
**Subject:** RE: Lower Saluda IFIM Study

Hi. How's it goin? The ADCP equipment is available to use along with our resident "expert". However, we wanted to make sure that any additional resources or costs that may arise with its use on this particular project would be covered by Kleinschmidt or SCEG. This is probably something we will need to discuss at some point. Scott

---

**From:** Shane Boring [mailto:Shane.Boring@KleinschmidtUSA.com]  
**Sent:** Tuesday, February 13, 2007 3:45 PM  
**To:** Scott Harder  
**Cc:** Alan Stuart  
**Subject:** RE: Lower Saluda IFIM Study

Hi Scott. Thanks for your interest in the field teams for the IFIM; we certainly can use all the help we can get. One follow-up --- did you ever find out whether your ADCP equipment will be available for the study?

Thanks  
Shane

-----Original Message-----

**From:** Scott Harder [mailto:HarderS@dnr.sc.gov]  
**Sent:** Monday, February 05, 2007 8:30 AM  
**To:** Shane Boring  
**Subject:** RE: Lower Saluda IFIM Study

Hi Shane. I am interested in participating on one of the field teams. I have talked it over with my supervisor (Bud Badr) and he agreed it would be a good idea. We do have an ADCP and one of my coworkers has a great deal of training and experience with it. I need to talk to him and some other DNR folks about using the ADCP for the this study. I'll let you know hopefully this week for sure.

Scott

---

**From:** Shane Boring [mailto:Shane.Boring@KleinschmidtUSA.com]  
**Sent:** Friday, February 02, 2007 1:19 PM  
**To:** Scott Harder  
**Subject:** Lower Saluda IFIM Study

Scott:

We're looking at sometime in May for the field data collection phase of the Saluda IFIM. Would you be interested in participating on one of the field teams? Also, as we may have briefly discussed at some point, we're interested in potential use of Acoustic Doppler Current Profiling technology for some areas. Did you mention that SCDNR has an ADCP unit? If so, would it be possible to use it for the Saluda study?

Thanks  
Shane



C. Shane Boring  
Environmental Scientist  
Kleinschmidt Associates  
101 Trade Zone Dr., Suite-21A  
West Columbia, SC 29170  
Phone: (803)822-3177  
Fax: (803)822-3183

**Kacie Jensen**

---

**From:** Scott Harder [HarderS@dnr.sc.gov]  
**Sent:** Monday, February 05, 2007 8:30 AM  
**To:** Shane Boring  
**Subject:** RE: Lower Saluda IFIM Study

Hi Shane. I am interested in participating on one of the field teams. I have talked it over with my supervisor (Bud Badr) and he agreed it would be a good idea. We do have an ADCP and one of my coworkers has a great deal of training and experience with it. I need to talk to him and some other DNR folks about using the ADCP for the this study. I'll let you know hopefully this week for sure.

Scott

---

**From:** Shane Boring [mailto:Shane.Boring@KleinschmidtUSA.com]  
**Sent:** Friday, February 02, 2007 1:19 PM  
**To:** Scott Harder  
**Subject:** Lower Saluda IFIM Study

Scott:

We're looking at sometime in May for the field data collection phase of the Saluda IFIM. Would you be interested in participating on one of the field teams? Also, as we may have briefly discussed at some point, we're interested in potential use of Acoustic Doppler Current Profiling technology for some areas. Did you mention that SCDNR has an ADCP unit? If so, would it be possible to use it for the Saluda study?

Thanks  
Shane

C. Shane Boring  
Environmental Scientist  
Kleinschmidt Associates  
101 Trade Zone Dr., Suite-21A  
West Columbia, SC 29170  
Phone: (803)822-3177  
Fax: (803)822-3183

**Kacie Jensen**

---

**From:** LEAPHART,JR., MALCOLML [MALCOLML@mailbox.sc.edu]  
**Sent:** Friday, February 02, 2007 10:08 AM  
**To:** Shane Boring; balesw@dnr.sc.gov; Alison Guth; Amanda Hill; BARGENTIERI@scana.com; Bud Badr; Dick Christie; Gerrit Jobsis (American Rivers); Hal Beard; Jennifer Summerlin; Jim Glover; mquattlebaum@scana.com; Prescott Brownell; RMAHAN@scana.com; Ron Ahle; Scott Harder; Steve Summer; Theresa Thom; Brandon Kulik; Alan Stuart  
**Cc:** mwaddell@esri.sc.edu  
**Subject:** RE: Instream Flow Study of Lower Saluda River DRAFT 2007-02-01.doc

Shane, Please add Michael Waddell to the IFIM/Habitat TWC - [mwaddell@esri.sc.edu](mailto:mwaddell@esri.sc.edu). I have forwarded this email with the draft IFIM to him for review for comments from Trout Unlimited.

**From:** Shane Boring [mailto:Shane.Boring@KleinschmidtUSA.com]  
**Sent:** Fri 2/2/2007 7:06 AM  
**To:** balesw@dnr.sc.gov; Alison Guth; Amanda Hill; Bill Argentieri; Bud Badr; Dick Christie; Gerrit Jobsis (American Rivers); Hal Beard; Jennifer Summerlin; Jim Glover; LEAPHART,JR., MALCOLML; mquattlebaum@scana.com; Prescott Brownell; Randy Mahan; Ron Ahle; Scott Harder; Shane Boring; Steve Summer; Theresa Thom; Brandon Kulik; Alan Stuart  
**Subject:** Instream Flow Study of Lower Saluda River DRAFT 2007-02-01.doc

All:

Attached for your review is the updated draft of the Lower Saluda River IFIM Study Plan. If possible, please have your comments back to me by February 15, 2007. Thanks to all who provided comments on the previous draft.

Shane

C. Shane Boring  
Environmental Scientist  
Kleinschmidt Associates  
101 Trade Zone Dr., Suite-21A  
West Columbia, SC 29170  
Phone: (803)822-3177  
Fax: (803)822-3183

Instream Flow Study of Lower Saluda River DRAFT 2007-02-01.doc  
<<Instream Flow Study of Lower Saluda River DRAFT 2007-02-01.doc>>

## Kacie Jensen

---

**From:** Shane Boring  
**Sent:** Friday, February 02, 2007 1:19 PM  
**To:** 'Scott Harder'  
**Subject:** Lower Saluda IFIM Study

Scott:

We're looking at sometime in May for the field data collection phase of the Saluda IFIM. Would you be interested in participating on one of the field teams? Also, as we may have briefly discussed at some point, we're interested in potential use of Acoustic Doppler Current Profiling technology for some areas. Did you mention that SCDNR has an ADCP unit? If so, would it be possible to use it for the Saluda study?

Thanks  
Shane

C. Shane Boring  
Environmental Scientist  
Kleinschmidt Associates  
101 Trade Zone Dr., Suite-21A  
West Columbia, SC 29170  
Phone: (803)822-3177  
Fax: (803)822-3183

## Kacie Jensen

---

**From:** Shane Boring  
**Sent:** Friday, February 02, 2007 4:24 PM  
**To:** 'Prescott Brownell'  
**Subject:** RE: Saluda Instream Flow Team address list



IFIM TWC.txt (4  
KB)

Pres:

The IFIM contacts are attached. Sorry for the format, but it was the only way I could get it out of the electronic business card format. Thanks for the sturgeon info.

Shane

-----Original Message-----

From: Prescott Brownell [mailto:Prescott.Brownell@noaa.gov]  
Sent: Friday, February 02, 2007 3:39 PM  
To: Shane Boring  
Subject: Re: Saluda Instream Flow Team address list

Hello Shane,

Attached is a draft paper from Boyd Kynard and Kieffer. Look at Page 12 for their methods for using the egg nets. Id go with their approach. Boyd has used this approach extensively. Call if you'd like to discuss in more detail.

By the way....the TWC addresses did not come through our server for some reason. Could you try again to send the TWC email address/name list?

Thank you for your effort on this  
PB

Shane Boring wrote:

> Pres:

>

> Attached is an electronic business card with names and addresses of  
> all of the Instream Flow TWC members. On a different note, I left a  
> message at your office earlier today. I have a question regarding our  
> upcoming sturgeon sampling -- Specifically, we state in the study plan  
> that "eggs nets will be fished concurrently with gillnets to sample  
> for shortnose sturgeon eggs/larvae". We do not state, however,  
> exactly how long the egg nets should be fished. Kleinschmidt projects  
> in CT have fished a 1 m diameter D-ring net for 1 hour during each  
> sampling day. We have acquired 0.5 m diameter nets (flattened to  
> D-ring shape) for our project (we were concerned that the larger nets  
> would stick out of water in the shallow portions of the Congaree).  
> My question is this -- is there a specific length of time or volume of  
> water that you guys would like to have sampled? Thanks so much.

>

> Shane

>

> -----

> --

>

> Subject:

> Fish & Wildlife TWC - IFIM/Aquatic Habitat  
> From:  
> "Alison Guth" <Alison.Guth@KleinschmidtUSA.com>  
> Date:  
> Tue, 14 Mar 2006 13:18:33 -0500  
>  
>

## Kacie Jensen

---

**From:** Shane Boring  
**Sent:** Friday, February 02, 2007 4:24 PM  
**To:** 'Prescott Brownell'  
**Subject:** RE: Saluda Instream Flow Team address list



IFIM TWC.txt (4  
KB)

Pres:

The IFIM contacts are attached. Sorry for the format, but it was the only way I could get it out of the electronic business card format. Thanks for the sturgeon info.

Shane

-----Original Message-----

From: Prescott Brownell [mailto:Prescott.Brownell@noaa.gov]  
Sent: Friday, February 02, 2007 3:39 PM  
To: Shane Boring  
Subject: Re: Saluda Instream Flow Team address list

Hello Shane,

Attached is a draft paper from Boyd Kynard and Kieffer. Look at Page 12 for their methods for using the egg nets. Id go with their approach. Boyd has used this approach extensively. Call if you'd like to discuss in more detail.

By the way....the TWC addresses did not come through our server for some reason. Could you try again to send the TWC email address/name list?

Thank you for your effort on this  
PB

Shane Boring wrote:

> Pres:

>

> Attached is an electronic business card with names and addresses of  
> all of the Instream Flow TWC members. On a different note, I left a  
> message at your office earlier today. I have a question regarding our  
> upcoming sturgeon sampling -- Specifically, we state in the study plan  
> that "eggs nets will be fished concurrently with gillnets to sample  
> for shortnose sturgeon eggs/larvae". We do not state, however,  
> exactly how long the egg nets should be fished. Kleinschmidt projects  
> in CT have fished a 1 m diameter D-ring net for 1 hour during each  
> sampling day. We have acquired 0.5 m diameter nets (flattened to  
> D-ring shape) for our project (we were concerned that the larger nets  
> would stick out of water in the shallow portions of the Congaree).  
> My question is this -- is there a specific length of time or volume of  
> water that you guys would like to have sampled? Thanks so much.

>

> Shane

>

> -----

> --

>

> Subject:

> Fish & Wildlife TWC - IFIM/Aquatic Habitat  
> From:  
> "Alison Guth" <Alison.Guth@KleinschmidtUSA.com>  
> Date:  
> Tue, 14 Mar 2006 13:18:33 -0500  
>  
>



**Kacie Jensen**

---

**From:** Shane Boring  
**Sent:** Thursday, February 01, 2007 4:59 PM  
**To:** 'Mike Waddell'  
**Cc:** 'ARGENTIERI, WILLIAM R'; Alan Stuart; 'MAHAN, RANDOLPH R'  
**Subject:** RE: In stream Flow/Aquatic habitat TWC

Mike:

We will add you to the list of Instream Flow/Aquatic Habitat TWC members and to the e-mail distribution for this TWC. You should begin receiving all correspondence for the group. We do ask that you read over the past meeting notes on the website to get up to speed regarding the group's progress; this will allow the group to continue moving forward. There are a number of presentations on the website that explain the IFIM methodology very well. Look forward to seeing you at the next meeting on Feb 19.

Shane

C. Shane Boring  
Environmental Scientist  
Kleinschmidt Associates  
101 Trade Zone Dr., Suite-21A  
West Columbia, SC 29170  
Phone: (803)822-3177  
Fax: (803)822-3183

-----Original Message-----

**From:** Mike Waddell [mailto:mwaddell@esri.sc.edu]  
**Sent:** Thursday, February 01, 2007 2:40 PM  
**To:** Shane Boring  
**Subject:** In stream Flow/Aquatic habitat TWC

Shane: Malcolm Leaphart has ask me to replace him on the In stream Flow/Aquatic habitat TWC. As you can see I am Research Professor at USC in environmental geophysics and have an understanding on how models work. I am active member a Board of Director member of Saluda River Chapter of Tout Unlimited, so I have a very keen interest in flows and aquatic habitat in the Saluda River. I also sit on the Safety and Operations RCG. Would please add me to your email address. Malcolm also said if you want it can officially resigned.

Mike

Michael G. Waddell  
Research Associate Professor  
Earth Sciences and Resources Institute  
University of South Carolina  
Office (803) 777-6484

**Kacie Jensen**

---

**From:** Alan Stuart  
**Sent:** Wednesday, January 24, 2007 10:36 AM  
**To:** k.westbury@saludacounty.sc.gov  
**Cc:** Alison Guth  
**Subject:** waterfowl area

Hi Kim,

Alison forwarded me your email regarding SCE&G working with SCDNR on a waterfowl management area. SCE&G has been working with SCDNR to identify potential areas to develop as a waterfowl management area. However, no transactions have occurred I'm aware of. Right now it is what I'd call a preliminary assessment. This whole waterfowl issue came up as part of the 5 year review of the Shoreline Management Plan in which the FERC required SCE&G to designate specific areas on the Lake for waterfowl hunting. This is not what the SCDNR was truly wanting when they made the recommendation. So SCE&G began working with SCDNR to evaluate areas which had potential for creation of a waterfowl management area.

As far as a press release by SCDNR I know of none. Are you referring to the article in today's State Paper in which you are quoted ? The term "proposal" Tim used is what I would call "strong". I would have used the term "feasibility study" as opposed to "proposal". Unless something has drastically changed, to my knowledge SCE&G has committed no lands and I do not expect anything to be put on the table that isn't part of filing of the FERC Application. I feel pretty confident on this.

If you need more information or clarification please give me a call and I'll try to answer anything I can.

Hope this was helpful.

Alan

***Alan Stuart***

**Senior Licensing Coordinator**  
**Kleinschmidt Energy and Water Resources**  
**101 Trade Zone Drive Suite 21A**  
**West Columbia, SC 29170**

**Office: 803-822-3177**  
**Cell: 803-640-8765**  
**Fax: 803-822-3183**

**email: [Alan.Stuart@kleinschmidtusa.com](mailto:Alan.Stuart@kleinschmidtusa.com)**

**Kacie Jensen**

---

**From:** James L. Leslie, Jr. [jlesliejr@bellsouth.net]  
**Sent:** Monday, January 22, 2007 7:39 PM  
**To:** Alison Guth  
**Subject:** SCE&G Relicensing

Ms. Alison Guth:

Please add my name to the Tier One participants in the SCE&G relicensing.

Please notify me in advance of any meetings in which Two Bird Cove is to be discussed.

James L. Leslie, Jr. President  
Lake Murray Docks, Inc.

**Kacie Jensen**

---

**From:** QUATTLEBAUM, MILTON [MQUATTLEBAUM@scana.com]  
**Sent:** Friday, January 19, 2007 9:13 AM  
**To:** Stephania.Bolden@NOAA.gov  
**Cc:** SUMMER, STEPHEN E; BARGENTIERI@scana.com; RMAHAN@scana.com; Alan Stuart; Shane Boring; Jennifer Summerlin  
**Subject:** Shortnose sturgeon collections

Stephania Bolden,

This is a follow up to our phone conversation on January 18, 2007.

SCANA Services Inc. and Kleinschmidt Associates will begin sampling for shortnose sturgeon under Endangered Species permit No. 1542. Sampling will be conducted on the Lower Saluda River and Congaree River in South Carolina starting on February 6 & 7, and proceed until April 30, 2007. All efforts will be made to conduct sampling on Tuesday and Wednesday of each week of the study period. Sampling will be conducted at the following locations:

1. Lower Saluda River downstream and in vicinity of the Saluda Project Dam;
2. The vicinity of SCE&g's Gardendale canoe landing on the Lower Saluda River;
3. Upstream of the old Granby Lock and Dam on the Congaree River; and
4. The vicinity of the Rosewood Boat Landing on the Congaree River.

Sampling personnel will consist of Principal Investigator Stephen E. Summer; Co - Investigators - Henry G. Mealing, III, C. Shane Boring, Alan W. Stuart; and research assistants - Milton Quattlebaum, and Jennifer Summerlin.

If you have any questions please contact me at ( 803 ) 217- 8262.

Milton Quattlebaum  
Environmental Specialist  
SCANA Corp.  
6248 Bush River Road  
Columbia, SC 29212  
Business Phone: (803) 217 - 8262  
Fax: (803) 217 - 7349

## Kacie Jensen

---

**From:** Dick Christie [dchristie@InfoAve.Net]  
**Sent:** Wednesday, January 10, 2007 2:39 PM  
**To:** Jennifer Summerlin  
**Subject:** RE: Saluda Relicensing: 2007 American Shad Telemetry Study Plan

Hi Jennifer - do you know how much the V-9 tags cost?

-----Original Message-----

**From:** Jennifer Summerlin [mailto:Jennifer.Summerlin@KleinschmidtUSA.com]  
**Sent:** Monday, January 08, 2007 10:07 AM  
**To:** Steve Bell; Alan Stuart; Alison Guth; Amanda Hill; Bill Argentieri; jdjaco@columbiasc.net; Dee Bennett; Dick Christie; Harold Moxley; Jennifer Summerlin; Prescott Brownell; Shane Boring  
**Subject:** Saluda Relicensing: 2007 American Shad Telemetry Study Plan

All:

Attached for your review is the 2007 American Shad Telemetry Study Plan. Please review and have comments back to me by January 29, 2007.

<<American Shad Telemetry Study Plan 01-8-2007 (jms\_csb\_aws).doc>>

Thanks,

Jennifer Summerlin  
Scientist Technician  
**Kleinschmidt Associates**  
101 Trade Zone Drive, Suite 21A  
West Columbia, SC 29170  
P:803.822.3177  
F:803.822.3183

## Kacie Jensen

---

**Subject:** Updated: Instream Flow/Aquatic habitat TWC Meeting - Habitat Suitability Curve/Guiding Session  
**Location:** Lake Murray Training Center  
**Start:** Mon 1/22/2007 10:00 AM  
**End:** Mon 1/22/2007 3:00 PM  
**Show Time As:** Tentative  
**Recurrence:** (none)  
**Meeting Status:** Not yet responded  
**Required Attendees:** Fish & Wildlife TWC - IFIM/Aquatic Habitat  
**Optional Attendees:** Alan Stuart; 'Gerrit Jobsis'; ARGENTIERI, WILLIAM R  
**Importance:** High

**I MADE A MISTAKE ON THE PREVIOUS INVITATION. THE MEETING WILL NE HELD AT LAKE MURRAY TRAINING CENTER, **NOT** CAROLINA RESEARCH PARK. MY APOLOGIES FOR THE CONFUSION. PLEASE CLICK ACCEPT AGAIN TO UPDATE THE MEETING LOCATION IN YOUR OUTLOOK CALENDAR.**

As discussed at our last IFIM TWC meeting, this session will focus on finalizing the species guiding and HSI curves for the upcoming Saluda IFIM study. **Please note that the meeting will begin at 10:00 AM, rather than 9:30;** since it is a Monday, we're trying to allow folks a little more travel time.

## Kacie Jensen

---

**Subject:** Instream Flow/Aquatic habitat TWC Meeting - Habitat Suitability Curve/Guiding Session  
**Location:** SCE&G Offices at Carolina Research Park

**Start:** Mon 1/22/2007 10:00 AM  
**End:** Mon 1/22/2007 3:00 PM  
**Show Time As:** Tentative

**Recurrence:** (none)

**Meeting Status:** Not yet responded

**Required Attendees:** Fish & Wildlife TWC - IFIM/Aquatic Habitat

As discussed at our last IFIM TWC meeting, this session will focus on finalizing the species guiding and HSI curves for the upcoming Saluda IFIM study. **Please note that the meeting will begin at 10:00 AM, rather than 9:30;** since it is a Monday, we're trying to allow folks a little more travel time.

## Kacie Jensen

---

**From:** Shane Boring  
**Sent:** Wednesday, January 03, 2007 2:28 PM  
**To:** Wade Bales (balesw@dnr.sc.gov); Alison Guth; Amanda Hill; Bill Argentieri; Bud Badr; Dick Christie; Gerrit Jobsis (American Rivers); Hal Beard; Jennifer Summerlin; Jim Glover; Malcolm Leaphart; Milton Quattlebaum (mquattlebaum@scana.com); Prescott Brownell; Randy Mahan; Ron Ahle; Scott Harder; Shane Boring; Steve Summer; Theresa Thom; Brandon Kulik; Alan Stuart  
**Subject:** Saluda Hydro Relicense: Proposed IFIM Meeting Date

All:

As you may remember, during our last IFIM meeting, we discussed having a separate session to finalize HSI curves and guilds for the upcoming Lower Saluda IFIM study. Looking at the schedule, it appears that there is a fish passage meeting on Jan 23rd. Since most folks will already be in town, what do you all think about having the HSI curve/guild session on Monday, January 22nd?

Shane



**From:** [Prescott Brownell](#)  
**To:** [Henry Mealing](#);  
**cc:** [Shane Boring](#); [Alison Guth](#);  
**Subject:** Re: Telephone conferencing? Pacolet Relicensing Meeting - December 18, 2007  
**Date:** Monday, December 17, 2007 1:35:49 PM  
**Attachments:** [prescott\\_brownell.vcf](#)

---

Hello Henry,  
My schedule has changed from last week, making it difficult for me to attend the Pacolet meeting in Lexington tomorrow. Is it possible to establish a telephone conference line for the meeting?  
Thank you for checking on this.  
regards  
Prescott Brownell  
843-953-7204

**From:** Shane Boring  
**To:** [Theresa Thom](#); [Alison Guth](#); [Amanda Hill](#); [Bill Argentieri](#); [Bud Badr](#);  
[Dick Christie \(dchristie@comporium.net\)](#); [Gerrit Jobsis \(American Rivers\)](#); [Gina Kirkland](#);  
[Hal Beard](#); [Jennifer Hand](#); [Jim Glover](#); [Malcolm Leaphart](#); [Mark Giffin \(giffinma@dhec.sc.gov\)](#); [Mike Waddell](#); [Milton Quattlebaum \(mquattlebaum@scana.com\)](#); [Prescott Brownell](#);  
[Randy Mahan](#); [Ron Ahle](#); [Scott Harder](#); [Shane Boring](#); [Steve Summer](#); [Brandon Kulik](#);  
[Alan Stuart](#);  
**Subject:** Saluda IFIM Conference Call to Discuss Additional Analyses Requested for Jan IFIM Workshop  
**Start:** Tuesday, January 15, 2008 2:00:00 PM  
**End:** Tuesday, January 15, 2008 3:30:00 PM  
**Location:** Via Conference Line

---

To access the conference line, dial 1-888-500-7717 (long distance) or 217-6565 (local) or 76565 (SCE&G/SCANA personnel). When prompted, enter the conference call ID – 7886.