Thompson, Alison (DEQ)

From: Sitter, Liz [esitter@loudounwater.org]
Sent: Thursday, August 25, 2011 12:28 PM
To: Thompson, Alison (DEQ)
Cc: Canham, Robert; Thornberry, Pamela
Subject: RE: Loudoun Water Reclaimed Water Management Plan - August 2011

Alison,

Just to clarify, this is a revision to the RWM Plan to address the seven comments from your last email. The comments were addressed as follows:
1) Section 2.3.3. Please note that Loudoun Water shall apply for a Certificate to Construct and a Certificate to Operate the Reclaimed Water Storage Tank that is proposed. This has been revised as requested.
2) Section 2.3.5. It might be worth noting that the VPDES permit for the Broad Run WRF requires notification to Fairfax Water should there be any overflows of the reclaimed water distribution system. This has been revised as requested.
3) Table 3-1. You should define CAT (Corrective Action Threshold) with this Table. This has been revised so there is a note below the table defining "CAT".
4) Appendix C, page 10 of 15. This page still included wording that has been stricken. Was this intentional? I am not sure what text was stricken, but I have provided the latest copy of the service agreement template, with the revision noted below.
5) Appendix C, page 14 of 15. The reclaimed water limits presented in the table shall be to the same number of significant figures as presented in the VPDES permit. This has been revised as requested. This has also been revised for a service agreement that is currently in the process of being executed.
6) Appendix D, page D-7. This page still references the 5.0 MGD flow tier which was removed with the most recent VPDES reissuance. This has been revised to remove the reference to the 5 mgd flow tier.
7) Appendix E. DEQ suggests that the words "will" and "must" be updated to state "shall" in this Service Agreement. This has been revised as requested.

I have also included the first customer agreement in Appendix C, so have the complete package and do not have to go back to the previous RWM Plan submissions. When the next service agreement is executed, I will send it to you for inclusion in Appendix C.

Thanks,

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From: Thompson, Alison (DEQ) [mailto:Alison.Thompson@deq.virginia.gov]
Sent: Wednesday, August 24, 2011 1:45 PM
To: Thornberry, Pamela
Cc: Sitter, Liz; Canham, Robert
Subject: RE: Loudoun Water Reclaimed Water Management Plan - August 2011

Thanks.

Alison Thompson
Water Permits Technical Reviewer
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From: Thornberry, Pamela [mailto:PThornberry@loudounwater.org]
Sent: Wednesday, August 24, 2011 1:06 PM
To: Thompson, Alison (DEQ)
Cc: Sitter, Liz; Canham, Robert
Subject: Loudoun Water Reclaimed Water Management Plan - August 2011

Ms. Thompson,

On behalf of Mr. Canham and Mrs. Sitter, I will be forwarding you a pdf version by e-mail of the above captioned document. The document is rather large and therefore will be forwarded in four (4) parts.

Please let me know if you have a problem receiving these e-mails which will be forwarded momentarily.

A hard copy of the document will be sent via regular mail as well.

Upon review, please let us know if you should need anything further.

Thanks!

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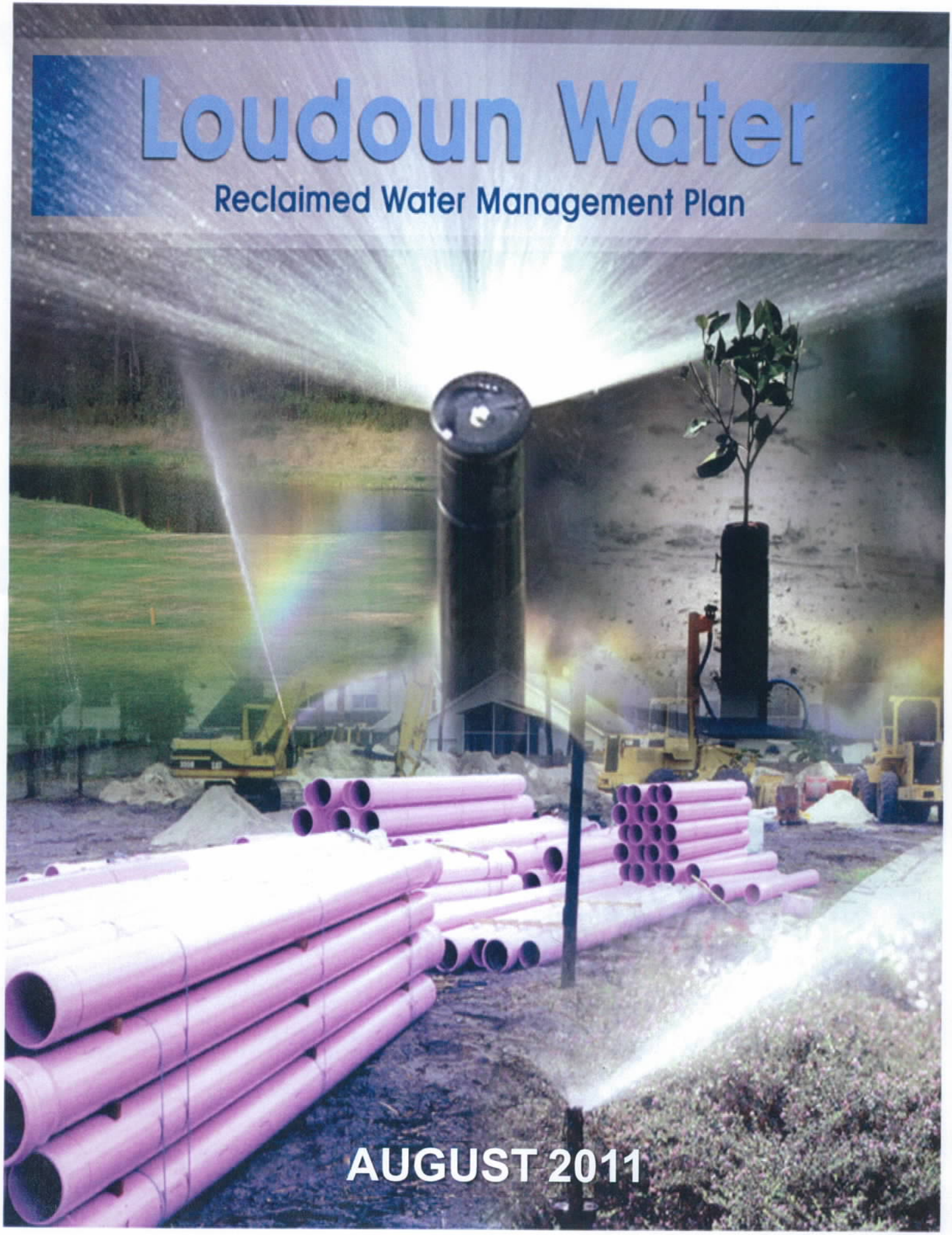
Loudoun Water

Reclaimed Water Management Plan



AUGUST 2011

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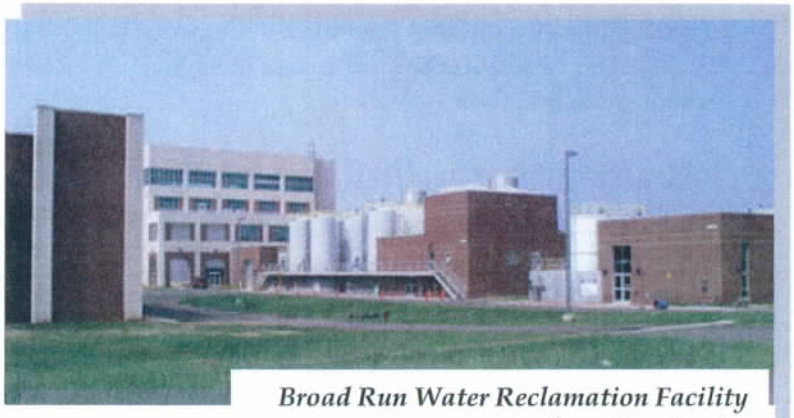
Section 1
Introduction

1.1 Background

Loudoun Water serves 175,000 residents within the unincorporated areas of Loudoun County, Virginia. Stemming from a need to provide both water and sewer service to one of the fastest growing populations in the United States, Loudoun Water incorporated a multi-faceted approach in 2008 to providing a high quality, consistent supply of water to their customers. Their goals are to maximize the resources they have, sustain resources wherever possible, protect the environment and public health, and meet their short and long-term water needs. In addition to these primary goals, the need to meet drought-driven water shortages, reduce nutrient loading to the Chesapeake Bay, and reduce water and wastewater treatment costs are key components to successful implementation of these goals.

Loudoun County is located within the Potomac watershed of the Chesapeake Bay (Bay) and is faced, as are other local jurisdictions, with a nutrient load limit on surface water discharges. Ever-tightening nitrogen and phosphorus loads to the Bay and special Water Quality limits established by the Commonwealth of Virginia (State) require Loudoun Water to plan for advanced nutrient removal techniques and alternate methods for nutrient reduction. Reuse is one of the alternate ways Loudoun Water is planning to reduce nutrient discharges and meet their water supply needs. In addition, these constraints also create potential water conservation options, which could provide off-sets to the growing water demand in the service area.



Broad Run Water Reclamation Facility
Loudoun County, VA

Incorporation of a water reuse system, which Loudoun Water began constructing in July 2004, is a critical component to meeting the County's water resources management goals. In May 2008, Loudoun Water began operations of the newly constructed Broad Run Water Reclamation Facility (BRWRF). This facility is currently permitted at 11 million gallons per day (mgd) annual average daily flow (AADF) and discharges treated water via an outfall to Broad Run, a tributary to the Potomac River. Equipped with ultra-filtration membranes, the BRWRF produces an extremely high quality effluent and has the potential to serve as a source of additional water for industrial and commercial applications within Loudoun County.

1.2 Purpose

The Virginia Water Reclamation and Reuse Regulation (Code 9VAC25-740), effective on October 1, 2008, states that a Reclaimed Water Management (RWM) plan is required for a reclamation system that provides reclaimed water directly to an end user(s). This RWM plan is an update to the approved RWM plan in support of Virginia Pollutant Discharge Elimination System (VPDES) Permit No. VA0091383, issued by the Virginia Department of Environmental Quality on August 25, 2010.

The requirements set forth by the State for a RWM plan, as described in the "*Water Reclamation and Reuse Addendum to an Application for a Virginia Pollutant Discharge Elimination System Permit or a Virginia Pollution Abatement Permit*" include the following:

1. A description and map of the reclaimed water service area;
2. A current inventory of impoundments, ponds or tanks that are used for system storage of reclaimed water;
3. A water balance model;
4. An example of service agreements or contracts to be established by the applicant or permittee with end users;
5. A description of a program to monitor end users;
6. An education and notification program;
7. A cross connection and backflow prevention program; and
8. A description of how the quality of reclaimed water in the reclaimed water distribution system shall be maintained to meet the standards for the intended reuse or reuses of the reclaimed water.

In accordance with the above permit requirements, this RWM plan for the BRWRF outlines Loudoun Water's planned reclaimed water system including production, storage, and distribution of high quality reclaimed water for non-potable use.

1.3 Report Outline

The report is divided into four sections as described below:

- **Section 1: Introduction** – Provides a background and purpose of the report.
- **Section 2: Reclaimed Water System** – Discusses the existing reclaimed water system including the water balance model, potential reclaimed water customers, supplies, and demands.
- **Section 3: Regulatory Considerations** – Describes the reclaimed water treatment level requirements and monitoring requirements for bacteria, pH, turbidity, BOD_5 and TSS.
- **Section 4: Implementation Strategy** – Summarizes programs necessary to implement the reclaimed water system including public education program, cross connection program, back flow prevention program, service agreements, and customer contracts.

Section 2
Reclaimed Water System

2.1 Reclaimed Water Source

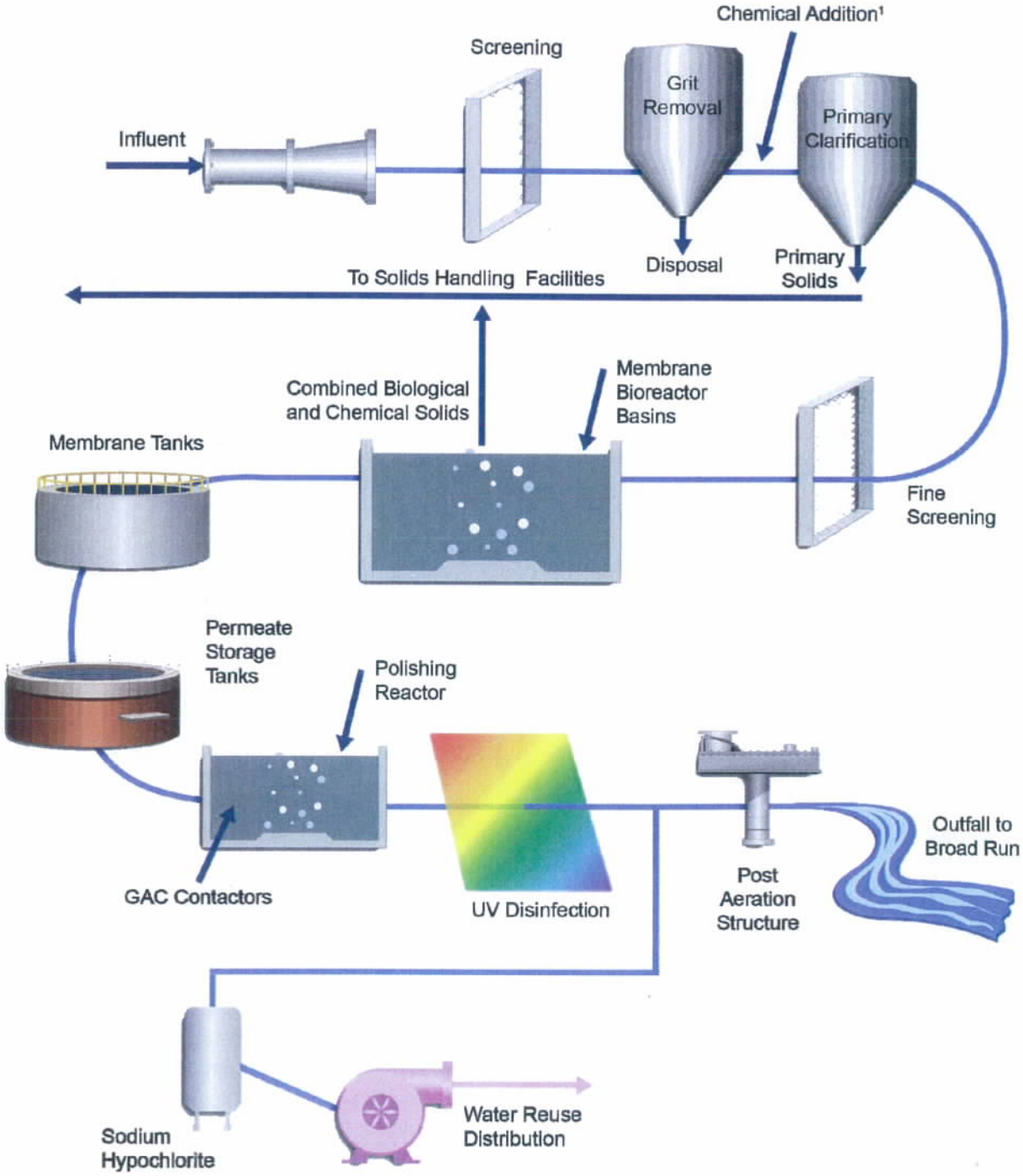
Loudoun Water currently provides wastewater service through a network of interceptors and collector sewers located throughout eastern Loudoun County. The District of Columbia Water and Sewer Authority (DC Water) treats the wastewater at its Blue Plains Wastewater Treatment Plant (WWTP). Flow from eastern Loudoun County is conveyed to the Blue Plains WWTP through the Potomac Interceptor collection system, but is limited by agreement to 13.8 mgd AADF. Faced with an emerging demand greater than its current 13.8 mgd capacity agreement can accommodate, Loudoun Water completed construction of the Broad Run Water Reclamation Facility (BRWRF) in May 2008. Using advanced treatment technology, the BRWRF protects public health, preserves environmental quality, and ensures adequate treatment capacity.

Loudoun Water owns and operates the newly constructed BRWRF, which has a permitted design capacity of 11 mgd AADF. The BRWRF is an advanced wastewater treatment facility consisting of influent screening, grit removal, primary clarification, fine screening, and biological treatment using membrane bioreactors (MBRs) followed by granular-activated carbon contactors and ultraviolet disinfection. A simplified process flow diagram is shown on **Figure 2-1**. The BRWRF completed operational testing in June 2008. Since then, the facility has produced an average of approximately 4.0 mgd of treated, non-potable water, as summarized in **Table 2-1** and presented on **Figure 2-2**.

The BRWRF facility is currently permitted to discharge high quality effluent via an outfall to Broad Run, a Class III tributary to the Potomac River. Per Virginia Code 9VAC25-220-120, the designated uses for Class III surface water include, but are not limited to, "*recreation, navigation, and cultural and aesthetic values.*" Loudoun Water currently utilizes this high quality effluent as a source for a reclaimed water system within the Loudoun Water service area, as further described in Section 2.3.

Implementation of a reuse program at the BRWRF has provided several benefits to Loudoun Water including relief from water restrictions, an offset of current potable water use, postponement of wastewater treatment capital expenditures, and possible nutrient exchange options. Loudoun Water has an existing permitted reuse program, but has identified additional customers in its reuse service area. Loudoun Water is extending its reclaimed water mains to serve the potential customers.

Figure 2-1 BRWRF Process Flow Diagram



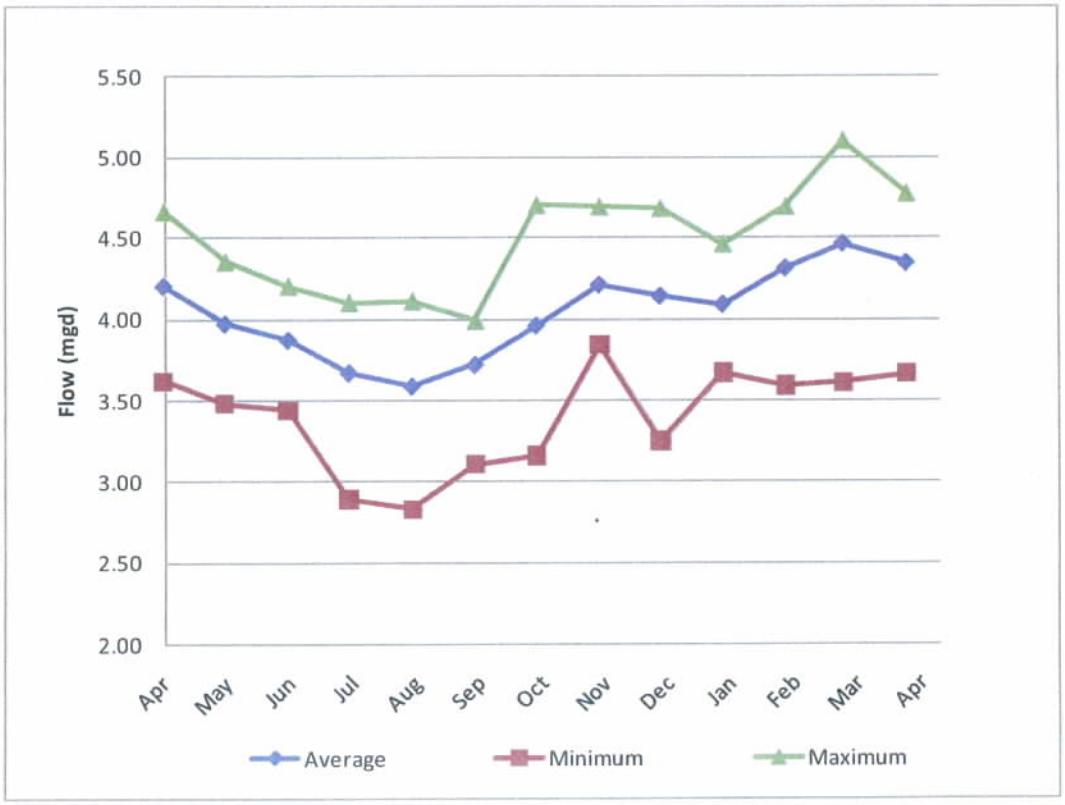
Notes: [1] Chemical addition may consist of sodium hydroxide, alum, or ferric chloride.

Table 2-1
BRWRF Effluent Flow Summary (mgd)
April 2010- April 2011

Month	Average	Minimum	Maximum
April	4.20	3.62	4.66
May	3.97	3.48	4.35
June	3.87	3.44	4.20
July	3.67	2.89	4.10
August	3.59	2.83	4.11
Sept	3.72	3.11	3.99
Oct	3.96	3.16	4.70
Nov	4.21	3.84	4.69
Dec	4.14	3.25	4.68
Jan	4.09	3.67	4.46
Feb	4.31	3.59	4.69
March	4.46	3.61	5.10
April	4.34	3.66	4.77
Averages	4.04	3.40	4.50

Note: for July and August min flows - filling Reactor basins for Maintenance work that was being done.

Figure 2-2 BRWRF Effluent Flow Summary (mgd) for April 2010 – April 2011



2.2 Reclaimed Water Usage

Per the Virginia Water Reclamation and Reuse Regulation (Code 9VAC25-740-90), there are six major reuse categories, which include:

- Urban (Unrestricted access);
- Irrigation (Unrestricted access);
- Irrigation (Restricted access);
- Landscape impoundments;
- Construction; and
- Industrial.

Each reuse category is designated as one of two acceptable treatment levels with minimum standard requirements based on their potential for human contact. Level 1 requires secondary treatment with filtration and a higher level of disinfection and includes different types of urban unrestricted access uses including: landscape irrigation in public access areas, non-residential toilet flushing, fire fighting or protection and fire suppression in non-residential buildings, outdoor domestic or residential reuse, commercial car washes, and air conditioning systems. In addition, irrigation of unrestricted access, specific industrial uses, and landscape impoundments with potential for public access must meet effluent requirements covered in Level 1 standards. Level 2 requires secondary treatment and standard disinfection and includes restricted access irrigation, construction, landscape impoundments with no potential for public access or contact, and some types of industrial uses.

The BRWRF achieves Level 1 standard requirements for reclaimed water through its use of preliminary and primary treatment, secondary/biological treatment, and membrane ultra-filtration. Therefore, due to its exceptionally high quality effluent, the facility is capable of providing reclaimed water (up to its design capacity) for all six major categories according to the specific application and demand identified by each potential reuse customer.

2.3 Reclaimed Water Service Area

Loudoun Water provides public water and sewer service to residents of the unincorporated areas of Loudoun County. This area mainly includes the residents living east of Route 15 to the Fairfax County line, not including the Town of Leesburg or Dulles Airport. **Figure 2-3** shows the Loudoun Water Service Area (orange shaded area) and the location of the BRWRF. The potential list of reuse customers that Loudoun Water has identified is provided in **Table D-1** included in **Appendix D**. **Figure D-1** provided in **Appendix D** showing the approximate location of the potential reuse customers for Loudoun Water.

Loudoun Water also supports many smaller community systems (**Figure 2-4**), which generally consist of community water supply wells and packaged wastewater treatment plants serving the Hamlet and Village Communities located within the County's Transition Policy Area, such as Lenah Run, Courtland Farms, and Raspberry Plains. Water reuse for any of these small community systems will be addressed separately.

Figure 2-3 Loudoun Water Service Areas

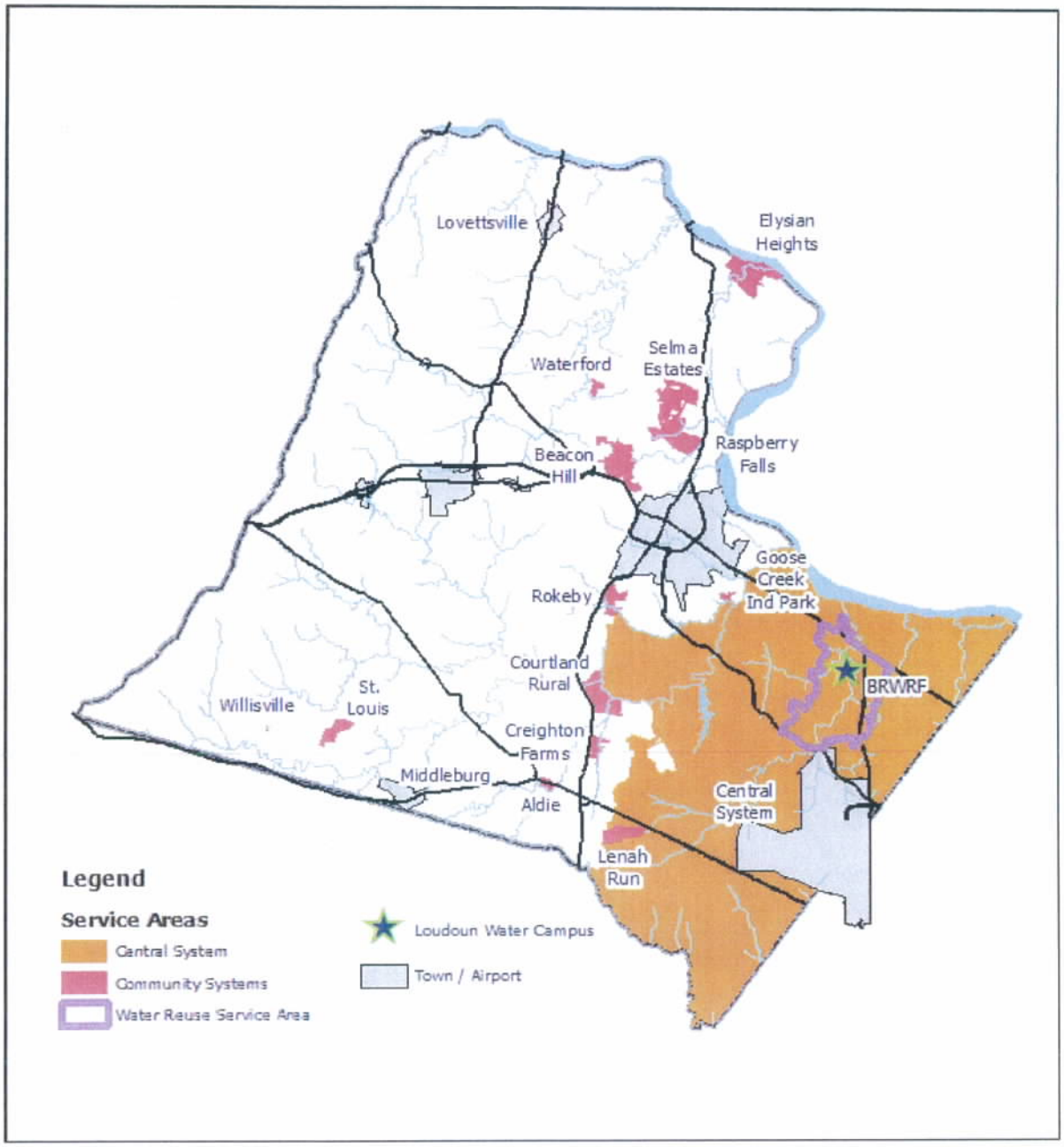
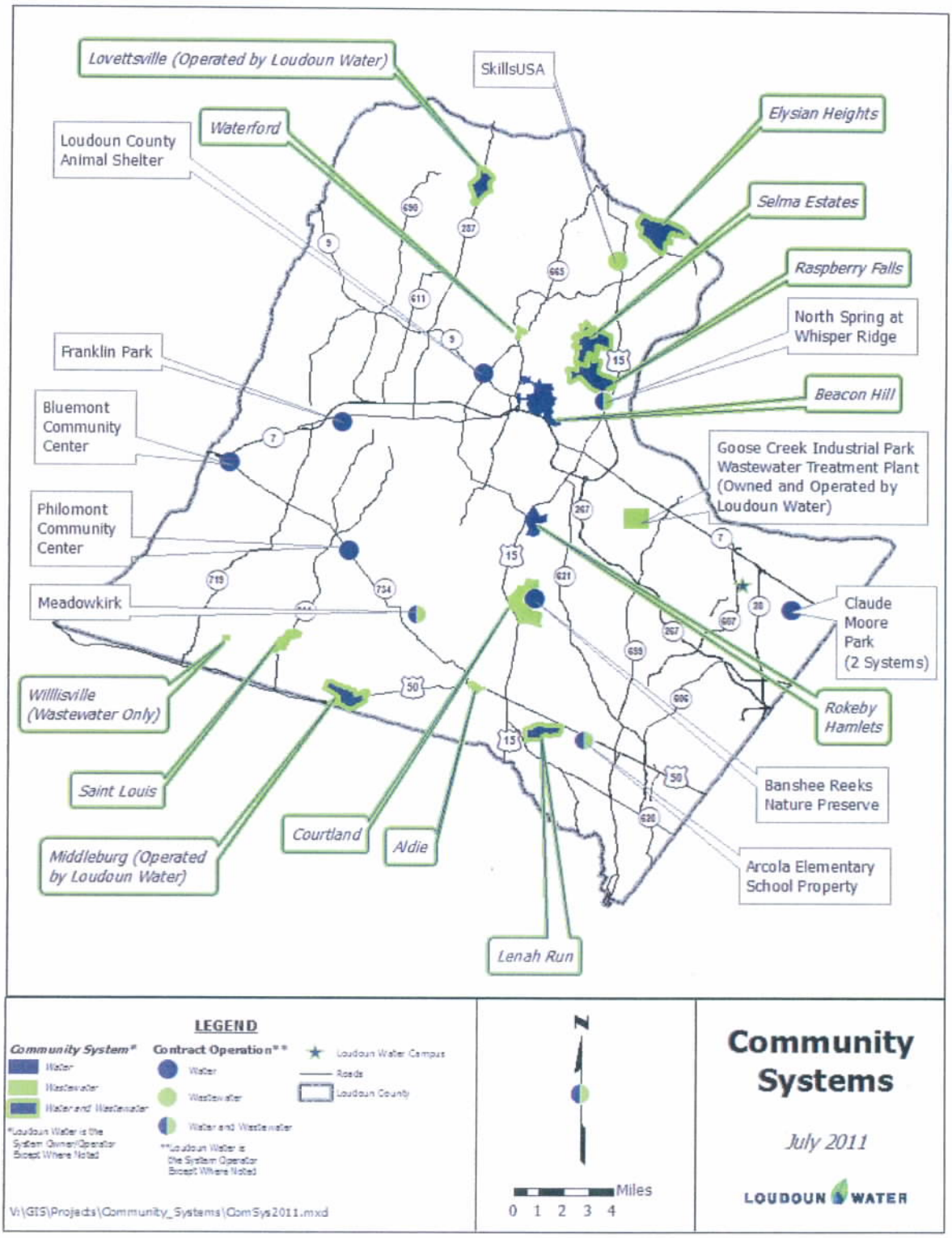


Figure 2-4 Community Systems Operated by Loudoun Water



2.3.1 Proposed Reclaimed Water Demands

Over the past several years, Loudoun Water has continued to develop their reuse program. The project team worked with County planners to create a list of potential reuse customers. This list was refined to include usage rates, and future capacity estimates. Peaking factors were also estimated to determine potential main segments/trunk lines and possible pumping and distribution needs. This exercise provided the framework for a feasibility study and set the basis for the reuse water service area.

A detailed discussion of potential customers, reclaimed water demands, and reclaimed water distribution system routing is provided in **Appendix D**.

2.3.2 Proposed Pipe Routing

Hydraulic modeling has been conducted by Loudoun Water, and the proposed pipe routing has been determined based on the potential customers identified. Service connections and piping connecting from the Loudoun Water reclaimed water main to the reuse customer's distribution system is assumed to be the responsibility of the reuse customer per Loudoun Water. A map showing the existing and proposed reclaimed water distribution system is presented on **Figure D-2** in **Appendix D**.

2.3.3 Reclaimed Water Storage

To meet reclaimed water demands, Loudoun Water will construct a new 1.6 mg reclaimed water storage tank. In the future, a second 1.6 mg storage tank will be added to meet build out peak flows. Loudoun Water will apply for Certificate to Construct and a Certificate to Operate the Reclaimed Water Storage Tanks that are proposed.

2.3.4 Public Water Supply Wells and Springs

Figure 2-5 shows private wells and surface water features identified within Loudoun Water's reclaimed water service area. It should be noted that there are no public water supply wells or springs within this area.

2.3.5 Public Water Supply Intakes

There are no public water intakes within Loudoun Water's reclaimed water service area. Please note that the VPDES permit for the Broad Run WRF requires notification to Fairfax Water should there be any overflows of the reclaimed water distribution system.

2.3.6 Reclaimed Water Filling Station

A reclaimed water filling station will provide reclaimed water for a selected number of customers not directly connected to the reclaimed water distribution system. The filling station will be located immediately north of BRWRF on Loudoun Water property. The filling station service area is shown in **Figure 2-6**. Customers will be able to fill a tank truck with reclaimed water and transport it off site for an approved reuse within the filling station service area. Reclaimed water filling station customers will be permitted under a standard agreement that is attached in **Appendix E**, and will be required to record their discharge of reclaimed water. The fill station will be equipped with a reader/key pad, flow meter and motorized open/close valve. The customer will be able to pull up to the fill station and enter his unique identification number to facilitate the automatic opening of the discharge valve and monitoring of the flow by the flow meter. This will be a completely automated process without the need for any onsite personnel.

Figure 2-5 Reclaimed Water Service Area and Water Sources

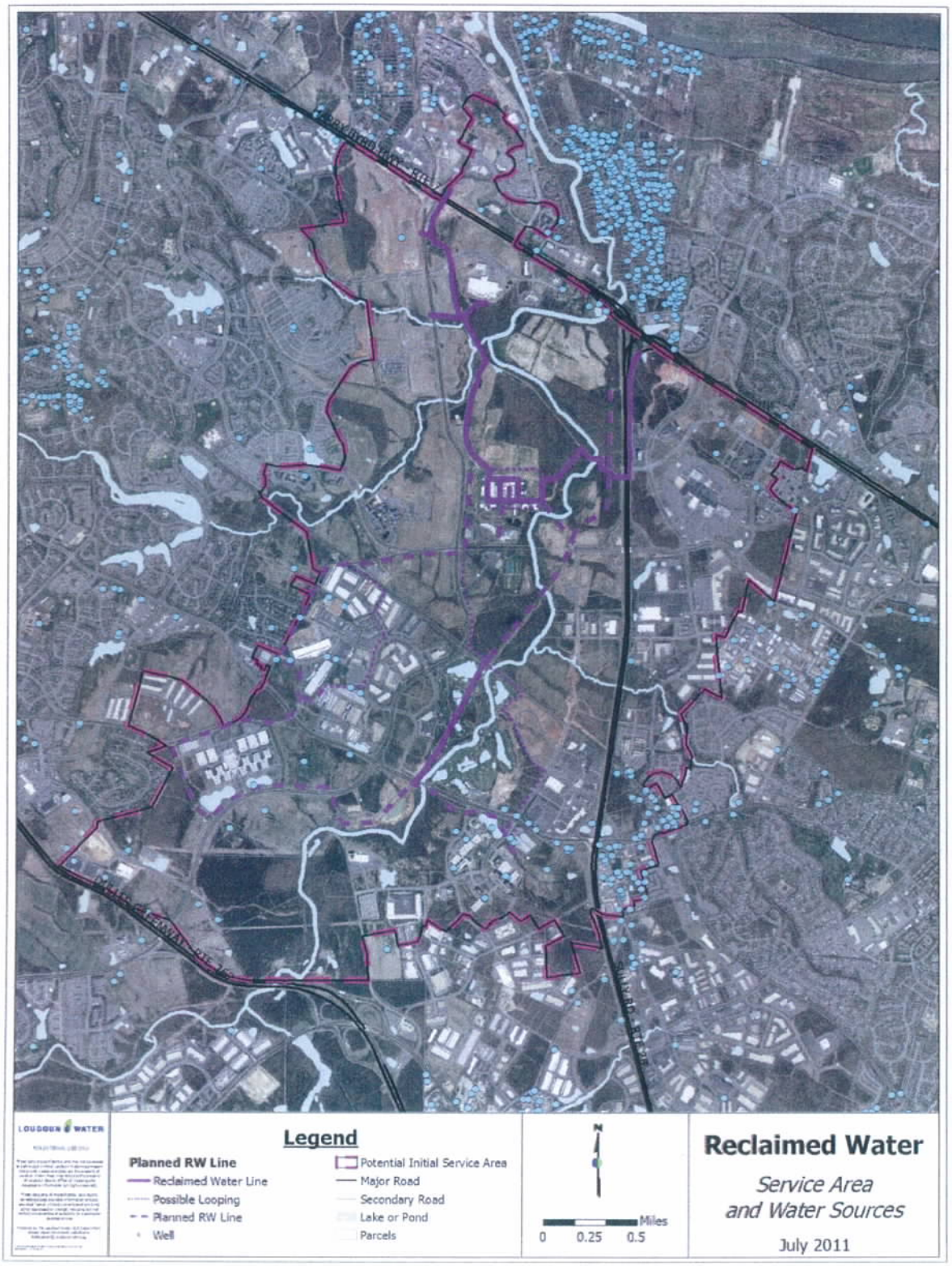
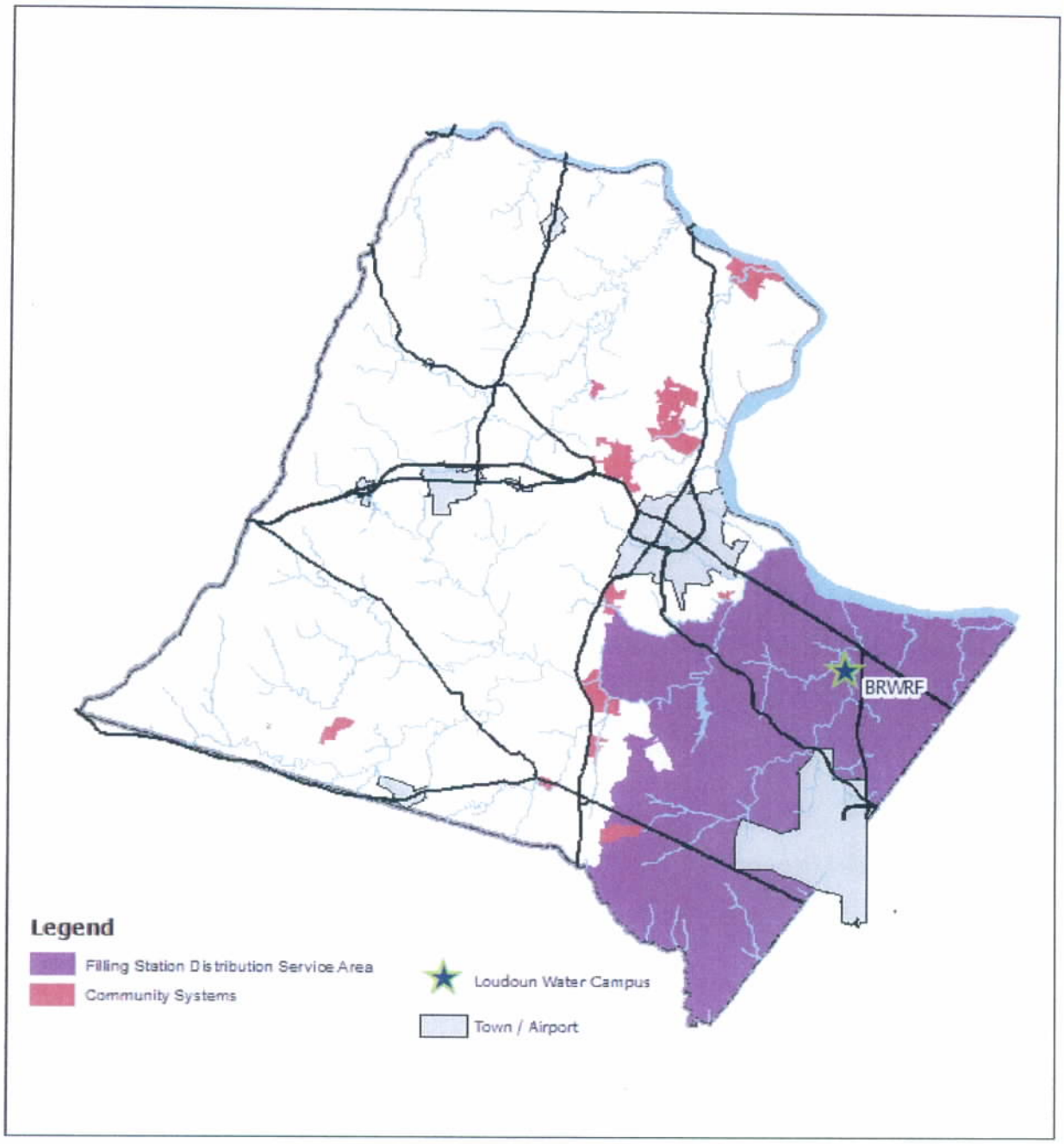


Figure 2-6 Filling Station Service Area



2.4 Reclaimed Water Balance

Water balance modeling is an important planning tool for a water reuse system. Depending on the specific utility, water balance models can range from as simple as a balance between the supply and demand to as intricate as a model that takes into account soil infiltration characteristics, rainfall, peaking factors, and wet weather storage. A model should take into account the supplies to the system, which will include the effluent flow from the water reclamation facility, as well as any supplemental water from an additional source or purchased from another utility. A comprehensive review of the system will identify the debits on the reclaimed water distribution system; including on-site plant water use, all residential/commercial users, municipal/institutional users, industrial users, and losses through the distribution system.

There are numerous equations to describe the water balance; however, it is most simply expressed as the balance of the inflows, outflows, and the change of storage over time as expressed below:

$$\sum \text{Inflows} = \sum \text{Outflows} + \sum \text{Storage/time} \qquad (1)$$

$$\sum \text{Inflows} - \sum \text{Outflows} = \sum \text{Storage/time} \qquad (2)$$

Per the Addendum, a water balance is required in support of the RWM plan that takes into account the following volumes of reclaimed water:

- Generated by the reclamation system (designated design flow of the system);
- Stored in reject water storage, system storage, and non-system storage facilities by the provider;
- Reused by reuse categories. The water balance must include seasonal and annual reclaimed water demand for each reuse category based on projected volumes for new projects or actual volumes for existing projects; and
- Discharged through a VPDES permitted outfall for reclamation systems.

Figure D-3 provided in Appendix D quantifies the above requirements for the BRWRF reclaimed water balance.

Section 3
Regulatory Considerations

3.1 Reclaimed Water Treatment Levels

Loudoun Water started planning for water reuse ten years before the Virginia State Water Control Board recommended adoption of a water reuse regulation. Loudoun Water staff became actively involved during the creation of state legislation. The new state regulation, finalized on October 1, 2008, defines two levels of treatment prior to reuse. Level 1 for use on unrestricted access areas includes a minimum of secondary treatment and high level disinfection (consisting of filtration followed by disinfection) and Level 2, for more restricted areas requires a minimum of secondary treatment and standard disinfection. The regulation currently includes restrictions on direct reuse, interior residential dual water systems, swimming pools and hot tubs, and for food preparation.

Water reclamation and reuse from wastewater treatment plants in the State of Virginia is regulated by the Virginia Administrative Code (VAC) under 9VAC25-740. Standards for reclaimed water are listed in 9VAC25-740-70. **Table 3-1** summarizes reclaimed water standards for both levels from the VAC.

Level 1 treatment applies to different types of urban unrestricted access uses including: landscape irrigation in public access areas, non-residential toilet flushing, fire fighting or protection and fire suppression in non-residential buildings, outdoor domestic or residential reuse, commercial car washes, and air conditioning systems. In addition, irrigation of unrestricted access, specific industrial uses, and landscape impoundments with potential for public access must meet effluent requirements covered in Level 1 standards.

Restricted access irrigation, construction, landscape impoundments with no potential for public access or contact, and some types of industrial uses must meet Level 2 standards and monitoring requirements. In addition to meeting effluent limits, the State of Virginia requires water reclamation facilities obtain a Virginia Pollutant Discharge Elimination System (VPDES) permit or a Virginia Pollution Abatement (VPA) permit given the type of discharge. If the facility has a surface water discharge, the reclamation system will be covered under the VPDES permit. On the other hand, if the facility will not have a surface water discharge, the reclamation system will be covered under the VPA permit.

The BRWRF currently treats to Level 1 standards, which are summarized in **Table 3-1**. Loudoun Water anticipates providing reuse water to large industrial and commercial users for irrigation, cooling water, and non-residential toilet flushing, as previously described in Section 2.3. In order to properly discharge to the reuse system, the BRWRF must comply with the standards listed in **Table 3-1**.

Table 3-1
Standards for Reclaimed Water Effluent Limits (VAC)

Parameter	*Treatment Standards*	
	Level 1	*Level 2*
Description of Minimum Treatment	Secondary treatment with filtration and higher level disinfection	Secondary treatment with standard disinfection
E..coli	Monthly geometric mean ≤ 11 colonies/100 ml; CAT > 35 colonies/100ml	Monthly geometric mean ≤ 126 colonies/100 ml; CAT > 235 colonies/100ml
Total Residual Chlorine	CAT < 1 mg/l after a minimum contact time of 30 minutes at average flow or 20 minutes at peak flow	CAT < 1 mg/l after a minimum contact time of 30 minutes at average flow or 20 minutes at peak flow
pH	6.0-9.0 s.u.	6.0-9.0 s.u.
BOD_5	Monthly average ≤ 10 mg/l	Monthly average ≤ 30 mg/l; maximum weekly average 45 mg/l
Turbidity	Daily average of discrete measurements recorded over a 24-hour period ≤ 2NTU; CAT > 5 NTU	
Total Suspended Solids (TSS)		Monthly average ≤ 30 mg/l; maximum weekly average 45 mg/l

Note: 'CAT' stands for 'Corrective Action Threshold'. "Corrective Action Threshold" means the standard for reclaimed water at which measures shall be implemented to correct operational problems of the reclamation system within a specified period or divert flow from the reclaimed treatment process in accordance with requirement of 9VAC25-740.

3.2 Reclaimed Water Monitoring

Loudoun Water completed construction of the BRWRF in May 2008. Process Control Operational data for the BRWRF have been collected since July 2008, as summarized in **Table 3-2**. This table outlines monthly averages for the regulated parameters. During this timeframe, all standards have been met while the treated effluent has been discharged into Broad Run. Samples were taken from a sample tap on the reuse pumps (W_3 pumps) and analyzed for Chemical Oxygen Demand (COD) based on the requirements of the existing VPDES permit. COD was converted by calculation to Biological Oxygen Demand (BOD_5) in order to reflect potential reclaimed water standards. As with the plant effluent data, these calculated values also remain below detection level.

Table 3-2
BRWRF Process Control Operational Data Summary
July – December 2008[a]

Parameter[b]	*July*	*Aug*	*Sep*	*Oct*	*Nov*	*Dec*	*Permitted Values*
BOD_5[c] (mg/L)	ND	ND	ND	ND	ND	ND	10.0[d]
pH[e] (s.u.)	6.7/7.7	6.9/8.0	6.9/7.5	6.9/7.5	6.8/7.5	6.6/7.4	6.0/9.0
Turbidity (NTU)	0.111	0.095	0.104	0.098	0.099	0.086	2.0

[a] May and June 2008 data not available since the BRWRF was performing operational testing at this time.
[b] Average concentrations unless otherwise noted.
[c] The Detection Limit for COD is 10 mg/L.
[d] Permit limit is 10 mg/L based on COD.
[e] Represents minimum/maximum concentrations.

3.3 Reclaimed Water Monitoring Requirements

Although the Treatment Standards require that a reclamation system producing reclaimed water intermittently or seasonally must monitor only when the reclamation system discharges to a reclaimed water distribution system, a non-system storage facility, or directly to a reuse, the BRWRF facility continuously produces potential reclaimed water and is, therefore, monitored on a more frequent basis.

3.3.1 Bacteria

A sampling port has been added to the W3 (reclaimed water pumps) at the BRWRF and once the reclaimed water system is in place, the facility will be able to meet permitted Bacterial limits for E. coli at 11 colonies per 100 mL.

Grab samples will be collected at the sampling port daily at least five days per week, to comply with the regulations. Bacterial sampling will occur between 10 a.m. and 4 p.m. or to coincide with reclaimed water peak flows. Compliance with the geometric mean standards for E. coli is determined monthly, based on bacteriological monitoring results for that month.

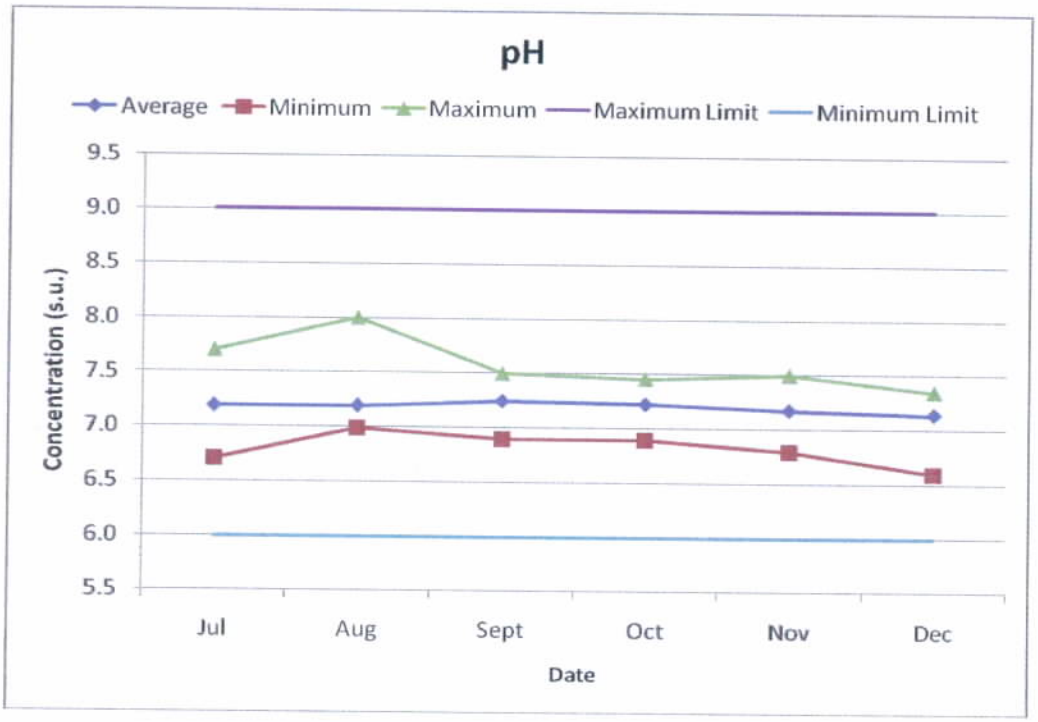
3.3.2 Total Residual Chlorine

The BRWRF provides disinfection of reclaimed water using ultraviolet (UV) light; therefore, Loudoun Water is not required to monitor Total Residual Chlorine (TRC) for purposes of permit compliance. Sodium hypochlorite is added to the finished reclaimed water to provide residual disinfection in the distribution system. Loudoun Water will sample for TRC in the distribution system to ensure that a high quality effluent is provided to its customers.

3.3.3 pH

Reclaimed water treated at the BRWRF is within the required pH concentration requirements of between 6.0 and 9.0 standard units (s.u.). As summarized in **Table 3-2**, current effluent data from the BRWRF shows an average of 7.2 s.u. from July 2008 through November 2008. The minimum value during the same time frame was 6.7 s.u. (July 2008), while the maximum value resulted in 8.0 s.u. (August 2008). **Figure 3-1** is a graphical representation of the current pH sample results and the regulated minimum and maximum limits. pH will be monitored from the W3 sampling port at least once per day. Compliance with the range of the pH standard is determined daily based on the pH of the samples. This meets DEQ standards for water reuse.

Figure 3-1
BRWRF pH Summary for July-December 2008



3.3.4 BOD_5 ($CBOD_5$)

BOD_5 levels are required to be less than or equal to 10 mg/L for Level 1 treatment for reclaimed water discharge. The VPDES Permit for the BRWRF is based on a COD of less than 10 mg/L monthly average; therefore, the State has assessed a monthly average of < 50 mg/L for COD with a monthly grab check sample of BOD_5. For this report, COD data was used to determine how well the facility is currently operating. During the first six months of data collection, the calculated BOD_5 levels were extremely low; the average calculation resulted in 1.63 mg/L, with a maximum of 9.24 mg/L occurring in August 2008.

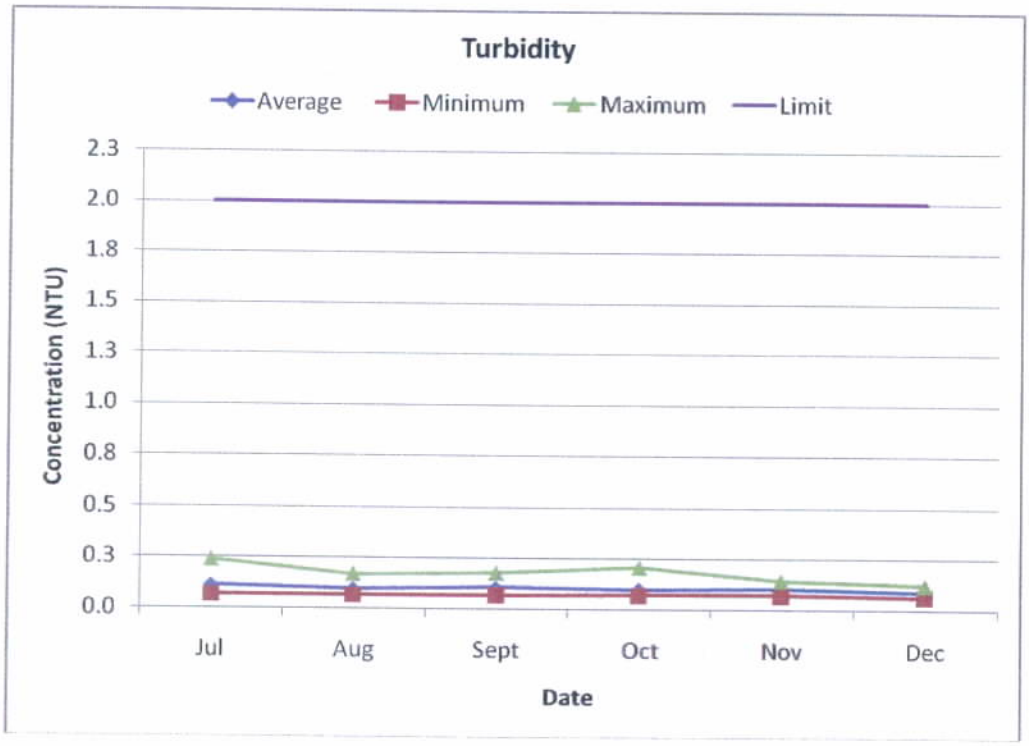
Based on the VDPES permit for reuse, a grab sample for COD will be taken daily, and a grab sample for BOD_5 will be taken monthly. COD standards are determined monthly, based on the arithmetic mean of all samples collected during the month.

3.3.5 Turbidity

Current Turbidity levels for reclaimed water at the BRWRF are treated to Level 1 conditions and are less than 2.0 nephelometric turbidity units (NTUs). This level has not been exceeded at the effluent since the BRWRF has been operational. Current effluent data from the BRWRF shows an average of 0.101 NTU from July 2008 through November 2008. The minimum value during the same time frame was 0.066 NTU (July and August 2008), while the maximum value resulted in 0.241 NTU (July 2008). **Figure 3-2** summarizes this facility data compared to the regulated limit of 2.0 NTUs.

For the reclaimed water, turbidity is monitored continuously at the discharge to the permeate tank using an in-line turbidity meter equipped with an automated data logging or recording device and an alarm system. This meets DEQ standards for water reuse.

Figure 3-2
BRWRF Turbidity Summary for July-December 2008



3.3.6 End User Compliance Monitoring

Per 9VAC25-740-40 C, Loudoun Water is responsible for the monitoring and management of individual end users with a service connection for reclaimed water and will have service agreements or contracts between Loudoun Water and these individual end users. Monitoring will include, at a minimum, metering the volume of reclaimed water consumed by the end users.

Loudoun Water will notify end users and the affected public of any treatment failures at the reclamation system that can adversely impact human health, or result in loss of reclaimed water service, as follows:

Where treatment of the reclaimed water fails more than once during a seven-day period to comply with Level 1 disinfection or other standards developed in accordance with 9VAC25-740-70 D or 9VAC25-740-70 E for the protection of human health, and the non-compliant reclaimed water has been discharged to

the reclaimed water distribution system, Loudoun Water will notify the end user of the treatment failures and advise the end user of precautions to be taken to protect public health when using the reclaimed water in areas accessible to the public or where human contact with the reclaimed water is likely. These precautions shall be implemented for a period of seven days or greater depending on the frequency and magnitude of the treatment failure.

Where reclaimed water service to end users will be interrupted due to planned causes, such as scheduled repairs, Loudoun Water will provide advance notice to end users of the anticipated date and duration of the interrupted service.

Where reclaimed water service to end users is disrupted by unplanned causes, such as an upset at the reclamation system, Loudoun Water will notify end users and the affected public of the disrupted service if it cannot or will not be restored within eight hours of discovery.

Section 4
Implementation Strategy

The following sections describe the implementation strategy undertaken by Loudoun Water to develop a public education program focused on the BRWRF and multiple benefits of reuse, a cross connection and backflow prevention program, standards and details, and service agreements and/or customer contracts with each potential reuse customer prior to coming on-line.

4.1 Public Education Program

One of the most important tasks implemented by Loudoun Water has been the public education program. Meetings and communications with stakeholders, decision makers (both internal and external to Loudoun Water), potential users, and the public were necessary to ensure the success of the program. Not only was increasing public awareness of the safety of reuse water a goal, but gaining internal support from various branches of the public was important. Loudoun Water answered this challenge by developing fact sheets for both internal and external use. Many internal presentations were made by Loudoun Water staff in support of the reuse program and its many benefits in helping to meet Loudoun County's anticipated growth. The external fact sheets created for customers included pertinent facts about reclaimed water. Additionally, a water reuse brochure (**Appendix A**) was developed to increase the public's understanding of the quality and safety of reclaimed water, how it could be used, and the benefits of using reuse water while conserving potable water, particularly during droughts. These methods have helped increase support for the reuse program.

In addition, Loudoun Water developed the "Aquiary," an outdoor interpretive trail (10 ac) adjacent to the BRWRF and an indoor education center (3,500 sq. ft) inside the Administration Building. A citizen advisory committee advised Loudoun Water on the exhibits and their content. The Aquiary, officially opened on October 18, 2008, will provides the public with an opportunity for hands-on exploration of how water is treated, used, reclaimed, and conserved within the County.

Loudoun Water's Aquiary Education Center

4.2 Cross Connection/Backflow Prevention Control Program

As part of the implementation of a reuse program, Loudoun Water developed a cross connection/backflow prevention program (CC/BFP) specifically for its reclaimed water system to ensure its proper usage. The comprehensive cross connection/backflow prevention program for the reclaimed water system includes a cross connection/backflow prevention procedures program manual, cross connection diagrams, and inspection forms. The program includes procedures and standards for both Loudoun Water and its contractors to follow to ensure public health and safety through the appropriate installation and inspection of the reclaimed water system.

The CC/BFP program for reclaimed water has been added to the Loudoun Water manual for cross connection/backflow prevention. The additional chapter dedicated to reuse is provided in **Appendix B.** The CC/BFP manual is not attached.

4.3 Standards and Details

Loudoun Water developed reuse water standards and details to meet the equipment standards, assure quality workmanship, and meet the recently developed State requirements (spacing, signage, *etc.*). Based from Loudoun Water's "*Water Standards and Details,*" these standards and details will ensure public health and safety through the proper installation of appropriate equipment for the reclaimed water system. These standards will be used by engineers and contractors in Loudoun County during design and construction of water reuse facilities and distribution systems within the water reuse service area. The constructed facilities will be owned and operated by Loudoun Water up to the edge of the property line, and it is critical that the materials and quality of construction meet those defined Loudoun Water standards prior to acquisition and use. Similar to water standards, these documents include minimum materials of construction, valves, pipes, testing requirements, and set the standards for construction that will sustain Loudoun Water for years to come.

4.4 Service Agreements

Loudoun Water has developed a customized water reuse service agreement template to use as customers come on-line. This agreement benefits Loudoun Water by protecting their rights, promoting long-term use, and confirming the commitment from the user. It also protects the rights of the user since the use of this reclaimed water will become an integral part of business operations. Included as **Appendix C**, this template agreement meets the needs of both Loudoun Water and the users by being flexible enough to be used by various users, yet include all the requirements needed by Loudoun Water to secure reuse well into the future.

The template reuse agreement is divided into three sections, as follows:

Parts I and II:

- Definitions;
- Permitting requirements; and
- Reclaimed water standards, monitoring and reuse.

Part III:

- Treatment requirements and design criteria;
- Setback requirements;
- Notification;
- Backflow prevention and cross-connection control;
- Storage;
- Operations and maintenance; and
- Record keeping.

4.5 Irrigation Customers

In conformance with the Water Reclamation and Reuse Regulations, all irrigation customers will use reclaimed water for supplemental irrigation only.

4.5.1 Below-ground Drip Irrigation

To maximize the conservation of water, many of Loudoun Water's anticipated customers will utilize subsurface drip irrigation systems. These systems will use reclaimed water for the purpose of supplemental irrigation. The below-ground drip systems will meet all requirements of drip irrigation systems and all permit special conditions. Measures will be taken to ensure that ponding does not occur due to below-ground drip irrigation systems, including an evaluation of soils to ensure that they have sufficient permeability to receive reclaimed water at supplemental irrigation rates. These measures include using below-ground drip line specifically designed for irrigation, instead of drainfield applications. Please note that the irrigation below-ground drip line products currently do not come with the labeling and identification that is typical for the reclaimed water system (purple pipe with "Reclaimed Water – Do Not Drink"). The labeling and identification requirements will be addressed through signage.

4.5.2 Bulk Irrigation

Bulk Irrigation customers will prepare a Site Plan in accordance with 9VAC25-740-100.C.6. The Site Plan will be included with the service agreement as an exhibit to VDEQ for review prior to execution of the service agreement. Bulk irrigation customers will not receive reclaimed water prior to VDEQ's approval of the service agreement, with associated exhibits.

4.5.3 Non-Bulk Irrigation

For non-bulk irrigation users, the service agreement contains information regarding the proper use of reclaimed water and calculation methods to ensure that all irrigation is supplemental irrigation. Loudoun Water encourages all users to employ automatic irrigation systems that sense soil moisture as a method of assuring all irrigation is supplemental.

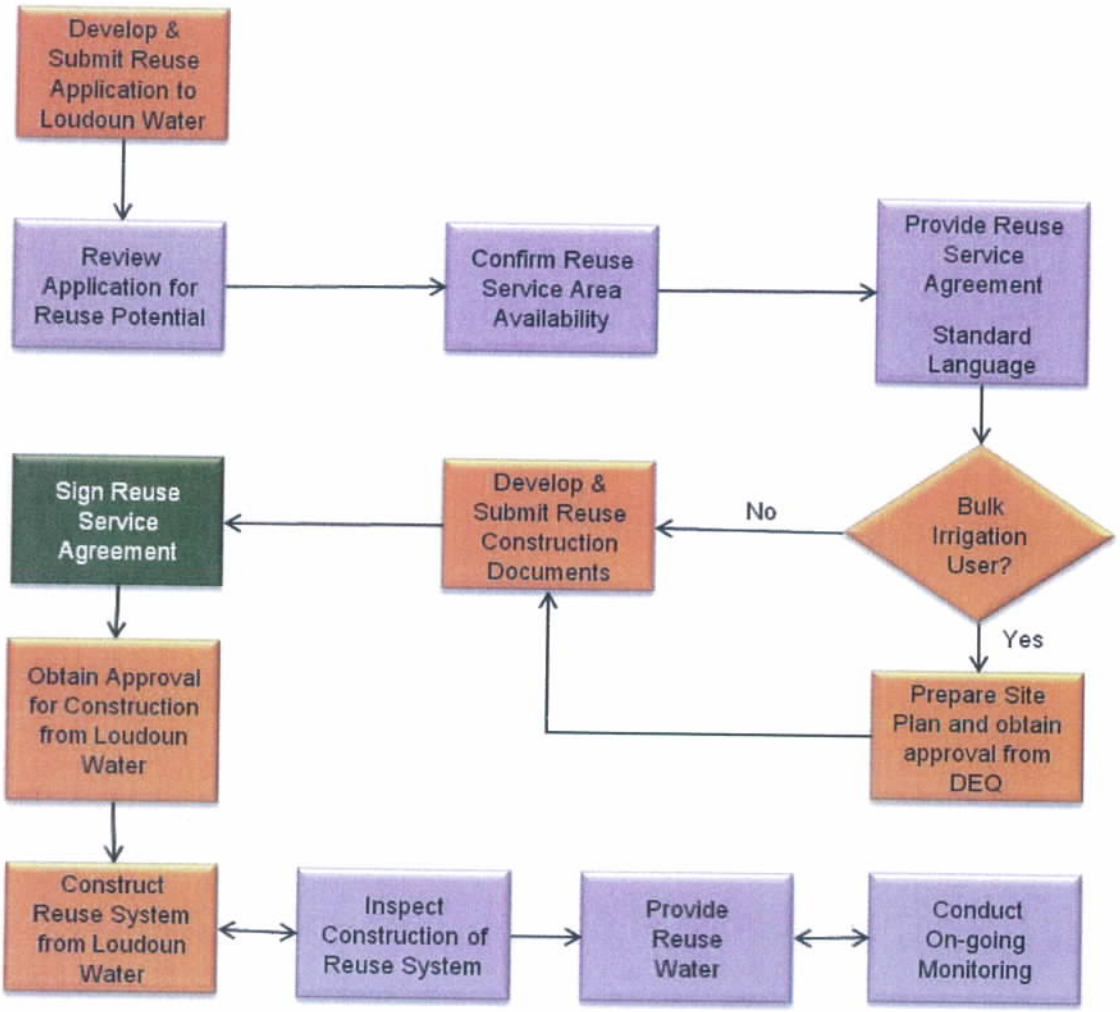
4.6 Reuse Customer Implementation Schedule

Implementing a reuse program within Loudoun Water's service area, as summarized on **Figure 4-1**, begins with communication between Loudoun Water and potential users. Potential reuse customers will approach Loudoun Water for a construction permit review. Once Loudoun Water receives the construction permit documentation, they will review the potential for reuse at the particular site based

on amount of reuse desired by the customer, location of the potential reuse site, and feasibility of transferring reuse to the site. If potential is identified, the reuse service area map will be checked for availability. Once it is determined that reuse is a viable option for the potential user, rate discussions will occur. Loudoun Water will present the potential user with typical reuse rates to determine a practical rate. Loudoun Water will also provide the potential user with backflow prevention information, standards and details, and a typical service agreement. With this information, the potential user will develop and issue the reuse documents to Loudoun Water for approval.

Following approval of the reuse customer, the reuse system is constructed in conjunction with inspection by Loudoun Water. Loudoun Water and the reuse user sign the service agreement, outlining all requirements. Per the reuse regulations, once the system is constructed and reuse water is transferred to the reuse customer, Loudoun Water monitors the system, as described in **Section 3** of this report.

Figure 4-1
Overview of Reuse Customer Implementation Process



Notes:

- Activity performed by potential reuse customer.
- Activity performed by Loudoun Water.
- Activity performed by both potential reuse customer and Loudoun Water.

Appendix A

Loudoun Water Reuse Brochure

Benefits of Using Reclaimed Water

- Provides safe, environmentally responsible nutrient management
- Reduces the need to acquire water from other sources
- Moves Loudoun Water towards our goal of using 30% of treated effluent for our customer's nonpotable water needs by 2015
- Saves fresh drinkable water for use in our homes and businesses
- Reduces the need to construct new drinking water facilities
- Offsets the costs of wastewater treatment
- Reduces use of drinking water for irrigation, cooling and manufacturing

The use of reclaimed water is one of the most important ways we can manage our water resources in an environmentally responsible manner. It also provides a great opportunity to save both Loudoun Water, and our customers, money.

Visit www.loudounwater.org for more information.

V2
Nov. 2010

LOUDOUN WATER

44865 Loudoun Water Way | PO Box 4000 | Ashburn, Virginia 20146
www.loudounwater.org

Reclaimed Water

LOUDOUN WATER

an opportunity to conserve a valuable natural resource and save money

What is Reclaimed Water?

Reclaimed water is wastewater that has been thoroughly treated to remove harmful organisms and substances, such as bacteria, viruses, and heavy metals, so that it can be reused. Once treated, it has a clear appearance, is non-staining and odorless, and is bacteriologically safe. Reclaimed water is always carefully monitored so that it meets Virginia Department of Environmental Quality regulations and is safe for our customers. To distinguish drinking water and wastewater piping from this new reuse water piping, Virginia uses the color "purple" for all pipes, hydrants, and signs wherever reuse water is used.

Being Environmentally Responsible

With an increasing demand for water, it is wasteful to water lawns with drinking-quality water. Each person in the Loudoun Water service area who waters their lawn twice a week and washes their vehicle once a week can use more than 12,000 gallons of drinking water each year.

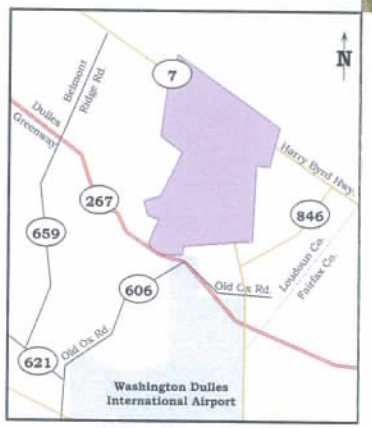
Reclaimed water can replace quality drinking-quality water for lawn watering and many other activities, which in turn, helps to conserve a valuable resource.

Reclaimed water contains low levels of nutrients (primarily nitrogen and phosphorous), can be beneficial to plant and turf growth, and may reduce the need for fertilizers that are normally applied.

Using reclaimed water is an important way to manage Loudoun Water's resources in an environmentally responsible manner

"Water reclamation and reuse helps conserve potable water for the highest quality uses." – Rick Weeks, Chief Deputy, Virginia Department of Environmental Quality

Cost Savings



Water Reuse Area

Water used to supply Loudoun Water's growing population and economy has increased significantly over the last decade. Increasing water use has made naturally occurring high quality water more and more costly to treat. Using reclaimed water for irrigation reduces drinking water demands, in turn reducing the cost of building more drinking water facilities. When watering a lawn, using reclaimed water can substantially reduce a customer's water bill because it costs less to use treated water than drinking water.

By using reclaimed water, we can reduce future costs of creating new drinking-quality water sources and treatment plants. These cost savings eventually can be passed on to our customers.

"By providing this resource, Loudoun Water gives our county another tool to attract more of the hi-tech businesses that will form the backbone of our economy throughout the 21st Century."
– Loudoun County Supervisor Lori Waters (Broad Run)

Learn more about how you can benefit. Visit www.loudounwater.org and click on "Reuse Opportunities".

Sustainable Irrigation Supply

Loudoun Water's reclaimed water supply saves drinking water resources during drought conditions. It provides our customers with a sustainable irrigation supply that reduces the likelihood of outdoor watering restrictions.

Uses of Reclaimed Water

- Irrigation of grassed and landscaped areas, common areas, road right-of-ways, and medians
- Washing of vehicles and the outside of buildings
- Control of dust at construction sites
- Filling of fountains, ponds, and lagoons used for aesthetic and cooling purposes
- Chilling/cooling water
- Toilet flushing for non-residential buildings

"There are a lot of benefits to using reclaimed water... availability, the amount of available nutrients in there, and it's less expensive than potable water."
– Steve Schwab, Water Conserv II, citrus irrigation supplier, Florida

Appendix B

Addendum to Loudoun Water
Cross Connection/Backflow Prevention Program

LOUDOUN WATER

Cross Connection/Backflow Prevention Program

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I. INTRODUCTION AND PURPOSE

I-A. INTRODUCTION

Loudoun Water is responsible for providing water and wastewater service to our customers in Eastern Loudoun County and Western Community Systems of Loudoun County. It is our obligation to ensure the health, safety, and welfare of our customers by making a continuous effort to provide total quality services. The focus of this document is to assure protection of water quality, throughout the water distribution system, to our customers.

Cross connection, as defined in the Commonwealth of Virginia/State Board of Health Waterworks Regulations (hereinafter referred to as the "Waterworks Regulations"), is "any connection or structural arrangement, direct or indirect, to the waterworks whereby backflow can occur". Backflow is defined as "the undesirable reversal of flow of water or other liquids, mixtures, or substances into the distribution piping of a waterworks from any source or sources other than its intended source." Consequently, either cross connections or the chance of backflow must be eliminated to prevent degrading the high quality of water that waterworks owners strive to maintain.

In 1974, the Waterworks Regulations were adopted to conform with the Federal "Safe Drinking Water Act," PL 93-523 (as amended) and Federal Regulation 40 CFR Part 141. The latest revision to the Waterworks Regulations was effective December 1, 2003. Section 12 VAC 5-590 of the Waterworks Regulations set guidelines requiring that a Cross Connection/Backflow Prevention Program be established and enforced for each waterworks by the owner of the waterworks.

Water utilities must identify potential cross connection hazards and determine necessary protective measures to maintain water quality. This can be accomplished by the Loudoun Water Cross Connection/Backflow Prevention Program. The Loudoun Water Cross Connection/Backflow Prevention Program was developed in 1982, amended in 1984 and revised in 2005. The program identifies those activities and situations which pose a threat to the public water supply due to cross connection and outlines appropriate protective measures.

In compliance with and in response to these guidelines and requirements, this document presents the program for cross connection control and backflow prevention for the Loudoun Water.

I-B. PURPOSE

The purpose of this program is to protect the public water supply of Loudoun Water from the possibility of contamination; to promote the elimination or control of actual or potential cross connections in the public water supply; and provide for the maintenance of a continuing program of cross connection control which will systematically and effectively prevent the contamination of potable water. More exactly, the program is intended to prevent delivered water – water that has passed beyond the public water system and into the private distribution systems of consumers – from re-entering the public distribution system and being subsequently delivered to consumers, and to allow persons active in piping design and installation to incorporate and install appropriate backflow prevention devices correctly.

The added purpose of this manual is to educate and assist Loudoun Water employees, customers, and those who work with public water supplies and to encourage users to actively support and implement cross connection prevention for the purpose of protecting our potable water supply. If you have any questions regarding the Cross Connection/Backflow Prevention Program, please contact the Field Service Department of Loudoun Water at 571.291.7878 or write to:

Loudoun Water
Cross Connection/Backflow Prevention Program
44771 Loudoun Water Way
Ashburn, VA 20147

I-C. DEFINITIONS

For the purpose of this article, the following terms shall have the following meanings:

1. **Air-Gap Separation:** A physical separation between the free-flowing discharge end of a potable water supply pipeline and an open or non-pressure receiving vessel. An "approved air-gap separation" shall be at least double the diameter of the supply pipe measured vertically above the top rim of the vessel, with a minimum of two-inch separation in all cases.

2. **Atmospheric Vacuum Breaker:** An assembly containing a float-check, usually a ball, which floats to close the air inlet port. The flow of water into the assembly causes the ball to float and close the air inlet port. When the flow of water stops, the ball falls to form a check valve against back-siphonage and at the same time opens the air inlet port to allow air to enter and eliminate the vacuum. A shutoff valve immediately upstream may be an integral part of the assembly. An atmospheric vacuum breaker is designed to protect against a health hazard (i.e. contaminant) under a back-siphonage condition only. An atmospheric vacuum breaker is also known as the "non-pressure type vacuum breaker".

3. **Auxiliary Water System:** Any water system on or available to the premises and not part of the Loudoun Water water system. These auxiliary systems may include water from

another provider's water system or water from a source such as wells, lakes, streams, process fluids, or used water. These sources may be polluted, contaminated or objectionable, and constitute a water source over which the Loudoun Water does not have control.

4. **Backflow:** The reversal of the normal flow of water or other liquids, mixtures or substances through the piping of the Loudoun Water water system because of an increase in the downstream pressure to a rate that is higher than the supply pressure.

5. **Backflow Prevention Device:** Equipment or measures that are designed to prevent backflow or back-siphonage, such as air-gaps, reduced pressure principle devices, double check valve assemblies, pressure vacuum breakers, atmospheric vacuum breakers, and residential dual checks.

6. **Back-pressure:** Any elevation of pressure in the downstream piping system (by pump, elevation of piping, or steam and/or air pressure) above the supply pressure at the point of consideration that would cause or tend to cause, a reversal of normal flow.

7. **Back-siphonage:** The reversal of the normal flow of water or other liquids, mixtures or substances through the distributing pipes of the water system because of negative pressure from a vacuum or partial vacuum in the pipes that supply water.

8. **Check Valve – Approved:** A check valve that is drip-tight in the normal direction of flow when the inlet pressure is at least one psig and the outlet pressure is zero. The check valve shall permit no leakage in a direction reverse to the normal flow. The closure element (e.g. clapper, poppet or other design) shall be internally loaded to promote rapid and positive closure. An approved check valve is only one component of an approved backflow prevention device – i.e. pressure type, anti-siphon vacuum breaker, double check backflow prevention assembly or reduced pressure backflow prevention device.

9. **Consumer:** The owner, occupant or tenant of a building or structure.

10. **Critical Level:** A reference line representing the level of the check valve seat within a back-siphonage control unit. It is used to establish the height of the unit above the highest outlet or flood level rim.

11. **Cross Connection:** A connection or a potential connection between any part of a potable water system and any other environment containing other substances in a manner that, under any circumstances, would allow such substances to enter the potable water system.

12. **Customer:** The owner or tenant having a water account with the Loudoun Water.

13. **Degree of Hazard:** An evaluation of the potential risk to health and adverse effect upon the water system.

14. **Domestic Meter:** The measurement device of water consumed by the customer for billing of water and/or sewer usage. The domestic meter is typically located at the downstream end of the water service at the right-of-way line, easement line or inside the structure.

15. **Double Check Valve Assembly:** An approved assembly composed of two independently acting check valves, including tightly closing shut-off valves located at each end of the assembly and fitted with properly located test cocks. This assembly shall only be used to protect against a non-health hazard (i.e., a non-pollutant).

16. **Health Hazard:** An actual or potential threat of, contamination or pollution of a physical or toxic nature to the public potable water system or the consumer's potable water system to such a degree or intensity that there would be a danger to health.

17. **Irrigation Meter (Water Only Meter):** The measuring device of water consumed by the customer for billing of water usage only.

18. **Loudoun Water Manager:** The Manager of Field Services or his duly authorized representative.

19. **Plumbing Fixtures:** Receptacles, devices or appliances that are installed to supply or receive potable water or discharge water or wastewater.

20. **Plumbing System:** Water supply and distribution pipes, plumbing fixtures, traps, soil, waste and vent pipes, building drains, building sewers, water-treating and water-using equipment and connection devices and appurtenances that supply potable water to a building or discharge wastewater, and that are located on the property where the building is located.

21. **Pollution:** The presence of any foreign substance in the water that tends to degrade its quality.

22. **Pressure Type, Anti-Siphon Vacuum Breaker:** An assembly containing an independently operating loaded check valve and an independently operating loaded air inlet valve located on the discharge side of the check valve. The assembly is to be equipped with properly located test cocks and tightly closing shut-off valves located at each end of the assembly. This assembly is designed to protect against a health hazard (i.e. contaminant or pollutant) under a back-siphonage condition only.

23. **Reclaimed Water Consumer:** The person or entity that directly uses reclaimed water.

24. **Reclaimed Water Consumer's System:** Reclaimed water supply and distribution pipes, plumbing fixtures, traps, soil, waste and vent pipes, building drains, building sewers, reclaimed water-treating and reclaimed water-using equipment and connection devices and appurtenances that supply reclaimed water to a building or discharge wastewater, and that are located on the property where the building is located.

25. **Reclaimed Water Customer:** The person or entity having a reclaimed water account with Loudoun Water.

26. **Reduced Pressure Zone Assembly:** An approved assembly containing a minimum of two independently acting check valves together with a hydraulically operated, mechanically independent pressure differential relief valve located between the two check valves. During normal flow and at the cessation of normal flow, the pressure between these two checks shall be less than the supply pressure. The unit must include tightly closing shut-off valves located at each end of the device, and each device shall be fitted with properly located test cocks. These devices must be approved by Loudoun Water in accordance with the Virginia Department of Health Waterworks Regulations. This device shall meet county plumbing code standards and is designed to protect against a health hazard.

27. **Water, Potable:** Water that is free from impurities in amounts that are sufficient to cause disease or harmful physiological effects and that does not contain bacteriological or chemical qualities which exceed the requirements of the Department of Health's Virginia Waterworks Regulations and the Safe Drinking Water Act.

28. **Water, nonpotable:** Water that is not safe for human consumption or that is not potable.

29. **Water, Reclaimed:** Water resulting from the treatment of domestic, municipal or industrial wastewater that is suitable for a water reuse that would not otherwise occur.

I-D. REQUIREMENTS

Every building and structure shall be constructed, equipped and maintained to prevent the contamination or pollution of the Loudoun Water water supply from cross connection, backflow or back-siphonage of liquids. The requirements and authority for the Cross Connection/Backflow Prevention Program is based on Loudoun County Ordinance Chapters 1042 and 1410. The requirements are referenced therein and include the AWWA and the Virginia Uniform Statewide Building Code.

1. Cross connection prohibited

a. The potable water supply system shall be designed, installed, and maintained to prevent nonpotable liquids, solids or gases from being introduced into the potable water supply through cross connection or any other pipe connections to the system.

b. No person shall permit a cross connection between the Loudoun Water potable water supply system and other systems or equipment that contains water or other substances except when the Loudoun Water Manager approves the cross connection and the person has installed protective devices or methods that have been approved by the Loudoun Water Manager. If there are multiple water sources to any one apparatus, the only acceptable protective measure for the connection to the potable water supply is an air gap.

2. Measures to prevent backflow and back-siphonage

The owner shall ensure the proper installation and maintenance of a backflow preventer, approved by the Loudoun Water Manager, on all fixtures, equipment and outlets where backflow or back-siphonage may occur.

3. Prevention devices to comply with regulations and specifications

All cross connection or backflow prevention devices or systems shall be designed, installed and maintained in accordance with the following manuals:

a. University of Southern California Manual of Cross Connection Control,
b. International Plumbing Code and International Residential Code,
c. Virginia Uniform Statewide Building Code,
d. Article 3 of the Virginia Waterworks Regulations; and
e. The Loudoun Water Cross Connection/Backflow Prevention Program.

Copies of each manual shall be filed with the Loudoun Water Manager and shall be made available to any owner or customer upon request.

4. Responsibility of the Loudoun Water Manager and Owner

a. The Loudoun Water Manager shall assign a technician to inspect the existing plumbing system of every building or structure so as to determine that the plumbing system has been installed to prevent the possibility that the public water supply will become polluted by cross connection, backflow or back-siphonage. (New installations shall be inspected by the County of Loudoun – see Part V).

b. The Loudoun Water Manager, or designee, shall have the right to enter any building or structure during reasonable hours for the purpose of inspecting the plumbing system for cross connection, backflow or back-siphonage. The owner shall furnish the Loudoun Water Manager or designee with all of the information that he/she requests regarding the plumbing system for the property.

5. Violations

a. As soon as practicable following inspection, the Loudoun Water Manager or his designee shall send a notice to the owner and tenant of any building or structure that is found to have devices in violation of this program. The notice will be addressed to the Loudoun Water customer with a copy to the other party. The Loudoun Water customer shall be responsible to ensure the devices are repaired to proper working order. The Loudoun Water Manager shall establish a reasonable deadline in the notice of violation for the customer to correct the violation. If the owner fails to correct the violation before the expiration of the time given by the manager, the manager may terminate the water service to the building or deny water service to the building.

b. If a backflow prevention device is removed or bypassed, if a cross connection exists or if the pressure in the water system is lowered below ten psi the Loudoun Water Manager may take whatever action he finds necessary to ensure that the water system is safe from contamination pollution.

6. Failure to Remedy

Any person who knowingly fails to remedy a violation of this program before the expiration of the time that the Loudoun Water Manager provided for correcting the violation shall be subject to the enforcement provisions of Chapter 1410 of the Loudoun County Ordinance and the Rates, Rules, and Regulations of the Loudoun Water.

I-E. ABBREVIATIONS

In the interest of readability the following abbreviations are used throughout the text:

AWWA	American Water Works Association
CFR	Code of Federal Regulations
psig	pounds per square inch, gage (gage pressure)
VDH	Virginia Department of Health

II. OVERVIEW

II-A. CAUSES OF BACKFLOW

The causes of backflow cannot be eliminated completely since backflow is often initiated by accidents or unexpected circumstances. However, some causes of backflow can be partially controlled by good design and maintenance by trained personnel. Listed below are the major causes of backflow as outlined under the two types of backflow – back-siphonage and backpressure.

1. **Back-siphonage** – Back-siphonage is caused by reduced or negative pressure in the supply line. The principle causes of back-siphonage are:

    a. Line repair or break that is lower than a service point. This will allow a vacuum in the system due to water trying to flow to a lower point in the system.

    b. Undersized piping if water is withdrawn from a pipe at a very high velocity, the pressure in the pipe is reduced and the pressure differential created can cause water to flow into the pipe from a contaminated source.

    c. Lowered pressure in water main due to high water withdrawal rate such as fire fighting, water main flushing, or water main breaks.

    d. Reduced supply main pressure on suction side of a water booster pump.

2. **Backpressure** – Backpressure may occur when a potable water system is connected to a non-potable system and the pressure in the non-potable system exceeds that in the potable system. The principle causes of backpressure are:

    a. Booster pumping systems designed without either backflow prevention devices or low pressure cut off switches.

    b. Potable water connections to boilers and other pressure systems without backflow prevention devices.

    c. Connections with other systems that may have a higher pressure.

    d. Water stored in tanks or plumbing systems that by virtue of their elevation would create head sufficient to cause backflow if pressure were lowered in the potable system.

II-B. METHOD OF CONTROL

The AWWA recognizes that the water provider has a responsibility to provide its consumers at the service connection with water that is safe under all foreseeable circumstances. Thus, in the exercise of this responsibility Loudoun Water must take reasonable precaution to protect the distribution system from the hazards originating on the premises of its consumers that may degrade the water in the distribution system

The containment policy utilized by Loudoun Water achieves this desired degree of precaution and results in totally isolating a facility with potential hazard from the public water supply system. Each water service line to such a facility must be protected in a manner commensurate with the degree of hazard as typified in Part IV, Paragraph IV.A, and Facilities & Type of Backflow Protection Required.

When any portion of a consumer's water supply system is rated hazardous, the entire system receives the same rated degree of hazard. That includes piping for potable as well as non-potable water. Under certain conditions, fire sprinkler system connections to a public water supply system may warrant a separate evaluation of the type of protection device required.

Historically, the supplier of water has been held accountable when backflow from a consumer's facility has contaminated the public water supply system. Positive safeguards of distribution system water quality, which are inherent in the containment oriented cross connection program, help limit the liability of the private supplier of water should a backflow condition occur within a facility.

III. RESPONSIBILITIES

III-A. GENERAL

Effective cross connection control requires the cooperation of Loudoun Water the building official, the consumer, the Virginia Department of Health and the backflow prevention device installer.

III-B. WATER PROVIDER (LOUDOUN WATER)

1. Loudoun Water has established and is operating this Cross Connection/Backflow Prevention Program to be consistent with the extent of the system and the class of customers served. This program includes one dedicated individual who is responsible for the Cross Connection/Backflow Prevention Program. The designated individual for the Cross Connection/Backflow Prevention Program, with the assistance as needed from the Loudoun Water Manager who will ensure completion of all initial inspections, follow-up, and testing, as well as investigation of backflow incidents. This program is carried out in accordance with the VDH Waterworks Regulations and is a continuing program.

2. Loudoun Water has full responsibility for water quality and for the construction, maintenance, and operation of the water system beginning at the water source and ending at each service connection and/or metered service connection.

3. Loudoun Water will provide thorough inspections made regularly of commercial, condos, and apartment's backflow prevention devices installed at each service connection. At the same time inspections will be made within any building or structure that has any type of receptacles, devices, equipment or appliances that are connected to the public water supply.

4. In the event of backflow of pollution or contamination into the public water system, Loudoun Water shall promptly cause correction action to confine and eliminate the pollution or contamination. Loudoun Water will immediately notify the VDH when backflow occurs.

5. Loudoun Water will take positive action to ensure that the water system is adequately protected at all times. If a cross connection exists, backflow occurs from a consumer's private water system, or if the pressure in the public water system is lowered below 10 psig, Loudoun Water may discontinue the water service to the consumer and water service shall not be restored until the deficiencies have been corrected or eliminated.

6. Regular notices will be used to provide backflow prevention education to residential consumers and inform them that they are responsible for the testing and maintenance of devices on the lawn irrigation systems and fire sprinkler systems.

7. Annual mailings will be used to notify commercial and industrial consumers when their yearly inspection will be performed and when their device is scheduled to be tested.

III-C. CONSUMERS

Consumers may, or may not be, customers of the Loudoun Water. In situations where centers receive their water from the owner (who is a customer of the Loudoun Water), Loudoun Water shall deal directly with the owner when violations occur and are not remedied.

The consumer's responsibility starts at the service connection from the public potable water system and includes all of his/her private water systems. The consumer, at his own expense will install, operate, and maintain approved backflow prevention devices. The consumer will allow entry during reasonable hours to the Loudoun Water Manager, or his designee for the purpose of inspecting backflow prevention devices. Failure, refusal or inability on the part of the consumer to install, have tested, and maintain required backflow prevention assemblies within 30 days of notification by the Loudoun Water shall constitute a violation. Violations may result in discontinuation of Loudoun Water service until the remedy is provided.

III-D. VIRGINIA DEPARTMENT OF HEALTH

The VDH is responsible for approving the Cross Connection/Backflow Prevention Program, providing technical assistance, clarification of regulations, and assisting with unique situations.

III-E. BACKFLOW PREVENTION DEVICE INSTALLERS

The installer's responsibility is to use approved backflow prevention devices installed in accordance with manufacturer's instructions and any additional instructions of the Loudoun Water. A licensed plumber shall perform the backflow prevention device installation. All maintenance may be completed by a certified Backflow Device Worker. The Loudoun Water will perform regular backflow prevention device inspections.

III-F. ORGANIZATION

1. The basic responsibility for the Cross Connection/Backflow Prevention Program is in the Loudoun Water Operation & Maintenance Division under the Loudoun Water Manager.

2. Individual(s) assigned to this activity full time shall be a designated member(s) of the Field Service Department. Individual(s) shall provide overall coordination of the program and shall be responsible for and perform the inspections, surveillance and maintenance programs as well as maintain records.

3. All new connections to the Authority's water system will be inspected for cross connections by the County of Loudoun Plumbing Department, prior to service. Loudoun

Water will also inspect all new connections on service lines and fire service lines at the time the meter is installed.

4. Review of site/utility plans for evaluation and approval shall be coordinated with the County of Loudoun Plumbing Department.

5. For information pertaining to the Loudoun Water Cross Connection/Backflow Prevention Program, inquiries may be addressed to:

Loudoun Water
Cross Connection/Backflow Prevention Program
44771 Loudoun Water Way
Ashburn, Virginia 20147

ATTN Manager of Field Services
Tel 571.291.7878

IV. CONTAINMENT POLICY

IV-A. SERVICE LINE PROTECTION

An approved backflow prevention device shall be installed at each new or existing service connection to a consumer's water system where, in the judgment of the water provider, a health, pollution, or system hazard to the water system exists.

IV-B. SPECIAL CONDITIONS

When, as a matter of practicality, the backflow prevention device cannot be installed at the service connection, the device may be located downstream of the service connection but prior to any unprotected takeoffs, subject to approval by Loudoun Water.

IV-C. PREMISES REQUIRING BACKFLOW PREVENTION

A backflow prevention device shall be installed at each service connection to a consumer's water system serving premises where the following conditions exist:

1. Premises on which any substance is handled in such a manner as to create an actual or potential hazard to a waterworks (this shall include premises having sources or systems containing process fluids or waters originating from a water system which are no longer under the control of the water provider).

2. Premises having internal cross connections that, in the judgment of the water provider, may not be easily correctable or intricate plumbing arrangements which make it impractical to determine whether or not cross connections exist.

3. Premises where, because of security requirements or other prohibitions or restrictions, it is impossible or impractical to make a complete cross connection survey.

4. Premises having a repeated history of cross connections being established or reestablished.

5. Premises having fire protection systems utilizing combinations of sprinklers, fire loops, storage tanks, pumps, antifreeze protection, or auxiliary water sources including siamese connections.

6. Other premises specified by the water provider when cause can be shown that a potential cross connection hazard not enumerated above exist.

IV-D. WATER BOOSTER PUMPS

Premises having water booster pumps connected to the public water system shall be equipped with a low pressure regulating or cutoff device to shut off booster pump(s) when the supply pressure in the water system drops below 10 psig.

V. APPROVALS AND SURVEILLANCE INSPECTIONS

V-A. PLAN REVIEW

All plans and specifications for new utility construction as well as all industrial and commercial building permits, except those for interior work with no plumbing, shall be reviewed by the County of Loudoun Plumbing Department to determine the degree of possible cross connections hazard. At this time, backflow prevention requirements in accordance with this program should be decided by the County. Final plans and specifications for cross connection control shall be submitted for review and approved by the County prior to construction.

V-B. NEW FACILITIES ACCEPTANCE

Loudoun Water will visit all new industrial and commercial facilities for inspection of backflow prevention devices on service line and fire service line connections when the permanent water meter is installed. Loudoun Water will inspect the contents of the building and/or structure within one year after the County of Loudoun Plumbing Department approves their inspection and after Loudoun Water has installed the water meter changes to be made to satisfy Loudoun Water will be issued to the customer at that time.

V-C. SURVEILLANCE

Water use requirements are continually changing within a water system. In order to determine if a degree of hazard exists to the public potable water system, a surveillance survey by Loudoun Water may be made of the consumer's presently installed water system. This survey need not be a detailed inspection of the location or disposition of the water lines, but may be confined to establishing the water uses on the premises, the existence of cross connections, and the availability of auxiliary or used water supplies. On-site inspections are made of existing facilities and should any cross connection control devices be required, a follow-up inspection will be made of the same facilities at a later designated date to ensure compliance.

V-D. MAINTENANCE INSPECTIONS / TESTING

Maintenance inspections of installed backflow prevention devices on the service connection line and/or takeoff lines from the service line inside the building or structure will be made regularly by Loudoun Water. During the inspection, existing cross connection control devices will be inspected to determine if the device has been altered or the protection afforded by it has been bypassed, removed or made otherwise ineffective. Commercial devices will be tested annually by a certified backflow tester in accordance with the manufacturer's instructions and procedures approved by Loudoun Water. Devices found to

be in non-compliance shall be repaired, overhauled or replaced by the customer at the customer's expense within 30 days of notification by the Loudoun Water.

All residential devices for irrigation systems and fire sprinkler systems will be tested annually by a certified backflow tester in accordance with the manufacturer's instructions and procedures approved by Loudoun Water. Devices found to be in non-compliance shall be repaired, overhauled or replaced by the customer at the customer's expense within 30 days of notification by the Loudoun Water.

VI. RECORD KEEPING

An automated facilities management and work order system is currently being used to track backflow prevention devices and histories. An inventory record for each device includes the location, type of device, serial number, and history of all inspections and tests. There are no maintenance records entered into the system as the devices are maintained by the consumer. The original hard copy of all tests and all other relevant records such as surveys, questionnaire distribution lists, and questionnaire responses are maintained in a file and kept for a period of at least 10 years.

VII. NOTIFICATION

VII-A. NOTIFICATION OF DEFICIENCIES

A Deficiency Worksheet will be hand delivered the day of the inspection to the owner/tenant of the site informing them of the failed backflow inspection. A re-inspection charge will be applied to the customer's account per visit.

This Deficiency Worksheet will include the following timeline and information:

1. 30 days to repair/replace or add a new backflow device from the date of the failed inspection on the deficiency worksheet.
2. Once all deficiencies have been completed, the consumer may notify Loudoun Water of their actions and arrange a time for Loudoun Water to re-inspect their facility. Loudoun Water's backflow technician will automatically revisit the facility after the 30 days without a call from the consumer
3. Appropriate names and contact information for Loudoun Water personnel will be included.
4. Clear notification that Loudoun Water will discontinue water services to the premises should their backflow protection remain out of compliance.

VII-B. NOTIFICATION OF VIOLATION

Should the consumer not comply within 30 days after notification of the deficiency worksheet, a Loudoun Water backflow technician will re-inspect for the deficiencies. If deficiencies have not been corrected the technician will hand deliver a 21 day violation letter which includes the following timeline and information:

1. The historical dates of the inspection and the deficiency worksheet to comply within 30 days.
2. Clear notification that Loudoun Water will turn water off to the premises at 21 days after delivering the violation notification. Water service will be restored to the premises once all deficiencies have been completed.
3. Appropriate names and contact information for Loudoun Water personnel will be included.

A re-inspection charge will be applied to the customer's account per visit.
Failed re-inspections of a device(s) that have previously failed a backflow prevention inspection do not defer the deadlines associated with the original failed inspection date. Prior to the scheduled termination of service date, Loudoun Water personnel will verify that the device(s) have failed to meet backflow prevention specifications.

VIII. WATER REUSE

VIII-A. INTRODUCTION AND PURPOSE

Loudoun Water provides high quality non-potable water to consumers within the Loudoun Water service area for approved reuse through its Water Reclamation and Reuse Program. To protect potable water and other non-potable water sources, the Virginia State Water Control Board requires a cross connection and backflow prevention program to be established as part of a Water Reclamation and Reuse Program. This Part is intended to provide guidance for the protection of those systems, and provides testing procedures to verify that cross connections with the potable water systems and other non-potable sources do not exist.

The potable water distribution system shall be protected from reclaimed water through an air gap or reduced pressure zone backflow device, pursuant to the standards in the previous Parts of this Manual.

The reclaimed water system containment policy utilized by Loudoun Water achieves a desired degree of precaution and results in totally isolating a facility with potential hazards from the reclaimed water supply system. Each reclaimed water service line to such a facility must be protected in a manner commensurate with the degree of hazard as typified in section VIII-C.

The purpose of this Part is to protect the reclaimed water supply, promote elimination or control of existing cross-connections or potential cross-connections, and provide for maintenance of a continuing program of cross-connection control and backflow prevention which will effectively prevent the contamination of the reclaimed water supply.

VIII-B. CONTAINMENT POLICY

An approved backflow prevention device shall be installed at each new or existing service connection to a consumer's reclaimed water system where, in the judgment Loudoun Water, a health, pollution, or system hazard to the water system exists.

Reclaimed water shall not be returned to the reclaimed water distribution system after the reclaimed water has been delivered to a consumer.

Cross-connection and backflow prevention design criteria shall be in accordance with Virginia State Water Control Board Water Reclamation and Reuse Regulation 9VAC25-740-110 B.

VIII-C. PREMISES REQUIRING BACKFLOW PREVENTION

The premises requiring Backflow Prevention and the type of Backflow Prevention required for protection of the reclaimed water system are documented in Appendix A.

VIII-D. PLAN REVIEW

Plans for all connections to the reclaimed water system shall be reviewed by the County of Loudoun Plumbing Department to determine the degree of possible cross connection hazard. At this time, backflow prevention requirements in accordance with this program should be decided by the County. Final plans and specifications for cross connection control shall be submitted for review and approved by the County prior to construction.

For all new reclaimed service connections an additional plan review may be required if an actual or potential cross connection between a consumer's reclaimed system and potable plumbing system exists to determine if the consumers current potable water containment policy is adequate.

VIII-E. NEW FACILITIES ACCEPTANCE

In addition to the procedure described for the potable water system new facilities connecting to the reclaimed water system shall conduct Dye and Pressure Testing as described in section VIII-F.B to verify no cross connections are constructed into the consumer's system. No facility shall be authorized to use reclaimed water prior to the completion of the initial Dye and Pressure Test.

VIII-F. MAINTENANCE INSPECTIONS / TESTING

1. Inspecting and Testing of Backflow Preventers

Inspections and testing of the consumer's backflow preventers shall be completed in accordance with the Virginia Uniform Statewide Building Code, International Plumbing Code (IPC), and in accordance with the requirements of this section.

2. Dye and Pressure Testing

Dye and pressure Testing shall be conducted in the presence of, and with approval by, Loudoun Water on all facilities where reclaimed water service is to be provided. Testing shall be performed prior to final approval of initial connections to Loudoun Water's reclaimed water distribution system, immediately after alterations to the consumer's system, and at least once every calendar year (periodic dye testing).

a. Dye Testing

i. Dye testing shall be conducted prior to connection to Loudoun Water's reclaimed water distribution system. During the initial dye test the consumer's reclaimed water system shall be pressurized with potable water from the plumbing system through a temporary connection. See Figure VIII.1 for a schematic of the temporary connection. During periodic dye testing, the reclaimed water system shall remain pressurized with reclaimed water. All consumers must provide dye injection ports on the consumer's side of the reclaimed water meter. Dye injection

ports must be secured, such that access is limited to trained personnel and Loudoun Water only.

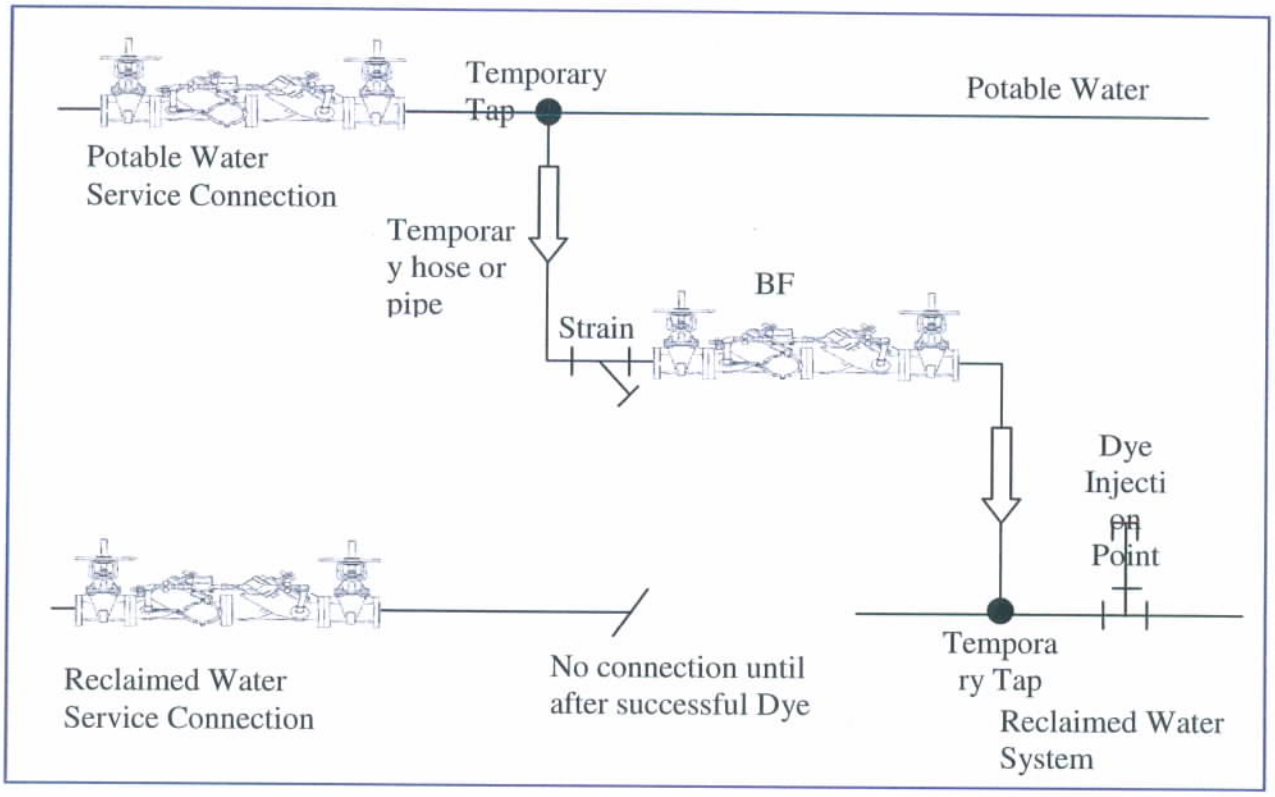


Figure VIII.1 - Temporary Connection Configuration for Dye Test

ii. Dye testing shall be accomplished by injecting dye into the pressurized reclaimed water system. Dye used in dye testing shall be non-toxic, red in color, fluorescent, and NSF certified. A sufficient amount of dye shall be used based on the volume of water in the reclaimed water system so that the manufacturers' stated concentration for visual detection will be exceeded by a minimum of ten times. Once the dye is inserted, the consumer's reclaimed water system is filled with potable water through the temporary connection. A distal reclaimed outlet shall be tested to insure that dye has been diffused throughout the reclaimed system. Once dye is detected in the system, the system shall be depressurized by closing one of the valves on the backflow preventer, and dye tablets or cakes shall be inserted into the temporary connection between the strainer and backflow preventer to provide make-up dye for water entering the reclaimed water main through the temporary connection. The valve shall then be opened, and the system re-pressurized.

iii. Reclaimed water outlets are first checked to verify that dye is present in the consumer's system. Once it is confirmed that dye is present in the reclaimed water system, all reclaimed water outlets are closed, and all potable water outlets are opened to determine if dye is visible at the potable outlets. A sample shall be taken from each potable water outlet. Samples shall be collected in clean, clear bottles. The samples shall first be visually inspected by holding a white sheet of paper behind the sample and looking for the presence of color. If no color is detected, the sample shall then be checked for fluorescence using a portable black light. Refer to dye manufacturer's recommendations for determining the presence of dye in collected samples. If no fluorescence is detected in any of the samples, the dye test is considered successful and the customer's reclaimed water system shall be temporarily connected to Loudoun Water's reclaimed water distribution system and pressure testing can be conducted.

iv. If color is detected or the sample exhibits fluorescence under a black light, then the potable fixture is assumed to be connected to the reclaimed water system and a cross connection has occurred. If a cross connection is discovered it must be corrected and the dye test repeated. Dye testing is complete when there is no evidence of dye in either system. If approved, the customer's reclaimed water system shall be temporarily connected to Loudoun Water's reclaimed water distribution system and pressure testing can be conducted.

b. Pressure Testing

i. Pressure testing shall be accomplished by first depressurizing the reclaimed water system while maintaining pressure in the potable water system. All reclaimed water outlets shall be checked to verify that no water pressure exists and service has been discontinued. If no reclaimed water outlet has pressure, the potable water system is depressurized and the consumer's reclaimed water system is repressurized. All potable water outlets are then checked to verify service has been discontinued and there is no pressure in the potable water system. If both tests are successful and no cross connection detected, the system can be approved by the Loudoun Water inspector.

ii. If any reclaimed water outlet still has pressure, a cross connection exists and must be corrected prior to continuation of pressure testing. Once all cross connections are corrected, pressure testing must be repeated. If any potable water outlets still has service a cross connection exists and must be corrected prior to continuation of pressure testing.

iii. If a cross connection is discovered in the potable water plumbing system after the system has been connected to Loudoun Water's reclaimed water distribution system, the plumbing system must be disinfected in accordance with the Virginia Plumbing Code Section 610 – Disinfection of Potable Water System prior to retesting with pressure. If upon retesting, both tests are successful and no cross

connection detected, the system can be approved by Loudoun Water inspector. Once approved, the temporary shall be closed or removed.

iv. If the periodic pressure test (once every four years) is determined to be impractical for a consumer, dye testing may be performed on its own. Loudoun Water shall determine if periodic pressure testing must be performed based on discussions with the consumer.

3. Site Visits

Site visits shall be conducted on an annual basis by Loudoun Water to all reclaimed water consumer's facilities. The purpose of these site visits shall be to verify the consumer's system is operating in accordance with 9VAC25-740 and their service agreement. The site visit shall include at a minimum a visual inspection of all reclaimed water outlets and all reclaimed water piping.

4. Converting Existing Water Mains

All existing potable water mains being converted to a reclaimed water main must pass a pressure and dye test prior to being connected to the reclaimed water distribution system. Dye tests must be conducted in the presence of a Loudoun Water representative. No connection of the Reclaimed Water Main shall be made until after the dye test has been shown to be successful.

a. Dye Test Preparation

i. Prior to conducting an initial dye test on a water main that is to be converted to a reuse water main, all potable water service connections previously connected to the converted reuse water main shall be disconnected. At the time these service connections are transferred, each one shall be pressure tested to verify they have been properly transferred to a potable water main. Pressure testing shall be carried out by depressurizing the existing water main and checking each water service connection that was transferred. If any connection does not have service they are still connected to the existing water main and need to be transferred to a potable water main prior to dye testing. Once all potable water connections are disconnected from the existing water main, the dye test can begin.

b. Dye Test

i. A temporary connection between a potable water main and the converted reuse water main shall be made to pressurize the converted water main with potable water for use in testing. The temporary connection shall be made using existing hydrants if available. If one or both of the mains do not have an available hydrant, a temporary tap will need to be made to connect the temporary piping or hose to the mains.

ii. The temporary pipe or hose connection shall be made between the tap or hydrant on the potable water main and the tap or hydrant on the converted reuse water main. The temporary connection shall be fitted with a certified backflow preventer, dye injection point consisting of a short length of pipe with a cap on one end and a tee on the other, and a strainer. The temporary connection shall be assembled in that order going from the potable water main to the converted water main. See **Figure VIII.2** for temporary connection configuration.

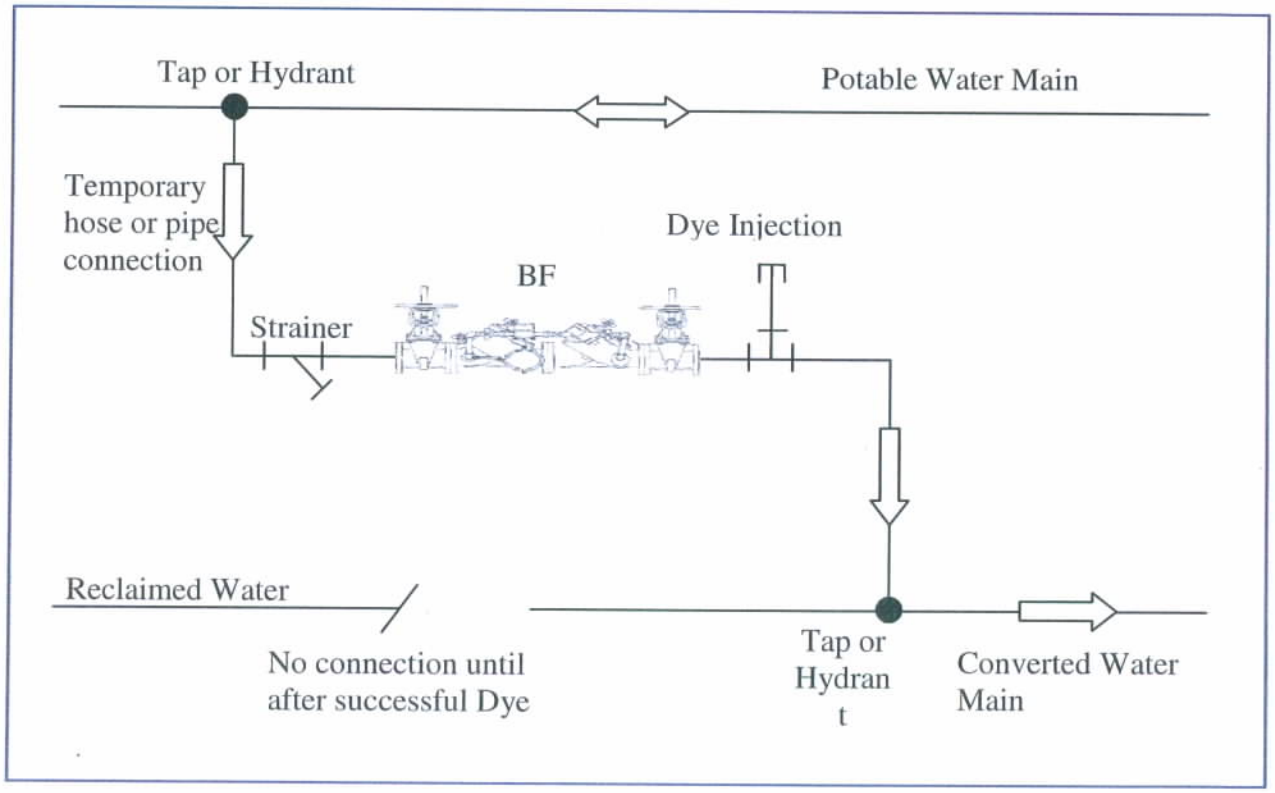


Figure VIII.2 - Temporary Connection Configuration for Dye Test

iii. Dye used in dye testing shall be non-toxic, red in color, fluorescent, and NSF certified. Liquid or powdered dye shall be placed into the temporary connection piping, between the temporary backflow preventer and strainer. A sufficient amount of dye shall be used based on the volume of water in the main so that the manufacturers' stated concentration for visual detection will be exceeded by a minimum of ten times.

iv. Pressurize existing water main with potable water. The converted water main shall be filled at a rate such that the water will flow at a velocity of no greater than 1 ft/sec (0.3 m/sec) in the main. Precautions shall be taken to ensure that air pockets are eliminated.

v. Once the converted water main is pressurized with water, an outlet at the opposite end of the main from the temporary connection shall be opened. The outlet shall remain open until dye is detected; once dye is detected the outlet shall be closed. Water from the outlet shall be discharged into a drain connected to the sanitary sewer system.

vi. Once dye is detected in the system, the system shall be depressurized by closing one of the valves on the backflow preventer, and dye tablets or cakes shall be inserted into the temporary connection between the strainer and backflow preventer to provide make-up dye for water entering the converted reuse water main through the temporary connection. The valve shall then be opened, and the system re-pressurized.

vii. All potable water connections that were previously connected to the converted reuse water main shall then be observed for the presence of dye. For each former service connection, a minimum of one tap shall be tested. The test fixture shall be flushed a sufficient amount of time so that it is pulling water from the main. A sample shall be taken from the fixture. Samples shall be collected in clean, clear bottles. The sample shall first be visually inspected by holding a white sheet of paper behind the sample and looking for any presence of color. If no color is detected, the sample shall then be checked for fluorescence using a portable black light. Refer to dye manufacturer's recommendations for determining the presence of dye in collected samples. If no fluorescence is detected in any of the samples, the dye test is considered successful and the reuse water main is considered ready for use.

viii. If color is detected or the sample exhibits fluorescence under a black light, then the service connection is still connected to the converted water main. The service connection must be disconnected from the converted water main and connected to the potable water main, and the connection must be dye tested again. Dye testing will continue until all potable water service connections have been verified as no longer connected to the converted water main.

c. Clean-up

i. Once sampling and monitoring is complete, and it is demonstrated that no connections to the converted water main exist, the dye test is complete. The outlet at the opposite end of the converted water main shall be opened and the main shall be flushed until no dye is visible. All flushing water shall be discharged to the nearest sanitary sewer.

ii. Once the converted water main is flushed, the temporary connection shall be removed and any temporary taps shall be capped.

iii. After removing the temporary connection, the converted water main may be connected to the reclaimed water distribution system.

APPENDIX A

CROSS CONNECTION HAZARDS AND REQUIRED PROTECTION

REQUIRED INSTALLATIONS, TYPE OF DEVICES,
TABLE – TYPES OF HAZARDS AND TYPICAL
BACKFLOW PREVENTION DEVICE INSTALLATIONS

A. CROSS CONNECTION HAZARDS AND REQUIRED PROTECTION

A-1. REQUIRED INSTALLATIONS

An approved backflow prevention device shall be installed on each service line to a consumer's water system serving, but not necessarily limited to; the following types of facilities (refer to the VDH Waterworks Regulations for the most current listings):

1. Hospitals, mortuaries, clinics, veterinary establishments, nursing homes, and medical buildings;

2. Laboratories;

3. Piers, docks, and waterfront facilities;

4. Sewage treatment plants, sewage pumping stations or storm water pumping stations;

5. Food and beverage processing plants;

6. Chemical plants, dyeing plants, and pharmaceutical plants;

7. Metal plating industries;

8. Petroleum or natural gas processing or storage plants;

9. Radioactive materials processing plants or nuclear reactors;

10. Car washes and laundries;

11. Lawn sprinkler systems, and irrigation systems;

12. Fire service systems;

13. Slaughter houses and poultry processing plants;

14. Farms where the water is used for other than household purposes;

15. Commercial greenhouses and nurseries;

16. Health clubs with swimming pools, therapeutic baths, hot tubs or saunas;

17. Paper and paper products plants and printing plants;

18. Pesticide or exterminating companies and their vehicles with storage or mixing tanks;

19. Schools or colleges with laboratory facilities;

20. High-rise buildings (four or more stories);

21. Multiuse commercial, office, or warehouse facilities;

22. Any facility with reclaimed water; and

23. Others specified by the provider or the division when reasonable cause can be shown for a potential backflow or cross connection hazard.

A-2. TYPE OF DEVICES

Device types are listed in descending order of degree of protection offered.

Type	***Abbreviation***
Air Gap Separation	AG
Reduced Pressure Principle Zone Assembly	RPZ
Double Check Valve Assembly	DCVA
Pressure Type, Anti-Siphon Vacuum Breaker	PVB
Atmospheric Vacuum Breaker	AVB

A-3. TABLE – TYPES OF HAZARDS

The following table is a list of cross connections, hazards found and the recommended type of protection. This table is presented as a guideline and should not be taken as a complete list.

TABLE A.3

CROSS CONNECTION, HAZARDS FOUND, RECOMMENDED TYPE OF PROTECTION

Facility	Hazard Found	Type of Protection	
		Potable Water	Reclaimed Water
A. Hospitals, mortuaries, clinics, veterinary clinics, nursing homes, medical buildings	Bedpan, washers, flush valve toilets, auto claves, specimen tanks, aspirators, autopsy and mortuary equipment, e.g.	Air-gap separation of RPZ backflow device on the service connection.	Not approved for Reclaimed Water
B. Laboratories	Autoclaves, specimen tanks, lab equipment, chemical, Bacteriological vessels, e.g.	Air gap separation or RPZ backflow device on the service connection.	Air gap separation or RPZ backflow device on the service connection.
C. Piers, docks, waterfront buildings	Auxiliary water, raw water connections, steam boilers, mud pumps, oil and gas tanks, reservoirs, e.g.	Air gap separation or RPZ backflow device on the service connection.	Air gap separation or RPZ backflow device on the service connection.
D. Sewage treatment plants, sewage and storm water pumping stations	Sewage pumps, sewage sump ejectors, laboratories, chemical storage, e.g.	Air gap separation or RPZ backflow device on the service connection.	Air gap separation or RPZ backflow device on the service connection.

Facility	Hazard Found	Type of Protection	
		Potable Water	Reclaimed Water
E. Food, beverage processing plants	Cookers, autoclaves, tanks, fill lines, steam connected facilities, chemicals, cleaning equipment, e.g.	Air gap separation or RPZ backflow device on the service connection. Double check device when there is a pollution hazard only.	Not approved for Reclaimed Water
F. Chemical plants, dyeing plants, pharmaceutical plants	Chemical tanks, vessels, fill lines, steam connected facilities, chemicals, cleaning equipment, e.g.	An air gap separation or RPZ backflow device on the service connection.	An air gap separation or RPZ backflow device on the service connection.
G. Metal plating industries	Industrial fluid lines, metals in solutions, cyanic, cleaning equipment, tanks, vessels, reservoirs, e.g.	An air gap separation or RPZ backflow device on the service connection.	An air gap separation or RPZ backflow device on the service connection.
H. Petroleum, natural gas processing or storage plants	Steam boilers, mud pumps, tanks, vessels, industrial fluid lines, fire foam equipment, e.g.	An air gap separation or RPZ backflow device on the service connection.	An air gap separation or RPZ backflow device on the service connection.

Facility	Hazard Found	Type of Protection	
		Potable Water	Reclaimed Water
I. Fire service systems	Sprinkler systems, foam systems, tanks, auxiliary water, anti-freeze, chemicals, pumps, pumper connections, e.g.	An air gap separation or RPZ backflow device on lines that are chemically treated. Double check backflow device on wet type sprinkler systems.	An air gap separation or RPZ backflow device on lines that are chemically treated. Double check backflow device on wet type sprinkler systems.
J. Car Washes	Soap, wax aspirating equipment, reclaimed water lines, fill and feed lines, e.g.	An air gap separation or RPZ backflow device on the service connection.	An air gap separation or RPZ backflow device on the service connection.
K. Lawn Sprinkler Systems	Submerged outlets, chemicals, pumps, stagnant or polluted ground water, e.g.	An RPZ device on lines that are connected with chemicals. A PVB device on wet systems must be 1' (foot) above highest head.	An RPZ device on lines that are connected with chemicals. A PVB device on wet systems must be 1' (foot) above highest head.*
L. Slaughter or poultry processing plants	Industrial fluid lines, cleaning, bleaching chemicals, wastes, e.g.	An air gap separation or RPZ backflow device on the service connection.	Not approved for Reclaimed Water

Facility	Hazard Found	Type of Protection	
		Potable Water	Reclaimed Water
M. Commercial greenhouses	Chemical, fertilizer, aspirating equipment, sprinkler lines, reservoirs, tanks, vessels, e.g.	An air gap separation or RPZ backflow device on the service connection.	An air gap separation or RPZ backflow device on the service connection.
N. Paper products, printing plants	Auxiliary waters, tanks, chemicals, industrial fluid lines, fill lines, bleaching and dyeing, e.g.	An air gap separation or RPZ backflow device on the service connection.	An air gap separation or RPZ backflow device on the service connection.
O. Pesticide or exterminating plants	Chemicals, aspirators, hose connections, tanks, fill lines, industrial fluid lines, e.g.	An air gap separation or RPZ backflow device on the service connection.	An air gap separation or RPZ backflow device on the service connection.
P. Schools, Colleges	Biological labs, flush valve toilets, specimen tanks, reservoirs, cooling towers, autopsy and morgue equipment, e.g.	Air gap separation or RPZ backflow device on the service connection.	Air gap separation or RPZ backflow device on the service connection.***
Q. High Rise Buildings (3 or more stories)	Multiple services, change of occupancy, flush valve toilets, pumps, cooling towers, steam boilers, e.g.	An air gap separation or RPZ backflow device on the service connection.	An air gap separation or RPZ backflow device on the service connection.**

Facility	Hazard Found	Type of Protection	
		Potable Water	Reclaimed Water
R. Multi-use commercial, office or warehouse facilities	Multiple services, change of occupancy, internal looping of lines, industrial fluid lines, e.g.	An air gap separation or RPZ backflow device on the service connection.	An air gap separation or RPZ backflow device on the service connection.**
S. Any facility with reclaimed water	Reclaimed water	An air gap separation or RPZ backflow device on the service connection.	N.A.

Notes:

*Reclaimed water service is not approved for individual residential sprinkling systems.

**Reclaimed water service only for non-potable uses, such as cooling water. Reclaimed water shall not be used for human consumption.

*** If the school or college includes a use specifically defined in the table, that use will dictate the Type of Protection, rather than the generic use. (Ex. A Teaching Hospital should follow the "Hospital" Type of Protection)

A-4. TYPICAL BACKFLOW PREVENTION DEVICE INSTALLATIONS

When a degree of hazard has been determined and properly classified, effective steps shall be taken to require correction of the condition or the installation of a backflow prevention device.

1. An air gap separation or an approved Reduced Pressure Principle Zone (RPZ) backflow prevention device shall be installed where contamination hazards are found or potentially exist. Examples of such facilities would be hospitals, funeral homes, veterinary establishments, car washes, chemical plants, sewage treatment plants. Generally Reduced Pressure Principle Zone Backflow (RPZ) prevention devices shall be installed on most main line domestic applications.

2. An approved Double-check Valve Backflow Prevention Device (DCV) shall be installed where pollution hazards are found or potentially exist. An example would be a fire service system. Fire service systems where chemicals are added, such as antifreeze or foaming agents shall be equipped with a Reduced Pressure Principle Zone (RPZ) device.

3. Pressure Type Vacuum Breakers (PVB) shall be installed on bottom fed tanks and vessels. Pressure type vacuum breakers are often installed on lawn irrigation/sprinkler systems. This device must be installed 6-12 inches above the highest sprinkler head.

4. Hose Bibb Vacuum Breakers shall be installed on all threaded hose bibs.

5. Trucks using portable hydrant meters shall be equipped with an approved air gap arrangement or provide a Reduced Pressure Principle Zone (RPZ) backflow prevention device on the fill line.

An approved device is one with the American Society of Sanitary Engineering and/or the Canadian Standards Association seal of approval and or the approval from the Loudoun Water backflow prevention device technician at the time of inspection.

A-5. OTHER CROSS CONNECTION HAZARDS

1. **Private Wells –** Shall not be interconnected unless the auxiliary water system and the method of connection and use of such system shall have been approved by the water provider.

2. **Exterminating Companies –** All tanks, tank trucks, and spraying apparatus used to convey pesticides in an exterminating process are required to fill with potable water by using over-head piping arrangements with air gap between the fill pipe and the tank (see Diagrams, Appendix B). If for any reason an over-head piping arrangement cannot be used, a reduced pressure principle zone device shall be installed on the fill line (see Diagrams, Appendix B) and tested annually, with a Test B Maintenance Report mailed or faxed to Loudoun Water.

3. **Construction Water Meters for Tank Trucks –** Any equipment such as tank trucks, which are filled using a construction water meter, shall be properly equipped to prevent contamination of the public potable water system from backflow or back siphonage. This shall be accomplished by providing an air gap between the fill pipe and the tank (see Air Gap Detail for Water Transport Vehicles) or by using a reduced pressure principle zone device on the fill line of the truck.

4. **Miscellaneous Uses of Water From Fire Hydrants –** The operation of fire hydrants by other than authorized personnel is prohibited. Loudoun Water may permit the use of water from a fire hydrant for construction or other purposes in accordance with the provisions of the Construction Water Meter Program. The applicant must properly apply for, and adhere to the backflow requirements of the permit.

Any device, equipment, or situation not expressly covered by this cross connection program which may constitute a potential health hazard will be handled at the discretion of the water provider.

A-6. FIRE SYSTEMS

Fire Protection systems, because of the varying degree of hazard, must be evaluated by the County of Loudoun Plumbing Department to determine the type of backflow prevention required. For this reason, the County of Loudoun Plumbing Department shall be consulted prior to installing a fire system.

1. Some of the Loudoun Water concerns with fire systems are:

   a. The growth of offensive microorganisms that can create taste and odor problems.

   b. The leaching of heavy metals such as zinc, cadmium, iron, or lead into water which stands in pipelines for long periods of time.

   c. The additions of corrosion inhibitors or antifreeze compounds to protect the piping systems.

   d. Dry systems containing compressed air.

   e. A loss of pressure on the public water supply main or an increase in pressure on the consumer's system which would allow water from these systems to enter the public supply.

If backflow occurs from these systems the hazard will vary from a non-health to a health hazard. Backflow protection shall be commensurate with the degree of hazard.

2. Listed below are those situations that determine the different fire system hazards and the type of protection required for each:

   a. Low Hazard Fire Systems

      Any system with siamese connections or non-potable water piping. The minimum backflow protection required shall be a Double Check Valve Assembly.

   b. High Hazard Fire Systems

      i. Systems with pumper connections where corrosion inhibitors or other chemicals are added to tanks of fire trucks.

      ii. All foamite plant installations.

      iii. Systems where an auxiliary water supply is permanently connected to a fire suppression system.

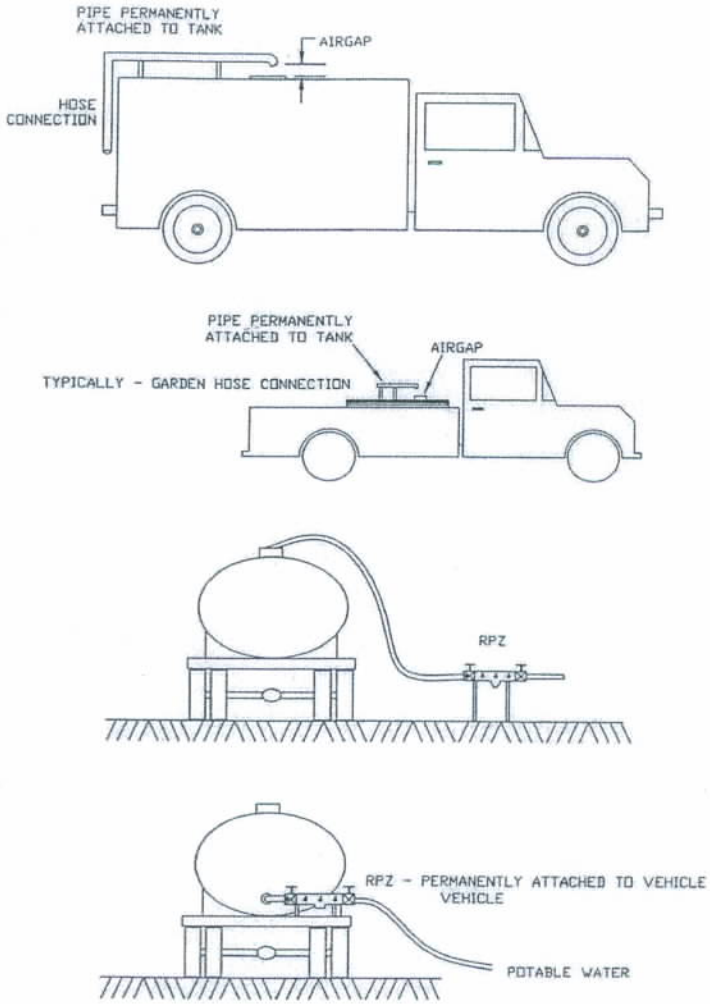
      iv. Systems in which antifreeze is allowed. Because some antifreeze is toxic, antifreeze is prohibited for use in fire systems by some government agencies.

v. Systems which make use of storage tanks.

The minimum backflow protection required shall be a Reduced Pressure Principle Zone Device.

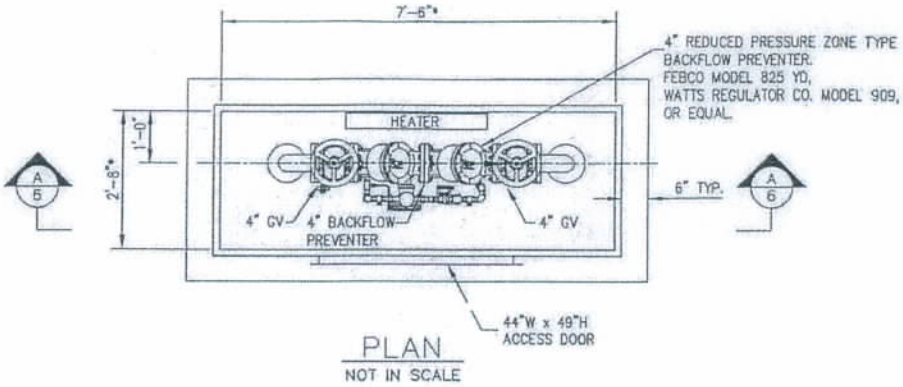
APPENDIX B

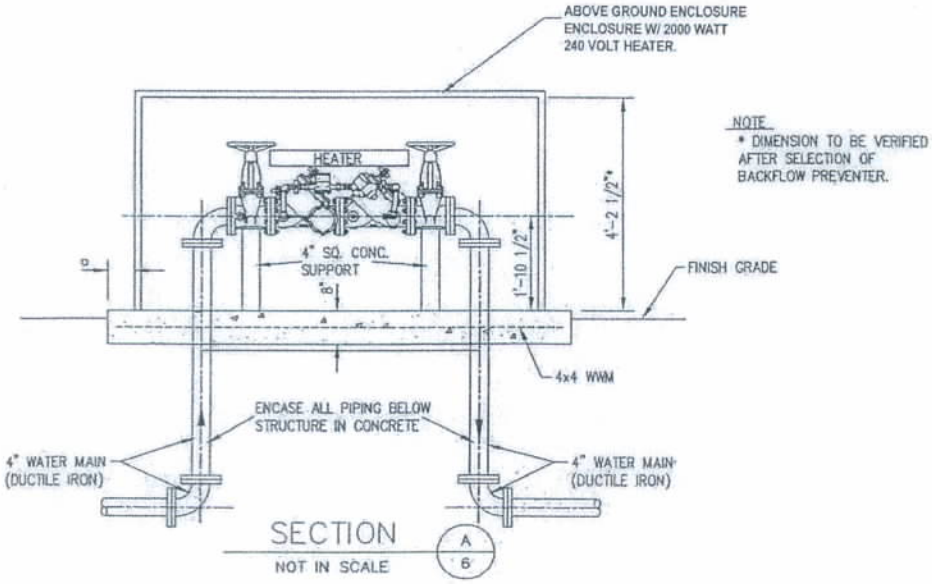
DIAGRAMS



Proper Methods of Filling Portable Spray and Cleaning Equipment

RPZ METHODS OF FILLING PORTABLE SPRAY AND CLEANING EQUIPMENT	DRWG. NO. B-1





DATE JULY 1998	RPZ ABOVE GROUND ENCLOSURE	DRWG. NO. B-3
REVISIONS		

APPENDIX C

AWWA CROSS CONNECTION/BACKFLOW POLICY

The need for concern and action on the part of the water utility to protect the water system from pollution or contamination is underscored by a policy statement on cross connection control released by the AWWA Board of Directors on Jan. 26, 1970, revised on June 24, 1979, and reaffirmed on June 10, 1984. The policy statement is as follows:

The American Water Works Association recognizes that the water provider has a responsibility to provide its customers at the service connection with water that is safe under all foreseeable circumstances. Thus, in the exercise of this responsibility the water provider must take reasonable precaution to protect the community distribution system from the hazards originating on the premises of its customers that may degrade the water in the community distribution system.

Cross connection control and plumbing inspections on premises of water customers are regulatory in nature and should be handled through the rules, regulations, and recommendations of the health authority or the plumbing code enforcement agencies having jurisdiction. The water provider, however, should be aware of any situation requiring inspection and/or re-inspection necessary to detect hazardous conditions resulting from cross connections. If, in the opinion of the utility, effective measures consistent with the degree of hazard have not been taken by the regulatory agency, the water provider should take such measures as the utility may deem necessary to ensure that the community distribution system is protected from contamination. Such action would include the installation of a backflow prevention assembly, consistent with the degree of hazard, at the service connection or discontinuance of the service.

In addition, customer use of water from the community distribution system for cooling or other purposes within the customer's system and later of the water to the community distribution system is not acceptable and is opposed by AWWA.

Because the provider must accept responsibility as outlined in this statement, the provider has no recourse but to take a leading position in the implementation and administration of a cross connection control program. Therefore, it is recommended that the water utility initiate and administer a cross connection control program in close cooperation with the health and plumbing authorities.

Appendix C

Loudoun Water Reuse Service Agreement Template

AGREEMENT FOR THE DELIVERY AND USE OF RECLAIMED WATER

THIS AGREEMENT is entered into this_____ day of _____, 20__, between _____ a _____ (the "Consumer") and the LOUDOUN COUNTY SANITATION AUTHORITY d.b.a. "LOUDOUN WATER", a Virginia body politic and corporate (the "Authority").

WITNESSETH:

WHEREAS, the Authority owns, maintains and operates water treatment and reclamation facilities that produce treated effluent that meets or exceeds the water reutilization standards of the Virginia Water Reclamation and Reuse Regulations (the "Reuse Regulations") codified at 9 VAC 25-740-10 et. seq. of the Virginia Administrative Code ("Reclaimed Water"); and

WHEREAS, the Authority is willing to sell and the Consumer is willing to purchase Reclaimed Water, pursuant to the terms of this Agreement for the Delivery and Use of Reclaimed Water (the "Agreement").

NOW, THEREFORE, in consideration of the foregoing and the mutual covenants contained herein, the Authority and Consumer do hereby agree as follows:

1. SALE OF RECLAIMED WATER

A. The Authority agrees to sell and deliver to the Consumer and the Consumer agrees to purchase and accept from the Authority [_____ **gallons per day OR such quantities as the Consumer may desire]** of Reclaimed Water derived from the Authority's Reclaimed Water production, storage and distribution systems (the "Authority's System").

B. For the remainder of the calendar year following the date on which the Authority begins providing Reclaimed Water to the Consumer (the "Effective Date"), Reclaimed Water will cost $_____ per thousand gallons (the "Initial Rate") and thereafter at such rate as the Authority may establish and revise from time to time as applicable to all **[wholesale OR retail?]** rate payers for Reclaimed Water.

C. In each year in which the Authority delivers Reclaimed Water to the Consumer, the Consumer shall also pay to the Authority a "Facilities Charge", which shall be computed by dividing the total number of gallons of Reclaimed Water produced by the Authority that year by the total number of gallons of water delivered to the Consumer that year, and then multiplying the result of such division, expressed in thousand gallons, by the actual cost of operation and maintenance of the Authority's System.

D. The actual cost of operation and maintenance in any year shall mean the necessary and reasonable current expenses of operating, maintaining and repairing the Authority's System including all administrative and general expenses, insurance and surety bond premiums, engineering and legal expenses, materials, supplies, labor, rental of equipment and other property, utility services, any taxes which may be lawfully imposed on the Authority or its income or operations of the property under its control related to the production, storage or

transmission of Reclaimed Water, as shown in the report of audit for such year prepared by a certified public accountant.

E. On or before January 1 of each year, the Authority shall provide the Consumer with a copy of that portion of the Authority's adopted budget related to the Authority's System for the succeeding year and a computation of the total estimated cost per thousand gallons of Reclaimed Water expected to be sold to the Consumer during such year, which amount shall be used for billing purposes during the year.

F. On or before the 20th day of each month, the Authority shall render an invoice to the Consumer for the Reclaimed Water delivered during the preceding month and the Facilities Charge. .

G. On or before May 1 of each year, the Authority shall provide the Consumer with a copy of the report of audit covering the preceding year of operation and maintenance expenses, including costs related to installation, maintenance, repair, replacement, improvement and infrastructure *i.e.* pipes, tanks, meters, water reclamation systems, related to the Authority's production, storage and distribution of Reclaimed Water and a computation of the total actual cost per thousand gallons of water sold to the Consumer during such year and the actual amount paid by the Consumer during such year. If the amount which was due and payable by the Consumer exceeds the actual amount paid by the Consumer, the Authority shall issue a supplemental invoice to the Consumer for this amount. If the amount due and payable by the Consumer is less that the actual amount paid by the Consumer, the Authority shall refund the amount of the difference to the Consumer within 30 days of the date of furnishing the report of audit and computation to the Consumer.

H. Full payment of all invoices is due within 30 days of the date of issuance. If the Consumer fails to timely fully pay any of the charges as herein provided, a late payment charge equal to ten percent (10%) of the amount due shall be added to the amount billed and shall be paid to the Authority by the Consumer. Failure to fully pay any charge within 60 days of the issuance of an invoice for such charge shall constitute an event of default.

I. The Consumer's payment to the Authority pursuant to the terms of this Agreement shall not create or constitute any ownership interest or title by the Consumer in or to any part of the Authority's System.

2. DELIVERY AND DISTRIBUTION OF RECLAIMED WATER

A. The Authority will deliver Reclaimed Water to the Consumer at the following location(s): _____ (the "Property). See **Exhibit A**.

B. The Authority's System shall extend downstream into the Property to the connection point on the volumetric flow meter (the "Point of Delivery". See **Exhibit A.** The Authority is responsible for operating and maintaining the Authority's System, including those components located on the Property up to and including the Point of Delivery and including the volumetric flow meter. The Consumer shall own, operate, and maintain all those components of

the Reclaimed Water delivery system downstream of the flow meter. (the "Consumers System") (the Authority's System and the Consumer System, collectively, the Reclaimed Water System.)

(i) The Consumer shall provide a positive check-valve between the Reclaimed Water System and any other non-potable irrigation water source(s). The Consumer shall be responsible for the cost, installation and complete operation of such check-valve. The Consumer will provide written notification to the Authority identifying any and all wells or surface water bodies connected to the Consumer's irrigation system.

(ii) The Consumer is responsible for constructing all pipes, connections, and appurtenances necessary to obtain Reclaimed Water from the Point of Delivery. Construction shall be in accordance with plans and specifications previously reviewed and approved by the Authority, final copies of which shall be submitted to the Authority for its records no more than thirty (30) calendar days subsequent to completion of construction.

C. All metering facilities installed at the Point(s) of Delivery are and shall remain the property of the Authority; said metering facilities being identified and described as follows:

Metering Location	Meter Size

D. The Authority will operate and maintain all Reclaimed Water metering facilities, including periodic testing thereof; and whenever it determines that replacement of any metering facility is required, it will install, operate and maintain such replacement/new metering facility as may be reasonably required in terms or then current waterworks industry standards for accuracy so as to insure accurate measurement of the quantities of Reclaimed Water delivered by the Authority to the Consumer at each delivery location.

E. The aggregate of the quantities of Reclaimed Water delivered by the Authority to the Consumer as measured by each of the metering facilities that are installed shall be considered to be the total amount of Reclaimed Water delivered by the Authority to the Consumer during any specified period of time.

F. Consumer grants the Authority easements en gross across and under the Property for the installation, operation and maintenance of Authority's System pipes and appurtenances up to the Point of Delivery and for access to and inspection of the Reclaimed Water System (the "Easements"). The Deed of Easements, which includes a legal description of the Property, is attached hereto as **Exhibit B**, and incorporated by reference and made a part of this Agreement. Upon full execution of the Deed of Easements, it shall be recorded in the land records of Loudoun County, Virginia.

G. Consumer shall provide the Authority with a sworn certificate of ownership and encumbrances regarding the Property. Consumer is responsible for obtaining and presenting to the Authority, the consent of all owners and mortgagees and any other person with a record interest in the Property [prior to the expiration date of this Agreement and the Easements] as a precondition to receipt of Reclaimed Water Services.

3. TERM OF THE AGREEMENT

A. This Agreement shall be effective for a period of _____ (__) years commencing on the Effective Date.

B. Provided the Consumer is not in default or breach of this Agreement, it may renew this Agreement by providing written notice to the Authority not less than ninety calendar (90) days in advance of the termination of the then current term.

4. USE OF RECLAIMED WATER

A. Consumer shall use the Reclaimed Water for the following non-potable reuse purposes categorized in the Virginia Reuse Regulations (9 VAC 25-740-90) and in a manner consistent with all federal, state, and local regulations.:_____
_____.

B. Not less than one hundred twenty calendar (120) days prior to the anticipated date of initiating additional reuses not identified in the Agreement, Consumer shall provide a written request for approval to the Authority. The Authority shall review these proposed additional uses and may disapprove any proposed use. Consumer shall not initiate proposed additional water reuses until an amended copy of this Agreement is received from the Authority which documents the additional uses.

C. If Consumer proposes to use Reclaimed Water for other reuses including: agriculture, sports facility irrigation, or water features/aesthetic uses, then the following conditions apply:

(i) Treatment requirements more stringent than those required in the Virginia Reuse Regulations shall be agreed upon by the Authority and Consumer for other uses not identified elsewhere in this Agreement. Any additional Reclaimed Water quality limits and treatment requirements for other specified uses will be identified in **Exhibit D**.

(ii) Color and odor limits may be agreed upon by the Authority and Consumer for other specified uses not identified elsewhere in this Agreement. Any additional color and odor limits for other uses will be identified in **Exhibit E**.

5. QUALITY OF RECLAIMED WATER SUPPLY

A. The Authority shall produce and supply Reclaimed Water of a quality that meets the standards of Reuse Regulations applicable for the Consumer's approved proposed uses outlined in Section 4A and any amendments thereto.

B. The Authority makes no other warranty, and specifically makes no implied warranty, of merchantability or of fitness of the Reclaimed Water for any particular reuse or purpose. Specifically, the Authority makes no representation concerning productivity of properties irrigated with Reclaimed Water, or potential changes to the land, crops, or vegetation. Further, any plans, specifications, water quality analysis or reclaimed wastewater sampling will serve to merely indicate the general quality of Reclaimed Water that will be delivered to the Consumer. Such plans, specifications, water quality analyses or treated water samples create no warranty that the Reclaimed Water delivered by the Authority will conform to these samples.

C. In the event of Reclaimed Water quality deterioration, the Authority will inform the Consumer as soon as practicable after the Authority identifies such deterioration and will discontinue delivery of Reclaimed Water until the quality is restored to level required by the Reuse Regulations.

6. DELIVERY OF RECLAIMED WATER UNDER ADVERSE CONDITIONS

A. **[OPTIONAL: INCLUDE ONLY IF WE ARE ASKING FOR A MINIMUM DRAW PERDAY]** Substantial rainfall or unforeseen circumstances beyond the Consumer's control may affect its need for Reclaimed Water. The Consumer may reduce the quantity of Reclaimed Water used to match its reduced needs or to accommodate such unforeseen circumstances provided that, if the Consumer's reduced needs will extend for a period of twenty (20) days or more, the Consumer shall provide a written notice to the Authority of its reduced needs at least seven (7) calendar days prior to initiating the reduction.

B. Adverse weather conditions or unforeseen circumstances may also result in a greater need for Reclaimed Water. **[Insert this if Section 1A uses a max GPD limit: The Consumer may draw additional water, subject to availability of the Authority's Reclaimed Water supplies, to the maximum amount specified in Section 1A.]** The Authority shall furnish only such Reclaimed Water as the reclamation, transmission and delivery systems are capable of handling.

C. If drought restrictions are in effect, Consumer will be required to restrict use of Reclaimed Water in accordance with Chapter 1046 of the Loudoun County Code.

7. INABILITY TO DELIVER RECLAIMED WATER

A. If circumstances beyond the Authority's control prevent the full or partial delivery of Reclaimed Water as provided herein ("Interruption of Service"), the Authority shall promptly notify the Consumer by telephone and shall follow up with a letter stating the reason for the interruption of service and the anticipated duration.

B. If all or any portion of the Reclaimed Water System becomes non-operational, by reason of some natural or other circumstance which prevents the Authority from performing any or all of its obligations hereunder, the payment of the Facilities Charge required to be made by the Consumer to the Authority under Section ___ hereof shall nevertheless continue to be made as though no such event had occurred. The Authority hereby agrees that it will use its best efforts to restore its system to full usefulness by making necessary repairs or providing adequate replacements and to resume the performance of its obligations

8. CROSS-CONNECTION AND BACKFLOW PREVENTION

A. Direct cross-connections between the Consumer's System and any potable water supply system are not permitted.

B. The Consumer's System shall be in compliance with the cross-connection control and backflow prevention requirements of the Virginia Waterworks Regulations (12 VAC 5-590-580 et seq.), the Uniform Statewide Building Code, the Authority's Cross Connection/Backflow Prevention Program, and local building and plumbing codes.

C. Consumer may utilize potable water as a supplementary reuse source, provided there are no announced legal restrictions on such use, and there is an air gap separation of at least eight (8) inches, or twice the pipe diameter, whichever is greater, between the potable water and the Reclaimed Water or a reduced pressure principle backflow prevention device installed at the potable service connection to the reuse.

D. Consumer shall bear the cost of all backflow prevention devices in the Consumer's System. The Authority takes no responsibility for the operation and maintenance of the backflow prevention device(s).

9. DELIVERY SYSTEM DESIGN CRITERIA

The design and construction of the Consumer's System shall comply with the Reuse Regulations and the Sewage Collection and Treatment Regulations ("SCAT Regulations") of the Virginia Administrative Code.

10. OPERATION AND MAINTENANCE

A. Consumer will take all reasonable precautions, including signs and labeling, to clearly identify Reclaimed Water systems to prevent inadvertent human consumption.

B. The Consumer shall prepare an operations and maintenance manual for its System, which shall include, at a minimum, contain the following:

(i) A description of all components of the Consumer's System and step-by-step instructions for operation of specific mechanical components.

(ii) A program for routine and unplanned inspection of the Consumer's System, including required inspections for the cross-connection and backflow prevention system program as specified in 9 VAC 25-740-100.B.1.g. of the Reuse Regulations.

(iii) Routine maintenance and schedules of maintenance for all components of the Consumer's System.

(iv) Procedures to handle and dispose of any wastes or wastewater generated by maintenance of the delivery system in a manner protective of the environment.

C. Consumer shall contact the Authority immediately if its System is unable to accept Reclaimed Water.

12. OPERATOR REQUIREMENTS

The Consumer shall comply with all applicable operator requirements as required by the Virginia Reuse or SCAT Regulations and/or any local, state, or federal regulations.

13. ADVISORY SIGNS

Signage shall be posted, as required by Section 9 VAC 25-740-160 of the Virginia Reuse Regulations, to ensure proper use of Reclaimed Water and to protect the health and safety of the general public. Signage shall be kept in appropriate condition so that the signs are legible and free of debris, vandalism, etc. The Authority may require the Consumer to post additional signage or replace existing signage if deemed necessary.

14. STORAGE

If required by Section 9 VAC 25-740-110 of the Virginia Reuse Regulations, the Consumer is required to own, operate, and maintain the Consumer's Reclaimed Water storage facilities.

[If we choose to require Consumer to keep records:

15. RECORD KEEPING

The Consumer shall maintain and submit adequate records in accordance with 9 VAC 740-190 of the Reuse Regulations. Failure to submit and maintain required record could result in termination of service by the Authority.]

16. IRRIGATION

If Consumer is providing bulk irrigation supply, the Authority may from time to time require rate controls and supply schedules to maintain adequate supply and pressures during periods of peak demands.

19. EARLY TERMINATION OR ASSIGNMENT

The Authority retains the right to terminate service at any time, including for any violations of this Agreement or of federal, state, or local regulations pertaining to the approved use and management of Reclaimed Water. The Authority will provide written notification of service termination to the Consumer thirty (30) days prior to termination of service.

20. EXCUSE FROM PERFORMANCE BY GOVERNMENTAL ACTS

If for any reason during the term of this Agreement, local, state, or federal governments or agencies fail to issue necessary permits, fail to grant necessary approvals, or shall require any change in the operation of the treatment, transmission and distribution systems for Reclaimed Water or the application and use of Reclaimed Water provided by the Authority, then to the

extent that such requirements shall affect the ability of any party to perform any of the terms of this Agreement, the affected party shall be excused from the performance thereof and a new Agreement shall be negotiated by the parties in conformity with such permits, approvals, or requirements.

21. TRANSFER OR MODIFICATION OF CONSUMER'S COMMITMENT

Consumer's right to alienate or encumber the land described in **Exhibit B** shall not be restricted by this Agreement, except that Consumer shall give the Authority written notice of any proposed sale or transfer at least thirty (30) days prior to the sale or transfer.

22. DEFAULT

The following events shall constitute events of default under this Agreement:

A. Except as provided in Section 1H, if Consumer fails to keep, perform, or abide by any other term, condition, or covenant of this Agreement to be performed or observed and does not cure such default within thirty (30) days after written notice thereof or, if such default cannot be cured in such period, does not within thirty (30) days commence with diligence and dispatch such act or acts as shall be necessary to cure the default and shall not cure such default within a reasonable time; or

B. If any default shall occur under the terms of any agreement between the parties for potted water service or sanitary sewer service.

23. REMEDIES FOR DEFAULT

A. In the event of a default, at any time thereafter the non-defaulting party may terminate this Agreement by giving at least ten (10) days prior written notice (the "Notice of Termination") to the defaulting party and this Agreement shall terminate after the date of such notice.

B. Additionally, the Authority may, without terminating this Agreement, suspend Reclaimed Water service to Consumer upon ten (10) days written notice. Such suspension may continue for the period specified in the notice or until such time as the Consumer has corrected any breach of this Agreement to the satisfaction of the Authority. At the end of the period of suspended service, if the Consumer has not corrected the breach, the Authority may terminate this Agreement upon ten (10) days written notice to Consumer.

C. The non-defaulting party also has rights and remedies that may exist under law. All rights and remedies may be exercised successively or concurrently.

D. The sole and exclusive jurisdiction for any litigation arising from or relation to this Agreement shall be in the Circuit Court of Loudoun County, Virginia.

24. ACCESS

The Authority shall have the right, at all reasonable times, to enter upon the Property to review and inspect the Consumer's System and/or the Authority's System Reclaimed Water facilities and operations with respect to the conditions agreed upon herein.

25. DISCLAIMER OF THIRD PARTY BENEFICIARIES

This Agreement is solely for the benefit of the parties hereto and no right or cause of action shall accrue to, upon or by reason hereto or for the benefit of any third party not a party hereto.

26. SEVERABILITY

If any part of this Agreement is found invalid or unenforceable by any court, such invalidity or unenforceability shall not affect the other parts of this Agreement if the rights and obligations of the parties contained therein are not materially prejudiced and if the intentions of the parties can continue to be effective. To that end, this Agreement is declared to be severable.

27. BINDING UPON SUCCESSORS

This Agreement shall be binding upon and shall inure to the benefit of the successors or assigns of the parties hereto. The terms and obligations of this Agreement shall run with the land referenced in **Exhibit B** attached hereto.

28. APPLICABLE LAW

This Agreement and the provisions contained herein shall be construed, controlled, and interpreted according to the laws of the Commonwealth of Virginia.

29. NOTICES

Unless otherwise specified in this Agreement, all notices or requests shall be in writing and shall be given by hand delivery or certified mail, return receipt requested, postage prepaid, addressed as follows:

If to the Authority:	With copies to:
Loudoun Water Attn: General Manager PO Box 4000 44865 Loudoun Water Way Ashburn, VA. 20146 ( ) _____	Mark M. Viani, Esquire McGuireWoods LLP 1750 Tysons Boulevard Suite 1800 McLean, VA 22102 (703) 712-5000

or to such other persons and places as the parties may specify by notice. The effective date of any notice or request shall be the date of receipt if delivered by hand, or the postmarked date thereof.

If to the Consumer: With a copy to:

or to such other persons and places as the parties may specify by notice. The effective date of any notice or request shall be the date of receipt if delivered by hand, or the postmarked date thereof.

30. ENTIRE AGREEMENT

This Agreement constitutes the entire agreement between the parties. Consumer agrees to abide by the provisions of the Loudoun Water Rules, Rates and Regulations and any policies and procedures which may address Reclaimed Water. Except as may be provided by Loudoun Water Rules, Rates and Regulations, policies or procedures, modifications to and waivers of the provisions herein shall not be binding unless made in writing and signed by the parties hereto.

IN WITNESS WHEREOF, the parties hereto have set their hands and seals on the date first above written.

ATTEST:

CONSUMER

_____

_____

_____

ATTEST:

LOUDOUN WATER

_____

By: _____
General Manager

_____

EXHIBIT A

LOCATION OF CUSTOMER'S PROPERTY AND POINT OF DELIVERY

EXHIBIT A

LOCATION OF CUSTOMER'S PROPERTY AND POINT OF DELIVERY

EXHIBIT B

EASEMENT SKETCH AND LEGAL DESCRIPTION

EXHIBIT C

DESIGNATION AS A PRIORITY Consumer

EXHIBIT D

RECLAIMED WATER - ADDITIONAL REQUIREMENTS

1. The Authority agrees to provide Reclaimed Water that meets the flowing additional water quality criteria as measured at the last sampling point of the Broad Run Water Reclamation Facility prior to distribution:

PARAMETER	LIMIT	SAMPLE TYPE	FREQUENCY OF MEASUREMENT
Ammonia*	<2.0 mg/L	24 Hr Composite	1/day
Total Phosphorus	<2.00 mg/L	Grab	1/day
pH	6.0 to 9.0 S.U.	Grab	1/day

*TKN (Total Kjeldahl Nitrogen) may be substituted for Ammonia testing at Loudoun Water's discretion. TKN is the sum of organic nitrogen, ammonia (NH2), and ammonium (NH4+). The TKN concentration shall be less than 2 mg/L.

2. The Authority shall not be obligated to deliver Reclaimed Water to Consumer at a rate of delivery or in excess gallon to that which it has available through its Plant operations. However, the Authority shall be obligated to deliver to Consumer during the time this Agreement is in effect all Reclaimed Water which meets the definition as expressed in the Agreement, and Consumer will use its reasonable effort to purchase sufficient quantities of said water at the rate described in Section __ above or pay a minimum of $30,000 per quarter. LCSA assumes no responsibility or obligations with respect to water pressure or continuous feed of water except herein as stated.

EXHIBIT E

RECLAIMED WATER – COLOR AND ODOR - ADDITIONAL REQUIREMENTS

\6542990.1

AGREEMENT FOR THE DELIVERY AND USE OF RECLAIMED WATER

THIS AGREEMENT is entered into this 4 day of October, 20 10 between Visa Inc. a Delaware Corp. (the "Consumer") and the LOUDOUN COUNTY SANITATION AUTHORITY d.b.a. "LOUDOUN WATER", a Virginia body politic and corporate (the "Authority").

WITNESSETH:

WHEREAS, the Authority owns, maintains and operates water treatment and reclamation facilities that produce treated effluent that meets or exceeds the water reutilization standards of the Virginia Water Reclamation and Reuse Regulations (the "Reuse Regulations") codified at 9 VAC 25-740-10 et. seq. of the Virginia Administrative Code ("Reclaimed Water"); and

WHEREAS, the Authority is willing to sell and the Consumer is willing to purchase Reclaimed Water, pursuant to the terms of this Agreement for the Delivery and Use of Reclaimed Water (the "Agreement").

NOW, THEREFORE, in consideration of the foregoing and the mutual covenants contained herein, the Authority and Consumer do hereby agree as follows:

1. SALE OF RECLAIMED WATER

A. The Authority agrees to sell and deliver to the Consumer and the Consumer agrees to purchase and accept from the Authority approximately 30,000 – 35,000 gallons per day of Reclaimed Water derived from the Authority's Reclaimed Water production, storage and distribution systems (the "Authority's System"). Notwithstanding the foregoing, it is understood that Consumer's usage may vary and the above estimated rate of consumption is not a guarantee.

B. For the remainder of the calendar year following the date on which the Authority begins providing Reclaimed Water to the Consumer (the "Effective Date"), Reclaimed Water will cost $1.36 per thousand gallons (the "Initial Rate") and thereafter at such rate as the Authority may establish and revise from time to time as applicable to all rate payers for Reclaimed Water pursuant to paragraph 1C below.

C. On or before December 31 of each year, consistent with its generally applicable notice requirements to rate payers the Authority shall provide the Consumer with a copy of that portion of the Authority's adopted budget related to the Authority's System for the succeeding year and a computation of the total estimated cost per thousand gallons of Reclaimed Water expected to be sold to the Consumer during such year, which amount shall be used for billing purposes during the succeeding year.

D. So long as the Authority has provided Reclaimed Water to the Consumer in accordance with the terms of this Agreement full payment of all invoices is due within 30 days of the date of issuance. If the Consumer fails to timely fully pay any of the charges as herein provided, a late payment charge equal to ten percent (10%) of the amount due shall be added to the amount billed and shall be paid to the Authority by the Consumer. Failure to fully pay any

charge within 60 days of the issuance of an invoice for such charge shall constitute an event of default.

E. The Consumer's payment to the Authority pursuant to the terms of this Agreement shall not create or constitute any ownership interest or title by the Consumer in or to any part of the Authority's System.

2. DELIVERY AND DISTRIBUTION OF RECLAIMED WATER

A. The Authority will deliver Reclaimed Water to the Consumer at the following location(s): 44901 and 45005 Russell Branch Parkway, Ashburn, VA 20147 (the "Property"). See **Exhibit A**.

B. The Authority's System shall extend to the volumetric flow meter(s) (the "Point(s) of Delivery"). See **Exhibit A.** The Authority is responsible for operating and maintaining the Authority's System, including those components located on the Property up to and including the Point(s) of Delivery and including the volumetric flow meter(s). The Consumer shall own, operate, and maintain all those components of the Reclaimed Water delivery system after the flow meter(s) to the point(s) of use. (the "Consumer's System") (The Authority's System and the Consumer's System, collectively, shall be the Reclaimed Water System.)

(i) The Consumer shall provide a positive check-valve between the Consumer's System and any other non-potable irrigation water source(s). The Consumer shall be responsible for the cost, installation and complete operation of such check-valve. The Consumer will provide written notification to the Authority identifying any and all wells or surface water bodies connected to the Consumer's irrigation system.

(ii) The Consumer is responsible for constructing all pipes, connections, and appurtenances necessary to obtain Reclaimed Water from the Point of Delivery. Construction shall be in accordance with plans and specifications previously reviewed and approved by the Authority, final copies of which shall be submitted to the Authority for its records no more than thirty (30) calendar days subsequent to completion of construction. The Authority shall treat these plans and specifications as confidential information, subject to the requirements of the Virginia Freedom of Information Act and shall make good faith efforts to maintain the confidentiality of the plans and specifications, including seeking and asserting appropriate exceptions from the Virginia Freedom of Information Act.

C. All metering facilities installed at the Point(s) of Delivery are and shall remain the property of the Authority; said metering facilities being identified and described as follows:.

Metering Location	Meter Size
Data Center	2- inch
Office Building	2- inch

D. The Authority will operate and maintain all Reclaimed Water metering facilities, including periodic testing thereof; and whenever it determines that replacement of any metering

facility is required, it will install, operate and maintain such replacement/new metering facility as may be reasonably required in accordance with then current waterworks industry standards for accuracy so as to insure accurate measurement of the quantities of Reclaimed Water delivered by the Authority to the Consumer at each delivery location. Calibration of the meters will occur in accordance with the most recent American Waterworks Association standards (AWWA C700, C701, C702, C703). A copy of the calibration results may be requested by the consumer at the time of the calibration test.

E. The aggregate of the quantities of Reclaimed Water delivered by the Authority to the Consumer as measured by each of the metering facilities that are installed shall be considered to be the total amount of Reclaimed Water delivered by the Authority to the Consumer during any specified period of time.

F. Consumer shall grant the Authority easements across and under the Property for the installation, operation, and maintenance of Authority's System pipes and appurtenances up to the Point of Delivery and for access to and inspection of the Reclaimed Water System (the "Easements"). subject to reasonable restrictions on access for areas within the security fence. The Authority shall be required to comply with the Consumer's security protocols in place at the time of inspection, which shall permit the Authority's staff to take photographs and otherwise document the condition and operation of the Reclaimed Water System. The Deed of Easements is attached hereto as **Exhibit B**, and incorporated by reference and made a part of this Agreement. Upon full execution of the Deed of Easements, it shall be recorded in the land records of Loudoun County, Virginia. The Authority shall promptly release the Deed of Easements of record upon the termination of this Agreement for any reason.

G. Consumer shall provide the Authority with a written statement of ownership and known liens regarding the Property.

3. TERM OF THE AGREEMENT

This Agreement shall be effective upon the later of the date first written above or the Effective Date defined as the date the Consumer begins receiving Reclaimed Water from the Authority. The Consumer may terminate this Agreement at any time by giving the Authority thirty (30) days written notice of termination.

4. USE OF RECLAIMED WATER

A. Consumer shall use the Reclaimed Water for the following non-potable reuse purposes categorized in the Virginia Reuse Regulations (9 VAC 25-740-90) and in a manner consistent with all federal, state, and local regulations: the intended use of the Reclaimed Water is for HVAC cooling tower supply water, landscape irrigation and water for use at toilet room urinals and water closets.

B. Not less than one hundred twenty calendar (120) days prior to the anticipated date of initiating additional reuses not identified in the Agreement, Consumer shall provide a written request for approval to the Authority. The Authority shall review these proposed additional uses and may disapprove any proposed use. Consumer shall not initiate proposed additional water

reuses until an amended copy of this Agreement is received from the Authority which documents the additional uses.

C. If Consumer proposes to use Reclaimed Water for other reuses including: agriculture, sports facility irrigation, or water features/aesthetic uses, then the following conditions apply:

(i) Treatment requirements more stringent than those required in the Virginia Reuse Regulations shall be agreed upon by the Authority and Consumer for other uses not identified elsewhere in this Agreement. Any additional Reclaimed Water quality limits and treatment requirements for other specified uses will be identified in **Exhibit C**.

(ii) Color and odor limits may be agreed upon by the Authority and Consumer for other specified uses not identified elsewhere in this Agreement. Any additional color and odor limits for other uses will be identified in **Exhibit C**.

D. The Authority retains the right to terminate Reclaimed Water service immediately and without prior written notice upon its determination that the Consumer has implemented unapproved uses of Reclaimed Water that may present a public health hazard, or are in violation of federal, state, or local regulations.

5. QUALITY OF RECLAIMED WATER SUPPLY

A. The Authority shall produce and supply Reclaimed Water of a quality that meets the standards of Reuse Regulations applicable for the Consumer's approved proposed uses outlined in Section 4A and any amendments thereto.

B. The Authority makes no other warranty, and specifically makes no implied warranty, of merchantability or of fitness of the Reclaimed Water for any particular reuse or purpose. Specifically, the Authority makes no representation concerning productivity of properties irrigated with Reclaimed Water, or potential changes to the land, crops, or vegetation. Further, any plans, specifications, water quality analysis, or reclaimed wastewater sampling will serve to merely indicate the general quality of Reclaimed Water that will be delivered to the Consumer. Such plans, specifications, water quality analyses or treated water samples create no warranty that the Reclaimed Water delivered by the Authority will conform to these samples.

C. In the event of Reclaimed Water quality deterioration, the Authority will inform the Consumer as soon as practicable after the Authority identifies such deterioration and will discontinue delivery of Reclaimed Water until the quality is restored to the level required by the Reuse Regulations.

6. SERVICE DISRUPTION AND NOTIFICATION

A. The Authority shall make good efforts to provide the Consumer forty-eight (48) hours advanced notification for any planned service disruption.

B. The Consumer shall make good faith efforts to provide the Authority 48 hours advanced notification of any planned service disruption.

C. The Consumer shall make good faith efforts to notify the Authority of any unplanned service disruption within 2 hours of its occurrence.

D. If circumstances beyond the Authority's control prevent the full or partial delivery of Reclaimed Water as provided herein, the Authority shall make good faith efforts to promptly notify the Consumer by telephone and shall follow up with a letter stating the reason for the interruption of service and the anticipated duration.

E. The Consumer may reduce the quantity of Reclaimed Water used to match its reduced needs or to accommodate such unforeseen circumstances provided that, if the Consumer's reduced needs will extend for a period of twenty (20) days or more, the Consumer shall provide a written notice to the authority of its reduced needs at least seven (7) calendar days prior to initiating the reduction.

F. The Consumer may draw additional Reclaimed Water, subject to availability of the Authority's Reclaimed Water supplies. The Authority shall furnish only such Reclaimed Water as it determines in its sole discretion that the Reclaimed Water system can safely reclaim, transmit or deliver. The Authority will make good faith efforts to try to deliver Reclaimed Water at between 70 psi and 80 psi of water pressure, however, the Authority assumes no responsibility or obligations with respect to water pressure or continuous feed of water.

G. Consumer will be required to restrict use of Reclaimed Water in accordance with Chapter 1046 of the Loudoun County Code, as applicable, or such other water use restrictions as the Authority shall promulgate.

7. CROSS-CONNECTION AND BACKFLOW PREVENTION

A. Direct cross-connections between the Consumer's System and any potable water supply system are not permitted.

B. The Consumer's System shall be in compliance with the cross-connection control and backflow prevention requirements of the Virginia Waterworks Regulations (12 VAC 5-590-580 et seq.), the Uniform Statewide Building Code, the Authority's Cross Connection/Backflow Prevention Program, and local building and plumbing codes.

C. Consumer may utilize potable water as a supplementary reuse source, provided there are no announced legal restrictions on such use, and there is an air gap separation of at least eight (8) inches, or twice the pipe diameter, whichever is greater, between the potable water and the Reclaimed Water or a reduced pressure principle backflow prevention device installed at the potable service connection to the reuse.

D. Consumer shall bear the cost of all backflow prevention devices in the Consumer's System. The Authority takes no responsibility for the operation and maintenance of the backflow prevention device(s).

8. DELIVERY SYSTEM DESIGN CRITERIA

The design and construction of the Consumer's System shall comply with the Reuse Regulations and the Sewage Collection and Treatment Regulations ("SCAT Regulations") of the Virginia Administrative Code.

9. CONSTRUCTION, OPERATION AND MAINTENANCE

A. Consumer will take all reasonable precautions, including signs and labeling, to clearly identify Reclaimed Water systems to prevent inadvertent human consumption.

B. The Consumer shall prepare an operations and maintenance manual for its System, which shall include, at a minimum, the following:

(i) A description of all components of the Consumer's System and step-by-step instructions for operation of specific mechanical components.

(ii) Routine maintenance and schedules of maintenance for all components of the Consumer's System.

(iii) Procedures to handle and dispose of any wastes or wastewater generated by maintenance of the delivery system in a manner required by applicable law.

C. The Consumer shall grant access to the Authority to perform routine and unplanned inspections of the Consumer's System, including required inspections for the cross-connection and backflow prevention system program as specified in 9 VAC 25-740-100.C.1.g. of the Reuse Regulations, as amended. The Authority shall have the ability to take notes, make sketches, and take photographs as necessary to document the condition of the Reclaimed Water system during inspection. The Authority shall be required to comply with the Consumer's security protocols in place at the time of inspection. Records of inspections shall be kept on file at the Authority.

D. Consumer shall make good faith efforts to contact the Authority promptly if its System is unable to accept Reclaimed Water.

E. The Consumer shall ensure that all necessary personnel are trained and familiar with the proper operation and maintenance of the Consumer's System.

F. The Consumer shall comply with all applicable operations and regulatory requirements as required by the Virginia Reuse Regulations, Section 9 VAC 25-740-160, or SCAT regulations and/or any local, state, or federal regulations in the construction, operations, and maintenance of the Consumer's System.

10. STORAGE

If required by Section 9 VAC 25-740-110 of the Virginia Reuse Regulations, the Consumer is required to own, operate, and maintain the Consumer's Reclaimed Water storage facilities.

11. RECORD KEEPING

The Consumer shall maintain and submit adequate records in accordance with 9 VAC 740-190 of the Reuse Regulations. Failure to submit and maintain required records could result in termination of service by the Authority.

12. IRRIGATION

A. The Consumer shall not provide bulk irrigation, defined as irrigation of five or more acres, under this agreement.

B. To comply with the Virginia Department of Environmental Quality's requirement for monthly reports on the total amount of Reclaimed Water used for irrigation, the Consumer shall report the amount of Reclaimed Water utilized for irrigation purposes to the Authority, in conformity with schedule and reporting requirements set forth in **Exhibit D, Paragraphs 22-27**.

13. EARLY TERMINATION OR ASSIGNMENT

A. The Authority retains the right to terminate this Agreement at any time, including for any violations of this Agreement or of federal, state, or local regulations pertaining to the approved use and management of Reclaimed Water. The Authority will provide written notification of service termination to the Consumer thirty (30) days prior to termination of this Agreement.

B. This Agreement may not be assigned by the Consumer without the prior written consent of the Authority, not to be unreasonably withheld, delayed or conditioned. Notwithstanding the foregoing, without obtaining the prior written consent of the Authority, Consumer may assign this Agreement (a) to any corporation which is a successor to Consumer either by merger or consolidation, (b) to a purchaser of all or substantially all of Consumer's assets, or (c) to a corporation or other entity which shall directly or indirectly control, be under the control of, or be under common control with, Consumer. For purposes hereof, "control" shall be deemed to mean the direct or indirect ownership of more than fifty percent (50%) of the outstanding voting stock of a corporation or other majority equity and control interest if not a corporation.

14. TRANSFER OR MODIFICATION OF CONSUMER'S COMMITMENT

Consumer's right to alienate or encumber the land described in **Exhibit B** shall not be restricted by this Agreement.

15. DEFAULT

The following events shall constitute events of default under this Agreement:

A. Except as provided in Section 1D, if Consumer fails to keep, perform, or abide by any other term, condition, or covenant of this Agreement to be performed or observed. and does not cure such default within thirty (30) days after written notice thereof, or, if such default cannot be cured in such period, does not within thirty (30) days commence with diligence and dispatch such act or acts as shall be necessary to cure the default and shall not cure such default within a reasonable time.

B. If any default shall occur under the terms of any agreement between the parties for potable water service or sanitary sewer service.

16. REMEDIES FOR DEFAULT

A. In the event of a default, at any time thereafter the non-defaulting party may terminate this Agreement by giving at least ten (10) days prior written notice (the "Notice of Termination") to the defaulting party and this Agreement shall terminate after the date of such notice.

B. Additionally, the Authority may, without terminating this Agreement, suspend Reclaimed Water service to Consumer upon ten (10) days written notice. Such suspension may continue for the period specified in the notice or until such time as the Consumer has corrected any breach of this Agreement to the satisfaction of the Authority. At the end of the period of suspended service, if the Consumer has not corrected the breach, the Authority may terminate this Agreement upon ten (10) days written notice to Consumer.

C. The non-defaulting party also has rights and remedies that may exist under law. All rights and remedies may be exercised successively or concurrently.

D. The sole and exclusive jurisdiction for any litigation arising from or relation to this Agreement shall be in the Circuit Court of Loudoun County, Virginia.

17. ACCESS

The Authority shall have the right, at all reasonable times, to enter upon the Property to review and inspect the Consumer's System and/or the Authority's System Reclaimed Water facilities and operations with respect to the conditions agreed upon herein. If the Authority requires access for such purposes to the area inside the security fence such access shall be coordinated with Consumer at a mutually convenient time and Consumer shall have the right to be present at all times during such review and inspections. The Authority shall be required to comply with Consumer's security protocols in place at the time of inspection.

18. DISCLAIMER OF THIRD PARTY BENEFICIARIES

This Agreement is solely for the benefit of the parties hereto and no right or cause of action shall accrue to, upon or by reason hereto or for the benefit of any third party not a party hereto.

19. SEVERABILITY

If any part of this Agreement is found invalid or unenforceable by any court, such invalidity or unenforceability shall not affect the other parts of this Agreement if the rights and obligations of the parties contained therein are not materially prejudiced and if the intentions of the parties can continue to be effective. To that end, this Agreement is declared to be severable.

20. BINDING UPON SUCCESSORS

This Agreement shall be binding upon and shall inure to the benefit of the successors or assigns of the parties hereto.

21. APPLICABLE LAW

This Agreement and the provisions contained herein shall be construed, controlled, and interpreted according to the laws of the Commonwealth of Virginia.

22. NOTICES

Unless otherwise specified in this Agreement, all notices or requests shall be in writing and shall be given by hand delivery or certified mail, return receipt requested, postage prepaid, addressed as follows:

If to the Authority:	With copies to:
Loudoun Water Attn: General Manager PO Box 4000 44865 Loudoun Water Way Ashburn, VA. 20146 (571) 291-7700	Stanley M. Franklin Mark M. Viani, Esquire McGuireWoods LLP 1750 Tysons Boulevard Suite 1800 McLean, VA 22102 (703) 712-5000

or to such other persons and places as the parties may specify by notice. The effective date of any notice or request shall be the date of receipt if delivered by hand, or the postmarked date thereof.

If to the Consumer:	With a copy to:
Visa USA Inc. Facilities Department 44901 Russell Branch Parkway Ashburn, VA 20147 Attn: Pamela Chapman	Visa USA Inc. Legal Department 900 Metro Center Blvd. Foster City, CA 94404 Attn: Margaret Fitzpatrick

23. ENTIRE AGREEMENT

This Agreement constitutes the entire agreement between the parties. Consumer agrees to abide by the provisions of the Loudoun Water Rules, Rates and Regulations and any policies and procedures which may address Reclaimed Water. Except as may be provided by Loudoun Water Rules, Rates and Regulations, policies or procedures, modifications to and waivers of the provisions herein shall not be binding unless made in writing and signed by the parties hereto.

IN WITNESS WHEREOF, the parties hereto have set their hands and seals on the date first above written.

ATTEST:

CONSUMER,

Don Davis

ATTEST:

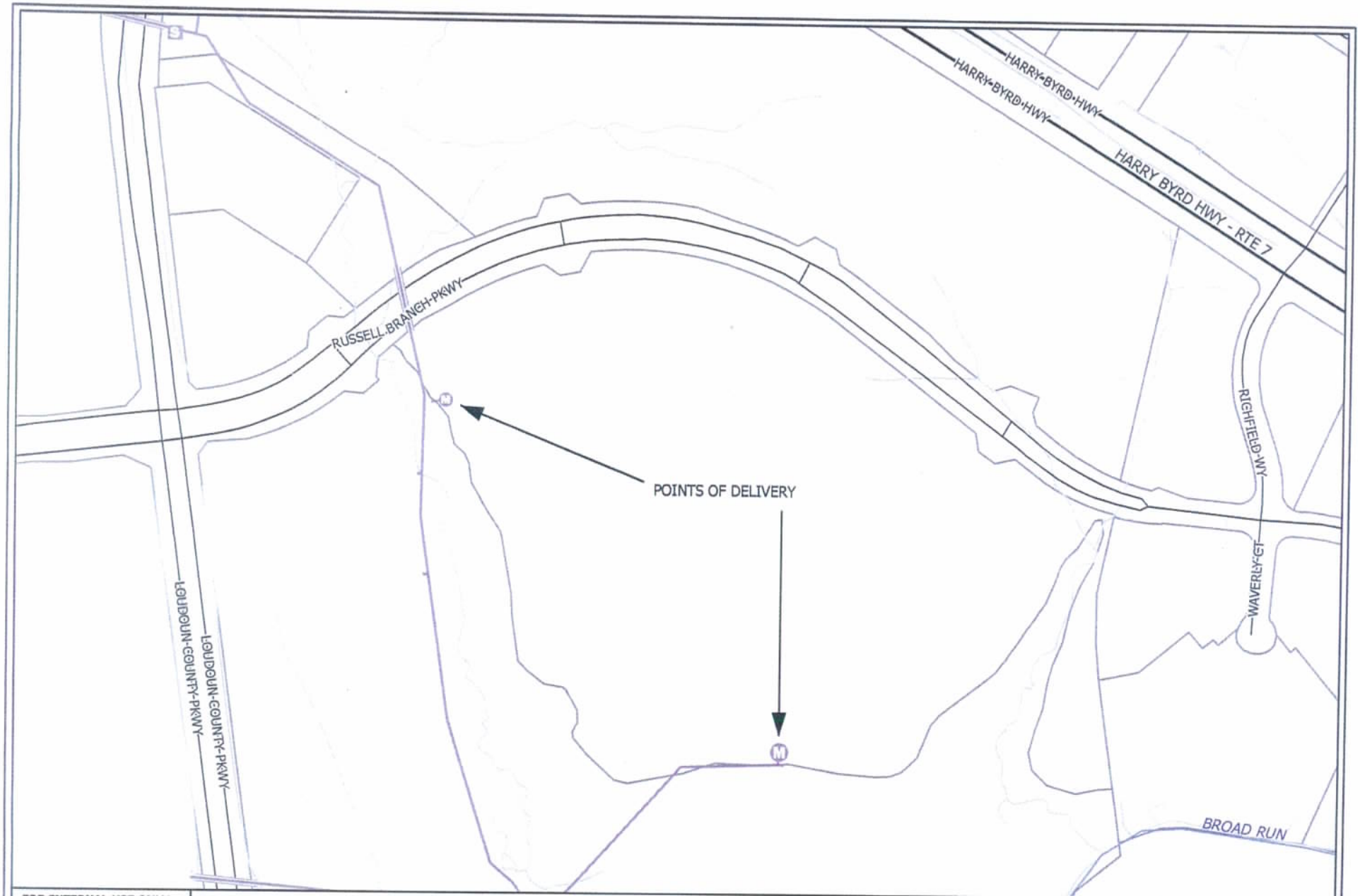
Jewell R. Lilly
Board Secretary

LOUDOUN WATER,

By: Dave C. Hammes
General Manager

EXHIBIT A

LOCATION OF CUSTOMER'S PROPERTY AND POINT(S) OF DELIVERY



FOR INTERNAL USE ONLY

These data are confidential and may not be copied or distributed without Loudoun Water's permission. Water and wastewater data are the property of Loudoun Water. Base map data are the property of Loudoun County Office of Mapping and Geographic Information (all rights reserved). These data and all maps thereby derived are considered best available information and are provided "as-is" without warranties of any kind, either expressed or implied, including but not limited to warranties of suitability to a particular purpose or use.

Legend

- Meter
- Pressure Main
- Application Parcel
- Parcels

N

0 100 200 300 400 Feet

Exhibit A

Points of Delivery

April 2010

LOUDOUN WATER

EXHIBIT B

EASEMENT SKETCH AND LEGAL DESCRIPTION

Project Name: PETERSON/COMMONWEALTH CENTER
Project ID: # 20060175

DEED

THIS DEED made this 4 day of October, 2010, by and between **VISA INC.** party of the first part, and **LOUDOUN COUNTY SANITATION AUTHORITY**, a body politic and corporate, hereinafter called "the Authority", party of the second part.

WHEREAS, VISA Inc. entered into agreement dated August 10, 2007 to provide for the furnishing, installing, constructing and conveyancing of water and sewerage facilities in a particular tract of land known as PIN # 040-46-4286 in Loudoun County, Virginia; and

WHEREAS, by the terms of the said agreement VISA Inc. agreed to convey to the Authority, at no cost to the Authority upon completion of the water and sewerage system, all easements, rights-of-way, properties and facilities thereof free of debts, liens and/or other legal encumbrances, for ownership, operation and maintenance by the Authority,

NOW, THEREFORE, THIS DEED WITNESSETH:

That for and in consideration of the premises and the sum of Ten Dollars ($10.00), receipt of which is hereby acknowledged, the party of the first part does hereby grant, bargain, sell and convey unto the party of the second part, with General Warranty of Title, all of the water and sewer systems servicing the following areas in Loudoun County, Virginia:

PETERSON/COMMONWEALTH CENTER - PROJECT ID #20060175 as shown on Exhibit "A" attached hereto and made a part hereof. This conveyance shall

include the following properties comprising the water and sewer systems serving the above-described developments:

A. All of the water mains, hydrants, valves and appurtenances installed or used by the party of the first part in the operation of the water system installed in the above-described area.

B. All of the meters, meter boxes and fittings and the house water services extending from the water mains and which area a part of the said water system.

C. All easements, rights-of-way, licenses or permissions for installation and maintenance of mains and other facilities or for other purposes in connection with the said water system.

D. All of the sewer mains, manholes, structures, equipment and appurtenances installed in the above-described areas.

E. All easements, rights-of-way, licenses or permissions for installation and maintenance of mains and other facilities or for other purposes in connection with the said sewer system.

F. All and any properties of whatsoever nature which comprise the said water and sewer systems.

The party of the first part covenants that it has the right to convey the said property; that it has done no act to encumber the said property; and that it will execute such further assurances of title as may be requisite.

IN WITNESS WHEREOF, the party of the first part, VISA Inc. has caused this Deed to be executed by Don Davis, on their behalf, all as of the day, month and year first above written.

ATTEST:

VISA INC.

_____

By_____
Don Davis
Title SVP

STATE OF _____
COUNTY OF_____, to wit:

I, the undersigned Notary Public, in and for the jurisdiction aforesaid, do hereby certify that _____, as _____of _____whose name is signed to the foregoing, appeared before me and personally acknowledged the same in my jurisdiction aforesaid.

GIVEN under my hand and seal this _____ day of _____, 20____.

_____
Notary Public

My Commission Expires: _____

See attached Certificate
-MM

CALIFORNIA ALL-PURPOSE ACKNOWLEDGMENT

State of California

County of San Mateo

On October 4, 2010 (Date) before me, Mana Mohammadi, Notary Public (Here Insert Name and Title of the Officer),

personally appeared Donald J. Davis (Name(s) of Signer(s)),

MANA MOHAMMADI
Commission # 1707605
Notary Public - California
San Mateo County
My Comm. Expires Nov 30, 2010

who proved to me on the basis of satisfactory evidence to be the person(~~s~~) whose name(~~s~~) is/~~are~~ subscribed to the within instrument and acknowledged to me that he/~~she~~/~~they~~ executed the same in his/~~her~~/~~their~~ authorized capacity(~~ies~~), and that by his/~~her~~/~~their~~ signature(~~s~~) on the instrument the person(~~s~~), or the entity upon behalf of which the person(~~s~~) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

Signature _____ (Signature of Notary Public)

Place Notary Seal Above

OPTIONAL

Though the information below is not required by law, it may prove valuable to persons relying on the document and could prevent fraudulent removal and reattachment of this form to another document.

Description of Attached Document

Title or Type of Document: Agreement for the delivery & use of reclaimed water

Document Date: October 4, 2010 Number of Pages: ——

Signer(s) Other Than Named Above: NA

Capacity(ies) Claimed by Signer(s)

Signer's Name: Donald J. Davis

☐ Individual
☐ Corporate Officer — Title(s): ____
☐ Partner — ☐ Limited ☐ General
☐ Attorney in Fact
☐ Trustee
☐ Guardian or Conservator
☑ Other: Visa

Signer Is Representing: ____

RIGHT THUMBPRINT OF SIGNER
Top of thumb here

Signer's Name: ____

☐ Individual
☐ Corporate Officer — Title(s): ____
☐ Partner — ☐ Limited ☐ General
☐ Attorney in Fact
☐ Trustee
☐ Guardian or Conservator
☐ Other: ____

Signer Is Representing: ____

RIGHT THUMBPRINT OF SIGNER
Top of thumb here

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LOUDOUN COUNTY SANITATION AUTHORITY

Dale C Hammes (SEAL)
Dale C. Hammes, General Manager

STATE OF Virginia
CITY/COUNTY OF Loudoun, to-wit:

I, Julie M. Atwell, a Notary Public in and for the City/County of Loudoun, State of Virginia, whose commission as such will expire on the 31st day of October, 20 11, do hereby certify that this day personally appeared before me in my City/County and State aforesaid, Dale C Hammes, whose name(s) is or are signed to the foregoing and hereunto annexed deed bearing date of the 4th day of October, 20 10, and acknowledged the same before me.

GIVEN under my hand this 8th day of November, 20 10.

(SEAL)

JULIE M. ATWELL
NOTARY PUBLIC
REG # 7150928
COMMISSION EXPIRES 10/31/2011
COMMONWEALTH OF VIRGINIA

Julie M Atwell
Notary Public
Registration Number: 7150928

NOTES:

1. THE PROPERTY DELINEATED ON THIS PLAT IS SHOWN ON LOUDOUN COUNTY MAP MCPI NUMBER 040-26-4286 AND IS ZONED PD-IP.
2. PREPARED WITHOUT BENEFIT OF A TITLE REPORT.
3. PARCEL OR PROPERTY LINES ARE DERIVED FROM DEEDS OF RECORD HEREON REFERENCED. PROPERTY INFORMATION SHOWN HEREON IS NOT BASED ON A FIELD RUN SURVEY.
4. THIS EASEMENT PLAT IS ASSOCIATED WITH: LCSA 2008-0097
   LCSA 2008-0130
5. OWNER(S) (AS OF DECEMBER 2007): VISA U.S.A. INC.
   PO BOX 8999
   SAN FRANCISCO, CA 94128-8999
   INSTRUMENT #20070817-0061038

CURVE TABLE						
CURVE	RADIUS	LENGTH	TANGENT	DELTA	CHORD BEARING	CHORD
C1	1085.50'	212.09'	106.38'	11°11'40"	S55°44'50"W	211.75'
C2	955.96'	51.15'	25.58'	3°03'57"	S49°45'12"W	51.14'
C3	942.23'	279.23'	140.65'	16°58'47"	S58°27'55"W	278.21'
C4	954.23'	744.29'	392.24'	44°41'25"	N74°31'11"W	725.57'
C5	1358.39'	75.61'	37.82'	3°11'21"	S00°25'11"W	75.60'

LINE TABLE		
LINE	BEARING	DISTANCE
L1	S69°11'41"W	107.34'
L2	S51°17'41"W	67.63'
L3	NOT USED	
L4	S45°53'47"W	57.88'
L5	S68°41'21"W	34.38'
L6	S87°21'27"W	40.54'
L7	N85°34'04"W	104.80'
L8	N78°39'35"W	142.67'
L9	S84°21'12"W	52.73'
L10	N88°01'16"W	152.11'
L11	S71°52'42"W	92.73'
L12	S79°39'00"W	35.46'
L13	S79°05'56"W	120.28'
L14	N77°25'26"W	38.98'
L15	N47°12'55"W	103.21'
L16	N41°18'30"W	58.33'
L17	N04°53'17"W	16.33'
L18	N27°29'31"E	29.85'
L19	N04°23'20"W	32.44'
L20	N29°01'54"W	64.88'
L21	N57°00'00"W	11.10'
L22	N50°33'06"W	51.96'
L23	N59°44'22"W	57.82'
L24	N45°16'49"W	38.77'
L25	N06°30'17"W	127.85'
L26	N01°49'27"W	55.81'
L27	N10°24'33"W	153.73'
L28	N14°49'55"W	20.08'
L29	N34°49'22"W	69.23'
L30	N29°15'50"W	85.37'
L31	N08°56'31"W	51.97'
L32	N25°13'29"W	29.91'
L33	N45°47'48"W	37.63'
L34	N15°52'00"W	37.89'
L35	N10°32'41"W	39.51'
L36	N39°36'18"W	50.29'
L37	N54°13'52"W	22.23'
L38	N31°56'09"W	43.09'
L39	N23°56'30"W	36.75'
L40	N46°58'04"W	41.10'
L41	N29°38'34"W	34.27'
L42	N51°10'49"W	25.91'
L43	N47°23'59"E	53.15'
L44	N61°27'37"E	94.31'

LINE TABLE		
LINE	BEARING	DISTANCE
L45	S37°56'15"E	54.15'
L46	N79°04'16"E	56.00'
L47	N28°03'58"E	62.95'
L48	S32°44'45"E	117.80'
L49	S45°41'38"E	55.79'
L50	S32°44'45"E	6.17'
L51	S32°44'45"E	43.82'
L52	S44°29'25"E	116.13'
L53	S58°26'38"E	240.00'
L54	N76°33'22"E	18.38'
L55	S58°26'38"E	40.09'
L56	S13°26'38"E	18.38'
L57	S58°26'38"E	61.27'
L58	S33°08'50"E	22.05'
L59	S57°57'53"E	61.51'
L60	S12°57'53"E	100.00'
L61	S48°39'45"E	23.13'
L62	N53°56'46"E	85.02'
L63	S20°53'02"E	12.60'
L64	S58°25'35"E	13.59'
L65	S13°26'38"E	14.14'
L66	S58°26'38"E	23.70'
L67	S12°57'53"E	157.49'
L68	S32°02'07"W	14.14'
L69	S12°57'53"E	85.73'
L70	N12°57'53"W	20.66'
L71	N57°56'12"E	47.26'
L72	N53°56'46"E	47.18'
L73	S50°56'48"E	21.31'
L74	S12°57'53"E	30.50'
L75	S47°57'01"W	11.44'
L76	S12°57'53"E	31.76'
L77	S12°57'53"E	55.86'
L78	S32°02'07"W	15.81'
L79	N88°43'30"E	262.11'
L80	N42°26'19"E	50.59'
L81	N88°43'30"E	262.69'
L82	N88°52'23"E	118.51'
L83	S01°07'37"E	1.13'
L84	N87°43'16"E	8.01'
L85	N02°40'21"W	3.65'
L86	N87°43'16"E	19.44'
L87	S02°16'44"E	4.40'
L88	S02°16'44"E	8.51'

No.	REVISION	Date
4	EASEMENT REVISIONS	09/03/09
3	ADD TEMP. CONSTRUCTION EASEMENTS	03/09/09
2	ADD DEDICATION AND EASEMENTS	03/03/09
1	LOUDOUN WATER COMMENTS	01/29/09

EASEMENT LEGEND:

(SD1) – EX. SIGHT DISTANCE EASEMENT
INST. #20070813-0059745

(SD2) – EX. SIGHT DISTANCE EASEMENT
INST. #20080622-0047348

(SS1) – EX. 15' LCSA SAN. SEW. EASEMENT
INST. #20070622-0047348

(SS2) – EX. 25' LCSA SAN. SEW. EASEMENT
D.B. 563 PG. 294

(SS3) – EX. 15' LCSA SAN. SEW. EASEMENT
D.B. 1027 PG. 1120

(SS5) – EX. 10' LCSA SAN. SEW. EASEMENT
D.B. 963 PG. 1210

(SS6) – EX. 10' LCSA SAN. SEW. EASEMENT
D.B. 1096 PG. 1005
D.B. 1216 PG. 1280

(SS7) – EX. 15' LCSA SAN. SEW. EASEMENT
INST. #20080503-0053436

(SS8) – EX. 30' LCSA SAN. SEW. EASEMENT
INST. #20090302-0011481

(SS9) – EX. 30' LCSA SAN. SEW. EASEMENT
INST. #20090302-0011477

(ST1) – EX. STORM DRAINAGE EASEMENT
INST. #20070813-0059745

(ST3) – EX. 17' STORM DRAINAGE EASEMENT
INST. #20070622-0047348

(ST4) – EX. 22' STORM DRAINAGE EASEMENT
INST. #20070622-0047348

(ST5) – EX. 9' STORM DRAINAGE EASEMENT
INST. #20070622-0047348

(ST6) – EX. 23' PERMANENT STORM DRAINAGE EASEMENT
INST. #20090302-0011481

(SW1) – EX. STORM WATER MANAGEMENT EASEMENT
INST. #20070813-0059745

(SW2) – EX. STORM WATER MANAGEMENT EASEMENT
INST. #20070622-0047348

(V1) – EX. 15' VEPCO EASEMENT
D.B. 1143 PG. 1117
D.B. 1150 PG. 0725

(V2) – EX. 30' VEPCO EASEMENT
D.B. 1075 PG. 1195

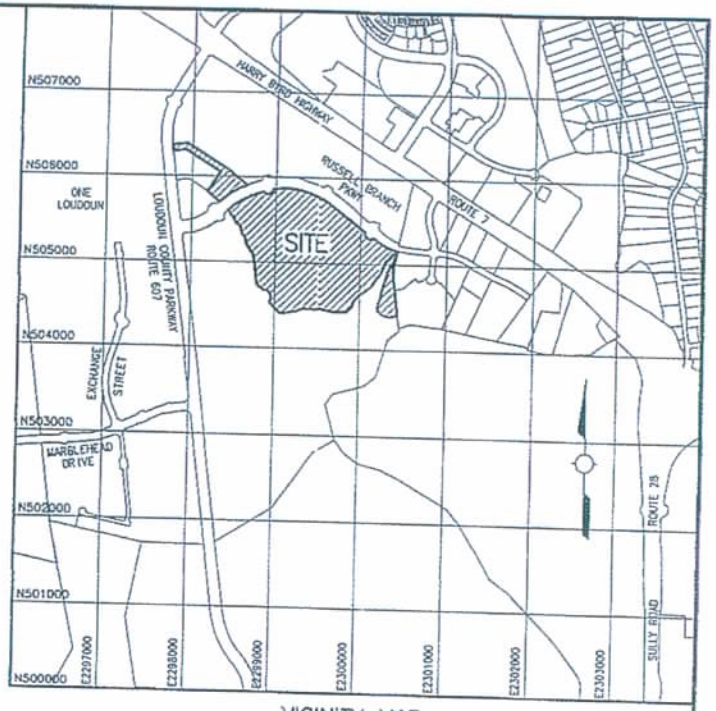
(W1) – EX. VARIABLE WIDTH LCSA WATERLINE EASEMENT
INST. #20070622-0047348

(W2) – EX. 10' LCSA WATERLINE EASEMENT
INST. #20080227-0010503

(W3) – EX. 15' LCSA WATERLINE EASEMENT
INST. #20070813-0059745

(WG) – EX. 10' WGL EASEMENT
INST. #20050531-0054944

(U1) – EX. LOUDOUN COUNTY UTILITY EASEMENT
INST. #20090302-0011481



VICINITY MAP
SCALE 1" = 1000'

COMMONWEALTH OF VIRGINIA
09/03/09
STANLEY D. HOKER
Lic. No. 001709
LAND SURVEYOR

PLAT SHOWING
10' LCSA EASEMENTS and
TEMPORARY CONSTRUCTION EASEMENTS
ON
PARCEL B-1A
DULLES OVERLOOK
BROAD RUN ELECTION DISTRICT
LOUDOUN COUNTY, VIRGINIA
SCALE: N/A OCTOBER 7, 2008

William H. Gordon Associates, Inc.
Civil Engineering • Survey • Land Planning • Landscape Architecture
Site Security Consulting • GIS
4501 Daly Drive, Suite 200, Chantilly, Virginia 20151
Phone: (703) 263-1900 Fax: (703) 263-0766 www.whga.com

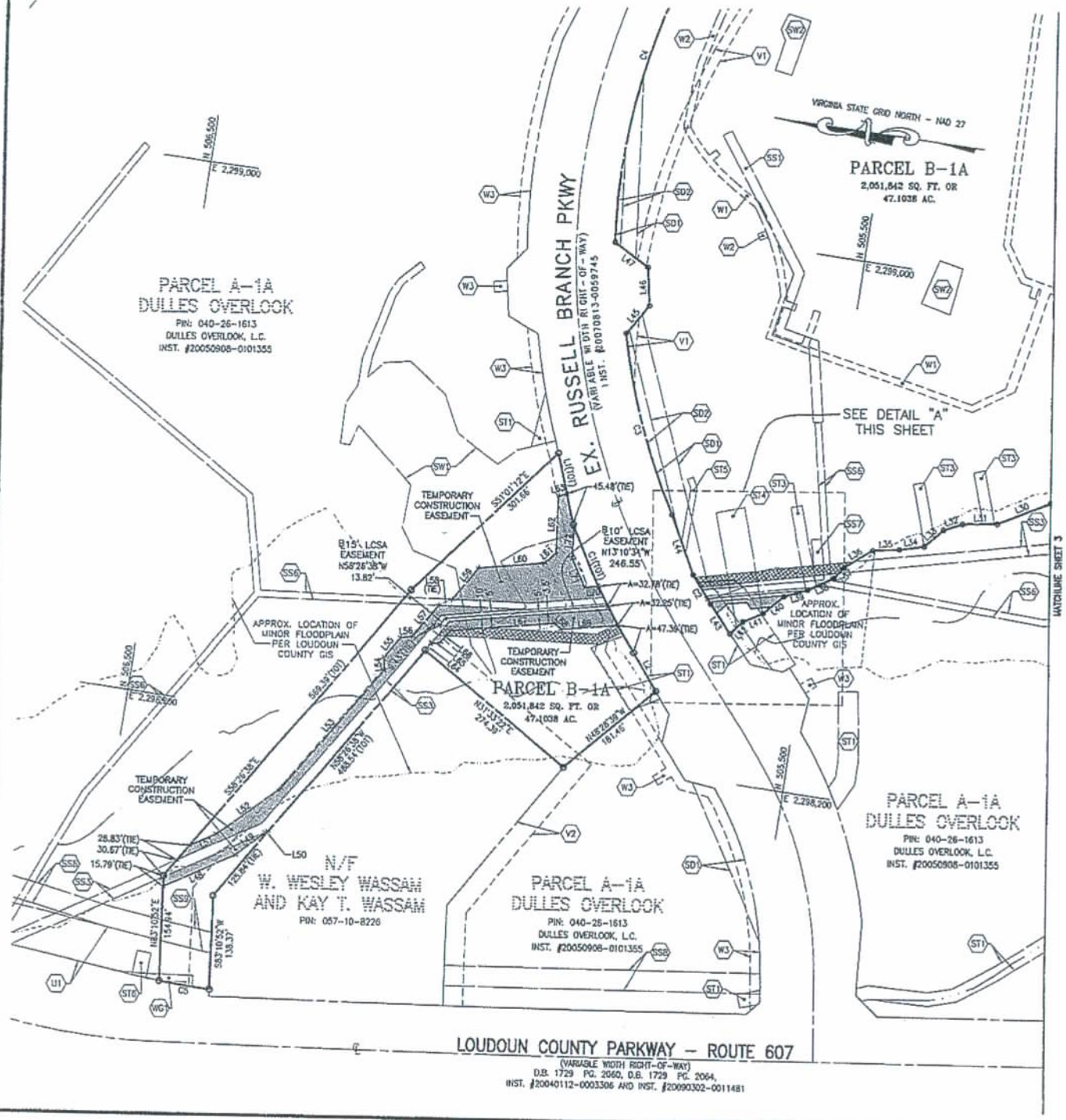
SHEET 1 OF 3

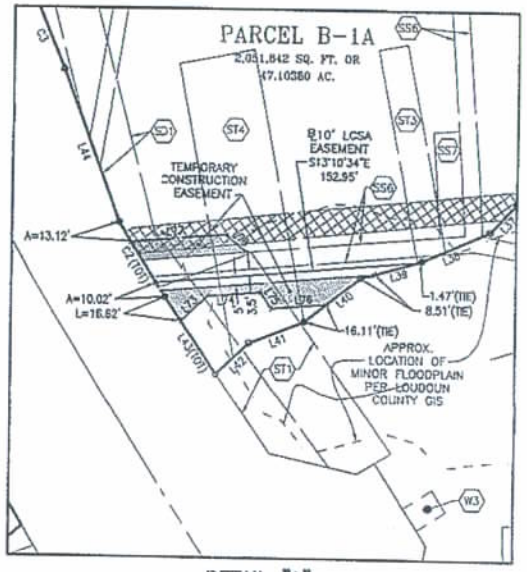
G:\PROJECT\SURVY\2406\PLATS\WL REUSE - PARCEL B-1A.DWG

No.	REVISION	Date
4	EASEMENT REVISIONS	09/03/09
3	ADD TEMP. CONSTRUCTION EASEMENTS	03/09/09
2	ADD DEDICATION AND EASEMENTS	03/03/09
1	LOUDOUN WATER COMMENTS	01/29/09

GRAPHIC SCALE

(IN FEET)
1 inch = 100 ft.





DETAIL "A"
SCALE: 1"=50'

LEGEND:

- HATCHED AREA DENOTES PORTION OF EX. 15' LCSA SAN. SEW. EASEMENT D.B. 1027 PG. 1120 HEREBY VACATED
- SHADED AREA DENOTES TEMPORARY CONSTRUCTION EASEMENT

COMMONWEALTH OF VIRGINIA
09/03/09
STANLEY D. HOEER
Lic. No. 001709
LAND SURVEYOR

PLAT SHOWING
10' LCSA EASEMENTS and
TEMPORARY CONSTRUCTION EASEMENTS
ON
PARCEL B-1A
DULLES OVERLOOK

BROAD RUN ELECTION DISTRICT
LOUDOUN COUNTY, VIRGINIA
SCALE: 1"=100' OCTOBER 7, 2008

William H. Gordon Associates, Inc.
Civil Engineering • Survey • Land Planning • Landscape Architecture
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4501 Daly Drive, Suite 200, Chantilly, Virginia 20151
Phone: (703) 263-1900 Fax: (703) 263-0766 www.whgs.com

BY ANY PROCESS WITHOUT PRIOR WRITTEN AUTHORIZATION FROM WILLIAM H. GORDON ASSOCIATES, INC.

G:\PROJECT\SURVY\2406\PLATS\WL REUSE - PARCEL B-1A.DWG

No.	REVISION	Date
4	EASEMENT REVISIONS	09/03/09
3	ADD TEMP. CONSTRUCTION EASEMENTS	03/03/09
2	ADD DEDICATION AND EASEMENTS	03/03/09
1	LOUDOUN WATER COMMENTS	01/29/09

LEGEND:

- SHADED AREA DENOTES TEMPORARY CONSTRUCTION EASEMENT

VIRGINIA STATE GRID NORTH - NAD 27

PARCEL A-1A
DULLES OVERLOOK
PIN: 040-26-1613
DULLES OVERLOOK, L.C.
INST. #20050908-0101355

PARCEL B-1A
2,051,842 SQ. FT. OR
47.10380 AC.

SEE DETAIL "B"
THIS SHEET

APPROX. LOCATION OF MAJOR FLOODPLAIN PER LOUDOUN COUNTY GIS

PORTION OF EX. 15' LCSA SAN. SEW. EASEMENT D.B. 1027 PG. 1120 HEREBY VACATED

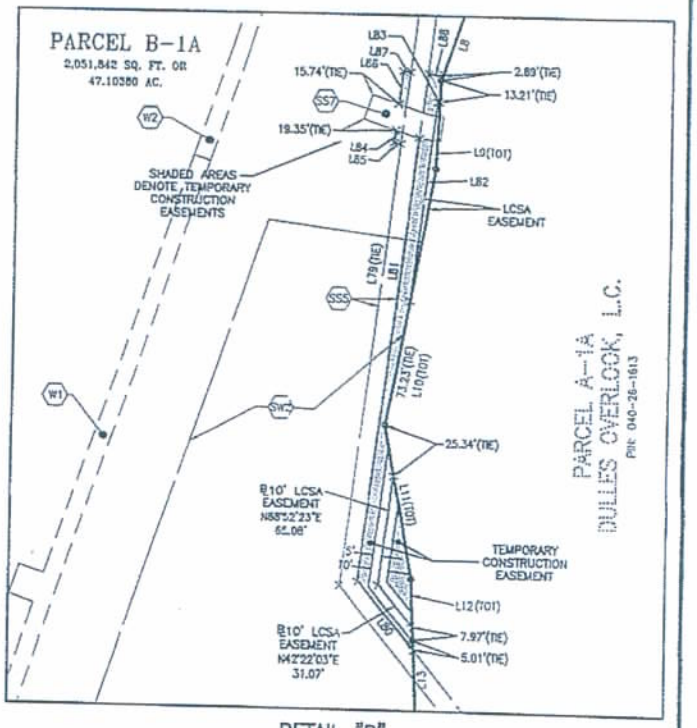
UNNAMED TRIBUTARY OF BROAD RUN

RUSSELL BRANCH

GRAPHIC SCALE

(IN FEET)
1 inch = 100 ft.

PARCEL A-1A
DULLES OVERLOOK
PIN: 040-26-1613
DULLES OVERLOOK, L.C.
INST. #20050908-0101355



DETAIL "B"
SCALE: 1"=50'

COMMONWEALTH OF VIRGINIA
09/03/09
STANLEY D. HEDER
Lic. No. 001709
LAND SURVEYOR

PLAT SHOWING
10' LCSA EASEMENTS and
TEMPORARY CONSTRUCTION EASEMENTS
ON
PARCEL B-1A
DULLES OVERLOOK
BROAD RUN ELECTION DISTRICT
LOUDOUN COUNTY, VIRGINIA
SCALE: 1"=100' OCTOBER 7, 2008

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EXHIBIT C

RECLAIMED WATER - ADDITIONAL REQUIREMENTS

1. The Authority agrees to provide Reclaimed Water that meets the following additional water quality criteria as measured at the last sampling point of the Broad Run Water Reclamation Facility prior to distribution:

PARAMETER	LIMIT	SAMPLE TYPE	FREQUENCY OF MEASUREMENT
Ammonia *	<2 mg/L	24-hour Composite	1/day
Total Phosphorus	<2 mg/L	Grab	1/day
pH	6 to 9 S.U.	Grab	1/day
Color			
Odor			

* TKN (Total Kjeldahl Nitrogen) may be substituted for Ammonia testing at Loudoun Water's discretion. TKN is the sum of organic nitrogen, ammonia (NH2), and ammonium (NH4+). The TKN concentration shall be less than 2 mg/l.

EXHIBIT D

RECLAIMED WATER - IRRIGATION METERING AND REPORTING

\9942208.1

COMMONWEALTH of VIRGINIA

DEPARTMENT OF ENVIRONMENTAL QUALITY

Permit No. VA0091383
Effective Date: April 1, 2005
Administrative Authorization Date: December 15, 2009
Expiration Date: March 31, 2010

ADMINISTRATIVE AUTHORIZATION TO PRODUCE OR DISTRIBUTE RECLAIMED WATER UNDER THE WATER RECLAMATION AND REUSE REGULATION ATTENDING AN AUTHORIZATION TO DISCHARGE UNDER THE VIRGINIA POLLUTANT DISCHARGE ELIMINATION SYSTEM AND THE VIRGINIA STATE WATER CONTROL LAW

In compliance with the provisions of the Water Reclamation and Reuse Regulation (9VAC25-740-10 et seq.), the following permittee is administratively authorized to produce or distribute reclaimed water in accordance with the information contained in the permit application, the Water Reclamation and Reuse Addendum to an Application, this administrative authorization cover page, and the standards and conditions as set forth herein.

This administrative authorization shall remain in effect until expiration of the above permit for the discharge, at which time the standards and conditions of the administrative authorization shall be incorporated into the permit or eliminated.

Permittee:	Loudoun Water
Facility Name:	Broad Run Water Reclamation Facility
County:	Loudoun
Facility Location:	44865 Loudoun Water Way, Ashburn, Virginia

Thomas A. Faha

Thomas A. Faha
Director, Northern Regional Office
Department of Environmental Quality

12-15-09
Date

A. Standards and Monitoring Requirements

1. Level 1 for Cooling Towers, Chilling Water, Fire Protection, Landscape Irrigation, Non-Residential Toilet Flushing, WWTP Non-potable water
   a. During the period beginning with the issuance of a Certificate to Operate (CTO) for the reclamation system and ending with the permit expiration date, the permittee is required to monitor pollutants in the reclaimed water as described below for reuses specified in the Reclaimed Water Management Plan:

Parameters	Standard (1)	Units	Frequency	Sample Type
E. coli (2)	Geometric mean (3): ≤ 11	Colonies/100 ml	5D/W (4)	Grab
	CAT: 35	Colonies/100 ml	NA	Grab
Total Residual Chlorine (TRC) (5)	NL	mg/l	Continuous	Recorded
	CAT: < 1.0	mg/l	Continuous	Recorded
pH	6.0 – 9.0	Standard Units	1/Day	Grab
BOD_5	≤ 10	mg/l	1/Month	Grab
COD	Monthly average: ≤ 50	mg/l	1/Day	Grab
Turbidity (6)	Daily average (7): ≤ 2	NTU	Continuous	Recorded
	CAT: > 5	NTU	Continuous	Recorded
Reclamation System Flow (8)	Monthly average: NL	MGD	Continuous	TIRE
	Monthly maximum: NL	MGD	Continuous	TIRE
Influent Flow (9)	Monthly average: NL	MGD	Continuous	TIRE(10)
	Monthly maximum: NL	MGD	Continuous	TIRE(10)
Total Nitrogen (11)	NL	mg/l	1/Day	24 HC
Total Phosphorus (11)	NL	mg/l	1/Day	24 HC

NA = Not Applicable
CAT = Corrective action threshold
MGD = Million gallons per day
NL = No Limit
TIRE = Totalizing, indicating, and recording equipment
NTU = nephelometric turbidity unit

(1) With the exception of turbidity, standards must be met at the point of compliance (POC) designated as internal outfall 650. The POC shall be just upstream of disinfection for turbidity, at the end of the contact tank or contact period for total residual chlorine, and as specified in the approved operations and maintenance manual of the reclamation system for all other standards.
(2) After disinfection.
(3) For the purpose of calculating the geometric mean, bacterial analytical results below the detection level of the analytical method used shall be reported as values equal to the detection level.
(4) For reclamation systems treating municipal wastewater, bacterial samples shall be collected between 10:00 a.m. and 4:00 p.m. to coincide with peak flows to the reclamation system
(5) The TRC standard applies only if chlorine is used for disinfection. TRC is measured after a minimum contact time of 30 minutes at average flow or 20 minutes at peak flow.
(6) Turbidity analysis shall be performed by a continuous, on-line turbidity meter equipped with an automated data logging or recording device and an alarm to notify the operator when the CAT for turbidity in the standard for Level 1 has been reached. Compliance with the average turbidity standard shall be determined daily, based on the arithmetic mean of hourly or more frequent discrete measurements recorded during a 24-hour period. See Part III.B.8 for additional information regarding turbidity monitoring.
(7) Daily average is the arithmetic mean of hourly or more frequent discrete turbidity measurements recorded during a 24-hour period.
(8) The designated design capacity for the reclamation system is 11MGD.
(9) The design capacity of the wastewater treatment works that will divert source water or effluent to the reclamation system is 11 MGD.
(10) Influent flow shall be monitored at the head of the wastewater treatment works that will divert source water or effluent to the reclamation system/calculated as the sum of all authorized discharges to surface waters, land treatment and to reclaimed water distributions systems for reuse or directly to a reuse.
(11) There shall be no nutrient management requirements for irrigation reuse of the reclaimed water produced by the reclamation system based on an annual average concentration of total nitrogen (N) and total phosphorus (P) ≤ 8.0 and ≤ 1.0 mg/l, respectively. Annual average concentrations of total N and total P shall be the arithmetic mean of the monthly average concentrations of these nutrients for the most recent 12 consecutive months of monitoring.

B. Special Conditions for Water Reclamation and Reuse

1. Prohibitions for Reuse and Reclamation.

   The following are prohibited:

   a. Direct potable reuse;

   b. The reuse of reclaimed water for any purpose inside a residential or domestic dwelling or a building containing a residential or domestic unit;

   c. The reuse of reclaimed water to fill residential swimming pools, hot tubs or wading pools;

   d. The reuse of reclaimed water for food preparation or incorporation as an ingredient into food or beverage for human consumption;

   e. Bypass of untreated or partially treated wastewater from the reclamation system or any intermediate unit process to the point of reuse unless the bypass complies with standards and requirements specified in this permit and is for essential maintenance to assure efficient operation; and

   f. The return of reclaimed water to the reclaimed water distribution system after the reclaimed water has been delivered to an end user.

2. Nuisance Conditions.
   There shall be no nuisance conditions (e.g., ponded water that attracts mosquitoes or other vectors; strong odors that the Department determines are the subject of frequent and wide spread complaints from the surrounding community; any condition determined by a court of law to be a nuisance condition) resulting from the distribution, use or storage of reclaimed water.

3. Reclamation and Reuse Reopener.
   The Board may modify or revoke and reissue this permit if any applicable standards or requirements for water reclamation and reuse promulgated under the Water Reclamation and Reuse Regulation (9VAC25-740) are more stringent than or are in addition to any standards or requirements for water reclamation and reuse contained in this permit.

4. Submittal of Monitoring Reports.
   Discharge of reclaimed water from the reclamation system to a reclaimed water distribution system, a non-system storage facility or directly to a reuse of the reclaimed water at any time for any duration within a monthly reporting period, shall require monitoring in accordance with Part III.A and submittal of a monthly monitoring report for the discharge. Results for shall be included in the monthly monitoring report submitted to the DEQ –Northern Regional Office (DEQ-NRO) by the 10th of each month for the preceding month's performance.

5. Corrective Action Threshold.
   Should reclaimed water reach the corrective action threshold (CAT) for turbidity or TRC specified in Part III.A of this permit, the operator of the reclamation system shall immediately initiate a review of treatment operations and data to identify the cause of the CAT monitoring results to bring the reclaimed water back into compliance with the standards. Resampling or diversion shall occur within one hour of first reaching the CAT. Procedures for resampling, operational review and diversion shall be as described in the approved operations and maintenance manual for the reclamation system. If subsequent monitoring results of the resamples collected within one hour of the first CAT monitoring results for turbidity or TRC continue to reach the CAT, the reclaimed water shall be considered substandard or reject water and shall be diverted to either storage for subsequent

additional treatment or retreatment or discharged to a VPDES permitted effluent disposal system provided the reject water meets the effluent limits of the permit. If the reclamation system is unattended, the diversion of reject water shall be initiated and performed with automatic equipment. There shall be no automatic restarts of distribution to reuse until the treatment problem is corrected. Failure to divert the substandard or reject water after one hour of CAT monitoring results shall be considered a violation of this permit. Upon resuming discharge of reclaimed water to the reclaimed water distribution system for which the CAT was reached, resampling for turbidity or TRC shall occur within one hour to verify proper treatment.

6. Corrective Action Threshold for Bacteria.
   Should the reclaimed water reach the CAT for *E. coli* specified in Part III.A of the VPDES permit for Level 1 reclaimed water, the operator of the reclamation system shall immediately initiate a review of treatment operations and data to identify the cause of the CAT monitoring results to bring the reclaimed water back into compliance with the standards. Procedures for operational review shall be as described in the approved operations and maintenance manual for the reclamation system. Two consecutive bacterial monitoring results that reach the CAT of the standards shall be considered a violation of this permit.

7. Failure to Resample.
   Failure to resample after determination that monitoring results are not in compliance with the CAT standards for reclaimed water in Part III.A, or to divert or discharge substandard or reject water in accordance with Part III.B.5 shall be deemed a violation of this permit.

8. Online Turbidity Meter.
   Should the on-line turbidity meter for the reclamation system/satellite reclamation system go out of service for either planned or unplanned repair, samples shall be manually collected for turbidity analysis at four-hour intervals up to a maximum of five days. Following the five-day period of repair, continuous, on-line monitoring with a turbidity meter shall resume.

9. Operations & Maintenance Manual.
   Within 90 days of placing the new reclamation system into operation, the permittee shall submit a new or revised operations and maintenance manual for the system to the DEQ-NRO. This document is an enforceable part of the permit that shall reflect the practices and procedures followed by the permittee to ensure compliance with the permit. The permittee shall maintain the manual and any changes in the practices and procedures followed by the permittee shall be documented and submitted to the DEQ-NRO for approval within 90 days of the effective date of the changes. Upon approval, these revisions to the O&M Manual shall be incorporated into the existing documents and be an enforceable part of the permit.

   The operations and maintenance manual for the new reclamation system shall be maintained on site at the facility and shall, at a minimum, contain the following:
   a. A description of unit treatment processes within the new reclamation system and step-by-step instructions for the operation of these processes;
   b. For all appurtenances associated with the reclamation system (i.e., storage facilities, distribution system, etc.), a description of each, step-by-step instructions for their operation, and a description of their maintenance;
   c. Routine maintenance and schedules of maintenance for each unit treatment process in the system;
   d. The criteria and equipment used to make continuous determinations of the acceptability of the reclaimed water being produced and alarm set points for parameters measured by continuous on-line monitoring equipment;

e. Descriptions of the following that shall comply with the standard and conditions of this permit:
   (1) Reclaimed water sampling and monitoring procedures and equipment. This shall include, but is not limited to, a description of sample handling, preservation and chemical analyses; and calibration and schedules of calibration for monitoring equipment;
   (2) The sampling location[s] for the point[s] of compliance; and
   (3) Control system, alarm functions, record keeping and reports;
f. Hours of reclamation system operation, hours that the system will be staffed, procedures to be followed by the staff during a period when an operator is not present at the system, and training of the staff regarding operation and maintenance of the system;
g. The physical steps and procedures to be followed by the operator when substandard water is being produced, including resampling and operational review required in accordance with Part III.B.5 and 6 of this permit;
h. The physical steps and procedures to be followed by the operator when the treatment works returns to normal operation and acceptable quality reclaimed water is again being produced;
i. Responsible officials and their duties, roles and contact information;
j. Information necessary for the proper management of sludge or residuals from reclamation treatment;
k. A contingency plan to eliminate or minimize the potential for untreated or inadequately treated water to be delivered to reuse areas. The plan shall, among other things:
   (1) Identifying persons responsible for implementing the contingency plan and their contact information;
   (2) Reference and be coordinated with the education and notification program contained in the approved RWM Plan for any release of untreated or inadequately treated water to the reclaimed water distribution system;
l. Location of back up or replacement parts critical to the operation of unit treatment processes within the reclamation system;
m. A list of chemicals and materials in storage areas and the location of storage areas; and
n. A plan for inactivation or closure of the reclamation system specifying what steps will be taken to protect the environment and public health. At a minimum, the closure plans shall include a list of all waste products remaining at the facility, information characterizing each waste (i.e., volume, percent solids, nutrient content, etc.), and a description of procedures to remove or properly dispose of the these wastes.

The operations and maintenance manual for the reclaimed water distribution system shall, at a minimum, contain the following:

a. A description of all components within the distribution system and step-by-step instructions for the operation of specific mechanical components;
b. Routine and unplanned inspection of the distribution system, including required inspections for the cross-connection and backflow prevention program contained in the approved RWM Plan;
c. Routine maintenance and schedules of maintenance for all components of the distribution system. Maintenance shall include, but is not be limited to, initial and routine flushing of the distribution system, measures to prevent or minimize corrosion, fouling and clogging of distribution lines; and detection and repair of broken distribution lines, flow meters or pumping equipment;
d. Procedures to handle and dispose of any wastes or wastewater generated by maintenance of the distribution system in a manner protective of the environment; and
e. A plan for inactivation or closure of the reclaimed water distribution system specifying what steps will be taken to protect the environment and public health.

10. 95% Capacity Reopener.
When the monthly average flow into the reclamation system reaches 95% of the designated design capacity authorized by this permit for each month of any 3 consecutive month period, a written notice and a plan of action for ensuring continued compliance with the terms of this permit shall be submitted to the DEQ-NRO. The written notice shall be submitted within 30 days and the plan of action shall be received at the DEQ-NRO no later than 90 days from the third consecutive month for which the flow reached 95% of the designated design capacity. The plan of action shall include the necessary steps and a prompt schedule of implementation for controlling any current problem, or any problem which could be reasonably anticipated, resulting from high flows entering the reclamation system. Failure to submit an adequate plan in a timely manner shall be deemed a violation of this permit.

11. BNR Reopener.
When the annual average concentration of total nitrogen (N) or total phosphorus (P) in the reclaimed water exceeds 8.0 mg/l or 1.0 mg/l, respectively, for the preceding calendar year (January through December), a written notice of such nutrient reduction failure and a plan of action for ensuring the reclamation system achieves BNR treatment of the reclaimed water shall be submitted by the permittee to the DEQ-NRO for review and approval. The written notice shall be submitted by February 1 and the plan of action shall be submitted no later than April 1. The plan of action shall include the necessary steps and a prompt schedule of implementation for the reclamation system to achieve BNR treatment. Upon its approval, said plan and schedule shall become a part of and enforceable under the provisions of this permit. Failure to submit the required notice or failure to submit an adequate plan in a timely manner shall be deemed a violation of this permit.

12. Minimizing Losses.
The reclaimed water distribution system shall be maintained to minimize losses and to ensure safe and reliable conveyance of reclaimed water, such that the reclaimed water in the distribution system will not be degraded to a quality that violates the standards in this permit for the intended reuses of the reclaimed water specified in the approved Reclaimed Water Management (RWM) Plan.

13. Storage of Reject Water.
All storage facilities of reject water and reclaimed water (system and non-system), including landscape impoundments used for non-system storage of reclaimed water, shall be designed and operated to prevent a discharge to surface waters of the state except in the event of a storm greater than the 25-year 24-hour storm.

14. Freeboard.
The permittee shall maintain a minimum freeboard of two feet at all times in the reject water storage facility. Non-compliance with the minimum two-foot freeboard requirement at any time shall be reported orally and in writing by the permittee to the DEQ-NRO in accordance with Part II.I of the VPDES permit.

15. Storage Inventory.
    A current inventory of reject water storage, system storage and non-system storage facilities located within the service area of the approved RWM plan shall be maintained. For the addition of new storage facilities to the inventory after permit reissuance, the permittee shall submit to the DEQ-NRO an amended inventory at least 30 days before reclaimed water will be introduced into the new storage facilities. An inventory of reject water storage, system storage and non-system storage facilities shall include the following:
    a. Name or identifier for each storage facility,
    b. Location of each storage facility (including latitude and longitude),
    c. Function of each storage facility (i.e., reject water storage, system storage or non-system storage),
    d. Type of each storage facility (i.e., covered tank, uncovered tank, lined pond, unlined pond, etc.), and
    e. Location (latitude and longitude) and distance of the nearest potable water supply well and spring, and public water supply intake, to each storage facility within 450 feet of that facility.

16. Preliminary Engineering Report.
    A preliminary engineering report shall be submitted for new reclamation system, satellite reclamation system or reclaimed water distribution system; or for the modification or expansion of the same facilities where they already exist. At the request of the permittee, the DEQ-NRO may waive the need for a preliminary engineering report or portions of a preliminary engineering report for modification or expansion of an existing reclamation system, satellite reclamation system or reclaimed water distributions system determined by the scope of the proposed project.

17. CTC/CTO.
    The permittee shall not cause or allow the construction, expansion or modification, and the operation of the reclamation system except in compliance with a certificate to construct (CTC) and a certificate to operate (CTO), respectively, issued by the DEQ.

18. Public Access.
    There shall be no uncontrolled public access to the reclamation system.

19. Advisory Signs.
    For all reuses of reclaimed water treated to Level 1, advisory signs or placards shall be posted within and at the boundaries of reuse areas, and shall display a non-potable water warning statement and symbol, and other necessary information as described in 9VAC25-740.

20. Placement of Advisory Signs.
    Advisory signs shall be posted adjacent to impoundments or ponds, including landscape impoundments, used for non-system storage of reclaimed water.

21. Advisory Signs for Industrial Sites.
    For industrial reuses, advisory signs shall be posted around those areas of the industrial site where reclaimed water is used and at the main entrances to the industrial site to notify employees and the visiting public of the reclaimed water reuse. Access control beyond what is normally provided by the industry is not required.

22. Supplemental Irrigation and Salt Accumulation.
All irrigation reuses of reclaimed water shall be supplemental irrigation, which in combination with rainfall, meets but does not exceed the water necessary to maximize production or optimize growth of the irrigated vegetation. For all bulk irrigation reuse sites identified in the reclaimed water management plan for the permitted reclamation system, the rate of supplemental irrigation shall be calculated for every day that irrigation with reclaimed water occurs.

Where it is demonstrated by the permittee or an end user other than the permittee that salts will accumulate or have accumulated in the soil of an irrigation reuse site to concentrations that adversely affect the productivity or growth of the irrigated vegetation, and the application of reclaimed water will not contribute or has not contributed significantly to the salt problem, an additional volume of reclaimed water less than or equal to 10% of the water lost to evapotranspiration by the irrigated vegetation may be used for leaching and shall be included in the calculation of supplemental irrigation. Where it is demonstrated by the permittee or an end user other than the permittee that salts will accumulate or have accumulated in the soil of an irrigation reuse site to concentrations that adversely affect the productivity or growth of the irrigated vegetation, and the application of reclaimed water will contribute or has contributed significantly to the salt problem, no additional reclaimed water shall be applied for the purpose of leaching salts from the soil at the site. Any additional volume of water required for leaching that is not or can not be reclaimed water (e.g., rainwater, potable water, etc.) shall be included in the calculation of supplemental irrigation.

23. Irrigation Requirements.
For all irrigation reuses of reclaimed water, the following shall be required:
   a. There shall be no application of reclaimed water to the ground when it is saturated, frozen or covered with ice or snow, and during periods of rainfall.
   b. The chosen method of irrigation shall minimize human contact with the reclaimed water.
   c. Reclaimed water shall be prevented from coming into contact with drinking fountains, water coolers, or eating surfaces.
   d. Methodology for determining supplemental rates shall be included in the Service Agreement.

24. Overspray from Irrigation.
Overspray of surface waters, including wetlands, from irrigation or other reuses of reclaimed water is prohibited.

25. Irrigation Setbacks.
For sites irrigated with reclaimed water meeting a minimum of Level 1 standards contained in Part III.A of this permit, the following setback distances are required:

a. Potable water supply wells and springs, and public water supply intakes	100 feet
b. Non-potable water supply wells	10 feet
c. Limestone rock outcrops and sinkholes	50 feet

No setback distances are required from occupied dwellings and outdoor eating, drinking and bathing facilities. However, aerosol formation shall be minimized within 100 feet of occupied dwellings and outdoor eating, drinking and bathing facilities through the use of low trajectory nozzles for spray irrigation, above-ground drip irrigation, or other means.

26. Irrigation Setback Waivers.
For sites irrigated with reclaimed water meeting the standards contained in Part III.A of this permit, the setback distances specified in Part III.B.25 may be reduced as follows with the prior approval of the DEQ-NRO:

a. Up to but not exceeding 50 % from occupied dwellings and areas accessible to the public unless alternative measures are implemented to provide an equivalent level of public health protection. Such measures shall include, but are not limited to, disinfection of the reclaimed water equivalent to meet Level 1 standards contained in Part III.A of this authorization, application of the reclaimed water by methods that minimize aerosol formation (e.g., low trajectory nozzles for spray irrigation, above-ground drip irrigation), installation of permanent physical barriers to prevent migration of aerosols from the reclaimed water irrigation site, or any combination thereof. Written consent of affected landowners is required to reduce setback distances from occupied dwellings.

b. Up to 100 % from property lines with written consent from adjacent landowners.

c. To but not less than 100 feet from potable water supply wells and springs, or public water supply intakes where it is demonstrated that disinfection of the reclaimed water is equivalent to Level 1 standards contained in Part I.A of this permit, and there are no other constituents of the reclaimed water present in quantities sufficient to be harmful to human health.

d. To but not less than 25 feet from surface waters, including wetlands, where reclaimed water shall be applied by methods that minimize aerosol formation (e.g., low trajectory nozzles for spray irrigation, above-ground drip irrigation); or permanent physical barriers are installed to prevent the migration of aerosols from the reclaimed water irrigation site to surface waters.

27. Multiple Setbacks.
For irrigation reuses where more than one setback distance may apply, the greater setback distance shall govern.

28. Measurement of Setbacks.
Unless specifically stated otherwise, all setback distances shall be measured horizontally.

29. Cooling Tower Spray.
Windblown spray generated by once-through cooling or recirculating cooling towers that reuse reclaimed water meeting the standards specified in Part III.A of this authorization, shall not reach areas accessible to workers or the public unless Level 1 disinfection specified in Part III.A of this authorization is provided.

30. Worker Contact.
Worker contact with reclaimed water meeting the standards specified in Part III.A of this authorization shall be minimized. Level 1 disinfection specified in Part III.A of this authorization, shall be provided when worker contact with the reclaimed water is likely.

31. Reclaimed Water Failure.
Where treatment of the reclaimed water fails more than once during a seven-day period to comply with Level 1 disinfection reclaimed water standards contained in Part III.A of this permit for the protection of human health, and the non-compliant reclaimed water has been discharged to the reclaimed water distribution system, the permittee shall notify the end user in accordance with the permittee's approved education and notification program of the treatment failures and advise the end

user of precautions to be taken to protect public health when using the reclaimed water in areas accessible to the public or where human contact with the reclaimed water is likely. These precautions shall be implemented for a minimum of seven days. Where reclaimed water service to end users will be interrupted due to planned causes, such as scheduled repairs, the permittee shall provide advance notice to end users of the anticipated date and duration of the interrupted service. Where reclaimed water service to end users is disrupted by unplanned causes, such as an upset at the reclamation system, the permittee shall notify end users and the affected public of the disrupted service if it can not or will not be restored within eight hours of discovery.

The permittee shall also describe and report all notifications of end users and the affected public for causes described above in accordance with Part III.B.32.

32. New End Users.
For the addition of new end users not contained in the original reclaimed water management (RWM) plan submitted with the application for a permit, the permittee shall submit to the DEQ-NRO an amendment to the RWM plan identifying new end users not less than 30 days prior to connection and reclaimed water service to these users. For each new end user, the permittee shall also provide all applicable information required by the Water Reclamation and Reuse Application Addendum.

33. Interruption of Reclaimed Water Supply.
For each interruption or loss of reclaimed water supply, the permittee shall report to the DEQ-NRO in writing the following information by the 10th of the month following the month in which the interruption or loss of reclaimed water supply occurs:
   a. The service area affected by the interruption or loss of reclaimed water supply;
   b. The initial date and time of the interruption or loss of reclaimed water supply and duration;
   c. The cause of interruption or loss of reclaimed water supply, additionally indicating whether the cause was planned or unplanned; and
   d. If the interruption was unplanned, describe the steps taken to correct the problem and to prevent the problem from recurring.

Each discharge of any untreated or partially treated water to the service area of intended reuse that fails to comply with reclaimed water standards contained in Part III.A shall be reported by the permittee as a noncompliance in accordance with Part II.I of this permit.

34. Recordkeeping.

In addition to records specified in Part II.B of the VPDES permit, the permittee shall maintain the following at the reclamation system for the period specified in Part II.B:

   a. Water reclamation and reuse operating records to include all analyses required for reclaimed water in Part III.A of this permit, records of operational problems, alarm failures, unit process and equipment breakdowns, diversions to reject storage or emergency storage, discharge to another permitted reuse system requiring a lower level of treatment, or disposal via a permitted effluent discharge; and all corrective or preventive action taken.

   b. A monthly summary of the operating records specified in a. of this condition.

35. Annual Water Reclamation and Reuse Report.
The permittee shall submit an annual report for the reclaimed water distribution system covering a 12-month period from January 1 through December 31 to the DEQ-NRO on or before February 10 of the following year. The annual report shall, at a minimum, include:

    a. The estimated volume of reclaimed water distributed to the service area of the RWM plan, reported as monthly totals; and
    b. A summary of ongoing education and notification program activities. The summary shall include, at a minimum:
        (1) Copies of educational materials,
        (2) The number and duration of notifications to end users per month for the following causes:
            (a) More than one treatment failure within a 7-day period at the reclamation system with subsequent discharge to the reclaimed water distribution system,
            (b) Planned disruption of reclaimed water service to end users, and
            (c) Unplanned disruption of reclaimed water service to end users.

36. Determining Supplemental Irrigation Rates.
Prior to commencing bulk irrigation reuse, the permittee shall submit for review and approval to DEQ-NRO the method for determining the supplemental irrigation rate.

37. Notification Requirements.
The permittee shall have procedures in place to notify Fairfax Water, DEQ-NRO, and the Virginia Department of Health of any release from the reclaimed water distribution system within 24 hours of the release. The notification shall include the location of the release and the estimated volume released.

Canham, Robert

From: Thompson,Alison [Alison.Thompson@deq.virginia.gov]
Sent: Tuesday, December 22, 2009 1:39 PM
To: Sitter, Liz; Broderick, Tom; Canham, Robert
Subject: additional reporting form
Attachments: Additional Reporting for Reclamation Systems Authorized by or in Association with a VPDES Permit.doc

<<Additional Reporting for Reclamation Systems Authorized by or in Association with a VPDES Permit.doc>>

Hey guys,

This is another form that is necessary for the Reclamation and Reuse. It got lost in the shuffle.

Alison L. Thompson

Water Permit Writer/Technical Reviewer

Virginia Department of Environmental Quality

Northern Regional Office

13901 Crown Court

Woodbridge, VA 22193

(703)583-3834

New email address: alison.thompson@deq.virginia.gov

Additional Reporting for Reclamation Systems Authorized by or in Association with a VPDES Permit

CORRECTIVE ACTION THRESHOLD (CAT) OCCURRENCES	CAT PARAMETER	NUMBER. OF CAT OCCURRENCES[1.]	NUMBER OF CAT DIVERSIONS[2.]
	TURBIDITY ☐		
	TRC ☐		

1. A corrective action threshold (CAT) occurrence is an event initiated by single measurement that exceeds the CAT for turbidity or falls below the CAT for TRC. Each measurement made during a CAT occurrence does not represent a separate CAT occurrence.
2. On a separate sheet attached to the monthly monitoring report of the VPDES permit, indicate for **each turbidity or TRC CAT diversion** the date and time of the diversion, the first measurement of the turbidity or TRC CAT occurrence, the period between the first measurement of the turbidity or TRC CAT occurrence and the diversion, the non-compliant CAT measurement of turbidity or TRC resulting in the diversion, and the duration of the diversion.
3. On a separate sheet attached to the monthly monitoring report of the VPDES permit, provide **for each bypass occurrence** a general description of circumstances resulting in the bypass of the [***Choose one:*** reclamation system/satellite reclamation system/reclaimed water distribution system *(**Note:** Only applicable where the reclaimed water distribution system has reclaimed water monitoring requirements)*] and appurtenances, the flow of the bypass, the duration of the bypass, and whether the water of the bypass did or did not comply with the reclaimed water standards of the permit.

Have there been two or more consecutive monitoring results greater than the CAT for *E. coli* within monitoring period of this report? ☐ Yes ☐ No (Submit the Monthly Log Sheet for Reclaimed Water Bacterial Monitoring with this report to the DEQ-NRO)

Were any bacterial monitoring samples collected outside the period of 10:00 a.m. to 4:00 p.m.? ☐ Yes ☐ No

I hereby certify under penalty of law that this document and all attached report forms 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.	OPERATOR IN RESPONSIBLE CHARGE			DATE		
	TYPED OR PRINTED NAME	SIGNATURE	CERTIFICATE NO.	YR	MO	DA
	PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT			DATE		
	TYPED OR PRINTED NAME	SIGNATURE	TELEPHONE	YR	MO	DA

Appendix D
Reclaimed Water System

Appendix D
Reclaimed Water Customers and Distribution

Reclaimed Water Service Area

Over the past several years, Loudoun Water has continued to advance the scope of their reuse program and to work through the various stages of program development. The project team worked with County planners to create a list of potential reuse customers. This list was narrowed to potential customers and usage rates, and future capacity estimates. Peaking factors were also estimated to determine potential main segments/trunk lines and possible pumping and distribution needs.

Figure D-1 shows the approximate location of the potential reuse customers for Loudoun Water. As shown, there are several active developments located within the proposed reuse water service area that have contacted Loudoun Water to express interest in water reuse.

The potential list of reuse customers that Loudoun Water has identified is provided below in **Table D-1.** This table also identifies the sub-area location of the customer and whether the service has been established to these customers.

Figure D-2 shows the planned development of the reclaimed water distribution system with time phasing.

Figure D-3 presents the water balance model for BRWRF. As can be seen from the model, the total peak flow through 2012 is 5.06 mgd. Currently BRWRF averages 4.04 mgd, meaning that Loudoun Water will need to provide storage for a minimum of 1.02 MG. Loudoun Water plans to construct a 1.6 MG tank; therefore the system will be able to provide reclaimed water to satisfy peak demands through 2012.

Table D-1
Existing and Potential Customer Information in Loudoun Water Service Area

ID. No.	Customer	Customer Information	Estimated Avg. (mgd)	Estimated Peak (mgd)	Timing for connection	Subarea	Built (Y/N)
1	BRWRF	Plant water (W3)	0.1	0.8	Connected	BRWRF Piping	Y
2	National Rural Utilities Cooperative Finance Corporation (NRUCFC)	Toilet flushing, landscape irrigation, cooling	0.57	1.44	March 2011	East Main	Y
3	Kincora: Fire & Rescue	Truck filling	0.005	0.01	Fall 2011	East Main	Y
4	Kincora: Stadium	Irrigation	0.015	0.1	Spring 2012	East Main	Y
5	Kincora: Commercial	Irrigation, Toilet and Ice Rink[1]	0.005	0.01	TBD – developer	East Main	Y
6	Dulles Town Center	Irrigation and Toilet	0.505	1.01	TBD – developer	East Main	Y
7	Visa Data Center	Data center	0.035	0.3	ASAP after re-piping at BRWRF	North Main	Y
8	One Loudoun	Irrigation and Toilet	0.05	0.1	TBD – developer	North Main	Y
9	Commonwealth Center at Ashburn	Irrigation and Toilet	0.05	0.1	TBD – developer	North Main	Y
10	GWU	Irrigation and Toilet	0.05	0.1	TBD – developer	North Main	Y
11	Merritt	Irrigation and Toilet	0.05	0.1	TBD – developer	North Main Ext	N
12	Howard Hospital Medical Institute (HHMI)	Cooling and Toilet	0.25	0.5	TBD - retrofit	North Main Ext	N
13	Community Church	Irrigation	0.05	0.1	TBD - retrofit	North Main Ext	N

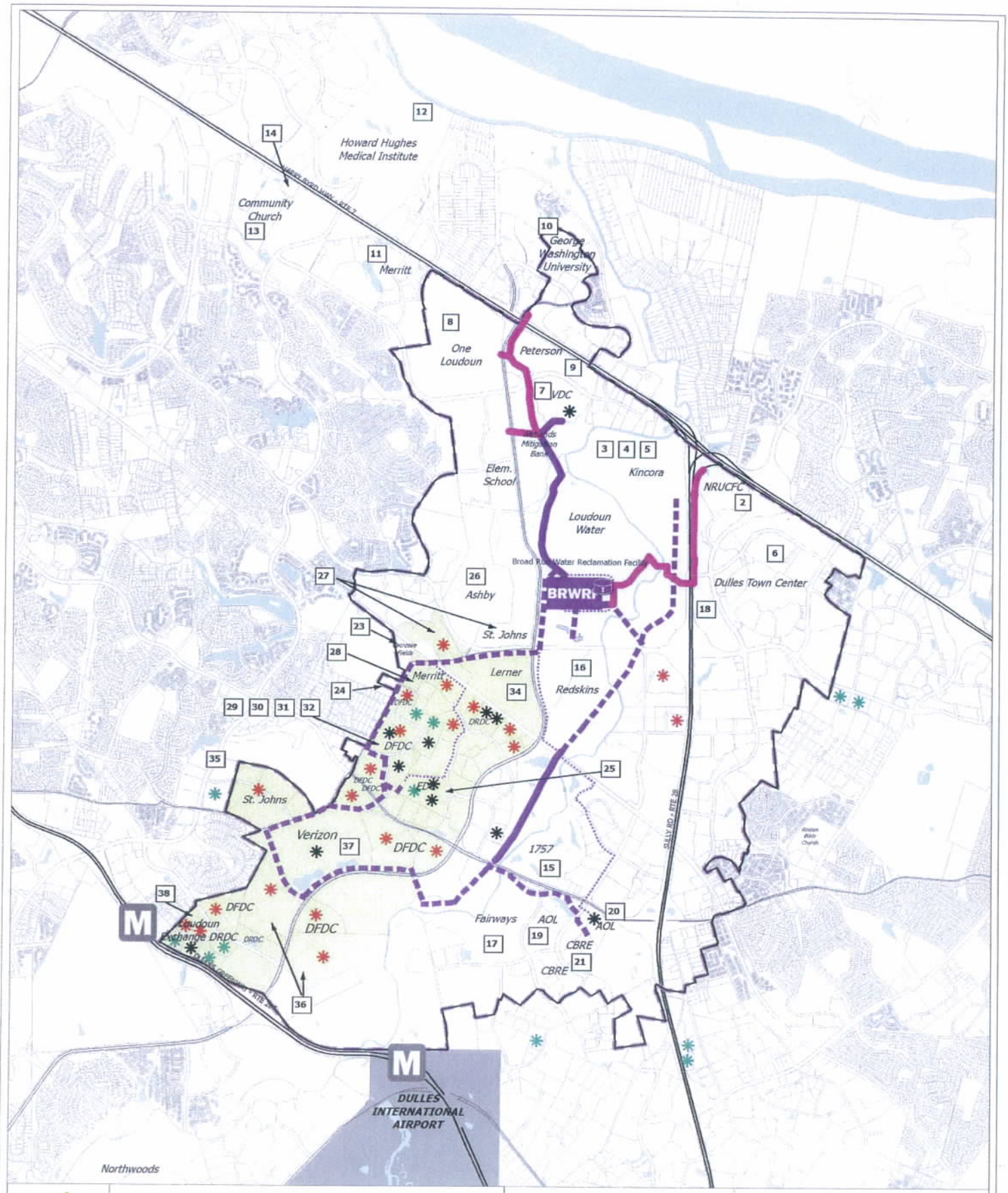
Table D-1
Existing and Potential Customer Information in Loudoun Water Service Area
(continued)

ID. No.	Customer	Customer Information	Estimated Avg. (mgd)	Estimated Peak (mgd)	Timing for connection	Subarea	Built (Y/N)
14	Johnson? Property	Irrigation	0.05	0.1	TBD – developer	North Main Ext	N
15	1757 Golf Course	Irrigation	0.05	0.1	TBD - retrofit	South Main	N
16	Redskins	Irrigation	0.015	0.1	TBD – retrofit	South Main	N
17	Fariways Office Park	Irrigation and Toilet	0.05	0.1	TBD – developer	South Main S. of Waxpool	N
18	Lerner	Irrigation and Toilet	0.1	0.2	TBD – developer	South Main S. of Waxpool	N
19	Raytheon	Irrigation and Toilet	0.05	0.1	TBD – developer	South Main S. of Waxpool	N
20	AOL	Data Center	0.025	0.05	TBD - retrofit	South Main S. of Waxpool	N
21	CBRE	Data Center	0.05	0.1	TBD – developer	South Main S. of Waxpool	N
22	SDC	Data center	0.35	0.7	September 2011	West Main	N
23	Lacrosse Fields	Irrigation	0.05	0.1	November 2011	West Main	N
24	Stonegate	Irrigation	0.005	0.01	November 2011	West Main	N
25	EDC	Data center	0.05	0.7	TBD - retrofit	West Main	N
26	Ashby Ponds	Irrigation	0.1	0.2	TBD – developer	West Main	N
27	St Johns	Irrigation and Toilet	0.05	0.1	TBD – developer	West Main	N
28	Merritt @ Beaumeade	Irrigation and Toilet	0.25	0.5	TBD – developer	West Main	N

Table D-1
Existing and Potential Customer Information in Loudoun Water Service Area
(continued)

ID. No.	Customer	Customer Information	Estimated Avg. (mgd)	Estimated Peak (mgd)	Timing for connection	Subarea	Built (Y/N)
29	DFDC - ACC4	Data center	0.1	0.2	Spring 2012	West Main	N
30	DFDC - ACC5	Data center	0.15	0.3	Spring 2012	West Main	N
31	DFDC - ACC6	Data center	0.25	0.5	Spring 2012	West Main	N
32	DFDC - ACC7	Data center	0.35	0.7	Spring 2012	West Main	N
33	Ice House	Ice Rink and Cooling[1]	0.05	0.1	TBD - retrofit	West Main	N
34	Lerner @ Beaumeade	Irrigation and Toilet	0.05	0.1	TBD – developer	West Main	N
35	St. John's Data center 2	Data center	0.35	0.7	Fall 2012	West Main S. of Waxpool	N
36	Future DF	Pending county approval of proposed use	0.25	0.5	TBD – developer	West Main S. of Waxpool	N
37	Verizon	Data center	0.25	0.5	TBD - retrofit	West Main S. of Waxpool	N
38	Loudoun Exchange	Data center	0.25	0.5	TBD – developer	West Main S. of Waxpool	N

[1] Reclaimed water will be used in the Zamboni for ice rink maintenance. The Zamboni will not spray water, and the water distributed will freeze instantly upon contact with the ice, so human contact with reclaimed water will be limited.



LOUDOUN WATER

FOR INTERNAL USE ONLY

Legend

- Water Cooled Data Center
- Air Cooled Data Center
- Future Data Center
- Future Tank
- Under Construction
- Reclaimed Water Line
- Possible Looping
- Planned RW Line
- Potential Initial Service Area
- Major Road
- Secondary Road
- Parcels
- Water Body
- Data Center Corridor
- Airport
- Future Metrorail Station

N

0 0.25 0.5 1 Mile

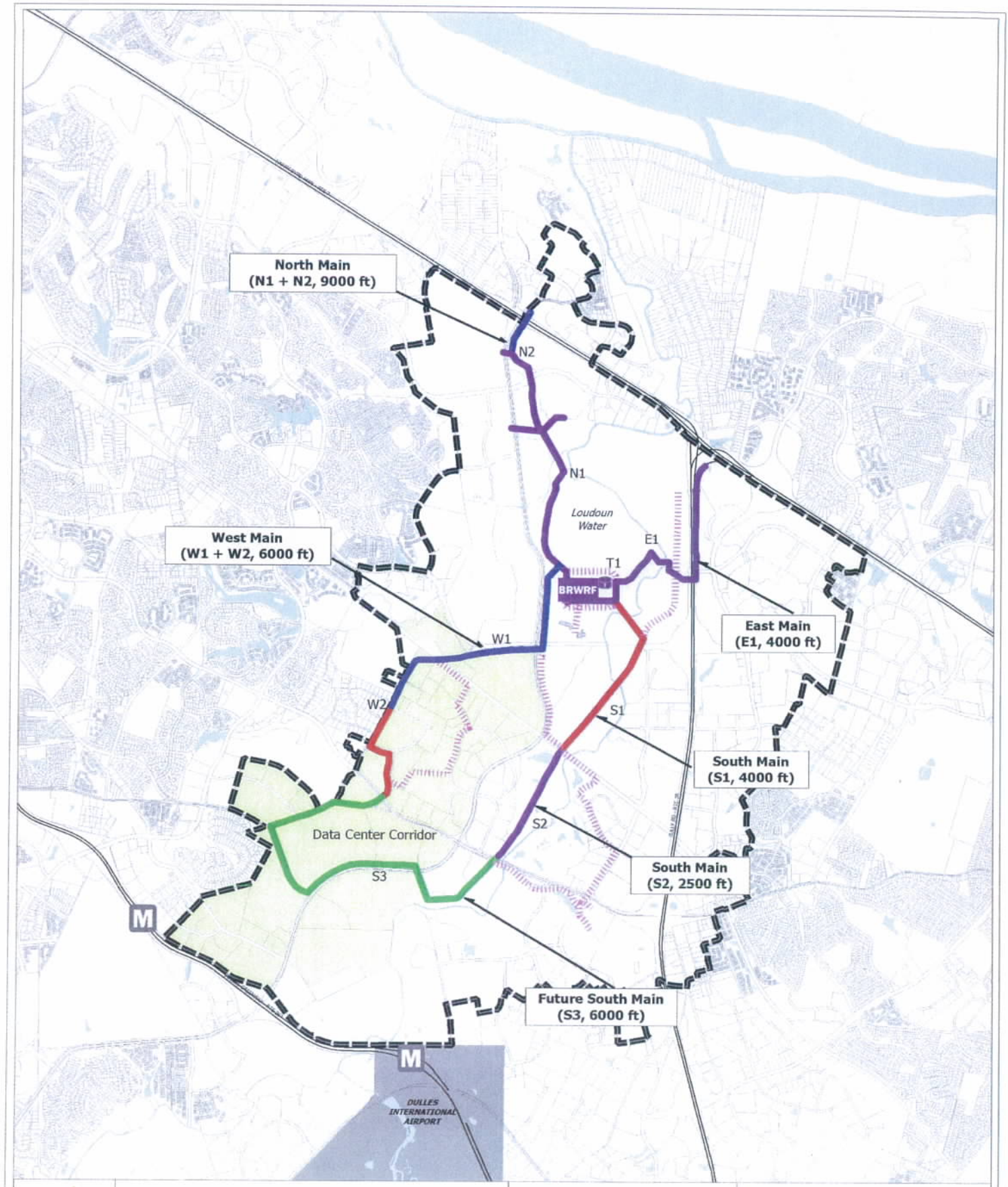
0 2,500 5,000 Feet

Reclaimed Water

Reuse Customer System Map

Figure D-1

July 2011



LOUDOUN WATER

FOR INFORMAL USE ONLY

Legend

Reclaimed Water Main
- Existing
- 2011
- 2012
- 2013
- Future
- Potential Service Area

- Major Road
- Secondary Road
- Parcels
- Data Center Corridor
- Water Body
- Airport

M Future Metrorail Station

N

0 0.25 0.5 1 Mile

0 2,500 5,000 Feet

Reclaimed Water

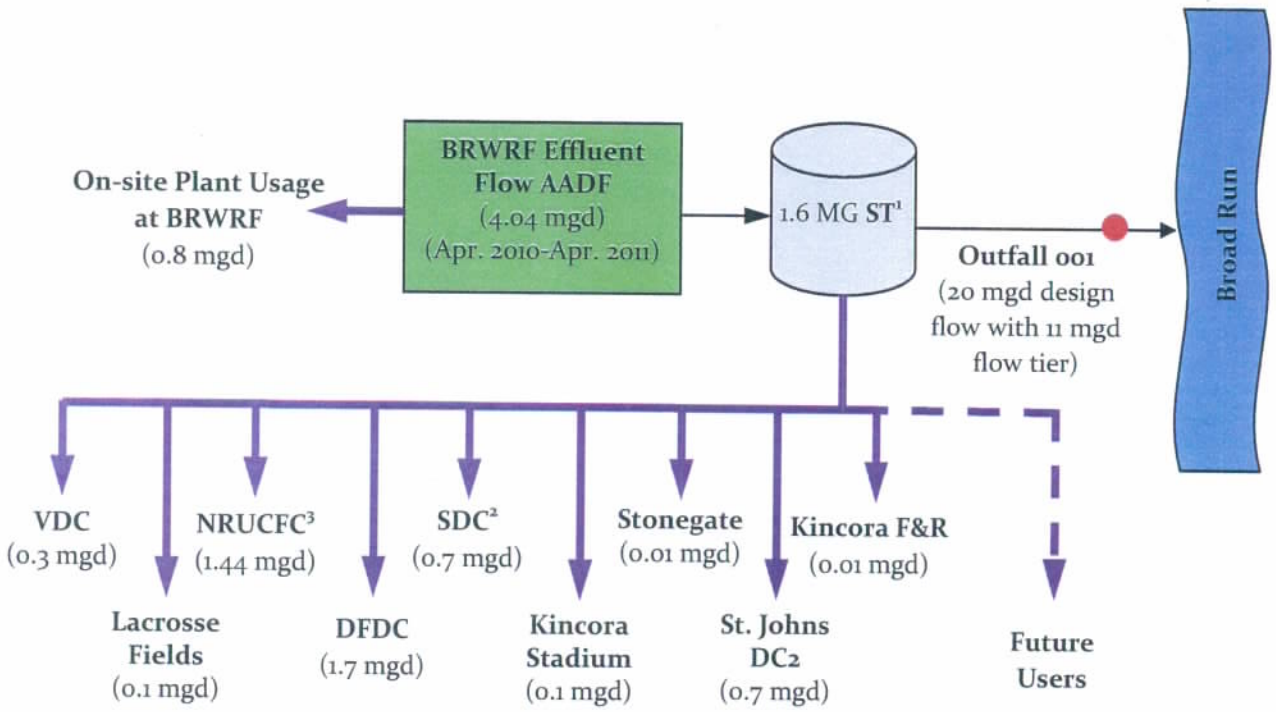
Existing & Proposed Pipe Routing

System Map

Figure D-2

July 2011

Figure D-3
BRWRF Reclaimed Water Balance (Annual Basis) Through 2012



Notes: [1]Indicates new reclaimed water storage tank to be constructed.

[2] The SDC's proposed reclaimed water uses include: chilling water (0.29 mgd), irrigation (0.22 mgd), toilet flushing (0.0072 mgd), cooling water (0.03 mgd), and office building toilet flushing & irrigation (0.18 mgd).

[3] The NRUCFC's proposed reclaimed water uses include: fire protection (1.44 mgd), irrigation (0.14 mgd), and combined toilet flushing and cooling water (0.43 mgd).

Appendix E

Reuse Service Agreement Template – Filling Station

LOUDOUN WATER
Operations and Maintenance Division
44771 Loudoun Water Way Ashburn, Virginia 20147
Tel 571.291.7878, Fax 703.729.9494

RECLAIMED WATER DISPENSING STATION USE PERMIT
SERVICE AGREEMENT

This permit authorizes the customer to obtain water from Loudoun Water's Reclaimed Water Dispensing station only.

BUSINESS NAME			
BILLING ADDRESS			
OFFICE PHONE NO.		FEDERAL TAX ID NO.	
VIRGINIA BUSINESS LICENSE NO.		or LOUDOUN CO. NO.	
CONTACT PERSON		MOBILE PHONE NO.	
INTENDED USES			
CODE ISSUE DATE		**EXPIRATION DATE**	

CUSTOMER COMPLIANCE (Initial that you have read, understand and shall comply with each requirement)

Initials

- [ ] Damage to the dispensing station shall be reported immediately to Loudoun Water by calling 571.291.7836.
- [ ] **Accepted** uses of the dispensing station include the following:
  - [ ] Construction: truck wash, dust control, soil compaction
  - [ ] Landscaping: a one time solution for watering new sod, trees, etc.
- [ ] **Unacceptable** uses of the dispensing station include, but are not limited to, the following:
  - [ ] A source of potable water
  - [ ] Supplying an irrigation system (defined as a watering method with pipes/hoses underground)
  - [ ] Pool Filling, pond filling
  - [ ] Supplying to a customer for use
- [ ] Customer Access codes shall not be shared with anyone outside the Business entity listed above.
- [ ] If you suspect that someone is using your code without authorization it shall be reported immediately to Loudoun Water by calling 571.291.7836.
- [ ] The dispensing station operates Monday through Friday 7:00 am-5:00 pm.
- [ ] Reclaimed Water shall meet the water truck inspection requirements, as described below.
- [ ] Reclaimed Water signage on your truck is required and shall read "Reclaimed Water In Use – Do Not Drink"
- [ ] If this truck is not exclusively for reclaimed water use, any parts that shall come in contact with a potable water system shall be disinfected prior to filling with potable water.

EXPIRATION DATE:

- *This agreement is only valid for one year from the date the Customer Access code was issued.* At this time, you have two options:
  - Stop your use of the dispensing station and close your account, or
  - If you choose to use this dispensing station for another year, you shall reapply to Loudoun Water. This process can take up to two weeks, so please plan accordingly.
- This permit shall be revoked without notice for failure to comply with all instructions included on this permit or under emergency circumstances as determined by Loudoun Water.

OTHER CHARGES AND PENALTIES:

- A minimum **charge** of **$10.00** per month shall be assessed whether the dispensing station is used or not.
- A **penalty** of **$1,000.00** shall be imposed for each instance of unauthorized or improper use of the dispensing station based upon above stated regulations. The customer is responsible for any damage resulting from this instance.
- **Unlawful tampering with waterworks results in a Class 6 Felony, which carries a maximum penalty of five years in jail. Maliciously tampering with hydrants results in a Class 3 Felony, which carries a maximum penalty of 20 years in prison and a fine up to $100,000.**

OPERATING INSTRUCTIONS:

1. Enter your Customer Access Code, followed by #.
2. Enter your Password.
3. Dispense water into the water truck.

AREA OF AUTHORIZED USE:

Reclaimed water from Loudoun Water's dispensing station shall be used only within Loudoun Water's service area. This is generally defined as the area east of Goose Creek to the Fairfax County line. Loudoun Water's service area DOES NOT include the entire county. Reclaimed water from Loudoun Water's dispensing station SHALL NOT BE USED in any of Loudoun County's incorporated towns, such as Leesburg, Purcellville, Hamilton, Round Hill, Lovettsville, and Middleburg, or outside the boundary of Goose Creek and the Fairfax County line. If there are any questions, please contact our office for further clarification at 571.291.7836 Monday through Friday, between 7:30 am and 4:00 pm.

Reclaimed water from Loudoun Water's dispensing station SHALL NOT BE USED in any of the following areas. Contact us at anytime for an updated list or go to www.LoudounWater.org.

Incorporated Towns	Village/Hamlet Communities	
Hamilton	Beacon Hill	Raspberry Falls
Leesburg	Big Woods	Red Cedar West
Lovettsville	Courtland Rural Village	The Reserve at Rokeby
Middleburg	Lenah Run	Selma
Purcellville	Oatlands Manor	Village Green at Elysian Heights
Round Hill		

Using Loudoun Water hydrant meters in any of the County's towns, villages, hamlet communities, or anywhere outside Loudoun Water's service area is considered theft, a violation of the state regulation for water reuse and can result in fines and prosecution by the jurisdictional authorities. A $1000 penalty shall be imposed by Loudoun Water if you are found using Loudoun Water reclaimed water outside our service area,.

WATER TRUCKS:

- All water trucks and tanks to be used with this Loudoun Water dispensing station shall be inspected by Loudoun Water personnel before the Customer Access Code is issued. We are looking for either a 6" air gap or an RPZ backflow preventer. Only trucks with a **fixed pipe** shall be authorized for use with the dispensing station.
- A **$5.00** charge shall be billed for this inspection.
- A valid inspection sticker **SHALL** be affixed and in a visible location on the tank or truck at **ALL** times.
- Please provide for us the truck(s) that shall be used with this dispensing station, if applicable:

(1) Truck No. License Plate Air Gap or RPZ?	**(2)** Truck No. License Plate Air Gap or RPZ?
Inspection Date: Renewal Date:	Inspection Date: Renewal Date:

Please PRINT Name _____

Signature _____ Date: _____

LOUDOUN WATER OFFICE USE:

Issued By:	Date:	Deposit Pd: $	How Paid:
Meter No:		Meter Size:	Reading:
A hydrant wrench has been issued.		Tag Color: *ORANGE*	Tag No:
Purpose:			Rate per 1,000 gallons: $5.31 year round

AGREEMENT FOR THE DELIVERY AND USE OF RECLAIMED WATER

THIS AGREEMENT is entered into this 16th day of AUGUST, 2011, between NATIONAL RURAL UTILITIES COOPERATIVE FINANCE CORPORATION, a District of Columbia cooperative association (the "Consumer") and the LOUDOUN COUNTY SANITATION AUTHORITY d.b.a. "LOUDOUN WATER", a Virginia body politic and corporate (the "Authority").

WITNESSETH:

WHEREAS, the Authority owns, maintains and operates water treatment and reclamation facilities that produce treated effluent that meets or exceeds the water reutilization standards of the Virginia Water Reclamation and Reuse Regulations (the "Reuse Regulations") codified at 9 VAC 25-740-10 et. seq. of the Virginia Administrative Code ("Reclaimed Water"); and

WHEREAS, the Authority is willing to sell and the Consumer is willing to purchase Reclaimed Water, pursuant to the terms of this Agreement for the Delivery and Use of Reclaimed Water (the "Agreement").

NOW, THEREFORE, in consideration of the foregoing and the mutual covenants contained herein, the Authority and Consumer do hereby agree as follows:

1. SALE OF RECLAIMED WATER

A. The Authority agrees to sell and deliver to the Consumer and the Consumer agrees to purchase and accept from the Authority 12,780 gallons per day of Reclaimed Water derived from the Authority's Reclaimed Water production, storage and distribution systems (the "Authority's System"). The quantity set forth above is an estimate only, and is based on an anticipated annual usage of 4,666,000 gallons. The Customer shall have no obligation to pay for any amount other than the actual gallons delivered.

B. For the remainder of the calendar year following the date on which the Authority begins providing Reclaimed Water to the Consumer (the "Effective Date"), Reclaimed Water will cost $1.36 per thousand gallons (the "Initial Rate") and thereafter at such rate as the Authority may establish and revise from time to time as applicable to all rate payers for Reclaimed Water.

C. On or before January 1 of each year, the Authority shall provide the Consumer with a copy of that portion of the Authority's adopted budget related to the Authority's System for the succeeding year and a computation of the total estimated cost per thousand gallons of Reclaimed Water expected to be sold to the Consumer during such year, which amount shall be used for billing purposes during the year.

D. Full payment of all invoices is due within 30 days of the date of issuance. If the Consumer fails to timely fully pay any of the charges as herein provided, a late payment charge equal to ten percent (10%) of the amount due shall be added to the amount billed and shall be paid to the Authority by the Consumer. Failure to fully pay any charge within 60 days of the issuance of an invoice for such charge shall constitute an event of default.

E. The Consumer's payment to the Authority pursuant to the terms of this Agreement shall not create or constitute any ownership interest or title by the Consumer in or to any part of the Authority's System.

2. DELIVERY AND DISTRIBUTION OF RECLAIMED WATER

A. The Authority will deliver Reclaimed Water to the Consumer at the following location(s): 20701 Cooperative Way, Sterling, Virginia (the "Property"). See **Exhibit A**.

B. The Authority's System shall extend to the "Point(s) of Delivery" as shown on **Exhibit A.** The Authority is responsible for operating and maintaining the Authority's System, including those components located on the Property up to and including the Point(s) of Delivery, and also including the volumetric flow meter(s). The Consumer shall own, operate, and maintain all those components of the Reclaimed Water delivery system after the Point(s) of Delivery to the point(s) of use (the "Consumer's System"). The Authority's System and the Consumer's System, collectively, shall be the Reclaimed Water System.

(i) The Consumer shall provide a positive check-valve between the Consumer's System and any other non-potable irrigation water source(s). The Consumer shall be responsible for the cost, installation and complete operation of such check-valve. The Consumer will provide written notification to the Authority identifying any and all wells or surface water bodies connected to the Consumer's irrigation system.

(ii) The Consumer is responsible for constructing all pipes, connections, and appurtenances necessary to obtain Reclaimed Water from the Point of Delivery. Construction shall be in accordance with plans and specifications previously reviewed and approved by the Authority, final copies of which shall be submitted to the Authority for its records no more than thirty (30) calendar days subsequent to completion of construction.

C. All metering facilities installed at the Point(s) of Delivery are and shall remain the property of the Authority; said metering facilities being identified and described as follows:

Metering Location	**Meter Size**	**Reuse**	**Maximum Flow (gallons per minute)**
Central Plant Room	3-inch	cooling and toilets*	300
Central Plant Room	5/8-inch (detector)	fire suppression sprinklers	1000
Central Plant Room	1.5-inch	irrigation	95

*Consumer may meter these flows independently.

D. The Authority will operate and maintain all Reclaimed Water metering facilities, including periodic testing thereof; and whenever it determines that replacement of any metering facility is required, it will install, operate and maintain such replacement/new metering facility as may be reasonably required in terms of then current waterworks industry standards for accuracy so as to insure accurate measurement of the quantities of Reclaimed Water delivered by the Authority to the Consumer at each delivery location.

E. The aggregate of the quantities of Reclaimed Water delivered by the Authority to the Consumer as measured by each of the metering facilities that are installed shall be considered to be the total amount of Reclaimed Water delivered by the Authority to the Consumer during any specified period of time.

F. Consumer has conveyed to the Authority easements across and under the Property for the installation, operation, and maintenance of Authority's System pipes and appurtenances up to the Point of Delivery and for access to and inspection of the Reclaimed Water System (the "Easements"). The Deed of Easements is attached hereto as **Exhibit B**, and incorporated by reference and made a part of this Agreement. Upon full execution of the Deed of Easements, it shall be recorded in the land records of Loudoun County, Virginia.

G. Consumer shall provide the Authority with a sworn certificate of ownership and encumbrances regarding the Property. Consumer is responsible for obtaining and presenting to the Authority, the consent of all owners and mortgagees and any other person with a record interest in the Property [prior to the expiration date of this Agreement and the Easements] as a precondition to receipt of Reclaimed Water Services.

3. TERM OF THE AGREEMENT

This Agreement shall be effective upon later of the date first written above or the Effective date defined as the date the Consumer begins receiving Reclaimed Water from the Authority.

4. USE OF RECLAIMED WATER

A. Consumer may use the Reclaimed Water for the following non-potable reuse purposes categorized in the Virginia Reuse Regulations (9 VAC 25-740-90) and, if Consumer elects to use such Reclaimed Water, it shall conduct reuse in a manner consistent with all federal, state, and local regulations: cooling, fire suppression, toilets, irrigation and ornamental landscape uses such as fountains.

B. Not less than one hundred twenty calendar (120) days prior to the anticipated date of initiating additional reuses not identified in the Agreement, Consumer shall provide a written request for approval to the Authority. The Authority shall review these proposed additional uses and may disapprove any proposed use. Consumer shall not initiate proposed additional water reuses until an amended copy of this Agreement is received from the Authority which documents the additional uses.

C. If Consumer proposes to use Reclaimed Water for other reuses including: agriculture, sports facility irrigation, or water features/aesthetic uses, then the following conditions apply:

(i) Treatment requirements more stringent than those required in the Virginia Reuse Regulations shall be agreed upon by the Authority and Consumer for other uses not identified elsewhere in this Agreement. Any additional Reclaimed Water quality limits and treatment requirements for other specified uses will be identified in **Exhibit C**.

(ii) Color and odor limits may be agreed upon by the Authority and Consumer for other specified uses not identified elsewhere in this Agreement. Any additional color and odor limits for other uses will be identified in **Exhibit C**.

D. The Authority retains the right to terminate Reclaimed Water service immediately and without prior written notice upon its determination that the Consumer has implemented unapproved uses of Reclaimed Water that may present a public health hazard, or are in violation of federal, state, or local regulations.

5. QUALITY OF RECLAIMED WATER SUPPLY

A. The Authority shall produce and supply Reclaimed Water of a quality that meets the standards of Reuse Regulations applicable for the Consumer's approved uses outlined in Section 4A and any amendments thereto, and as provided for in **Exhibit C**.

B. The Authority makes no other warranty, and specifically makes no implied warranty, of merchantability or of fitness of the Reclaimed Water for any particular reuse or purpose, other than the purposes listed in Section 4.A and as provided for in **Exhibit C**. Specifically, the Authority makes no representation concerning productivity of properties irrigated with Reclaimed Water, or potential changes to the land, crops, or vegetation. Further, any plans, specifications, water quality analysis, or reclaimed wastewater sampling will serve to merely indicate the general quality of Reclaimed Water that will be delivered to the Consumer. Such plans, specifications, water quality analyses or treated water samples create no warranty that the Reclaimed Water delivered by the Authority will conform to these samples, but the Reclaimed Water will meet the standards set forth in Section 5.A above.

C. In the event of Reclaimed Water quality deterioration, the Authority will inform the Consumer as soon as possible after the Authority identifies such deterioration and will discontinue delivery of Reclaimed Water until the quality is restored to level required by the Reuse Regulations.

6. SERVICE DISRUPTION AND NOTIFICATION

A. The Authority shall provide the Consumer forty-eight (48) hours advanced notification for any planned service disruption.

B. The Consumer shall provide the Authority 48 hours advanced notification of any planned service disruption.

C. The Consumer and Authority shall use commercially reasonable efforts to notify one another of any unplanned service disruption within 2 hours of its occurrence.

D. If circumstances beyond the Authority's control prevent the full or partial delivery of Reclaimed Water as provided herein, the Authority shall promptly notify the Consumer by telephone and shall follow up with a letter stating the reason for the interruption of service and the anticipated duration.

E. The Consumer may draw additional Reclaimed Water, subject to availability of the Authority's Reclaimed Water supplies, above the estimated amount specified in Section 1.A. The Authority shall furnish only such Reclaimed Water as its determines in its sole discretion that the Reclaimed Water system can safely reclaim, transmit or deliver. The Authority assumes no responsibility or obligations with respect to water pressure or continuous feed of water except herein as stated.

F. Consumer will be required to restrict use of Reclaimed Water in accordance with Chapter 1046 of the Loudoun County Code, as applicable, or such other water use restrictions as the Authority shall promulgate.

7. CROSS-CONNECTION AND BACKFLOW PREVENTION

A. Direct cross-connections between the Consumer's System and any potable water supply system are not permitted.

B. The Consumer's System shall be in compliance with the cross-connection control and backflow prevention requirements of the Virginia Waterworks Regulations (12 VAC 5-590-580 et seq.), the Uniform Statewide Building Code, the Authority's Cross Connection/Backflow Prevention Program, and local building and plumbing codes.

C. Consumer may utilize potable water as a supplementary reuse source, provided there are no announced legal restrictions on such use, and there is an air gap separation of at least eight (8) inches, or twice the pipe diameter, whichever is greater, between the potable water and the Reclaimed Water or a reduced pressure principle backflow prevention device installed at the potable service connection to the reuse.

D. Consumer shall bear the cost of all backflow prevention devices in the Consumer's System. The Authority takes no responsibility for the operation and maintenance of the backflow prevention device(s).

8. DELIVERY SYSTEM DESIGN CRITERIA

The design and construction of the Consumer's System shall comply with the Reuse Regulations and the Sewage Collection and Treatment Regulations ("SCAT Regulations") of the Virginia Administrative Code.

9. CONSTRUCTION, OPERATION AND MAINTENANCE

A. Consumer will take all reasonable precautions, including signs and labeling, to clearly identify Reclaimed Water systems to prevent inadvertent human consumption.

B. The Consumer shall prepare an operations and maintenance manual for its System, which shall include, at a minimum, the following:

(i) A description of all components of the Consumer's System and step-by-step instructions for operation of specific mechanical components.

(ii) Routine maintenance and schedules of maintenance for all components of the Consumer's System.

(iii) Procedures to handle and dispose of any wastes or wastewater generated by maintenance of the delivery system in a manner protective of the environment.

C. The Consumer shall grant access to the Authority to perform routine scheduled inspections of the Consumer's System, including required inspections for the cross-connection and backflow prevention system program as specified in 9 VAC 25-740-100.C.1.g. of the Reuse Regulations, as amended. The Authority shall have the ability to take notes, make sketches, and take photographs as necessary to document the condition of the Reclaimed Water system during inspection. Records of inspections shall be kept on file at the Authority.

D. Consumer shall contact the Authority as soon as commercially reasonable if its System is unable to accept Reclaimed Water.

E. The Consumer shall use commercially reasonable efforts to ensure that all necessary personnel are trained and familiar with the proper operation and maintenance of the Consumer's System.

F. The Consumer shall use commercially reasonable efforts to comply with all applicable operations and regulatory requirements as required by the Virginia Reuse Regulations, Section 9 VAC 25-740-160, or SCAT regulations and/or any local, state, or federal regulations in the construction, operations, and maintenance of the Consumer's System.

10. ADVISORY SIGNS

Signage shall be posted, as required by Section 9 VAC 25-740-160 of the Virginia Reuse Regulations, to ensure proper use of Reclaimed Water and to protect the health and safety of the general public. Signage shall be kept in appropriate condition so that the signs are legible and free of debris, vandalism, etc. The Authority may require the Consumer to post additional signage or replace existing signage if deemed necessary.

11. STORAGE

If required by Section 9 VAC 25-740-110 of the Virginia Reuse Regulations, the Consumer is required to own, operate, and maintain the Consumer's Reclaimed Water storage facilities.

12. RECORD KEEPING

The Consumer shall use commercially reasonable efforts to maintain and submit adequate records in accordance with 9 VAC 740-190 of the Virginia Reuse Regulations. Failure to submit and maintain required records could result in termination of service by the Authority. As these regulations change from time to time, the Authority will endeavor to advise the Consumer, so that the changed reporting requirements can be met.

13. IRRIGATION

A. Consumer shall not conduct bulk irrigation as defined in 9 VAC 25-740-10 et. seq. of the Virginia Administrative Code.

14. EARLY TERMINATION OR ASSIGNMENT

A. Either party retains the right to terminate this Agreement at any time, including for any violations of this Agreement or of federal, state, or local regulations pertaining to the approved use and management of Reclaimed Water. The terminating party will provide written notification of service termination to the other party thirty (30) days prior to termination of this Agreement.

B. This Agreement may not be assigned by the Consumer without the prior written consent of the Authority, except that this Agreement may be assigned to any purchaser of all or a part of the Consumer's real property, as shown in **Exhibit B**.

15. EXCUSE FROM PERFORMANCE BY GOVERNMENTAL ACTS

If for any reason during the term of this Agreement, local, state, or federal governments or agencies fail to issue necessary permits, fail to grant necessary approvals, or shall require any change in the operation of the treatment, transmission and distribution systems for Reclaimed Water or the application and use of Reclaimed Water provided by the Authority, then to the extent that such requirements shall affect the ability of any party to perform any of the terms of this Agreement, the affected party shall be excused from the performance thereof and a new Agreement shall be negotiated by the parties in conformity with such permits, approvals, or requirements.

16. TRANSFER OR MODIFICATION OF CONSUMER'S COMMITMENT

Consumer's right to alienate or encumber the land described in **Exhibit B** shall not be restricted by this Agreement, except that Consumer shall endeavor to give the Authority written notice of any proposed sale or transfer at least thirty (30) days prior to the sale or transfer.

17. DEFAULT

The following events shall constitute events of default under this Agreement:

A. Except as provided in Section 1.D, if either party fails to keep, perform, or abide by any other term, condition, or covenant of this Agreement to be performed or observed. and does not cure such default within thirty (30) days after written notice thereof, or, if such default cannot be cured in such period, does not within thirty (30) days commence with diligence and dispatch such act or acts as shall be necessary to cure the default and shall not cure such default within a reasonable time; or

B. If any default shall occur under the terms of any agreement between the parties for potable water service or sanitary sewer service, and such default is not cured following notice to Consumer and the expiration of the cure periods provided in Section 17.A.

18. REMEDIES FOR DEFAULT

A. In the event of a default, at any time thereafter the non-defaulting party may terminate this Agreement by giving at least ten (10) days prior written notice (the "Notice of Termination") to the defaulting party and this Agreement shall terminate after the date of such notice.

B. Additionally, the Authority may, without terminating this Agreement, suspend Reclaimed Water service to Consumer upon ten (10) days written notice. Such suspension may continue for the period specified in the notice or until such time as the Consumer has corrected any breach of this Agreement to the satisfaction of the Authority. At the end of the period of suspended service, if the Consumer has not corrected the breach, the Authority may terminate this Agreement upon ten (10) days written notice to Consumer.

C. The non-defaulting party also has rights and remedies that may exist under law. All rights and remedies may be exercised successively or concurrently.

D. The sole and exclusive jurisdiction for any litigation arising from or relation to this Agreement shall be in the Circuit Court of Loudoun County, Virginia.

19. ACCESS

The Authority shall have the right, at all reasonable times, after the giving of reasonable advance notice, to enter upon the Property to review and inspect the Consumer's System and/or the Authority's System Reclaimed Water facilities and operations with respect to the conditions agreed upon herein. No advance notice shall be necessary in the event of an emergency.

20. DISCLAIMER OF THIRD PARTY BENEFICIARIES

This Agreement is solely for the benefit of the parties hereto and no right or cause of action shall accrue to, upon or by reason hereto, or for the benefit of any third party not a party hereto.

21. SEVERABILITY

If any part of this Agreement is found invalid or unenforceable by any court, such invalidity or unenforceability shall not affect the other parts of this Agreement if the rights and obligations of the parties contained therein are not materially prejudiced and if the intentions of the parties can continue to be effective. To that end, this Agreement is declared to be severable.

22. APPLICABLE LAW

This Agreement and the provisions contained herein shall be construed, controlled, and interpreted according to the laws of the Commonwealth of Virginia.

23. NOTICES

Unless otherwise specified in this Agreement, all notices or requests shall be in writing and shall be given by hand delivery or certified mail, return receipt requested, postage prepaid, addressed as follows:

If to the Authority:	With copies to:
Loudoun Water Attn: General Manager PO Box 4000 44865 Loudoun Water Way Ashburn, VA. 20146 (571) 291-7700	Jonathan P. Rak, Esquire McGuireWoods LLP 1750 Tysons Boulevard Suite 1800 McLean, VA 22102 (703) 712-5000

or to such other persons and places as the parties may specify by notice. The effective date of any notice or request shall be the date of receipt if delivered by hand, or the postmarked date thereof.

If to the Consumer:	With a copy to:	With copy to:
National Rural Utilities Cooperative Finance Corporation Attn: John Moone 2201 Cooperative Way Herndon, VA 20171 (703)709-6787	National Rural Utilities Cooperative Finance Corporation Attn: Cindy W. Gugino, Esq. 2201 Cooperative Way Herndon, VA 20171 (703)709-6781	Reed Smith LLP Attn: Benjamin F. Tompkins, Esq. 3110 Fairview Park Drive Suite 1400 Falls Church, VA 22042 (703)641-4200

24. ENTIRE AGREEMENT

This Agreement constitutes the entire agreement between the parties. Consumer agrees to abide by the provisions of the Loudoun Water Rules, Rates and Regulations and any policies and procedures which may address Reclaimed Water. Except as may be provided by Loudoun Water Rules, Rates and Regulations, policies or procedures, modifications to and waivers of the provisions herein shall not be binding unless made in writing and signed by the parties hereto.

SIGNATURES ON FOLLOWING PAGE

IN WITNESS WHEREOF, the parties hereto have set their hands and seals on the date first above written.

ATTEST:

Roberta B. Arnson
Assistant Secretary – Treasurer

NATIONAL RURAL UTILITIES COOPERATIVE FINANCE CORPORATION, a District of Columbia cooperative association

By: _____
VICE PRESIDENT, CSG

ATTEST:

Jewell R. Lilly

LOUDOUN WATER, a Virginia body politic and corporate

By: Dale C. Hammes
DALE C. HAMMES, General Manager

EXHIBIT A

LOCATION OF CUSTOMER'S PROPERTY AND POINT(S) OF DELIVERY

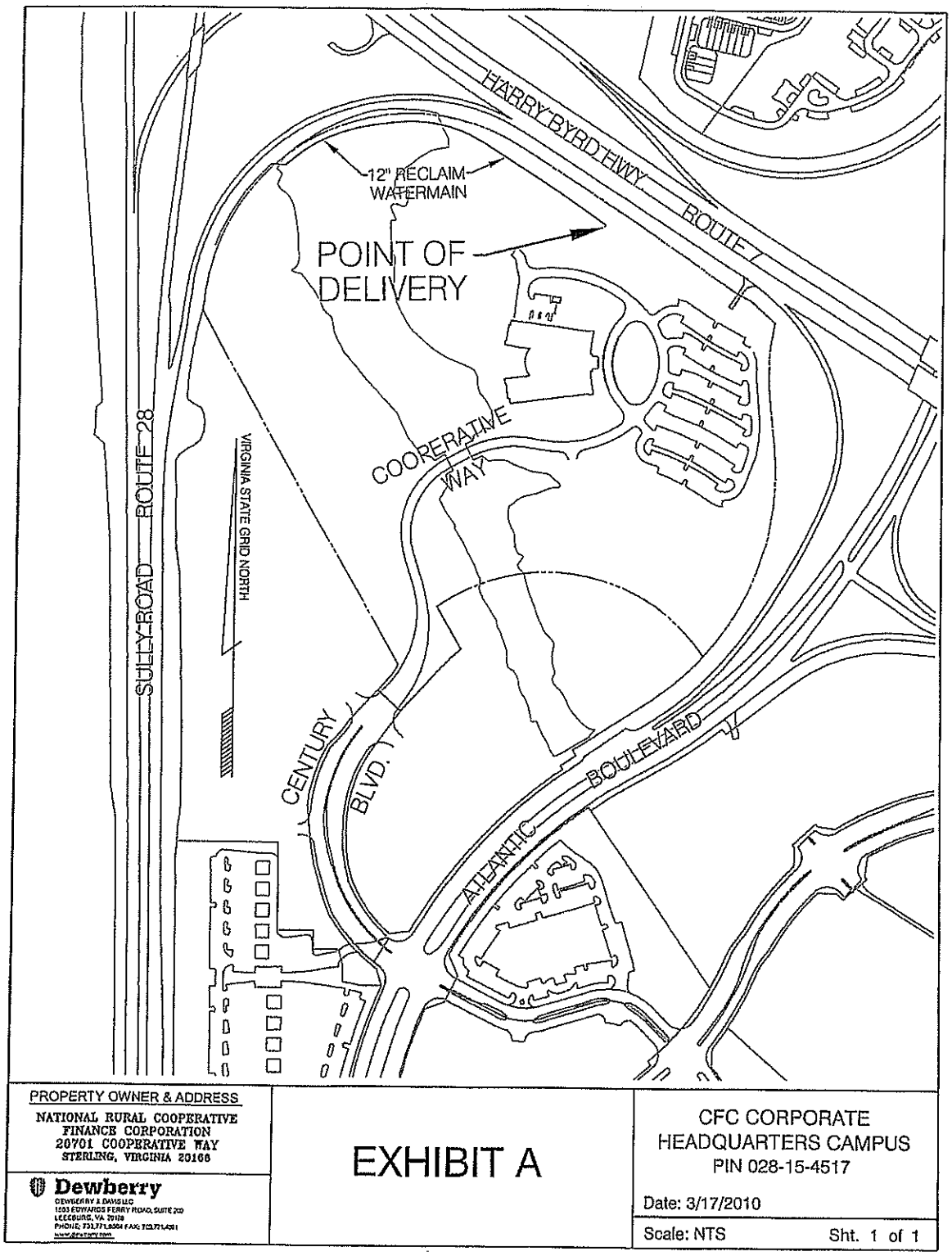


EXHIBIT B

EASEMENT SKETCH AND LEGAL DESCRIPTION

NOTES

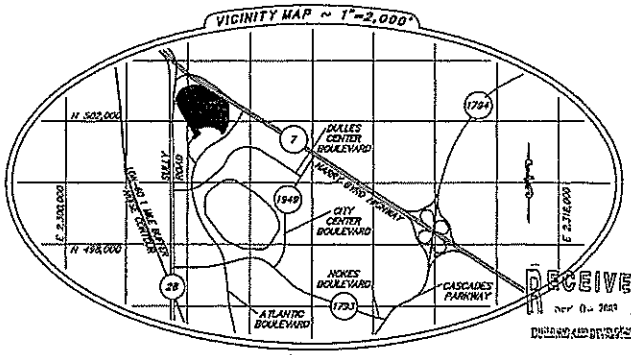
1. THE PROPERTY SHOWN HEREON IS DESIGNATED AS LOUDOUN COUNTY TAX ASSESSMENT PARCEL PIN 028-15-4517 AND IS ZONED PD-OP (PLANNED DEVELOPMENT-OFFICE PARK) AND FOD (FLOODPLAIN OVERLAY DISTRICT) AS ADMINISTERED UNDER THE 1972 LOUDOUN COUNTY ZONING ORDINANCE PER SECTION 1-103(A) OF THE REVISED 1993 LOUDOUN COUNTY ZONING ORDINANCE.
2. THIS PLAT HAS BEEN PREPARED WITHOUT THE BENEFIT OF A CURRENT TITLE REPORT AND DOES NOT PURPORT TO REFLECT ALL EASEMENTS, ENCUMBRANCES OR OTHER CIRCUMSTANCES AFFECTING THE TITLE TO THE SUBJECT PROPERTY.
3. THE PROPERTY LINES AND REFERENCE TO VIRGINIA STATE GRID NORTH ~ NAD 27 SHOWN HEREON IS PER A PLAT ENTITLED "PRELIMINARY/RECORD PLAT PARCELS 1, 2, 3, AND RESIDUE OF THE LANDS OF DTC PARTNERS, L.L.C.", LAST REVISED DECEMBER 11, 2008, PREPARED BY DEWBERRY & DAVIS, AND RECORDED IN INSTRUMENT 20081224-0074252.
4. DEVELOPMENT OF THE SUBJECT PROPERTIES IS SUBJECT TO CONDITIONS CONTAINED WITHIN ZCPA 1990-0004 (APPROVED NOVEMBER 27, 1990), ZMAP 1990-0014 (APPROVED DECEMBER 17, 1991), SPEX 1990-0071 (APPROVED MAY 7, 1991), SPEX 1991-0043 (APPROVED DECEMBER 17, 1991), SPEX 1991-0045 (APPROVED DECEMBER 17, 1991), SPEX 1992-0026 (APPROVED FEBRUARY 6, 1994), FPAL 2006-0007 (APPROVED OCTOBER 20, 2006), CPAP 2008-0056 (APPROVED NOVEMBER 24, 2008), FPAL 1994-0004 (APPROVED AUGUST 2, 1994), CPAP 2008-0070 (APPROVED NOVEMBER 24, 2008), AND SBRD 2008-0005 (APPROVED DECEMBER 23, 2008).
5. THE PROPERTY SHOWN HEREON IS SUBJECT TO A DECLARATION FOR DULLES TOWN CENTER RECORDED IN INSTRUMENT 20081224-0074249.
6. APPROVAL OF THIS PLAT IN NO WAY RELIEVES THE OWNERS, DEVELOPERS, OR THEIR AGENTS OF ANY RESPONSIBILITIES REQUIRED BY THE COUNTY.
7. THE PROPERTY SHOWN HEREON IS LOCATED WITHIN THE ROUTE 28 TAX IMPROVEMENT DISTRICT.
8. ALL STORM DRAINAGE EASEMENTS AND APPURTENANT STRUCTURES ASSOCIATED HEREWITH ARE TO BE DEDICATED TO THE LOUDOUN COUNTY BOARD OF SUPERVISORS.
9. THE OWNER OF FEE TITLE TO ANY PROPERTY ON WHICH AN EASEMENT IS HEREBY GRANTED FOR STORM DRAINAGE AND/OR STORM WATER MANAGEMENT PURPOSES SHALL BE RESPONSIBLE FOR MAINTENANCE OF SUCH EASEMENT AND THE FACILITIES WITHIN SUCH EASEMENT THAT ARE NOT MAINTAINED BY THE COUNTY, UNLESS SUCH RESPONSIBILITY SHALL HAVE BEEN GIVEN TO ITS SUCCESSORS OR TO AN OWNER'S ASSOCIATION UNDER THE PROVISIONS OF ANY DECLARATION OF COVENANTS, CONDITIONS, AND RESTRICTIONS HERETOFORE OR HEREAFTER RECORDED. NOTWITHSTANDING THE FOREGOING, THE COUNTY SHALL MAINTAIN THE PHYSICAL INFRASTRUCTURE OF STORM DRAINAGE FACILITIES CONTAINED WITHIN THE EASEMENTS.
10. STORM DRAINAGE EASEMENTS SHOWN HEREON ARE FOR THE DRAINAGE OF NATURAL AND STORM WATERS. NO USE, NOR ANY IMPROVEMENTS SHALL BE MADE OR CONSTRUCTED WITHIN THESE EASEMENTS WHICH WOULD IN ANY WAY INTERFERE WITH THE NATURAL DRAINAGE OR THE USE AND MAINTENANCE OF THE STORM DRAINAGE EASEMENTS.
11. THE SUBJECT PROPERTY IS SERVED BY LCSA (LOUDOUN WATER) AND IS SUBJECT TO THE RATES, RULES AND REGULATIONS OF THE AUTHORITY AND THE TERMS SPECIFIED IN THE DEED OF EASEMENT.
12. LOUDOUN COUNTY WETLANDS INDICATES THE PRESENCE OF HYDRIC SOILS ON THE SUBJECT PROPERTY, AS SUCH ANY LAND DISTURBING ACTIVITIES WITHIN THESE SOILS MAY REQUIRE CONTACTING THE ARMY CORPS OF ENGINEERS.
13. THE LANDS SHOWN HEREON ARE SUBJECT TO CONDITIONS CONTAINED WITHIN SECTION 740 (FLOODPLAIN OVERLAY DISTRICT) OF THE 1972 LOUDOUN COUNTY ZONING ORDINANCE.
14. PORTIONS OF THE PROPERTY FALL WITHIN MINOR FLOODPLAIN AS IDENTIFIED ON THE LOUDOUN COUNTY FLOODPLAIN MAP. ANY USE OR ACTIVITY IN THE FLOODPLAIN OVERLAY DISTRICT, INCLUDING THE INSTALLATION OF PRIVATE DRIVES, REQUIRES A ZONING PERMIT IN ACCORDANCE WITH PROCEDURES SET FORTH IN THE ZORAS ORDINANCE. THE EXTENT OF A FLOOD-PLAIN IS DYNAMIC IN NATURE AND IS A FUNCTION OF LAND USE; THEREFORE, THE BOUNDARY OF A FLOODPLAIN IS SUBJECT TO CHANGE WITH CHANGING LAND USE.
15. THE ACCESS SERVING THIS PARCEL IS PRIVATE AND ITS MAINTENANCE, INCLUDING SNOW REMOVAL, IS NOT A PUBLIC RESPONSIBILITY.
16. THE PRIVATE STREETS IN THIS SUBDIVISION DO NOT MEET THE STANDARDS NECESSARY FOR INCLUSION IN THE SYSTEM OF STATE HIGHWAYS AND WILL NOT BE MAINTAINED BY THE DEPARTMENT OF TRANSPORTATION OR THE COUNTY AND ARE NOT ELIGIBLE FOR RURAL ADDITION FUNDS OR ANY OTHER FUNDS APPROPRIATED BY THE GENERAL ASSEMBLY AND ALLOCATED BY THE COMMONWEALTH TRANSPORTATION BOARD.
17. CONSTRUCTION OF THE INGRESS-EGRESS EASEMENTS SHOWN HEREON SHALL CONFORM TO THE STANDARDS SET FORTH IN THE LOUDOUN COUNTY LAND SUBDIVISION AND DEVELOPMENT ORDINANCE.
18. THE CONSTRUCTION, REPAIR, AND MAINTENANCE OF THE ROADWAY IMPROVEMENTS WITHIN THE 40' INGRESS-EGRESS EASEMENT SHOWN HEREON SHALL BE THE RESPONSIBILITY OF THE OWNER OF RECORD OF PARCEL 1 ~ DIVISION OF DTC PARTNERS, L.L.C., THEIR SUCCESSORS AND ASSIGNS, UNLESS SUCH MAINTENANCE RESPONSIBILITY SHALL HAVE BEEN GIVEN TO AN OWNER'S ASSOCIATION UNDER THE PROVISIONS OF ANY DECLARATION OF COVENANTS, CONDITIONS AND RESTRICTIONS, HERETOFORE, HEREAFTER RECORDED.
19. THE CONSTRUCTION, REPAIR, AND MAINTENANCE OF THE ROADWAY IMPROVEMENTS WITHIN THE EMERGENCY ACCESS EASEMENT SHOWN HEREON SHALL BE THE RESPONSIBILITY OF THE OWNER OF RECORD OF PARCEL 1 ~ DIVISION OF DTC PARTNERS, L.L.C., THEIR SUCCESSORS AND ASSIGNS, UNLESS SUCH MAINTENANCE RESPONSIBILITY SHALL HAVE BEEN GIVEN TO AN OWNER'S ASSOCIATION UNDER THE PROVISIONS OF ANY DECLARATION OF COVENANTS, CONDITIONS AND RESTRICTIONS, HERETOFORE, HEREAFTER RECORDED.
19. THE CONSTRUCTION, REPAIR, AND MAINTENANCE OF THE ROADWAY IMPROVEMENTS WITHIN THE STORM DRAIN ACCESS EASEMENT SHOWN HEREON SHALL BE THE RESPONSIBILITY OF THE OWNER OF RECORD OF PARCEL 1 ~ DIVISION OF DTC PARTNERS, L.L.C., THEIR SUCCESSORS AND ASSIGNS, UNLESS SUCH MAINTENANCE RESPONSIBILITY SHALL HAVE BEEN GIVEN TO AN OWNER'S ASSOCIATION UNDER THE PROVISIONS OF ANY DECLARATION OF COVENANTS, CONDITIONS AND RESTRICTIONS, HERETOFORE, HEREAFTER RECORDED.
20. THE 8' LCSA TEMPORARY CONSTRUCTION EASEMENT SHOWN HEREON SHALL BECOME NULL AND VOID AT SUCH TIME AS CONSTRUCTION IS COMPLETE.

PLAT SHOWING
CREATION OF VARIOUS EASEMENTS
PARCEL 1
THE DIVISION OF DTC PARTNERS, L.L.C.
POTOMAC ELECTION DISTRICT
LOUDOUN COUNTY, VIRGINIA
SCALE: N/A
DATE: APRIL 1, 2009

Dewberry
Dewberry & Davis LLC
1503 Edwards Ferry Road, Suite 300, Leesburg, Virginia 20176
Phone 703.771.8004 Metro 703.478.1530 Fax 703.771.4091
www.dewberry.com

RPB-951-LC SHEET 1 OF 5

VICINITY MAP ~ 1"=2,000'



SURVEYOR'S CERTIFICATE

I, ERIC R. SCHRYER, A DULY LICENSED LAND SURVEYOR IN THE COMMONWEALTH OF VIRGINIA, DO HEREBY CERTIFY TO THE THE BEST OF MY KNOWLEDGE, INFORMATION AND BELIEF, THAT THE LAND SHOWN HEREON IS NOW IN THE NAME OF NATIONAL RURAL UTILITIES COOPERATIVE FINANCE CORPORATION AND WAS ACQUIRED BY THEM FROM DTC PARTNERS, L.L.C. BY DEED DATED DECEMBER 22, 2008, AND RECORDED IN INSTRUMENT 20081224-0074300; AMONG THE LAND RECORDS OF LOUDOUN COUNTY, VIRGINIA.

GIVEN UNDER MY HAND THIS 31st DAY OF SEPTEMBER, 2009.

ERIC R. SCHRYER CSL #003366

COMMONWEALTH OF VIRGINIA
ERIC R. SCHRYER
LIC. NO. 003366
09/03/09
LAND SURVEYOR

RECEIVED

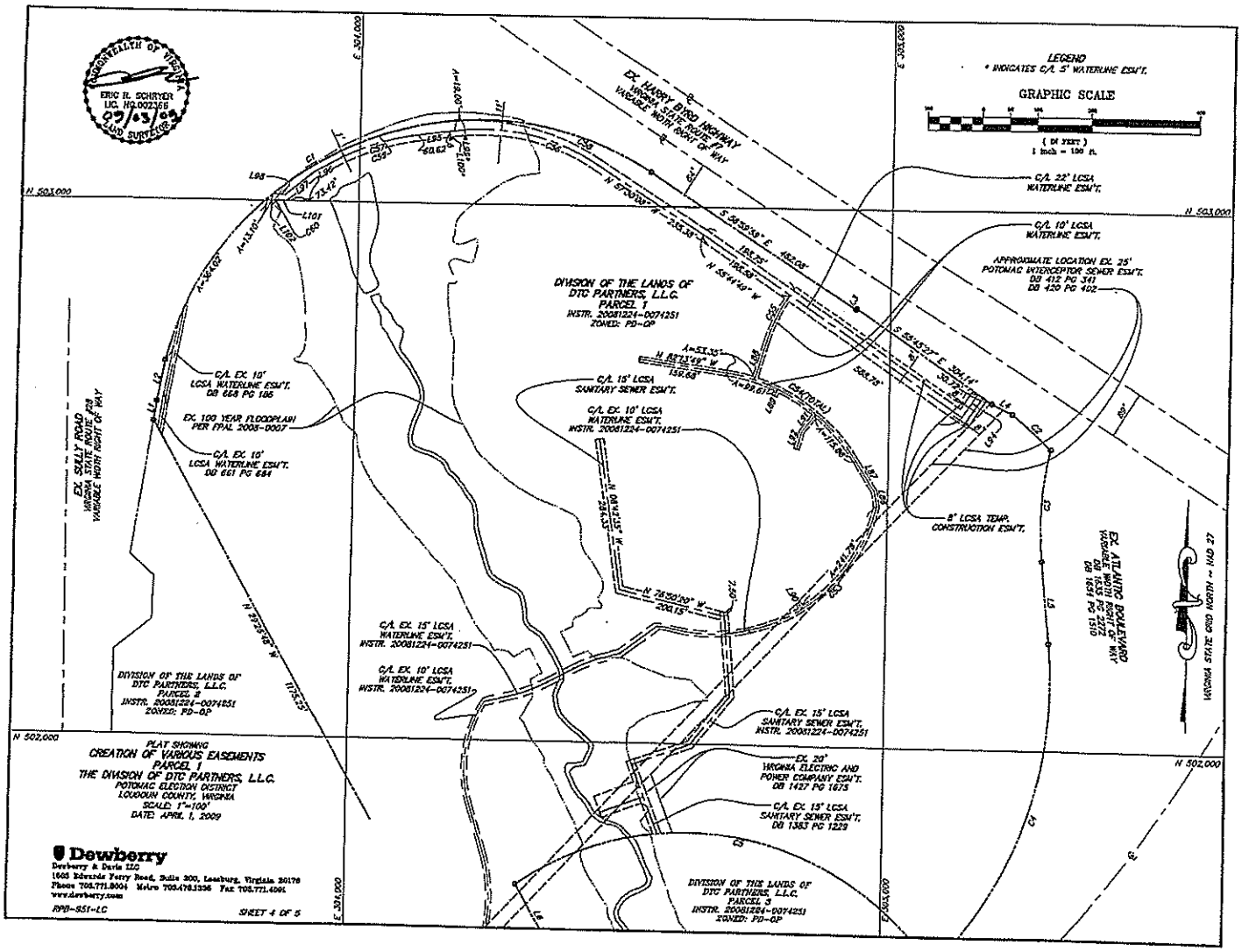
20090915-0092948

OWNER
NATIONAL RURAL UTILITIES
COOPERATIVE FINANCE CORPORATION
2201 COOPERATIVE WAY
HERNDON, VIRGINIA 20171

TABLE OF CONTENTS
SHEET 1: COVER SHEET ~ ORIGINAL SIGNATURE
SHEETS 2-4: PLAT ~ REPRODUCED SIGNATURES
SHEET 5: TABLES ~ REPRODUCED SIGNATURE

REVISION BLOCK

NUMBER	DESCRIPTION	DATE
2	COUNTY COMMENTS	08/10/09
1	COUNTY COMMENTS	07/10/09


COMMONWEALTH OF VIRGINIA
ERIC H. SCHRYER
LIC. NO. 002166
09/03/09
LAND SURVEYOR
LEGEND
* INDICATES C/L 5' WATERLINE ESM'T.
GRAPHIC SCALE
(IN FEET)
1 inch = 100 ft.
EX. HARRY BYRD HIGHWAY
VIRGINIA STATE ROUTE #9
VARIABLE WIDTH RIGHT OF WAY
C/L 22' LCSA WATERLINE ESM'T.
C/L 10' LCSA WATERLINE ESM'T.
APPROXIMATE LOCATION EX. 25' POTOMAC INTERCEPTOR SEWER ESM'T. DB 412 PG 341 DB 420 PG 402
DIVISION OF THE LANDS OF DTC PARTNERS, L.L.C. PARCEL 1 INSTR. 20081224-0074251 ZONED: PD-OP
C/L EX. 10' LCSA WATERLINE ESM'T. DB 668 PG 186
EX. 100 YEAR FLOODPLAIN PER FIRM 2005-0007
C/L EX. 10' LCSA WATERLINE ESM'T. DB 661 PG 684
EX. SILLY ROAD VIRGINIA STATE ROUTE #28 VARIABLE WIDTH RIGHT OF WAY
C/L 15' LCSA SANITARY SEWER ESM'T.
C/L EX. 10' LCSA WATERLINE ESM'T. INSTR. 20081224-0074251
8' LCSA TEMP. CONSTRUCTION ESM'T.
EX. ATLANTIC BOULEVARD VARIABLE WIDTH RIGHT OF WAY DB 1534 PG 1510
VIRGINIA STATE GRID NORTH - NAD 27
C/L EX. 15' LCSA WATERLINE ESM'T. INSTR. 20081224-0074251
C/L EX. 10' LCSA WATERLINE ESM'T. INSTR. 20081224-0074251
DIVISION OF THE LANDS OF DTC PARTNERS, L.L.C. PARCEL 2 INSTR. 20081224-0074251 ZONED: PD-OP
C/L EX. 15' LCSA SANITARY SEWER ESM'T. INSTR. 20081224-0074251
EX. 20' VIRGINIA ELECTRIC AND POWER COMPANY ESM'T. DB 1427 PG 1675
C/L EX. 15' LCSA SANITARY SEWER ESM'T. DB 1383 PG 1229
DIVISION OF THE LANDS OF DTC PARTNERS, L.L.C. PARCEL 3 INSTR. 20081224-0074251 ZONED: PD-OP
N 503,000
N 502,000
E 301,000
E 302,000
PLAT SHOWING
CREATION OF VARIOUS EASEMENTS
PARCEL 1
THE DIVISION OF DTC PARTNERS, L.L.C.
POTOMAC ELECTION DISTRICT
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www.dewberry.com
RPD-551-LC
SHEET 4 OF 5

EXHIBIT C

RECLAIMED WATER - ADDITIONAL REQUIREMENTS

The Authority agrees to provide Reclaimed Water that meets the flowing additional water quality criteria as measured at the last sampling point of the Broad Run Water Reclamation Facility prior to distribution:

PARAMETER	LIMIT	SAMPLE TYPE	FREQUENCY OF MEASUREMENT
Ammonia*	<2.0 mg/L	24 Hour Composite	1/day
Total Phosphorus	<2.00 mg/L	Grab	1/day
pH	6.0 to 9.0 S.U.	Grab	1/day

* TKN (Total Kjeldahl Nitrogen) may be substituted for Ammonia testing at Loudoun Water's discretion. TKN is the sum of organic nitrogen, ammonia (NH2), and ammonium (NH4+). The TKN concentration shall be less than 2 mg/l.