STATE OF NORTH CAROLINA
DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES

REPORT OF PROCEEDINGS ON THE PROPOSED RECLASSIFICATION OF HAW RIVER SEGMENT AND ASSOCIATED WATERSHED IN ALAMANCE, CASWELL, GUILFORD AND ROCKINGHAM COUNTIES (CAPE FEAR RIVER BASIN) FROM WS-V NSW TO WS-IV CA NSW AND WS-IV NSW

PUBLIC HEARING
SEPTEMBER 29, 2011
REIDSVILLE, NORTH CAROLINA

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SUMMARY AND RECOMMENDATION

SUMMARY

In 2004, the City of Greensboro requested that a Haw River segment and associated watershed in Alamance, Caswell, Guilford and Rockingham Counties be reclassified (request package attached as pages a-2 through a-43) in order to recognize and allow continued use of an existing emergency potable water supply intake on the Haw River. During the drought of 2002, the City of Greensboro (City) received permission from the former Public Water Supply Section of the Division of Environmental Health and funding from the Division of Water Resources to construct and use an emergency intake on the Haw River. One condition of the permission granted for the intake was that a water supply reclassification be pursued. The intake, which is a permanent structure, was utilized from October 2007 through April 2008.

The waters draining to the intake are currently classified as Water Supply–V (WS-V) Nutrient Sensitive Waters (NSW). At the time that the City requested the reclassification, this segment of the Haw River was classified C NSW and the City requested that the intake be reclassified to WS-V. DWQ waited for the rulemaking associated with the Jordan Lake rules to be completed prior to taking current actions on this reclassification due to the complexity involved in those rules. Under current regulations, the source must be classified as a WS-I, WS-II, WS-III, or WS-IV to be used as a public water supply; therefore, the WS-V promulgated by the Jordan rules cannot be used for this intake and an evaluation was done to determine the appropriate WS classification. The NSW designation is to remain intact.

A WS-III classification was considered for the intake due to the type and amount of existing development and discharges in the watershed draining to the intake, the WS-III classification of Lake Townsend (which receives the intake's water), and the adjacent WS-III and WS-II classified watersheds. However, other state regulatory programs applicable to the waters draining to the intake were also considered, including the Jordan Lake rules that apply to the entirety of the proposed watershed and the Phase 2 Stormwater Program that applies to approximately 40% of the proposed watershed, either via the delegation criteria or the "tipped in" criteria. Review of these existing regulations as well as local governments' regulations led to the proposed WS-IV designation for these waters. Neither the Phase 2 rules nor the Jordan Rules will be affected as a result of the proposed reclassification.

The WS-IV primary classification is assigned to waters protected as water supplies that are located generally in moderately to highly developed watersheds. A Critical Area (CA) is the area adjacent to a water supply intake or reservoir where risk associated with pollution is greater than from the remaining portions of the watershed. For a proposed riverine WS-IV intake, the area (land and waters) that is within 10 miles and draining to the intake is known as the PA, and the area (land and waters) within 0.5 mile and draining to the river intake is known as the CA. A Protected Area (PA) means the area adjoining and upstream of the CA in a WS-IV water supply watershed in which protection measures are required.

The criteria and standards that must be met before waters can be classified to WS-IV are outlined in Rule 15A NCAC 2B .0104, Considerations/Assigning/Implementing Water Supply Classifications, and in Rule 15A NCAC 2B .0216, Fresh Surface Water Quality Standards for WS-IV Waters (rules attached as pages a-44 through a-52). These criteria include water supply

standards and the requirement that water supply waters must be used for drinking, culinary, or food processing purposes. The waters to be reclassified meet water supply water standards according to 2005 DWQ studies (studies attached as pages a-53 through a-87). All Class C uses[1] are protected by the WS-IV classification.

The river segment requested for reclassification extends from the existing intake to a point approximately 0.6 mile downstream of U.S. Route 29. A map of the area to be affected by the proposed reclassification is located on page 3**,** and the recommended amendment to the Cape Fear River Basin Schedule of Classifications (Table 1), which lists the existing and recommended classifications of the waters proposed for reclassification, is also located on page 3. The proposed CA extends along the river from the intake, which is located approximately 650 feet upstream of Guilford County Road 2712, to a point approximately 0.5 miles upstream of the intake. The nearly 316-acre proposed CA, which is located entirely within Guilford County, contains no named tributaries to the Haw River.

The proposed PA extends along the river from a point approximately 0.5 miles upstream of the intake to a point approximately 0.6 mile downstream of U.S. Route 29 and covers approximately 18,500 acres. This area includes two entire named tributaries (Rose Creek (Apple Pond) and Giles Creek) as well as the lower portion of one named tributary (Little Troublesome Creek), to the Haw River, which are also proposed to be reclassified to WS-IV (Table 1). The proposed PA is located within Rockingham, Guilford, Alamance and Caswell Counties. The percentage of the proposed watershed within the jurisdiction of each of these governments is as follows: Rockingham County (57%), Guilford County (33%), Alamance County (5%), and Caswell County (4%).

There are three NPDES wastewater discharges (a mobile home park, a subdivision, and a wastewater treatment plant) and two permitted animal operations in the proposed WS-IV watershed; none of these operations would be impacted by regulations associated with this reclassification. There are no known planned discharges and developments in the proposed reclassification area, and no known plans for existing dischargers to become process industrial dischargers in the area. The proposed area is rural in character, with forested, residential, and agricultural lands.

Alamance, Caswell, Guilford, and Rockingham Counties are the local governments with jurisdiction in the reclassification area, and each county has provided a favorable resolution for this proposal, agreeing to modify their ordinances as required should the proposal become effective. As a reminder, the purpose of a resolution is to indicate whether or not a potentially impacted local government will implement the water supply rules within its jurisdiction once a reclassification becomes effective. A fiscal analysis describing the costs and benefits of the proposal has been completed and approved by the Office of State Budget and Management. The analysis' quantifiable results revealed a one-time cost of approximately $2,940 to the state, $2,500 to Alamance County, $2,650 to Caswell County, $4,640 to Guilford County, and $2,500 to Rockingham County (fiscal note with local government resolutions and proposed rule attached as pages a-88 through a-102).

[1] Class C uses, which are protected in all NC fresh surface waters, include aquatic life propagation, maintenance of biological integrity, fishing, wildlife, secondary recreation, agriculture and any other usages except primary recreation or as a source of water supply. Secondary recreation includes wading, boating, and other uses involving human body contact on an infrequent, unorganized, or incidental manner.

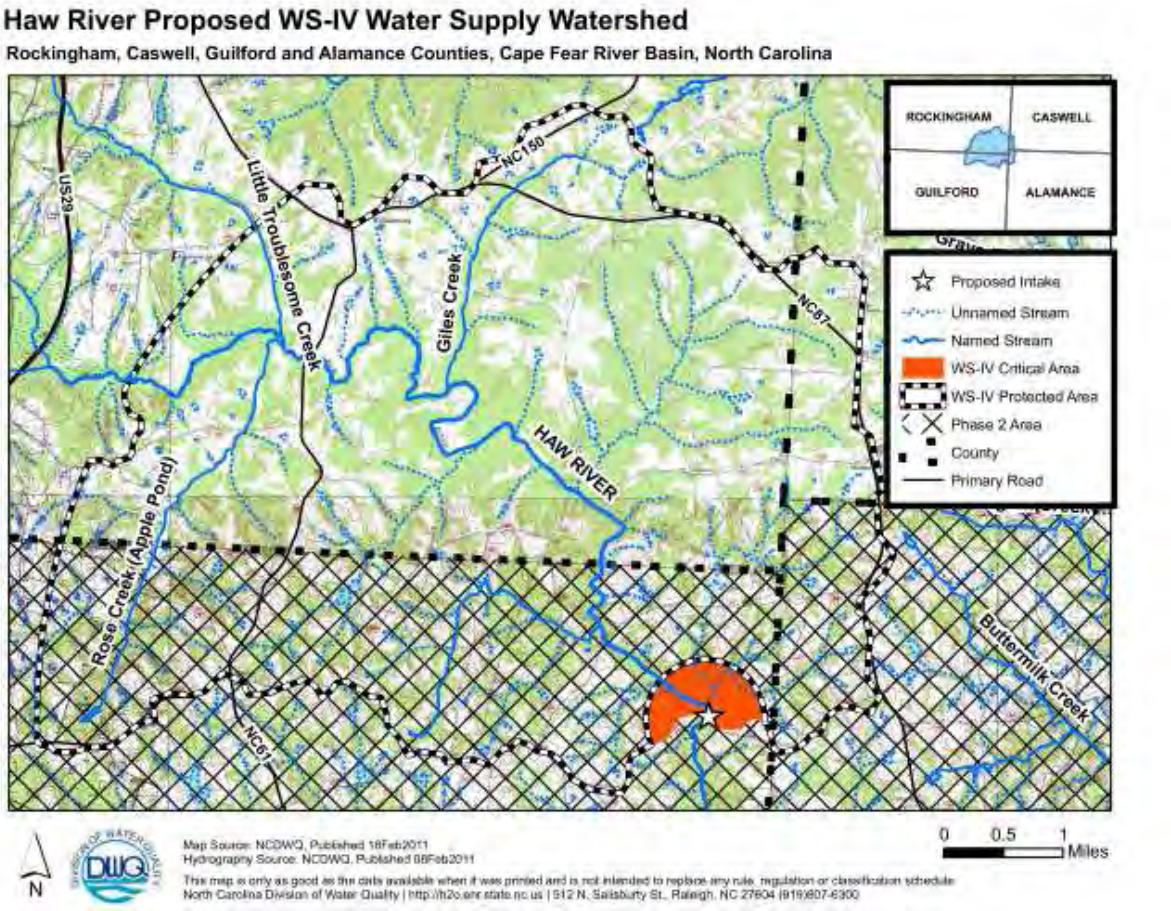


TABLE 1. PROPOSED AMENDMENT TO THE CAPE FEAR RIVER BASIN SCHEDULE OF CLASSIFICATIONS AS REFERENCED IN TITLE 15A NORTH CAROLINA ADMINISTRATIVE CODE 02B .0311				
Name of Stream	Description	Existing Class	Description of Recommended Segment	Recommended Class
Haw River	From source to a point 0.4 mile downstream of Cane Creek (south side of Haw River)	WS-V NSW	From source to a point approximately 0.6 miles downstream of U.S. Route 29 From a point approximately 0.6 miles downstream of U.S. Route 29 to a point approximately 0.5 miles upstream of the City of Greensboro's intake From a point approximately 0.5 miles upstream of the City of Greensboro's intake to the City of Greensboro's intake, which is located approximately 650 feet upstream of Guilford County Road 2712 From the City of Greensboro's intake to a point approximately 0.4 mile downstream of Cane Creek (south side of Haw River)	WS-V NSW WS-IV NSW WS-IV CA NSW WS-V NSW
Little Troublesome Creek	From source to Haw River	WS-V NSW	From source to a point approximately 265 feet upstream of SR 2600 From a point approximately 265 feet upstream of SR 2600 to Haw River	WS-V NSW WS-IV NSW
Rose Creek (Apple Pond)	From source to Haw River	WS-V NSW	Same	WS-IV NSW
Giles Creek	From source to Haw River	WS-V NSW	Same	WS-IV NSW

Implications of the Proposed Reclassification

The protective management strategies for WS-IV watersheds are outlined in the following rules (rules attached as pages a-44 through a-52):

- 15A NCAC 2B .0104 Considerations/Assigning/Implementing Water Supply Classifications
- 15A NCAC 2B .0216 Fresh Surface Water Quality Standards for WS-IV Waters

Rule 15A NCAC 2B .0104, Considerations/Assigning/Implementing Water Supply Classifications, describes regulations mainly pertaining to the responsibilities of local governments with jurisdiction in water supply watersheds, and these responsibilities involve actions concerning ordinances, engineered stormwater controls, normal pool elevation, Agricultural Cost Share Program, etc. (rule attached as pages a-44 through a-48). This regulation also addresses new, low density, high density, expanding, existing, and cluster development, redevelopment and variances pertaining to development in water supply watersheds. Further topics include, but are not limited to, suitability of waters for water supply classifications, critical water supply watersheds, and future water supply use, as well as groundwater remediation projects, joint water quality monitoring and information sharing programs, roads, bridges, and silviculture activities in water supply watersheds.

One of the most important aspects of the rule is the requirement that local governments that have land use jurisdiction within a water supply watershed develop and implement water supply watershed ordinances. Designated local governments have 270 days after the effective date of the proposed rule to develop or modify watershed protection land use ordinances to at least meet the state's minimum requirements (15A NCAC 2B .0100 and .0200). The result of this proposed reclassification will be that Alamance, Caswell, Guilford, and Rockingham Counties would be required to modify their water supply watershed protection ordinances. Based on an estimated effective date for the proposed reclassification of March 1, 2012, the local governments would have until December 1, 2012 to get their ordinances in compliance with the resulting Water Supply regulations.

Rule 15A NCAC 2B .0216, Fresh Surface Water Quality Standards for WS-IV Waters, features regulations regarding the best usage of these waters, conditions related to best usage, and quality standards applicable to Class WS-IV waters for sewage, industrial waste, non-process industrial wastes, or other wastes, as well as nonpoint source and stormwater pollution for the CA and PA (rule attached as pages a-49 through a-52). The main features of the quality standards portion of this rule are described in the following paragraphs.

If reclassified, additional regulations associated with stormwater control for new development activities will be required in the proposed water supply watershed. Projects that require a state Sedimentation and Erosion Control Plan, which generally are projects disturbing one acre or more of land, and are located within the proposed water supply watershed will be required to comply with development density and setback requirements. More specifically, where land disturbing activities in WS-IV watersheds require a Sedimentation and Erosion Control Plan, development is limited to two dwelling units (du) per acre or 24% built upon area (low density

option) in the CA and PA. For those developments without curb and gutter street systems, development may take place at up to three du/acre or 36% built upon area in the PA. A high density option, which requires control of runoff of the first inch of rainfall though the use of engineered stormwater controls, permits development at up to 50% built upon area in the CA and 70% built upon area in the PA. Within these options there is considerable flexibility for local governments such as averaging development density.

Thirty foot stream setbacks are required with the low density option, and 100 foot setbacks are required with the high density option. State Department of Transportation (DOT) regulations for WS-IV watersheds require use of Best Management Practices (BMPs) associated with meeting the above-mentioned requirements. Forestry and farming practices as well as dam and water resource projects will not be affected in the proposed area.

In order to evaluate the net impacts of the proposed reclassification's development regulations in the subject area, the requirements of the existing state development regulations that apply in the proposed water supply watershed were compared with the proposal's development requirements (Table 2). The net impacts of the WS-IV reclassification in terms of development in the subject area are as follows:

- Only new development disturbing 1 or more acres will be impacted.
- The WS-IV built upon area caps would be the only significant impact of the WS-IV development regulations because in areas where the Jordan Lake buffer requirements and Water Supply setbacks overlap, only the Jordan Lake buffer requirements need to be met per the Jordan Lake rules.
- In the counties where the Phase 2 rules apply, only new high density projects would be impacted by the WS-IV regulations (because the built upon area requirements of the Phase 2 rule and built upon area requirements of the Water Supply-IV low density option are the same).
- In the counties where Phase 2 rules do not apply, new high and low density projects would be impacted by the WS-IV regulations.

TABLE 2. DEVELOPMENT REQUIREMENTS OF THE EXISTING AND PROPOSED CLASSIFICATIONS

Classification	Low Density Development Option	High Density Development Option	Setbacks/Buffers*
Phase 2 (Existing)	1 DU / 0.5 acre or 24% BUA	NA	30'/NA
Jordan Lake (Existing)	NA	NA	NA/50'
WS-IV Critical Area (Proposed)	1 DU / 0.5 acre or 24% BUA	24-50%	30'(low density) and 100'(high density)/NA
WS-IV Protected Area (Proposed)	1 DU / 0.5 acre or 24% BUA Optional: 3 DU / 1.0 acre or 36% BUA w/o curb & gutter street system	24-70% BUA Optional: 3 DU / 1.0 acre or 36% BUA w/o curb & gutter street system	30'(low density) and 100'(high density)/NA

DU = Dwelling Unit; BUA = Built Upon Area; *Requirements for Jordan Lake buffers supersede Phase 2 and WS setbacks

Table 3 shows how different parts of the subject area will be affected by the proposed reclassification in terms of development. The net new requirements of the Water Supply-IV development regulations for the Phase 2 counties, which are Alamance and Guilford Counties, would affect only high density projects, and thus, maximum built upon area caps of 50% in the Critical Area, and 70% in the Protected Area would apply. For the non-Phase 2 counties, which are Caswell and Rockingham Counties, the net new requirements of the Water Supply-IV development regulations would affect low and high density projects; thus, the above-mentioned high density 70% cap would apply along with a 24% low density maximum built upon area cap and a low density 2 acre/1 dwelling unit restriction. The Critical Area requirements only impact Guilford County.

TABLE 3. APPLICABLE WS-IV NEW DEVELOPMENT DENSITY OPTIONS FOR HAW RIVER RECLASSIFICATION COUNTIES[1]

	Low Density in CA or PA of 1 DU/0.5 acre or 24% BUA	High Density in CA of 24-50% BUA	High Density in PA of 24-70% BUA
Non-Phase 2 Counties			
Rockingham	X		X
Caswell	X		X
Phase 2 Counties			
Guilford		X	X
Alamance			X

[1] = only apply once a land disturbance of 1 acre is reached, DU = Dwelling Unit, BUA = Built Upon Area

Another result of the proposed reclassification, given the existing development regulations associated with the Jordan Lake rules, would be that local governments not already implementing the Jordan buffer requirements in the newly reclassified area within their jurisdictions would need to do so. Rockingham, Guilford, and Caswell County are currently implementing the Jordan buffer requirements in the proposed WS-IV watershed. Alamance County is not currently implementing the Jordan buffer requirements and will be required to do so upon reclassification within its portion of the proposed area.

Other applicable WS-IV regulations require water supply standards to be met by existing and new NPDES wastewater dischargers throughout the proposed area, albeit the Jordan Lake rules have already put these requirements in place. However, new industrial process wastewater discharges will have additional wastewater treatment requirements in the WS-IV CA. In addition, no new permitted landfills or land application sites are allowed in a WS-IV CA.

The proposed area is rural in character, with forested, residential, and agricultural lands. As mentioned above, there are three NPDES wastewater discharges and two permitted animal operations in the proposed WS-IV watershed that would not be impacted by regulations associated with this reclassification. Furthermore, there are no known planned discharges and developments in the proposed reclassification area, and no known plans for existing dischargers to become process industrial dischargers in the area.

Public Hearing Process and Comments Received

In accordance with North Carolina General Statutes, a public hearing was held on September 29, 2011, in Reidsville, North Carolina (Rockingham County). Notice of the proposal and hearing, including the proposed rule amendment, was published in the September 1, 2011, *North Carolina Register* (Volume 26, Issue 5) (proposed rule amendment attached as pages a-92 through a-95).

Announcements of the public hearing (announcement attached as pages a-103 and a-104) were sent to the Water Quality Rule-Making Announcements mailing list, the Division of Water Quality Rules e-mail list, staff of local governments with jurisdiction over land adjacent to the waters proposed to be reclassified, wastewater dischargers, animal operations, local libraries, and to other persons potentially interested in the proposed reclassification, including staff of local interest groups, environmental organizations, companies, and state agencies within North Carolina. The public announcement and request for publication were submitted on September 9, 2011 to nine local newspapers, *Greensboro News & Record, Triad Business Journal, Northwest Observer, Yes Weekly, Reidsville Review, Madison Messenger, Caswell Messenger, Mebane Enterprise* and *Times-News* (newspaper request for publication attached as page a-105).

Tom Ellis, EMC Commissioner, served as hearing officer (hearing officer designation letter attached as page a-106). Five people registered at the public hearing (list of attendees attached as page a-107**)**. Of those five people, all provided the organization they were representing: Town of Pittsboro, City of Greensboro, Piedmont Tried Water Authority, Piedmont Triad Regional Council, and NC State Parks. A brochure describing the proposed reclassification of the Haw River was made available to the hearing attendees (proposed reclassification brochure attached as pages a-108 and a-109).

Opening comments and slides were presented by DWQ staff to provide a brief overview of the DWQ classification program and detailed information about the proposed reclassification. Then public comments on the proposed reclassification were taken. One individual, who represented the Piedmont Triad Regional Council, registered to make comments at the hearing; that individual did not indicate a stance on the proposed reclassification but rather asked a question that DWQ staff addressed after the hearing.

Written comments were accepted for the NC proposed reclassification from September 1, 2011 through October 31, 2011. Two letters were received during the comment period. The letters did not state a stance on the proposed reclassification, and were received from N.C. Department of Transportation as well as Division of Water Resources (DWR) staff (letters attached as pages a-110 through a-113). The DWR letter stated that a DWR imposed condition of the expedited approval of the intake, installation of a stream gauge below the dam and proposed intake, has not been implemented, and DWR would work with requestor to correct this issue. The City's response, received in the form of a letter, to the DWR comments was that the City would install such a gauge by January 2012 (letter attached as page a-114).

RECOMMENDATION

It is the recommendation of the Hearing Officer that the reclassification of the segment of the Haw River, as proposed herein, be approved by the Environmental Management Commission. In making this recommendation, the Hearing Officer has considered the requirements of General Statutes 150B-21.2, 143-214.1, 143-215, and 143-215.3(a)(1), and Rules 15A NCAC 2B .0100 [Procedures for Assignment of Water Quality Standards, especially 15A NCAC 2B .0104 (Considerations/Assigning/Implementing Water Supply Classifications)] and 15A NCAC 2B .0216 (Fresh Surface Water Quality Standards for WS-IV Waters). In addition, the fact that continued use of the existing intake as an emergency intake requires the reclassification of the surface waters draining to it was considered.

In taking this action, Rule 15A NCAC 2B .0311, which references the Schedule of Classifications for the Cape Fear River Basin, will show that the Environmental Management Commission has revised the schedule for a portion of the Haw River [Index No. 16-(1)] from the City of Greensboro's intake, located approximately 650 feet upstream of Guilford County 2712, to a point approximately 0.5 miles upstream of the intake from Class WS-V NSW to Class WS-IV CA NSW, and a portion of the Haw River [Index No. 16-(1)] from a point approximately 0.5 miles upstream of the intake to a point nearly 0.6 miles downstream of U.S. Route 29 from Class WS-V NSW to Class WS-IV NSW.

The proposed effective date of this reclassification is March 1, 2012.

APPENDIX

WATER Resources
City of Greensboro

Administration
(336) 373-2055
Fax (336) 412-6305

Customer Service
(336) 373-2344
Fax (336) 412-3932

Water Supply
Mitchell Plant
(336) 373-5855
Fax (336) 373-5834

Townsend Plant
(336) 375-2230
Fax (336)375-2207

Water Reclamation
North Buffalo Plant
(336) 373-5913
Fax (336) 274-7585

T.Z. Osborne Plant
(336) 375-2240
Fax (336) 621-3523

Construction & Maintenance
Service Center
(336) 373-2033
Fax (336) 412-3936

Meter Services
(336) 373-2071
Fax (336) 574-4067

Water Conservation
(336) 373-7610
Fax (336) 412-6305

Stormwater Management
(336) 373-2055
Fax (336) 412-6305

April 8, 2004

Mr. Tom Reeder
Supervisor, Classification and Standards Unit
North Carolina Department of Environment and Natural Resources
Division of Water Quality – Planning Branch
1617 Mail Service Center
Raleigh, NC 27699-1617

Re: Haw River Watershed Reclassification Application

Dear Mr. Reeder:

Enclosed is an application requesting the classification of a portion of the Haw River Watershed as a Water Supply Watershed.

The City of Greensboro appreciated that in 2002, NCDENR approved the refurbishment of the Haw River pump station and granted the City of Greensboro permission to use the water immediately with the understanding that at a later date, the City would apply for watershed reclassification. In the interim, the City may only access this water when faced with statistical probability of long term drought, as described in one of the documents enclosed, a modification to our Water Supply Plan.

On March 2, 2004, the Greensboro City Council passed a resolution to seek classification of a portion of the Haw River watershed as a "water supply" classification. The City of Greensboro is seeking a Water Supply Watershed Classification V for this portion of the Haw River, which provides for intermittent emergency water supply to the City of Greensboro. Enclosed please find:

1. Application Request
2. USGS topographic map showing limits of request
3. Resolution of Greensboro City Council seeking reclassification
4. Copy of letter dated August 9, 2003 seeking permit to construct project
5. Addendum to Greensboro Water Supply Plan describing function of project
6. Authorization to Construct, Engineer's Certification, and Applicant Certification Form for the Haw River Pump Station
7. Authorization to Construct, Engineer's Certification, Applicant Certification, and Final Approval of Haw River Transfer Line

8. All water quality data that the City of Greensboro has collected from the Haw River immediately upstream of the dam
9. Copies of letters to the County Managers of the four county jurisdictions that the reclassification request affects. No objection has been voiced by any of the jurisdictions.

No SEPA document was required for the project given the limits of construction and purpose. Please let me know if you have any questions regarding this application.

Thank you,

Allan E. Williams, P.E., Director
Department of Water Resources
City of Greensboro

cc (without attachments):
J. Edward Kitchen, City Manager
Linda Miles, City Attorney
Willie Best, Guilford County Manager
Jeff Earp, Caswell County Manager
Tom Robinson, Rockingham County Manager
David Cheek, Alamance County Manager

APPLICATION TO REQUEST
RECLASSIFICATION OF NC SURFACE WATER

1. Date of Request: April 8, 2004

2. Requested by (include full contact information):

Allan E. Williams, P.E.
Director of Water Resources
P.O. Box 3136
Greensboro, NC 27402

3. River Basin: Haw River (Cape Fear Watershed)
County(ies): Guilford, Rockingham, Alamance, Caswell

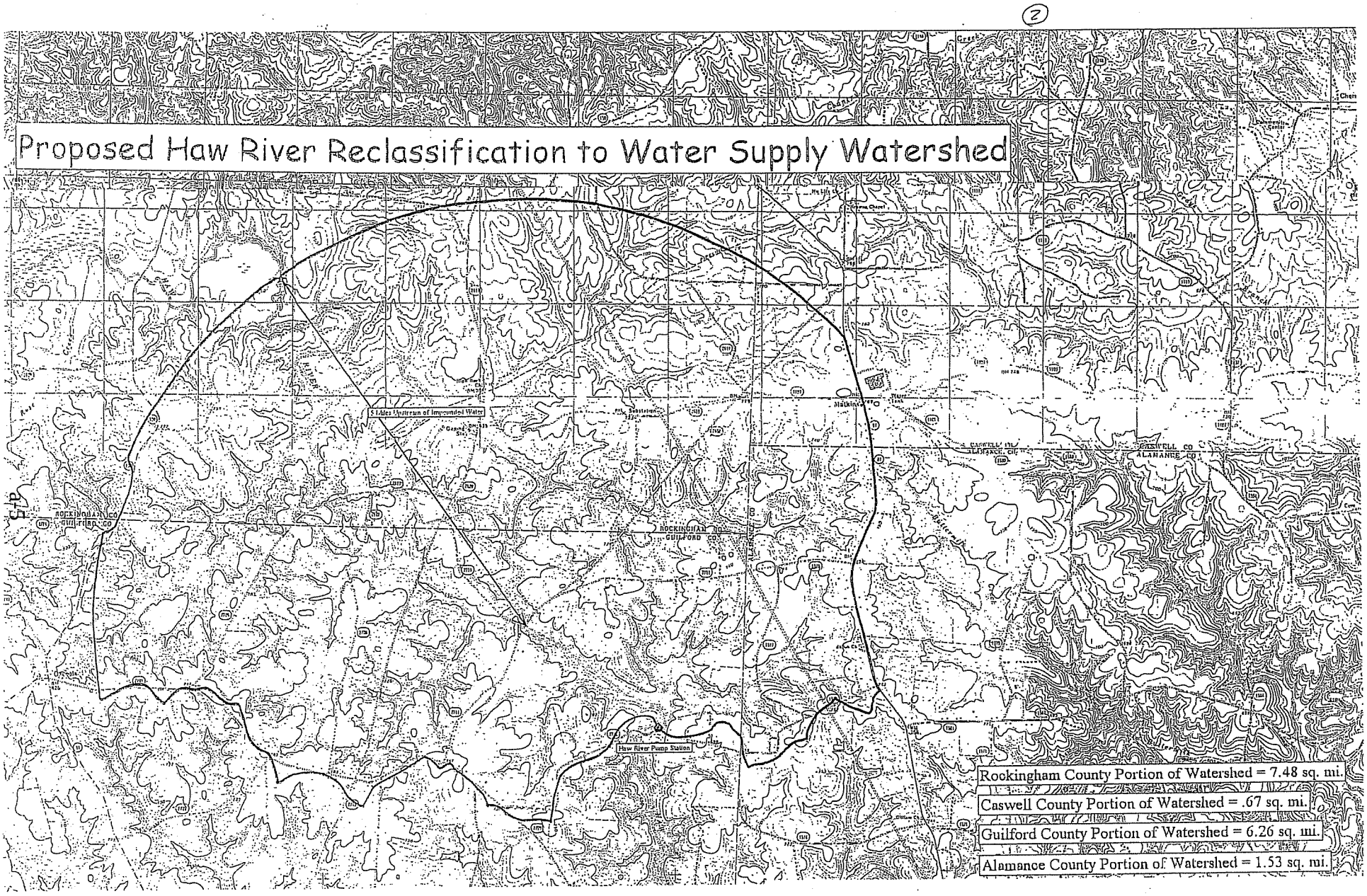
4. List Waterbody(ies) requested for Reclassification: (*see reverse)

Waterbody name	*Waterbody Index #*	*Current Class*	*Request Class*
Haw River	16-(1)	C; NSW	WS-V; NSW

5. Attachments:
Is a USGS 7.5 topographic map outlining the subject waters/land area attached? Yes.
Is this a request for a more protective water supply reclassification? Yes. If so, is a resolution from all local governments with land use jurisdiction within the boundaries of a proposed water supply watershed attached? No.

6. Reason for Request (attach additional sheet if necessary):
Class WS-V is requested to protect this portion of the Haw River as an intermittent emergency supply that would drain to Greensboro's WS-III lakes.

Additional information on the reverse side of this application.


Proposed Haw River Reclassification to Water Supply Watershed
5 Miles Upstream of Impounded Water
Haw River Pump Station
ROCKINGHAM CO
GUILFORD CO
CASWELL CO
ALAMANCE CO
Rockingham County Portion of Watershed = 7.48 sq. mi.
Caswell County Portion of Watershed = .67 sq. mi.
Guilford County Portion of Watershed = 6.26 sq. mi.
Alamance County Portion of Watershed = 1.53 sq. mi.

11

A-16

53-04

RESOLUTION INSTRUCTING THE CITY MANAGER TO PETITION THE ENVIRONMENTAL MANAGEMENT COMMISSION OF THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES TO CLASSIFY THE HAW RIVER AS A WATER SUPPLY WATERSHED IN ACCORDANCE WITH NORTH CAROLINA GENERAL STATUTE SECTION 143-214.1

WHEREAS, that North Carolina General Statute Section 143-214.1 empowers the North Carolina Environmental Management Commission to develop and adopt a series of classifications and standards which will be appropriate for classifying each of the waters of the State in such a way as to promote the best usage of the waters to which the classification will be applied;

WHEREAS, the purchase of the Haw River Dam and the completion of the Haw River Dam Pipeline delivering water to Lake Townsend in the opinion of the City Council of the City of Greensboro, necessitates the reclassification of the Haw River as a water supply watershed.

NOW, THEREFORE BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF GREENSBORO:

That the City Manager is authorized to take appropriate action to petition the North Carolina Environmental Commission to classify the Haw River as a water supply watershed for the City of Greensboro.

The foregoing resolution was adopted by the City Council of the City of Greensboro, NC on

March 2, 2004

Juanita J. Cooper
City Clerk

3

WATER Resources
City of Greensboro

August 9, 2002

Administration
(336) 373-2055
Fax (336) 412-6305

Customer Service
(336) 373-2344
Fax (336) 412-3932

Water Supply
Mitchell Plant
(336) 373-5855
Fax (336) 373-5834

Townsend Plant
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Water Reclamation
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Fax (336) 574-4067

Water Conservation
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Fax (336) 412-6305

Stormwater Management
(336) 373-2055
Fax (336) 412-6305

Linda Sewall, P.E.
Director, Division of Environmental Health
Department of Environment and Natural Resources
1617 Mail Service Center
Raleigh, NC 27699-1617

Dear Ms. Sewall:

The City of Greensboro is pleased to submit the attached addendum to our currently adopted 1997 Water Supply Plan. It accommodates the use of the Haw River as an emergency water source pending reclassification of the watershed to Water Supply IV. Items 6,7,8, and 9 of the addendum duplicate the language that we have circulated to the staff of the Department describing the criteria by which Greensboro would be allowed to access the Haw River.

Greensboro's progress in putting in place this desperately needed insurance policy against another dry winter has been exceptional, due in no small part to the cooperation we have received from your department. In addition, personnel from the North Carolina Department of Transportation, the U. S. Army Corps of Engineers, Norfolk Southern Railroad, Plantation Pipeline, and other utilities have exceeded all expectations in their assistance making our goal of project implementation by December 2002 a highly achievable probability. I am enclosing a bar chart showing critical path items for the project.

Greensboro has undertaken many steps to shorten our completion time. Our Council waived the "Mini-Brooks" provision allowing us to direct our selected engineer, Hazen and Sawyer, to begin work immediately. We have purchased the pipe, the pumps, electrical gear, and other long lead items in advance of contractor bidding, eliminating the delay of contractor acquisition. There is currently approximately $4 million of equipment or pipe under purchase order being manufactured at this time. The original pump station is currently under contract for purchase.

The pipeline project itself (over 70,000 lineal feet of 30" pipe) is being bid in three phases. Bids will be accepted on Phases I and II August 16th, and on Phase III August 23rd. U.S. Pipe will begin delivering five truckloads of pipe daily beginning August 19th. We intend to have the contractors for Phases I and II installing pipe September 3rd with Phase III beginning one week later. We are in the process of informally bidding the pump station rehabilitation at this time. Lead-time for pump manufacturing is such that the actual pumps will set the critical path ending mid-January, 2003. Anticipating this, we have provided in the bid for the use of temporary rental pumps when the line is complete should lake and river conditions warrant such action.

At this time, following is the status of the permitting and other actions that are required for this project:

TASK	AGENCY	DATE
Submitted Soil Erosion Control Permit Application for Ph. I & II	NCDENR Div. Of Land Resources Attention: Shannon Leonard (Winston-Salem)	8/2/02

4

Will Submit Soil Erosion Control Permit Application for Ph. III	NCDENR Div. Of Land Resources Attention: Shannon Leonard (Winston-Salem)	8/9/02
Submitted Letter Requesting Permission From Contractor to Jack & Bore Under US Hwy. 29	NCDOT – Division of Highways Attention: Brad Wall, Division Construction Engineer	8/2/02
Submitted NCDOT Encroachment Permit Application for Ph. I & II Pipeline Route	NCDOT – Division of Highways Attention: Ernie Wilson	8/5/02
Submitted NCDOT Encroachment Permit Application for US Hwy. 29 Jack & Bore	NCDOT – Division of Highways Attention: Ernie Wilson	8/5/02
Will Submit NCDOT Encroachment Permit Application for Ph. III Pipeline Route	NCDOT – Division of Highways Attention: Ernie Wilson	8/12/02
Submitted Norfolk-Southern Railroad Encroachment Permit Application	DMJM+HARRIS (Consultant for Norfolk-Southern) Attention: Patrick DesMarais	8/6/02
Submitted Request to Encroach Upon Cardinal/Williams Gas Pipeline R/W	Cardinal / Williams Pipeline Attention: David Mordan, Jr.	8/5/02
Will Submit Request to Encroach Upon Plantation Gas Plantation Pipeline R/W	Plantation Pipeline Attention: Terry Walker	8/7/02
Submitted Application for Section 404 Permit – Nationwide 12 General Permit	US Army COE Attention: Todd Tugwell	8/6/02
Will Submit Plans and Specifications For Authorization to Construct	DENR Wayne Munden	8/14/02
Submitted Application for Water Quality Certification (401)	U. S. Army COE John Dorney	8/12/02
Modify Greensboro Ordinance Code to accommodate Haw Rule (authority to impose restrictions)	Greensboro City Council Allan Williams	8/20/02

With the completion of the above permitting and the acceptance of the attached addendum to our 1997 Water Supply Plan, it is Greensboro's understanding that the City shall be fully authorized to construct and operate the project as described in the permits and the addenda.

Sincerely,

Original signed by

Allan E. Williams, P. E.
Director

Attachments: Addendum to 1997 Water Supply Plan
Project Schedule

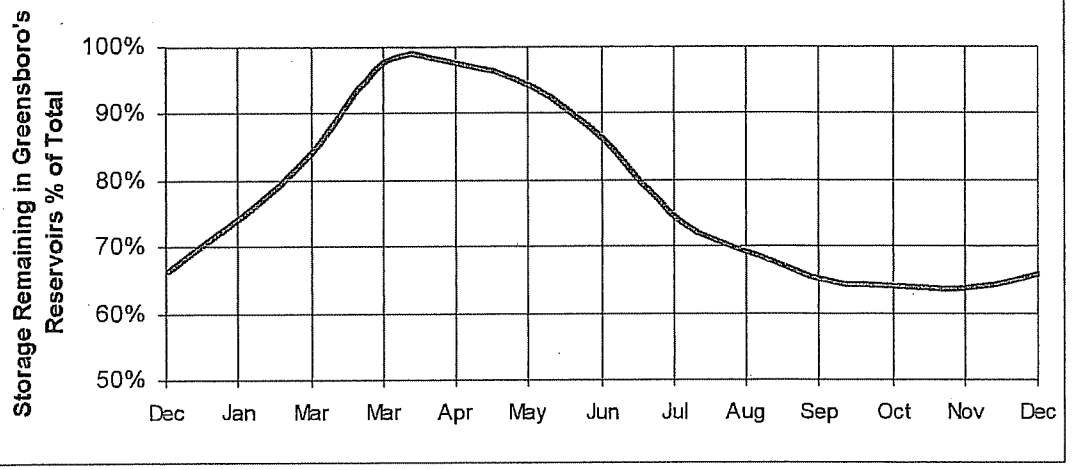
Addendum
1997 Water Supply Plan
City of Greensboro, North Carolina
PWSID 02-41-010

The following is provided to modify the current Greensboro Water Supply Plan, adopted in compliance with North Carolina General Statute 143-355 (1). There are several changes that will be addressed in the 2002 Water Supply Plan, currently in preparation, that are not reflected in the following. The intent of the following is to acknowledge the use of water transferred from the Haw River to the City's Lake Townsend Reservoir as only a drought hazard mitigation measure pending reclassification to WS-IV of the Haw River at the pump station.

1. The City of Greensboro will construct a 13 mile, 30" diameter ductile iron raw water transfer line from a pump station located on the Haw River, within Haw River Sub-basin (2-1), to Lake Townsend in the same sub-basin. The point of withdrawal will be an existing low level dam on the Haw River located just upstream of Brooks Bridge Road in Guilford County.
2. Water will be pumped through the transfer line from an existing abandoned pumping station, used previously by the City of Burlington for the same purpose. The station will be completely refurbished; pumping will be by local and remote control by the City of Greensboro.
3. The City of Greensboro will not transfer water in amounts or at times that would reduce downstream flow to less than 23.2 cubic feet per second. The City of Greensboro is currently contracting with the USGS to install a permanent stream gauge downstream of the dam and withdrawal point.
4. The Haw River Project will not change any of the water supply amounts quoted in the current 1997 Water Supply Plan. The 50-year safe yield of the City's reservoir system is 36 mgd. The Haw River Project will reduce the risk of reservoir failure in the event of back-to-back drought years by increasing the likelihood that the City's reservoirs will refill by April of any given year.
5. The City of Greensboro will withdraw water from the Haw River when there is an unacceptable risk that the City's reservoirs will not be full by the following April, based on the "Drought Risk Rule Curve" (attached), as discussed below. The City may operate the Haw River pumping station as an emergency source of raw water any time total storage available in the City's existing reservoirs falls below the predicted values taken from the Drought Risk Curve, subject to the availability of river flows greater than the required minimum in-stream flow.
6. Once pumping begins based on the Drought Risk Curve, pumping may continue, subject to the availability of river flows in excess of the required minimum in-stream flow, until City reservoirs are refilled.
7. The City may be granted permission to pump from the Haw River based on approval of a petition to the Secretary of the Department of Environment and Natural Resources that describes extraordinary conditions that threaten the viability of the City's long-term water supply that are not contemplated by the Drought Risk Curve.

8. For the City to pump water from the Haw River, mandatory water use restrictions at least as stringent as Level IIA, Water Level I Warning, Greensboro Code of Ordinances Chapter 29.5 must be in force.

Figure 1
CITY OF GREENSBORO, NC
Drought Risk Rule Curve for
Operation of Haw River Pumping Station



State of North Carolina
Department of Environment and Natural Resources

Applicant Certification Form

In accordance with 15A NCAC 18C .0303 (c), a signed applicant certification must be submitted to the Department, stating that the Operation and Maintenance (O&M) Plan and the Emergency Management Plan requirements have been satisfied and that the system will have a certified operator as required by Section .1300. No construction, alteration, or expansion of a community or non-transient, non-community public water system shall be placed into final service or made available for human consumption until the applicant has submitted the certification and has received Final Approval from the Department.

Certification must be provided by the following individual or their duly authorized representative:

1. For a corporation, limited liability company, home owner association or non-profit organization: *a president, vice president, secretary, or treasurer.*
2. For a partnership or sole proprietorship: *by a general partner or the proprietor.*
3. For a municipality, State, Federal or other agency: *by either a principal executive officer or ranking elected official.*

By the signature below I certify, under penalty of law:

1. The following actions have been completed for the construction, alteration, or expansion of the water system, as defined in the project documents;

   - I, or personnel under my direct supervision, have completed an O&M Plan and an Emergency Management Plan in accordance with 15A NCAC 18C .0307(d) and (e). Based on my evaluation of the plans, or my inquiry of the person or persons directly responsible for preparing the O&M Plan and Emergency Management Plan, the information contained in the plans is, to the best of my knowledge and belief, true, accurate, and complete.

2. The following actions will be completed before the construction, alteration, or expansion of the water system, as defined in the project documents is placed into final service or made available for human consumption;

   - In accordance with 15A NCAC 18C .0307(d), the O&M Plan will be made accessible to the system operator on duty at all times and available to the Department upon request.
   - In accordance with 15A NCAC 18C .0307(e) the Emergency Management Plan will be made accessible to the system operator on duty at all times and available to the Department upon request.
   - In accordance with 15A NCAC 18C .0303(c), the system will have a certified operator as required by 15A NCAC 18C .1300.

Signature: _____ Name(Print): Kevin E Eason P.E.

Title: Engineering Manager Date: February 20 2004

Project Name: Haw River and Brooks Bridge System Name: City of Greensboro

Serial No: 02-01457 PWS I.D. No: 02-41-010

(6)

Permit No. 0201457

ENGINEER'S CERTIFICATION

I, **Barry F. Bickerstaff**, as a duly registered Professional Engineer in the State of North Carolina, having been authorized to observe periodically the construction of the following project(s):

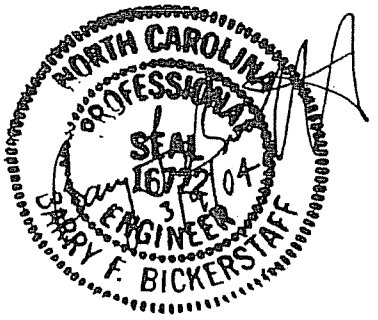
Haw River and Brooks Bridge
Project Name

Greensboro, Guildford County, NC
Location and County

For the Permittee hereby state that, to the best of my abilities, due care and diligence was used in the observation of the construction of the project such that the construction was observed to be built within substantial compliance and intent of the Permit, the approved plans and specifications, and other supporting materials.

Signature _____ Registration No. 16722

Date 3/9/04



NCDENR

State of North Carolina
Department of Environment and Natural Resources

Public Water System
Authorization to Construct

Public Water System Name and PWSID No. *(if available)*:	GREENSBORO, CITY OF 0241010
Project Name:	HAW RIVER & BROOKS BRIDGE
Serial No:	0201457
Issue Date:	09/19/2002
Expiration Date:	24 months after Issue Date

In accordance with NCAC 18C.0305, this Authorization to Construct must be posted for inspection at the primary entrance of the job site during all construction.

STATE OF NORTH CAROLINA
DEPARTMENT OF ENVIRONMENT
AND NATURAL RESOURCES
Division of Environmental Health
Public Water Supply Section

Michael F. Easley, Governor
William G. Ross Jr., Secretary
Linda C. Sewall, Director
Jessica G. Miles, Section Chief

June 16, 2003

2003 JUN 18 PM 1:36

ALLAN E WILLIAMS
201 N Greene Street
Greensboro,NC 27402

Re: **Final Approval**
HAW RIVER TO LAKE TOWSEND
DEH Serial # 0201305
PWSID #0241010
GUILFORD County

Dear Sir/Madam:

The Department received an engineer's certification statement and an applicant's certification statement concerning the above referenced project. The engineer's certification verifies that the construction of the referenced project has been completed in accordance with the engineering plans and specifications approved under Department Serial Number 0201305. The applicant's certification verifies that an Operation and Maintenance Plan and Emergency Management Plan have been completed and are accessible to the operator on duty at all times and available to the Department upon request and that the system will have a certified operator as required by 15A NCAC 18C .1300.

The Department has determined that the requirements specified in 15A NCAC 18C .0303(a) and (c) have been met and, therefore, issues this **Final Approval** in accordance with Rule .0309(a).

Please contact us at (919) 733-2321 if you have any questions or need additional information.

Sincerely,

J. Wayne Munden, P.E., Head
Technical Services Branch
Public Water Supply Section

JWM:TCC

cc: LEE G. SPENCER, Regional Engineer
GUILFORD County Health Department
Hazen & Sawyer Engineers

1634 Mail Service Center, Raleigh, North Carolina 27699-1634 □ Telephone: 919-733-2321
Main Fax: 919-715-4374 □ Lab Forms Fax: 919-715-6637 □ Internet: http://www.deh.enr.state.nc.us/pws/index.htm
An Equal Opportunity / Affirmative Action Employer - 50 % Recycled \ 10 % Post Consumer Paper

(7)

State of North Carolina
Department of Environment and Natural Resources

Applicant Certification Form

In accordance with 15A NCAC 18C .0303 (c), a signed applicant certification must be submitted to the Department, stating that the Operation and Maintenance (O&M) Plan and the Emergency Management Plan requirements have been satisfied and that the system will have a certified operator as required by Section .1300. No construction, alteration, or expansion of a community or non-transient, non-community public water system shall be placed into final service or made available for human consumption until the applicant has submitted the certification and has received Final Approval from the Department.

Certification must be provided by the following individual or their duly authorized representative:

1. For a corporation, limited liability company, home owner association or non-profit organization: *a president, vice president, secretary, or treasurer.*
2. For a partnership or sole proprietorship: *by a general partner or the proprietor.*
3. For a municipality, State, Federal or other agency: *by either a principal executive officer or ranking elected official.*

By the signature below I certify, under penalty of law:

1. The following actions have been completed for the construction, alteration, or expansion of the water system, as defined in the project documents;

   - I, or personnel under my direct supervision, have completed an O&M Plan and an Emergency Management Plan in accordance with 15A NCAC 18C .0307(d) and (e). Based on my evaluation of the plans, or my inquiry of the person or persons directly responsible for preparing the O&M Plan and Emergency Management Plan, the information contained in the plans is, to the best of my knowledge and belief, true, accurate, and complete.

2. The following actions will be completed before the construction, alteration, or expansion of the water system, as defined in the project documents is placed into final service or made available for human consumption;

   - In accordance with 15A NCAC 18C .0307(d), the O&M Plan will be made accessible to the system operator on duty at all times and available to the Department upon request.
   - In accordance with 15A NCAC 18C .0307(e) the Emergency Management Plan will be made accessible to the system operator on duty at all times and available to the Department upon request.
   - In accordance with 15A NCAC 18C .0303(c), the system will have a certified operator as required by 15A NCAC 18C .1300.

Signature: _____ Name(Print): Kevin Eason

Title: Engineering Manager Date: June 2, 2003

Project Name: Haw River Water Main System Name: City of Greensboro

Serial No: 02-01305 PWS I.D. No: 02-41-010

Permit No. 020135

ENGINEER'S CERTIFICATION

_____ Partial _X_ Final

I, BENJAMIN THOMPSON, as a duly registered Professional Engineer in the State of North Carolina, having been authorized to observe (periodically, weekly, full time) the construction of the project,

HAW RIVER RAW WATER TO LAKE TOWNSEND GREENSBORO-GUILFORD CO

Project Name *Location and County*

For the Permittee hereby state that, to the best of my abilities, due care and diligence was used in the observation of the construction such that the construction was observed to be built within substantial compliance and intent of this permit, the approved plans and specifications, and other supporting materials.

Signature Benjamin Thompson Registration No. 20242

Date MAY 20, 2003

State of North Carolina
Department of Environment and Natural Resources

Public Water System
Authorization to Construct

Public Water System Name and PWSID No. *(if available)*:	GREENSBORO, CITY OF 0241010
Project Name:	HAW RIVER TO LAKE TOWSEND,
Serial No:	0201305
Issue Date:	08/22/2002
Expiration Date:	24 months after Issue Date

In accordance with NCAC 18C.0305, this Authorization to Construct must be posted for inspection at the primary entrance of the job site during all construction.

2004 MAY 25 PM 1:19

HAW RIVER

PARAMETER	UNITS	JUNE 2002				
DATE		6/10/02	6/17/02	6/24/02		AVG.
Temperature	C^0	23.5	23.0	21.6		22.7
Flow (low, rain event)	-	low	low	low*		low
Alkalinity	mg/L	78	80	108		89
Hardness	mg/L	44	60	60		55
Carbon Dioxide	mg/L	1	2	5		2.6
pH	pH units	7.49	7.61	7.81		7.64
Turbidity	NTU	6.5	5.4	4.5		5.5
Specific Conductance	µmhos	391	594	684		556
Color	CU	143	151	186		160
Fluoride	mg/L	.678	.932	1.05		0.87
Chloride	mg/L	25	53	56		45
NO_3 as N	mg/L	.610	.685	.430		0.575
PO_4 as P	mg/L	.27	.28	.21		0.25
TSS	mg/L	3.5	2.25	2.60		2.78
TDS	mg/L	268	-	-		268
COD	mg/L	35.0	-	39.9		37.45
UV_{254} Total	m^{-1}	50.5	74.4	86.2		70.36
TOC	mg/L	11.2	16.6	17.8		15.2
UV_{254} Dissolved	cm^{-1}	.428	.666	.814		.636
DOC	mg/L	10.9	15.5	3.37		9.92
SUVA	L/mg-m	3.93	4.30	24.1		10.8
Iron	mg/L	1.02	1.10	1.35		1.16
Manganese	mg/L	0.26	0.62	0.85		.58
Copper	mg/L	<01	<01	<01		<01
Lead	mg/L	<01	<01	<01		<01
Cryptosporidium	oocysts/100L	<3.6				<3.6
Giardia	cysts/100L	<3.6				<3.6
				*rain 4 days prior		

HAW RIVER

PARAMETER	UNITS	July 2002					
DATE		7/1/02	7/8/02	7/15/02	7/22/02	7/29/02	AVG.
Temperature	C^0	21.9	20.9	20.5	19.5	21.7	20.9
Flow (low, over weir)	-	Low	Low	Low	Low	Over	Low
Alkalinity	mg/L	96	94	132	64	40	85
Hardness	mg/L	64	70	76	50	28	58
Carbon Dioxide	mg/L	10	12	14	10	6	10
pH	pH units	7.66	7.80	8.19	7.90	7.74	7.86
Turbidity	NTU	40	1.9	0.53	0.84	0.32	8.72
Specific Conductance	µmhos	630	620	864	223	217	511
Color (apparent/true)	CU	68	51/31	219/186	136/88	390/44	173/87
Fluoride	mg/L	1.39	1.38	1.54	0.699	0.446	1.091
Chloride	mg/L	64.5	71.0	66.0	23.0	12.0	47.3
NO_3 as N	mg/L	0.85	0.72	2.75	0.55	0.53	1.08
PO_4 as P	mg/L	0.24	0.21	0.74	0.31	0.29	0.36
TSS	mg/L	3.4	3.0	1.6	2.4	10.5	4.2
TDS	mg/L		392				392
COD	mg/L	27.3	19.7	41.6	30.2	23.2	28.4
UV_{254} Total	cm^{-1}	0.350	0.256	0.938	0.502	0.672	0.544
TOC	mg/L	9.391	8.873	18.11	10.74	8.146	11.05
UV_{254} Dissolved	cm^{-1}	0.319	0.234	0.884	0.435	0.262	0.427
DOC	mg/L	9.618	8.791	17.40	10.28	8.117	10.84
SUVA	L/mg-m	3.31	2.66	5.08	4.23	3.23	3.70
Iron	mg/L	0.319	0.234	0.884	0.98	0.24	0.422
Manganese	mg/L	0.59	0.44	0.30		0.22	0.388
Copper	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Lead	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Cryptosporidium	oocysts/100L						<7.0
Giardia	cysts/100L						<7.0
Total Coliform	colonies/100L	TNTC	TNTC	TNTC	TNTC	TNTC	TNTC
Fecal Coliform	colonies/100L	1	0	1	1	46	9.8

HAW RIVER

PARAMETER	UNITS	AUGUST 2002					
DATE		8/5/02	8/12/02	8/19/02	8/23/02	8/28/02	AVG.
Temperature	C^0	21.3	21.5	20.6	20.4	20.2	20.8
Flow (low, over weir)	-	Low	Low	Low	Low	Rain Event	Low
Alkalinity	mg/L	88	102	120	132	126	113.6
Hardness	mg/L	56	60	48	58	60	56.4
Carbon Dioxide	mg/L	10	12	10	14	12	11.6
pH	pH units	7.98	7.98	8.14	8.00	7.94	8.01
Turbidity	NTU	0.98	0.83	1.9	0.94	1.19	1.17
Specific Conductance	µmhos	464	656	787	829	807	709
Color (apparent/true)	CU	171/96	218/140	214/167	204/159	178/158	197/144
Fluoride	mg/L	0.775	1.15	1.35	1.31	1.32	1.18
Chloride	mg/L	36.0	62.5	80.0	88.5	88.0	71
NO_3 as N	mg/L	0.88	1.00	2.1	0.83		1.20
PO_4 as P	mg/L	0.29	0.53	0.86	0.60	0.49	0.55
TSS	mg/L	4.8	2.8	5.7	1.0		3.58
TDS	mg/L	278					278
COD	mg/L	37.3	41.5	41.2	39.6	39.5	39.8
UV_{254} Total	cm^{-1}	0.638	0.738	0.796		0.813	0.746
TOC	mg/L	13.66	15.66	17.12		15.46	15.48
UV_{254} Dissolved	cm^{-1}	0.418	0.629	0.732		0.748	0.632
DOC	mg/L	12.88	14.36	16.17		15.45	14.72
SUVA	L/mg-m	3.24	4.38	4.53		4.84	4.25
Iron	mg/L	1.54	1.25	1.26	1.02	0.95	1.20
Manganese	mg/L	0.36	0.38	0.46	0.20	0.39	0.36
Copper	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Lead	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Zinc	mg/L	<0.01	<0.01	0.01	0.01	0.02	0.01
Sodium	mg/L			265	295	275	278
Total Coliform	colonies/100L	TNTC	TNTC	TNTC		TNTC	TNTC
Fecal Coliform	colonies/100L	6	7	3		67	21

HAW RIVER

PARAMETER	UNITS	SEPTEMBER 2002						
DATE		9/3/02	9/6/02	9/9/02	9/16/02	9/23/02	9/30/02	AVG.
Temperature	C^0	19.6	20.6	20.8	20.7	20.0	20.9	20.3
Flow (low, over weir)	-	+9" ow	+3" ow	+1" ow	+1.5" ow	+1"	+3" ow	+3.1ow
Alkalinity	mg/L	13	28	38	68	48	40	37
Hardness	mg/L	28	30	32	40	34	26	33
Carbon Dioxide	mg/L	6	10	10	8	12	10	9
pH	pH units	6.98	7.40	7.63	7.91	7.61	7.57	7.51
Turbidity	NTU	35	2.9	1.84	1.40	2.20	8.0	8.7
Specific Conductance	µmhos	111	160	263	420	228	163	236
Color (apparent/true)	CU	277/82	90/65	90/63	93/82	112/87	111/93	129/78
Fluoride	mg/L	.117	.196	.394	.664	.27	.210	.309
Chloride	mg/L	3.5	9.0	22.0	41.0	15.5	9.5	16.8
NO_3 as N	mg/L	0.41	0.29	0.28	0.57	0.42	0.34	0.39
PO_4 as P	mg/L	0.19	0.28	0.63	0.33	0.20		0.33
TSS	mg/L	13.0		3.1		3.5	2.0	3.6
TDS	mg/L	141	185					163
COD	mg/L	20.4	21.1	23.1	28.8	25.7	22.2	23.6
UV_{254} Total	cm^{-1}	.489	.351	.357	.433	.453	.463	.424
TOC	mg/L	6.958	7.274	8.416	10.79	9.525		8.593
UV_{254} Dissolved	cm^{-1}	.202	.258	.232	.304	.386	.359	.290
DOC	mg/L	6.814	6.640	7.908	10.42	9.322		8.223
SUVA	L/mg-m	2.96	3.88	2.93	2.92	4.14		3.37
Iron	mg/L	2.53		1.08		1.81		1.81
Manganese	mg/L	0.05		0.09		0.13		0.09
Copper	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01		<0.01
Lead	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01		<0.01
Total Coliform	colonies/100 L	TNTC	TNTC	TNTC	TNTC	TNTC	TNTC	TNTC
Fecal Coliform	colonies/100 L	16	4	103	16	20	22	30.2
Sodium	mg/L				76.5			76.5

HAW RIVER

PARAMETER	UNITS	OCTOBER 2002				
DATE		10/7	10/14	10/21	10/28	AVG.
Temperature	C^0		18.3	16.3	13.4	16.0
Flow (low, over weir)	-	+2" OW	+9" OW	+5.5"OW	+4.5"OW	+5.25
Alkalinity	mg/L	71	25	31.0	37.0	41
Hardness	mg/L	48	34	38.0	37.0	39
Carbon Dioxide	mg/L	8	14	10	12	11
pH	pH units	7.63	6.83	6.82	7.20	7.12
Turbidity	NTU	4.3	31	14.3	8.9	14.6
Specific Conductance	µmhos	327	92	123	120	165
Color (apparent/true)	CU	134/115	323/80.	132/72	104/59	173/81
Fluoride	mg/L		0.140	0.180	0.195	0.172
Chloride	mg/L	25.5	4.5	8.5	8.0	11.6
NO_3 as N	mg/L	.362	.229	0.256	0.178	.256
PO_4 as P	mg/L	.28	.16	0.15	0.20	.20
TSS	mg/L				3.5	3.5
TDS	mg/L	234			104	169
COD	mg/L	31.2	22.8	18.4	17.2	15.4
UV_{254} Total	cm^{-1}	0.576	0.593	0.383	0.309	.465
TOC	mg/L			6.95	6.29	6.62
UV_{254} Dissolved	cm^{-1}	0.505	0.320	0.262	0.219	.327
DOC	mg/L			7.20	6.55	6.88
SUVA	L/mg-m			3.64	3.34	3.49
Iron	mg/L	2.17	4.08	1.99	1.54	2.45
Manganese	mg/L	0.15	0.27	0.21	0.04	0.17
Copper	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Lead	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Total Coliform	colonies/100L	TNTC	TNTC	TNTC	TNTC	TNTC
Fecal Coliform	colonies/100L	23	47	35	24	32.3
Sodium	mg/L			13.9		13.9
Zinc	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01

HAW RIVER

PARAMETER	UNITS	NOVEMBER 2002					
DATE		11-4-02	11-11-02	11-18-02	11-25-02		AVG.
Temperature	C^0	8.5	13.5	9.4	6.5		9.5
Flow (low, over weir)	-	+5 ½" ow	+5" ow	+17" ow	+5.5" ow		+8.2" ow
Alkalinity	mg/L	31	30	19	28		27
Hardness	mg/L	29	35	25	30		30
Carbon Dioxide	mg/L	12	14	12	8		12
pH	pH units	7.14	7.17	6.95	6.94		7.05
Turbidity	NTU	0.93	0.70	1.0	8.0		2.66
Specific Conductance	µmhos	112	100	54	85		88
Color (apparent/true)	CU	118/49	94/49	345/98	93/36		163/58
Fluoride	mg/L	0.18	0.18	0.11	0.14		0.15
Chloride	mg/L	7.0	7.0	3.5	5.5		5.8
NO_3 as N	mg/L	0.228	0.228	0.168	0.210		0.208
PO_4 as P	mg/L	0.05	0.12	0.05	0.03		0.06
TSS	mg/L		3.3	20.0	1.0		8.1
TDS	mg/L	98	98	85	86		92
COD	mg/L	15.3	14.5	20.8	12.5		15.8
UV_{254} Total	cm^{-1}	0.217	0.273	0.567	0.264		0.330
TOC	mg/L	5.68	5.94	7.24	5.78		0.330
UV_{254} Dissolved	cm^{-1}	0.204	0.191	0.275	0.179		0.212
DOC	mg/L	6.34	5.96	8.22	5.27		6.45
SUVA	L/mg-m	3.22	3.20	3.34	3.40		3.29
Iron	mg/L		1.12	4.20	1.44		2.25
Manganese	mg/L		0.14	0.24	0.21		0.13
Copper	mg/L		<0.01	<0.01	<0.01		<0.01
Lead	mg/L		<0.01	<0.01	<0.01		<0.01
Total Coliform	colonies/100L	TNTC	TNTC	TNTC	120		TNTC
Fecal Coliform	colonies/100L	38	51	59	3		38
Cryptosporidium	oocysts/100L						
Giardia	cysts/100L						
Aluminum	mg/L		0.01	<0.01	<0.01		<0.01
Sodium	mg/L		8.9				8.9

HAW RIVER

PARAMETER	UNITS	December 2002					
DATE		12/2/02	12/9/02	12/16/02	12/23/02	12/30/02	AVG.
Temperature	C^0	5.3	1.5	4.4	5.0		4.0
Flow (low, over weir)	-	2"	5.5"	15"	9"	8"	8"
Alkalinity	mg/L	34.0	28.0	20.5	21.5	19.0	24.6
Hardness	mg/L	34.0	28.1	24.5	25.0	26.5	27.6
Carbon Dioxide	mg/L	16	14	12	16	12	14
pH	pH units	6.94	7.08	6.98	7.04	7.06	7.02
Turbidity	NTU	9.5	6.7	27.0	13.7	2.3	11.8
Specific Conductance	µmhos	94	113	52	77	79.4	83
Color (apparent/true)	CU	111/ 105	108/ 84	238/ 51	139/ 45	142/ 39	148/ 65
Fluoride	mg/L	0.168	0.139	0.094	0.125	0.126	0.130
Chloride	mg/L	6.5	11.0	3.5	6.75	3.25	6.2
NO_3 as N	mg/L	0.332	0.356	0.206	0.355	0.254	0.301
PO_4 as P	mg/L	0.06	0.08	0.03	0.02	0.03	0.04
TSS	mg/L	2.5	4.0	14.0	2.5	5.0	5.6
TDS	mg/L	89	98	56	68	93	81
COD	mg/L	15.1		11.2	12.0	10.5	12.2
UV_{254} Total	cm^{-1}	0.271		0.420	0.295	0.265	0.313
TOC	mg/L	4.67		4.85	4.73	3.77	4.50
UV_{254} Dissolved	cm^{-1}	0.152		0.207	0.150	0.123	0.158
DOC	mg/L	6.07		5.32	4.91	3.88	5.04
SUVA	L/mg-m	2.50		3.89	3.05	3.17	3.15
Iron	mg/L	1.67	1.58	2.14	1.56	1.45	1.68
Manganese	mg/L	0.22	0.18	0.09	0.07	0.04	0.19
Copper	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Lead	mg/L	<0.01	<0.01				<0.01
Total Coliform	colonies/100L	TNTC	TNTC	TNTC		128	TNTC
Fecal Coliform	colonies/100L		1117	17		8	13
Aluminum	mg/L	0.03	<0.01	<0.01	<0.01		<0.01
Sodium	mg/L			3.80			3.80

HAW RIVER

PARAMETER	UNITS	January 2003					
DATE		1/6/03	1/13/03	1/21/03	1/27/03		AVG.
Alkalinity	mg/L	20	20	32	34		26
Aluminum	mg/L	<0.01	<0.01	<0.01	<0.01		<0.01
Carbon Dioxide	mg/L	5	6	6	3		5
Chloride	mg/L	3.0	6.5	7.5	9.0		6.5
COD	mg/L	12.0	-	13.7	12.2		12.5
Color (apparent/true)	CU	186/ 62	126/ 44	126/ 38	125/40		141/46
Copper	mg/L	<0.01	<0.01	<0.01	<0.01		<0.01
DOC	mg/L	4.50	4.051	4.28	4.04		4.22
Fecal Coliform	colonies/100L	11	8	2	4		6
Flow (low, over weir)	inches	12.5"	7"	6"	6.5"		8"
Fluoride	mg/L	0.114	0.203	0.161	0.166		0.161
Hardness	mg/L	27	30	28	26		28
Iron	mg/L	1.98	1.65	1.46	1.51		1.65
Lead	mg/L	-	<0.01	-	<0.01		<0.01
Manganese	mg/L	0.08	0.16	0.17	0.16		0.14
NO_3 as N	mg/L	0.236	0.454	0.899	0.437		0.506
pH	pH units	7.32	7.33	7.24	7.33		7.31
PO_4 as P	mg/L	0.03	0.03	0.04	0.05		0.04
Sodium	mg/L	-	-	16.2	-		16.2
Specific Conductance	µmhos	79	80	127	139		106
Sulfate	mg/L	-	-	20.2	18.5		19.4
SUVA	L/mg-m	3.53	4.17	3.08	4.31		3.77
TDS	mg/L	67	85	100	98		88
Temperature	C^0	3.2	2.1	2.2	0.2		1.9
TOC	mg/L	4.17	3.90	4.02	3.84		3.98
Total Coliform	colonies/100L	TNTC	TNTC	73	TNTC		TNTC
TSS	mg/L	5.3	4.5	1.0	4.4		3.8
Turbidity	NTU	22	14.1	11.9	11.7		14.9
UV_{254} Dissolved	cm^{-1}	0.159	0.169	0.132	0.174		0.158
UV_{254} Total	cm^{-1}	0.342	0.268	0.266	0.270		0.286

HAW RIVER

PARAMETER	UNITS	February 2003					
DATE		2/3/03	2/10/03	2/18/03	2/14/03		AVG.
Alkalinity	mg/L	24	22	26	18		22
Aluminum	mg/L	<0.01	<0.01	0.01	<0.01		<0.01
Carbon Dioxide	mg/L	6	6	7	10		7.2
Chloride	mg/L	6.0	5.5	8.5	6.0		6.5
COD	mg/L	13.3	11.9	13.2	17.5		14.0
Color (apparent/true)	CU	133/44	155/46	106/33	950/94		336/54
Copper	mg/L	<0.01	<0.01	<0.01	0.01		<0.01
DOC	mg/L	3.147	4.131	3.027	5.431		3.93
Fecal Coliform	colonies/100L	1	7	4	112		31
Flow (low, over weir)	inches	7.5 in.	8.0 in.	7.5 in.	4 ft.		17.8 in.
Fluoride	mg/L	0.12	0.12	0.13	0.09		0.12
Hardness	mg/L	32	24	26	26		27
Iron	mg/L	1.88	1.59	1.66	6.45		2.90
Lead	mg/L	-	<0.01	-	<0.01		<0.01
Manganese	mg/L	0.09	0.08	0.10	0.23		0.12
NO_3 as N	mg/L	0.263	0.248	0.357	0.296		0.29
pH	pH units	7.29	6.97	7.17	7.45		7.22
PO_4 as P	mg/L	0.03	0.03	0.02	0.03		0.03
Sodium	mg/L	-	6.9	-	3.1		5.0
Specific Conductance	µmhos	94	81	100	60		84
Sulfate	mg/L	14.1	13.2	15.7	14.2		14.3
SUVA	L/mg-m	5.31	3.82	1.39	2.87		3.35
TDS	mg/L	83	82	84	88		84
Temperature	C^0	4.2	4.3	2.0	6.8		4.3
TOC	mg/L	3.635	3.712	3.661	4.757		3.94
Total Coliform	colonies/100L	78	TNTC	58	TNTC		134
TSS	mg/L	5.6	7.2	2.0	54		17.2
Turbidity	NTU	12.9	18.4	10.3	80		30.4
UV_{254} Dissolved	cm^{-1}	0.167	0.158	0.042	0.156		0.131
UV_{254} Total	cm^{-1}	0.252	0.291	0.217	0.898		0.414
Zinc	mg/L	-	<0.01	-	0.01		<0.01
Calcium	mg/L	-	0.59	-	0.45		0.52
Magnesium	mg/L	-	2.0	-	1.7		1.8
Potassium	mg/L	-	1.9	-	2.6		2.2

HAW RIVER

PARAMETER	UNITS	March 2003				
DATE		3-3-03	3-10-03	3-17-03	3-24-03	AVG.
Alkalinity	mg/L	22	20	19	16	19
Aluminum	mg/L	0.02	<0.01	<0.01	<0.01	0.01
Carbon Dioxide	mg/L	8	4	12	6	7.5
Chloride	mg/L	5.0	4.5	4.5	4.0	4.5
COD	mg/L	11.7	15.0	18.2	19.5	16.1
Color(apparent/true)	CU	418 / 87	207/77	827/88	414/92	467/86
Copper	mg/L	<0.01	<0.01	0.01	0.01	<0.01
DOC	mg/L	8.461	3.545	7.022		6.343
Coliform, Fecal	colonies/100mL	40	678	>3000	>3000	1680
Coliform, Total	colonies/100mL	TNTC	TNTC	TNTC	-	TNTC
Flow (low, over weir)	inches	21	12	17	17	17
Fluoride	mg/L	0.105	0.108	0.141	0.091	0.111
Hardness	mg/L	26	22	31.5	22	25.4
Iron	mg/L	3.22	2.01	5.22	3.28	3.43
Lead	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Manganese	mg/L	0.05	0.05	0.13	0.06	0.07
NO_3 as N	mg/L	0.29	0.14	0.27	0.19	0.22
pH	pH units	7.57	7.08	6.88	7.30	7.21
PO_4 as P	mg/L	0.02	0.03	0.05	0.06	0.04
Sodium	mg/L	4.8	7.1		3.5	5.1
Specific Conductance	µmhos	71	82	77	59	72
Sulfate	mg/L	14.2	14.2	18.2	15.2	15.5
SUVA	L/mg-m	0.42	2.82	3.26		2.17
TDS	mg/L	83	70	95	78	81.5
Temperature	C^0	7.3	10.4	10.4	13.1	10.3
TOC	mg/L	4.320	4.563	5.714	-	4.866
TSS	mg/L	14.8	7.0	47.0	12.5	81.3
Turbidity	NTU	54	23	101	-	59
UV_{254} Dissolved	cm^{-1}	0.036	0.100	0.229	-	0.122
UV_{254} Total	cm^{-1}	0.608	0.371	0.917	-	0.632
Zinc	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Calcium	mg/L	4.2	5.1	-	3.7	4.3
Magnesium	mg/L	1.9	2.0	-	1.6	1.8
Potassium	mg/L	2.8	4.5	-	2.8	3.4

HAW RIVER

PARAMETER	UNITS	April 2003					
DATE		4-7-03		4-21-03			AVG.
Alkalinity	mg/L	34		28			31
Aluminum	mg/L	<0.01		-			<0.01
Carbon Dioxide	mg/L	9		6			7.5
Chloride	mg/L	4.0		-			4.0
COD	mg/L	17.8		13.7			15.8
Coliform, Fecal	colonies/100L	256		263			260
Coliform, Total	colonies/100L	TNTC		TNTC			TNTC
Color (apparent/true)	CU	595/123		177/83			386/103
Copper	mg/L	0.01		0.01			0.01
DOC	mg/L	6.125		-			6.125
Flow (low, over weir)	inches	11.5		9.0			10.25
Fluoride	mg/L	0.106		0.125			0.115
Hardness	mg/L	36		28			32
Iron	mg/L	6.06		2.53			4.30
Lead	mg/L	<0.01		<0.01			<0.01
Manganese	mg/L	0.27		0.09			0.18
NO_3 as N	mg/L	0.37		0.168			0.27
pH	pH units	7.13		6.92			7.02
PO_4 as P	mg/L	0.12		0.07			0.10
Sodium	mg/L	5.6		6.0			5.8
Specific Conductance	µmhos	76		82.7			79
Sulfate	mg/L	7.2		-			7.2
SUVA	L/mg-m	4.08		-			4.08
TDS	mg/L	63		79			71
Temperature	C^0	12.6		14.5			13.6
TOC	mg/L	5.591		5378			5.484
TSS	mg/L	77.3		3.0			40.2
Turbidity	NTU	110		11.1			60.6
UV_{254} Dissolved	cm^{-1}	0.250		-			0.250
UV_{254} Total	cm^{-1}	0.782		-			0.782
Calcium	mg/L	7.7		6.9			7.3
Magnesium	mg/L	2.9		2.3			2.6
Potassium	mg/L	3.2		2.4			2.8
Zinc	mg/L	0.02		0.01			0.02

HAW RIVER

PARAMETER	UNITS	May 2003					
DATE		5-5-03	5-19-03				AVG.
Alkalinity	mg/L	36	36				36
Aluminum	mg/L	0.02	<0.01				0.01
Carbon Dioxide	mg/L	9	5				7
Chloride	mg/L	4.0	5.5				4.8
COD	mg/L	16.0	14.7				15.4
Coliform, Fecal	colonies/100L	1	28				14
Coliform, Total	colonies/100L	TNTC	TNTC				TNTC
Color (apparent/true)	CU	153 / 41	167 / 46				160 / 44
Copper	mg/L	<0.01	<0.01				<0.01
DOC	mg/L	6.318	6.333				6.33
Flow (low, over weir)	inches	8.0	8.0				8.0
Fluoride	mg/L	0.165	0.153				0.159
Hardness	mg/L	32	35				34
Iron	mg/L	2.36	2.82				2.59
Lead	mg/L	<0.01	<0.01				<0.01
Manganese	mg/L	0.15	0.20				0.18
NO_3 as N	mg/L	0.326	0.229				0.278
PH	pH units	7.25	7.28				7.26
PO_4 as P	mg/L	0.03	0.01				0.02
Sodium	mg/L	5.8	5.3				5.6
Specific Conductance	µmhos	104.0	114.6				109.3
Sulfate	mg/L	12.8	14.0				13.4
SUVA	L/mg-m	4.51	4.07				4.29
TDS	mg/L	83	99				91
Temperature	C^0	16.3	14.5				15.4
TOC	mg/L	5.844	5.718				5.781
TSS	mg/L	4.7	8.0				6.4
Turbidity	NTU	12.3	-				12.3
UV_{254} Dissolved	cm^{-1}	0.285	0.258				0.272
UV_{254} Total	cm^{-1}	0.407	0.422				0.414

HAW RIVER

PARAMETER	UNITS	June 2003				
DATE		6-2-03	6-16-03			Average
Alkalinity	mg/L	31	30			30.5
Aluminum	mg/L	<0.01	<0.01			<0.01
Carbon Dioxide	mg/L	8	8			8
Chloride	mg/L	-	3.5			3.5
COD	mg/L	14.6	21.7			18.2
Color(apparent/true)	CU	41/187	67/900			54/543
Copper	mg/L	-	<0.01			<0.01
DOC	mg/L	5.413	7.617			6.515
Coliform, Fecal	colonies/100mL	1	>3000			1500
Coliform, Total	colonies/100mL	TNTC	TNTC			TNTC
Flow (low, over weir)	inches	8.0	12.5			10.25
Fluoride	mg/L	0.142	0.150			0.146
Hardness	mg/L	30	20			25
Iron	mg/L	2.60	6.17			4.39
Lead	mg/L	-	<0.01			<0.01
Manganese	mg/L	0.02	0.03			0.025
NO_3 as N	mg/L	0.206	0.444			0.325
pH	pH units	7.19	7.44			7.32
PO_4 as P	mg/L	0.04	0.07			0.06
Sodium	mg/L	-	5.8			5.8
Specific Conductance	µmhos	84.7	81			82.9
Sulfate	mg/L	11.8	9.7			10.8
SUVA	L/mg-m	5.10	3.37			4.24
TDS	mg/L	80	74			77
Temperature	C^0	17.8	23.0			20.4
TOC	mg/L	5.746	6.847			6.297
TSS	mg/L	4.0	101.3			52.7
Turbidity	NTU	20	110			65
UV_{254} Dissolved	cm^{-1}	0.276	0.257			0.267
UV_{254} Total	cm^{-1}	0.484	1.029			0.757
Zinc	mg/L	-	<0.01			<0.01
Calcium	mg/L	-	5.7			5.7
Magnesium	mg/L	-	2.3			2.3
Potassium	mg/L	-	3.8			3.8

HAW RIVER

PARAMETER	UNITS	July 2003				
DATE		7-7-03				
Alkalinity	mg/L	24.0				
Aluminum	mg/L	<0.01				
Carbon Dioxide	mg/L	20.0				
Chloride	mg/L	1.5				
COD	mg/L	18.0				
Color(apparent/true)	CU	39/949				
Copper	mg/L	<0.01				
DOC	mg/L	6.936				
Coliform, Fecal	colonies/100mL	TNTC				
Coliform, Total	colonies/100mL	TNTC				
Flow (low, over weir)	inches	11.5				
Fluoride	mg/L	0.152				
Hardness	mg/L	30.5				
Iron	mg/L	5.58				
Lead	mg/L	<0.01				
Manganese	mg/L	0.19				
NO_3 as N	mg/L	0.308				
pH	pH units	-				
PO_4 as P	mg/L	0.03				
Sodium	mg/L	4.5				
Specific Conductance	µmhos	77				
Sulfate	mg/L	5.0				
SUVA	L/mg-m	3.07				
TDS	mg/L	58				
Temperature	C^0	23.9				
TOC	mg/L	6.682				
TSS	mg/L	100.0				
Turbidity	NTU	127				
UV_{254} Dissolved	cm^{-1}	0.213				
UV_{254} Total	cm^{-1}	0.920				
Calcium	mg/L	7.6				
Magnesium	mg/L	2.4				
Potassium	mg/L	3.6				
Zinc	mg/L	<0.01				

HAW RIVER

PARAMETER	UNITS	August 2003				
DATE		8-4-2003				AVG.
Flow (low, over weir)	inches	11"				11"
Temperature	C°	23.7				23.7
Alkalinity	mg/L	34				34
Hardness	mg/L	28				28
Carbon Dioxide	mg/L	6				6
pH	pH units	7.31				7.31
Specific Conductance	µmhos	106				106
Turbidity	NTU	28				28
Aluminum	mg/L	<0.01				<0.01
Chloride	mg/L	6.0				6.0
COD	mg/L	16.1				16.1
Color(apparent/true)	CU	36/311				36/311
Fluoride	mg/L	0.173				0.173
NO_3 as N	mg/L	0.258				0.258
Organic Carbon TOC	mg/L	5.553				5.553
Organic Carbon DOC	mg/L	5.451				5.451
PO_4 as P	mg/L	0.05				0.05
Solids TDS	mg/L	89				89
Solids TSS	mg/L	43.0				43.0
Sulfate	mg/L	11.8				11.8
SUVA	L/mg-m	4.55				4.55
UV_{254} Dissolved	cm^{-1}	0.248				0.248
UV_{254} Total	cm^{-1}	0.440				0.440
Coliform, Fecal	colonies/100mL	14				14
Coliform, Total	colonies/100mL	TNTC				TNTC
Iron	mg/L	3.58				3.58
Manganese	mg/L	0.32				0.32
Copper	mg/L	<0.01				<0.01
Lead	mg/L	<0.01				<0.01
Zinc	mg/L	<0.01				<0.01
Calcium	mg/L	7.7				7.7
Magnesium	mg/L	2.9				2.9
Sodium	mg/L	7.9				7.9
Potassium	mg/L	2.9				2.9

HAW RIVER

PARAMETER	UNITS	September 2003				
DATE		9/2/03				
Flow (low, over weir)	inches	-				
Temperature	C°	24.2				
Alkalinity	mg/L	48				
Hardness	mg/L	38				
Carbon Dioxide	mg/L	9				
pH	pH units	7.45				
Specific Conductance	µmhos	142				
Turbidity	NTU	13.7				
Aluminum	mg/L	0.02				
Chloride	mg/L	6.5				
COD	mg/L	14.0				
Color(apparent/true)	CU	60/141				
Fluoride	mg/L	0.202				
NO_3 as N	mg/L	1.08				
Organic Carbon TOC	mg/L	21.23				
Organic Carbon DOC	mg/L	-				
PO_4 as P	mg/L	0.07				
Solids TDS	mg/L	122				
Solids TSS	mg/L	5.0				
Sulfate	mg/L	17.0				
SUVA	L/mg-m	-				
UV_{254} Dissolved	cm^{-1}	-				
UV_{254} Total	cm^{-1}	-				
Coliform, Fecal	colonies/100mL	2				
Coliform, Total	colonies/100mL	TNTC				
Iron	mg/L	2.07				
Manganese	mg/L	0.40				
Copper	mg/L	<0.01				
Lead	mg/L	<0.01				
Zinc	mg/L	<0.01				
Calcium	mg/L	10.6				
Magnesium	mg/L	3.2				
Sodium	mg/L	12.3				
Potassium	mg/L	4.0				

HAW RIVER

PARAMETER	UNITS	October 2003				
DATE		**10/6/03**				
Flow (low, over weir)	inches	N/A				
Temperature	C°	15.0				
Alkalinity	mg/L	42				
Hardness	mg/L	42				
Carbon Dioxide	mg/L	8				
pH	pH units	7.52				
Specific Conductance	µmhos	123				
Turbidity	NTU	8.7				
Aluminum	mg/L	0.04				
Chloride	mg/L	6.0				
COD	mg/L	11.0				
Color(apparent/true)	CU	100/40				
Fluoride	mg/L	0.18				
NO_3 as N	mg/L	0.192				
Organic Carbon TOC	mg/L	4.63				
Organic Carbon DOC	mg/L	N/A				
PO_4 as P	mg/L	0.03				
Solids TDS	mg/L	80				
Solids TSS	mg/L	3.5				
Sulfate	mg/L	14.8				
Coliform, Fecal	colonies/100mL	49				
Coliform, Total	colonies/100mL	TNTC				
Iron	mg/L	1.86				
Manganese	mg/L	0.21				
Copper	mg/L	<0.01				
Lead	mg/L	<0.01				
Zinc	mg/L	<0.01				
Calcium	mg/L	7.3				
Magnesium	mg/L	2.9				
Sodium	mg/L	9.3				
Potassium	mg/L	3.2				

HAW RIVER

PARAMETER	UNITS	November 2003				
DATE		11/303				
Flow (low, over weir)	inches	-				
Temperature	C°	13.9				
Alkalinity	mg/L	38				
Hardness	mg/L	36				
Carbon Dioxide	mg/L	7				
pH	pH units	7.11				
Specific Conductance	µmhos	126				
Turbidity	NTU	6.4				
Aluminum	mg/L	0.02				
Chloride	mg/L	6.0				
COD	mg/L	11.2				
Color(apparent/true)	CU	86/41				
Fluoride	mg/L	0.192				
NO_3 as N	mg/L	0.18				
Organic Carbon TOC	mg/L	4.89				
Organic Carbon DOC	mg/L	4.80				
PO_4 as P	mg/L	0.02				
Solids TDS	mg/L	93				
Solids TSS	mg/L	2.7				
Sulfate	mg/L	17.3				
Coliform, Fecal	colonies/100mL	39				
Coliform, Total	colonies/100mL	TNTC				
Iron	mg/L	1.37				
Manganese	mg/L	0.09				
Copper	mg/L	<0.01				
Lead	mg/L	<0.01				
Zinc	mg/L	<0.01				
Calcium	mg/L	8.0				
Magnesium	mg/L	3.0				
Sodium	mg/L	10.7				
Potassium	mg/L	3.6				

HAW RIVER

PARAMETER	UNITS	DECEMBER 2003				
DATE		12/1/2003				
Flow (low, over weir)	inches	7.0"				
Temperature	C°	5.5				
Alkalinity	mg/L	36				
Hardness	mg/L	40				
Carbon Dioxide	mg/L	6				
pH	pH units	7.16				
Specific Conductance	µmhos	95				
Turbidity	NTU	9.4				
Aluminum	mg/L	<0.01				
Chloride	mg/L	5.5				
COD	mg/L	9.1				
Color(apparent/true)	CU	69/40				
Fluoride	mg/L	0.16				
NO_3 as N	mg/L	0.258				
Organic Carbon TOC	mg/L	4.253				
Organic Carbon DOC	mg/L	2.246				
PO_4 as P	mg/L	0.03				
Solids TDS	mg/L	57				
Solids TSS	mg/L	3.2				
Sulfate	mg/L	11.3				
Coliform, Fecal	colonies/100mL	57				
Coliform, Total	colonies/100mL	TNTC				
Iron	mg/L	1.64				
Manganese	mg/L	0.12				
Copper	mg/L	<0.01				
Lead	mg/L	<0.01				
Zinc	mg/L	0.01				
Calcium	mg/L	8.8				
Magnesium	mg/L	2.9				
Sodium	mg/L	6.8				
Potassium	mg/L	3.1				

HAW RIVER

PARAMETER	UNITS	January 2004				
DATE		1-5-04				
Flow (low, over weir)	inches	8"				
Temperature	C°	10.7				
Alkalinity	mg/L	34				
Hardness	mg/L	32				
Carbon Dioxide	mg/L	6				
pH	pH units	7.44				
Specific Conductance	µmhos	96.7				
Turbidity	NTU	8.2				
Aluminum	mg/L	0.03				
Chloride	mg/L	5.5				
COD	mg/L	-				
Color(apparent/true)	CU	93/31				
Fluoride	mg/L	0.141				
NO_3 as N	mg/L	0.349				
Organic Carbon TOC	mg/L	3.59				
Organic Carbon DOC	mg/L	3.08				
PO_4 as P	mg/L	0.09				
Solids TDS	mg/L	78				
Solids TSS	mg/L	3.5				
Sulfate	mg/L	12.1				
Coliform, Fecal	colonies/100mL	108				
Coliform, Total	colonies/100mL	TNTC				
Iron	mg/L	14.0				
Manganese	mg/L	0.11				
Copper	mg/L	<0.01				
Lead	mg/L	<0.01				
Zinc	mg/L	<0.01				
Calcium	mg/L	7.2				
Magnesium	mg/L	2.8				
Sodium	mg/L	8.4				
Potassium	mg/L	2.8				
UV 254		0.111				
SUVA		3.60				

HAW RIVER

PARAMETER	UNITS	February 2004				
DATE		2/2/04				
Flow (low, over weir)	inches	7.0				
Temperature	C°	0.6				
Alkalinity	mg/L	28				
Hardness	mg/L	50				
Carbon Dioxide	mg/L	6				
pH	pH units	7.23				
Specific Conductance	µmhos	131				
Turbidity	NTU	0.6				
Aluminum	mg/L	<0.01				
Chloride	mg/L	11.0				
COD	mg/L	14.0				
Color(apparent/true)	CU	88/27				
Fluoride	mg/L	0.128				
NO_3 as N	mg/L	0.309				
Organic Carbon TOC	mg/L	3.318				
Organic Carbon DOC	mg/L	2.951				
PO_4 as P	mg/L	0.10				
UV_{254}	cm^{-1}	0.097				
Solids TDS	mg/L	-				
Solids TSS	mg/L	3.5				
Sulfate	mg/L	14.0				
Coliform, Fecal	colonies/100mL	24				
Coliform, Total	colonies/100mL	TNTC				
Iron	mg/L	1.22				
Manganese	mg/L	0.16				
Copper	mg/L	<0.01				
Lead	mg/L	<0.01				
Zinc	mg/L	<0.01				
Calcium	mg/L	7.1				
Magnesium	mg/L	2.9				
Sodium	mg/L	11.3				
Potassium	mg/L	2.6				
Cadmium	mg/L	<0.01				
Chromium	mg/L	<0.01				

Allan Williams A-50

Office of the City Manager
City of Greensboro

GREENSBORO

January 8, 2004

2004 JAN 12 PM 2:57

Mr. David Cheek
Alamance County Manager
124 W. Elm Street
Graham, NC 27253

Dear Mr. ~~Cheek~~ DAVID:

You may be aware that in the drought of 2002 Greensboro sought permission from the State of North Carolina to rehabilitate an abandoned dam on the Haw River to supplement Greensboro's water supplies during extreme drought. The project was successfully completed at a cost of approximately $9 million and provides a considerable degree of protection to Greensboro's water supply in the event of droughts with a return frequency of every 10-15 years. Except in such drought years we do not expect to transfer water from the Haw to our reservoir other than for testing equipment. While used infrequently, the project represents a great deal of safety to our community when extreme dry weather returns.

North Carolina's Department of Environment and Natural Resources allowed this construction to proceed in light of the extreme danger Greensboro faced in 2002. However, the State has asked Greensboro to proceed with a request to classify the upstream watershed to "Water Supply" watershed in keeping with statutory requirements. Our next step is to request our Council to approve such a request to the State, but we wanted to let you and your county (as well as the other three counties involved) know before this action was taken. I have enclosed a map showing the area covered and my staff will call you shortly to discuss any questions you may have.

We are requesting Watershed V, a minimal classification, because this is only an interruptible water supply upstream of our reservoirs. In that case, there would be no development restriction on the area. Should the State insist on Watershed IV, development would generally be limited to 2 dwelling units per acre, with higher density option of 70% built upon, if stormwater management practices are employed. We do not believe that this will have any impact to the area in your county as it is highly rural, and unless central sewer is installed, a density of 2 units per acre is not possible.

If you have any questions, please contact Deputy City Manager, Mitchell Johnson, in my office at 373-2002.

Sincerely,

J. Edward Kitchen
City Manager

One Governmental Plaza, P.O. Box 3136, Greensboro, NC 27402-3136 (336) 373-2002

2317

(9)

Office of the City Manager
City of Greensboro

GREENSBORO

January 8, 2004

Mr. Tom Robinson
Rockingham County Manager
Governmental Center, Suite 206
371 NC 65
Wentworth, NC 27375

Dear Mr. Robinson:

You may be aware that in the drought of 2002 Greensboro sought permission from the State of North Carolina to rehabilitate an abandoned dam on the Haw River to supplement Greensboro's water supplies during extreme drought. The project was successfully completed at a cost of approximately $9 million and provides a considerable degree of protection to Greensboro's water supply in the event of droughts with a return frequency of every 10-15 years. Except in such drought years we do not expect to transfer water from the Haw to our reservoir other than for testing equipment. While used infrequently, the project represents a great deal of safety to our community when extreme dry weather returns.

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Sincerely,

J. Edward Kitchen
City Manager

One Governmental Plaza, P.O. Box 3136, Greensboro, NC 27402-3136 (336) 373-2002

Office of the City Manager
City of Greensboro

GREENSBORO

January 8, 2004

Mr. Jeff Earp
Caswell County Manager
P.O. Box 98
Yanceyville, NC 27379

Dear Mr. Earp:

You may be aware that in the drought of 2002 Greensboro sought permission from the State of North Carolina to rehabilitate an abandoned dam on the Haw River to supplement Greensboro's water supplies during extreme drought. The project was successfully completed at a cost of approximately $9 million and provides a considerable degree of protection to Greensboro's water supply in the event of droughts with a return frequency of every 10-15 years. Except in such drought years we do not expect to transfer water from the Haw to our reservoir other than for testing equipment. While used infrequently, the project represents a great deal of safety to our community when extreme dry weather returns.

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Sincerely,

J. Edward Kitchen
City Manager

One Governmental Plaza, P.O. Box 3136, Greensboro, NC 27402-3136 (336) 373-2002

Office of the City Manager
City of Greensboro

January 8, 2004

Mr. Willie Best
Guilford County Manager
301 West Market Street
P.O. Box 3247
Greensboro, NC 27402

Dear Mr. Best: WILLIE

You may be aware that in the drought of 2002 Greensboro sought permission from the State of North Carolina to rehabilitate an abandoned dam on the Haw River to supplement Greensboro's water supplies during extreme drought. The project was successfully completed at a cost of approximately $9 million and provides a considerable degree of protection to Greensboro's water supply in the event of droughts with a return frequency of every 10-15 years. Except in such drought years we do not expect to transfer water from the Haw to our reservoir other than for testing equipment. While used infrequently, the project represents a great deal of safety to our community when extreme dry weather returns.

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Sincerely,

J. Edward Kitchen
City Manager

One Governmental Plaza, P.O. Box 3136, Greensboro, NC 27402-3136 (336) 373-2002

3317

15A NCAC 02B .0104 CONSIDERATIONS/ASSIGNING/IMPLEMENTING WATER SUPPLY CLASSIFICATIONS

(a) In determining the suitability of waters for use as a source of water supply for drinking, culinary or food processing purposes after approved treatment, the Commission will be guided by the physical, chemical, and bacteriological maximum contaminant levels specified by Environmental Protection Agency regulations adopted pursuant to the Public Health Service Act, 42 U.S.C. 201 et seq., as amended by the Safe Drinking Water Act, 42 U.S.C. 300(f) et seq. In addition, the Commission shall be guided by the requirements for unfiltered and filtered water supplies and the maximum contaminant levels specified in the North Carolina Rules Governing Public Water Supplies, 15A NCAC 18C .1100, .1200 and .1500 and comments provided by the Division of Environmental Health.

(b) All local governments that have land use authority within designated water supply watersheds shall adopt and enforce ordinances that at a minimum meet the requirements of G.S. 143-214.5 and this Subchapter. The Commission shall approve local water supply protection programs if it determines that the requirements of the local program equal or exceed the minimum statewide water supply watershed management requirements adopted pursuant to this Section. Local governments may adopt and enforce more stringent controls. Local management programs and modifications to these programs must be approved by the Commission and shall be kept on file by the Division of Environmental Management, Division of Environmental Health and the Division of Community Assistance.

(c) All waters used for water supply purposes or intended for future water supply use shall be classified to the most appropriate water supply classification as determined by the Commission. Water supplies may be reclassified to a more or less protective water supply classification on a case-by-case basis through the rule-making process. A more protective water supply classification may be applied to existing water supply watersheds after receipt of a resolution from all local governments having land use jurisdiction within the designated water supply watershed requesting a more protective water supply classification. Local government(s) requesting the Future Water Supply classification must provide to the Division evidence of intent which may include one or a combination of the following: capital improvement plans, a Water Supply Plan as described in G.S. 143-355(l), bond issuance for the water treatment plant or land acquisition records. A 1:24,000 scale USGS topographical map delineating the location of the intended water supply intake is also required. Requirements for activities administered by the State of North Carolina, such as the issuance of permits for landfills, NPDES wastewater discharges, land application of residuals and road construction activities shall be effective upon reclassification for future water supply use. The requirements shall apply to the critical area and balance of the watershed or protected area as appropriate. Upon receipt of the final approval letter from the Division of Environmental Health for construction of the water treatment plant and water supply intake, the Commission shall initiate rule-making to modify the Future Water Supply supplemental classification. Local government implementation is not required until 270 days after the Commission has modified the Future Water Supply (FWS) supplemental classification through the rule-making process and notified the affected local government(s) that the appropriate local government land use requirements applicable for the water supply classifications are to be adopted, implemented and submitted to the Commission for approval. Local governments may also adopt land use ordinances that meet or exceed the state's minimum requirements for water supply watershed protection prior to the end of the 270 day deadline. The requirements for FWS may also be applied to waters formerly used for drinking water supply purposes, and currently classified for water supply use, at the request of local government(s) desiring protection of the watershed for future water supply use.

(d) In considering the reclassification of waters for water supply purposes, the Commission shall take into consideration the relative proximity, quantity, composition, natural dilution and diminution of potential sources of pollution to determine that risks posed by all significant pollutants are adequately considered.

(e) For the purposes of implementing the water supply watershed protection rules (15A NCAC 2B .0100, .0200 and .0300) and the requirements of G.S. 143-214.5, the following schedule of implementation shall be applicable:

August 3, 1992 - Activities administered by the State of North Carolina, such as the issuance of permits for landfills, NPDES wastewater discharges, and land application of sludge/residuals, and road construction activities, shall become effective regardless of the deadlines for municipal and county water supply watershed protection ordinance adoptions;

By July 1, 1993 - Affected municipalities with a population greater than 5,000 shall adopt and submit the appropriate drinking water supply protection, maps and ordinances that meet or exceed the minimum management requirements of these Rules;

By October 1, 1993 -Affected municipalities with a population less than 5,000 shall adopt and submit the appropriate drinking water supply protection, maps and ordinances that meet or exceed the minimum management requirements of these Rules;

By January 1, 1994 -Affected county governments shall adopt and submit the appropriate drinking water supply protection, maps and ordinances that meet or exceed the minimum management requirements of these Rules.

Affected local government drinking water supply protection ordinances shall become effective on or before these dates. Local governments may choose to adopt, implement and enforce these provisions prior to this date. Three copies of the adopted and effective relevant ordinances shall be sent to the Division along with a cover letter from the municipal or county attorney, or its designated legal counsel, stating that the local government drinking water supply protection ordinances shall meet or exceed the rules in 15A NCAC 2B .0100, .0200 and .0300. If the rules in 15A NCAC 2B .0100, .0200 and .0300 are revised, the Division shall modify and distribute to local governments, as appropriate, a revised model ordinance. The Division shall approve the amended local maps and ordinances, or request the Commission to take appropriate action under G.S. 143-214.5.

(f) Wherever in this Subchapter it is provided that local governments assume responsibility for operation and maintenance of engineered stormwater control(s), this shall be construed to require responsible local governments to inspect such controls at least once per year, to determine whether the controls are performing as designed and intended. Records of inspections shall be maintained on forms supplied by the Division. Local governments may require payment of reasonable inspection fees by entities which own the controls, as authorized by law. In the event inspection shows that a control is not performing adequately, the local government shall order the owning entity to take corrective actions. If the entity fails to take sufficient corrective actions, the local government may impose civil penalties and pursue other available remedies in accordance with the law. The availability of new engineered stormwater controls as an alternative to lower development density and other measures under the provisions of this Subchapter and local ordinances approved by the Commission shall be conditioned on the posting of adequate financial assurance, in the form of a cash deposit or bond made payable to the responsible local government, or other acceptable security. The establishment of a stormwater utility by the responsible local government shall be deemed adequate financial assurance. The purpose of the required financial assurance is to assure that maintenance, repairs or reconstruction necessary for adequate performance of the controls may be made by the owning entity or the local government which may choose to assume ownership and maintenance responsibility.

(g) Where higher density developments are allowed, stormwater control systems must use wet detention ponds as described in 15A NCAC 2H .1003(g)(2), (g)(3), (i), (j), (k), and (l). Alternative stormwater management systems consisting of other treatment options, or a combination of treatment options, may be approved by the Director. The design criteria for approval shall be 85 percent average annual removal of Total Suspended Solids. Also the discharge rate shall meet one of the following criteria:

(1) the discharge rate following the 1-inch design storm shall be such that the runoff draws down to the pre-storm design stage within five days, but not less than two days; or

(2) the post development peak discharge rate shall equal the predevelopment rate for the 1-year, 24 hour storm.

(h) Where no practicable alternative exists, discharge from groundwater remediation projects addressing water quality problems shall be allowed in accordance with other applicable requirements in all water supply classifications.

(i) To further the cooperative nature of the water supply watershed management and protection program provided for herein, local governments with jurisdiction over portions of classified watersheds and local governments which derive their water supply from within such watersheds are encouraged to establish joint water quality monitoring and information sharing programs, by interlocal agreement or otherwise. Such cooperative programs shall be established in consultation with the Division.

(j) Where no practicable alternative exists other than surface water discharge, previously unknown existing unpermitted wastewater discharges shall incorporate the best possible technology treatment as deemed appropriate by the Division.

(k) The Commission may designate water supply watersheds or portions thereof as critical water supply watersheds pursuant to G.S. 143-214.5(b).

(l) A more protective classification may be allowed by the Commission although minor occurrences of nonconforming activities are present prior to reclassification. When the Commission allows a more protective classification, expansions of existing wastewater discharges that otherwise would have been prohibited may be allowed if there is no increase in permitted pollutant loading; other discharges of treated wastewater existing at the time of reclassification may be required to meet more stringent effluent limitations as determined by the Division. Consideration of all practicable alternatives to surface water discharge must be documented.

(m) The construction of new roads and bridges and non-residential development shall minimize built-upon area, divert stormwater away from surface water supply waters as much as possible, and employ best management practices (BMPs) to minimize water quality impacts. To the extent practicable, the construction of new roads in the critical area shall be

avoided. The Department of Transportation shall use BMPs as outlined in their document entitled "Best Management Practices for the Protection of Surface Waters" which is hereby incorporated by reference including all subsequent amendments and editions. This material is available for inspection at the Department of Environment, Health, and Natural Resources, Division of Environmental Management, Water Quality Planning Branch, 512 North Salisbury Street, Raleigh, North Carolina.

(n) Activities within water supply watersheds are also governed by the North Carolina Rules Governing Public Water Supplies, 15A NCAC 18C .1100, .1200 and .1500. Proposed expansions of treated wastewater discharges to water supply waters must be approved by the Division of Environmental Health.

(o) Local governments shall correctly delineate the approximate normal pool elevation for backwaters of water supply reservoirs for the purposes of determining the critical and protected area boundaries as appropriate. Local governments must submit to the Division a 1:24,000 scale U.S.G.S. topographic map which shows the local government's corporate and extraterritorial jurisdiction boundaries, the Commission's adopted critical and protected area boundaries, as well as the local government's interpreted critical and protected area boundaries. All revisions (expansions or deletions) to these areas must be submitted to the Division and approved by the Commission prior to local government revision.

(p) Local governments shall encourage participation in the Agricultural Cost Share Program. The Soil and Water Conservation Commission is the designated management agency responsible for implementing the provisions of the rules in 15A NCAC 2H .0200 pertaining to agricultural activities. Agricultural activities are subject to the provisions of the Food Security Act of 1985 and the Food, Agriculture, Conservation and Trade Act of 1990 (Public Law 101-624) and 15A NCAC 2H .0217). The following shall be required within WS-I watersheds and the critical areas of WS-II, WS-III and WS-IV watersheds:

(1) Agricultural activities conducted after January 1, 1993 shall maintain a minimum 10 foot vegetated buffer, or equivalent control as determined by the Soil and Water Conservation Commission, along all perennial waters indicated on the most recent versions of U.S.G.S. 1:24,000 (7.5 minute) scale topographic maps or as determined by local government studies; and

(2) Animal operation deemed permitted and permitted under 15A NCAC 2H .0217 are allowed in all classified water supply watersheds.

(q) Existing development is not subject to the requirements of these Rules. Redevelopment is allowed if the rebuilding activity does not have a net increase in built-upon area or provides equal or greater stormwater control than the previous development, except that there are no restrictions on single family residential redevelopment. Expansions to structures classified as existing development must meet the requirements of the rules in 15A NCAC 2B .0100, .0200 and .0300; however, the built-upon area of the existing development is not required to be included in the density calculations. Expansions to structures other than existing development must meet the density requirements of these Rules for the entire project site. If a nonconforming lot of record is not contiguous to any other lot owned by the same party, then that lot of record shall not be subject to the development restrictions of these Rules if it is developed for single-family residential purposes. Local governments may, however, require the combination of contiguous nonconforming lots of record owned by the same party in order to establish a lot or lots that meet or nearly meet the development restrictions of the rules under 15A NCAC 2B. Any lot or parcel created as part of a family subdivision after the effective date of these Rules shall be exempt from these Rules if it is developed for one single-family detached residence and if it is exempt from local subdivision regulation. Any lot or parcel created as part of any other type of subdivision that is exempt from a local subdivision ordinance shall be subject to the land use requirements (including impervious surface requirements) of these Rules, except that such a lot or parcel must meet the minimum buffer requirements to the maximum extent practicable. Local governments may also apply more stringent controls relating to determining existing development, redevelopment or expansions.

(r) Development activities may be granted minor variances by local governments utilizing the procedures of G.S. 153A Article 18, or G.S. 160A, Article 19. A description of each project receiving a variance and the reason for granting the variance shall be submitted to the Commission on an annual basis by January 1. For all proposed major and minor variances from the minimum statewide watershed protection rules, the local Watershed Review Board shall make findings of fact showing that:

(1) there are practical difficulties or unnecessary hardships that prevent compliance with the strict letter of the ordinance;

(2) the variance is in harmony with the general purpose and intent of the local watershed protection ordinance and preserves its spirit; and

(3) in granting the variance, the public safety and welfare have been assured and substantial justice has been done.

The local Watershed Review Board may attach conditions to the major or minor variance approval that support the purpose of the local watershed protection ordinance. If the variance request qualifies as a major variance, and the local Watershed Review Board decides in favor of granting the major variance, the Board shall then prepare a preliminary record of the hearing and submit it to the Commission for review and approval. If the Commission approves the major variance or approves with conditions or stipulations added, then the Commission shall prepare a Commission decision which authorizes the local Watershed Review Board to issue a final decision which would include any conditions or stipulations added by the Commission. If the Commission denies the major variance, then the Commission shall prepare a Commission decision to be sent to the local Watershed Review Board. The local Watershed Review Board shall prepare a final decision denying the major variance. For all proposed major and minor variances the local government considering or requesting the variance shall notify and allow a reasonable comment period for all other local governments having jurisdiction within the watershed area governed by these Rules and the entity using the water supply for consumption. Appeals from the local government decision on a major or minor variance request are made on certiorari to the local Superior Court. Appeals from the Commission decision on a major variance request are made on judicial review to Superior Court. When local ordinances are more stringent than the state's minimum water supply protection rules a variance to the local government's ordinance is not considered a major variance as long as the result of the variance is not less stringent than the state's minimum requirements.

(s) Cluster development is allowed on a project-by-project basis as follows:

(1) Overall density of the project meets associated density or stormwater control requirements under 15A NCAC 2B .0200;

(2) Buffers meet the minimum statewide water supply watershed protection requirements;

(3) Built-upon areas are designed and located to minimize stormwater runoff impact to the receiving waters, minimize concentrated stormwater flow, maximize the use of sheet flow through vegetated areas, and maximize the flow length through vegetated areas;

(4) Areas of concentrated density development are located in upland areas and away, to the maximum extent practicable, from surface waters and drainageways;

(5) Remainder of tract to remain in vegetated or natural state;

(6) The area in the vegetated or natural state may be conveyed to a property owners association; a local government for preservation as a park or greenway; a conservation organization; or placed in a permanent conservation or farmland preservation easement. A maintenance agreement shall be filed with the property deeds; and

(7) Cluster developments that meet the applicable low density requirements shall transport stormwater runoff by vegetated conveyances to the maximum extent practicable.

(t) Local governments may administer oversight of future development activities in single family residential developments that exceed the applicable low density requirements by tracking dwelling units rather than percentage built-upon area, as long as the wet detention pond or other approved stormwater control system is sized to capture and treat runoff from all pervious and built-upon surfaces shown on the development plan and any off-site drainage from pervious and built-upon surfaces, and when an additional safety factor of 15 percent of built-upon area of the project site is figured in.

(u) All new development shall meet the development requirements on a project-by-project basis except local governments may submit ordinances and ordinance revisions which use density or built-upon area criteria averaged throughout the local government's watershed jurisdiction instead of on a project-by-project basis within the watershed. Prior to approval of the ordinance or amendment, the local government must demonstrate to the Commission that the provisions as averaged meet or exceed the statewide minimum requirements, and that a mechanism exists to ensure the orderly and planned distribution of development potential throughout the watershed jurisdiction.

(v) Silviculture activities are subject to the provisions of the Forest Practices Guidelines Related to Water Quality (15A NCAC 1I .0101 - .0209). The Division of Forest Resources is the designated management agency responsible for implementing the provisions of the rules in 15A NCAC 2B .0200 pertaining to silviculture activities.

(w) Local governments shall, as the existing laws allow, develop, implement, and enforce comprehensive nonpoint source and stormwater discharge control programs to reduce water pollution from activities within water supply watersheds such as development, forestry, landfills, mining, on-site sanitary sewage systems which utilize ground adsorption, toxic and hazardous materials, transportation, and water based recreation.

(x) When the Commission assumes a local water supply protection program as specified under G.S. 143-214.5(e) all local permits authorizing construction and development activities as regulated by the statewide minimum water supply watershed protection rules of this Subchapter must be approved by the Commission prior to local government issuance.

(y) In the event that stormwater management systems or facilities may impact existing waters or wetlands of the United States, the Clean Water Act requires that these systems or facilities be consistent with all federal and state requirements.
(z) A model local water supply watershed management and protection ordinance, as approved by the Commission in accordance with G.S. 143-214.5, is on file with the Office of Administrative Hearings and may be obtained by writing to: Water Quality Planning Branch, Division of Environmental Management, Post Office Box 29535, Raleigh, North Carolina 27626-0535.
(aa) The Commission may delegate such matters as variance approval, extension of deadlines for submission of corrected ordinances and assessment of civil penalties to the Director.

History Note: *Authority G.S. 143-214.1; 143-215.3(a)(1);*
Eff. February 1, 1976;
Amended Eff. August 1, 1995; August 3, 1992; March 1, 1991; October 1, 1989.

15A NCAC 02B .0216 FRESH SURFACE WATER QUALITY STANDARDS FOR WS-IV WATERS

The following water quality standards apply to surface water supply waters that are classified WS-IV. Water quality standards applicable to Class C waters as described in Rule .0211 of this Section also apply to Class WS-IV waters.

(1) The best usage of WS-IV waters are as follows: a source of water supply for drinking, culinary, or food-processing purposes for those users where a more protective WS-I, WS-II or WS-III classification is not feasible and any other best usage specified for Class C waters;

(2) The conditions related to the best usage are as follows: waters of this class are protected as water supplies which are generally in moderately to highly developed watersheds or protected areas and meet average watershed development density levels as specified in Sub-Items (3)(b)(i)(A), (3)(b)(i)(B), (3)(b)(ii)(A) and (3)(b)(ii)(B) of this Rule; discharges which qualify for a General Permit pursuant to 15A NCAC 02H .0127, trout farm discharges, recycle (closed loop) systems that only discharge in response to 10-year storm events, other stormwater discharges and domestic wastewater discharges shall be allowed in the protected and critical areas; treated industrial wastewater discharges are allowed in the protected and critical areas; however, new industrial wastewater discharges in the critical area shall be required to meet the provisions of 15A NCAC 02B .0224(1)(b)(iv), (v) and (vii), and 15A NCAC 02B .0203; new industrial connections and expansions to existing municipal discharges with a pretreatment program pursuant to 15A NCAC 02H .0904 are allowed; the waters, following treatment required by the Division of Environmental Health, shall meet the Maximum Contaminant Level concentrations considered safe for drinking, culinary, or food-processing purposes which are specified in the national drinking water regulations and in the North Carolina Rules Governing Public Water Supplies, 15A NCAC 18C .1500. Sources of water pollution which preclude any of these uses on either a short-term or long-term basis shall be considered to be violating a water quality standard. The Class WS-II or WS-III classifications may be used to protect portions of Class WS-IV water supplies. For reclassifications of these portions of WS-IV water supplies occurring after the July 1, 1992 statewide reclassification, the more protective classification requested by local governments shall be considered by the Commission when all local governments having jurisdiction in the affected area(s) have adopted a resolution and the appropriate ordinances to protect the watershed or the Commission acts to protect a watershed when one or more local governments has failed to adopt necessary protection measures;

(3) Quality standards applicable to Class WS-IV Waters are as follows:

(a) Sewage, industrial wastes, non-process industrial wastes, or other wastes: none shall be allowed except for those specified in Item (2) of this Rule and Rule .0104 of this Subchapter and none shall be allowed that shall have an adverse effect on human health or that are not effectively treated to the satisfaction of the Commission and in accordance with the requirements of the Division of Environmental Health, North Carolina Department of Environment and Natural Resources. Any discharges or industrial users subject to pretreatment standards may be required by the Commission to disclose all chemical constituents present or potentially present in their wastes and chemicals which could be spilled or be present in runoff from their facility which may have an adverse impact on downstream water supplies. These facilities may be required to have spill and treatment failure control plans as well as perform special monitoring for toxic substances;

(b) Nonpoint Source and Stormwater Pollution: none shall be allowed that would adversely impact the waters for use as water supply or any other designated use.

(i) Nonpoint Source and Stormwater Pollution Control Criteria For Entire Watershed or Protected Area:

(A) Low Density Option: development activities which require a Sedimentation/Erosion Control Plan in accordance with 15A NCAC 4 established by the North Carolina Sedimentation Control Commission or approved local government programs as delegated by the Sedimentation Control Commission shall be limited to no more than either: two dwelling units of single family detached development per acre (or 20,000 square foot lot excluding roadway right-of-way) or 24 percent built-upon on area for all other residential and non-residential development; or three dwelling units per acre or 36 percent built-upon area for projects without curb and gutter street systems in the protected area outside of the critical area;

stormwater runoff from the development shall be transported by vegetated conveyances to the maximum extent practicable;

(B) High Density Option: if new development activities which require a Sedimentation/Erosion Control Plan exceed the low density requirements of Sub-Item (3)(b)(i)(A) of this Rule then development shall control the runoff from the first inch of rainfall; new residential and non-residential development shall not exceed 70 percent built-upon area;

(C) Land within the critical and protected area shall be deemed compliant with the density requirements if the following condition is met: the density of all existing development at the time of reclassification does not exceed the density requirement when densities are averaged throughout the entire area;

(D) Cluster development shall be allowed on a project-by-project basis as follows:

(I) overall density of the project meets associated density or stormwater control requirements of this Rule;

(II) buffers meet the minimum statewide water supply watershed protection requirements;

(III) built-upon areas are designed and located to minimize stormwater runoff impact to the receiving waters, minimize concentrated stormwater flow, maximize the use of sheet flow through vegetated areas, and maximize the flow length through vegetated areas;

(IV) areas of concentrated development are located in upland areas and away, to the maximum extent practicable, from surface waters and drainageways;

(V) remainder of tract to remain in vegetated or natural state;

(VI) area in the vegetated or natural state may be conveyed to a property owners association, a local government for preservation as a park or greenway, a conservation organization, or placed in a permanent conservation or farmland preservation easement;

(VII) a maintenance agreement for the vegetated or natural area shall be filed with the Register of Deeds; and

(VIII) cluster development that meets the applicable low density option requirements shall transport stormwater runoff from the development by vegetated conveyances to the maximum extent practicable;

(E) If local governments choose the high density development option which requires engineered stormwater controls, then they shall assume ultimate responsibility for operation and maintenance of the required controls as outlined in Rule .0104 of this Subchapter;

(F) Minimum 100 foot vegetative buffer is required for all new development activities that exceed the low density option requirements as specified in Sub-Item (3)(b)(i)(A) or Sub-Item (3)(b)(ii)(A) of this Rule, otherwise a minimum 30 foot vegetative buffer for development shall be required along all perennial waters indicated on the most recent versions of U.S.G.S. 1:24,000 (7.5 minute) scale topographic maps or as determined by local government studies;

(G) No new development shall be allowed in the buffer; water dependent structures, or other structures, such as flag poles, signs and security lights, which result in only de minimus increases in impervious area and public projects such as road crossings and greenways may be allowed where no practicable alternative exists. These activities shall minimize built-upon surface area, divert runoff away from surface waters and maximize the utilization of BMPs;

(H) For local governments that do not use the high density option, a maximum of 10 percent of each jurisdiction's portion of the watershed outside of the critical area as delineated on July 1, 1995 may be developed with new development projects and expansions to existing development of up to 70 percent built-upon surface area in addition to the new development approved in compliance with the appropriate requirements of Sub-Item (3)(b)(i)(A) of this Rule. For expansions to existing development, the existing built-upon surface area shall not be counted toward the allowed 70 percent built-upon surface area. A local government having jurisdiction within the watershed may transfer, in whole or in part, its right to the 10 percent/70 percent land area to another local government within the watershed upon submittal of a joint resolution for review by the Commission. When the designated water supply watershed area is composed of public land, such as National Forest land, local governments may count the public land acreage within the designated watershed area outside of the critical area in figuring the acreage allowed under this provision. Each project shall, to the maximum extent practicable, minimize built-upon surface area, direct stormwater runoff away from surface waters and incorporate best management practices to minimize water quality impacts;

(ii) Critical Area Nonpoint Source and Stormwater Pollution Control Criteria:

(A) Low Density Option: new development activities which require a Sedimentation/Erosion Control Plan in accordance with 15A NCAC 4 established by the North Carolina Sedimentation Control Commission or approved local government programs as delegated by the Sedimentation Control Commission shall be limited to no more than two dwelling units of single family detached development per acre (or 20,000 square foot lot excluding roadway right-of-way) or 24 percent built-upon area for all other residential and non-residential development; stormwater runoff from the development shall be transported by vegetated conveyances to the maximum extent practicable;

(B) High Density Option: if new development density exceeds the low density requirements specified in Sub-Item (3)(b)(ii)(A) of this Rule, engineered stormwater controls shall be used to control runoff from the first inch of rainfall; new residential and non-residential development shall not exceed 50 percent built-upon area;

(C) No new permitted sites for land application of residuals or petroleum contaminated soils shall be allowed;

(D) No new landfills shall be allowed;

(c) MBAS (Methylene-Blue Active Substances): not greater than 0.5 mg/l to protect the aesthetic qualities of water supplies and to prevent foaming;

(d) Odor producing substances contained in sewage, industrial wastes, or other wastes: only such amounts, whether alone or in combination with other substances or waste, as will not cause taste and odor difficulties in water supplies which can not be corrected by treatment, impair the palatability of fish, or have a deleterious effect upon any best usage established for waters of this class;

(e) Chlorinated phenolic compounds: not greater than 1.0 ug/l to protect water supplies from taste and odor problems due to chlorinated phenols shall be allowed. Specific phenolic compounds may be given a different limit if it is demonstrated not to cause taste and odor problems and not to be detrimental to other best usage;

(f) Total hardness shall not exceed 100 mg/l as calcium carbonate;

(g) Total dissolved solids shall not exceed 500 mg/l;

(h) Toxic and other deleterious substances:

(i) Water quality standards (maximum permissible concentrations) to protect human health through water consumption and fish tissue consumption for non-carcinogens in Class WS-IV waters:
(A) Barium: 1.0 mg/l;
(B) Chloride: 250 mg/l;
(C) Manganese: 200 ug/l;
(D) Nickel: 25 ug/l;
(E) Nitrate nitrogen: 10.0 mg/l;
(F) 2,4-D: 100 ug/l;
(G) 2,4,5-TP (Silvex): 10 ug/l;
(H) Sulfates: 250 mg/l;

(ii) Water quality standards (maximum permissible concentrations) to protect human health through water consumption and fish tissue consumption for carcinogens in Class WS-IV waters:
(A) Aldrin: 0.05 ng/l;
(B) Arsenic: 10 ug/l;
(C) Benzene: 1.19 ug/l;
(D) Carbon tetrachloride: 0.254 ug/l;
(E) Chlordane: 0.8 ng/l;
(F) Chlorinated benzenes: 488 ug/l;
(G) DDT: 0.2 ng/l;
(H) Dieldrin: 0.05 ng/l;
(I) Dioxin: 0.000005 ng/l;
(J) Heptachlor: 0.08 ng/l;
(K) Hexachlorobutadiene: 0.44 ug/l;
(L) Polynuclear aromatic hydrocarbons (total of all PAHs): 2.8 ng/l;
(M) Tetrachloroethane (1,1,2,2): 0.17 ug/l;
(N) Tetrachloroethylene: 0.7 ug/l;
(O) Trichloroethylene: 2.5 ug/l;
(P) Vinyl Chloride: 0.025 ug/l.

History Note: *Authority G.S. 143-214.1; 143-215.3(a)(1);*
Eff. February 1, 1986;
Amended Eff. May 1, 2007; April 1, 2003; June 1, 1996; October 1, 1995; August 1, 1995; June 1, 1994.

Michael F. Easley, Governor

William G. Ross Jr., Secretary
North Carolina Department of Environment and Natural Resources

Alan W. Klimek, P.E. Director
Division of Water Quality

MEMORANDUM

TO: Elizabeth Kountis

THRU: Steve W. Tedder
Surface Water Protection Supervisor, WSRO

FROM: David Russell
Environmental Specialist, WSRO

SUBJECT: Haw River
Use Attainability Study for Water Supply

The City of Greensboro has requested that the waters in the Haw River watershed be reclassified to Class Water Supply-V (WS-V). The request is to protect a portion of the Haw River as an intermittent emergency water supply to Greensboro's WS-III lakes. The Classification and Standards unit feel either a WS-IV or WS-III classification would be appropriate.

The results of the stream samples collected by WSRO staff are attached as are pictures, general information and recommendations concerning the request.

cc: SWP-Central Files
WSRO File

GENERAL DESCRIPTION AND LAND USE:

Excluding the Troublesome Creek Watershed and the most downstream section of Haw river, the area proposed for reclassification covers the remainder of Subbasin 01 in the Cape Fear River Basin.

Approximately 97% of the land cover in the subbasin is either forest, wetland or agriculture. The City of Reidsville is the only urban area in the subbasin and covers approximately 2% of the land use.

The Haw River and its tributaries are located in parts of five counties. Those counties include Forsyth, Guilford, Rockingham, Caswell and Alamance.

PERMITTED DISCHARGES:

The Haw River and its tributaries have seven (7) NPDES permitted discharges in the drainage area. The total permitted flow in the area is approximately 7.7 MGD. The largest discharge is the City of Reidsville with a permitted flow of 7.5 MGD. This discharge enters the Haw River at the downstream side of the Highway 150 bridge, approximately seven (7) miles upstream of the proposed intake.

Other minor domestic discharges include two (2) mobile home parks (MHP), Willow Oak North MHP and Willow Oak Clubhouse MHP. Both discharge into Little Troublesome Creek, which flows into the Haw River just upstream of Highway 150.

There are three (3) other domestic waste discharges in the drainage area ; two (2) conference centers, Episcopal Diocese of North Carolina and Pentecostal Holiness Church and a school, Oak Ridge Military Academy. These discharges are greater than twenty-five (25) miles upstream of the proposed intake.

The City of Reidsville also has a water filtration plant, that discharges treated wastewater into Troublesome Creek just downstream of the Lake Reidsville Dam. Troublesome Creek enters the Haw River near Highway 29, approximately eleven (11) miles upstream of the proposed intake at Brooks Bridge Road.

DATA SUMMARY:

The Haw River was sampled at five (5) locations. The mile values indicated are the approximate distances upstream of the proposed intake. The sampling locations were as follows:

1) Scalesville Road (SR1002)- 23 miles
2) US Business Highway 29- 11 miles
3) Highway 150- 7 miles
4) High Rock Road (SR2614)- 3 miles
5) Brooks Bridge Road (SR2712)- Proposed Intake

All five (5) stream locations were sampled August 29, 2005. Field Parameters were performed, as well as, samples collected and analyzed for fecal coliform, inorganic parameters, trace metals, organics, phenols and cyanide. Data summary sheets are attached. Digital photos of each sampling site are also included in this report.

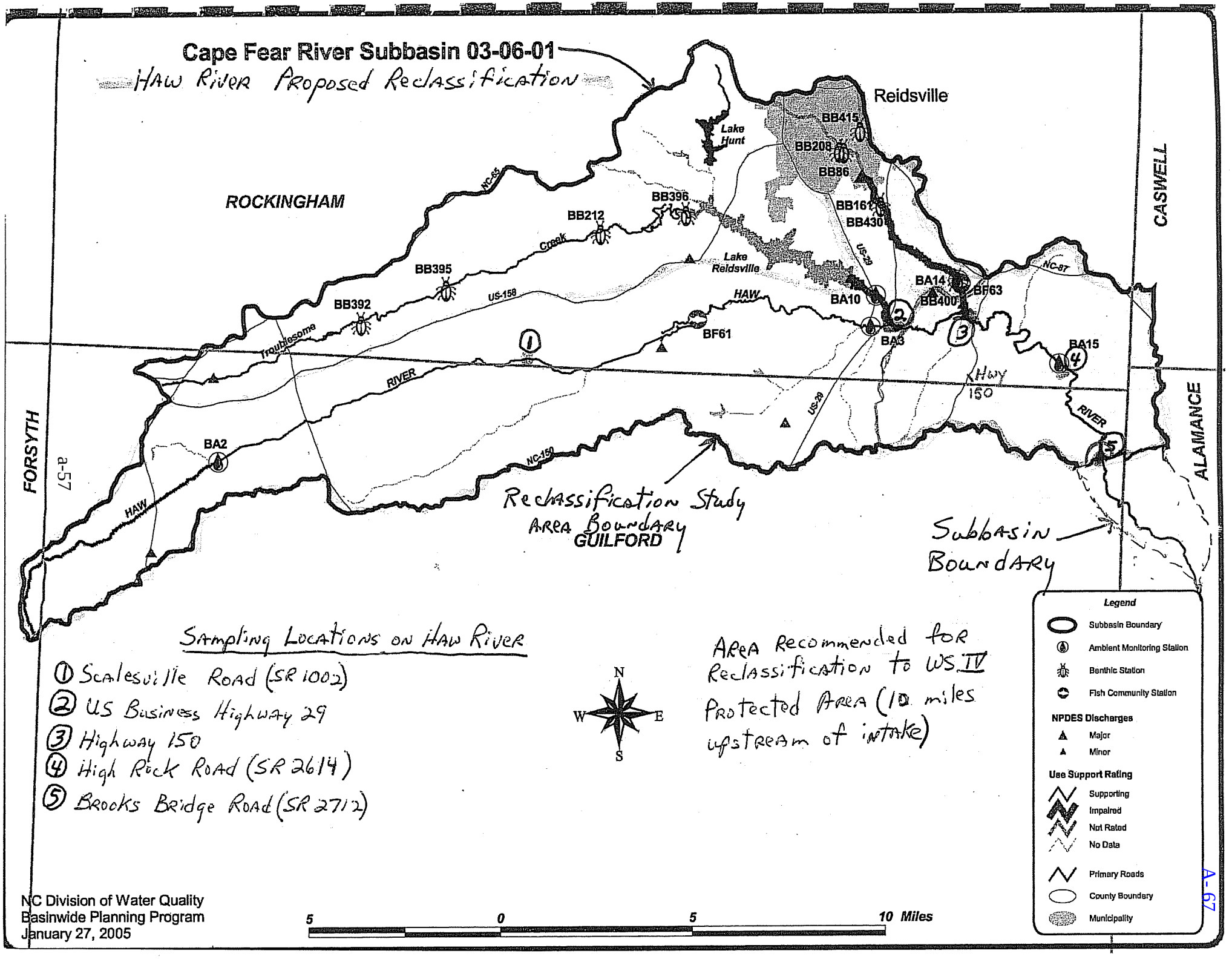
The sampling data shows the following results:

- The water quality action level for iron in the Class "C" Streams of 1000 ug/l, was exceeded at each sampling location.
- The manganese waster quality standard for WS waters of 200 ug/l was exceeded at all locations.
- The phenol waster quality standard for WS waters of 1.0 ug/l was exceeded at Scalesville Road and at Brooks Bridge Road.
- The fecal coliform count was 7400/100ml at Scalesville Road. This is not a violation since it was a single sample.
- The pH at Scalesville Road was 5.94SU, which is less than the minimum standard of 6.0 SU in Class "C" waters.

CONCLUSIONS & RECOMMENDATIONS:

The stream samples collected on August 29, 2005, at the five (5) sampling locations show results exceeded water quality standards or action levels. The phenol water quality standard in WS waters of 1.0 u g/l and was exceeded at the most upstream location, Scalesville Road (SR1002), and at the most downstream location, the proposed intake at Brooks Bridge Road (SR2712). However, semi-volatile organics analysis for individual phenolic compounds in the samples did not detect any measurable quantities. The action level for iron and the water quality standard for manganese were exceeded at all five (5) locations. These results are due to natural factors and not wastewater sources. In short, there were no extremely elevated values for any pollutant found.

It is recommended that the Haw River, and streams draining to it, be reclassified as WS-IV CA NSW and WS-IV (PA) NSW from the intake to a point ten (10) run-of-the-river miles upstream. The stream segment ½ mile upstream of the intake would be WS-IV CA NSW. The ten (10) mile run-of-the-river (protected area) on the Haw River would extend upstream to a point approximately one half mile downstream of Highway 29. Little Troublesome Creek enters the Haw River approximately 7 ¾ miles upstream of the intake. The entire drainage basin for Little Troublesome Creek would be in the protected area and would be reclassified as would the Haw River and its other tributaries to WS-IV (PA) NSW.


Cape Fear River Subbasin 03-06-01
HAW River Proposed Reclassification
Reidsville
ROCKINGHAM
CASWELL
ALAMANCE
FORSYTH
GUILFORD
Lake Hunt
Lake Reidsville
Troublesome Creek
HAW RIVER
BB415
BB208
BB86
BB161
BB430
BB396
BB212
BB395
BB392
BA14
BB400
BF63
BA10
BA3
BF61
BA15
BA2
Hwy 150
US-29
US-158
NC-87
NC-150
NC-65
SR 1007
Reclassification Study Area Boundary
Subbasin Boundary
Sampling Locations on HAW River
1 Scalesville Road (SR 1002)
2 US Business Highway 29
3 Highway 150
4 High Rock Road (SR 2614)
5 Brooks Bridge Road (SR 2712)
N
W
E
S
AREA Recommended for Reclassification to WS IV Protected AREA (10 miles upstream of intake)
Legend
Subbasin Boundary
Ambient Monitoring Station
Benthic Station
Fish Community Station
NPDES Discharges
Major
Minor
Use Support Rating
Supporting
Impaired
Not Rated
No Data
Primary Roads
County Boundary
Municipality
5 0 5 10 Miles
NC Division of Water Quality
Basinwide Planning Program
January 27, 2005
A-67

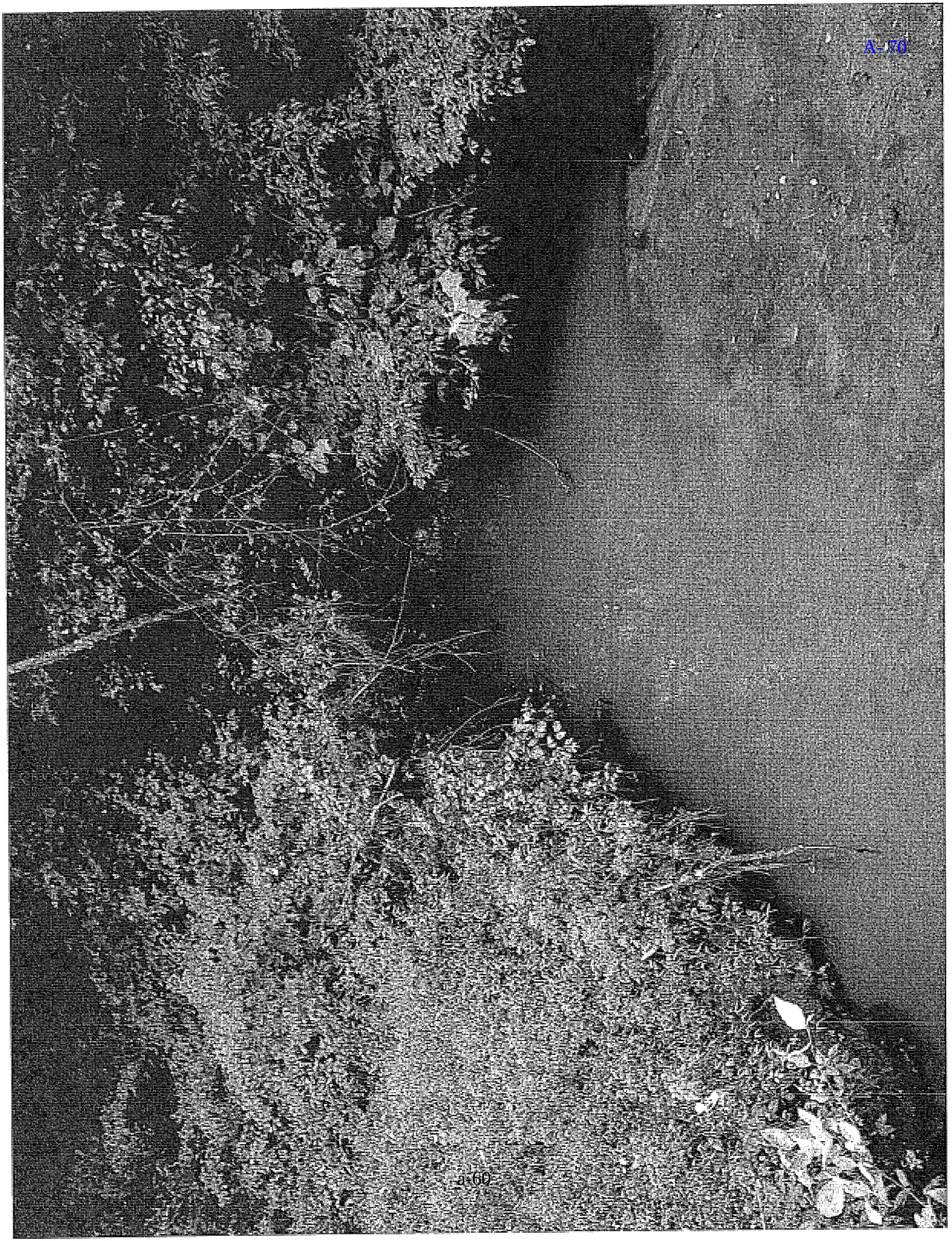
DATA SUMMARY TABLE. Parameters in bold type exceeded W. Q. Standard.

Parameter (mg/L except as noted)	Sampling Location Distance upstream from Intake	Scalesville Rd 23 mi.	US 29 Bus. 11 mi.	NC 150 7 mi.	High Rock Rd. 3 mi.	Brooks Bridge Rd 0 mi. (Intake Location)	NC Water Quality Standard
Water Temp. (deg C)		21.6	22.3	22.4	23.3	23.6	32.2
Dissolved Oxygen		7.2	6.7	6.7	5.8	5.5	4
pH (standard units)		***5.94***	6.91	7.1	7.2	7.2	6.0<pH<9.0
Specific Conductance (µS/cm 25 C)		98	100.6	104	210	215	500 TDS
Turbidity (NTU)		11	16	12	9.6	9.5	50
Fecal Coliform Bacteria (col./100 mL)		***7400***	190	110	93	170	200
Chlorophyll a (µg/L)		<1	<1	<1	<1	<1	40
Chloride		<5	<5	<5	18	22	250
Sulfate		<5	<5	<5	21	22	250
Fluoride		<0.5	<0.5	<0.5	<0.5	<0.5	1.8
Ammonia		<0.02	<0.02	<0.02	<0.02	<0.02	
Total Kjeldahl Nitrogen		0.21	0.23	0.25	0.35	0.39	
Nitrate + nitrite		0.24	0.17	0.22	0.29	0.42	10
Total Phosphorous		<0.02	0.04	0.05	0.07	0.06	
Calcium		9.6	9.9	10	13	13	
Magnesium		3.8	4	4.1	4	3.9	
Hardness (as CaCO3)		40	41	42	49	49	100
MBAS		<0.1	<0.1	<0.1	0.16	0.12	0.500
Trace Metals (µg/L)							
Arsenic		<5	<5	<5	<5	<5	50
Barium		26	30	30	31	26	1000
Beryllium		<10	<10	<10	<10	<10	0.0068
Cadmium		<2	<2	<2	<2	<2	2.0
Chromium		<25	<25	<25	<25	<25	50
Copper		<2	<2	<2	2.4	2.2	7
Iron		***1900***	***1700***	***1500***	***1600***	***1100***	1000
Lead		<10	<10	<10	<10	<10	25
Manganese		***230***	***400***	***370***	***310***	***210***	200
Mercury		<0.2	<0.2	<0.2	<0.2	<0.2	0.012
Nickel		<10	<10	<10	<10	<10	25
Selenium		<5	<5	<5	<5	<5	5
Silver		<5	<5	<5	<5	<5	0.06
Zinc		<10	<10	<10	12	<10	50
Organics (µg/L)							
Phenols		***13***	<10	<10	<10	***11***	~~1.0~~ (phenol = 300µg/L)
Cyanide		<20	<20	<20	<20	<20	5.0
Pesticides (see detail sheets)		None detected	None detected	None detected	2,4 D and Dicambra	2,4 D and Dicambra	By compound
Semi-Volatiles (see detail sheets)		None detected	None detected	None detected	None detected	None detected	By compound
Volatiles (see detail sheets)		2.4 TMSF	None detected	2.4 TMSF	0.29 Chloroform	0.79 TMSF 0.57 Dioxane	By compound

CP

Scalesville Road (SR 1002)

23 miles upstream of Intake.



DIVISION OF WATER QUALITY

Chemistry Laboratory Report / Water Quality

Lab Number :	5W5215
Date Received :	8/29/2005
Time Received :	2:00 PM
Received By :	HMW
Data Released :	JSW
Date Reported :	10/3/2005

COUNTY : ROCKINGHAM
RIVER BASIN :

REPORT TO : WSRO Regional Office

Other :
COLLECTOR(S) : D RUSSELL

PRIORITY
[X] AMBIENT [ ] QA
[ ] COMPLIANCE [ ] CHAIN OF CUSTODY
[ ] EMERGENCY VISIT ID

[W] SAMPLE TYPE
[X] STREAM [ ] EFFLUENT
[ ] LAKE [ ] INFLUENT
[ ] ESTUARY

1

Estimated BOD Range:

Station Location: HAW RIVER AT SCALESVILLE ROAD- SR1002

Seed: **Chlorinated:** **Remarks:**

Station #	Date Begin (yy/mm/dd)	Date End (yy/mm/dd)	Time Begin	Time End	Depth - DM, DB, DBM	Value Type - A, H, L	Composite-T, S, I	Sample Type
	20050829		0805					

	BOD 310		mg/L
	COD High 340		mg/L
	COD Low 335		mg/L
X	Coliform: MF Fecal 31616	7400 B3 Q1	/100ml
	Coliform: MF Total 31504		/100ml
	Coliform: tube Fecal 31615		/100ml
	Coliform: Fecal Strep 31673		/100ml
	Residue: Total 500		mg/L
	Volatile 505		mg/L
	Fixed 510		mg/L
	Residue: Suspended 530		mg/L
	Volatile 535		mg/L
	Fixed 540		mg/L
	pH 403		units
	Acidity to pH 4.5 436		mg/L
	Acidity to pH 8.3 435		mg/L
	Alkalinity to pH 8.3 415		mg/L
	Alkalinity to pH 4.5 410		mg/L
	TOC 680		mg/L
X	Turbidity 76	11	NTU
	Coliform Total Tube		"/100 mls

X	Chloride 940	5U	mg/L
X	Chl a 70953	1U	ug/L
	Color: True 80		c.u.
	Color: (pH) 83 pH=		c.u.
	Color: pH 7.6 82		c.u.
X	Cyanide 720	0.02U	mg/L
X	Fluoride 951	0.5U	mg/L
	Formaldehyde 71880		mg/L
	Grease and Oils 556		mg/L
	Hardness Total 900		mg/L
	Specific Cond. 95		umhos/cm
X	MBAS 38260	0.1U,J4	mg/L
X	Phenols 32730	13	ug/L
X	Sulfate 945	5U	mg/L
	Sulfide 745		mg/L
	Boron		
	Tannin & Lignin		ug/L
	Hexavalent Chromium		ug/L
	Bicarbonate		mg/L
	Carbonate		mg/L
	Total Dissolved Solids		mg/L

X	NH3 as N 610	0.02U	mg/L
X	TKN an N 625	0.21	mg/L
X	NO2 plus NO3 as N 630	0.24	mg/L
X	P: Total as P 665	0.02	mg/L
	PO4 as P 70507		mg/L
	P: Dissolved as P 666		mg/L
	K-Potassium		mg/L
X	Cd- Cadmium 1027	2.0U	ug/L
X	Cr-Chromium:Total 1034	25U	ug/L
X	Cu- Copper 1042	2.0U	ug/L
X	Ni-Nickel 1067	10U	ug/L
X	Pb- Lead 1051	10U	ug/L
X	Zn- Zinc 1092	10U	ug/L
	V-Vanadium		ug/L
X	Ag- Silver 1077	5.0U	ug/L
	Al- Aluminum 1105		ug/L
X	Be- Beryllium 1012	10U	ug/L
X	Ca- Calcium 916	9.6	mg/L
	Co- Cobalt 1037		ug/L
X	Fe- Iron 1045	1900	ug/L
	Mo-Molybdenum		ug/L
	Sb-Antimony		ug/L
	Sn-Tin		ug/L
	Tl-Thallium		ug/L
	Ti-Titanium		ug/L
	Hg-1631		ng/L

	Li-Lithium 1132		ug/L
X	Mg- Magnesium 9:	3.8	mg/L
X	Mn-Manganese 10:	230	ug/L
	Na- Sodium 929		mg/L
X	Arsenic:Total 1002	5.0U	ug/L
X	Se- Selenium 1147	5.0U	ug/L
X	Hg- Mercury 7190(	0.2U	ug/L
X	Ba-Barium	26	ug/L
X	Organochlorine Pesticides		
X	Organophosphorus Pesticides		
X	Acid Herbicides		
X	Base/Neutral&Acid Extractable Organics		
	TPH Diesel Range		
X	Purgeable Organics (VOA bottle req'd)		
	TPH Gasoline Range		
	TPH/BTEX Gasoline Range		
	Phytoplankton		

COMMENTS :

ENR/DWQ LABORATORY
VOLATILE ANALYTICAL REPORT

LAB NO. 5W5215

REPORTED BY AT
CHECKED BY ALC
REVIEWED BY ALC

SUPERVISOR REK
DATE 9/12/2005

ENTERED BY
DATE

SAMPLE TYPE: WATER

ANALYTICAL RESULTS

CAS#	VOA TARGET COMPOUND	PQL ug/L	DETECTED ug/L	
75-71-8	Dichlorodifluoromethane	0.25	U	
74-87-3	Chloromethane	0.25	U	
75-01-4	Vinyl Chloride	0.25	U	
74-83-9	Bromomethane	0.25	U	
75-00-3	Chloroethane	0.25	U	
75-69-4	Trichlorofluoromethane	0.25	U	
75-35-4	1,1-Dichloroethene	0.25	U	
75-09-2	Methylene Chloride	10	U	
156-60-5	trans-1,2-Dichloroethene	0.25	U	
75-34-3	1,1-Dichloroethane	0.25	U	
594-20-7	2,2-Dichloropropane	0.25	U	
156-59-4	cis-1,2-Dichloroethene	0.25	U	
67-66-3	Chloroform	0.25	U	
74-97-5	Bromochloromethane	0.25	U	
71-55-6	1,1,1-Trichloroethane	0.25	U	
563-58-6	1,1-Dichloropropene	0.25	U	
56-23-5	Carbon Tetrachloride	0.25	U	
107-06-2	1,2-Dichloroethane	0.25	U	
79-01-6	Trichloroethene	0.25	U	
78-87-5	1,2-Dichloropropane	0.25	U	
75-27-4	Bromodichloromethane	0.25	U	
74-95-3	Dibromomethane	0.25	U	
10061-01-5	cis-1,3-Dichloropropene	0.25	U	
10061-02-6	trans-1,3-Dichloropropene	0.25	U	
79-00-5	1,1,2-Trichloroethane	0.25	U	
127-18-4	Tetrachloroethene	0.25	U	
142-28-9	1,3-Dichloropropane	0.25	U	
124-48-1	Dibromochloromethane	0.25	U	
106-93-4	1,2-Dibromoethane	0.25	U	
108-90-7	Chlorobenzene	0.25	U	
630-20-6	1,1,1,2-Tetrachloroethane	0.25	U	
75-25-2	Bromoform	0.25	U	
79-34-5	1,1,2,2-Tetrachloroethane	0.25	U	
96-18-4	1,2,3-Trichloropropane	0.25	U	
108-86-1	Bromobenzene	0.25	U	
95-49-8	2-Chlorotoluene	0.25	U	
106-43-4	4-Chlorotoluene	0.25	U	
541-73-1	1,3-Dichlorobenzene	0.25	U	
106-46-7	1,4-Dichlorobenzene	0.25	U	
95-50-1	1,2-Dichlorobenzene	0.25	U	
96-12-8	1,2-Dibromo-3-Chloropropane	0.50	U	
120-82-1	1,2,4-Trichlorobenzene	0.25	U	
87-68-3	Hexachlorobutadiene	0.25	U	
87-61-6	1,2,3-Trichlorobenzene	0.25	U	
1634-04-4	Methyl-tert-butyl ether	0.25	U	
71-43-2	Benzene	0.25	U	
108-88-3	Toluene	0.25	U	
100-41-4	Ethyl benzene	0.25	U	
108-38-3	m,p-Xylenes	0.50	U	
95-47-6	o-Xylene	0.25	U	
100-42-5	Styrene	0.25	U	
98-82-8	Isopropylbenzene	0.25	U	
103-65-1	n-Propylbenzene	0.25	U	
108-67-8	1,3,5-Trimethylbenzene	0.25	U	
98-06-6	tert-Butylbenzene	0.25	U	
95-63-6	1,2,4-Trimethylbenzene	0.25	U	
135-98-8	sec-Butylbenzene	0.25	U	
99-87-6	p-isopropyltoluene	0.25	U	
104-51-8	n-Butylbenzene	0.25	U	
91-20-3	Naphthalene	0.25	U	

	mg/L	mg/L	
Gasoline Range Estimated Total Petroleum Hydrocarbon	0.20		X

Other purgeables detected (up to 10 highest peaks)	Detected ug/L
Trimethylsilyl fluoride	2.4 #, N1

PQL Practical Quantitation Limit- Subject to change due to instrument sensitivity
N- Tentatively Identified, not confirmed
J- Estimated Value
U- Samples analyzed for this compound but not detected
X- Sample not analyzed for this compound
N3- Estimated concentration is <PQL and >MDL
GC/MS Analysis performed

COMMENTS: NOT ANALYZED FOR 2-CHLOROETHYL VINYL ETHER

ENR/DWQ LABORATORY
SEMIVOLATILE ANALYTICAL REPORT

LAB NO. 5W5215

REPORTED BY NTG
CHECKED BY PC
REVIEWED BY PTD

SUPERVISOR REK
DATE 9/9/2005

ENTERED BY
DATE

SAMPLE TYPE: WATER

ANALYTICAL RESULTS

CAS#:	SEMIVOLATILES TARGET COMPOUND	PQL ug/L	DETECTED ug/L	CAS#	SEMIVOLATILES TARGET COMPOUND	PQL ug/L	DETECTED ug/L
62-53-3	ANILINE	10 J2	U	606-20-2	2,6-DINITROTOLUENE	10	U
108-95-2	PHENOL	10	U	99-09-2	3-NITROANILINE	50	U
111-44-4	BIS(2-CHLOROETHYL) ETHER	10	U	83-32-9	ACENAPHTHENE	10	U
95-57-8	2-CHLOROPHENOL	10	U	51-28-5	2,4-DINITRO PHENOL	50	U
541-73-1	1,3-DICHLOROBENZENE	10	U	100-02-7	4-NITRO PHENOL	50	U
106-46-7	1,4-DICHLOROBENZENE	10	U	132-64-9	DIBENZOFURAN	10	U
100-51-6	BENZYL ALCOHOL	20	U	121-14-2	2,4-DINITROTOLUENE	10	U
95-50-1	1,2-DICHLOROBENZENE	10	U	84-66-2	DIETHYL PHTHALATE	10	U
95-48-7	2-METHYL PHENOL	10	U	7005-72-3	4-CHLOROPHENYL PHENYL ETHE	10	U
108-60-1	BIS(2-CHLOROISOPROPYL) ETHER	10	U	86-73-7	FLUORENE	10	U
106-44-5	4-METHYL PHENOL	10	U	100-01-6	4-NITROANILINE	50	U
621-64-7	N-NITROSO-DI-N-PROPYLAMINE	10	U	534-52-1	4,6-DINITRO-2-METHYL PHENOL	50	U
67-72-1	HEXACHLOROETHANE	10	U	88-30-6	N-NITROSODIPHENYLAMINE	10	U
98-95-3	NITROBENZENE	10	U	101-55-3	4-BROMOPHENYL PHENYL ETHEI	10	U
78-59-1	ISOPHORONE	10	U	118-74-1	HEXACHLOROBENZENE	10	U
88-75-5	2-NITRO PHENOL	10	U	87-86-5	PENTACHLORO PHENOL	50	U
105-67-9	2,4-DIMETHYL PHENOL	10	U	85-01-8	PHENANTHRENE	10	U
65-85-0	BENZOIC ACID	50	U	120-12-7	ANTHRACENE	10	U
111-91-1	BIS(2-CHLOROETHOXY) METHANE	10	U	84-74-2	DI-N-BUTYL PHTHALATE	10	U
120-83-2	2,4-DICHLORO PHENOL	10	U	206-44-0	FLUORANTHENE	10	U
120-82-1	1,2,4-TRICHLOROBENZENE	10	U	129-00-0	PYRENE	10	U
91-20-3	NAPHTHALENE	10	U	85-68-7	BUTYLBENZYL PHTHALATE	10	U
106-47-8	4-CHLOROANILINE	20	U	91-94-1	3,3'-DICHLOROBENZIDINE	20	U
87-68-3	HEXACHLOROBUTADIENE	10	U	56-55-3	BENZO(A)ANTHRACENE	10	U
59-50-7	4-CHLORO-3-METHYL PHENOL	20	U	218-01-9	CHRYSENE	10	U
91-57-6	2-METHYL NAPHTHALENE	10	U	117-81-7	BIS(2-ETHYLHEXYL) PHTHALATE	10	U
77-47-4	HEXACHLOROCYCLOPENTADIENE	10 J2	U	117-84-0	DI-N-OCTYL PHTHALATE	10	U
88-06-2	2,4,6-TRICHLORO PHENOL	10	U	205-99-2	BENZO(B)FLUORANTHENE	10	U
95-95-4	2,4,5-TRICHLORO PHENOL	10	U	207-08-9	BENZO(K)FLUORANTHENE	10	U
91-58-7	2-CHLORO NAPHTHALENE	10	U	50-32-8	BENZO(A)PYRENE	10	U
88-74-4	2-NITROANILINE	50	U	193-39-5	INDENO(1,2,3-CD)PYRENE	10	U
131-11-3	DIMETHYL PHTHALATE	10	U	53-70-3	DIBENZO(A,H)ANTHRACENE	10	U
208-96-8	ACENAPHTHYLENE	10	U	191-24-2	BENZO(G,H,I)PERYLENE	10	U

Dil Factor	1
Mult factor	1
Dil*mult factor	1

SEMIVOLATILE ORGANICS REPORT - DWQ LAB PAGE 2

LAB NO. 5W5215

Other Semi-Volatiles compounds detected: (up to 30 highest peaks):	Detected ug/L
No base/neutral or acid extractable organics detected by GC/MS.	

PQL- Practical Quantitation Limit- Subject to change due to instrument sensitivity

U- Samples analyzed for this compound but not detected

J- Estimated value

J2- The reported value failed to meet the established quality control criteria for either precision or accuracy.

N1- The component has been tentatively identified based on mass spectral library search and has an estimated value.

N3- Estimated concentration less than the laboratory PQL limit and greater than the laboratory method detection limit.

A- Value reported is the average of two or more determinations.

P- Elevated PQL due to matrix interfernece and/or sample dilution.

COMMENTS:

ENR/DWQ LABORATORY PESTICIDES ANALYTICAL REPORT

LAB NO. 5W5215
SUPERVISOR REK
DATE 9/29/2005

REPORTED BY CGY
CHECKED BY OB
REVIEWED BY CGY

ENTERED BY _____
DATE _____

ANALYTICAL RESULTS

SAMPLE TYPE: WATER

CHLORINATED PESTICIDES BY ELECTRON CAPTURE DETECTION

CAS#	PESTICIDE TARGET COMPOUND	PQL ug/L	DETECTED ug/L		CAS#	PESTICIDE TARGET COMPOUND	PQL ug/L	DETECTED ug/L	
15972-60-8	ALACHLOR	0.15	U		72-20-8	ENDRIN	0.025	U	
309-00-2	ALDRIN	0.025	U		7421-93-4	ENDRIN ANDEHYDE	0.025	U	
1912-24-9	ATRAZINE	3.0	U		53494-70-5	ENDRIN KETONE	0.030	U	
319-84-6	BHC-ALPHA	0.025	U		2593-15-9	ETHALZOLE	0.060	U	
319-85-7	BHC-BETA	0.025	U		76-44-8	HEPTACHLOR	0.025	U	
319-86-8	BHC-DELTA	0.025	U		1024-57-3	HEPTACHLOR EPOXIDE	0.025	U	
58-89-9	BHC-GAMMA(LINDANE)	0.025	U		118-74-1	HEXACHLOROBENZENE	0.015	U	
57-74-9	CHLORDANE, TECHNICAL	0.50	U		121-75-5	MALATHION	0.20	U	
5103-71-9	CHLORDANE-ALPHA	0.020	U		72-43-5	METHOXYCHLOR, PP	0.10	U	
5103-74-2	CHLORDANE-GAMMA	0.020	U		2385-85-5	MIREX	0.030	U	
3734-48-3	CHLOROENE	0.025	U		39765-80-5	TRANS-NONACHLOR	0.020	U	
2675-77-6	CHLORNEB	0.20	U		26880-48-8	OXYCHLORDANE	0.050	U	
5010-8	CHLOROBENZILATE	0.60	U		52645-53-1	MIXED-PERMETHRIN	1.20	U	
2921-88-2	CHLORPYRIFOS	0.050	U		1918-16-7	PROPACHLOR	0.30	U	
1897-45-6	CHLOROTHALONIL	0.025	U		117-18-0	TECNAZENE	0.010	U	
1861-32-1	DCPA	0.025	U		1582-09-8	TRIFLURALIN	0.035	U	
53-19-0	DDD, OP	0.050	U		12674-11-2	AROCLOR 1016	1.0	U	
72-54-8	DDD, PP	0.025	U		11104-28-2	AROCLOR 1221	1.0	U	
3424-82-6	DDE, OP	0.040	U		11141-16-5	AROCLOR 1232	1.0	U	
72-55-9	DDE, PP	0.025	U		53469-21-9	AROCLOR 1242	1.0	U	
789-02-6	DDT, OP	0.030	U		12672-29-6	AROCLOR 1248	1.0	U	
50-29-3	DDT, PP	0.025	U		11097-69-1	AROCLOR 1254	1.0	U	
60-57-1	DIELDRIN	0.025	U		11096-82-5	AROCLOR 1260	1.0	U	
959-98-8	ENDOSULFAN I	0.025	U		37324-23-5	AROCLOR 1262	1.0	U	
33213-65-9	ENDOSULFAN II	0.025	U		8001-35-2	TOXAPHENE	3.0	U	
1031-07-8	ENDOSULFAN SULFATE	0.025	U			UNIDENTIFIED PEAKS DETECTED		1	

ACID HERBICIDES BY ELECTRON CAPTURE DETECTION

CAS#	HERBICIDE TARGET COMPOUND	PQL ug/L	DETECTED ug/L		CAS#	HERBICIDE TARGET COMPOUND	PQL ug/L	DETECTED ug/L	
50594-66-6	ACIFLUORFEN (BLAZER)	0.1	U		120-36-5	DICHLORPROP	0.5	U	
25057-89-0	BENTAZON	0.3	U		88-85-7	DINOSEB	0.2	U	
133-90-4	CHLORAMBEN	0.1	U		100-02-7	4-NITROPHENOL	0.6	U	
94-75-7	2,4-D	0.4	U		87-86-5	PENTACHLOROPHENOL (PCP)	0.1	U	
94-82-6	2,4-DB	0.7	U		1918-02-1	PICLORAM	0.3	U	
	DCPA (MONOACID METABOLITE)	0.4	U		93-76-5	2,4,5- T	0.1	U	
1918-00-9	DICAMBA	0.2	U		93-72-1	2,4,5-TP (SILVEX)	0.1	U	
51-36-5	3,5 DICHLOROBENZOIC ACID	0.5	U						
						UNIDENTIFIED PEAKS DETECTED		6	

ORGANOPHOSPHATE PESTICIDES BY FLAME PHOTOMETRIC DETECTION

CAS#	PESTICIDE TARGET COMPOUND	PQL ug/L	DETECTED ug/L		CAS#	PESTICIDE TARGET COMPOUND	PQL ug/L	DETECTED ug/L	
786-19-6	CARBOPHENOTHION	0.80	U		55-38-9	FENTHION	0.40	U	
2921-88-2	CHLORPYRIFOS	0.40	U		115-90-2	FENSULFOTHION	2.2	U	
78-48-8	DEF (OXIDIZED MERPHOS)	0.40	U		7786-34-7	MEVINPHOS	0.40	U	
298-03-3	DEMETON	0.80	U		6923-22-4	MONOCROTOPHOS	1.0	U	
333-41-5	DIAZINON	0.40	U		300-76-5	NALED	2.7	U	
62-73-7	DICHLORVOS	2.1	U		56-38-2	ETHYL PARATHION	0.40	U	
60-51-5	DIMETHOATE	0.40	U		298-00-0	METHYL PARATHION	0.40	U	
298-04-4	DISULFOTON	0.80	U		298-02-2	PHORATE	0.40	U	
2497-06-5	DISULFOTON SULFONE	1.0	U		299-84-3	RONNEL	0.40	U	
2497-07-6	DISULFOTON SULFOXIDE	NE	U		3689-24-5	SULFOTEPP	0.40	U	
2104-64-5	EPN	0.40	U		13071-79-9	TERBUFOS	0.40	U	
563-12-2	ETHION	0.40	U						
13194-48-4	ETHOPROP	0.40	U			UNIDENTIFIED PEAKS DETECTED		0	

NITROGEN PESTICIDES BY NP DETECTION

CAS#	PESTICIDE TARGET COMPOUND	PQL ug/L	DETECTED ug/L		CAS#	PESTICIDE TARGET COMPOUND	PQL ug/L	DETECTED ug/L	
15972-60-8	ALACHLOR	8	U		21087-64-9	METRIBUZIN	12	U	
834-12-8	AMETRYN	4.5	U		7786-34-7	MEVINPHOS	NE	U	
1610-17-9	ATRATON	NE	U		2212-67-1	MOLINATE	4.5	U	
1912-24-9	ATRAZINE	4.5	U		15299-99-7	NAPROPAMIDE	15	U	
314-40-9	BROMACIL	20	U		27314-13-2	NORFLURAZON	12	U	
23184-66-9	BUTACHLOR	15	U		1114-71-2	PEBULATE	4.5	U	
2008-41-5	BUTYLATE	4.5	U		886-50-0	PREBANE	19	U	
101-21-3	CHLORPROPHAM	12	U		1610-18-0	PROMETON	4.5	U	
21725-46-2	CYANAZINE	15	U		7287-19-6	PROMETRYN	4.5	U	
1134-23-2	CYCLOATE	4.5	U		23950-58-5	PRONAMIDE	15	U	
62-73-7	DICHLORVOS	NE	U		1918-16-7	PROPACHLOR	NE	U	
957-51-7	DIPHENAMID	8	U		139-40-2	PROPAZINE	4.5	U	
2921-88-2	DURSBAN	1.5	U		1014-70-6	SIMETRYN	4.5	U	
759-94-4	EPTC (EPTAM)	4.5	U		961-11-5	TETRACHLORVINPHOS	NE	U	
13194-48-4	ETHOPROP	15	U		34014-18-1	TEBUTHIURON	12	U	
51235-04-2	HEXAZINONE	30	U		41814-78-2	TRICYCLAZOLE	NE	U	
51218-45-2	METOLACHLOR	15	U		1929-77-7	VERNOLATE	4.5	U	
						UNIDENTIFIED PEAKS DETECTED		0	

PQL- Practical Quantitation Limit- Subject to change due to instrument sensitivit
U- Samples analyzed for this compound but was not detected above PQL

X1- Sample not analyzed for this compound
NE- No established PQL
J2- Reported value failed to meet QC criteria for either precision or accuracy

COMMENTS: _____

US Highway 29

11 miles upstream of Intake.

DIVISION OF WATER QUALITY

Chemistry Laboratory Report / Water Quality

Lab Number :	5W5216
Date Received :	8/29/2005
Time Received :	2:00 PM
Received By :	HMW
Data Released :	JSW
Date Reported :	10/3/2005

COUNTY : ROCKINGHAM
RIVER BASIN : _____

REPORT TO : WSRO Regional Office

Other : -
COLLECTOR(S) : D RUSSELL

PRIORITY
[X] AMBIENT [ ] QA
[ ] COMPLIANCE [ ] CHAIN OF CUSTODY
[ ] EMERGENCY VISIT ID

[W] SAMPLE TYPE
[X] STREAM [ ] EFFLUENT
[ ] LAKE [ ] INFLUENT
[ ] ESTUARY

2

Estimated BOD Range:

Station Location: HAW RIVER AT BUS.29

Seed: _____ Chlorinated: _____

Remarks:

Station #	Date Begin (yy/mm/dd)	Date End (yy/mm/dd)	Time Begin	Time End	Depth - DM, DB, DBM	Value Type - A, H, L	Composite-T, S, I	Sample Type
	20050829		0900					

	BOD 310		mg/L
	COD High 340		mg/L
	COD Low 335		mg/L
X	Coliform: MF Fecal 31616	190	/100ml
	Coliform: MF Total 31504		/100ml
	Coliform: tube Fecal 31615		/100ml
	Coliform: Fecal Strep 31673		/100ml
	Residue: Total 500		mg/L
	Volatile 505		mg/L
	Fixed 510		mg/L
	Residue: Suspended 530		mg/L
	Volatile 535		mg/L
	Fixed 540		mg/L
	pH 403		units
	Acidity to pH 4.5 436		mg/L
	Acidity to pH 8.3 435		mg/L
	Alkalinity to pH 8.3 415		mg/L
	Alkalinity to pH 4.5 410		mg/L
	TOC 680		mg/L
X	Turbidity 76	16	NTU
	Coliform Total Tube		"/100 mls

X	Chloride 940	5U	mg/L
X	Chl a 70953	1U	ug/L
	Color: True 80		c.u.
	Color: (pH) 83 pH=		c.u.
	Color: pH 7.6 82		c.u.
X	Cyanide 720	0.02U,J6	mg/L
X	Fluoride 951	0.5U	mg/L
	Formaldehyde 71880		mg/L
	Grease and Oils 556		mg/L
	Hardness Total 900		mg/L
	Specific Cond. 95		umhos/cm
X	MBAS 38260	0.1U,J4	mg/L
X	Phenols 32730	10U	ug/L
X	Sulfate 945	5U	mg/L
	Sulfide 745		mg/L
	Boron		
	Tannin & Lignin		ug/L
	Hexavalent Chromium		ug/L
	Bicarbonate		mg/L
	Carbonate		mg/L
	Total Dissolved Solids		mg/L

X	NH3 as N 610	0.02	mg/L
X	TKN an N 625	0.23	mg/L
X	NO2 plus NO3 as N 630	0.17	mg/L
X	P: Total as P 665	0.04	mg/L
	PO4 as P 70507		mg/L
	P: Dissolved as P 666		mg/L
	K-Potassium		mg/L
X	Cd- Cadmium 1027	2.0U	ug/L
X	Cr-Chromium:Total 1034	25U	ug/L
X	Cu- Copper 1042	2.0U	ug/L
X	Ni-Nickel 1067	10U	ug/L
X	Pb- Lead 1051	10U	ug/L
X	Zn- Zinc 1092	10U	ug/L
	V-Vanadium		ug/L
X	Ag- Silver 1077	5.0U	ug/L
	Al- Aluminum 1105		ug/L
X	Be- Beryllium 1012	10U	ug/L
X	Ca- Calcium 916	9.9	mg/L
	Co- Cobalt 1037		ug/L
X	Fe- Iron 1045	1700	ug/L
	Mo-Molybdenum		ug/L
	Sb-Antimony		ug/L
	Sn-Tin		ug/L
	Tl-Thallium		ug/L
	Ti-Titanium		ug/L
	Hg-1631		ng/L

	Li-Lithium 1132		ug/L
X	Mg- Magnesium 92	4.0	mg/L
X	Mn-Manganese 10:	400	ug/L
	Na- Sodium 929		mg/L
X	Arsenic:Total 1002	5.0U	ug/L
X	Se- Selenium 1147	5.0U	ug/L
X	Hg- Mercury 7190(	0.2U	ug/L
X	Ba-Barium	30	ug/L
X	Organochlorine Pesticides		
X	Organophosphorus Pesticides		
X	Acid Herbicides		
X	Base/Neutral&Acid Extractable Organics		
	TPH Diesel Range		
X	Purgeable Organics (VOA bottle req'd)		
	TPH Gasoline Range		
	TPH/BTEX Gasoline Range		
	Phytoplankton		

COMMENTS : _____

A-77

ENR/DWQ LABORATORY
VOLATILE ANALYTICAL REPORT

LAB NO. 5W5216

REPORTED BY AT
CHECKED BY ALC
REVIEWED BY ALC

SUPERVISOR REK
DATE 9/12/2005

ENTERED BY
DATE

SAMPLE TYPE: WATER

ANALYTICAL RESULTS

CAS#	VOA TARGET COMPOUND	PQL ug/L	DETECTED ug/L	CAS#	VOA TARGET COMPOUND	PQL ug/L	DETECTED ug/L
75-71-8	Dichlorodifluoromethane	0.25	U	630-20-6	1,1,1,2-Tetrachloroethane	0.25	U
74-87-3	Chloromethane	0.25	U	75-25-2	Bromoform	0.25	U
75-01-4	Vinyl Chloride	0.25	U	79-34-5	1,1,2,2-Tetrachloroethane	0.25	U
74-83-9	Bromomethane	0.25	U	96-18-4	1,2,3-Trichloropropane	0.25	U
75-00-3	Chloroethane	0.25	U	108-86-1	Bromobenzene	0.25	U
75-69-4	Trichlorofluoromethane	0.25	U	95-49-8	2-Chlorotoluene	0.25	U
75-35-4	1,1-Dichloroethene	0.25	U	106-43-4	4-Chlorotoluene	0.25	U
75-09-2	Methylene Chloride	10	U	541-73-1	1,3-Dichlorobenzene	0.25	U
156-60-5	trans-1,2-Dichloroethene	0.25	U	106-46-7	1,4-Dichlorobenzene	0.25	U
75-34-3	1,1-Dichloroethane	0.25	U	95-50-1	1,2-Dichlorobenzene	0.25	U
594-20-7	2,2-Dichloropropane	0.25	U	96-12-8	1,2-Dibromo-3-Chloropropane	0.50	U
156-59-4	cis-1,2-Dichloroethene	0.25	U	120-82-1	1,2,4-Trichlorobenzene	0.25	U
67-66-3	Chloroform	0.25	U	87-68-3	Hexachlorobutadiene	0.25	U
74-97-5	Bromochloromethane	0.25	U	87-61-6	1,2,3-Trichlorobenzene	0.25	U
71-55-6	1,1,1-Trichloroethane	0.25	U	1634-04-4	Methyl-tert-butyl ether	0.25	U
563-58-6	1,1-Dichloropropene	0.25	U	71-43-2	Benzene	0.25	U
56-23-5	Carbon Tetrachloride	0.25	U	108-88-3	Toluene	0.25	U
107-06-2	1,2-Dichloroethane	0.25	U	100-41-4	Ethyl benzene	0.25	U
79-01-6	Trichloroethene	0.25	U	108-38-3	m,p-Xylenes	0.50	U
78-87-5	1,2-Dichloropropane	0.25	U	95-47-6	o-Xylene	0.25	U
75-27-4	Bromodichloromethane	0.25	U	100-42-5	Styrene	0.25	U
74-95-3	Dibromomethane	0.25	U	98-82-8	Isopropylbenzene	0.25	U
10061-01-5	cis-1,3-Dichloropropene	0.25	U	103-65-1	n-Propylbenzene	0.25	U
10061-02-6	trans-1,3-Dichloropropene	0.25	U	108-67-8	1,3,5-Trimethylbenzene	0.25	U
79-00-5	1,1,2-Trichloroethane	0.25	U	98-06-6	tert-Butylbenzene	0.25	U
127-18-4	Tetrachloroethene	0.25	U	95-63-6	1,2,4-Trimethylbenzene	0.25	U
142-28-9	1,3-Dichloropropane	0.25	U	135-98-8	sec-Butylbenzene	0.25	U
124-48-1	Dibromochloromethane	0.25	U	99-87-6	p-isopropyltoluene	0.25	U
106-93-4	1,2-Dibromoethane	0.25	U	104-51-8	n-Butylbenzene	0.25	U
108-90-7	Chlorobenzene	0.25	U	91-20-3	Naphthalene	0.25	U

	mg/L	mg/L	
Gasoline Range Estimated Total Petroleum Hydrocarbon	0.20		X

PQL Practical Quantitation Limit- Subject to change due to instrument sensitivity
N- Tentatively Identified, not confirmed
J- Estimated Value
U- Samples analyzed for this compound but not detected
X- Sample not analyzed for this compound
N3- Estimated concentration is <PQL and >MDL
GC/MS Analysis performed

Other purgeables detected (up to 10 highest peaks) — Detected ug/L

NO VOLATILE ORGANIC COMPOUNDS
DETECTED BY GC/MS.

COMMENTS: NOT ANALYZED FOR 2-CHLOROETHYL VINYL ETHER

a-68

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ENR/DWQ LABORATORY
SEMIVOLATILE ANALYTICAL REPORT

LAB NO. 5W5216

REPORTED BY NTG
CHECKED BY PC
REVIEWED BY PTD

SUPERVISOR REK
DATE 9/9/2005

ENTERED BY _____
DATE _____

SAMPLE TYPE: WATER

ANALYTICAL RESULTS

CAS#	SEMIVOLATILES TARGET COMPOUND	POL ug/L	DETECTED ug/L		CAS#	SEMIVOLATILES TARGET COMPOUND	POL ug/L	DETECTED ug/L	
62-53-3	ANILINE	10 J2	U		606-20-2	2,6-DINITROTOLUENE	10	U	
108-95-2	PHENOL	10	U		99-09-2	3-NITROANILINE	50	U	
111-44-4	BIS(2-CHLOROETHYL) ETHER	10	U		83-32-9	ACENAPHTHENE	10	U	
95-57-8	2-CHLOROPHENOL	10	U		51-28-5	2,4-DINITRO PHENOL	50	U	
541-73-1	1,3-DICHLOROBENZENE	10	U		100-02-7	4-NITRO PHENOL	50	U	
106-46-7	1,4-DICHLOROBENZENE	10	U		132-64-9	DIBENZOFURAN	10	U	
100-51-6	BENZYL ALCOHOL	20	U		121-14-2	2,4-DINITROTOLUENE	10	U	
95-50-1	1,2-DICHLOROBENZENE	10	U		84-66-2	DIETHYL PHTHALATE	10	U	
95-48-7	2-METHYL PHENOL	10	U		7005-72-3	4-CHLOROPHENYL PHENYL ETHE	10	U	
108-60-1	BIS(2-CHLOROISOPROPYL) ETHER	10	U		86-73-7	FLUORENE	10	U	
106-44-5	4-METHYL PHENOL	10	U		100-01-6	4-NITROANILINE	50	U	
621-64-7	N-NITROSO-DI-N-PROPYLAMINE	10	U		534-52-1	4,6-DINITRO-2-METHYL PHENOL	50	U	
67-72-1	HEXACHLOROETHANE	10	U		86-30-6	N-NITROSODIPHENYLAMINE	10	U	
98-95-3	NITROBENZENE	10	U		101-55-3	4-BROMOPHENYL PHENYL ETHEI	10	U	
78-59-1	ISOPHORONE	10	U		118-74-1	HEXACHLOROBENZENE	10	U	
88-75-5	2-NITRO PHENOL	10	U		87-86-5	PENTACHLORO PHENOL	50	U	
105-67-9	2,4-DIMETHYL PHENOL	10	U		85-01-8	PHENANTHRENE	10	U	
65-85-0	BENZOIC ACID	50	U		120-12-7	ANTHRACENE	10	U	
111-91-1	BIS(2-CHLOROETHOXY) METHANE	10	U		84-74-2	DI-N-BUTYL PHTHALATE	10	U	
120-83-2	2,4-DICHLORO PHENOL	10	U		206-44-0	FLUORANTHENE	10	U	
120-82-1	1,2,4-TRICHLOROBENZENE	10	U		129-00-0	PYRENE	10	U	
91-20-3	NAPHTHALENE	10	U		85-68-7	BUTYLBENZYL PHTHALATE	10	U	
106-47-8	4-CHLOROANILINE	20	U		91-94-1	3,3'-DICHLOROBENZIDINE	20	U	
87-68-3	HEXACHLOROBUTADIENE	10	U		56-55-3	BENZO(A)ANTHRACENE	10	U	
59-50-7	4-CHLORO-3-METHYL PHENOL	20	U		218-01-9	CHRYSENE	10	U	
91-57-6	2-METHYL NAPHTHALENE	10	U		117-81-7	BIS(2-ETHYLHEXYL) PHTHALATE	10	U	
77-47-4	HEXACHLOROCYCLOPENTADIENE	10 J2	U		117-84-0	DI-N-OCTYL PHTHALATE	10	U	
88-06-2	2,4,6-TRICHLORO PHENOL	10	U		205-99-2	BENZO(B)FLUORANTHENE	10	U	
95-95-4	2,4,5-TRICHLORO PHENOL	10	U		207-08-9	BENZO(K)FLUORANTHENE	10	U	
91-58-7	2-CHLORO NAPHTHALENE	10	U		50-32-8	BENZO(A)PYRENE	10	U	
88-74-4	2-NITROANILINE	50	U		193-39-5	INDENO(1,2,3-CD)PYRENE	10	U	
131-11-3	DIMETHYL PHTHALATE	10	U		53-70-3	DIBENZD(A,H)ANTHRACENE	10	U	
208-96-8	ACENAPHTHYLENE	10	U		191-24-2	BENZO(G,H,I)PERYLENE	10	U	

Dil Factor 1
Mult factor 1
Dil*mult factor 1

SEMIVOLATILE ORGANICS REPORT - DWQ LAB PAGE 2

LAB NO. 5W5216

Other Semi-Volatiles compounds detected (up to 30 highest peaks):	Detected ug/L
No base/neutral or acid extractable organics detected by GC/MS.	

POL- Practical Quantitation Limit- Subject to change due to instrument sensitivity

U- Samples analyzed for this compound but not detected

J- Estimated value

J2- The reported value failed to meet the established quality control criteria for either precision or accuracy.

N1- The component has been tentatively identified based on mass spectral library search and has an estimated value.

N3- Estimated concentration less than the laboratory PQL limit and greater than the laboratory method detection limit.

A- Value reported is the average of two or more determinations.

P- Elevated PQL due to matrix interferneca and/or sample dilution.

COMMENTS: _____

ENR/DWQ LABORATORY PESTICIDES ANALYTICAL REPORT

LAB NO. 5W5216
SUPERVISOR REK
DATE 9/29/2005

REPORTED BY CGY
CHECKED BY DB
REVIEWED BY CGY

ENTERED BY _____
DATE _____

ANALYTICAL RESULTS

SAMPLE TYPE: WATER

CHLORINATED PESTICIDES BY ELECTRON CAPTURE DETECTION

CAS#	PESTICIDE TARGET COMPOUND	PQL ug/L	DETECTED ug/L		CAS#	PESTICIDE TARGET COMPOUND	PQL ug/L	DETECTED ug/L	
15972-60-8	ALACHLOR	0.15	U		72-20-8	ENDRIN	0.025		U
309-00-2	ALDRIN	0.025	U		7421-93-4	ENDRIN ANDEHYDE	0.025		U
1912-24-9	ATRAZINE	3.0	U		53494-70-5	ENDRIN KETONE	0.030		U
319-84-6	BHC-ALPHA	0.025	U		2593-15-9	ETHAZOLE	0.060		U
319-85-7	BHC-BETA	0.025	U		76-44-8	HEPTACHLOR	0.025		U
319-86-8	BHC-DELTA	0.025	U		1024-57-3	HEPTACHLOR EPOXIDE	0.025		U
58-89-9	BHC-GAMMA(LINDANE)	0.025	U		118-74-1	HEXACHLOROBENZENE	0.015		U
57-74-9	CHLORDANE, TECHNICAL	0.50	U		121-75-5	MALATHION	0.20		U
5103-71-9	CHLORDANE-ALPHA	0.020	U		72-43-5	METHOXYCHLOR, PP	0.10		U
5103-74-2	CHLORDANE-GAMMA	0.020	U		2385-85-5	MIREX	0.030		U
3734-48-3	CHLORDENE	0.025	U		39765-80-5	TRANS-NONACHLOR	0.020		U
2675-77-6	CHLORNEB	0.20	U		26880-48-8	OXYCHLORDANE	0.050		U
501-15-6	CHLOROBENZILATE	0.60	U		52645-53-1	MIXED-PERMETHRIN	1.20		U
2921-88-2	CHLORPYRIFOS	0.050	U		1918-16-7	PROPACHLOR	0.30		U
1897-45-6	CHLOROTHALONIL	0.025	U		117-18-0	TECNAZENE	0.010		U
1861-32-1	DCPA	0.025	U		1582-09-8	TRIFLURALIN	0.035		U
53-19-0	DDD, OP	0.050	U		12674-11-2	AROCLOR 1016	1.0		U
72-54-8	DDD, PP	0.025	U		11104-28-2	AROCLOR 1221	1.0		U
3424-82-6	DDE, OP	0.040	U		11141-16-5	AROCLOR 1232	1.0		U
72-55-9	DDE, PP	0.025	U		53469-21-9	AROCLOR 1242	1.0		U
789-02-6	DDT, OP	0.030	U		12672-29-6	AROCLOR 1248	1.0		U
50-29-3	DDT, PP	0.025	U		11097-69-1	AROCLOR 1254	1.0		U
60-57-1	DIELDRIN	0.025	U		11096-82-5	AROCLOR 1260	1.0		U
959-98-8	ENDOSULFAN I	0.025	U		37324-23-5	AROCLOR 1262	1.0		U
33213-65-9	ENDOSULFAN II	0.025	U		8001-35-2	TOXAPHENE	3.0		U
1031-07-8	ENDOSULFAN SULFATE	0.025	U			UNIDENTIFIED PEAKS DETECTED		2	

ACID HERBICIDES BY ELECTRON CAPTURE DETECTION

CAS#	HERBICIDE TARGET COMPOUND	PQL ug/L	DETECTED ug/L		CAS#	HERBICIDE TARGET COMPOUND	PQL ug/L	DETECTED ug/L	
50594-66-6	ACIFLUORFEN (BLAZER)	0.1	U		120-36-5	DICHLORPROP	0.5		U
25057-89-0	BENTAZON	0.3	U		88-85-7	DINOSEB	0.2		U
133-90-4	CHLORAMBEN	0.1	U		100-02-7	4-NITROPHENOL	0.6		U
94-75-7	2,4-D	0.4	U		87-86-5	PENTACHLOROPHENOL (PCP)	0.1		U
94-82-6	2,4-DB	0.7	U		1918-02-1	PICLORAM	0.3		U
	DCPA (MONOACID METABOLITE)	0.4	U		93-76-5	2,4,5-T	0.1		U
1918-00-9	DICAMBA	0.2	U		93-72-1	2,4,5-TP (SILVEX)	0.1		U
51-36-5	3,5 DICHLORODENZOIC ACID	0.5	U						
						UNIDENTIFIED PEAKS DETECTED		4	

LAB # 5W5216

PESTICIDES REPORT - DWQ LAB PAGE 2

ORGANOPHOSPHATE PESTICIDES BY FLAME PHOTOMETRIC DETECTION

CAS#	PESTICIDE TARGET COMPOUND	PQL ug/L	DETECTED ug/L		CAS#	PESTICIDE TARGET COMPOUND	PQL ug/L	DETECTED ug/L	
786-19-6	CARBOPHENOTHION	0.80	U		55-38-9	FENTHION	0.40		U
2921-88-2	CHLORPYRIFOS	0.40	U		115-90-2	FENSULFOTHION	2.2		U
78-48-8	DEF (OXIDIZED MERPHOS)	0.40	U		7786-34-7	MEVINPHOS	0.40		U
298-03-3	DEMETON	0.80	U		6923-22-4	MONOCROTOPHOS	1.0		U
333-41-5	DIAZINON	0.40	U		300-76-5	NALED	2.7		U
62-73-7	DICHLORVOS	2.1	U		56-38-2	ETHYL PARATHION	0.40		U
60-51-5	DIMETHOATE	0.40	U		298-00-0	METHYL PARATHION	0.40		U
298-04-4	DISULFOTON	0.80	U		298-02-2	PHORATE	0.40		U
2497-06-5	DISULFOTON SULFONE	1.0	U		299-84-3	RONNEL	0.40		U
2497-07-6	DISULFOTON SULFOXIDE	NE	U		3689-24-5	SULFOTEPP	0.40		U
2104-64-5	EPN	0.40	U		13071-79-9	TERBUFOS	0.40		U
563-12-2	ETHION	0.40	U						
13194-48-4	ETHOPROP	0.40	U			UNIDENTIFIED PEAKS DETECTED		0	

NITROGEN PESTICIDES BY NP DETECTION

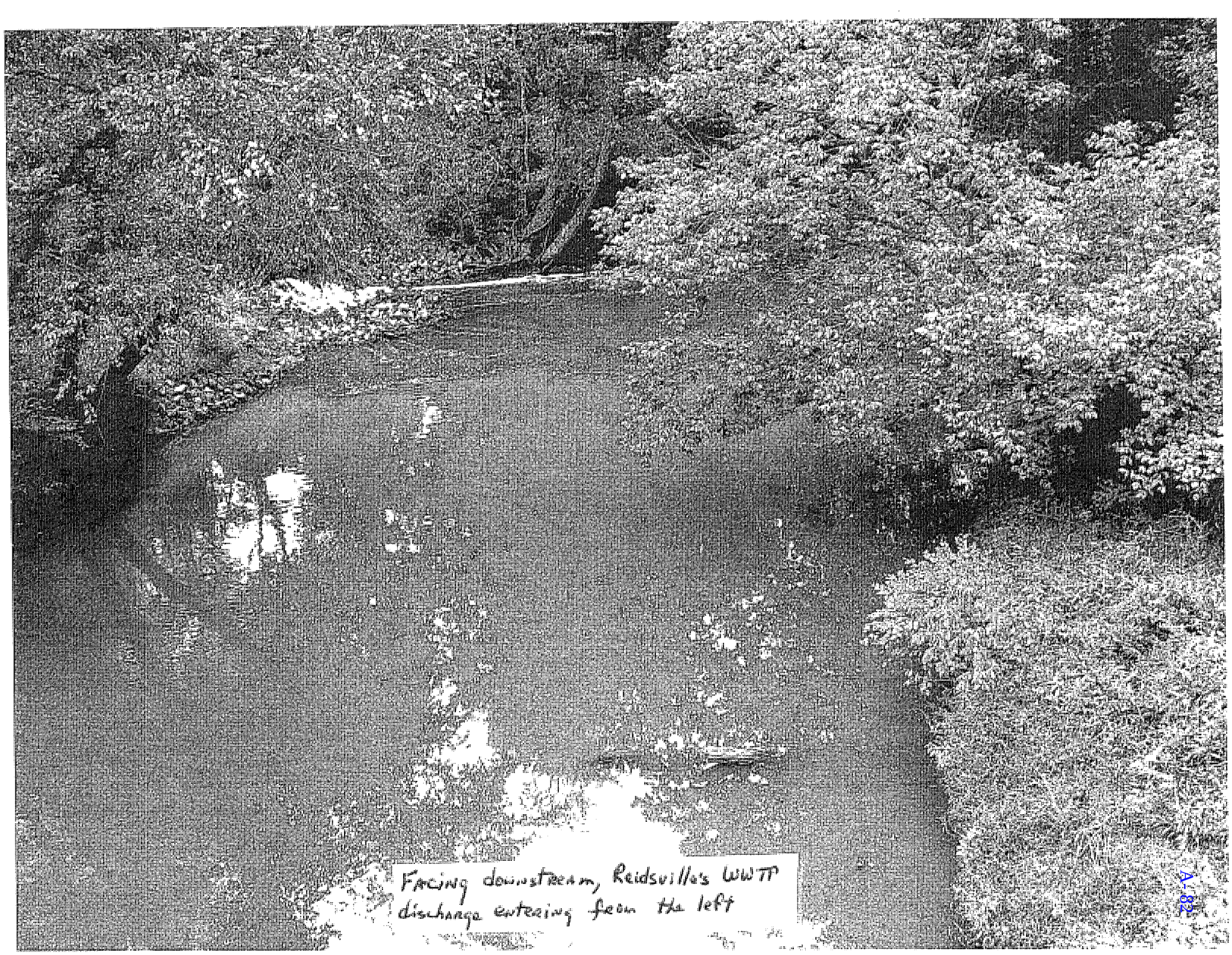
CAS#	PESTICIDE TARGET COMPOUND	PQL ug/L	DETECTED ug/L		CAS#	PESTICIDE TARGET COMPOUND	PQL ug/L	DETECTED ug/L	
15972-60-8	ALACHLOR	8	U		21087-64-9	METRIBUZIN	12		U
834-12-8	AMETRYN	4.5	U		7786-34-7	MEVINPHOS	NE		U
1610-17-9	ATRATON	NE	U		2212-67-1	MOLINATE	4.5		U
1912-24-9	ATRAZINE	4.5	U		15299-99-7	NAPROPANIDE	15		U
314-40-9	BROMACIL	20	U		27314-13-2	NORFLURAZON	12		U
23184-66-9	BUTACHLOR	15	U		1114-71-2	PEBULATE	4.5		U
2008-41-5	BUTYLATE	4.5	U		886-50-0	PREBANE	19		U
101-21-3	CHLORPROPHAM	12	U		1610-18-0	PROMETON	4.5		U
21725-46-2	CYANAZINE	15	U		7287-19-6	PROMETRYN	4.5		U
1134-23-2	CYCLOATE	4.5	U		23950-58-5	PRONAMIDE	15		U
62-73-7	DICHLORVOS	NE	U		1918-16-7	PROPACHLOR	NE		U
957-51-7	DIPHENAMID	8	U		139-40-2	PROPAZINE	4.5		U
2921-88-2	DURSBAN	1.5	U		1014-70-6	SIMETRYN	4.5		U
759-94-4	EPTC (EPTAM)	4.5	U		961-11-5	TETRACHLORVINPHOS	NE		U
13194-48-4	ETHOPROP	15	U		34014-18-1	TEBUTHIURON	12		U
51235-04-2	HEXAZINONE	30	U		41814-78-2	TRICYCLAZOLE	NE		U
51218-45-2	METOLACHLOR	15	U		1929-77-7	VERNOLATE	4.5		U
						UNIDENTIFIED PEAKS DETECTED		0	

PQL- Practical Quantitation Limit- Subject to change due to instrument sensitivity
U- Samples analyzed for this compound but was not detected above PQL
X1- Sample not analyzed for this compound
NE- No established PQL
J2- Reported value failed to meet QC criteria for either precision or accuracy

COMMENTS: _____

Highway 150

7 miles upstream of Intake.



Facing downstream, Reidsville's WWTP discharge entering from the left

DIVISION OF WATER QUALITY

Chemistry Laboratory Report / Water Quality

Lab Number :	5W5212
Date Received :	8/29/2005
Time Received :	2:00 PM
Received By :	HMW
Data Released :	JSW
Date Reported :	10/3/2005

COUNTY : ROCKINGHAM
RIVER BASIN :

REPORT TO : WSRO Regional Office

Other :
COLLECTOR(S) : D RUSSELL

PRIORITY
[X] AMBIENT [ ] QA
[ ] COMPLIANCE [ ] CHAIN OF CUSTODY
[ ] EMERGENCY VISIT ID

[W] SAMPLE TYPE
[X] STREAM [ ] EFFLUENT
[ ] LAKE [ ] INFLUENT
[ ] ESTUARY

3

Estimated BOD Range:

Station Location: HAW RIVER AT HWY 150

Seed: **Chlorinated:** **Remarks:**

Station #	Date Begin (yy/mm/dd)	Date End (yy/mm/dd)	Time Begin	Time End	Depth - DM, DB, DBM	Value Type - A, H, L	Composite-T, S, I	Sample Type
	20050829		1000					

	BOD 310		mg/L	X	Chloride 940	5U	mg/L	X	NH3 as N 610	0.02	mg/L	Li-Lithium 1132 ug/L
	COD High 340		mg/L	X	Chl a 70953	1U	ug/L	X	TKN an N 625	0.25	mg/L	X Mg- Magnesium 92 4.1 mg/L
	COD Low 335		mg/L					X	NO2 plus NO3 as N 630	0.22	mg/L	X Mn-Manganese 10: 370 ug/L
X	Coliform: MF Fecal 31616	110	/100ml					X	P: Total as P 665	0.05	mg/L	Na- Sodium 929 mg/L
	Coliform: MF Total 31504		/100ml		Color: True 80		c.u.		PO4 as P 70507		mg/L	X Arsenic:Total 1002 5.0U ug/L
	Coliform: tube Fecal 31615		/100ml		Color: (pH) 83 pH=		c.u.		P: Dissolved as P 666		mg/L	X Se- Selenium 1147 5.0U ug/L
	Coliform: Fecal Strep 31673		/100ml		Color: pH 7.6 82		c.u.		K-Potassium		mg/L	X Hg- Mercury 7190(0.2U ug/L
	Residue: Total 500		mg/L	X	Cyanide 720	0.02U,J6	mg/L	X	Cd- Cadmium 1027	2.0U	ug/L	X Ba-Barium 30 ug/L
	Volatile 505		mg/L	X	Fluoride 951	0.5U	mg/L	X	Cr-Chromium:Total 1034	25U	ug/L	X Organochlorine Pesticides
	Fixed 510		mg/L		Formaldehyde 71880		mg/L	X	Cu- Copper 1042	2.0U	ug/L	X Organophosphorus Pesticides
	Residue: Suspended 530		mg/L		Grease and Oils 556		mg/L	X	Ni-Nickel 1067	10U	ug/L	
	Volatile 535		mg/L		Hardness Total 900		mg/L	X	Pb- Lead 1051	10U	ug/L	X Acid Herbicides
	Fixed 540		mg/L		Specific Cond. 95		umhos/cm	X	Zn- Zinc 1092	10U	ug/L	
	pH 403		units	X	MBAS 38260	0.1U,J4	mg/L		V-Vanadium		ug/L	X Base/Neutral&Acid Extractable Organics
	Acidity to pH 4.5 436		mg/L	X	Phenols 32730	10U	ug/L	X	Ag- Silver 1077	5.0U	ug/L	TPH Diesel Range
	Acidity to pH 8.3 435		mg/L	X	Sulfate 945	5U	mg/L		Al- Aluminum 1105		ug/L	
	Alkalinity to pH 8.3 415		mg/L		Sulfide 745		mg/L	X	Be- Beryllium 1012	10U	ug/L	X Purgeable Organics (VOA bottle req'd)
	Alkalinity to pH 4.5 410		mg/L		Boron			X	Ca- Calcium 916	10	mg/L	TPH Gasoline Range
	TOC 680		mg/L		Tannin & Lignin		ug/L		Co- Cobalt 1037		ug/L	TPH/BTEX Gasoline Range
X	Turbidity 76	12	NTU		Hexavalent Chromium		ug/L	X	Fe- Iron 1045	1500	ug/L	Phytoplankton
	Coliform Total Tube		"/100 mls		Bicarbonate		mg/L		Mo-Molybdenum		ug/L	
					Carbonate		mg/L		Sb-Antimony		ug/L	
					Total Dissolved Solids		mg/L		Sn-Tin		ug/L	
									Tl-Thallium		ug/L	
									Ti-Titanium		ug/L	
									Hg-1631		ng/L	

COMMENTS :

ENR/DWQ LABORATORY
VOLATILE ANALYTICAL REPORT

LAB NO. 5W5212

REPORTED BY AT
CHECKED BY ALC
REVIEWED BY ALC

SUPERVISOR REK
DATE 9/12/2005

ENTERED BY
DATE

SAMPLE TYPE: WATER

ANALYTICAL RESULTS

CAS#	VOA TARGET COMPOUND	PQL ug/L	DETECTED ug/L		CAS#	VOA TARGET COMPOUND	PQL ug/L	DETECTED ug/L	
75-71-8	Dichlorodifluoromethane	0.25	U		630-20-6	1,1,1,2-Tetrachloroethane	0.25	U	
74-87-3	Chloromethane	0.25	U		75-25-2	Bromoform	0.25	U	
75-01-4	Vinyl Chloride	0.25	U		79-34-5	1,1,2,2-Tetrachloroethane	0.25	U	
74-83-9	Bromomethane	0.25	U		96-18-4	1,2,3-Trichloropropane	0.25	U	
75-00-3	Chloroethane	0.25	U		108-86-1	Bromobenzene	0.25	U	
75-69-4	Trichlorofluoromethane	0.25	U		95-49-8	2-Chlorotoluene	0.25	U	
75-35-4	1,1-Dichloroethene	0.25	U		106-43-4	4-Chlorotoluene	0.25	U	
75-09-2	Methylene Chloride	10	U		541-73-1	1,3-Dichlorobenzene	0.25	U	
156-60-5	trans-1,2-Dichloroethene	0.25	U		106-46-7	1,4-Dichlorobenzene	0.25	U	
75-34-3	1,1-Dichloroethane	0.25	U		95-50-1	1,2-Dichlorobenzene	0.25	U	
594-20-7	2,2-Dichloropropane	0.25	U		96-12-8	1,2-Dibromo-3-Chloropropane	0.50	U	
156-59-4	cis-1,2-Dichloroethene	0.25	U		120-82-1	1,2,4-Trichlorobenzene	0.25	U	
67-66-3	Chloroform	0.25	U		87-68-3	Hexachlorobutadiene	0.25	U	
74-97-5	Bromochloromethane	0.25	U		87-61-6	1,2,3-Trichlorobenzene	0.25	U	
71-55-6	1,1,1-Trichloroethane	0.25	U		1634-04-4	Methyl-tert-butyl ether	0.25	U	
563-58-6	1,1-Dichloropropene	0.25	U		71-43-2	Benzene	0.25	U	
56-23-5	Carbon Tetrachloride	0.25	U		108-88-3	Toluene	0.25	U	
107-06-2	1,2-Dichloroethane	0.25	U		100-41-4	Ethyl benzene	0.25	U	
79-01-6	Trichloroethene	0.25	U		108-38-3	m,p-Xylenes	0.50	U	
78-87-5	1,2-Dichloropropane	0.25	U		95-47-6	o-Xylene	0.25	U	
75-27-4	Bromodichloromethane	0.25	U		100-42-5	Styrene	0.25	U	
74-95-3	Dibromomethane	0.25	U		98-82-8	Isopropylbenzene	0.25	U	
10061-01-5	cis-1,3-Dichloropropene	0.25	U		103-65-1	n-Propylbenzene	0.25	U	
10061-02-6	trans-1,3-Dichloropropene	0.25	U		108-67-8	1,3,5-Trimethylbenzene	0.25	U	
79-00-5	1,1,2-Trichloroethane	0.25	U		98-06-6	tert-Butylbenzene	0.25	U	
127-18-4	Tetrachloroethene	0.25	U		95-63-6	1,2,4-Trimethylbenzene	0.25	U	
142-28-9	1,3-Dichloropropane	0.25	U		135-98-8	sec-Butylbenzene	0.25	U	
124-48-1	Dibromochloromethane	0.25	U		99-87-6	p-isopropyltoluene	0.25	U	
106-93-4	1,2-Dibromoethane	0.25	U		104-51-8	n-Butylbenzene	0.25	U	
108-90-7	Chlorobenzene	0.25	U		91-20-3	Naphthalene	0.25	U	

	mg/L	mg/L	
Gasoline Range Estimated Total Petroleum Hydrocarbon	0.20		X

Other purgeables detected (up to 10 highest peaks)	Detected ug/L
Trimethylsilyl flouride	2.4 #, N1

PQL Practical Quantitation Limit- Subject to change due to instrument sensitivity
N- Tentatively Identified, not confirmed
J- Estimated Value
U- Samples analyzed for this compound but not detected
X- Sample not analyzed for this compound
N3- Estimated concentration is <PQL and >MDL
GC/MS Analysis performed

COMMENTS: NOT ANALYZED FOR 2-CHLOROETHYL VINYL ETHER

ENR/DWQ LABORATORY
SEMIVOLATILE ANALYTICAL REPORT

LAB NO. 5W5212

REPORTED BY NTG
CHECKED BY PC
REVIEWED BY PTD

SUPERVISOR REK
DATE 9/9/2005

ENTERED BY
DATE

SAMPLE TYPE: WATER

ANALYTICAL RESULTS

CAS#	SEMIVOLATILES TARGET COMPOUND	PQL ug/L	DETECTED ug/L		CAS#	SEMIVOLATILES TARGET COMPOUND	PQL ug/L	DETECTED ug/L	
62-53-3	ANILINE	10	J2	U	606-20-2	2,6-DINITROTOLUENE	10		U
108-95-2	PHENOL	10		U	99-09-2	3-NITROANILINE	50		U
111-44-4	BIS(2-CHLOROETHYL) ETHER	10		U	83-32-9	ACENAPHTHENE	10		U
95-57-8	2-CHLOROPHENOL	10		U	51-28-5	2,4-DINITRO PHENOL	50		U
541-73-1	1,3-DICHLOROBENZENE	10		U	100-02-7	4-NITRO PHENOL	50		U
106-46-7	1,4-DICHLOROBENZENE	10		U	132-64-9	DIBENZOFURAN	10		U
100-51-6	BENZYL ALCOHOL	20		U	121-14-2	2,4-DINITROTOLUENE	10		U
95-50-1	1,2-DICHLOROBENZENE	10		U	84-66-2	DIETHYL PHTHALATE	10		U
95-48-7	2-METHYL PHENOL	10		U	7005-72-3	4-CHLOROPHENYL PHENYL ETHE	10		U
108-60-1	BIS(2-CHLOROISOPROPYL) ETHER	10		U	86-73-7	FLUORENE	10		U
106-44-5	4-METHYL PHENOL	10		U	100-01-6	4-NITROANILINE	50		U
621-64-7	N-NITROSO-DI-N-PROPYLAMINE	10		U	534-52-1	4,6-DINITRO-2-METHYL PHENOL	50		U
67-72-1	HEXACHLOROETHANE	10		U	86-30-6	N-NITROSODIPHENYLAMINE	10		U
98-95-3	NITROBENZENE	10		U	101-55-3	4-BROMOPHENYL PHENYL ETHEI	10		U
78-59-1	ISOPHORONE	10		U	118-74-1	HEXACHLOROBENZENE	10		U
88-75-5	2-NITRO PHENOL	10		U	87-86-5	PENTACHLORO PHENOL	50		U
105-67-9	2,4-DIMETHYL PHENOL	10		U	85-01-8	PHENANTHRENE	10		U
65-85-0	BENZOIC ACID	50		U	120-12-7	ANTHRACENE	10		U
111-91-1	BIS(2-CHLOROETHOXY) METHANE	10		U	84-74-2	DI-N-BUTYL PHTHALATE	10		U
120-83-2	2,4-DICHLORO PHENOL	10		U	206-44-0	FLUORANTHENE	10		U
120-82-1	1,2,4-TRICHLORQBENZENE	10		U	129-00-0	PYRENE	10		U
91-20-3	NAPHTHALENE	10		U	85-68-7	BUTYLBENZYL PHTHALATE	10		U
106-47-8	4-CHLOROANILINE	20		U	91-94-1	3,3'-DICHLOROBENZIDINE	20		U
87-68-3	HEXACHLOROBUTADIENE	10		U	56-55-3	BENZO(A)ANTHRACENE	10		U
59-50-7	4-CHLORO-3-METHYL PHENOL	20		U	218-01-9	CHRYSENE	10		U
91-57-6	2-METHYL NAPHTHALENE	10		U	117-81-7	BIS(2-ETHYLHEXYL) PHTHALATE	10		U
77-47-4	HEXACHLOROCYCLOPENTADIENE	10	J2	U	117-84-0	DI-N-OCTYL PHTHALATE	10		U
88-06-2	2,4,6-TRICHLORO PHENOL	10		U	205-99-2	BENZO(B)FLUORANTHENE	10		U
95-95-4	2,4,5-TRICHLORO PHENOL	10		U	207-08-9	BENZO(K)FLUORANTHENE	10		U
91-58-7	2-CHLORO NAPHTHALENE	10		U	50-32-8	BENZO(A)PYRENE	10		U
88-74-4	2-NITROANILINE	50		U	193-39-5	INDENO(1,2,3-CD)PYRENE	10		U
131-11-3	DIMETHYL PHTHALATE	10		U	53-70-3	DIBENZO(A,H)ANTHRACENE	10		U
208-96-8	ACENAPHTHYLENE	10		U	191-24-2	BENZO(G,H,I)PERYLENE	10		U

Dil Factor	1
Mult factor	1
Dil*mult factor	1

SEMIVOLATILE ORGANICS REPORT - DWQ LAB PAGE 2

LAB NO. 5W5212

Other Semi-Volatiles compounds detected (up to 30 highest peaks)	Detected ug/L
No base/neutral or acid extractabl organics detected by GC/MS.	

PQL- Practical Quantitation Limit- Subject to change due to instrument sensitivity

U- Samples analyzed for this compound but not detected

J- Estimated value

J2- The reported value failed to meet the established quality control criteria for either precision or accuracy.

N1- The component has been tentatively identified based on mass spectral library search and has an estimated value.

N3- Estimated concentration less than the laboratory PQL limit and greater than the laboratory method detection limit.

A- Value reported is the average of two or more determinations.

P- Elevated PQL due to matrix interfernece and/or sample dilution.

COMMENTS:

ENR/DWQ LABORATORY PESTICIDES ANALYTICAL REPORT

LAB NO. 5W5212
SUPERVISOR REK
DATE 9/29/2005

REPORTED BY CGY
CHECKED BY DB
REVIEWED BY CGY

ENTERED BY _____
DATE _____

ANALYTICAL RESULTS

SAMPLE TYPE: WATER

CHLORINATED PESTICIDES BY ELECTRON CAPTURE DETECTION

CAS#	PESTICIDE TARGET COMPOUND	PQL ug/L	DETECTED ug/L		CAS#	PESTICIDE TARGET COMPOUND	PQL ug/L	DETECTED ug/L	
15972-60-8	ALACHLOR	0.15	U		72-20-8	ENDRIN	0.025	U
309-00-2	ALDRIN	0.025	U		7421-93-4	ENDRIN ANDEHYDE	0.025	U
1912-24-9	ATRAZINE	3.0	U		53494-70-5	ENDRIN KETONE	0.030	U
319-84-6	BHC-ALPHA	0.025	U		2593-15-9	ETHAZOLE	0.060	U
319-85-7	BHC-BETA	0.025	U		76-44-8	HEPTACHLOR	0.025	U
319-86-8	BHC-DELTA	0.025	U		1024-57-3	HEPTACHLOR EPOXIDE	0.025	U
58-89-9	BHC-GAMMA(LINDANE)	0.025	U		118-74-1	HEXACHLOROBENZENE	0.015	U
57-74-9	CHLORDANE, TECHNICAL	0.50	U		121-75-5	MALATHION	0.20	U
5103-71-9	CHLORDANE-ALPHA	0.020	U		72-43-5	METHOXYCHLOR, PP	0.10	U
5103-74-2	CHLORDANE-GAMMA	0.020	U		2385-85-5	MIREX	0.030	U
3734-48-3	CHLOROENE	0.025	U		39765-80-5	TRANS-NONACHLOR	0.020	U
2675-77-6	CHLORNEB	0.20	U		26880-48-8	OXYCHLORDANE	0.050	U
501-15-6	CHLOROBENZILATE	0.60	U		52645-53-1	MIXED-PERMETHRIN	1.20	U
2921-88-2	CHLORPYRIFOS	0.050	U		1918-16-7	PROPACHLOR	0.30	U
1897-45-6	CHLOROTHALONIL	0.025	U		117-18-0	TECNAZENE	0.010	U
1861-32-1	DCPA	0.025	U		1582-09-8	TRIFLURALIN	0.035	U
53-19-0	DDD, OP	0.030	U		12674-11-2	AROCLOR 1016	1.0	U
72-54-8	DDD, PP	0.025	U		11104-28-2	AROCLOR 1221	1.0	U
3424-82-6	DDE, OP	0.040	U		11141-16-5	AROCLOR 1232	1.0	U
72-55-9	DDE, PP	0.025	U		53469-21-9	AROCLOR 1242	1.0	U
789-02-6	DDT, OP	0.030	U		12672-29-6	AROCLOR 1248	1.0	U
50-29-3	DDT, PP	0.025	U		11097-69-1	AROCLOR 1254	1.0	U
60-57-1	DIELDRIN	0.025	U		11096-82-5	AROCLOR 1260	1.0	U
959-98-8	ENDOSULFAN I	0.025	U		37324-23-5	AROCLOR 1262	1.0	U
33213-65-9	ENDOSULFAN II	0.025	U		8001-35-2	TOXAPHENE	3.0	U
1031-07-8	ENDOSULFAN SULFATE	0.025	U			UNIDENTIFIED PEAKS DETECTED		0

ACID HERBICIDES BY ELECTRON CAPTURE DETECTION

CAS#	HERBICIDE TARGET COMPOUND	PQL ug/L	DETECTED ug/L		CAS#	HERBICIDE TARGET COMPOUND	PQL ug/L	DETECTED ug/L	
50594-66-6	ACIFLUORFEN (BLAZER)	0.1	U		120-36-5	DICHLORPROP	0.5	U
25057-89-0	BENTAZON	0.3	U		88-85-7	DINOSEB	0.2	U
133-90-4	CHLORAMBEN	0.1	U		100-02-7	4-NITROPHENOL	0.6	U
94-75-7	2,4-D	0.4	U		87-86-5	PENTACHLOROPHENOL (PCP)	0.1	U
94-82-6	2,4-DB	0.7	U		1918-02-1	PICLORAM	0.3	U
	DCPA (MONOACID METABOLITE)	0.4	U		93-76-5	2,4,5- T	0.1	U
1918-00-9	DICAMBA	0.2	U		93-72-1	2,4,5-TP (SILVEX)	0.1	U
51-36-5	3,5 DICHLORODENZOIC ACID	0.5	U					
						UNIDENTIFIED PEAKS DETECTED		5

LAB # 5W5212

PESTICIDES REPORT - DWQ LAB PAGE 2

ORGANOPHOSPHATE PESTICIDES BY FLAME PHOTOMETRIC DETECTION

CAS#	PESTICIDE TARGET COMPOUND	PQL ug/L	DETECTED ug/L		CAS#	PESTICIDE TARGET COMPOUND	PQL ug/L	DETECTED ug/L	
786-19-6	CARBOPHENOTHION	0.80	U		55-38-9	FENTHION	0.40	U
2921-88-2	CHLORPYRIFOS	0.40	U		115-90-2	FENSULFOTHION	2.2	U
78-48-8	DEF (OXIDIZED MERPHOS)	0.40	U		7786-34-7	MEVINPHOS	0.40	U
298-03-3	DEMETON	0.80	U		6923-22-4	MONOCROTOPHOS	1.0	U
333-41-5	DIAZINON	0.40	U		300-76-5	NALED	2.7	U
62-73-7	DICHLORVOS	2.1	U		56-38-2	ETHYL PARATHION	0.40	U
60-51-5	DIMETHOATE	0.40	U		298-00-0	METHYL PARATHION	0.40	U
298-04-4	DISULFOTON	0.80	U		298-02-2	PHORATE	0.40	U
2497-06-5	DISULFOTON SULFONE	1.0	U		299-84-3	RONNEL	0.40	U
2497-07-6	DISULFOTON SULFOXIDE	NE	U		3689-24-5	SULFOTEPP	0.40	U
2104-64-5	EPN	0.40	U		13071-79-9	TERBUFOS	0.40	U
563-12-2	ETHION	0.40	U					
13194-48-4	ETHOPROP	0.40	U			UNIDENTIFIED PEAKS DETECTED		0

NITROGEN PESTICIDES BY NP DETECTION

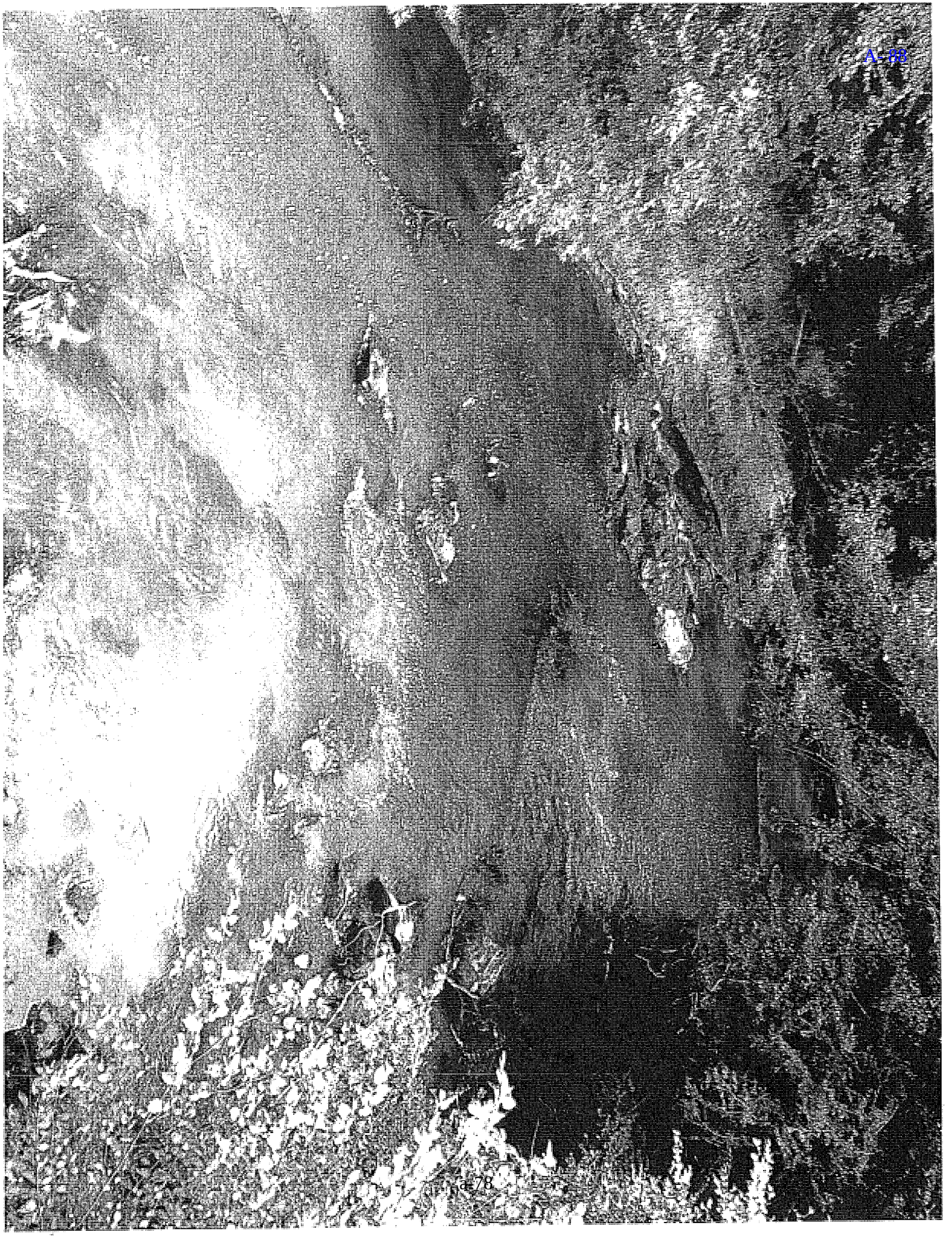
CAS#	PESTICIDE TARGET COMPOUND	PQL ug/L	DETECTED ug/L		CAS#	PESTICIDE TARGET COMPOUND	PQL ug/L	DETECTED ug/L	
15972-60-8	ALACHLOR	8	U		21087-64-9	METRIBUZIN	12	U
834-12-8	AMETRYN	4.5	U		7786-34-7	MEVINPHOS	NE	U
1610-17-9	ATRATON	NE	U		2212-67-1	MOLINATE	4.5	U
1912-24-9	ATRAZINE	4.5	U		15299-99-7	NAPROPAMIDE	15	U
314-40-9	BROMACIL	20	U		27314-13-2	NORFLURAZON	12	U
23184-66-9	BUTACHLOR	15	U		1114-71-2	PEBULATE	4.5	U
2008-41-5	BUTYLATE	4.5	U		886-50-0	PREDAME	19	U
101-21-3	CHLORPROPHAM	12	U		1610-18-0	PROMETON	4.5	U
21725-46-2	CYANAZINE	15	U		7287-19-6	PROMETRYN	4.5	U
1134-23-2	CYCLOATE	4.5	U		23950-58-5	PRONAMIDE	15	U
62-73-7	DICHLORVOS	NE	U		1918-16-7	PROPACHLOR	NE	U
957-51-7	DIPHENAMID	8	U		139-40-2	PROPAZINE	4.5	U
2921-88-2	DURSBAN	1.5	U		1014-70-6	SIMETRYN	4.5	U
759-94-4	EPTC (EPTAM)	4.5	U		961-11-5	TETRACHLORVINPHOS	NE	U
13194-48-4	ETHOPROP	15	U		34014-18-1	TEBUTHIURON	12	U
51235-04-2	HEXAZINONE	30	U		41814-78-2	TRICYCLAZOLE	NE	U
51218-45-2	METOLACHLOR	15	U		1929-77-7	VERNOLATE	4.5	U
						UNIDENTIFIED PEAKS DETECTED		0

PQL- Practical Quantitation Limit- Subject to change due to instrument sensitivity
U- Samples analyzed for this compound but was not detected above PQL
X1- Sample not analyzed for this compound
NE- No established PQL
J2- Reported value failed to meet QC criteria for either precision or accuracy

COMMENTS: _____

High Rock Road (SR 2614)

3 miles upstream of Intake.


A-88

DIVISION OF WATER QUALITY

Chemistry Laboratory Report / Water Quality

Lab Number :	5W5211
Date Received :	8/29/2005
Time Received :	2:00 PM
Received By :	HMW
Data Released :	JSW
Date Reported :	10/3/2005

COUNTY : ROCKINGHAM
RIVER BASIN :

REPORT TO : WSRO Regional Office

Other :
COLLECTOR(S) : D RUSSELL

PRIORITY
[X] AMBIENT [ ] QA
[ ] COMPLIANCE [ ] CHAIN OF CUSTODY
[ ] EMERGENCY VISIT ID

[W] SAMPLE TYPE
[X] STREAM [ ] EFFLUENT
[ ] LAKE [ ] INFLUENT
[ ] ESTUARY

4

Estimated BOD Range:

Station Location: HAW RIVER SR 2620-HIGH ROCK ROAD

Seed: Chlorinated: Remarks:

Station #	Date Begin (yy/mm/dd)	Date End (yy/mm/dd)	Time Begin	Time End	Depth - DM, DB, DBM	Value Type - A, H, L	Composite-T, S, I	Sample Type
	20050829		1100					

	BOD 310		mg/L
	COD High 340		mg/L
	COD Low 335		mg/L
X	Coliform: MF Fecal 31616	93	/100ml
	Coliform: MF Total 31504		/100ml
	Coliform: tube Fecal 31615		/100ml
	Coliform: Fecal Strep 31673		/100ml
	Residue: Total 500		mg/L
	Volatile 505		mg/L
	Fixed 510		mg/L
	Residue: Suspended 530		mg/L
	Volatile 535		mg/L
	Fixed 540		mg/L
	pH 403		units
	Acidity to pH 4.5 436		mg/L
	Acidity to pH 8.3 435		mg/L
	Alkalinity to pH 8.3 415		mg/L
	Alkalinity to pH 4.5 410		mg/L
	TOC 680		mg/L
X	Turbidity 76	9.6	NTU
	Coliform Total Tube		"/100 mls

X	Chloride 940	18	mg/L
X	Chl a 70953	1	ug/L
	Color: True 80		c.u.
	Color: (pH) 83 pH=		c.u.
	Color: pH 7.6 82		c.u.
X	Cyanide 720	0.02U,J6	mg/L
X	Fluoride 951	0.5U	mg/L
	Formaldehyde 71880		mg/L
	Grease and Oils 556		mg/L
	Hardness Total 900		mg/L
	Specific Cond. 95		umhos/cm
X	MBAS 38260	0.16,J4	mg/L
X	Phenols 32730	10U	ug/L
X	Sulfate 945	21	mg/L
	Sulfide 745		mg/L
	Boron		
	Tannin & Lignin		ug/L
	Hexavalent Chromium		ug/L
	Bicarbonate		mg/L
	Carbonate		mg/L
	Total Dissolved Solids		mg/L

X	NH3 as N 610	0.02	mg/L
X	TKN an N 625	0.35	mg/L
X	NO2 plus NO3 as N 630	0.29	mg/L
X	P: Total as P 665	0.07	mg/L
	PO4 as P 70507		mg/L
	P: Dissolved as P 666		mg/L
	K-Potassium		mg/L
X	Cd- Cadmium 1027	2.0U	ug/L
X	Cr-Chromium:Total 1034	25U	ug/L
X	Cu- Copper 1042	2.4	ug/L
X	Ni-Nickel 1067	10U	ug/L
X	Pb- Lead 1051	10U	ug/L
X	Zn- Zinc 1092	12	ug/L
	V-Vanadium		ug/L
X	Ag- Silver 1077	5.0U	ug/L
	Al- Aluminum 1105		ug/L
X	Be- Beryllium 1012	10U	ug/L
X	Ca- Calcium 916	13	mg/L
	Co- Cobalt 1037		ug/L
X	Fe- Iron 1045	1600	ug/L
	Mo-Molybdenum		ug/L
	Sb-Antimony		ug/L
	Sn-Tin		ug/L
	Tl-Thallium		ug/L
	Ti-Titanium		ug/L
	Hg-1631		ng/L

	Li-Lithium 1132		ug/L
X	Mg- Magnesium 92	4.0	mg/L
X	Mn-Manganese 10:	310	ug/L
	Na- Sodium 929		mg/L
X	Arsenic:Total 1002	5.0U	ug/L
X	Se- Selenium 1147	5.0U	ug/L
X	Hg- Mercury 7190(	0.2U	ug/L
	Ba-Barium	31	ug/L
X	Organochlorine Pesticides		
X	Organophosphorus Pesticides		
X	Acid Herbicides		
X	Base/Neutral&Acid Extractable Organics		
	TPH Diesel Range		
X	Purgeable Organics (VOA bottle req'd)		
	TPH Gasoline Range		
	TPH/BTEX Gasoline Range		
	Phytoplankton		

COMMENTS :

ENR/DWQ LABORATORY
VOLATILE ANALYTICAL REPORT

LAB NO. 5W5211

SUPERVISOR REK
DATE 9/12/2006

REPORTED BY AT
CHECKED BY ALC
REVIEWED BY ALC

ENTERED BY
DATE

SAMPLE TYPE: WATER

ANALYTICAL RESULTS

CAS#	VOA TARGET COMPOUND	PQL ug/L	DETECTED ug/L	
75-71-8	Dichlorodifluoromethane	0.25		U
74-87-3	Chloromethane	0.25		U
75-01-4	Vinyl Chloride	0.25		U
74-83-9	Bromomethane	0.25		U
75-00-3	Chloroethane	0.25		U
75-69-4	Trichlorofluoromethane	0.25		U
75-35-4	1,1-Dichloroethene	0.25		U
75-09-2	Methylene Chloride	10		U
156-60-5	trans-1,2-Dichloroethene	0.25		U
75-34-3	1,1-Dichloroethane	0.25		U
594-20-7	2,2-Dichloropropane	0.25		U
156-59-4	cis-1,2-Dichloroethene	0.25		U
67-66-3	Chloroform	0.25	0.29 #	
74-97-5	Bromochloromethane	0.25		U
71-55-6	1,1,1-Trichloroethane	0.25		U
563-58-6	1,1-Dichloropropene	0.25		U
56-23-5	Carbon Tetrachloride	0.25		U
107-06-2	1,2-Dichloroethane	0.25		U
79-01-6	Trichloroethene	0.25		U
78-87-5	1,2-Dichloropropane	0.25		U
75-27-4	Bromodichloromethane	0.25		U
74-95-3	Dibromomethane	0.25		U
10061-01-5	cis-1,3-Dichloropropene	0.25		U
10061-02-6	trans-1,3-Dichloropropene	0.25		U
79-00-5	1,1,2-Trichloroethane	0.25		U
127-18-4	Tetrachloroethene	0.25		U
142-28-9	1,3-Dichloropropane	0.25		U
124-48-1	Dibromochloromethane	0.25		U
106-93-4	1,2-Dibromoethane	0.25		U
108-90-7	Chlorobenzene	0.25		U
630-20-6	1,1,1,2-Tetrachloroethane	0.25		U
75-25-2	Bromoform	0.25		U
79-34-5	1,1,2,2-Tetrachloroethane	0.25		U
96-18-4	1,2,3-Trichloropropane	0.25		U
108-86-1	Bromobenzene	0.25		U
95-49-8	2-Chlorotoluene	0.25		U
106-43-4	4-Chlorotoluene	0.25		U
541-73-1	1,3-Dichlorobenzene	0.25		U
106-46-7	1,4-Dichlorobenzene	0.25		U
95-50-1	1,2-Dichlorobenzene	0.25		U
96-12-8	1,2-Dibromo-3-Chloropropane	0.50		U
120-82-1	1,2,4-Trichlorobenzene	0.25		U
87-68-3	Hexachlorobutadiene	0.25		U
87-61-6	1,2,3-Trichlorobenzene	0.25		U
1634-04-4	Methyl-tert-butyl ether	0.25		U
71-43-2	Benzene	0.25		U
108-88-3	Toluene	0.25		U
100-41-4	Ethyl benzene	0.25		U
108-38-3	m,p-Xylenes	0.50		U
95-47-6	o-Xylene	0.25		U
100-42-5	Styrene	0.25		U
98-82-8	Isopropylbenzene	0.25		U
103-65-1	n-Propylbenzene	0.25		U
108-67-8	1,3,5-Trimethylbenzene	0.25		U
98-06-6	tert-Butylbenzene	0.25		U
95-63-6	1,2,4-Trimethylbenzene	0.25		U
135-98-8	sec-Butylbenzene	0.25		U
99-87-6	p-isopropyltoluene	0.25		U
104-51-8	n-Butylbenzene	0.25		U
91-20-3	Naphthalene	0.25		U

	mg/L	mg/L	
Gasoline Range Estimated Total Petroleum Hydrocarbon	0.20		X

Other purgeables detected (up to 10 highest peaks)

	Detected ug/L

PQL Practical Quantitation Limit- Subject to change due to instrument sensitivity
N- Tentatively Identified, not confirmed
J- Estimated Value
U- Samples analyzed for this compound but not detected
X- Sample not analyzed for this compound
N3- Estimated concentration is <PQL and >MDL
GC/MS Analysis performed

COMMENTS: NOT ANALYZED FOR 2-CHLOROETHYL VINYL ETHER

ENR/DWQ LABORATORY
SEMIVOLATILE ANALYTICAL REPORT

LAB NO. 5W5211

REPORTED BY NTG
CHECKED BY PC
REVIEWED BY PTD

SUPERVISOR REK
DATE 9/9/2005

ENTERED BY _____
DATE _____

SAMPLE TYPE: WATER

ANALYTICAL RESULTS

CAS#	SEMIVOLATILES TARGET COMPOUND	PQL ug/L	DETECTED ug/L		CAS#	SEMIVOLATILES TARGET COMPOUND	PQL ug/L	DETECTED ug/L	
62-53-3	ANILINE	10 J2	U		606-20-2	2,6-DINITROTOLUENE	10	U	
108-95-2	PHENOL	10	U		99-09-2	3-NITROANILINE	50	U	
111-44-4	BIS(2-CHLOROETHYL) ETHER	10	U		83-32-9	ACENAPHTHENE	10	U	
95-57-8	2-CHLOROPHENOL	10	U		51-28-5	2,4-DINITRO PHENOL	50	U	
541-73-1	1,3-DICHLOROBENZENE	10	U		100-02-7	4-NITRO PHENOL	50	U	
106-46-7	1,4-DICHLOROBENZENE	10	U		132-64-9	DIBENZOFURAN	10	U	
100-51-6	BENZYL ALCOHOL	20	U		121-14-2	2,4-DINITROTOLUENE	10	U	
95-50-1	1,2-DICHLOROBENZENE	10	U		84-66-2	DIETHYL PHTHALATE	10	U	
95-48-7	2-METHYL PHENOL	10	U		7005-72-3	4-CHLOROPHENYL PHENYL ETHE	10	U	
108-60-1	BIS(2-CHLOROISOPROPYL) ETHER	10	U		86-73-7	FLUORENE	10	U	
106-44-5	4-METHYL PHENOL	10	U		100-01-6	4-NITROANILINE	50	U	
621-64-7	N-NITROSO-DI-N-PROPYLAMINE	10	U		534-52-1	4,6-DINITRO-2-METHYL PHENOL	50	U	
67-72-1	HEXACHLOROETHANE	10	U		86-30-6	N-NITROSODIPHENYLAMINE	10	U	
98-95-3	NITROBENZENE	10	U		101-55-3	4-BROMOPHENYL PHENYL ETHEI	10	U	
78-59-1	ISOPHORONE	10	U		118-74-1	HEXACHLOROBENZENE	10	U	
88-75-5	2-NITRO PHENOL	10	U		87-86-5	PENTACHLORO PHENOL	50	U	
105-67-9	2,4-DIMETHYL PHENOL	10	U		85-01-8	PHENANTHRENE	10	U	
65-85-0	BENZOIC ACID	50	U		120-12-7	ANTHRACENE	10	U	
111-91-1	BIS(2-CHLOROETHOXY) METHANE	10	U		84-74-2	DI-N-BUTYL PHTHALATE	10	U	
120-83-2	2,4-DICHLORO PHENOL	10	U		206-44-0	FLUORANTHENE	10	U	
120-82-1	1,2,4-TRICHLOROBENZENE	10	U		129-00-0	PYRENE	10	U	
91-20-3	NAPHTHALENE	10	U		85-68-7	BUTYLBENZYL PHTHALATE	10	U	
106-47-8	4-CHLOROANILINE	20	U		91-94-1	3,3'-DICHLOROBENZIDINE	20	U	
87-68-3	HEXACHLOROBUTADIENE	10	U		56-55-3	BENZO(A)ANTHRACENE	10	U	
59-50-7	4-CHLORO-3-METHYL PHENOL	20	U		218-01-9	CHRYSENE	10	U	
91-57-6	2-METHYL NAPHTHALENE	10	U		117-81-7	BIS(2-ETHYLHEXYL) PHTHALATE	10	U	
77-47-4	HEXACHLOROCYCLOPENTADIENE	10 J2	U		117-84-0	DI-N-OCTYL PHTHALATE	10	U	
88-06-2	2,4,6-TRICHLORO PHENOL	10	U		205-99-2	BENZO(B)FLUORANTHENE	10	U	
95-95-4	2,4,5-TRICHLORO PHENOL	10	U		207-08-9	BENZO(K)FLUORANTHENE	10	U	
91-58-7	2-CHLORO NAPHTHALENE	10	U		50-32-8	BENZO(A)PYRENE	10	U	
88-74-4	2-NITROANILINE	50	U		193-39-5	INDENO(1,2,3-CD)PYRENE	10	U	
131-11-3	DIMETHYL PHTHALATE	10	U		53-70-3	DIBENZO(A,H)ANTHRACENE	10	U	
208-96-8	ACENAPHTHYLENE	10	U		191-24-2	BENZO(G,H,I)PERYLENE	10	U	

Dil Factor	1
Mult factor	1
Dil*mult factor	1

SEMIVOLATILE ORGANICS REPORT - OWQ LAB PAGE 2

LAB NO. 5W5211

Other Semi-Volatiles compounds detected (up to 30 highest peaks)	Detected ug/L
No base/neutral or acid extractable organics detected by GC/MS.	

PQL- Practical Quantitation Limit- Subject to change due to instrument sensitivity

U- Samples analyzed for this compound but not detected

J- Estimated value

J2- The reported value failed to meet the established quality control criteria for either precision or accuracy.

N1- The component has been tentatively identified based on mass spectral library search and has an estimated value.

N3- Estimated concentration less than the laboratory PQL limit and greater then the laboratory method detection limit.

A- Value reported is the average of two or more determinations.

P- Elevated PQL due to matrix interference and/or sample dilution.

COMMENTS: _____

ENR/DWQ LABORATORY PESTICIDES ANALYTICAL REPORT

LAB NO. 5W5211
SUPERVISOR REK
DATE 9/29/2005

REPORTED BY CGY
CHECKED BY DB
REVIEWED BY CGY

ENTERED BY
DATE

ANALYTICAL RESULTS

SAMPLE TYPE: WATER

CHLORINATED PESTICIDES BY ELECTRON CAPTURE DETECTION

CAS#	PESTICIDE TARGET COMPOUND	PQL ug/L	DETECTED ug/L		CAS#	PESTICIDE TARGET COMPOUND	PQL ug/L	DETECTED ug/L	
15972-60-8	ALACHLOR	0.15		U	72-20-8	ENDRIN	0.025		U
309-00-2	ALDRIN	0.025		U	7421-93-4	ENDRIN ANDEHYDE	0.025		U
1912-24-9	ATRAZINE	3.0		U	53494-70-5	ENDRIN KETONE	0.030		U
319-84-6	BHC-ALPHA	0.025		U	2593-15-9	ETHIAZOLE	0.050		U
319-85-7	BHC-BETA	0.025		U	76-44-8	HEPTACHLOR	0.025		U
319-86-8	BHC-DELTA	0.025		U	1024-57-3	HEPTACHLOR EPOXIDE	0.025		U
58-89-9	BHC-GAMMA(LINDANE)	0.025		U	118-74-1	HEXACHLORODENZENE	0.015		U
57-74-9	CHLORDANE, TECHNICAL	0.50		U	121-75-5	MALATHION	0.20		U
5103-71-9	CHLORDANE-ALPHA	0.020		U	72-43-5	METHOXYCHLOR, PP	0.10		U
5103-74-2	CHLORDANE-GAMMA	0.020		U	2385-85-5	MIREX	0.030		U
3734-48-3	CHLORDENE	0.025		U	39765-80-5	TRANS-NONACHLOR	0.020		U
2675-77-6	CHLORNEB	0.20		U	26880-48-8	OXYCHLORDANE	0.050		U
501-15-6	CHLOROBENZILATE	0.60		U	52645-53-1	MIXED-PERMETHRIN	1.20		U
2921-88-2	CHLORPYRIFOS	0.050		U	1918-16-7	PROPACHLOR	0.30		U
1897-45-6	CHLOROTHALONIL	0.025		U	117-18-0	TECNAZENE	0.010		U
1861-32-1	DCPA	0.025		U	1582-09-8	TRIFLURALIN	0.035		U
53-19-0	DDD, OP	0.050		U	12674-11-2	AROCLOR 1016	1.0		U
72-54-8	DDD, PP	0.025		U	11104-28-2	AROCLOR 1221	1.0		U
3424-82-6	DDE, OP	0.040		U	11141-16-5	AROCLOR 1232	1.0		U
72-55-9	DDE, PP	0.025		U	53469-21-9	AROCLOR 1242	1.0		U
789-02-6	DDT, OP	0.030		U	12672-29-6	AROCLOR 1248	1.0		U
50-29-3	DDT, PP	0.025		U	11097-69-1	AROCLOR 1254	1.0		U
60-57-1	DIELDRIN	0.025		U	11096-82-5	AROCLOR 1260	1.0		U
959-98-8	ENDOSULFAN I	0.025		U	37324-23-5	AROCLOR 1262	1.0		U
33213-65-9	ENDOSULFAN II	0.025		U	8001-35-2	TOXAPHENE	3.0		U
1031-07-8	ENDOSULFAN SULFATE	0.025		U		UNIDENTIFIED PEAKS DETECTED		3	

ACID HERBICIDES BY ELECTRON CAPTURE DETECTION

CAS#	HERBICIDE TARGET COMPOUND	PQL ug/L	DETECTED ug/L		CAS#	HERBICIDE TARGET COMPOUND	PQL ug/L	DETECTED ug/L	
50594-66-6	ACIFLUORFEN (BLAZER)	0.1		U	120-36-5	DICHLORPROP	0.5		U
25057-89-0	BENTAZON	0.3		U	88-85-7	DINOSEB	0.2		U
133-90-4	CHLORAMBEN	0.1		U	100-02-7	4-NITROPHENOL	0.6		U
94-75-7	2,4-D	0.4	0.315 N3		87-86-5	PENTACHLOROPHENOL (PCP)	0.1		U
94-82-6	2,4-DB	0.7		U	1918-02-1	PICLORAM	0.3		U
	DCPA (MONOACID METABOLITE)	0.4		U	93-76-5	2,4,5- T	0.1		U
1918-00-9	DICAMBA	0.2	0.180 N3		93-72-1	2,4,5-TP (SILVEX)	0.1		U
51-36-5	3,5 DICHLOROBENZOIC ACID	0.5		U					
						UNIDENTIFIED PEAKS DETECTED		>10	

LAB # 5W5211

PESTICIDES REPORT - DWQ LAB PAGE 2

ORGANOPHOSPHATE PESTICIDES BY FLAME PHOTOMETRIC DETECTION

CAS#	PESTICIDE TARGET COMPOUND	PQL ug/L	DETECTED ug/L		CAS#	PESTICIDE TARGET COMPOUND	PQL ug/L	DETECTED ug/L	
786-19-6	CARBOPHENOTHION	0.80		U	55-38-9	FENTHION	0.40		U
2921-88-2	CHLORPYRIFOS	0.40		U	115-90-2	FENSULFOTHION	2.2		U
78-48-8	DEF (OXIDIZED MERPHOS)	0.40		U	7786-34-7	MEVINPHOS	0.40		U
298-03-3	DEMETON	0.80		U	6923-22-4	MONOCROTOPHOS	1.0		U
333-41-5	DIAZINON	0.40		U	300-76-5	NALED	2.7		U
62-73-7	DICHLORVOS	2.1		U	56-38-2	ETHYL PARATHION	0.40		U
60-51-5	DIMETHOATE	0.40		U	298-00-0	METHYL PARATHION	0.40		U
298-04-4	DISULFOTON	0.80		U	298-02-2	PHORATE	0.40		U
2497-06-5	DISULFOTON SULFONE	1.0		U	299-84-3	RONNEL	0.40		U
2497-07-6	DISULFOTON SULFOXIDE	NE		U	3689-24-5	SULFOTEPP	0.40		U
2104-64-5	EPN	0.40		U	13071-79-9	TERBUFOS	0.40		U
563-12-2	ETHION	0.40		U					
13194-48-4	ETHOPROP	0.40		U		UNIDENTIFIED PEAKS DETECTED		1	

NITROGEN PESTICIDES BY NP DETECTION

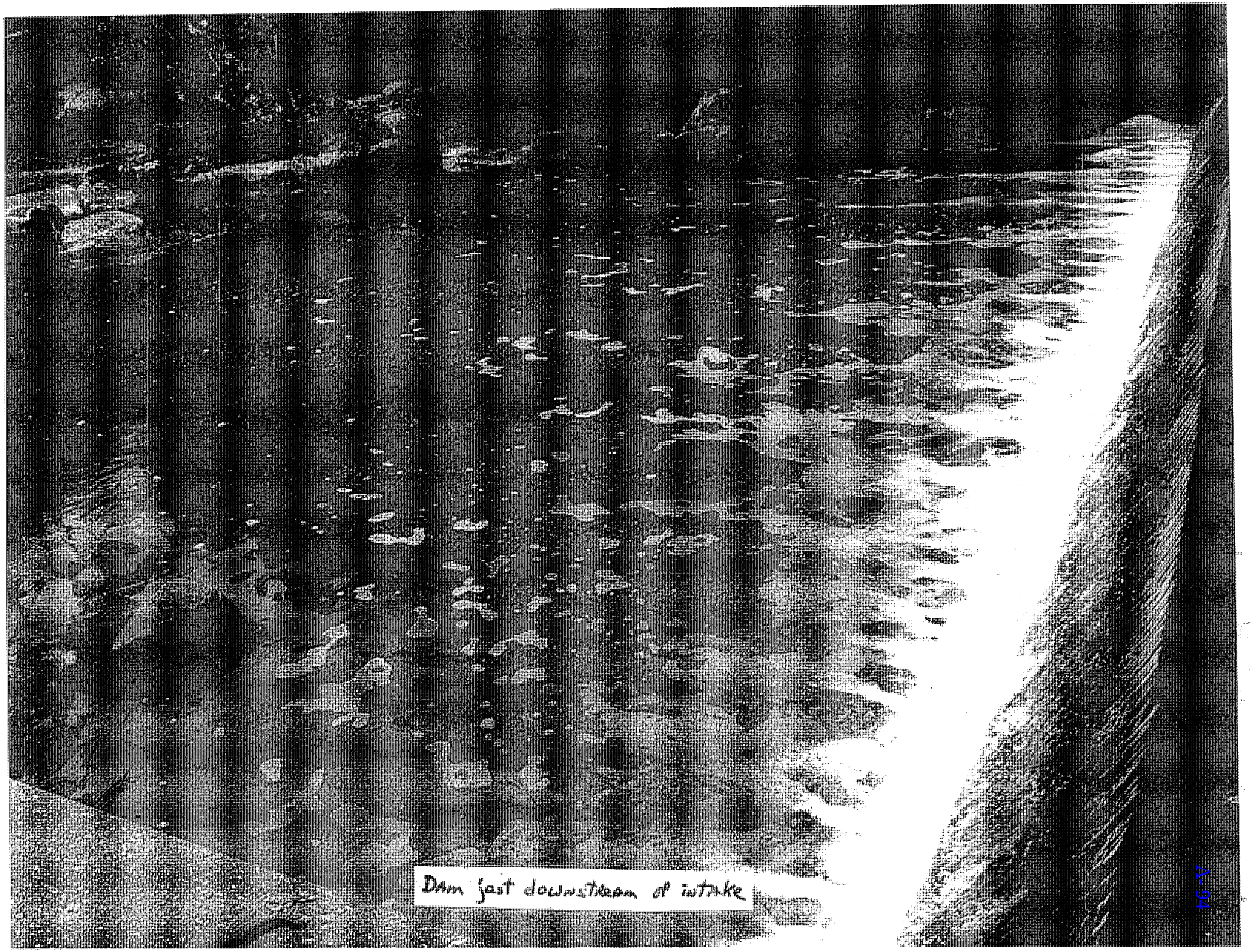
CAS#	PESTICIDE TARGET COMPOUND	PQL ug/L	DETECTED ug/L		CAS#	PESTICIDE TARGET COMPOUND	PQL ug/L	DETECTED ug/L	
15972-60-8	ALACHLOR	8		U	21087-64-9	METRIBUZIN	12		U
834-12-8	AMETRYN	4.5		U	7786-34-7	MEVINPHOS	NE		U
1610-17-9	ATRATON	NE		U	2212-67-1	MOLINATE	4.5		U
1912-24-9	ATRAZINE	4.5		U	15299-99-7	NAPROPAMIDE	15		U
314-40-9	BROMACIL	20		U	27314-13-2	NORFLURAZON	12		U
23184-66-9	BUTACHLOR	15		U	1114-71-2	PEBULATE	4.5		U
2008-41-5	BUTYLATE	4.5		U	886-50-0	PREDANE	19		U
101-21-3	CHLORPROPHAM	12		U	1610-18-0	PROMETON	4.5		U
21725-46-2	CYANAZINE	15		U	7287-19-6	PROMETRYN	4.5		U
1134-23-2	CYCLOATE	4.5		U	23950-58-5	PRONAMIDE	15		U
62-73-7	DICHLORVOS	NE		U	1918-16-7	PROPACHLOR	NE		U
957-51-7	DIPHENAMID	8		U	139-40-2	PROPAZINE	4.5		U
2921-88-2	DURSBAN	1.5		U	1014-70-6	SIMETRYN	4.5		U
759-94-4	EPTC (EPTAM)	4.5		U	961-11-5	TETRACHLORVINPHOS	NE		U
13194-48-4	ETHOPROP	15		U	34014-18-1	TEBUTHIURON	12		U
51235-04-2	HEXAZINONE	30		U	41814-78-2	TRICYCLAZOLE	NE		U
51218-45-2	METOLACHLOR	15		U	1929-77-7	VERNOLATE	4.5		U
						UNIDENTIFIED PEAKS DETECTED		0	

PQL- Practical Quantitation Limit- Subject to change due to instrument sensitivity
U- Samples analyzed for this compound but was not detected above PQL
X1- Sample not analyzed for this compound
NE- No established PQL
J2- Reported value failed to meet QC criteria for either precision or accuracy

COMMENTS: _____

Brooks Bridge Road (SR 2712)

Intake


Dam just downstream of intake

Standing at dam facing upstream, intake on right

DIVISION OF WATER QUALITY

Chemistry Laboratory Report / Water Quality

COUNTY : GUILFORD
RIVER BASIN : _____

REPORT TO : WSRO Regional Office

Other : -
COLLECTOR(S) : D RUSSELL

PRIORITY
[X] AMBIENT [ ] QA
[ ] COMPLIANCE [ ] CHAIN OF CUSTODY
[ ] EMERGENCY VISIT ID

[W] SAMPLE TYPE
[X] STREAM [ ] EFFLUENT
[ ] LAKE [ ] INFLUENT
[ ] ESTUARY

5

Lab Number : 5W5213
Date Received : 8/29/2005
Time Received : 2:00 PM
Received By : HMW

Data Released : JSW
Date Reported : 10/3/2005

Estimated BOD Range:

Station Location: HAW RIVER SR 2712-BROOKS BRIDGE ROAD

Seed: _____ **Chlorinated:** _____ **Remarks:**

Station #	Date Begin (yy/mm/dd)	Date End (yy/mm/dd)	Time Begin	Time End	Depth - DM, DB, DBM	Value Type - A, H, L	Composite-T, S, I	Sample Type
	20050829		1140					

	BOD 310		mg/L
	COD High 340		mg/L
	COD Low 335		mg/L
X	Coliform: MF Fecal 31616	170	/100ml
	Coliform: MF Total 31504		/100ml
	Coliform: tube Fecal 31615		/100ml
	Coliform: Fecal Strep 31673		/100ml
	Residue: Total 500		mg/L
	Volatile 505		mg/L
	Fixed 510		mg/L
	Residue: Suspended 530		mg/L
	Volatile 535		mg/L
	Fixed 540		mg/L
	pH 403		units
	Acidity to pH 4.5 436		mg/L
	Acidity to pH 8.3 435		mg/L
	Alkalinity to pH 8.3 415		mg/L
	Alkalinity to pH 4.5 410		mg/L
	TOC 680		mg/L
X	Turbidity 76	9.5	NTU
	Coliform Total Tube		"/100 mls

X	Chloride 940	22	mg/L
X	Chl a 70953	1U	ug/L
	Color: True 80		c.u.
	Color: (pH) 83 pH=		c.u.
	Color: pH 7.6 82		c.u.
X	Cyanide 720	0.02U,J6	mg/L
X	Fluoride 951	0.5U	mg/L
	Formaldehyde 71880		mg/L
	Grease and Oils 556		mg/L
	Hardness Total 900		mg/L
	Specific Cond. 95		umhos/cm
X	MBAS 38260	0.12,J4	mg/L
X	Phenols 32730	11	ug/L
X	Sulfate 945	22	mg/L
	Sulfide 745		mg/L
	Boron		
	Tannin & Lignin		ug/L
	Hexavalent Chromium		ug/L
	Bicarbonate		mg/L
	Carbonate		mg/L
	Total Dissolved Solids		mg/L

X	NH3 as N 610	0.02	mg/L
X	TKN an N 625	0.39	mg/L
X	NO2 plus NO3 as N 630	0.42	mg/L
X	P: Total as P 665	0.06	mg/L
	PO4 as P 70507		mg/L
	P: Dissolved as P 666		mg/L
	K-Potassium		mg/L
X	Cd- Cadmium 1027	2.0U	ug/L
X	Cr-Chromium:Total 1034	25U	ug/L
X	Cu- Copper 1042	2.2	ug/L
X	Ni-Nickel 1067	10U	ug/L
X	Pb- Lead 1051	10U	ug/L
X	Zn- Zinc 1092	10U	ug/L
	V-Vanadium		ug/L
X	Ag- Silver 1077	5.0U	ug/L
	Al- Aluminum 1105		ug/L
X	Be- Beryllium 1012	10U	ug/L
X	Ca- Calcium 916	13	mg/L
	Co- Cobalt 1037		ug/L
X	Fe- Iron 1045	1100	ug/L
	Mo-Molybdenum		ug/L
	Sb-Antimony		ug/L
	Sn-Tin		ug/L
	Tl-Thallium		ug/L
	Ti-Titanium		ug/L
	Hg-1631		ng/L

	Li-Lithium 1132		ug/L
X	Mg- Magnesium 92	3.9	mg/L
X	Mn-Manganese 10:	210	ug/L
	Na- Sodium 929		mg/L
X	Arsenic:Total 1002	5.0U	ug/L
X	Se- Selenium 1147	5.0U	ug/L
X	Hg- Mercury 7190(	0.2U	ug/L
X	Ba-Barium	26	ug/L
X	Organochlorine Pesticides		
X	Organophosphorus Pesticides		
X	Acid Herbicides		
X	Base/Neutral&Acid Extractable Organics		
	TPH Diesel Range		
X	Purgeable Organics (VOA bottle req'd)		
	TPH Gasoline Range		
	TPH/BTEX Gasoline Range		
	Phytoplankton		

COMMENTS :

ENR/DWQ LABORATORY
VOLATILE ANALYTICAL REPORT

LAB NO. 5W5213

REPORTED BY AT
CHECKED BY ALC
REVIEWED BY ALC

SUPERVISOR REK
DATE 9/15/2005

ENTERED BY
DATE

SAMPLE TYPE: WATER

ANALYTICAL RESULTS

CAS#	VOA TARGET COMPOUND	PQL ug/L	DETECTED ug/L		CAS#	VOA TARGET COMPOUND	PQL ug/L	DETECTED ug/L	
75-71-8	Dichlorodifluoromethane	0.25	U		630-20-6	1,1,1,2-Tetrachloroethane	0.25	U	
74-87-3	Chloromethane	0.25	U		75-25-2	Bromoform	0.25	U	
75-01-4	Vinyl Chloride	0.25	U		79-34-5	1,1,2,2-Tetrachloroethane	0.25	U	
74-83-9	Bromomethane	0.25	U		96-18-4	1,2,3-Trichloropropane	0.25	U	
75-00-3	Chloroethane	0.25	U		108-86-1	Bromobenzene	0.25	U	
75-69-4	Trichlorofluoromethane	0.25	U		95-49-8	2-Chlorotoluene	0.25	U	
75-35-4	1,1-Dichloroethene	0.25	U		106-43-4	4-Chlorotoluene	0.25	U	
75-09-2	Methylene Chloride	10	U		541-73-1	1,3-Dichlorobenzene	0.25	U	
156-60-5	trans-1,2-Dichloroethene	0.25	U		106-46-7	1,4-Dichlorobenzene	0.25	U	
75-34-3	1,1-Dichloroethane	0.25	U		95-50-1	1,2-Dichlorobenzene	0.25	U	
594-20-7	2,2-Dichloropropane	0.25	U		96-12-8	1,2-Dibromo-3-Chloropropane	0.50	U	
156-59-4	cis-1,2-Dichloroethene	0.25	U		120-82-1	1,2,4-Trichlorobenzene	0.25	U	
67-66-3	Chloroform	0.25	U		87-68-3	Hexachlorobutadiene	0.25	U	
74-97-5	Bromochloromethane	0.25	U		87-61-6	1,2,3-Trichlorobenzene	0.25	U	
71-55-6	1,1,1-Trichloroethane	0.25	U		1634-04-4	Methyl-tert-butyl ether	0.25	U	
563-58-6	1,1-Dichloropropene	0.25	U		71-43-2	Benzene	0.25	U	
56-23-5	Carbon Tetrachloride	0.25	U		108-88-3	Toluene	0.25	U	
107-06-2	1,2-Dichloroethane	0.25	U		100-41-4	Ethyl benzene	0.25	U	
79-01-6	Trichloroethene	0.25	U		108-38-3	m,p-Xylenes	0.50	U	
78-87-5	1,2-Dichloropropane	0.25	U		95-47-6	o-Xylene	0.25	U	
75-27-4	Bromodichloromethane	0.25	U		100-42-5	Styrene	0.25	U	
74-95-3	Dibromomethane	0.25	U		98-82-8	Isopropylbenzene	0.25	U	
10061-01-5	cis-1,3-Dichloropropene	0.25	U		103-65-1	n-Propylbenzene	0.25	U	
10061-02-6	trans-1,3-Dichloropropene	0.25	U		108-67-8	1,3,5-Trimethylbenzene	0.25	U	
79-00-5	1,1,2-Trichloroethane	0.25	U		98-06-6	tert-Butylbenzene	0.25	U	
127-18-4	Tetrachloroethene	0.25	U		95-63-6	1,2,4-Trimethylbenzene	0.25	U	
142-28-9	1,3-Dichloropropane	0.25	U		135-98-8	sec-Butylbenzene	0.25	U	
124-48-1	Dibromochloromethane	0.25	U		99-87-6	p-isopropyltoluene	0.25	U	
106-93-4	1,2-Dibromoethane	0.25	U		104-51-8	n-Butylbenzene	0.25	U	
108-90-7	Chlorobenzene	0.25	U		91-20-3	Naphthalene	0.25	U	

	mg/L	mg/L	
Gasoline Range Estimated Total Petroleum Hydrocarbon	0.20		X

PQL Practical Quantitation Limit- Subject to change due to instrument sensitivity
N- Tentatively Identified, not confirmed
J- Estimated Value
U- Samples analyzed for this compound but not detected
X- Sample not analyzed for this compound
N3- Estimated concentration is <PQL and >MDL
GC/MS Analysis performed

Other purgeables detected (up to 10 highest peaks)	Detected ug/L
Trimethylsilyl fluoride	0.79 #, N1
1,4-Dioxane	0.57 #, N1

COMMENTS: NOT ANALYZED FOR 2-CHLOROETHYL VINYL ETHER

FISCAL NOTE

Rule Citation Number: 15A NCAC 2B .0311 Cape Fear River Basin

Rule Topic: Proposed Reclassification of Portions of the Haw River from Class Water Supply-V (WS-V) Nutrient Sensitive Waters (NSW) to Class WS-IV Critical Area (CA) NSW and Class WS-IV (Protected Area or PA)

DENR Division: Division of Water Quality

Staff Contact: Elizabeth Kountis, Environmental Senior Specialist
Division of Water Quality
(919) 807-6418
elizabeth.kountis@ncdenr.gov

Impact Summary:

State government:	Yes
Local government:	Yes
Substantial impact:	No
Federal government:	No

Authority: G.S. 143-214.5

Necessity: This proposed reclassification is necessary to prepare for future emergencies and to ensure the supply of drinking water for the City of Greensboro. Under North Carolina 15A NCAC 18C .0202, "any surface water which is to receive treatment...in order to be used for a public water system shall be obtained from a source which meets the water supply stream classification standards established by the EMC...".

I. Summary

The City of Greensboro (City) has requested that portions of the Haw River and associated watershed in Alamance, Caswell, Guilford, and Rockingham Counties (Cape Fear River Basin) be reclassified for public water supply use. The WS-IV Critical Area[1] (CA) and WS-IV [Protected Area[2] (PA)] designations would be the most appropriate classifications for this use and these waters (see Appendix 1 for the proposed rule change text). The reclassification would recognize the City's existing emergency intake in the river. If reclassified, regulations affecting new development and discharges would apply. Currently, there are no new developments or discharges impacted by this proposal. Alamance, Caswell, Guilford, and Rockingham Counties are the local governments with jurisdiction in the proposed water supply watershed area. These counties have provided resolutions indicating that they will implement the proposed rule within their jurisdiction once the reclassification becomes effective (see Appendix 2 for resolutions), and will incur costs due to the rule change. The analysis of the proposed rule does not indicate that estimated annual economic impacts will exceed $3 million. The state anticipates the effective date of this reclassification to be to May 1, 2012.

[1] Critical Area: The lands and waters .5 miles linearly upstream and draining to a water intake

[2] Protected Area: The lands and waters 10 miles run-of-the-river upstream and draining to a water intake, not including the Critical Area.

I. Purpose of Rules and Background

The purpose of this rule change is to allow the continued utilization of an existing emergency intake in the Haw River that the city constructed for immediate use due to drought. The waters to be reclassified meet water supply water standards according to DWQ studies, and a Finding of No Significant Impact (FONSI) was not required for this project.

The Division of Water Quality assigns all surface waters a primary classification to designate their best uses. Class C is the most basic classification for freshwater and this classification is intended to protect secondary recreation, fishing, wildlife, fish and aquatic life propagation and survival, and agriculture. Secondary recreation includes wading, boating, and other uses involving human body contact with water where such activities take place in an infrequent, unorganized, or incidental manner.

The division assigns other primary classifications to protect waters for such uses as shellfishing (Class SA), drinking water supply (WS-I through WS-V), and primary recreation (B). Supplemental classifications afford additional protections, and include Nutrient Sensitive Waters (NSW) and High Quality Waters (HQW).

The five drinking water supply classifications, WS-I through WS-V, reflect the variability in the types of water supply watersheds across the state. The Water Supply Watershed Protection Act (North Carolina General Statute 143-214.5) requires the Environmental Management Commission to adopt rules to protect the state's surface drinking water supply watersheds.

The City has requested that portions of the Haw River and associated watershed in Rockingham, Caswell, Alamance, and Guilford Counties (Cape Fear River Basin) be reclassified for public water supply use. The WS-IV CA and WS-IV (PA) designations would be the most appropriate classifications for this use and these waters (see Appendix 1 for the proposed rule change text). For this proposal, the proposed CA would extend along the river from the intake, which is located approximately 650 feet upstream of Guilford County Road 2712, to a point approximately 0.5 miles upstream of the intake. The proposed CA is entirely located within Guilford County. The proposed PA would extend along the river from the proposed CA to a point approximately 0.6 mile downstream of U.S. Route 29. The proposed PA is located primarily within Guilford and Rockingham Counties, and small portions of the proposed PA are located within Alamance and Caswell Counties. See the Guide to Freshwater Classifications Chart (PDF) for the regulations on discharges and new developments at the following website: http://portal.ncdenr.org/web/wq/ps/csu/classifications.

II. Costs

Regulated Parties

(a) Wastewater Discharge

In the proposed water supply watershed area, there are existing wastewater discharges, which would not be impacted by the proposal. In addition, there are no known planned wastewater discharges into the proposed waters.

(b) New Development

According to NC DWQ Regional office staff, as well as Frankie Legaux (the Rockingham County Assistant Planning Director), Jason Martin (the Alamance County Planning Manager), Brian Collie (Caswell County Planner) and Shea Bolick (Guilford County Civil Engineer), there are no known plans for new development in the area.

(c) Local Governments

Alamance, Caswell, Guilford, and Rockingham Counties would be required to modify their water supply watershed ordinances within 270 days after the effective date of the proposed rule to reflect the changes in surface waters classifications and resulting changes in land management requirements. These counties have provided resolutions regarding the proposed reclassification indicating that these local governments will implement the proposed rule within their jurisdiction once the reclassification becomes effective (see Appendix 2 for resolutions).

There are one-time costs associated with the modification of water supply watershed ordinances. These expenditures include costs for revising water supply watershed protection language in the ordinances, changing the water supply boundaries on maps, public notification, and hearing costs. A single local government, a combined regional effort between several local governments, or a paid consulting firm could perform these tasks. The estimated total cost of staff time and physical materials required for these activities to Alamance, Caswell, Guilford, and Rockingham Counties is approximately $2,500, $2,650, $4,640, and $2,500, respectively, according to Frankie Legaux (the Rockingham County Assistant Planning Director), Jason Martin (the Alamance County Planning Manager), Brian Collie (Caswell County Planner) and Frank Park (the Guilford County Chief Plans Engineer).

(d) Department of Transportation (DOT)

This reclassification would not affect any known DOT activities in the area according to Matthew Lauffer (NC DOT Highway Stormwater Program Project Manager) and David Harris (NC DOT State Roadside Erosion Control and Vegetation Management Engineer).

Implementing Agencies

(a) Division of Water Quality (DWQ)

The NC DWQ Central and Regional office staff will oversee the processing of the proposed rule as well as the implementation and enforcement of the requirements. DWQ staff will handle administrative procedures, educational and technical assistance and rule/policy evaluations. In addition, there are DWQ staff that will specifically oversee and assist local governments with watershed planning and ordinances. The Division issues permits, conducts inspections and takes enforcement actions. DWQ monitors and keep records of compliance associated with their inspections and enforcement activities.

The Division of Water Quality anticipates that if this rule becomes effective, there will be a one-time cost of $2,940 to the state. This cost is to be incurred for notifying Alamance, Caswell, Guilford, and Rockingham Counties, and reviewing and approving changes to their local ordinances and maps. The cost to the state varies depending on the particular staff required to review specific types of local programs as well as the complexity of the different local programs. The cost to the state for these activities associated with Alamance, Caswell, Guilford, and Rockingham County is $600, $750, $990, and $600, respectively. The formula used to estimate the cost associated with each county is the following:
One-time Cost to State = [#tasks] X [hrs/task] X [staff cost/hr]] + [25% overhead]
("Tasks" includes phone calls, letters, site visits, and meetings that would be performed by state staff, and "staff cost/hr," which is based on salary information from OSBM as of July 1, 2008, includes salary, payroll taxes, retirement, and health benefits.)

III. Benefits

(a) Humans

The City's citizens will benefit from the reclassification of these river segments because they will be able to use it as a source of emergency potable water. Reclassifying the waters will help protect the water supply for human consumption by decreasing the risk of contamination via application of wastewater discharge and stormwater management requirements for new future developments and discharges. The benefits from this use are dependent on the probability of another drought or other emergency that would negatively affect the current water supply.

(b) Environment/Ecosystem

Land use restrictions that protect water quality through stormwater management strategies and other narrative and numeric water quality standards benefits ecosystem health and environmental assets. The protective management criteria will help to mitigate impacts from new development and wastewater discharges, and will benefit fish and wildlife. More specifically, portions of the area proposed to be reclassified may experience lower levels of development density as well as decreased pollution, which may increase and improve habitat and, in turn, propagation and survival of aquatic life including wildlife and fish. DWQ currently does not have adequate data and models to quantify the potential benefits associated with the increase in wildlife habitat or reduction of pollution that this rule may create.

The analysis of the proposed rule does not indicate that estimated annual economic impacts will exceed $3 million.

APPENDIX 1

15A NCAC 02B .0311 CAPE FEAR RIVER BASIN

(a) The Cape Fear River Basin Schedule of Classifications and Water Quality Standards may be inspected at the following places:

(1) the Internet at http://h2o.enr.state.nc.us/csu/; and

(2) the North Carolina Department of Environment and Natural Resources:

(A) Winston-Salem Regional Office
585 Waughtown Street
Winston-Salem, North Carolina

(B) Fayetteville Regional Office
225 Green Street
Systel Building Suite 714
Fayetteville, North Carolina

(C) Raleigh Regional Office
3800 Barrett Drive
Raleigh, North Carolina

(D) Washington Regional Office
943 Washington Square Mall
Washington, North Carolina

(E) Wilmington Regional Office
127 Cardinal Drive Extension
Wilmington, North Carolina

(F) Division of Water Quality
Central Office
512 North Salisbury Street
Raleigh, North Carolina.

(b) The Cape Fear River Basin Schedule of Classification and Water Quality Standards was amended effective:

(1) March 1, 1977;
(2) December 13, 1979;
(3) December 14, 1980;
(4) August 9, 1981;
(5) April 1, 1982;
(6) December 1, 1983;
(7) January 1, 1985;
(8) August 1, 1985;
(9) December 1, 1985;
(10) February 1, 1986;
(11) July 1, 1987;
(12) October 1, 1987;
(13) March 1, 1988;
(14) June 1, 1988;
(15) July 1, 1988;
(16) January 1, 1990;
(17) August 1, 1990;
(18) August 3, 1992;
(19) September 1, 1994;
(20) August 1, 1998;
(21) April 1, 1999;
(22) August 1, 2002;
(23) November 1, 2004;
(24) November 1, 2007;
(25) January 1, 2009;
(26) August 11, 2009;
(27) September 1, ~~2009.~~2009;
(28) May 1, 2012.

(c) The Schedule of Classifications and Water Quality Standards for the Cape Fear River Basin has been amended effective June 1, 1988 as follows:

(1) Cane Creek [Index No. 16-21-(1)] from source to a point 0.5 mile north of N.C. Hwy. 54 (Cane Reservoir Dam) including the Cane Creek Reservoir and all tributaries has been reclassified from Class WS-III to WS-I.

(2) Morgan Creek [Index No. 16-41-1-(1)] to the University Lake dam including University Lake and all tributaries has been reclassified from Class WS-III to WS-I.

(d) The Schedule of Classifications and Water Quality Standards for the Cape Fear River Basin has been amended effective July 1, 1988 by the reclassification of Crane Creek (Crains Creek) [Index No. 18-23-16-(1)] from source to mouth of Beaver Creek including all tributaries from C to WS-III.

(e) The Schedule of Classifications and Water Quality Standards for the Cape Fear River Basin has been amended effective January 1, 1990 as follows:

(1) Intracoastal Waterway (Index No. 18-87) from southern edge of White Oak River Basin to western end of Permuda Island (a line from Morris Landing to Atlantic Ocean), from the eastern mouth of Old Topsail Creek to the southwestern shore of Howe Creek and from the southwest mouth of Shinn Creek to channel marker No. 153 including all tributaries except the King Creek Restricted Area, Hardison Creek, Old Topsail Creek, Mill Creek, Futch Creek and Pages Creek were reclassified from Class SA to Class SA ORW.

(2) Topsail Sound and Middle Sound ORW Area which includes all waters between the Barrier Islands and the Intracoastal Waterway located between a line running from the western most shore of Mason Inlet to the southwestern shore of Howe Creek and a line running from the western shore of New Topsail Inlet to the eastern mouth of Old Topsail Creek was reclassified from Class SA to Class SA ORW.

(3) Masonboro Sound ORW Area which includes all waters between the Barrier Islands and the mainland from a line running from the southwest mouth of Shinn Creek at the Intracoastal Waterway to the southern shore of Masonboro Inlet and a line running from the Intracoastal Waterway Channel marker No. 153 to the southside of the Carolina Beach Inlet was reclassified from Class SA to Class SA ORW.

(f) The Schedule of Classifications and Water Quality Standards for the Cape Fear River Basin has been amended effective January 1, 1990 as follows: Big Alamance Creek [Index No. 16-19-(1)] from source to Lake Mackintosh Dam including all tributaries has been reclassified from Class WS-III NSW to Class WS-II NSW.

(g) The Schedule of Classifications and Water Quality Standards for the Cape Fear River Basin was amended effective August 3, 1992 with the reclassification of all water supply waters (waters with a primary classification of WS-I, WS-II or WS-III). These waters were reclassified to WS-I, WS-II, WS-III, WS-IV or WS-V as defined in the revised water supply protection rules, (15A NCAC 02B .0100, .0200 and .0300) which became effective on August 3, 1992. In some cases, streams with primary classifications other than WS were reclassified to a WS classification due to their proximity and linkage to water supply waters. In other cases, waters were reclassified from a WS classification to an alternate appropriate primary classification after being identified as downstream of a water supply intake or identified as not being used for water supply purposes.

(h) The Schedule of Classifications and Water Quality Standards for the Cape Fear River Basin was amended effective June 1, 1994 as follows:

(1) The Black River from its source to the Cape Fear River [Index Nos. 18-68-(0.5), 18-68-(3.5) and 18-65-(11.5)] was reclassified from Classes C Sw and C Sw HQW to Class C Sw ORW.

(2) The South River from Big Swamp to the Black River [Index Nos. 18-68-12-(0.5) and 18-68-12(11.5)] was reclassified from Classes C Sw and C Sw HQW to Class C Sw ORW.

(3) Six Runs Creek from Quewhiffle Swamp to the Black River [Index No. 18-68-2] was reclassified from Class C Sw to Class C Sw ORW.

(i) The Schedule of Classifications and Water Quality Standards for the Cape Fear River Basin was amended effective September 1, 1994 with the reclassification of the Deep River [Index No. 17-(36.5)] from the Town of Gulf-Goldston water supply intake to US highway 421 including associated tributaries from Class C to Classes C, WS-IV and WS-IV CA.

(j) The Schedule of Classifications and Water Quality Standards for the Cape Fear River Basin was amended effective August 1, 1998 with the revision to the primary classification for portions of the Deep River [Index No. 17-(28.5)] from Class WS-IV to Class WS-V, Deep River [Index No. 17-(41.5)] from Class WS-IV to Class C, and the Cape Fear River [Index 18-(10.5)] from Class WS-IV to Class WS-V.

(k) The Schedule of Classifications and Water Quality Standards for the Cape Fear River Basin was amended effective April 1, 1999 with the reclassification of Buckhorn Creek (Harris Lake)[Index No. 18-7-(3)] from the backwaters of Harris Lake to the Dam at Harris Lake from Class C to Class WS-V.

(l) The Schedule of Classifications and Water Quality Standards for the Cape Fear River Basin was amended effective April 1, 1999 with the reclassification of the Deep River [Index No. 17-(4)] from the dam at Oakdale-Cotton Mills, Inc. to the dam at Randleman Reservoir (located 1.6 mile upstream of U.S. Hwy 220 Business), and including tributaries from Class C and Class B to Class WS-IV and Class WS-IV & B. Streams within the Randleman Reservoir Critical Area have been reclassified to WS-IV CA. The Critical Area for a WS-IV reservoir is defined as 0.5 mile and draining to the normal pool elevation of the reservoir. All waters within the Randleman Reservoir Water Supply Watershed are within a designated Critical Water Supply Watershed and are subject to a special management strategy specified in 15A NCAC 02B .0248.

(m) The Schedule of Classifications and Water Quality Standards for the Cape Fear River Basin was amended effective August 1, 2002 as follows:

(1) Mill Creek [Index Nos. 18-23-11-(1), 18-23-11-(2), 18-23-11-3, 18-23-11-(5)] from its source to the Little River, including all tributaries was reclassified from Class WS-III NSW and Class WS-III B NSW to Class WS-III NSW HQW@ and Class WS-III B NSW HQW@.

(2) McDeed's Creek [Index Nos. 18-23-11-4, 18-23-11-4-1] from its source to Mill Creek, including all tributaries was reclassified from Class WS III NSW and Class WS-III B NSW to Class WS-III NSW HQW@ and Class WS-III B NSW HQW@.

The "@" symbol as used in this Paragraph means that if the governing municipality has deemed that a development is covered under a "5/70 provision" as described in Rule 15A NCAC 02B .0215(3)(b)(i)(E) (Fresh Surface Water Quality Standards for Class WS-III Waters), then that development is not subject to the stormwater requirements as described in rule 15A NCAC 02H .1006 (Stormwater Requirements: High Quality Waters).

(n) The Schedule of Classifications and Water Quality Standards for the Cape Fear River Basin was amended effective November 1, 2004 as follows:

(1) A portion of Rocky River [Index Number 17-43-(1)] from a point approximately 0.3 mile upstream of Town of Siler City upper reservoir dam to a point approximately 0.3 mile downstream of Lacy Creek from WS-III to WS-III CA.

(2) A portion of Rocky River [Index Number 17-43-(8)] from dam at lower water supply reservoir for Town of Siler City to a point approximately 65 feet below dam (site of proposed dam) from C to WS-III CA.

(3) A portion of Mud Lick Creek (Index No. 17-43-6) from a point approximately 0.4 mile upstream of Chatham County SR 1355 to Town of Siler City lower water supply reservoir from WS-III to WS-III CA.

(4) A portion of Lacy Creek (17-43-7) from a point approximately 0.6 mile downstream of Chatham County SR 1362 to Town of Siler City lower water supply reservoir from WS-III to WS-III CA.

(o) The Schedule of Classifications and Water Quality Standards for the Cape Fear River Basin was amended effective November 1, 2007 with the reclassifications listed below, and the North Carolina Division of Water Quality maintains a Geographic Information Systems data layer of these UWLs.

(1) Military Ocean Terminal Sunny Point Pools, all on the eastern shore of the Cape Fear River [Index No. 18-(71)] were reclassified to Class WL UWL as defined in 15A NCAC 02B .0101.

(2) Salters Lake Bay near Salters Lake [Index No. 18-44-4] was reclassified to Class WL UWL as defined in 15A NCAC 02B .0101.

(3) Jones Lake Bay near Jones Lake [Index No. 18-46-7-1] was reclassified to Class WL UWL as defined in 15A NCAC 02B .0101.

(4) Weymouth Woods Sandhill Seep near Mill Creek [18-23-11-(1)] was reclassified to Class WL UWL as defined in 15A NCAC 02B .0101.

(5) Fly Trap Savanna near Cape Fear River [Index No. 18-(71)] was reclassified to Class WL UWL as defined in 15A NCAC 02B .0101.

(6) Lily Pond near Cape Fear River [Index No. 18-(71)] was reclassified to Class WL UWL as defined in 15A NCAC 02B .0101.

(7) Grassy Pond near Cape Fear River [Index No. 18-(71)] was reclassified to Class WL UWL as defined in 15A NCAC 02B .0101.

(8) The Neck Savanna near Sandy Run Swamp [Index No. 18-74-33-2] was reclassified to Class WL UWL as defined in 15A NCAC 02B .0101.

(9) Bower's Bog near Mill Creek [Index No. 18-23-11-(1)] was reclassified to Class WL UWL as defined in 15A NCAC 02B .0101.

(10) Bushy Lake near Turnbull Creek [Index No. 18-46] was reclassified to Class WL UWL as defined in 15A NCAC 02B .0101.

(p) The Schedule of Classifications and Water Quality Standards for the Cape Fear River Basin was amended effective January 1, 2009 as follows:

(1) a portion of Cape Fear River [Index No. 18-(26)] (including tributaries) from Smithfield Packing Company's intake, located approximately 2 miles upstream of County Road 1316, to a point approximately 0.5 miles upstream of Smithfield Packing Company's intake from Class C to Class WS-IV CA.

(2) a portion of Cape Fear River [Index No.18-(26)] (including tributaries) from a point approximately 0.5 miles upstream of Smithfield Packing Company's intake to a point approximately 1 mile upstream of Grays Creek from Class C to Class WS-IV.

(q) The schedule of Classifications and Water Quality Standards for the Cape Fear River Basin was amended effective August 11, 2009 with the reclassification of all Class C NSW waters and all Class B NSW waters upstream of the dam at B. Everett Jordan Reservoir from Class C NSW and Class B NSW to Class WS-V NSW and Class WS-V & B NSW, respectively. All waters within the B. Everett Jordan Reservoir Watershed are within a designated Critical Water Supply Watershed and are subject to a special management strategy specified in 15A NCAC 02B .0262 through .0272.

(r) The Schedule of Classifications and Water Quality Standards for the Cape Fear River Basin was amended effective September 1, 2009 with the reclassification of a portion of the Haw River [Index No. 16-(28.5)] from the Town of Pittsboro water supply intake, which is located approximately 0.15 mile west of U.S. 15/501, to a point 0.5 mile upstream of the Town of Pittsboro water supply intake from Class WS-IV to Class WS-IV CA.

(s) The Schedule of Classifications and Water Quality Standards for the Cape Fear River Basin was amended effective May 1, 2012 with the reclassification of a portion of the Haw River [Index No. 16-(1)] from the City of Greensboro's intake, located approximately 650 feet upstream of Guilford County 2712, to a point approximately 0.5 miles upstream of the intake from Class WS-V NSW to Class WS-IV CA NSW, and a portion of the Haw River [Index No. 16-(1)] from a point approximately 0.5 miles upstream of the intake to a point nearly 0.6 miles downstream of U.S. Route 29 from Class WS-V NSW to Class WS-IV NSW.

History Note: *Authority G.S. 143-214.1; 143-215.1; 143-215.3(a)(1);*
Eff. February 1, 1976;
Amended Eff. May 1, 2012; September 1, 2009; August 11, 2009; January 1, 2009; November 1, 2007; November 1, 2004; August 1, 2002; April 1, 1999; August 1, 1998; September 1, 1994; June 1, 1994; August 3, 1992; August 1, 1990.

APPENDIX 2

RESOLUTION OF SUPPORT BY THE COUNTY OF GUILFORD

FOR THE WATERSHED IV RECLASSIFICATION OF THE LANDS DEFINING THE

GREENSBORO EMERGENCY WATER SUPPLY WATERSHED

WHEREAS, the City of Greensboro requested and received permission from the State of North Carolina (hereinafter referred to as "the State") Department of Environmental Health to put an emergency water supply intake on the Haw River in response to the drought of 2002; and

WHEREAS, the State's Department of Environmental and Natural Resources' Division of Water Quality requires the reclassification of all watersheds that serve as water supplies to protect the quality of those waters; and

WHEREAS, the jurisdictions affected by this reclassification have actively sought to protect the Haw River and its tributaries, as evidenced by the Memorandum of Understanding to preserve resources within the 500-foot corridor of the River for development of the Haw River Trail; and

WHEREAS, State legislation (Session Law 2009-216 and 2009-484) and Administrative Code (15A NCAC 02B.0262 – 0273) in response to State requirements for the B. Everett Jordan Lake Reservoir were enacted to reduce the net inputs of nitrogen and phosphorous within the entire Haw River by 8% and 5% respectively; and

WHEREAS, that same Session Law 2009-216 and 2009-484 requires Best Management Practices and other load reducing measures to reduce and maintain these required nitrogen and phosphorous concentrations from new and existing development within the affected communities; and

WHEREAS, the combinations of land use practices required by Session Law 2009-216 and 2009-484 within the protected Haw River riparian corridor and the Watershed IV reclassification of the emergency water supply watershed adequately protects the emergency water supply;

NOW, THEREFORE, THE COUNTY OF GUILFORD HEREBY RESOLVES:

To support the reclassification of the lands identified by the State Department of Environment

And Natural Resources in July 2010 as being within the Greensboro emergency water supply

Watershed from Watershed V to Watershed IV.

Nothing in this resolution shall affect or interfere with fulfillment of the obligations and rights of the parties hereto to manage the lands and programs administered by them in accordance

with their other basic land management responsibilities. Nor shall this resolution be understood to affect any lands outside of the designated emergency water supply watershed.

ATTEST:

Clerk to Board

GUILFORD COUNTY

Melvin Skip Alston, Chairman

Board of County Commissioners

Date:

3/17/11

RESOLUTION OF SUPPORT
BY THE COUNTY OF ALAMANCE
FOR THE WATERSHED IV RECLASSIFICATION OF THE LANDS DEFINING THE GREENSBORO EMERGENCY WATER SUPPLY WATERSHED

WHEREAS, the City of Greensboro requested and received permission from the State of North Carolina (hereinafter referred to as "the State") Department of Environmental Health to put an emergency water supply intake on the Haw River in response to the drought of 2002; and

WHEREAS, the State's Department of Environment and Natural Resources' Division of Water Quality requires the reclassification of all watersheds that serve as water supplies to protect the quality of those waters; and

WHEREAS, State legislation (Session Law 2009-216 and 2009-484) and Administrative Code (15A NCAC 02B .0262 - .0273) in response to State requirements for the B. Everett Jordan Lake Reservoir were enacted to reduce the net inputs of nitrogen and phosphorous within the entire Haw River by 8% and 5%, respectively; and

WHEREAS, that same Session Law 2009-216 and 2009-484 requires Best Management Practices and other load reducing measures to reduce and maintain these required nitrogen and phosphorous concentrations from new and existing development within the affected communities; and

WHEREAS, the combinations of the land use practices required by Session Law 2009-216 and 2009-484 within the protected Haw River riparian corridor and the Watershed IV reclassification of the emergency water supply watershed adequately protects the emergency water supply;

NOW, THEREFORE, the COUNTY OF ALAMANCE hereby resolves:

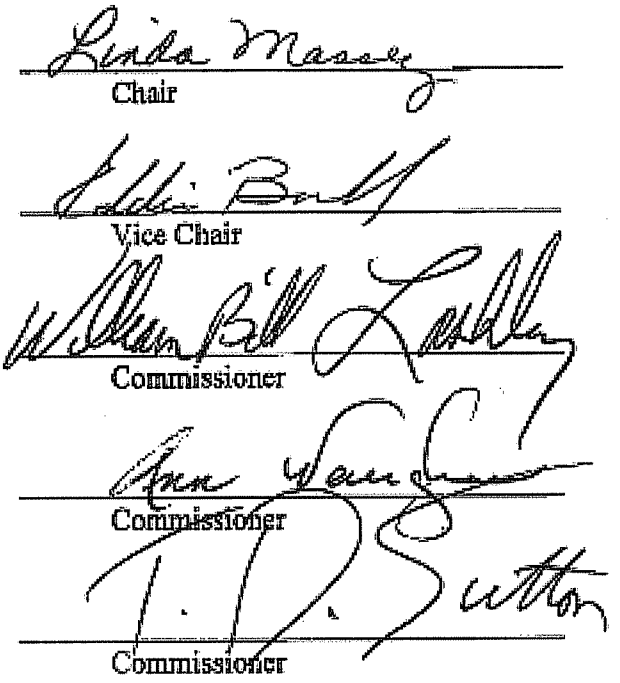
> To support the reclassification of the lands identified by the State Department of Environment and Natural Resources in July 2010 as being within the Greensboro emergency water supply watershed from Watershed V to Watershed IV.

Nothing in this resolution shall affect or interfere with fulfillment of the obligations and rights of the parties hereto to manage the lands and programs administered by them in accordance with their other basic land management responsibilities.

Nor shall this resolution be understood to affect any lands outside of the designated emergency water supply watershed.

IN WITNESS WHEREOF, the COUNTY OF ALAMANCE hereby resolves as of the date written below.

This 7th day of September, 2010.



ROCKINGHAM COUNTY BOARD OF COMMISSIONERS
REGULAR MEETING – AUGUST 23, 2010 – 3:30 P.M.

The Rockingham County Board of Commissioners met in regular session on August 23, 2010, 3:30 p.m., Governmental Center, Commissioners Chambers, Wentworth, North Carolina. Present were Chairman Harold A. Bass; Vice-Chairman Bobby R. Stanley; Commissioners Amelia Whitley Dallas, James E. Kallam, and W. Thomas Flynt; Thomas B. Robinson, County Manager; Michael W. Apple, Assistant County Manager/Director of Financial Services; Robert Shaver, Assistant County Attorney; Pamela M. McLain, Clerk to the Board; and members of the local news media. Absent was W. Eugene Russell, County Attorney.

Chairman Bass called the meeting to order and gave invocation. The Pledge of Allegiance was recited, led by Commissioner Flynt.

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ITEM #15 – ADOPTION OF RESOLUTION OF SUPPORT – RECLASSIFICATION OF LANDS AND WATERS WITHIN GREENSBORO EMERGENCY WATER SUPPLY WATERSHED

Commissioner Kallam moved, Commissioner Dallas seconded and the vote was unanimous to adopt Resolution supporting the reclassification of the lands and waters within the Greensboro Emergency Water Supply Watershed as identified by the North Carolina Department of Environment and Natural Resources, *from Watershed V to Watershed IV*. The City of Greensboro requested and received permission from the North Carolina Division of Water Quality, Department of Environment and Natural Resources to put an emergency water supply intake on the Haw River in response to the drought of 2002. The watershed for this emergency water supply encompasses parts of Alamance, Caswell, Guilford, and Rockingham Counties; watershed area lying within the Jordan Lake Watershed. The North Carolina Division of Water Quality requires that all watersheds that serve as water supplies be reclassified from the basic WS-V classification to a classification that better protects the quality of those waters. Reclassification of this watershed to WS-IV is sufficient to adequately protect the emergency water supply in combination with the land use practices required by Session Laws 2009-216 and 2009-484 and protection of the Haw River riparian corridor.

CASWELL COUNTY

RESOLUTION OF SUPPORT BY THE COUNTY OF CASWELL FOR THE WATERSHED IV RECLASSIFICATION OF THE LANDS DEFINING THE GREENSBORO EMERGENCY WATER SUPPLY WATERSHED

WHEREAS, Caswell County requested and received permission from the State of North Carolina (hereinafter referred to as "the State") Department of Environmental Health to put an emergency water supply intake on the Haw River in response to the drought of 2002; and

WHEREAS, the State's Department of Environmental and Natural Resources' Division of water Quality requires the reclassification of all watersheds that serve as water supplies to protect the quality of those waters; and

WHEREAS, the jurisdictions affected by this reclassification have actively sought to protect the Haw River and its tributaries, as evidenced by the Memorandum of Understanding to preserve resources within the 500-foot corridor of the River for development of the Haw River Trail; and

WHEREAS, State legislation (Session Law 2009-216 and 2009-484) and Administrative Code (15A NCAC 02B.0262-0273) in response to State requirements for the B. Everett Jordan lake Reservoir were enacted to reduce the net inputs of nitrogen and phosphorous within the entire Haw River by 8% and 5% respectively; and

WHEREAS, the same Session law 2009-216 and 2009-484 requires Best Management Practices and other load reducing measures to reduce and maintain these required nitrogen and phosphorous concentrations from new and existing development within the affected communities; and

WHEREAS, the combinations of land use practices required by Session Law 2009-216 and 2009-484 within the protected Haw River riparian corridor and the Watershed IV reclassification of the emergency water supply watershed adequately protects the emergency water supply;

NOW, THEREFORE, THE COUNTY OF CASWELL HEREBY RESOLVES:

To support the reclassification of the lands identified by the State Department of Environment And Natural Resources in July 2010 as being within the Greensboro emergency water supply Watershed from Watershed V to Watershed IV.

CASWELL COUNTY

Nothing in this resolution shall affect or interfere with fulfillment of the obligations and rights of the parties hereto to manage the lands and programs administered by them in accordance with their other basic land management responsibilities. Nor shall this resolution be understood to affect any lands outside of the designated emergency water supply watershed.

ATTEST:

Caswell County

Clerk to Board

Nathaniel Hall, Chairman

Board of County Commissioners

Date:

April 4, 2011

ANNOUNCEMENT

PROPOSED WATER SUPPLY RECLASSIFICATION OF HAW RIVER: PUBLIC HEARING SET FOR SEPTEMBER

A public hearing is going to be conducted in order to receive public comments on the proposed reclassification of a segment of the Haw River in Alamance, Caswell, Guilford and Rockingham Counties (Cape Fear River Basin) to support an existing water supply intake by the City of Greensboro (City). The segment will be reclassified to the Class Water Supply-IV (WS-IV) and Class WS-IV CA (Critical Area) classifications.

PUBLIC HEARING

Location: Williamsburg Elementary School
2830 NC Hwy 87
Reidsville, NC 27320

Date: Thursday, September 29, 2011

Time: 7:00 p.m.

BACKGROUND OF RECLASSIFICATION REQUEST

A request for reclassification of a segment of the Haw River was submitted by the City of Greensboro (City). During the drought of 2002, the City received permission from the Division of Environmental Health and funding from the Division of Water Resources to construct an emergency water supply intake on the Haw River. The intake, which is a permanent structure, was utilized from October 2007 through April 2008. Continued use of the intake as an emergency intake requires the reclassification of the surface waters draining to the intake. The waters to be reclassified meet water supply water quality standards according to DWQ studies.

GENERAL DEFINITION OF PROPOSED RECLASSIFICATION

A Water Supply-IV (WS-IV) water is protected as a water supply for drinking, culinary, or food processing purposes and for those uses where a higher WS classification (such as WS-I, II, or III) is not feasible. A Critical Area (CA) is defined as the area within approximately one half mile and draining to a river intake for WS-IV waters. A Protected Area (PA) for WS-IV waters is defined as the area within 10 miles and draining to a river intake.

WATERS TO BE AFFECTED BY THE PROPOSED RECLASSIFICATION

The portion of the river proposed to be reclassified to WS-IV CA extends along the river from the intake, which is located approximately 650 feet upstream of Guilford County Road 2712, to a point approximately 0.5 miles upstream of the intake and includes approximately 316 acres. There are no named tributaries to the Haw River in the proposed CA, which is located entirely within Guilford County. The portion of the river proposed to be reclassified to WS-IV (PA) extends along the river from a point approximately 0.5 miles upstream of the intake to a point approximately 0.6 mile downstream of U.S. Route 29 and includes approximately 18,501 acres. The proposed PA includes Rose Creek (Apple Pond) and Giles Creek, as well as the lower portion of Little Troublesome Creek, to the Haw River, and these waters are proposed to be reclassified to WS-IV. The PA is located within Rockingham, Guilford, Alamance and Caswell Counties.

REGULATIONS ASSOCIATED WITH THE PROPOSED RECLASSIFICATION

If reclassified, regulations affecting new development as well as existing and new wastewater discharges would apply throughout the water supply watershed. Other requirements, which would apply only in the CA, are additional treatment for new industrial process wastewater discharges, no new land application sites, and no new landfills. Forestry and farming practices will not be affected.

In the proposed water supply watershed, there are three NPDES wastewater discharges and two permitted animal operations; none of these operations would be impacted by the proposed reclassification. In addition, there are no land application sites in the proposed watershed's CA. There are no known planned discharges and developments in the proposed reclassification area, and no known plans for existing discharges to become industrial process wastewater dischargers in the proposed area.

The local governments that have land use jurisdiction within the proposed water supply watershed are responsible for developing and implementing the water supply watershed ordinances within the Protected Area and the Critical Area. These local governments will have 270 days after the effective date of the proposed reclassification to develop or modify water supply watershed protection ordinances that must at least meet the state's minimum requirements (15A

NCAC 2B .0100 and .0200). The proposed watershed is located entirely within the jurisdictions of Alamance, Caswell, Guilford, and Rockingham Counties, which have agreed to modify their ordinances as required should the proposal become effective. Finally, upon reclassification, Alamance County would be expected to implement the Jordan Lake buffer requirements within its portion of the proposed area because the Jordan Lake rules apply to the entire proposed watershed. Caswell, Guilford and Rockingham Counties are currently implementing the Jordan buffer requirements in the proposed watershed.

MEETING FEDERAL TRIENNIAL REVIEW REQUIREMENTS

The public hearing and comment period are to be held in accordance with the federal Water Pollution Control Act (the Clean Water Act) which requires States, at least every three years, to review and revise water quality standards to protect aquatic life and human health. These standards are provided in existing rules NCAC 15A 02B .0100 and .0201 through .0228. The process is called the Triennial Review and includes an assessment and revision of the designated uses of waters (classifications) and the water quality criteria (standards), which are based on the designated uses. More specifically, the public hearing and associated comment period are to address the potential assignment of a WS-IV classification to a portion of the Haw River watershed for the purpose of protecting its proposed designated use as a public water supply. This proposal will result in changing the water quality standards for waters within the above-mentioned Critical Area and Protected Area.

HOW TO SUBMIT COMMENTS

You may attend the public hearing and provide verbal comments that specifically address the proposed reclassification of the Haw River. The Hearing Officer may limit the length of time that you may speak at the public hearing, if necessary, so that all those who wish to speak may have an opportunity to do so. In addition, written comments addressing the proposed reclassification of the Haw River will be accepted until October 31, 2011.

All persons interested and potentially affected by the proposal are encouraged to read this entire announcement and make comments on the proposed reclassification. The EMC may not adopt a rule that differs substantially from the text of the proposed rule published in the North Carolina Register unless the EMC publishes the text of the proposed different rule and accepts comments on the new text (General Statute 150B 21.2 (g)). The proposed effective date for the final rule for this proposed reclassification pursuant to this hearing process is March 1, 2012 pending EPA approval. Written comments on the Haw River proposed reclassification may be submitted to Elizabeth Kountis of the Water Quality Planning Section at the postal address, e-mail address, or fax number listed below.

FOR ADDITIONAL INFORMATION

Existing Division of Water Quality rules are located on the internet at http://portal.ncdenr.org/web/wq/ps/csu/rules. This announcement and a map of the waters proposed to be reclassified are located on the internet via http://portal.ncdenr.org/web/wq/event-calendar (look under "2011-09-29"). Further explanations and details on reclassifications may be obtained by writing or calling:

Elizabeth Kountis
DENR-Division of Water Quality, Planning Section
1617 Mail Service Center
Raleigh, NC 27699-1617
phone (919) 807-6418
fax (919) 807-6497
Elizabeth.Kountis@ncdenr.gov

In the case of inclement weather on the day of the scheduled public hearing, please contact the above telephone number for a recorded message regarding any changes to the location, date or time of the hearing.

North Carolina Department of Environment and Natural Resources

Beverly Eaves Perdue, Governor

Dee Freeman, Secretary

September 9, 2011

TO: Major Newspapers of NC

FROM: Ms. Elizabeth Kountis
Environmental Senior Specialist
N.C. Department of Environment and Natural Resources
Division of Water Quality

SUBJECT: Publication of Announcement for Proposed Reclassification of Haw River

Attached is an announcement for the Proposed Reclassification of the Haw River. The legal requirements for notice as required by G.S. 150B-21.2 have been met by publishing this notice in the *NC Register*. Publishing this notice in newspapers is not a statutory requirement and has therefore been recently cut from the Department's budget as non-essential spending. However, we do recognize that newspapers are one of the most effective methods to convey information to the public, and many newspapers contain a public announcement (or similar) section that does not charge a fee to service its readers with public announcements. Therefore, we are presenting the attached announcement to you for your information to publish at your discretion.

Should you decide to publish this information, it would be greatly appreciated if you would notify us. I can be contacted at any of the following:

By Email: Elizabeth.Kountis@ncdenr.gov
By Fax #: (919) 807-6497
By postal mail:
Ms. Elizabeth Kountis
NCDENR-DWQ-Planning Section
1617 Mail Service Center, Raleigh, NC 27699-1617
By phone: (919) 807-6418

If you should have any questions, please do not hesitate to contact me. Thank you sincerely for your consideration.

Enclosure

One NorthCarolina *Naturally*

1601 Mail Service Center, Raleigh, North Carolina 27699-1601
Phone: 919-733-4984 \ FAX: 919-715-3060 \ Internet: www.enr.state.nc.us/ENR/

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ENVIRONMENTAL MANAGEMENT COMMISSION

NORTH CAROLINA
DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES

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Charles Peterson
Vice Chairman

Beverly Eaves Perdue, Governor
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Tom Ellis
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David H. Moreau
Jeffrey V. Morse
Darryl D. Moss
David B. Peden
Thomas H. Percival
Dickson Phillips III
Forrest R. Westall, Sr.

May 23, 2011

MEMORANDUM

TO: Tom Ellis

FROM: Stephen T. Smith

SUBJECT: Hearing Officer Appointment, Haw River Reclassification

I hereby designate you to serve as hearing officer for the public hearing to be held on the Proposed Reclassification of the Haw River in Alamance, Caswell, Guilford, and Rockingham Counties (Cape Fear River Basin) from Class WS-V to Class WS-IV (PA) and WS-IV (CA). Staff will be contacting you to discuss the process and establish the date, time and location of the public hearing. Please present your findings and recommendations to the Environmental Management Commission.

Thank you for your assistance and service.

cc: Coleen Sullins
Dianne Reid
Elizabeth Kountis
Lois Thomas

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LIST OF ATTENDEES

PROPOSED RECLASSIFICATION OF HAW RIVER
PUBLIC HEARING: SEPTEMBER 29, 2011, REIDSVILLE, NC

Hearing Officer

Ellis	Tom	EMC Commission (Hearing Officer)

Division of Water Quality Staff (CSU = Classifications and Standards Unit)

Kountis	Elizabeth	Senior Environmental Specialist, CSU, Planning Section
Kreiser	Gary	Groundwater Vairance and Rulemaking, CSU, Planning Section
Reid	Dianne	Supervisor, CSU, Planning Section
Basinger	Corey	Regional Supervisor, Winston-Salem Regional Office
Thomas	Mike	Environmental Specialist, Winston-Salem Regional Office
Mickey	Mike	Environmental Specialist, Winston-Salem Regional Office

Citizens in Attendance (*=made verbal comments)

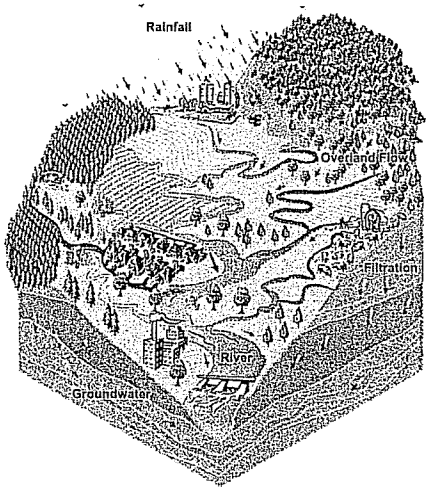
Last Name	First Name	Entity Representing	City	County	State
Jewell	Scott	Town of Pittsboro	Pittsboro	Chatham	NC
Thompson	Kelley	NC State Parks	Brown Summit	Guilford	NC
Drew	Steven	City of Greensboro	Greensboro	Guilford	NC
Stober	Cy	Piedmont Triad Regional Council	Greensboro	Guilford	NC*
Kime	John	Piedmont Triad Water Authority	Randleman	Randolph	NC

Why is this happening?

The City of Greensboro has requested the Haw River watershed reclassification in an effort to provide a protected drinking water source for citizens. The reclassification will limit development activities but will not affect forestry and agricultural operations.

Development prevents water from being absorbed into the soil, instead forcing it to travel over the land picking up pollutants and carrying them to the nearest body of water. Polluted water is costly to treat, making it necessary to classify and protect North Carolina's streams, rivers and lakes.

a-108



A watershed is the area of land that drains to a common body of water, such as a stream, lake, estuary, wetland, or even the ocean (Center for Watershed Protection)

I	II	III	IV	V

Most Restrictive ⟶ Least Restrictive

The Environmental Management Commission assigns classifications to surface waters. All surface waters must meet standards for uses such as fishing, boating, wildlife and wading. The Water Supply Watershed classifications are designed specifically to protect drinking water sources.

For more information, please contact:

DIVISION OF WATER QUALITY
DWQ

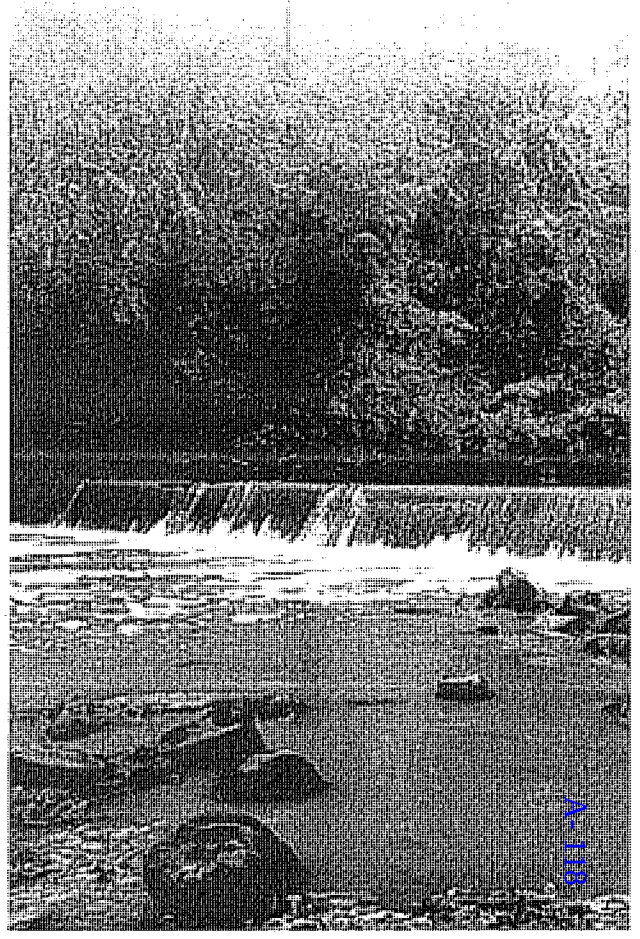
N.C. Division of Water Quality
www.ncwaterquality.org
(919) 807-6300

Piedmont Triad Regional Council

This brochure was prepared for NC DWQ by the Piedmont Triad Regional Council

Haw River

Watershed IV *Reclassification*



A-119

CHANCES ARE GOOD YOU DON'T HAVE TO CHANGE ANYTHING!

CURRENT LAND USES ARE GRANDFATHERED IN. YOU MAY CONTINUE OPERATING ON YOUR LAND JUST AS YOU HAVE IN THE PAST.

WHAT YOU NEED TO KNOW

CRITICAL VS. PROTECTED AREA:

The **critical** area is the 1/2-mile area draining to the water intake. The **protected** area is the 10-mile area that drains to the intake. Allowable development activities differ in these two areas. Forestry and agriculture activities are exempt from these particular WS-IV requirements.

LOW DENSITY VS. HIGH DENSITY:

Protection measures are broken down into two categories and apply only to new development projects that disturb one acre or more of land. The **low density** option applies to property owners who plan on having a built upon area of no more than 24% (approximately one residence per 1/2 acre). This option requires a 30-foot vegetated stream buffer.

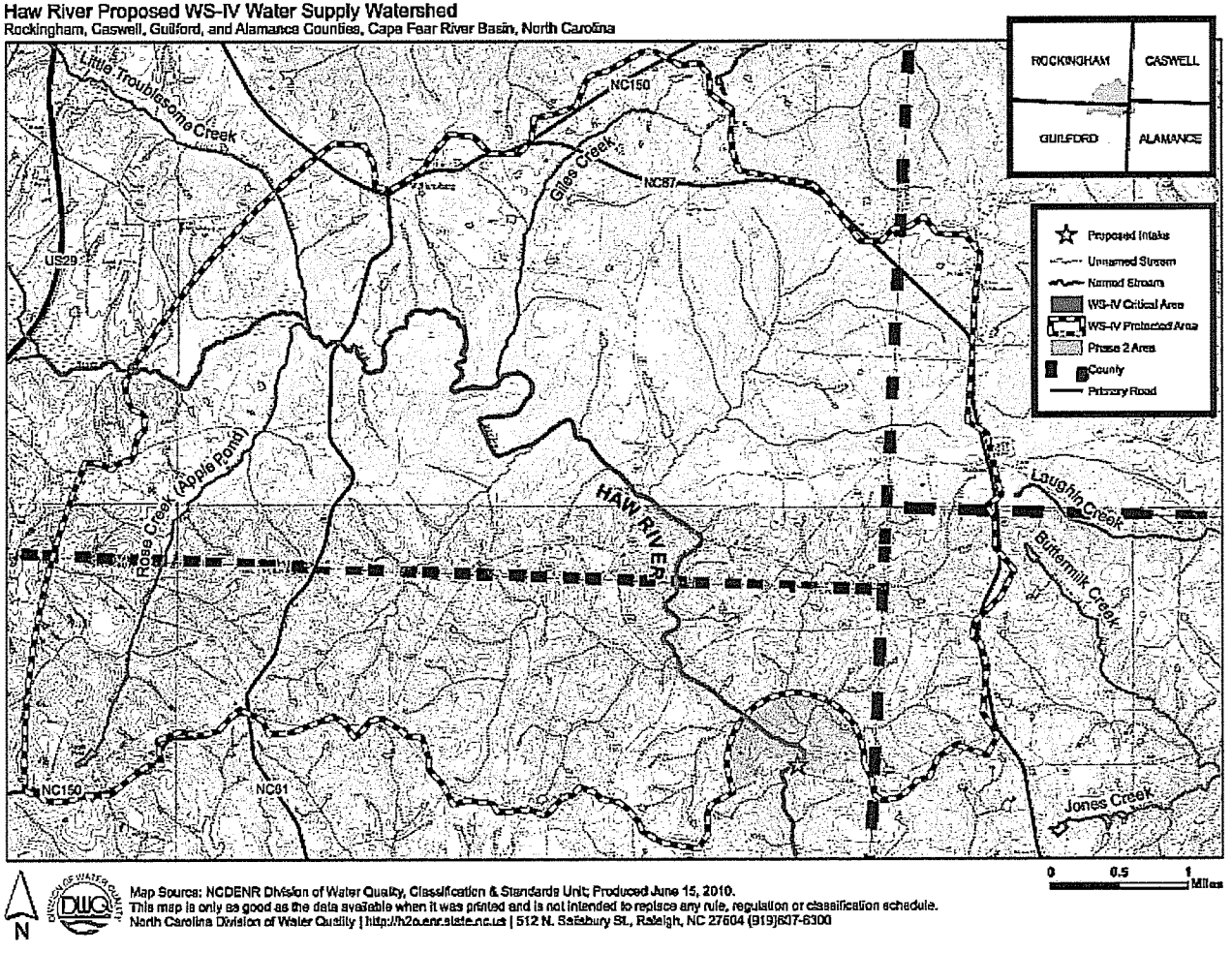
The **high density** option allows for a built upon area of up to 50% in the critical area and up to 70% in the protected area. Under this option, developers must control the first inch of rainfall using engineered stormwater controls. This option also requires a 100-foot vegetated stream buffer.

Other development options may be available depending on the requirements of applicable local ordinances and regulations. Please contact your local government for more information.

VEGETATED STREAM BUFFERS

A stream buffer is a vegetated area bordering a body of water, such as a stream, lake or pond. Vegetation absorbs excess nutrients and sediment, controls erosion, moderates water temperature and provides habitat for wildlife. Buffers also provide flood control and protect your property.

In a Water Supply Watershed, vegetated buffers are required on surface waters that appear as solid blue lines on topographic maps from the U.S. Geological Survey. Any type of vegetation is allowed in these buffers. Contact your local government if you are unsure whether or not a vegetated buffer is required for a water body on your property.



Kountis, Elizabeth

From: Lauffer, Matthew S
Sent: Friday, September 30, 2011 2:03 PM
To: Kountis, Elizabeth
Cc: Simes, Amy; Wrenn, Brian; Harris, David B; Lee, Donald G; Chang, David S; Harris, Philip S; amcmillan@ndcot.gov; Barbour, Deborah M; Thorpe, Gregory J; Mullins, Ryan M
Subject: RE: Comment Period and Hearing for Haw River Reclassification

The proposed changes with respect to post-construction stormwater management would not have any effect on cost due to the existing Jordan Lake Rules and the requirements associated with the Departments NPDES Stormwater permit.

From: Kountis, Elizabeth
Sent: Friday, September 02, 2011 2:24 PM
To: Harris, David B; Lauffer, Matthew S; Lee, Donald G; Henderson, David R; csmith@ncdot.gov; Chang, David S; Harris, Philip S; amcmillan@ndcot.gov; Barbour, Deborah M; Thorpe, Gregory J
Cc: Simes, Amy; Wrenn, Brian
Subject: Comment Period and Hearing for Haw River Reclassification

Attached is an announcement for a comment period and an upcoming public hearing for the proposed surface water reclassification of a segment of the Haw River and its associated watershed (Alamance, Caswell, Guilford and Rockingham Counties, Cape Fear River Basin). The segment is proposed to be reclassified to Class Water Supply-IV (WS-IV) Critical Area (CA) and WS-IV (Protected Area or PA) for an existing emergency water supply intake for the City of Greensboro. The public hearing and comment period are being held in accordance with the federal Water Pollution Control Act (the Clean Water Act) that requires States to conduct a Triennial Review, which includes an assessment and revision of the designated uses of waters (classifications) and associated water quality criteria (standards). This announcement will appear on a few listservs, so I apologize in advance if you receive this information more than once.

Comments on the proposed reclassification may be submitted in writing, fax, or email anytime through October 31, 2011 to the following:

Elizabeth Kountis
DENR-Division of Water Quality, Planning Section
1617 Mail Service Center
Raleigh, NC 27699-1617
Fax (919) 807-6497
Elizabeth.Kountis@ncdenr.gov

If you or any of your staff would like to attend the hearing, please let me know which staff are planning to attend by September 22nd, and know that I would like to introduce that staff at the hearing. The date , time, and location of the public hearing are as follows:

September 29, 2011
7:00 p.m.
Williamsburg Elementary School
2830 NC Hwy 87
Reidsville, NC 27320

Please reference the attached hearing announcement for further details regarding the hearing, comment period, and proposed reclassification. The hearing announcement and a map of the waters proposed to be reclassified are located on the internet at:

http://portal.ncdenr.org/web/wq/event-calendar (look under "2011-09-29")

If you should need additional information , the DWQ staff contact is Elizabeth Kountis at (919) 807-6418.

Please feel free to forward this email to parties you think may be interested in the proposed reclassification.

Email correspondence to and from this sender is subject to the N.C. Public Records Law and may be disclosed to third parties.

North Carolina Department of Environment and Natural Resources
Division of Water Resources
Thomas A. Reeder
Director

Beverly Eaves Perdue
Governor

Dee Freeman
Secretary

October 31, 2011

MEMORANDUM

FROM: Jim Mead, SEPA Review Coordinator – DWR

TO: Elizabeth Kountis, Division of Water Quality, Planning Section

SUBJECT: Haw River Reclassification upstream of SR 2712 (Brooks Bridge Rd.)
City of Greensboro, Guilford County

The Division of Water Resources (DWR) has reviewed the proposed reclassification of the Haw River for the City of Greensboro's existing intake upstream of SR 2712 (Brooks Bridge Rd.) in Guilford County. Greensboro is presently using this intake for emergency purposes to top-off the Townsend Reservoir (located on Reedy Fork), subject to an operations protocol, and only when a flow-by of 23.2 cfs can be maintained in the Haw River downstream of the intake. The following is an excerpt from the existing operating protocol:

"3. The City of Greensboro will not transfer water in amounts or at times that would reduce downstream flow to less than 23.2 cubic feet per second. The City of Greensboro is currently contracting with the USGS to install a permanent stream gauge downstream of the dam and withdrawal point.
4. The Haw River Project will not change any of the water supply amounts quoted in the current…Water Supply Plan. The 50-year safe yield of the City's reservoir system is 36 mgd. The Haw River Project will reduce the risk of reservoir failure in the event of back-to-back drought years by increasing the likelihood that the City's reservoirs will refill by April of any given year.
5. The City of Greensboro will withdraw water from the Haw River when there is an unacceptable risk that the City's reservoirs will not be full by the following April, based on the 'Drought Risk Rule Curve'…. The City may operate the Haw River pumping station as an emergency source of raw water any time total storage available in the City's existing reservoirs falls below the predicted values taken from the Drought Risk Curve, subject to the availability of river flows greater that the required minimum in-stream flow.
6. Once pumping begins based on the Drought Risk Curve, pumping may continue, subject to the availability of river flows in excess of the required minimum instream flow, until City reservoirs are refilled.
7. The City may be granted permission to pump from the Haw River based on approval of a petition to the Secretary of the Department of Environment and Natural Resources that describes extraordinary conditions that threaten the viability of the City's long-term water supply that are not contemplated by the Drought Risk Curve.
8. For the City to pump water from the Haw River, mandatory water use restrictions at least as stringent as Level IIA, Water Level I Warning, Greensboro Code of Ordinances Chapter 29.5 must be in force."

The emergency diversion of water was granted following an expedited review in August, 2002. The City is now requesting a reclassification from WS-V to WS-IV. DWR recognizes that a primary focus of the reclassification review is the impact on land uses upstream of the intake. However, DWR is taking this opportunity to reiterate a condition of the 2002 expedited approval that has not been implemented:

- Item 3 of the Addendum to the City's water supply plan states the following: "The City of Greensboro is currently contracting with the USGS to install a permanent stream gauge downstream of the dam and withdrawal point." DWR, in a June 21, 2002, memorandum to Linda Sewell – Public Water Supply Section, requested the installation, calibration, and maintenance of a staff gage in accordance with USGS procedures, and that the records from the gage be recorded and provided to the Department on a monthly basis while pumping from the Haw River.

DWR is specified as the lead agency for the Department in reviewing gage plans, biennial calibration data, and river level records. We have learned from the City that they have yet to install the gage and we will work with them to rectify this issue.

We appreciate the opportunity to submit these comments. Should you have questions or wish to discuss this further, please contact Fred Tarver at 919/715-5442, or by email at fred.tarver@ncdenr.gov .

cc: Tom Reeder, Tom Fransen, Steve Reed, Linwood Peele, & Fred Tarver - DWR
Jessica Godreau & Wayne Munden, DWR-PWSS
Shari Bryant, NCWRC
Project File

City of Greensboro
North Carolina

November 30, 2011

Mr. Fred Tarver
MSC Division of Water Resources
1611 Mail Service Center
Raleigh, NC 27699-1611

Subject: Haw River Pump Station Spillway Gage Installation

Dear Mr. Tarver,

In response to our recent conversation, I had a follow-up meeting with Mr. Barry Parsons, our Water Supply Division Manager. He will be responsible for installing a board-gage to USGS specs like you and I spoke about and will plan to have that in place sometime in January if not sooner. He will also work toward putting in an electronic level monitoring device wired back to the pump house. Though you said that was not required, we think it would be a good idea for us to keep a data log of spillway levels at time of operation. That installation will take a little longer since he intends on having it designed and installed to be as vandal-proof as possible. We've had instruments there before and they do not last very long. If you have any other requirements or questions, feel free to contact Barry Parson or myself. Barry will notify you upon completion of the gage board installation.

Sincerely,

Steven D. Drew
Operations Division Manager
City of Greensboro Water Resources Department

Cc: Elizabeth Kountis - NCDENR Division of Water Quality
Barry Parsons – Water Supply Manager, Greensboro Water Resources Dept.
Kenney McDowell - Interim Director, Greensboro Water Resources Dept.

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