



Duck River Development Agency  
Comprehensive Regional Water Supply Plan

**Meeting Minutes**  
**WORKSHOP NO. 2**

Henry Horton State Park  
August 26, 2009  
9 AM - 2:30 PM

**Meeting Participants**

Name	Organization	E-Mail	Telephone
George Rest	O'Brien & Gere (OBG)	<a href="mailto:restgb@obg.com">restgb@obg.com</a>	301.731.1160
Tom Dumm	OBG	<a href="mailto:dummte@obg.com">dummte@obg.com</a>	301.731.1162
Doug Murphy	Duck River Agency (DRA)	<a href="mailto:doug@duckriveragency.org">doug@duckriveragency.org</a>	931.684.7620
Randal Braker	Duck River Utility Commission	<a href="mailto:manager@druc.org">manager@druc.org</a>	931.455.6458
Bill Walter	DRA Board	<a href="mailto:williamrwalter@gmail.com">williamrwalter@gmail.com</a>	931.381.0393
Eugene Crowell	DRA Board	<a href="mailto:crowelle@bellsouth.net">crowelle@bellsouth.net</a>	931.684.6483
Elaine Boyd	TDEC - Strategic Management	<a href="mailto:elaine.Boyd@tn.gov">elaine.Boyd@tn.gov</a>	615.532.0288
Scott Young	Tulahoma Utilities Board (TUB)	<a href="mailto:syoung@tub.net">syoung@tub.net</a>	931.455.4515
Rodney Knight	US Geological Survey	<a href="mailto:rrknight@usgs.gov">rrknight@usgs.gov</a>	615.837.4731
Steve Barnes	TVA	<a href="mailto:sebarnes@tva.gov">sebarnes@tva.gov</a>	423.751.6436
Jim Clark	Columbia Water & Power	<a href="mailto:jim.clark@cpws.com">jim.clark@cpws.com</a>	931.375.7601
Marie Stringer	The Nature Conservancy	<a href="mailto:mstringer@tnc.org">mstringer@tnc.org</a>	615.383.9909
Leslie Colley	The Nature Conservancy	<a href="mailto:lcolley@tnc.org">lcolley@tnc.org</a>	931.840.8881
Gina Hancock	The Nature Conservancy	<a href="mailto:ghancock@tnc.org">ghancock@tnc.org</a>	615.383.9909
Sally Palmer	The Nature Conservancy	<a href="mailto:spalmer@tnc.org">spalmer@tnc.org</a>	615.383.9909
Brian McCrodden	HydroLogics	<a href="mailto:bmccrodden@hydrologics.net">bmccrodden@hydrologics.net</a>	919.856.1288



<b>Name</b>	<b>Organization</b>	<b>E-Mail</b>	<b>Telephone</b>
David Money	TDEC – DWS	<a href="mailto:david.money@tn.gov">david.money@tn.gov</a>	931.840.4172
Tom Puckett	HB&TS Utility District, Williamson County	<a href="mailto:tpuckett.hbts@bellsouth.net">tpuckett.hbts@bellsouth.net</a>	615.794.7796
Kenneth Carr	Lewisburg Water & Wastewater	<a href="mailto:kenneth@lewisburgwater.org">kenneth@lewisburgwater.org</a>	931.359.6831
Richard Quin	Duck River Watershed Association	<a href="mailto:rquin@bellsouth.net">rquin@bellsouth.net</a>	931.797.5541
Anne Choquette	U.S. Geological Survey	<a href="mailto:achog@usgs.gov">achog@usgs.gov</a>	615.837.4774
Susan Hutson	U.S. Geological Survey	<a href="mailto:shutson@usgs.gov">shutson@usgs.gov</a>	901.753.8643
John McFadden	Tennessee Environmental Council	<a href="mailto:john@tectn.org">john@tectn.org</a>	615.330.5364
Michael Eiffe	TVA	<a href="mailto:maeiffe@tva.gov">maeiffe@tva.gov</a>	865.632.3074
David Crowell	Shelbyville Water - Sewer	<a href="mailto:dcrowell@shelbyvillepower.com">dcrowell@shelbyvillepower.com</a>	931.684.7171
Caryl Giles	City of Spring Hill	<a href="mailto:cgiles@springhilltn.org">cgiles@springhilltn.org</a>	931.384.0626
Neil Loeffler	TMRPC	<a href="mailto:leffler@cafes.net">leffler@cafes.net</a>	931.393.3539
Joe Bishop	CTI Engineers, Inc.	<a href="mailto:jbishop@ctiengr.com">jbishop@ctiengr.com</a>	615.834.8300
Sue Stephenson	Columbia City Council	<a href="mailto:susancs@charter.net">susancs@charter.net</a>	931.446.1337
Tom Peebles	DRA	<a href="mailto:tpeebles@wallerlaw.com">tpeebles@wallerlaw.com</a>	931.698.7772
Lee Morrison	DRA	<a href="mailto:morr2142@bellsouth.net">morr2142@bellsouth.net</a>	
Marjorie Collier	Duck River Watershed Association / Friends of Short Springs	<a href="mailto:marcollier@lighttube.net">marcollier@lighttube.net</a>	931.455.4186
Patricia Clemens	Friends of Short Springs State Natural Area	<a href="mailto:patclemens@bellsouth.net">patclemens@bellsouth.net</a>	931.455.8850
David McKinney	TWRA	<a href="mailto:dave.mckinney@state.tn.us">dave.mckinney@state.tn.us</a>	
Greg Sanford	GS&P – Maury County Water System	<a href="mailto:greg.sanford@gspnet.com">greg.sanford@gspnet.com</a>	615.720.8343
Bill Wade	E&WE	<a href="mailto:wade@energyandwatereconomics.com">wade@energyandwatereconomics.com</a>	931.490.0060
Ed Penrod	Local resident		931.388.7131



Name	Organization	E-Mail	Telephone
Chad Augustin	TDEC / WPC-COL	<a href="mailto:chad.augustin@tva.gov">chad.augustin@tva.gov</a>	931.490.3945
Paul Davis	TDEC / WPC	<a href="mailto:paul.estill.davis@tn.gov">paul.estill.davis@tn.gov</a>	615.532.0632
Lynnise Roehrich-Patrick	TACIR	<a href="mailto:lynnise.roehrich-patrick@tn.gov">lynnise.roehrich-patrick@tn.gov</a>	615.253.4239
W. Justin Adams	Trauger & Tuke	<a href="mailto:jadams@tnlaw.net">jadams@tnlaw.net</a>	615.256.8585
Martin Davis	BCUD	<a href="mailto:bcudgm@bellsouth.net">bcudgm@bellsouth.net</a>	931.684.1667
Mary Jennings	US Fish & Wildlife Service	<a href="mailto:mary_e_jennings@fws.gov">mary_e_jennings@fws.gov</a>	931.528.6481
Steve Alexander	US Fish & Wildlife Service	<a href="mailto:steven_alexander@fws.gov">steven_alexander@fws.gov</a>	931.528.6481
Richard Young	BDY Environmental	<a href="mailto:ryoung@bdy-inc.com">ryoung@bdy-inc.com</a>	615.772.6327
Eslick Daniel	DRA Board	<a href="mailto:eedaniel@hughes.net">eedaniel@hughes.net</a>	931.619.6436
Robert Foster	Private citizen	<a href="mailto:rober2t@aol.com">rober2t@aol.com</a>	615.771.2812
Lee Keck	TDEC DWS	<a href="mailto:lee.keck@tn.gov">lee.keck@tn.gov</a>	615.532.0517
Tom Moss	TDEC DWS	<a href="mailto:tom.moss@tn.gov">tom.moss@tn.gov</a>	615.532.0170
Joe Brooks III	DRWA		931.619.4423
Rhedona Rose	TN Farm Bureau Federation	<a href="mailto:rrose@tbf.com">rrose@tbf.com</a>	931.388.7872

**Attachments:** Agenda, MS PowerPoint presentation

### Introductions

Meeting participants introduced themselves and the format for the workshops was discussed. O'Brien & Gere presented Duck River Agency's mission and the project goal.

### Review of Minutes from Workshop No. 1

O'Brien & Gere briefly summarized the key points from Workshop No. 1.

### Summary of Activities Since Workshop No. 1

O'Brien & Gere reviewed the activities conducted subsequent to Workshop No. 1.



### **Present Project Website**

The project website was presented to the meeting participants and should be available to the public the week of August 31.

### **Objectives of Workshop No. 2**

O'Brien & Gere identified key objectives of Workshop No. 2 including water supply needs analysis and review of evaluation criteria.

### **Water Supply Availability**

- O'Brien & Gere identified four water service areas which correspond to the water service areas used in the 2008 USGS study: Coffee, Bedford, Marshall, and Maury/southern Williamson.
- The TVA timeline illustrated that there has been an extensive amount of water supply planning conducted in the Duck River watershed dating back to the 1930's.
- The DRUC withdraws water directly from Normandy Reservoir while Shelbyville, BCUD, Lewisburg, Spring Hill and Columbia withdraw water directly from the main stem of the Duck River.
- For wastewater discharges, Manchester discharges upstream of Normandy Reservoir; Tullahoma discharges to the Elk River; Shelbyville, Tysons, Chapel Hill, and Columbia discharge to the main stem of the Duck River; and Lewisburg and Spring Hill discharge to tributaries of the Duck River.
- Participant comment: The operating protocol (i.e., operating curve) for Normandy Reservoir is based on flood control and not water supply.
- A plot of historic water levels indicates that Normandy Reservoir has dropped to around 852 ft in 1981 (before changes were made to the operating guideline) and 2007, but information on reservoir water quality and pump operating characteristics if the reservoir drops below 852 ft is unknown.
- A "constraint" for purposes of this workshop discussion is considered to be enforceable requirement from TVA, TDEC, etc. The presentation focused on constraints addressing reservoir releases and minimum instream flow. Water withdrawal permit limits were not included in the hydrologic modeling constraints, but will be included in the Needs Assessment Report.
- Reservoir constraints used in the modeling analyses were presented.
- HydroLogics identified that the OASIS model incorporates multiple constraints, withdrawals and returns.
- O'Brien & Gere identified that utility withdrawals from the reservoir were based on average daily demands whereas utility withdrawals from the river were based on peak day. O'Brien & Gere identified aggregate peaking factor for river utilities which was computed by adding the daily water withdrawals for 2003-2007.



- HydroLogics identified that the OASIS model is capable of "perfect" releases during the 2007 drought and the model runs indicate that TVA released approximately 20 cfs of excess flow from Normandy Reservoir to the river (as measured at Shelbyville) for an extended period during the 2007 drought.
- O'Brien & Gere identified that the available supply during the 2007 drought (critical drought of record) based on the defined constraints was roughly 42 mgd. Much discussion followed with several participants emphasizing that it is important that it be clearly stated that this available flow reflects a single event in the period of record.
- Participant comment: We would have had lots of water in 2007 if the releases more closely matched the flows needed and that should be noted. We would have preserved storage in Normandy Reservoir.
- Participant comment: It is important to recognize that 2007 drought is the drought of record, but a more severe drought could occur. Should the study use a drought worse than the 2007 drought?
- Participant comment: Note that additional river constraints may include the water utilities' current limits on maximum permitted withdrawals. O'Brien & Gere agreed to include withdrawal permit information in the Needs Assessment Report.
- Participant comment: The supply available is based on a single point during the drought of 2007 and needs to be put in context (i.e., quantity, duration, probability, etc.).
- Participant comment: Flow in the river for wasteload assimilation will be a greater need than water use. This situation should be considered in the alternatives discussion.
- Participant comment: Do the water demands account for water used from the Duck River outside the Duck River Basin such as Spring Hill North, HB & TS, Cornersville? The USGS identified that these areas were included in the water service areas.

### Water Demand Projections

- Several sources of information such as USGS, UT's CBER, and TVA (1979) were used to estimate future water demands. O'Brien & Gere identified that UT's CBER data appears to be an independent and sound source of information and was used to project water demands to 2030 and to extrapolate water demands from 2030 to 2060. O'Brien & Gere noted that a key assumption was that the mix of domestic, commercial and industrial would remain consistent with current conditions through the planning period and therefore population could be used to estimate overall water demands through the planning period.
- Five years of daily data (2003-2007) were compiled to define the aggregate peaking factors for the Duck River users (Shelbyville, Bedford County, Lewisburg,



Spring Hill and Columbia). This information was used to account for the ratio of peak day/average day demands.

- Participant comment: The study identified that the per capita water use was held constant throughout the planning period. O'Brien & Gere identified that water conservation and demand management impacts would be considered in the alternatives analysis.
- Participant comment: Did the CBER data account for the economic downturn in 2008-2009? Other participant identified that the data was based on 1990 and 2000 census data, migration, birth rates and death rates. Economic downturn may impact water usage on short term, but may not impact the 2060 demands because the water demands will eventually return to their long term trend.
- Participant comment: The 9/11 event impacted utilities in 2005 and the water demands have continued to be depressed due to the drought. Future planning should reflect the likelihood of a surge in water demands.
- Participant comment: O'Brien & Gere should obtain the most recent USGS report on climate change and the USGS is available to meet to discuss how climate change should be addressed.
- Participant comment: The 2008 USGS report and demand projections reflected some of the impact of drought conditions because the per capita demand was based on both normal and drought conditions.

### Needs Assessment

- O'Brien & Gere identified that the deficit in 2060 was estimated to be 15 mgd average day and 23 mgd maximum day based on extrapolation of the CBER data and the supply available predicted from the reservoir and river constraints. Much discussion followed with several participants emphasizing that again it is important that it be clearly stated that this deficit reflects a single event in the period of record.
- The timing for the deficit was predicted to occur between 2020 and 2035. O'Brien & Gere agreed to review the reservoir and river availability separately to help confirm the supply and deficit estimates.
- Participant comment: A detailed explanation of the 42 mgd supply is needed. The quantity, duration and probability of deficit needs to be documented. O'Brien & Gere agreed to furnish additional data to explain the quantity, duration and probability of deficit.
- NRCS was requested to furnish agricultural demands, but demands have not been furnished. TDEC confirmed that agricultural irrigation does not require permitting or reporting. Irrigation of golf courses is regulated, and believed to be in the range of about 2 million gallons per day. Based on comments from participants, there was no indication that specific demands for agriculture could be defined.



However, historic streamflow gage data effectively reflects the agricultural withdrawals, and O'Brien & Gere will consider that approach to account for agricultural irrigation.

- Agricultural demands have been included in the historic streamflow gage data, but have not been included in the water demands used in the model. Information on agricultural demands are estimated to be a couple of million gallons per day, but based on discussions with NRCS it appears that the agricultural demands cannot be documented.
- Participant comment: The deficit in the reservoir lasts longer than the deficit in the river system.
- Participant comment: Likelihood and duration needs to be addressed including the impacts of climate change, etc.

## Alternatives Evaluation Criteria

### Water Quality

- Participant comment: The water quality criteria should reflect improvements in river water quality derived from reuse applications or improvements in effluent quality from wastewater plants. The ability to address future contaminants such as endocrine disruptors (EDCs) should be taken into account in the criteria. O'Brien & Gere edited the Water Quality definition.

### Recreation

- Participant comment: Recreational and Environmental Benefits should be separate criteria, not combined as presented.
- Participant comment: It should be noted that for the recreation criteria it is not clear whether Congress continues to allow recreation to be used as a basis for justifying reservoir projects.

### Cost

- Participant comment: Costs should be on a unit basis and \$ per number of days of deficit. O'Brien & Gere edited the Cost criteria definition.
- Participant comment: Wholesale water options would result in a monopoly because there is only one supplier. O'Brien & Gere identified that suppliers could be asked to submit bids for wholesale delivery.

### Environmental Benefits

- Participant comment: Why are we releasing flow from Normandy Reservoir for environmental purposes?



- O'Brien & Gere noted that costs for environmental mitigation will be included in the cost estimates.
- Participant comment: The environmental benefits criteria should reflect the ability of the alternative to promote recovery of endangered species. O'Brien & Gere requested suggestions for specific wording for the criteria.
- Participant comment: What about alternatives that impact the Elk River? O'Brien & Gere said that they did not intend to include benefits to the Elk River in this criterion. O'Brien & Gere will rely on input from regulatory agencies to address negative impacts.
- Participant comment: Environmental benefits criteria should reflect main stem of Duck River and tributaries.
- Participant comment: If too many studies are needed to generate data on environmental benefits it will minimize the value of the project.
- Participant comment: Economic costs, such as fisheries impact in tailwater due to dam construction, needs to be balanced with environmental benefits.
- O'Brien & Gere will work with participants to identify whether the environmental costs can be captured under the overall project cost.

### **Discussion of Water Supply Options**

The list of alternatives in the TVA Draft EIS (2000) report will be used as the starting point for identifying new alternatives. OBG requested that participants provide input on suggestions to reconfigure alternatives included in the list or provide new alternatives not included in the list.

### **Cost Estimating Approach**

OBG will generate capital and operation and maintenance costs for alternatives based on unit costs.

### **Planning for Open House (Public Meetings)**

"Open House" style public meetings will be held September 22-24, 2009 in Manchester, Chapel Hill, and Columbia. The public meetings will be from 4 pm to 7 pm.

### **Next Steps**

O'Brien & Gere will be focused on preparing materials for the Open House, finalizing the evaluation criteria, documenting the Needs Assessment, and developing the alternatives. DRA will explore whether to conduct focused work sessions in advance on Workshop No. 3.