ARCADIS

Infrastructure · Water · Environment · Buildings

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Tennessee Department of Environment and Conservation
Division of Water Pollution Control, Permits Section
401 Church Street
6th Floor L&C Annex
Nashville, TN 37243-1534

WATER RESOURCES

Subject:
Lakeview Utility District (Hawkins County)
Athowominee Water Treatment Plant
Filter Backwash Permit NOI

Date: May 16, 2011

Dear Division of Water Pollution Control:

On behalf of Lakeview Utility District, Rogersville, Tennessee (Hawkins County), I have enclosed one original Notice of Intent (NOI) for coverage of the referenced new water treatment plant filter backwash discharge under the State's General NPDES Permit. Supplemental information is attached to the NOI.

Please call Tim Carwile of LUD at 423.272.5126 or me if you have any questions.

Sincerely,

ARCADIS U.S., Inc.

David W. Bible, PE
Project Manager

Attachment

Copies:
Tim Carwile
Johnson City EFO

Contact:
David Bible

Phone:
Ext. 48714

Email:
David.Bible@arcadis-us.com

Our ref:
TNLUD081

DEPARTMENT OF ENVIRONMENT AND CONSERVATION
DIVISION OF WATER POLLUTION CONTROL

NOTICE OF INTENT (NOI)
WATER TREATMENT PLANT DISCHARGE PERMIT

Facility Name: Athowominee Water Treatment Plant	County: Hawkins
Street Address or Location: 1191 Old Stage Road, Rogersville	Latitude: N36 25 130
	Longitude: W82 56 250

▪ All entries must be in ink. ▪ **Attach a copy of U.S.G.S. topographical map, a city map, or a county map, identifying the location of this facility.** ▪ This NOI must be signed by a responsible corporate officer for a corporation, a general partner for a partnership, the proprietor for a sole proprietorship, or a principal executive officer or ranking elected official for a public agency. ▪ If this NOI is submitted because of new operator or to update facility information (such as name of facility, new official contact person name, new E-mail address, etc.), provide the existing permit tracking number: _____.

Owner or Operator: (the person or legal entity which controls facility's operation; this may or may not be the same as the site name or the official contact name)
Lakeview Utility District

1

Official Contact Person Name: (individual responsible for a facility)	Title or Position:		
Tim Carwile	General Manager		
Mailing Address: 116 Marble Hall Rd, PO Box 99	City: Rogersville	State: TN	Zip: 37857
Phone: (423) 272-5126	E-mail: lakeviewud@bellsouth.net		

2

Local Contact Person Name: (if appropriate, write "same as #1")	Title or Position:		
same as #1			
Facility Address: (this may or may not be the same as street address)	Facility City:	State: TN	Zip:
Phone: ( )	E-mail:		

Write in the box (to the right) or circle the number (above) to indicate where to send correspondence: 1

PROCESS DESCRIPTION (Reply on a separate page, if necessary)

Name of surface waters receiving the discharge (and the mileage point, if available).
Unnamed tributary to Holston River (RM 110)

A description of the plant, i.e. iron removal, manganese and/or turbidity removal, and a list of any additives used in the water treatment process, such as coagulant, oxidizing enhancers, etc.
turbidity removal of groundwater by microfiltration, with chlorination in clearwell

Design capacity of treatment plant in million of gallons per day (MGD): 0.40 Number and volume of sedimentation basins: 1 @ 53,000 gpd
Average flow of finished water production in MGD over 12 months prior to submission of the NOI:

Filter backwashing. Number of filter backwashed: 2 Frequency for each filter: 670 times per week. Amount of water used to backwash: 180 for each filter. Frequency sedimentation basin is washed out: NA times per year. Amount of water used to wash out the largest sedimentation basin: _____ gallons. Type of treatment provided for backwash and sedimentation basin washwaters and the design capacity of the treatment system.
see attached

Water is released from the backwash settling basin ____ times per week for _____ hours per release and a volume of _____ gallons per release. For existing facility, give averages from last 12 months of operation. For new facilities, indicate "not available". Describe more fully, if necessary.
Not Available

CERTIFICATION AND SIGNATURE

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Tim Carwile	General Manager		5/16/11
Printed Name	Official Title	Signature	Date

STATE USE ONLY

Received Date	Domestic Water Supply Use	Protective for Lead Conc.	Tracking No.	EAC
Impaired Receiving Stream	High Quality Water	T & E Aquatic Fauna	NOC Date	Reviewer

Submit the original completed and signed form to:

WTP NOI
Division of Water Pollution Control
6th Floor L&C Annex, 401 Church Street
Nashville, TN 37243-1534

CN-1225

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RDAs 2399 and 2400

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Supplemental Information for NPDES Notice of Intent

Lakeview Utility District's Athowominee Water Treatment Plant

Filter Backwash From Water Treatment Plant

Proposed Water Treatment Process

The new Athowominee Water Treatment Plant (Lakeview Utility District, Hawkins County) is currently in construction and is expected to be ready to begin operation around summer 2011. A general overview of the water treatment plant (WTP) process follows. Water is pumped from two groundwater wells, each rated at 100 gallons per minute (gpm), into the raw water storage tank. Water is then gravity fed to two microfiltration skid units inside the new WTP building. Each unit is constructed to be expandable, with installed filter canisters with capacity of 200 gpm each and capacity to expand to 350 gpm each by the addition of filter canisters. Installed filtration capacity is 400 gpm or 0.576 million gallons per day (MGD). Maximum build-out capacity is 700 gpm or 1.00 MGD. Filtered water is pumped to a new circular clearwell with baffles to promote contact time. Chlorine is added to the clearwell before pumping to the system for distribution.

Process drains including filter backwash from the WTP flow into a concrete backwash basin. See Drawings G-4, W-1 and D-4 attached showing the WTP site layout, two wells and backwash holding basin.

TDEC Division of Water (March 15, 2010, WS 10-0049) has permitted the new WTP at only 100 gpm, based on one well in service with one as backup.

Estimated Filter Backwash

It is difficult to estimate the filter backwash discharges at this time since this is a new WTP. The volumes given below should be conservative estimates based on full build-out capacity of 700 gpm with two units in operation. The microfiltration units are Aria AP-4, provided by PALL Corporation. The filters are back-flushed at regular intervals with air and filtrate. PALL estimates this process will occur approximately every 7.5 minutes and will create approximate 180 gallons of backwash per cycle while in operation. It is envisioned that the new WTP filtration units will operate less than 12-hours per day. The maximum expected backwash could be approximately 96 times and 17,280 gallons per day. Actual backwash frequency and volume will be determined by raw water characteristics and actual finished water demand. All backwash will be discharged to the backwash holding basin.

No chemical addition is expected at this time prior to the microfiltration units. The microfiltration units are regularly back-flushed with water and air (no chemicals). The backwash will go into the holding basin. Periodic enhanced flux maintenance (EFM) cleaning of the filter equipment may utilize bleach to maintain and extend the performance of the filters. Approximately 286 gallons of bleach solution will be used per cycle per unit followed by 286 gallons of filtered water flush. It is estimated that approximately 4,600 gallons will be discharged per month. Additionally, as need demands, the filtration units will be cleaned in place with a bleach wash, followed by a caustic and acid wash. All the cleaning waste will be discharged to the backwash holding basin. It is estimated that approximately 1,150 gallons will be discharged per month.

The concrete backwash basin has a holding capacity of approximately 53,000 gallons. Discharge from the basin will be through an 8-inch pipe with valve to a ditch (an unnamed tributary to the Holston River). Cleaning solution wastewater containing bleach, acid and caustic rinses are expected to be small in quantity and concentration. It is expected that the discharge valve from the basin will be closed during chemical cleaning processes, and the wastewater monitored before releasing. Dilution within the basin should neutralize the acid and caustic rinses and mitigate chlorine residual before discharge. Much of the chlorine in the cleaning solution should be consumed during the cleaning process.

The basin is constructed to allow intermittent removal of any settled sludge or solids by operators using manual, back-hoe or other means. Disposal is expected to be at permitted landfill.

By sampling, the owner will monitor the chlorine residual, pH, and other parameters required by TDEC regulations. Should residual chlorine exceed discharge limits of 0.019 mg/L, the bleach concentration in the cleaning solutions can be adjusted downward, or a neutralizing agent (e.g. sodium bisulfite or sodium metabisulfite) can be added in the backwash holding basin to mitigate residual chlorine.

Receiving Stream

The backwash will be discharged to unnamed tributary to Holston River near river mile 110 (John Sevier Detention Reservoir) in the Holston River Watershed (HUC 06010104). According to the Proposed Final Version, Year 2010 303(d) List, August 2010, the Holston River is listed for mercury with pollutant source listed as "Sources Outside the State Atmospheric Deposition," Category 5, Assistance from EPA is

requested for Total Maximum Daily Load (TMDL), which includes atmospheric deposition.

Research on TDEC's website determined EPA approved TMDL for E. Coli in the Holston River Watershed (HUC 06010104) approved by EPA September 30, 2008.

However, the expected discharges from the new WTP filter backwash should not contain mercury or E. Coli and therefore will not contribute any pollutants of concern for either the 303(d) list or the E Coli TMDL.

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PROJECT MANAGER	DEPARTMENT MANAGER	LEAD DESIGN PROF.	CHECKED BY
DAVID BIBLE	BOB BORNEMAN	BRIAN GIVENS	STEVE FORBES
SHEET TITLE: LOCATION MAP ATHOWOMINEE WATER TREATMENT PLANT LAKEVIEW UTILITY DISTRICT		TASK/PHASE NUMBER 1DES.CTWTP	DRAWN BY JERRY CAMP
		PROJECT NUMBER TNLUD081	DRAWING NUMBER 1.0

Acad Version : R17.1s (LMS Tech)
User Name : bjackson

Date\Time : Thu, 05 May 2011 - 10:07am
Path\Name : G:\WWA\TNLUD081\Permits\BackwashDischarge\Figure1.dwg

Current Plotstyle : ByColor
Layout Tab: Layout1

TINC Well (FUTURE): 6"
Completed: 6-25-09
Latitude: 36°25'12"N
Longitude: 82°56'13"W
Well depth 605'
6" Casing: 63'
Water inflow: 245' @ 6 gpm
Static Water Level: 59'
Elevation: 1156'
TN Well ID #D00889457

Anthony Well (FUTURE)
Completed: 1/11/08
Latitude: 36°25'11"N
Longitude: 82°56'14"W
Well depth 718
Casing: 105'
Static Water Level = -58'
23 gpm
Elevation: 1156'
TN Well ID #D0082580
Hydrofractured: June 2008

RAW WATER TANK ±28' DIA.

SEPTIC DISPOSAL AREA

FUTURE CLEARWELL

CLEARWELL 28' DIA.

FILTRATION EQUIPMENT BUILDING

CHEMICAL BUILDING

BACKWASH DETENTION

EXISTING GRAVEL ROAD (APPROX. LOCATION)

DOUBLE GATE (20 FT) WIDE

SEE B-5 FOR DETAILS THIS AREA

8 FT CHAINLINK FENCE

DOUBLE GATE (14 FT)

INSTALL NON-POTABLE HYDRANT

INSTALL 12" DIP RAW WATER LINE IN EXISTING ROADWAY,OWNER PROVIDED APPROX. 2'½'x5' D TRENCH IN ROAD (BACKFILLED W/DIRT) FOR INSTALLING WATER LINE. BEDDING & BACKFILL SHALL BE STONE. RESTORE GRAVEL ROADWAY SURFACE.

OMG Well: 6"
Completed: 7-1-09
Latitude: 36°25'13"N
Longitude: 82°56'09"W
Well depth 245'
6" Casing: 93'
Water inflow: 200' @ 300 gpm
Static Water Level: 10'
Elevation: 1095'
TN Well ID #D00889459

Hirsute Well: 6"
Completed: 6-29-09
Latitude: 36°25'14"N
Longitude: 82°56'03"W
Well depth 305'
8" Casing: 94'
Water inflow: 225' @ 15 gpm
Static Water Level: 10'
Elevation: 1088'
TN Well ID #D00889459

0 50' 100' 150'
1"=50'

BUREM ROAD (STATE ROUTE 347)

HOLSTON RIVER

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Current Pltstyle : ByColor
Layout Tab: Well Location Plan

Date\Time : Thu, 29 Apr 2010 - 8:44am
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Acad Version : R17.1s (LMS Tech)
User Name : bgivens

REV.	ISSUED DATE	DESCRIPTION
0	04/30/2010	ISSUED FOR BID

KEYPLAN

SEAL
DAVID W. BIBLE
STATE OF TENNESSEE
4/30/10

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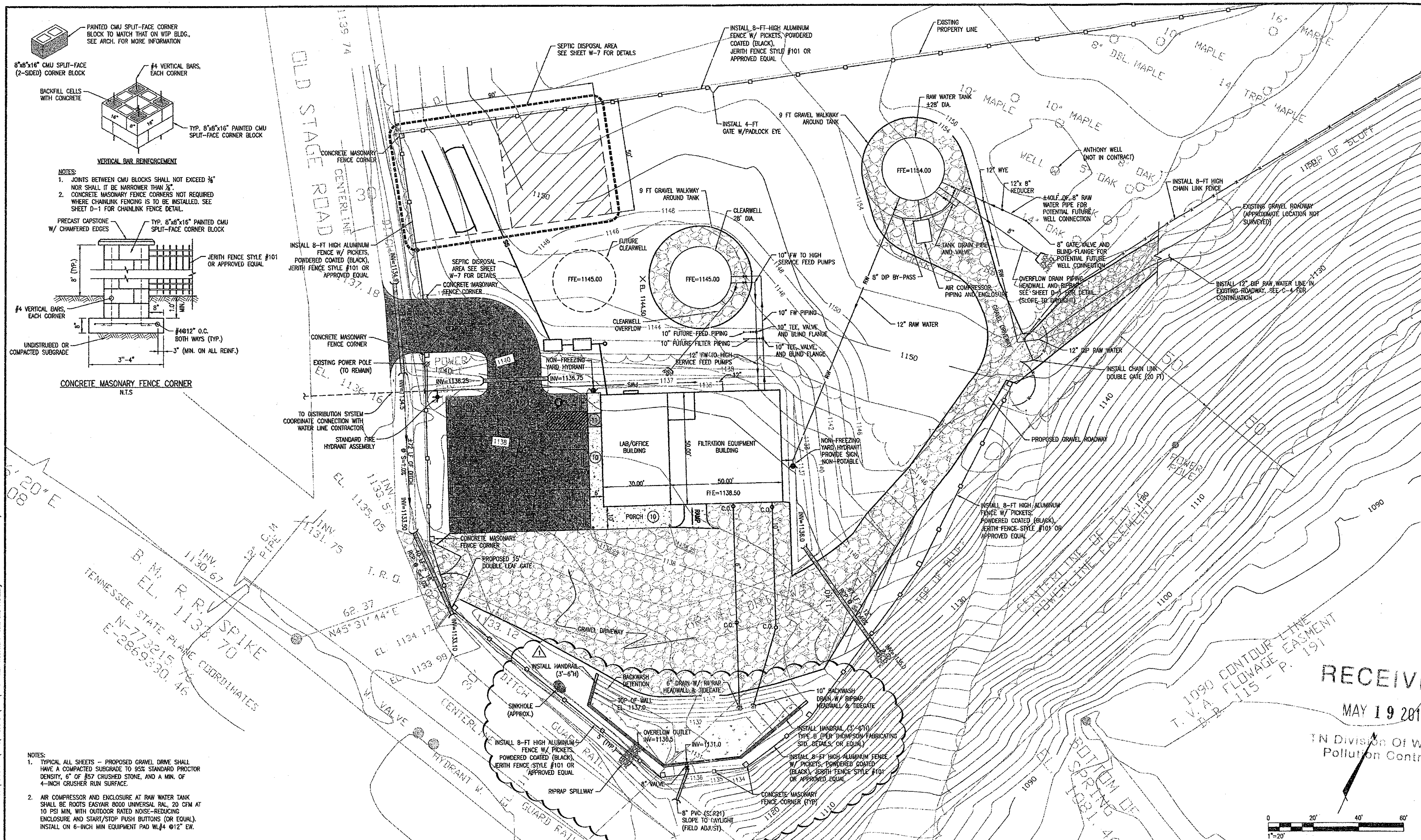
LAKEVIEW UTILITY DISTRICT
ATHOWOMINEE WATER TREATMENT PLANT
AND WATER SYSTEM IMPROVEMENTS

HAWKINS COUNTY, TENNESSEE

PROJECT MANAGER	DEPARTMENT MANAGER	LEAD DESIGN PROF.	CHECKED BY
DAVID BIBLE	BOB BORNEMAN	BRIAN GIVENS	DAVID BIBLE
SHEET TITLE		TASK/PHASE NUMBER	DRAWN BY
WELL LOCATION PLAN		1DES.CTWTP	JEFF JOHNSON
		PROJECT NUMBER	DRAWING NUMBER
		TNLUD081	G-4



NOTES:

1. TYPICAL ALL SHEETS – PROPOSED GRAVEL DRIVE SHALL HAVE A COMPACTED SUBGRADE TO 95% STANDARD PROCTOR DENSITY, 6" OF #57 CRUSHED STONE, AND A MIN. OF 4-INCH CRUSHER RUN SURFACE.
2. AIR COMPRESSOR AND ENCLOSURE AT RAW WATER TANK SHALL BE ROOTS EASYAIR 8000 UNIVERSAL RAL, 20 CFM AT 10 PSI MIN, WITH OUTDOOR RATED NOISE-REDUCING ENCLOSURE AND START/STOP PUSH BUTTONS (OR EQUAL). INSTALL ON 6-INCH MIN EQUIPMENT PAD W/#4 @12" EW.

REV.	ISSUED DATE	DESCRIPTION
1	12/08/2010	REVISED BACKWASH BASIN
0	04/30/2010	ISSUED FOR BID

KEYPLAN

SEAL

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LAKEVIEW UTILITY DISTRICT
ATHOWOMINEE WATER TREATMENT PLANT
AND WATER SYSTEM IMPROVEMENTS

HAWKINS COUNTY, TENNESSEE

PROJECT MANAGER: DAVID BIBLE	DEPARTMENT MANAGER: BOB BORNEMAN	LEAD DESIGN PROF.: BRIAN GIVENS	CHECKED BY: DAVID BIBLE
SHEET TITLE: WATER TREATMENT PLANT SITE PLAN		TASK/PHASE NUMBER: 1DES.CTWTP	DRAWN BY: JERRY CAMP
		PROJECT NUMBER: TNLUD081	DRAWING NUMBER: W-1

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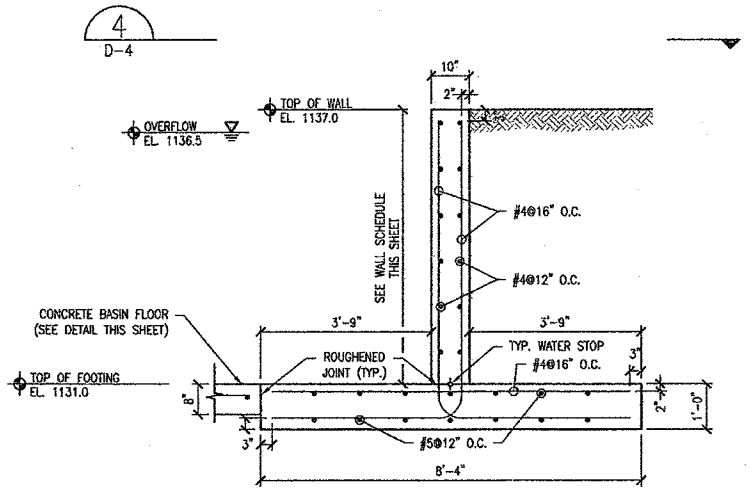
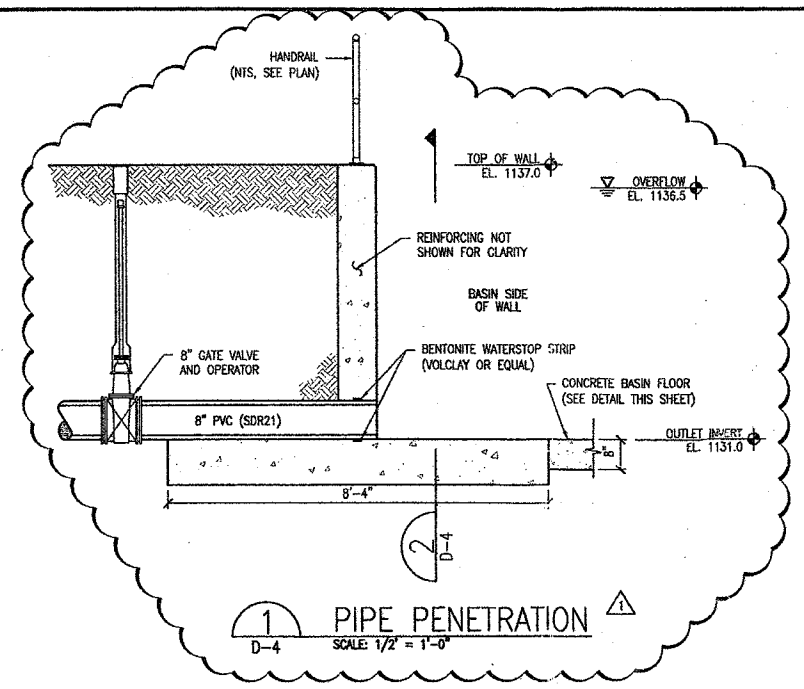


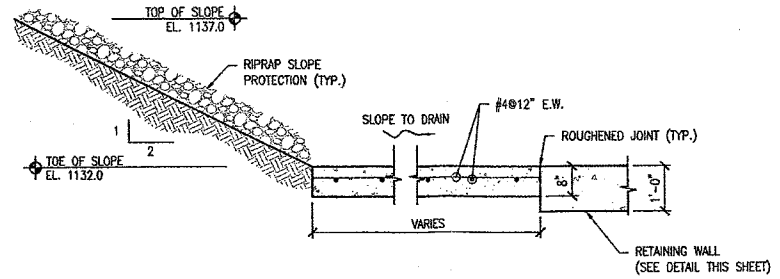
TYPICAL RETAINING WALL SECTION

SCALE: 1/2" = 1'-0"



1 D-4 PIPE PENETRATION ⚠1

SCALE: 1/2" = 1'-0"



3 D-4 CONCRETE BASIN FLOOR

SCALE: 1/2" = 1'-0"

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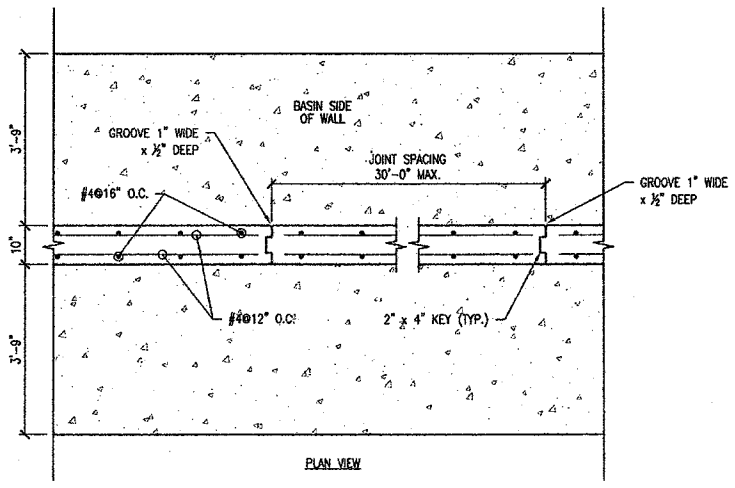
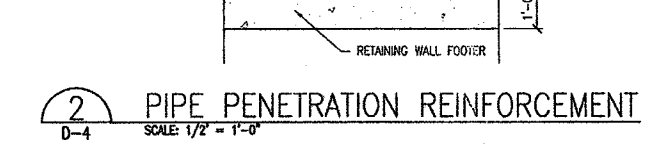


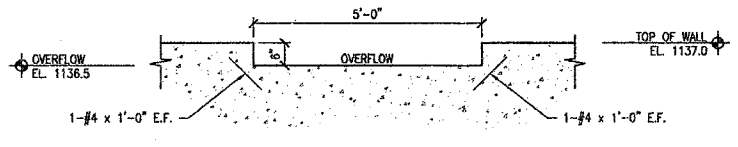
4 D-4 TYPICAL RETAINING WALL

SCALE: 1/2" = 1'-0"



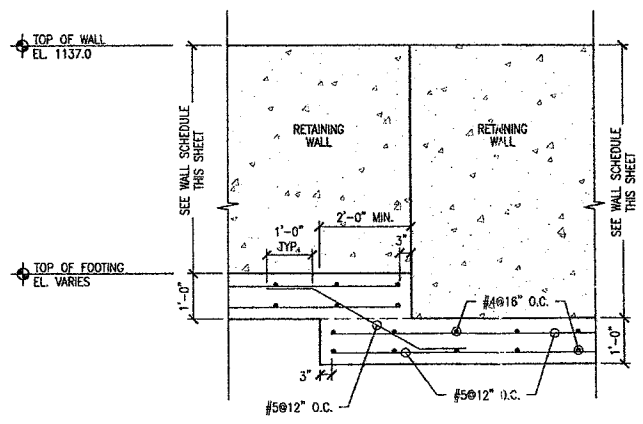
2 D-4 PIPE PENETRATION REINFORCEMENT

SCALE: 1/2" = 1'-0"



5 D-4 BASIN OVERFLOW OUTLET

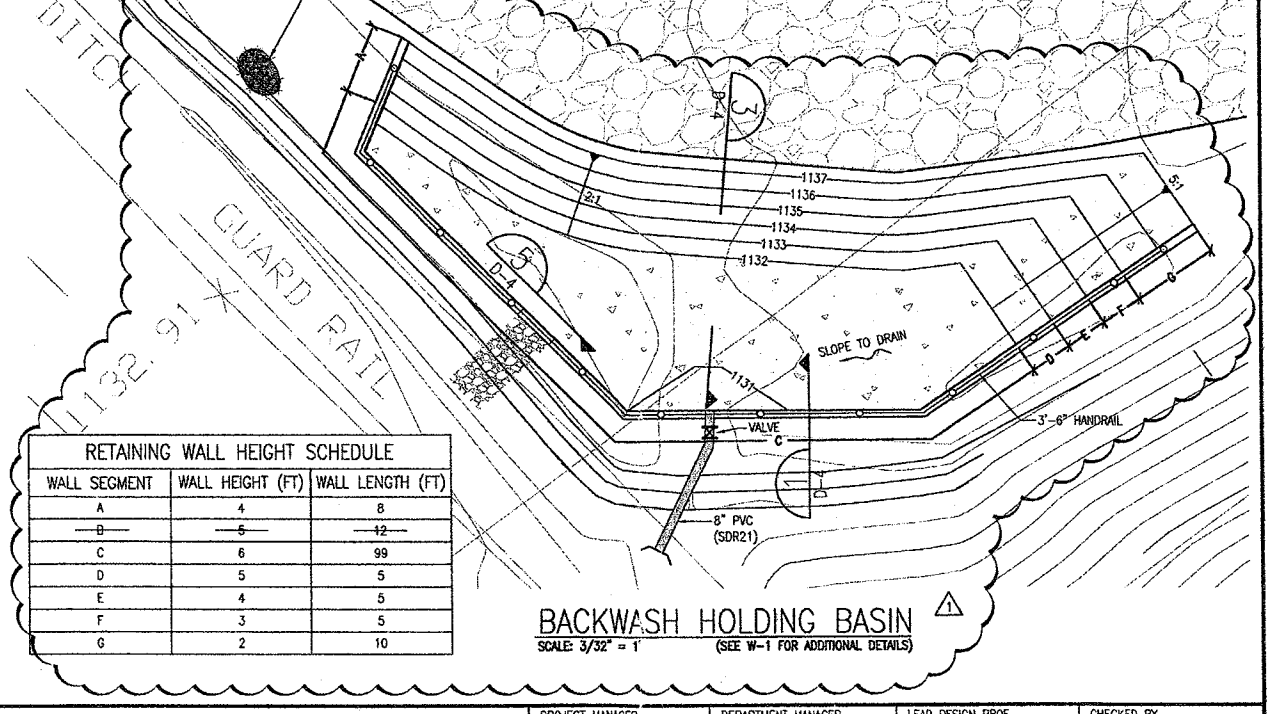
SCALE: 1/2" = 1'-0"



NOTE: SEE PLANS FOR LOCATION

TYPICAL STEPPED FOOTING

SCALE: 1/2" = 1'-0"



RETAINING WALL HEIGHT SCHEDULE		
WALL SEGMENT	WALL HEIGHT (FT)	WALL LENGTH (FT)
A	4	8
~~B~~	~~5~~	~~12~~
C	6	99
D	5	5
E	4	5
F	3	5
G	2	10

BACKWASH HOLDING BASIN ⚠1

SCALE: 3/32" = 1' (SEE W-1 FOR ADDITIONAL DETAILS)

REV.	ISSUED DATE	DESCRIPTION
1	12/08/2010	REVISED BACKWASH BASIN
0	04/30/2010	ISSUED FOR BID

KEYPLAN

SEAL

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LAKEVIEW UTILITY DISTRICT
ATHOWOMINEE WATER TREATMENT PLANT
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HAWKINS COUNTY, TENNESSEE

PROJECT MANAGER	DEPARTMENT MANAGER	LEAD DESIGN PROF.	CHECKED BY
DAVID BIBLE	BOB BORNEMAN	BRIAN GIVENS	DAVID BIBLE
SHEET TITLE		TASK/PHASE NUMBER	DRAWN BY
DETAILS (SHEET 4 OF 4)		1DES.CTWTP	JERRY CAMP
		PROJECT NUMBER	DRAWING NUMBER
		TNLUD081	D-4

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