

ROANOKE RAPIDS AND GASTON FERC PROJECT NO. 2009
DOMINION NORTH CAROLINA POWER
ARTICLE 414 WITHN DAY PEAKING PLAN
NOTES FROM COOPERATIVE MANAGEMENT TEAM MEETINGS
APPENDIX 1
September 30, 2006

FERC PROJECT NO. 2009
ROANOKE RAPIDS AND GASTON HYDROPOWER RELICENSING PROJECT

FL3 and FL4 Cooperative Management Teams
Roanoke Rapids Power Station
Minutes to September 29, 2004 Meeting
9:00 A.M. TO 3:00 P.M.

Participants: Bob Graham (Dominion), Bill Adams (Corps of Engineers), Jennifer Everett (NCDWQ), John Ellis (USFWS), Jean Richter (USFWS RRNWR), Pete Kornegay (NCWRC), Sam Pearsall (TNC), Jim Mead (NCDWR), Jim Thornton (Dominion)

Jim Thornton provided an update on the license status. Because the Commission meets in the middle of each month, it's likely FERC will act on the license revisions provided by the relicensing participants mid-October or mid-November, 2004. Jim brought to the group's attention the need to respond to an urgent plea by Don Clarke to provide comment on the three outstanding FERC issues. **Action Item:** Participant legal counsel need to provide comment by close of business 9/30/04.

There was discussion about how SEPA's control of Kerr Reservoir releases have made Lake Gaston and Roanoke Rapids Lake water level control more difficult for Dominion. Dominion has remained in compliance with its new FERC license requirements, although it recognizes the there has been greater elevation fluctuation in Lake Gaston than occurred in the past. The consensus was SEPA's control has not had much effect on the violations of water quality standards experienced at Roanoke Rapids this summer, and that these were more the result of the large volume of water passing through the system in this high water year.

The advantages and disadvantages of changing the current flood control release schedule from Kerr in favor of short-term releases of 35,000 cfs were discussed. This concept will be thoroughly investigated as part of the Corps 216 study.

Jennifer, Jean, Jim Mead and Bill Adams provided updates on the Kerr 216 studies. Jennifer described the water quality topics to be examined and emphasized the value of following EPA

QAPP procedures to ensure reliable data. Jean described the proposed approach to address erosion/sedimentation concerns and cost-share needs for a FWS grant. It was noted an important meeting of the erosion/sedimentation committee is scheduled for October 26 and that Dominion needed to be represented. **Action Item:** Bob agreed to attend the meeting to help ensure Dominion's FL3 and FL4 needs would be addressed in any cooperative efforts. Jim Mead described proposed downstream flow/riparian ecosystem studies to be undertaken. Sam described how he envisioned the Corps studies could be coordinated with Dominion's adaptive management studies. The 216 fisheries SOWs will be developed in the coming weeks.

The Cooperative Management Team duties as defined in the Settlement Agreement and FERC license were reviewed and discussed. It was noted that meeting minutes were a FERC requirement, and the consensus of the group was these only needed to cover major decisions. Bob volunteered to provide the first set of meeting minutes for review by the group. There was some discussion of formalizing the CMT members, and bringing the Corps in as a member. **Action Item:** Bill agreed to check to see if the Corps would make the necessary commitment. It was further noted that voting members should be present at meetings so that when important decisions need to be made they are informed decisions. **Action Item:** All members should commit to making most meetings.

The September 30, 2005 FERC deadline (extended from the March 31, 2004 license) to provide FERC with study plans for FL3 (within day) and FL4 (within week) monitoring and adaptive management implementation was reviewed. Sam recommended that to meet that deadline and get people into the field by March/April of 2005, CMT administrative procedures for distribution of funds need to be in place by January 2005. Discussion of how various monitoring components would be addressed by FL3 versus FL4 studies followed. The only major overlap perceived was for bank erosion, which is to be addressed by both FL3 and FL4 studies. It was suggested that FL3 erosion studies could address the abiotic components (soil and sediments), and FL4 address the biotic components (plants and animals). There was also discussion of how the studies could be parsed geographically, and it was suggested that FL3 studies should be focused on Corps 216 river reach 1 (and possibly some of 2), whereas the FL4 studies should focus on river reaches 2 and 3. Sam believed that in spring 2005 a new flood model with an hourly time step and 25m x 25 cm resolution will be available for use. **Action Item:** Sam is to provide images depicting the river reaches, adjacent land use and vegetative cover.

Action Item: It was agreed that Jim Mead, Jean, Bob and Sam would meet following the October 26 meeting to discuss what monitoring components described in the 216 PMP could be handled by Dominion's adaptive management studies.

The meeting ended with a general discussion of how Dominion's peaking releases could cause water to enter or be held in the backswamps, and the frequency that this may occur.

FERC PROJECT NO. 2009
ROANOKE RAPIDS AND GASTON HYDROPOWER RELICENSING PROJECT

FL3 and FL4 Cooperative Management Teams
Roanoke Rapids Power Station
Minutes to January 13, 2005 Meeting

Participants: Bob Graham (Dominion), , Jennifer Everett (NCDWQ), Jean Richter (USFWS RRNWR), Pete Kornegay (NCWRC), Sam Pearsall (TNC), Jeff Horton (TNC), Jim Mead (NCDWR), Jim Thornton (Dominion)

Jim Thornton provided an update on the license status. Submittal of recommended license revisions will occur once a signature from the USFWS is obtained. Because the Commission meets in the middle of each month, it's likely FERC will act on the license revisions provided by the relicensing participants mid-February or mid-March, 2005.

Formalized membership was discussed. Bob relayed Bill Adams' message that the USACE does not anticipate becoming a formal member of the CMT, but will stay involved. The group recognized that CMT membership is formalized in the relicensing settlement agreement and FERC license. However, there is concern some members not attending meetings or failing to participate in discussion may create obstacles to consensus in the future. The group reviewed license articles 414, 415 and 427, and the SA, and agreed the CMTs have authority to develop rules for decision making and (likely) developing consensus. **Action Item:** Jim Thornton will check with Don Clarke regarding how consensus is defined. **Action Item:** Bob will send an email to all CMT members asking that each designate a primary spokesperson responsible for casting votes for the entity they represent.

Mechanical effects of load following were reviewed. Sam reviewed some of the results of his analysis of the 1996-1999 floodplain water level gage data. Relative to the USACE 216 study, Sam hypothesized the primary effect of Dominion load following in Reach 1 (roughly upstream of Scotland Neck) was on the river banks and channel, whereas in Reach 2 (roughly between Hamilton and Scotland Neck) the primary effect was on the bottomland hardwoods. **Action Item:** Jean is to work on refining the Reach boundaries.

Scouring of river banks and channel by load following was viewed as a primary concern for the upper river reaches.

Proposed USACE 216 studies that complemented Dominion's load following studies were reviewed. Of special note were 1) the use of videography to provide a baseline for the abundance and distribution of riparian woody debris, 2) erosion studies, 3) bottomland hardwood productivity and recruitment studies, 4) vegetation mapping, 5) water quality modeling and 6) hydrodynamic modeling. Some of these studies are ongoing or will build on previous studies. Because the time frame for the Phase 2 USACE 216 studies is only 18 months, there was

discussion that Dominion may want to undertake some of the studies requiring longer time frames, such as study of hardwood seedling recruitment.

Focusing on FL3 (Article 414), there was general agreement that studies of organisms or communities sensitive to impacts (e.g., specialists) may be most productive. There was some discussion of what previous studies of other systems had found, and that insight could be gained by reviewing what kinds of impacts from load following were documented, and how those researchers detected those impacts. **Action Item:** Jim Mead will send out instream flow and related references he has from Tapoko relicensing (contained in 6 emails from Bob Graham 1/21/05). **Action Item:** Bob will send Jim, Jennifer and Pete links to Shenandoah River and Smith River studies (sent 2/1/05).

There was some discussion of how to approach FL3 and FL4 studies. One would be to brainstorm a general study outline or need, develop a SOW, and send out for bid proposals. Sam described a broader stepwise approach that incorporated complementary USACE 216 studies. This approach identifies the likely limits of impacts, stratifies studies by community type, and adds particularly sensitive areas or areas where impacts are especially pronounced. Jim Thornton indicated that Dominion would consider implementing operational changes earlier than required in the adaptive management process if it was fairly certain the changes would reduce or eliminate potentially negative effects, and the changes eliminated the need for further study and operational changes. However, Jim noted the example he used needed to be examined further by Dominion. Relative to FL3, the merits and disadvantages of species, guild and habitat approaches was discussed. Jeff suggested examination of daily rings in fish otoliths could be used to compare growth during load following and non-load following periods. **Action Item:** Bob is to draft a SOW for FL3 based on license article language. **Action Item:** Sam is to draft a SOW for FL4 related to the relationship between seedling survival and load following effects. **Action Item:** Bob to look for literature review of effects of dams on benthos.

The meeting ended with a general discussion of future needs. It was agreed the next 2-3 months should see development of more detailed descriptions of studies with schedules. Next meeting date was set for 30 March 2005.

FERC PROJECT NO. 2009
ROANOKE RAPIDS AND GASTON HYDROPOWER RELICENSING PROJECT

FL3 and FL4 Cooperative Management Teams
Roanoke Rapids Power Station
Minutes to March 29, 2005 Meeting

Participants: Jennifer Everett (NCDWQ), Pete Kornegay (NCWRC), Jim Mead (NCDWR), Sam Pearsall (TNC), Jeff Horton (TNC), Jean Richter (USFWS RRNWR), John Ellis (USFWS), Wayne Dyok (MWH), Bob Graham (Dominion)

UPDATE ON LICENSE STATUS

Wayne Dyok provided an update on the license status. On March 4, 2005 the FERC issued an order approving the Settlement Agreement, amending the license issued March 31 of 2004, and denying a rehearing. Jim Mead noted that the NCDENR had concerns that language in the Settlement Agreement describing the manner in which water withdrawals from the project are to be reported differs from what was in the 401 certification.

Given the license was amended in March 2005, Sam asked when the start date for monetary commitments was. Bob explained that Dominion's budget was based on a calendar year and issuance of the license in March 2005 did not affect this. Although the Settlement Agreement was modified to reflect license issuance rather than license acceptance in some instances, monetary expenditures and monitoring cycles are based on Dominion's acceptance of a new license. However, the license itself requires annual funding to commence no later than January 31, 2005. Thus, Year 1 for funding purposes is 2005. Having the January 31st date affords Dominion one month to make the annual funding available.

It was confirmed that the September 30, 2005 deadlines for a submittal of within day and within week monitoring plans to the FERC were firm deadlines. It was agreed we'd consult experts on benthic macroinvertebrates as needed, rather than search the literature.

REVIEW OF ACTION ITEMS FROM JANUARY 13 MEETING

Action items from the January 13 CMT meeting were reviewed. All action items had been completed except a literature review by Dominion of effects of dams on benthos was not located. However, applicable references were contained in the instream flow references Jim Mead distributed. Sam distributed a map of the study reaches as revised by Jean, and they described landmarks associated with the reach boundaries. The boundary between reaches 1 and 2 was the head of Mush Island, between reaches 2 and 3 the drainage from White's Millpond, between reaches 3 and 4 Devil's Gut, and between reaches 4 and 5 the powerlines upstream of the thoroughfare connecting the Roanoke and Cashie rivers.

CMT MEMBER SPOKESPERSONS

CMT member representation/spokespersons was discussed. For both Articles 414 and 415, Pete Kornegay will serve as the primary CMT spokesperson with Bennett Wynne as secondary for NCWRC. For TNC, Sam Pearsall will be primary with Jeff Horton as secondary. **Action Item:** For NCDENR, Jim Mead and Jennifer Everette will consult further within their agency for a decision. For USFWS, Jean Richter will serve as primary and John Ellis as secondary for Article 415. However, for Article 414 John Ellis will serve as primary and Jean Richter as secondary. Wilson Laney will serve as tertiary for both Articles 414 and 415 as needed. Jim Thornton will serve as primary for Dominion and Bob Graham as secondary. As at our last meeting, there was concern that members not attending meetings or failing to participate in discussion may create obstacles to consensus in the future. **Action Item:** The National Marine Fisheries is asked to designate a primary, and if desired secondary, spokesperson responsible for casting votes for NOAA Fisheries.

UPDATE ON KERR 216 AND COMPLIMENTARY STUDIES

Updates on the John H. Kerr 216 studies were provided. There is a good deal of uncertainty as to the future course of the 216 study. A limited number of the studies proposed have been approved. Members were only aware of two studies, the flood model review and the water quality database review, that were formally approved and underway. Those CMT members most closely associated with different studies provided the group with updates on progress to date and their understanding of where each study stood in the approval process. Sam noted that the vegetation model update will be of particular importance to Article 415 studies and that the RRBROM update has been tabled..

Wayne provided an update of Dominion's meeting with the USACE to discuss the proposal put forward by the TNC to make more frequent use of 35,000 cfs releases to keep Kerr Reservoir within the guide curve. Wayne noted Dominion's concerns fell within the categories of generation loss, uncertainty as to how a default 35,000 cfs release operation would be implemented, impacts to adaptive management measures agreed to as part of the Settlement Agreement, and potential water quality and fisheries effects. Sam indicated that the proposal had been meant to be taken as a suggested experimental approach that would complement the adaptive management programs Dominion was implementing and the ACE would be likely to implement. Sam suggested that Dominion work with the TNC and resource agencies to develop a joint proposal to implement more frequent 35,000 cfs releases as an experimental program. Sam indicated that the TNC would like to see incremental changes made in the operation of Kerr Reservoir as knowledge is gained, and that it may be able to help defray the cost of lost generation for water that Dominion has to spill. He expressed concerns about the 216 Study schedule that could delay completion of the 216 to as late as 2010.

REVIEW OF DRAFT RFP'S

The draft scopes of work (SOWs) that Sam and Bob had drafted were discussed. Sam proposed that the SOWs be limited to studies that identified responses of biota and river channel banks to hydrologic variables (e.g., frequency and duration of inundation). The effects of different

operational modes (e.g., peaking or flood control) would then be done evaluated separately once we had an understanding of how hydrologic variables affected biota and banks through application of flow, flood and vegetation models. Sam further proposed combining studies associated with Articles 414 and 415 by study discipline, as follows:

- Benthos, Fish and Crayfish (Articles 414 and 415)
- Bank Erosion and Vegetation (Articles 414 and 415)
- Tree seedling survival (Article 415)
- Macro-lepidopterans (Article 415)

Action Item: Bob expressed some reservations but agreed to redraft the SOW for Article 414 and develop drafts that combined elements from the two articles by study discipline. The SOW concerning benthos in floodplain tributary streams would further include reference to EPA QAPP and NCDWQ benthos collection guidelines. **Action Item:** Sam is to make minor changes to the draft seedling survival SOW.

DRAFT CMT LETTER OF AGREEMENT

Due to time constraints the CMT letter of agreement drafted by Don Clarke was not discussed. **Action Item:** Instead, Bob is to forward the group a redlined version sent to him by Jim Mead that contained Marc Bernstein's comments, and some of Jim's thoughts.

NEXT STEPS

The next meeting date was set for June 1, 2005.

FERC PROJECT NO. 2009
ROANOKE RAPIDS AND GASTON HYDROPOWER RELICENSING PROJECT

FL3 and FL4 Cooperative Management Teams
Roanoke Rapids Power Station
Draft Minutes to August 2, 2005 Meeting

Participants: Jennifer Everett (NCDWQ - phone), Pete Kornegay (NCWRC - phone), Bennett Wynne (NCWRC), Angie Rodgers (NCWRC - phone), Jim Mead (NCDWR), Sam Pearsall (TNC), Jeff Horton (TNC), Jean Richter (USFWS RRNWR), Bob Graham (Dominion), Jim Thornton (Dominion)

REVIEW OF ACTION ITEMS FROM MARCH 30, 2005 MEETING

Jim Mead was designated primary spokesperson for NCDENR. A primary spokesperson for NMFS has yet to be designated. Sam and Bob had drafted SOWs as needed.

CONFIDENTIALITY AGREEMENT

The confidentiality agreement that was to be required to participate in bid/proposal reviews was deemed unnecessary because there were only two proposals submitted, therefore there was minimal risk of sharing confidential information. If such an agreement is needed in the future, TNC will sign an agreement that restricts it from divulging anything in one bidder's proposal to another bidder, but not other matters discussed as part of the bid review process. TNC suggested that if Dominion has proprietary information it does not want share, that information should not be brought to the table.

COOPERATIVE MANAGEMENT TEAM AGREEMENT

All present agreed the CMT operating agreement was ready for signing with two minor changes. **Action Item:** Dominion was to make the changes and distribute the final agreement to member spokespersons for signing. (*Final version distributed via email 8/8/05*)

REVIEW OF PROPOSALS FOR FISH AND MACROINVERTEBRATES

The consensus was that neither proposal was acceptable. The investigative approach for one was not likely to be conclusive, and the cost for the other was prohibitive. DWQ, DWR and Dominion felt the study approach proposed by EA, while requiring modification and too costly, had the most merit because it directly measured organism response.

SEEDLING SURVIVAL, MACROLEPIDOPTERAN, EROSION STUDIES

No proposals were received for these SOWs. Three factors likely contributed. The budgets were relatively small for the amount of work to be performed, there was too short of a time-frame for preparing proposals and for recruiting students at universities, and the cooperative fish and wildlife research units could not engage in competitive bidding.

TNC will be installing water level loggers in the floodplain between Hamilton and Williamston during 2006 that can provide hydrologic data required for Article 415 studies. TNC has raised sufficient funds to purchase and install the loggers, but not for operation and maintenance. Some of the budget for Article 414 could go towards this annual cost. The floodplain hydrologic data will be needed for assessments of peaking effects on floodplain vegetation, crayfish and other terrestrial macroinvertebrates (if they are to be studied). TNC also intends to update the 1995 vegetation map currently used in conjunction with the floodplain hydrologic model under development. The FWS and TNC will provide \$10K and \$15K, respectively, to be matched by Dominion for 2006 studies specific to seedling survival. **Action Item:** TNC to provide CMT with an estimate of annual O&M expenses for the gages

DENR has \$30K that may be available to assist with erosion studies in 2006 or later. Dominion noted that \$15K of Article 414 dollars are slated to be spent in 2005. \$45K is budgeted for 2006.

NEXT STEPS

The CMT agreed that it would be necessary to request an extension of the 9/30/05 deadline from the FERC for submittal of plans to monitor and evaluate the effects of within-day and within-week peaking required as parts of Articles 414 and 415. **Action Item:** Dominion to contact NMFS regarding concurrence with this decision.

Ways to focus the scopes of Article 414 and 415 studies were discussed. TNC suggested the CMT work to reduce the set of variables to be monitored, develop approaches to monitor select variables, have contractors perform the monitoring, and assume responsibility for data analysis and interpretation. WRC and Dominion expressed reservations about CMT members having the time and expertise to conduct appropriate analysis. It was agreed money could be devoted to hiring assistance for data reduction and analysis. Dominion noted that its Environmental Biology section cannot pick up additional work at this time, and that starting in 2006 Bob Graham's time will be charged to the budget for Article 414 when he is involved in conducting related studies. Time spent performing regular CMT duties will not be charged.

The language of the Settlement Agreement allows the lists of study topics to be modified by mutual agreement of the CMT. It was agreed that in-depth study of marcolepidopteran and crayfish in the mainstem river were not necessary at this time. (Note: Study of crayfish on the floodplain is still a priority.) The study of fish may be delayed, or reduced to focus on shallow water, riffle/run species or spawning success. **Action Item:** WRC will check with western regions regarding study of peaking effects on fishes.

Dominion noted that the CMT has the ability to accumulate money over a number of years and conduct intensive studies during one or two years, versus conducted annual studies. Dominion also noted that private contractors can be more responsive to conducting monitoring on short notice than universities that incorporate monitoring studies into graduate programs.

It was agreed some potential contractors be contacted directly to gauge their interest in conducting focused studies. **Action Item:** TNC will contact Bob Peet and Phil Townsend regarding terrestrial vegetation studies. **Action Item:** TNC will contact Thurmond Grove regarding terrestrial invertebrate (primarily crayfish?) studies. **Action Item:** DWR will check with Dave Penrose regarding mainstem aquatic macroinvertebrate studies. **Action Item:** Dominion will draft proposal to monitor fish relative to within-day peaking. **Action Item:** Dominion will research potential contractors to conduct erosion studies.

The next meeting date was set for September 22, 2005.

FERC PROJECT NO. 2009
ROANOKE RAPIDS AND GASTON HYDROPOWER RELICENSING PROJECT

FL3 and FL4 Cooperative Management Teams
Roanoke Rapids Power Station
Revised Minutes to October 14, 2005 Meeting

Participants: Jennifer Everett (NCDWQ - phone), Prescott Brownell (NMFS - phone), Bennett Wynne (NCWRC), Angie Rodgers (NCWRC), Jim Mead (NCDWR), Sam Pearsall (TNC), Jean Richter (USFWS RRNWR), Bob Graham (Dominion), Jim Thornton (Dominion), Joe Hightower (USGS NC Coop. Res. Unit), Dave Penrose (NCSU)

Introductions

All present introduced themselves. Jim Thornton provided an overview of the history of the relicensing effort and how the need for studies of Dominion's peaking operations came about.

Review of Minutes and Action Items from August 2, 2005 Meeting

Jim Mead provided the following text to clarify the second sentence of the second paragraph under the heading **NEXT STEPS**:

"The issue of the roles of the CMT and contractors was discussed further to clarify minutes from the 8/2/05 meeting. The CMT will review and work with the contractors to develop plans of study. The contractors will collect data and test correlation of results to flow and floodplain gage data. It will then be the CMT's role to determine what aspects of operations by Dominion and the USACE are responsible for the flow/water level conditions and the resulting effects."

Jean Richter asked for further clarification of the last two sentences of the same paragraph regarding payments for field efforts by Dominion's Environmental Biology group (including Bob Graham). All agreed it would be necessary for Dominion to provide the CMT with cost estimates for field work and to set bounds on how much cash would be spent for Dominion's work on an annual basis. The CMT would then approve or deny the work.

Action items from the 8/2/05 meeting were discussed. One was carried over until the number of vegetation plots needed for the tree seedling survival study is determined. **Action Item:** TNC to provide CMT with an estimate of annual O&M expenses for the floodplain gages.

FERC Submittals

The request for extensions of the deadlines for monitoring plans associated with Articles 414 and 415 was filed with the FERC on August 16, 2005. Jim Thornton has yet to receive any work on

the request. The Cooperative Management Team Agreement required by Settlement Agreement articles FL3, section 5.5 and FL4, section 5.5 has been signed by all parties. There is no requirement to file the plan with the FERC.

Sam's Exercise

Sam had distributed an exercise to some members of the CMT that asked them to rank the relative influences of hydrologic variables on some ecosystem components. The exercise was not directly related to the immediate needs of the CMT, but was an experimental attempt to develop an index of the differences between the modified fluctuating flow regime and a naturally fluctuating flow regime. Sam indicated that responses were quite variable, and if he continued to pursue the exercise he would share the results with the group as they may have application to making operational changes.

Review of Budget and Prioritization of Research

Jim Thornton provided an overview of the budget for license Articles 414 and 415. Four points about Dominion's budgeting and financial commitments were noted.

- Dominion's annual budget for any calendar year is developed in June of the previous year.
- Except for calendar year 2006, any funds carried over from one year are not available until two years later due to budgeting constraints. 2006 is an exception because Dominion was able to budget carryover from 2005.
- Dominion is subject to overhead charges from most potential contractors because it is a for-profit business.
- Dominion's financial commitments are capped by the license and settlement agreement terms and conditions, and there is not a process whereby funds exceeding existing match caps can be added to the annual budget.

Bob expanded on Jim's presentation by attempting to determine the approximate amounts of money available for Article 414 and 415 studies for calendar years 2006 - 2007, in terms of 2002 dollars. The estimates are attached to these minutes as Appendix A. Note that for 2008 and 2007 the budgets for Article 415 studies contain an upper and lower range of values dependent on the availability of Dominion matching funds. **Action Item:** Jim Thornton will check on the availability of Dominion matching funds in relation to cash-flow accounting restrictions.

It was recognized that Dominion's budgeting process places considerable restriction on the availability of funds for rapid response to natural hydrologic events, and that considerable portions of annual budgets could be consumed by overhead charges if Dominion contracts directly with researchers. The possibility of having TNC, DENR or a third party serve as the fiduciary agents for Article 414 and 415 research contracts was explored. Although the CMT appreciated TNC's offer made with the intent of putting as much money into research as possible, there is a risk of conflict of interest if TNC were to serve in this capacity. DENR is currently serving as the fiduciary agent for studies related to another hydropower relicensing with a board set up to administer funds in a state-approved manner. **Action Item:** Jim Mead will consult further with Steve Reed to approach DENR as a possible fiduciary agent. Under this

scenario, DENR would administer funds and DWR would administer contracts at the direction of the CMT. **Action Item:** Jim Thornton will consult with Dominion accounting and management to explore the acceptability of such an arrangement with Dominion.

Joe noted that the NC Cooperative Fish and Wildlife Research Unit can bring in funds from the Wildlife Resources Commission without overhead, but wasn't sure if that could be done for all state agencies. The standard overhead rate for off-campus research (i.e., funding from any source) is 27% .

Action Item: Bob to email Dave copies of Articles 414 and 415. (*Done 10/14/05*)

Fish and Macroinvertebrate Studies

The CMT agreed that for any year it will be very difficult to support effective study of all the items slated for study in Article 414 with the funds available. The CMT also agreed that in relation to within-day peaking, the focus of study should be fish and macroinvertebrates. Therefore, the CMT agreed by consensus that, for the near term, all Article 414 funds would be directed towards studies of fish and macroinvertebrates. NMFS was not available at the time this decision was made, but was contacted on 10/17/05, informed of the decision and the rationale behind it, and joined in the consensus.

Joe noted that Tom Kwak had an interest in conducting the needed studies, and was consulting with the WRC in an effort to develop a Wallop-Breaux proposal to expand funding with a possible 2007 start date. There was some discussion of potential study approaches, including one by Jim Mead that looked at the gradient of fish and benthic community (and potentially bank erosion) attributes from Weldon downstream.

There was discussion of terrestrial crayfish studies, and it was agreed to hold off on studying terrestrial crayfish (an Article 415 study item) for the near term because no regional experts have expressed interest, and because it will be difficult to assess the impacts of the exotic red swamp crayfish on native populations. Angie provided the following information for the group's benefit via email to Bob on 10/17/05:

Native crayfish of Roanoke River Basin coastal plain:
Procambarus acutus - White River crayfish - known occurrences are Rockingham County and east in the Roanoke River basin - Piedmont and Coastal plain
Orconectes virginianensis - Chowanoke crayfish - Federal species of concern and state species of concern
Fallicambarus fodiens - no common name
Cambarus diogenes - devil crayfish
Cambarus sp. C

Additionally, there is the red swamp crayfish, *Procambarus clarkii*, which I believe Jean said had shown up in pitfall traps on the refuge.

Seedling Survival Studies

The proposal for study by the University of North Carolina that had been distributed by Sam was reviewed. Several points were clarified by Sam. Floodplain inundation data will be provided to UNC by TNC. TNC will pay for the update to the floodplain vegetation map. Also, it is difficult to estimate how much the UNC overhead charges may be, but they may be enough to impact other studies to be funded by Article 415 (see below). The CMT agreed the proposal looked to provide the needed research, and agreed by consensus that Article 415 funds would be directed towards the study proposed by UNC. NMFS was not available at the time this decision was made, but was contacted on 10/17/05, informed of the decision and the rationale behind it, and joined in the consensus.

Bank Erosion and Vegetation Studies

Bob had contacted Panos Diplas of the Virginia Tech Department of Civil and Environmental Engineering, who had expressed interest in conducting a study of bank erosion in the Roanoke River. He also had other contacts within Virginia Tech's Department of Forestry that may be interested in conducting studies to connect erosion effects with riparian vegetation. Dr. Diplas had been a principal investigator in a study of the effects of fluctuating flow releases in the Smith River downstream of Philpott Dam, and was interested in coming out to view the river (see below) and develop a proposal for study.

Sam noted that the TNC had found a complete set of aerial photos of the Roanoke River from the 1930s, that had the potential to help with changes in bank erosion since impoundment. There was discussion of using the existing transects established by Townsend and Hupp for erosion studies. **Action Item:** Jean and Bob are to discuss the possibility with Cliff Hupp.

Next Steps and Meeting

It would be beneficial for potential contractors and advisors to view the river at low flow, to gain a better understanding of the river's geomorphology and issues related to peaking and flood control operations. **Action Item:** Bob will coordinate a field trip with Jean that will extend invitations to Dave Penrose, Tom Kwak of the NC Coop Unit, and Panos Diplas of Virginia Tech. The next meeting date will be determined via email in November or December.

FERC PROJECT NO. 2009
ROANOKE RAPIDS AND GASTON HYDROPOWER RELICENSING PROJECT

FL3 and FL4 Cooperative Management Teams
Roanoke Rapids Power Station
Draft Minutes to February 10, 2006 Meeting

Participants: Prescott Brownell (NMFS - phone), Bennett Wynne (NCWRC), Jim Mead (NCDWR), Sam Pearsall (TNC), Jean Richter (USFWS RRNWR), Bob Graham (Dominion), Jim Thornton (Dominion), Panos Diplas (Virginia Tech - phone), Marte Gutierrez (Virginia Tech - phone), Hasan Pourtaheri (USACE - phone), Ben Lane (USACE - phone), Cliff Hupp (USGS - phone), Wayne Dyok (MWH - phone)

Introductions

All present introduced themselves. Bob reviewed some changes to the agenda.

Virginia Tech Proposal for Erosion Study

Panos Diplas, Virginia Tech Department of Civil and Environmental Engineering, provided an overview of the proposed approach. A one-dimensional model would be used to characterize the hydrodynamics for an 80-mile river reach. A two-dimensional model would assess bank stability at 12 locations, with intensive study at 3 locations to refine model calibrations. Both mass wasting and grain by grain erosion would be addressed.

Cliff has several technical questions regarding collection of field information. Hasan requested further information regarding how cross sectional velocities would be related to bank erosion. Panos and Marte Gutierrez described how these concerns would be addressed. Cliff noted he had information related to 30 sites (60 banks) that had been lazer-leveled, and use of data from these sites, where possible, would help reduce any duplicity of effort. Panos agreed, noting Cliff probably used criteria to select sites that were similar to what he would have used. **Action Item:** Cliff and Panos agreed to consult early next week to better familiarize each other with data needs, ongoing field studies, and how to best coordinate the USGS and Virginia Tech efforts. Panos also noted a reconnaissance survey of the entire river study reach would be useful. **Action Item:** Panos and Cliff to determine when it would be best to conduct the reconnaissance survey and report to Bob and Jean for coordination.

Opportunity for USACE/CMT Cooperative Study

Ben Lane provided an overview of the current status of the J.H. Kerr 216 study and funding. Ben and Hasan expressed the general consensus that a cooperative effort on the erosion studies would likely fulfill the needs of all interested parties, save money, and produce a more comprehensive product for use in river management. Jim Thornton indicated that Dominion would very much

like an opportunity to meet with the USACE to discuss this and additional opportunities for coordinated efforts. Jim Mead indicated that NCDENR may be able to contribute to a 3-year erosion study if the results would be beneficial to the goals of the 216 study and Dominion's relicensing obligations. **Action Item:** Bob is to provide Ben and Hasan with an estimate of the amount of Kerr 216 dollars needed, in addition to Dominion funding, to conduct the studies proposed by Virginia Tech.

There was general discussion of revising the study proposal submitted to the USACE that was developed by Cliff and Phil Townsend.

Jim M. noted another potential study that would likely benefit diverse stakeholders was an aerial survey of the Roanoke River to document the condition of the river banks. This kind of videography has proved useful for a variety of applications, and has been proposed for the Kerr 216 with the intent of obtaining baseline data on woody debris used extensively by fish and macroinvertebrates. Footage obtained would be immediately useful to the Kerr 216 Diadromous Fish and Aquatic Resources group, for the erosion study, and possibly for studies of bankside vegetation. If it is to be obtained this year, immediate action is required to conduct the flyover prior to leaf-out (approximately late March). The CMT, Panos and Cliff concurred the data would be very useful, but were unsure how the cost may impact the 216 budget. **Action Item:** Jim Mead to pursue further investigation (cost estimates) by the appropriate 216 participants and approval from the 216 Executive Committee. **Action Item:** Jean Richter to pursue use of USFWS helicopter for videography transport. *(Done 2/13 - helicopter not available until well after leaf out)*

Review of Minutes and Action Items from October 14, 2005 Meeting

Technical revisions provided by Joe Hightower were reviewed and are to be incorporated into revised minutes. Jim Thornton noted there was no requirement to submit the CMT agreement to the FERC, as mistakenly noted in the draft minutes. This will be corrected in the revised minutes.

Jim M. noted that DENR still stands as a potential fiduciary agent for Article 414 and 415 research contracts. Sam suggested that, in general, it would be best for Dominion to contact directly with universities and make the case that the work being done is for the benefit of the resource and public. Therefore, Dominion should qualify for reduced overhead rates.

Seedling Survival Studies

Jim T. related how discussions have developed with UNC. Martin Doyle will be leaving UNC, as has the prospective graduate student tagged for the seedling studies. **Action Item:** Sam to obtain her notes from transect location meeting, so as to retain information imparted by Phil Townsend. Bob Peet (UNC) will take over study effort and attempt to find Principal Investigator.

Sam provided modeled maps of flooding expected to occur in the Roanoke River floodplain with different release levels and durations. He noted that 5 windows to the Roanoke River are

provided, with some overlap. From a base flow of 5,000 cfs, flooding resulting from releases of 10,000, 12,000 and 14,000 cfs for 1-5 days are illustrated. Multiplicative effects of varying flows were not simulated, as appropriate reset periods (dry conditions following flooding) have not been determined.

There was discussion that with recent changes in the operation of the Kerr-Gaston-Roanoke Rapids complex, the USACE has requested that Dominion, on a daily basis, release weekly average flows when the weekly flow declaration exceeds 8,000 cfs. This policy, if it is determined in further discussion with the USACE that it needs to be continued, would effectively eliminate Dominion's ability to store water over a week for high volume releases within a compressed time period. This, in turn, would eliminate Dominion's potential to cause any significant backswamp flooding, except during times of moderately high flow (around, but less than, 8,000 cfs) when Dominion has the ability to peak.

Fish and Macroinvertebrate Studies

It was clarified that, based on discussion held during relicensing settlement negotiations, fish studies will focus on the upper river reaches (Article 414). Crayfish studies will occur in the floodplain (Article 415). Benthic macroinvertebrate studies will occur in the upper reaches of the river mainstem (Article 414) and in tributaries to the river's middle reaches (Article 415). Potential study approaches were discussed, including a focus on the transition period from uniform flows to peaking on June 16 of every year, and incorporating a longitudinal change component. **Action Item:** Bob agreed to draft a plan to monitor fish and macroinvertebrates for Article 414 to implement in 2007. **Action Item:** Bob to send Bennett CIA report containing some river fish data.

Review of Budget and Prioritization of Research

Jim T. suggested that in the face of expensive studies and limited budget, the CMT focus on what's perceived as being most impacted (erosion and seedling survival, for now), make operational changes (if needed) based on results of these studies, and look at the other study subjects (for now, fish and macroinvertebrates) after the first operational changes are made because these changes are going to be based on the greatest potential effects of operations. There was some feeling the opportunity to gather baseline data in these early years should not be missed. In order to focus on seedling survival and erosion, it was agreed the CMT would work together to develop some low-level monitoring for bankside vegetation (continuing the digital photography Jean has been doing at the erosion transects, Bob to assist), fish and possibly macroinvertebrates. Advice on study design from regional experts and (depending on cost) consultants would be sought. Jim M. noted that Jennifer Everett (DWQ) had indicated that if it came to a choice between fish and macroinvertebrate work, she would prefer to see the macroinvertebrate work done using DWQ protocol for Swamps (Feb and Mar sampling).

Bob attempted to determine the approximate amounts of money available for license Articles 414 and 415 for calendar years 2006-2008 on the flip chart. Corrections were made, and the final estimates are attached as Appendix A. It was agreed that because of the significance and applicability of the erosion study to both USACE and CMT needs, a 50/50 cost share would be

appropriate. Jim M. indicated that if both DENR and USACE contribute 25% of total cost, the USACE contribution would be about \$25,000 per year.

Next Steps and Meeting

The next meeting will be scheduled following the USACE meeting of work group leaders, expected to occur in the next several weeks.

FERC PROJECT NO. 2009
ROANOKE RAPIDS AND GASTON HYDROPOWER RELICENSING PROJECT

FL3 and FL4 Cooperative Management Teams
Roanoke Rapids Power Station
Draft Minutes to June 1, 2006 Meeting

Participants: Bennett Wynne (NCWRC), Rob Nichols (NCWRC), Jim Mead (NCDWR), Sam Pearsall (TNC), Jean Richter (USFWS RRNWR), Bob Graham (Dominion), Jim Thornton (Dominion),

Introductions

All present introduced themselves. Rob was welcomed to the group.

Review of minutes from 2/10/06 meeting

The minutes were accepted. Most Action Items had been attended to. **Action Item:** Bob is to send Bennett and Rob copies of the Cumulative Impacts Assessment studies, so they can reference the stream fish studies.

Update on seedling survival study

Dominion and UNC have a contract in place, although some details remain to be worked out. Bob Peet's graduate student is to arrive in August. We should expect to be meeting with her soon after to discuss vegetation (veg) plot locations and sampling strategies. Sam still has the money for purchasing water level monitoring equipment, and Phil Townsend is still working on a contract for the vegetation mapping. Jean indicated it will be important for the seedling study to address factors such as canopy cover in addition to inundation. Hopefully the veg plots and wells can go in this fall/winter so data will be collected in spring 2007. Sam noted he does have the notes that Calin and Steve took from the well site selection meeting held previously, but they were not taken with the intention of being comprehensive.

It was noted that there is not a study plan in place that directly addresses stream bank riparian vegetation. Sam indicated some plots could be added to the seedling survival study, but guidance would be needed to locate them. Jean suggested they be located between Roanoke Rapids and Highway 11, near Oak City.

Action Item: Sam is to talk with Bob Peet about adding some riparian vegetation plots to Reach 2 and the upper end of Reach 3.

Action Item: Jim T. to provide CMT with UNC contract. (*Done 6/1/06*)

Action Item: Dominion to check if UNC can embargo data (retain it until they have it published) under the terms of the contract. *(There are no special stipulations regarding data accessibility. The final report including data analysis is to be made available within 2 months of the end of funding, or no later than March 1, 2008.)*

Update on erosion study

Cliff Hupp, Principal Investigator for the USACE 216 erosion study, has all his transects in place. Dominion and Virginia Tech have a contract in place for Panos Diplas and Marty Gutierrez to begin their work. Dominion is working with NCDENR to develop a Memorandum of Agreement so North Carolina can provide 50% of the study cost as part of the state's contribution to the John H. Kerr 216 study.

Action Item: Dominion needs to provide John Sutherland with its review of the draft MOA ASAP. *(Done 6/1/06, signed copies sent 6/9/06.)*

Hupp will be looking at the entire river downstream of Roanoke Rapids in a holistic manner to better understand channel dynamics, including the relative importance of different erosional forces and trends in suspended sediments. Drs. Diplas and Gutierrez will be focusing on a subset of Hupp's transects to better understand erosional mechanisms in relation to hydrology, and extrapolating that information to model the effects of flow releases on streambank stability. Phil Townsend will be continuing some studies of sediment deposition in the floodplain that are funded by USGS.

Action Item: Bob to send note to Panos reiterating the importance of close coordination with Cliff. *(Done 6/1/06).*

Action Item: Sam is to send Bob both DEMs (Lidar, if available, and radar) to give to Panos, for help in his studies as needed.

Review of revised 2006-2008 budget

Bob reviewed the summary budget he'd sent out previously, and noted some discrepancies with the budget Jim T. provided that included recent funding arrangements with UNC and adjustments for the current Consumer Price Index. Jim T. provided a detailed budget that displayed how carry-over and match monies were handled.

Action Item: Dominion needs to invoice TNC for its \$15K match.

Action Item: Bob is to revise the simplified budget for the CPI.

The question of finding a fiscal agent to help with study funding was discussed. The advantages include have a "pot" people can donate to as money is available, circumventing some of the problems with having 3 fiscal cycles to deal with (see below), and possibly avoiding some overhead from university work. Jim M. relayed that DENR was still working on making arrangements to accept and distribute money from the Alcoa relicensing. Once those arrangements are in place, the same mechanism should be available for other purposes.

End of Fiscal Year

NC and TNC - June 30
Federal agencies - September 30
Dominion - December 31

Fish and macroinvertebrate studies

It was noted there were no objections to the draft study plans Bob sent out, but some suggestions for additional work. The group agreed to examine the potential longitudinal gradation of effects, and that the lower bound for study of longitudinal effects should be somewhere between Scotland Neck and Oak City. The group also agreed to look at the use of various habitats by macroinvertebrates, with emphasis on the use and relative importance of woody debris. If woody debris proves particularly beneficial to aquatic insects, it may serve as a surrogate measure of biological response in future years.

Currently, the John H. Kerr 216 study plans to document the abundance and distribution of woody debris via helicopter videography in late 2006. The Virginia Tech erosion study should provide insight into effects of erosion on riparian vegetation and the availability of woody debris, which could be expanded if UNC includes some riparian vegetation plots. The need for a reference river was discussed, and Rob indicated he didn't believe such would be necessary if sampling is conducted regularly. Sam suggested the lower end of the longitudinal effect study area may serve as a reference. The CMT also decided the proposal for study of woody debris submitted by Hupp et al. was more applicable to the John H. Kerr 216 study, and should be coordinated with the videography currently planned.

Action Item: Bob will provide results of electrofishing conducted in the lower river during the 1990s to Bennett and Rob, as a first-cut examination of longitudinal changes in the fish assemblage.

Action Item: Bob is to incorporate the following modifications to the draft study design:

- 1) Shallow water fish sampling will be conducted in the river's main channel upstream of Weldon as described in the draft study plan. Sampling will occur in June prior to and after the resumption of peaking on June 16. Sampling with boat electrofishing will be conducted concurrently in the lower river at select locations between Weldon and Oak City.
- 2) Aquatic macroinvertebrate abundance and use in the river's main channel between Roanoke Rapids and Oak City will be characterized in relation to habitat. Sampling will occur in June prior to and after the resumption of peaking on June 16, using DWQ protocol for the 5-year basin assessments. Linkages between woody debris and macroinvertebrate abundance and diversity will be examined at sampling locations between Weldon and Oak City.
- 3) Aquatic macroinvertebrate abundance and use in the river's tributaries will be characterized in relation to areas influenced and not influenced by Dominion's peaking operations, as determined by Townsend's flood maps. Sampling will occur in February using DWQ swamp protocol, and

again in June prior to and after the resumption of peaking on June 16. Conoho, Conniott, and Indian Creek are larger tributaries that have been identified as potential sampling sites.

Plan for 9/30/06 FERC submittal

Bob is to distribute revised draft study plans by 15 June. The CMT will review the study plans by the end of June, and provide comments. Expert input on the study plans will be solicited during July. Also during July, the CMT will meet to discuss final details and develop decision criteria required by the FERC. A cover letter for the FERC submittal with a description of the study plans will be drafted in August. Also during August, and possibly September, a reconnaissance of shallow water habitats will be conducted.

Next meeting

July 17, 2006 at the WRC Headquarters in Raleigh, beginning at 9 a.m. Contact Bob or Rob for directions.

FERC PROJECT NO. 2009
ROANOKE RAPIDS AND GASTON HYDROPOWER RELICENSING PROJECT

FL3 and FL4 Cooperative Management Teams
NC Wildlife Resources Commission Raleigh Headquarters
Draft Minutes to July 17, 2006 Meeting

Participants: Bennett Wynne (NCWRC), Rob Nichols (NCWRC), Jim Mead (NCDWR), Sam Pearsall (TNC), Jean Richter (USFWS RRNWR), Tom Cuffney (USGS), Bob Graham (Dominion), Jim Thornton (Dominion).

Introductions

All present introduced themselves. Tom was welcomed to the group.

Review of minutes from 6/1/06 meeting

The minutes were accepted. Most Action Items had been attended to. **Action Item:** Sam is to remind Phil Townsend to send Bob the DEM, so Bob can forward it to Panos Diplas.

Fish and macroinvertebrate studies

The group spent most of the morning discussing various aspects of the draft study plans distributed 6/14/06.

Within-day peaking studies

Bob described his discussions with Steve McIninch of the Center for Environmental Studies at Virginia Commonwealth University. Dr. Greg Garman of the Center had been contacted and asked to review the draft studies, and Drs. McIninch and Len Smock are assisting in the reviews. Dr. McIninch's initial reaction to the draft plan for fish sampling was more effective collections could be made by boat electrofishing, versus the proposed backpack or fixed-array setups. The group considered this, and agreed the use of an electric-seine in conjunction with boat electrofishing may be most effective. **Action Item:** Bob is to relay discussion to Drs. Garman and McIninch, and make appropriate changes to the draft study plan.

In regards to the proposed mainstem benthic macroinvertebrate studies, Tom provided several comments that cast doubt that the proposed approach would be effective in detecting detrimental effects of peaking operations. Of greatest concern was an uncertainty that the non-peaking period during the diadromous fish spawning season would be of sufficient length to allow macroinvertebrates populations to rebound from declines that may occur during the peaking period. Other confounding effects could include that fact that peaking has been occurring for decades, and the likely possibility that impoundment effects separate from peaking (e.g., effects

of abundant seston associated with epilimnetic releases) may have significant influences in determining benthic community attributes.

Tom indicated that, given the present conditions, to achieve the study objectives it would be useful to 1) have pre-impoundment historical data (which are not available), or 2) compare the existing benthic community with what occurs in similar rivers not influenced by peaking. All agreed finding an acceptable reference river is difficult. However, two possibilities were suggested. First, EPA has done considerable work with results of sampling in various rivers and ecoregions, and these data may be used to develop projections of what a river's benthic macroinvertebrate community may be expected to look like given the river's physical properties. It is possible these data could be used to develop a model of what the Roanoke River's benthic community should be expected to look like, and that can be compared with what actually exists. Tom noted that this approach has been used with fish in North Carolina, and not infrequently fewer species and reduced abundance were seen in the actual community than would be expected based on historical data. Bob suggested that factors such as impoundments should be considered in developing the expected community. The second possibility is using the James River fall zone as a reference reach for Reach 1 (Roanoke Rapids Dam to Weldon) of the Roanoke River. The James River fall zone is physically similar and in relatively close proximity to the fall zone for the Roanoke River. Further, they are adjacent major watersheds, and there are no peaking effects lower James River.

Two generalized approaches to the mainstem benthic macroinvertebrate studies were developed to replace those previously proposed.

1) Expectations for what the benthic community should look like in Reach 1 of the Roanoke River based on existing literature and EPA data base will be developed, and following sampling compared with what actually exists. In addition, the possibility of developing similar expectations for the James River fall zone, sampling it, and comparing James River and Roanoke River results with each other and with the expected communities will be explored. **Action Item:** Bob is to gather information on physical and biological characteristics of the James River fall zone. **Action Item:** Bob is to request Brian McCrodden use RRBROM and USGS flow data to develop and compare a series of unregulated flows for the Roanoke River and James River fall zones.

2) Due to decreased complexity and increased uniformity downstream of Weldon, studies in Reach 2 and 3 will investigate the longitudinal changes in the river's benthic macroinvertebrate communities as distance from Roanoker Rapids Dam increases and effects of peaking decrease. At a minimum, sampling sites will be established near Weldon (upper Reach 2), near Oak City (upper Reach 3), and about midway in between. A standardized sampling approach will be used to characterize the benthic macroinvertebrate communities at each site. Differences in benthic macroinvertebrate communities among sites will be examined in relation to differences in hydrologic indices.

Other important points:

- Sampling should occur during May or June, and at the lowest water levels possible.

- Quantitative data should be collected.
- Identifications will be made to the levels recommended by DWQ.
- Regional experts, especially from NC DWQ and FWS, will be asked to help with developing sampling design.
- Community indices (e.g., species richness and diversity, EPT, etc.) should be considered in addition to population-specific indices (e.g., relative abundance).
- Further work incorporating investigation of habitat use by benthic macroinvertebrates will be deferred pending review of results of the generalized approaches described above.

Action Item: Bob to set up river reconnaissance survey to help develop sampling approaches.

Action Item: Bob to check with Glenn Bishop (Dominion) on sampling and analytical considerations for below dams.

Within-week peaking studies

The proposed approach was considered acceptable. Occoneechee Creek is to be added to the list of candidate study creeks.

Action Item: Sam is to send Bob a reference for the floodplain model.

Jim M. provided comments to the proposed studies he received from Trish McPherson. The group felt that following today's discussions Ms. McPherson's comments, some of which were also brought up by Tom, will have been addressed. **Action Item:** Jim M. will forward the comments to Bob. **Action Item:** Bob will contact Ms. McPherson regarding a) having DWQ participate in field reconnaissance, b) appropriate level of taxonomic identifications for purposes of these studies, c) obtaining a list of DWQ sampling sites in river and tribs with specific locations, and d) availability of information from DWQ studies that could be applied to development of Quality Assurance Project Plans.

Action Item: Bob is to revise the proposed study plans for Articles 414 and 415, and send them to the group for review.

Update on seedling survival study

Sam had talked with Bob Peet, and UNC will be able to extend the vegetation plots to the river's banksides to include riparian bank vegetation. Jim T. noted that Peet expects to spend \$5,000 this year.

Update on erosion study

Bob relayed the contents of an email from Panos Diplas. There will be three graduate students (2 MS, 1 PhD) working on the project at Virginia Tech. Jeremy Herbstritt is working to incorporate the cross-sectional measurements that Harza used to develop the existing unsteady flow model into a HEC-RAS model, and has been in touch with Cliff Hupp regarding similar data the USGS have collected. Jean informed the group that Panos is attempting to organize a

field reconnaissance for August 24-25. **Action Item:** Bob is to forward the group information on the erosion field trip.

Review of revised 2006-2008 budget

The budget was reviewed. There were only minor modifications from that presented at the 6/1/06 meeting. **Action Item:** Bob is to distribute the budget.

Discussion of items for FERC submittal (e.g., definition of "unregulated high flow" days)

Jim T. led the discussion regarding items required by the FERC that need to be part of the submittal of study plans. Jim is drafting the documents for submittal, which will include a general description of the studies to be conducted and the final study plans as attachments.

The group agreed the number of "unregulated high flow days" (Article FL3, sec. 3.3) in any month (or season) will be determined in the following manner:

- 1) "high flow" will be defined as the average daily hydropower peak at Roanoke Rapids Power Station for each month (or season, as applicable),
- 2) the frequency (number of days) with which the "high flow" occurs in any month (or season) will be determined for the unregulated flow condition using RRBROM,
- 3) the frequency (number of days) with which the "high flow" occurs in any month (or season) will define the fewest number of days Dominion's discretion for within-day peaking operations will be reduced to through step-changes designed to reduce potentially adverse effects, so long as the sum of monthly limits exceeds 40 days/year (sec. 3.4).

A variety of items to be included in the FERC submittal were addressed. Jim T. noted that 2007 will represent the first year in the initial 5-year study cycles for both Article 414 and 415, and that the first reports to the FERC will be due in 2012. Sam noted that for monitoring of natural communities (Art. 415, sec. 1e), TNC will provide the first data base for the post-relicensing period. This is the vegetation map that Phil Townsend will be updating. **Action Item:** Sam will send Phil's proposal for updating the veg map to Jim T.

Plan for 9/30/06 FERC submittal

Bob noted the group was on schedule as planned at the 6/1/06 meeting. During July and August major efforts should include obtaining input on the study plans from regional experts (including a field trip to the study area), finalizing the study plans, and reviewing the submittal documents for Articles 414 and 415 that Jim T. is developing.

Next meeting

September 8, 2006 at Roanoke Rapids Power Station.

FERC PROJECT NO. 2009
ROANOKE RAPIDS AND GASTON HYDROPOWER RELICENSING PROJECT

FL3 and FL4 Cooperative Management Teams
Roanoke Rapids Power Station
Draft Minutes to September, 2006 Meeting

Participants: Bennett Wynne (NCWRC), Rob Nichols (NCWRC), Chris Wood (NCWRC), Jim Mead (NCDWR), Sam Pearsall (TNC), Jean Richter (USFWS RRNWR), Bob Graham (Dominion), Jim Thornton (Dominion), Pres Brownell via phone (NMFS).

Introductions

All present introduced themselves. Chris was welcomed to the group.

Review of minutes from 7/1706 meeting

The minutes were accepted. Most Action Items had been attended to. **Action Item:** Sam is to remind Phil Townsend to send Bob the DEM, so Bob can forward it to Panos Diplas.

Within-day and within-week peaking study plans

Jim Thornton ran through the study plans with the group, explained what changes were and were not made and why, and made the final revisions that were needed. **Action Item:** Dominion is to provide Pres a written explanation of why some of the NMFS suggestions were not adopted.

Review of 8/28-29 river recon surveys

Jim Mead, Jean and Bob provided an overview of the river reconnaissance surveys. Eric Fleek (NCDWQ) and Tom Cuffney (USGS) were regional experts on the benthos survey, and Steve McIninch and Dave Hopler (VCU) were regional experts for the fish survey. Although flows were at times unexpectedly high, all felt the surveys were productive. Eric, Tom, and Steve provided sampling recommendations. VCU's Center for Environmental Studies is interested in conducting the within-day and within-week peaking studies.

Within-day fish and macroinvertebrate studies and within-week macroinvertebrate studies

The group reviewed comments received from Eric, Tom and Steve, discussed merits and disadvantages of several study items, reviewed study objectives, and conferred on changes to be made to the draft study plans. **Action Item:** Bob is to revise the study plans per the CMT's discussions and distribute for final review. **Action Item:** Review comments from the CMT are due by September 15, 2006.

Update on seedling survival study

The graduate student to work with Dr. Peet has arrived in North Carolina and will be present at a meeting to select study transects on October 4 in Durham.

Update on erosion study

A field survey is scheduled for September 28 and 29 so Dr. Diplas and Cliff Hupp and review the erosion transects and discuss how the Virginia Tech and USGS studies can be best integrated. The Nature Conservancy will have observers present the morning of September 28 who are working on similar studies on the Altamaha River, Georgia.

Plan for 9/30/06 FERC submittal

Bob is to revise the final draft study plans and distribute them to the CMT, Eric, Tom and Steve with a request that reviews be completed by September 15, 2006. Dominion will then make any changes it finds appropriate, assemble all study plan materials and submit them to the FERC before September 30, 2006.

Next meeting

To be determined after proposals from potential contractors are received.