

**BERRYVILLE TOWN COUNCIL
MEETING AGENDA
Regular Meeting
Berryville-Clarke County Government Center
101 Chalmers Court, Second Floor
Main Meeting Room
Tuesday, September 13, 2016
7:30 p.m.**

<u>Item</u>	<u>Attachment</u>
1. Call the Town Council to Order – Patricia Dickinson, Mayor	
2. Pledge of Allegiance	
3. Approval of Agenda	
4. Approval of Minutes August 9, 2016 Regular Meeting	1
5. Citizens' Forum	
6. Report of Patricia Dickinson, Mayor Town Administration Policy Committee	2↓
7. Report of Christy Dunkle, Asst. Town Manager for Community Development Rappahannock Electrical Cooperative Presentation	
Planning Department Monthly Report	3↓
Rain Harvesting	4
8. Report of Keith Dalton, Town Manager Policy regarding Photography, Video Recording, and Audio Recording of Town Meetings	5↓
Calendar of Town Meetings	6↓
9. Report of H. Allen Kitselman, III - Berryville Area Development Authority Liaison	
10. Report of Erecka Gibson – Chair, Budget and Finance Committee Approval of Committee Meeting Minutes – 8/18/16	7
Report of Desiree Moreland, Treasurer	8

<u>Item</u>	<u>Attachment</u>
11. Report of Donna McDonald – Chair, Community Improvements Committee Approval of Committee Meeting Minutes – 8/30/16	9
12. Report of David Tollett- Planning Commission Liaison	
13. Report of David Tollett – Chair, Police and Security Committee Police Chief’s Monthly Report	10
14. Report of Patricia Dickinson – Chair, Streets and Utilities Committee Approval of Committee Meeting Minutes – 8/16/16	11
Public Utilities Director’s Report	12
Public Works Director’s Report	13
15. Report of Erecka Gibson – Chair, Personnel Committee	
16. Other	
17. Closed Session – No closed session scheduled	
18. Adjourn	

↑ Denotes an item on which a motion for action is included in the packet

Attachment 1

MINUTES
BERRYVILLE TOWN COUNCIL
Berryville-Clarke County Government Center
Regular Meeting
August 9, 2016
7:30 p.m.

Town Council: Present-Patricia Dickinson, Mayor; Harry Lee Arnold, Jr., Recorder; Donna Marie McDonald; Allen Kitselman; Erecka Gibson; David Tollett

Staff: Keith Dalton, Town Manager; Christy Dunkle, Assistant Town Manager/Planner; Desiree Moreland, Assistant Town Manager/Finance; Neal White, Chief of Police; Ann Phillips, Town Clerk

Press: None

1. Call to Order

Mayor Dickinson called the meeting to order at 7:30 p.m.

2. Approval of Agenda

The agenda was approved as presented.

3. Pledge of Allegiance

4. Public Hearing

**The Berryville Town Council sponsors amendments to Article VI, Section 609 L-1
Industrial District of the Berryville Zoning Ordinance in order to allow uses consistent
with eligible land uses proposed in the Tourism Zone Incentives in the Berryville Code.
TA 02-16**

Ms. Dunkle gave an overview of the proposed amendments and said that two property owners in the affected area have voiced support for the amendments. Ms. Dickinson asked for clarification on the Tourism Zone adoption process and Ms. Dunkle explained the process.

Public Hearing speakers were as follows:

Alton Echols of 400 Custer Court, Berryville, who said he supports the proposed re-zoning to include uses that are appropriate to bring in tax revenue. He said there is a missed opportunity because the area in question is not a high traffic area, and said his property in the northwest part of town fronts both Route 7 and U.S. Rt. 340 and is zoned Business Commercial. He added that his property would benefit from allowable apartments that would provide housing for the people who work in the businesses there as well as teachers and police officers. He suggested tabling the idea and allowing the Planning Commission and the Economic Development Advisory Committee to address the issue.

Christina Kraybill of 317 First Street, Berryville, who said she is interested in seeing new building uses on First Street, but is concerned about the proposal for lodging or residential uses in the area. She said her neighbors on First Street are not aware of the plans for the area.

Mayor Dickinson closed the public hearing.

5. Approval of Minutes

Upon motion of Recorder Arnold, seconded by Council Member Gibson, the minutes of the July 12, 2016 meeting were approved as follows:

Aye – Patricia Dickinson
Harry Lee Arnold, Jr.
Donna McDonald
Allen Kitselman
Erecka Gibson
David Tollett

Nay – None
Absent – None

6. Citizens' Forum

The speakers were as follows:

Alton Echols, 400 Custer Court, Berryville, who referred to a handout he had distributed which showed the budgeted and proposed amounts of Meals Tax revenue. He said he is a supporter of senior housing and of downtown. He said senior housing residents can produce \$365,000 per year in meals tax in the downtown area. Mr. Echols said the town needs to look at revenues as development happens. He cautioned the Council about looking at Front Royal's experience with Tourism Zones saying that it is a different area than Berryville.

Kathy Pierson, 24 Bundy Street, Berryville, who said she was representing Berryville Main Street. She noted the recent and upcoming Main Street events including the Cruise-In set for August 27, and the Small Business Development training scheduled for September 12 at Modern Mercantile. Ms. Pierson noted that the Fire House Gallery has doubled its revenues over the last few months.

7. Report of Patricia Dickinson, Mayor

The Mayor said she had a wonderful item to report saying that the 2016 SafeWise report of the safest cities in Virginia shows Berryville ranked as 11th in the state. She said Chief White and his staff are to be thanked for this achievement.

8. Report of Christy Dunkle, Asst. Town Manager for Community Development

Ms. Dunkle noted the earlier public hearing and said a motion is included as an action item. **Council member Kitselman moved that the Council of the Town of Berryville approve the attached ordinance amending Section 609 L-1 Industrial Zoning District in order to allow uses consistent with eligible land uses proposed in Tourism Zone incentives in the Code of the Town of Berryville. Recorder Arnold seconded the motion which carried as follows:**

Aye – Patricia Dickinson
Harry Lee Arnold, Jr.
Donna McDonald
Allen Kitselman
Erecka Gibson
David Tollett

Nay – None

Absent – None

AN ORDINANCE AMENDING
ARTICLE VI, SECTION 609 OF THE
TOWN OF BERRYVILLE ZONING ORDINANCE

BE IT ORDAINED, by the Council of the Town of Berryville, that Article VI, Additional Districts, Section 609 L-I Industrial, of the Town of Berryville Zoning Ordinance shall be amended as follows:

ARTICLE VI – DISTRICT REGULATIONS

SECTION 609 L-1 INDUSTRIAL DISTRICT

609.1 PURPOSE AND INTENT

The L-1 Industrial District is established to provide locations within the Town of Berryville for a broad range of general light-industrial uses **and, recreational and event venues, infill development and** employment-related businesses operating under well-governed performance standards. The specific uses permitted within the L-1 District must be in harmony with the cultural and environmental character of the Town of Berryville. No use should be permitted that might be harmful to the adjoining land uses and the residential ambience of the community at large. **Adaptive reuse is encouraged in the L-1 District.** Outdoor storage and heavy industrial uses are discouraged but may be permitted by special use and environmental performance review. The L-1 District recognizes and is to be applied to existing conforming industry in the Town of Berryville as of the date of adoption of this District. Existing industrial uses shall be considered as satisfying the purpose and intent of the L-1 District, but expansion of existing industrial uses shall conform to the provisions herein.

609.2 SPECIAL PERMIT USES

- (a) All above permitted uses requiring outdoor storage **(10/94)**
- (b) Day care centers **(12/94)**
- (c) Eating establishments **including microbreweries, wineries, and distilleries (5/95)**
- (d) Heliports
- (e) Laundry and dry cleaning establishments
- (f) Lumber yards and building materials establishments
- (g) Motor freight terminals
- (h) Retail sales incidental to a manufacturing, production or related use, provided that:
 - a) the gross floor area used for retail purposes (excluding storage) shall not occupy more than five-thousand (5,000) square feet of gross floor area on any one lot, and shall not exceed twenty-five (25) percent of the total floor area for the site; and
 - b) the areas dedicated for retail uses must be indicated on an approved site plan. The provisions of this Section shall not apply to those permitted or special permit uses for which retail sales are a primary activity. **(12/07)**
- (i) Scientific research, development, and training establishments

- (j) Service stations
- (k) Vehicle and machinery sales and rentals
- (l) Recreation, commercial indoor (06/10)
- (m) Retreat and conference centers**
- (n) Residential lofts and apartments**
- (o) Wholesale/retail food hubs**
- (p) Commercial kitchens**
- (q) Hotels, motels, and accommodations**

SIGNED: _____
 Patricia Dickinson, Mayor

ATTEST: _____
 Harry Lee Arnold, Jr., Recorder

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Ms. Dunkle noted the request for a text amendment to Article VI, Section 610 Business Commercial. Mayor Dickinson invited the applicant, Alton Echols, to speak. Mr. Echols said there has been a long standing debate about whether retail at the Food Lion area will destroy downtown. He said the missing retail uses that could locate at his site need an allowable size of 7000 to 12,000 square feet of space and will bring revenue to the town. He said by locating drug stores and auto supply stores, people will be drawn off the highway and bring business to town.

Recorder Arnold cautioned the Council about increasing the square footage limits. He said he would agree to send the matter to the Planning Commission for a public hearing, but is concerned whether a 10,000 square foot store can be supported by the community. He cited the closure of a large drug store in Winchester which has resulted in a large building sitting empty.

Council member Kitselman said this request means the Town is looking at changing 30 years of successful planning. He reiterated that he would agree with letting the issue go to the Planning Commission, but is an opponent of the idea.

Recorder Arnold said the infrastructure for a 10,000 square foot building will be costly, and that a good master plan would be needed to ensure development is done correctly.

Council member Kitselman noted that Berryville is famous in the state for being a successful small town while many other Virginia towns have suffered by adding too much development on the edges of town and causing the downtowns to suffer.

Council member McDonald noted concerns about the Food Lion grocery store closing. Council member Kitselman said the sale of the Food Lion store is a corporate buyout issue. He said there will still be a grocery store in Town.

Council member Tollett said the issue had been in discussion for a while, and he wished to see it move to the Planning Commission for a hearing. **Council member Tollett moved that the Council of the Town of Berryville approve the attached resolution and forward it to the Planning Commission to set a public hearing and to make recommendations on the proposed amendments to Section 610 of the Berryville Zoning Ordinance and ask them to address the matter in an expedited manner.** Council member Kitselman and Recorder Arnold expressed concern about asking the Planning Commission to expedite their process when the matter was a major change in the plan. **Council member Tollett amended the motion to exclude the request to address the matter in an expedited manner. Council member McDonald seconded the motion which carried as follows:**

Aye – Patricia Dickinson
Harry Lee Arnold, Jr.
Donna McDonald
Allen Kitselman
Erecka Gibson
David Tollett

Nay – None
Absent – None

RESOLUTION OF TOWN OF BERRYVILLE

The governing body of the Town of Berryville, Virginia, consisting of 6 members, in a duly called meeting held on the 9th day of August, 2016 at which a quorum was present, RESOLVED as follows:

A RESOLUTION: REMOVING SECTION 611.2(U) OF THE TOWN OF BERRYVILLE ZONING ORDINANCE CONCERNING RETAIL STORES AND SHOPS AS AN ACCESSORY USE WITH PROVISIONS AND ADDING “PERSONAL SERVICE ESTABLISHMENTS, RETAIL STORES AND SHOPS NOT TO EXCEED 10,000 FEET FOR EACH FREE-STANDING BUSINESS OR FOR EACH BUSINESS IN A SHOPPING CENTER OR STRIP MALL CENTER.”

WHEREAS, the Council of the Town of Berryville supports retail development in the Business Commercial Zoning District; and

NOW, THEREFORE, BE IT RESOLVED by the Council of the Town of Berryville, Virginia hereby initiates the modification of the Town of Berryville Zoning Ordinance allowing the uses identified above by right in the Business Commercial (BC) zoning district.

Passed this 9th day of August, 2016.

THE TOWN OF BERRYVILLE

Attest: _____

By: Patricia Dickinson, Mayor

CERTIFICATION

I hereby certify that the above resolution was duly adopted by the Council of the Town of Berryville, in a duly assembled meeting on the 9th day of August, 2016.

Harry Lee Arnold, Jr., Recorder

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9. Report of Keith Dalton, Town Manager

A. Mr. Dalton said the number of committee meetings has increased, and he asked for direction from the Council about the need for full minutes taken by the Town Clerk versus action only minutes kept by the senior staff person attending the meeting. He said minutes of committee meetings are not required, but action minutes have been kept unless a meeting merited more detailed minutes. By consensus, the Council agreed that action only minutes should be kept unless staff or the committee chair cited a need for full minutes at a particular meeting.

B. Mr. Dalton said he had been tasked with researching the recording of Town Council meetings. He asked the Council for budget and quality expectations. He said there are legal aspects of the Town, the public, and the press doing the recording, and there is a need for a written policy.

Recorder Arnold said he is opposed to video recording, but said audio recording could be helpful with the minutes. He said recording may intimidate some speakers who wish to address the Council. He added he is not in favor of recordings being posted on the website, and suggested the issue needs more study.

Mayor Dickinson asked if there were a committee that would address the issue. Recorder Arnold suggested staff continue researching the matter and Mayor Dickinson offered to help. Mr. Dalton asked for the Council's direction regarding the budgeted amount. Mayor Dickinson advised keeping it simple and starting small with minimal investment.

Mr. Tollett said the policy should address why the recording is being done.

C. Mr. Dalton noted the need for the Council to meet jointly twice with the Clarke County Board of Supervisors regarding the Comcast Franchise Agreement. By consensus, a joint work session was set for September 13 at 6:30 pm and a public hearing was set for October 18 at 6:30 pm.

10. Report of H. Allen Kitselman, III – Berryville Area Development Authority Liaison

Council member Kitselman said the BADA will meet on August 17.

11. Report of Erecka Gibson - Chair, Budget and Finance Committee

The minutes of the Budget and Finance Committee meeting on July 20, 2016, were approved unanimously.

Council member Gibson said she met with Mr. Weiss and Mr. McKay of the Clarke County Board of Supervisors to discuss Town contributions toward emergency medical services. She said it was suggested that the County budget and finance committee make a presentation to the Town committee and she awaits scheduling of that meeting. She said she has shared her notes from her meeting with the Town Manager.

Recorder Arnold asked about the status of the need for an RFP for financial services that had been voted on at the July meeting. Council member Gibson said her committee will meet with the current auditor on August 18. Recorder Arnold stated he understood the current auditor could be asked to expand their services to provide the requested mapping. Mayor Dickinson said in the meantime, she has been contacting other accounting firms to gather information about their services. Council member

Kitselman said that the staff should do that task, and said she was not taking a healthy approach to the issue. He reminded the Mayor that she does not have authority to go out and talk to firms representing the full Council according to the adopted code of conduct. He suggested that the Mayor refer to the Town Code where her authority is clarified. Council member Kitselman said he has seen emails where the Mayor is stepping outside of her authority. He added that he is respectfully urging her to be careful and that he thinks she has gone way beyond her purview by attending county committee meetings and speaking for the Town regarding the elimination of the Berryville Area Development Authority.

12. Report of Donna McDonald - Chair, Community Improvements Committee

Council member McDonald said the next meeting is set for August 30, 2016, at 6:00 pm.

13. Report of David Tollett – Planning Commission Liaison

Mayor Dickinson said Planning Commission issues had already been discussed.

14. Report of David Tollett – Police and Security Committee

The minutes of the Police and Security Committee meeting on August 4, 2016, were approved unanimously.

Council member Tollett moved that the Council of the Town of Berryville authorize the expenditure of not more than \$3,000 from the General Fund Contingency Line Item to supplement the funds budgeted for the purchase of a Police Cruiser. With the addition of the Contingency funds the amount authorized for the purchase of a Police Cruiser is \$46,530. Council member Gibson seconded the motion which carried as follows:

Aye – Patricia Dickinson
Harry Lee Arnold, Jr.
Donna McDonald
Allen Kitselman
Erecka Gibson
David Tollett

Nay – None

Absent – None

Council member Tollett said the next committee meeting will be September 6, 2016.

15. Report of Patricia Dickinson – Chair, Streets and Utilities Committee

The Streets and Utilities Committee meeting minutes of July 28, 2016, were approved unanimously.

Mayor Dickinson noted the Swan Avenue sidewalk project is moving forward with the schools taking ownership of the maintenance of the sidewalk and approving the design. She said the water main project on Battletown Drive is almost complete, and the one on Academy court is in progress. She noted that crosswalks will be discussed with VDOT staff at a meeting on August 16. Recorder Arnold asked that East Main Street be discussed with VDOT staff at the same meeting.

16. Report of Erecka Gibson – Chair, Personnel Committee

The minutes of the Personnel Committee meetings on July 20, August 2, and August 3 were approved unanimously.

Council member Gibson noted the staff report that said Mayor Dickinson recommended appointing three individuals to the Planning Commission. She offered a correction saying the recommendation had been for four rather than three appointees. Council member Kitselman asked if the Council were changing the configuration of the Planning Commission. He said that doing so is not a power the Mayor has.

Recorder Arnold said in the interest of transparency, he wanted to explain how the committee chose the candidates to recommend. He said after the interviews, the committee had ranked the candidates while planning to make one appointment to fill one vacancy. He said that once the rankings were reviewed, the Mayor suggested appointing all the applicants which would effectively enlarge the Planning Commission. Recorder Arnold said that the Mayor said the Code would allow up to 15 members on the Commission. He said he is not in favor of expanding the Planning Commission.

Council member Kitselman said he would want to talk to other jurisdictions, the Town staff, and the Chair and Vice-Chair of the Planning Commission before deciding about increasing the size of the Commission.

Council member Gibson asked how the process of enlarging a commission was done in the past. Mr. Dalton said he had not seen the size of a board increased, but that it would be a Council decision made by appointing additional members.

Recorder Arnold repeated that the Mayor's desire to increase the size of the Commission was not made known until after the candidates had been ranked and the Mayor's rankings were different from the other two committee members who had ranked the candidates identically.

Mayor Dickinson said her rationale was to increase the diversity of representation on the Commission and added that most of the present Commission members live in the same part of town. Recorder Arnold said that while an effort is made to appoint members from all wards of town, qualifications and willingness to serve can skew the numbers at times. He added that the City of Winchester has only seven members on its Planning Commission.

Council member Kitselman said that this process has not been transparent, it had been sprung on the Council members, and he wants to hear from the Chair and Vice-Chair of the Planning Commission before the Council decides to increase the size of the Planning Commission.

Council member Gibson asked Council members Tollett and McDonald for their input. Council member Tollett asked if Council member Gibson was ready to make a recommendation to appoint one person to the vacancy on the Commission. He said he does not have an opinion on increasing the Commission's size until the Council hears from the Planning Commission.

Council member McDonald said she was in favor of filling the one vacancy and would defer to the Planning Commission to get a better feel about increasing the size. She said that one appointment should be made this evening.

Council member Gibson asked about upcoming openings, and Mr. Dalton explained that historically when a member's term was near expiring, the member was asked if he or she would accept re-appointment, and the Personnel Committee would then make a recommendation to the Town Council.

Council member Gibson said that a majority of Council wants to receive further input before increasing the size of the Planning Commission, but that she wished to move to appoint one person to fill the existing vacancy. **Council member Gibson moved that the Council of the Town of Berryville appoint Krishan Mathur to the Berryville Planning Commission for a four year term to begin August 9, 2016, and end August 9, 2020. Recorder Arnold seconded the motion which carried as follows:**

Aye – Patricia Dickinson
Harry Lee Arnold, Jr.
Donna McDonald
Allen Kitselman
Erecka Gibson
David Tollett

Nay – None
Absent – None

Council member Gibson noted that since Mr. Mathur was currently a member of the Board of Zoning Appeals, his departure from that board would leave an opening to be filled.

17. Other

There was no other business.

18. Closed Session

There was no closed session scheduled.

19. Adjourn

There being no other business, upon motion of Council member Tollett, seconded by Council member Kitselman, the meeting was adjourned at 9:10 p.m.

Harry Lee Arnold, Jr., Recorder

Ann W. Phillips, Town Clerk

Attachment 2

BERRYVILLE TOWN COUNCIL

MOTION TO AMEND THE COMMITTEE CHARGE FOR THE
TOWN ADMINISTRATION POLICY COMMITTEE

Date: September 13, 2016

Motion By:

Second By:

I move that the Council of the Town of Berryville amend the charge for the Town Administration Policy Committee as attached.

VOTE:

Aye:

Nay: None

Absent: None

ATTEST:

Harry Lee Arnold, Jr., Recorder

Town Administration Policy Committee

The Town Administration Policy Committee is a standing committee with no fewer than three of two members, one representative of Town Council works in partnership with and one representative of town administration managers whose purpose is to develop town-wide policies. A policy is a guide for discretionary action. Although sources for the formation of policy appear on many levels in the town, only the town council can adopt policies. Through its policies the council establishes purposes and directions for the town and directs the kinds of action the administration and staff may take. Where appropriate and possible, policies offer administrators sufficient freedom to use their professional knowledge and judgment.

~~The Town Manager,~~ Town Attorney and Town Treasurer are ex-officio members of the Policy Committee. The Policy Committee meets as needed to formulate, review and recommend to Town Council policy recommendations.

Purpose:

The Town Administration Policy Committee is responsible for the creation of a Town Administration Policy Manual. The policies, and their associated procedures (as prepared by Town Staff), formalizes town council expectations and provides guidance to town administrators. Carefully considered and correctly implemented policies and procedures increases the likelihood of an organization achieving stated goals and objectives. Each policy statement must provide a rationale for the policy, including underlying philosophy of the policy and what the policy hopes to accomplish.

Major Committee Functions Include:

The committee shall create a Berryville Policy Manual that is published on the town website. The primary functions include:

- Develop a process and governance framework through which town policies are formulated, vetted, approved, reviewed, maintained, communicated and enforced.
- At the direction of Town Council, the Town Administration Policy Committee will respond to the need for policy review and will write new policies that might arise from administrative recommendations, citizen requests, and/or statutory requirements or specific Council member concerns.
- Assess existing policies for coverage, including consistency or conflict with other policies, evaluate current practice of compliance with the policies, and distinguish between policies and procedures.
- Review procedure statements which accompany policies to ascertain conformance with town policy.

All decisions shall be reached by consensus ~~or vote of a simple majority~~ of the total membership of the committee. The ~~group consensus and/or voting~~ recommendations of the Town Administration Policy Committee will be ~~summarized and presented to the Council for action.~~

Attachment 3

Planning and Community Development

Action Items

- **Amendments to Construction Standards and Specifications Manual**
- **Set Public Hearing – Special Use Permit – Professional Office at 208 North Buckmarsh Street**
- **Set Public Hearing – Text Amendment to Section 204.2 of the Berryville Zoning Ordinance**
- **Set Public Hearing – Text Amendment to Section 614.2 of the Berryville Zoning Ordinance**
- **Set Public hearing – Text Amendment to Section 614.5 of the Berryville Zoning Ordinance**
- **Rain Harvesting**

September 13, 2016

Planning Commission

The Planning Commission held a meeting on Tuesday, August 23, 2016. They held public hearings for text amendments to Section 614 Older Person Residential in order to remove the unit cap and to allow a number of housing options, including multifamily units, by right and to the General Commercial zoning district (Section 204) in order to allow veterinary hospitals as a use by Special Permit. Their next meeting is scheduled for Tuesday, September 27, 2016 at 7:30pm.

Berryville Area Development Authority

The BADA did not hold an August meeting. Their next meeting is scheduled for Wednesday, September 28, 2016 at 7:00pm.

Architectural Review Board

The Architectural Review Board held a meeting on Wednesday, September 7, 2016 to review the following:

Sign Review

Middleburg Bank, Applicant, is requesting a Certificate of Appropriateness in order to install a projecting sign at 1 West Main Street, identified as Tax Map Parcel number 14A5-((A))-10 zoned C General Commercial. *Approved as presented.*

Architectural Review

Keith A. Johnson, Applicant, (Jerry and Rogena Larrick, Owners) is requesting a Certificate of Appropriateness in order to construct a garage and greenhouse at the property located at 201 North Buckmarsh Street, identified as Tax Map Parcel number 141-((A))-76, zoned R-2 Residential. *Approved as presented.*

Board of Zoning Appeals

The Board of Zoning Appeals has not held a meeting since the last Council meeting.

BERRYVILLE TOWN COUNCIL
Amendments to Construction Standards and Specifications Manual
September 13, 2016

At their August 16, 2016 meeting, the Streets and Utilities Committee recommended approval of the modifications identified on the attached Chapter 2 Design Standards and detail figures 22 through 30 to the Town of Berryville Construction Standards and Specifications Manual. Gleaned from the City of Winchester Public Services Standards Manual (2012), these modifications establish requirements for stormwater reporting and design; easements; stormwater quantity and quality requirements; and inspection and testing obligations.

Proposed amendments are identified in red in the following document.

Recommendation

Approve as presented. A motion follows this report.

Section 2

General Design Standards

I. Provision for Future Growth

The Town may require the modification of certain proposed public improvements to provide adequate capacity for the logical extension of said improvements. Proposed facilities would include, but not be limited to, water lines, booster stations, water pressure control valves, sewer lines, ~~and~~ sewer pump stations, **and streets and associated stormwater management facilities**. Costs for the provision of additional capacity or modifications as required above may be reimbursed by the Town or through agreements with other owners/developers.

II. Phased Construction

A. Delineation

If development is to be constructed in phases, plans shall clearly indicate by phase lines and notes, which facilities are to be constructed under each phase. Plans shall indicate locations of contour tie-ins for each phase and specific measures for phased termination of all water, sewer, storm drainage, streets and other public improvements. Construction plans for public improvements and utilities shall be designed so as to be fully functional at the completion of each phase and allow for construction of the next phase with a minimal impact to existing improvements. A temporary marker identifying the location of the utility termination shall be provided.

B. Bonding

Bonding of public improvements and erosion and sediment control measures as required by Town Ordinance shall be provided independently for each proposed phase.

III. Drainage

A. General

1. An evaluation shall be performed for all proposed drainage systems to ensure adequate hydraulic capacity for conveyance of the minimum ten-year event including, but not limited to, channels, storm water management facilities and conduits.
2. Hydraulic capacity must be verified with engineering calculations, in accordance with the procedures outlined in the *Virginia Erosion and Sediment Control Handbook*, the *Virginia Department of Transportation Drainage Manual*, *Town of Berryville Storm Water Management Ordinance*, and this manual. Submit two complete copies of drainage calculations with construction plans.

Calculations shall include a copy of the site grading and drainage plan, at the plan scale, upon which the boundaries, acreages, time of concentration paths and C-factors of the interior drainage areas shall be shown. Calculations shall

also include a map at an appropriate scale delineating the boundaries, acreages, time of concentration paths and C-factors of the drainage areas, upstream of the development, which would contribute storm water to the development.

3. Due consideration must be given to infrequent events (100-year) resulting in runoff quantities greater than minor system design capacity. The design for the major drainage system shall provide for overland relief of the 100-year event without flooding or damaging buildings and structures and without reliance upon the minor drainage system. The limits of the area affected by the 100-year event shall be represented on construction plans.
4. The drainage system shall be designed to honor all natural drainage divides and create no adverse impact on downstream properties; to account for all off-site storm water and; to convey discharge surface waters to the flow line of a natural watercourse or an existing underground or above-ground adequate conveyance system.
5. The owner or developer may not create a new discharge or concentrated storm water from a pipe, culvert, channel, or other drainage structure, onto or through lands of another, without first obtaining a permanent storm drainage easement and constructing improvements to guarantee continuity of an outfall from the point of discharge to the nearest natural or man-made watercourse.
6. If off-site downstream construction and easements are required to construct an adequate channel outfall, no plans shall be approved until such storm drainage easements, extending to the nearest natural or man-made watercourse, have been obtained and recorded. It will be the responsibility of the developer to obtain all off-site easements.
7. Energy dissipation devices and/or friction channel lining shall be used at and downstream of outfalls when discharge velocities exceed the maximum permissible as defined by the *Virginia Erosion and Sediment Control Handbook*.
8. Plans shall be prepared to preclude adverse impacts because of higher flow rates that may occur during construction.
9. Construction plans shall show the location, size, flow line elevations, profiles and details of all drainage facilities and structures, existing or proposed, including, but not limited to, swales, ditches, culverts under public streets and private drives, drop inlets, storm sewers and detention/retention ponds and pond outlet structures. Typical cross sections of all swales and ditches shall be shown.
10. Profiles of streets shall show profiles of storm sewers and cross sections of culverts together with point of intersection. Profiles shall show clearance of such drainage facilities with water mains and sanitary sewer.

B. Storm Sewer Systems

- ~~1. Design and capacity of culverts, inlets and piped storm drainage systems shall be in accordance with the requirements of the Virginia Department of Transportation (VDOT) Drainage Manual, latest release, Town of Berryville Storm Water Management Ordinance, Virginia Department of Environmental~~

~~Quality Storm Water Management Program and this manual. Proposed drainage facilities shall be sized for ultimate development conditions. Ultimate developed condition of currently undeveloped areas within a watershed shall be based upon the current or anticipated zoning of those areas.~~

- ~~2. Where a proposed drainage system is connected to an existing drainage system, the hydraulic gradient shall be computed through the existing system outfalls to daylight to demonstrate hydraulic capacity. System computations for the existing system will be made available by the Town to the designer for those systems for which the Town has this information. The Town Superintendent may waive this requirement when it has been previously determined that the receiving system is known to have sufficient capacity.~~
- ~~3. All storm sewer pipe within a public right of way or public drainage easement shall be reinforced concrete pipe with a minimum diameter of 15 inches or equivalent elliptical size. Storm sewer pipe which begins or ends within a public right of way or public easement shall be reinforced concrete for its entire length between terminal structures. All reinforced concrete pipe shall be Class III, or greater as conditions require. Installation shall be in accordance with VDOT Standard PB-1, joined using a tongue and groove connection with bitumastic sealant. Precast box culvert sections shall be joined using a closed-cell extruded rubber gasket, Delta Rubber "Omni-Flex" or Town approved equal.~~
- ~~4. Reinforced concrete flared end sections shall be installed at the open ends of all storm drainage pipe. Concrete endwalls may be accepted 42 inches in diameter or less subject to approval by the Town Superintendent.~~
- ~~5. Minimum cover for storm sewer pipe shall be two feet vertically from finish grade to the outside crown of pipe, except where structural correction is provided and approved. Requests for less than two feet of cover shall be recorded on the plans and clearly denoted. Test pits will be required and shall be shown on the plans for all crossings which involve gas lines, water mains, sanitary sewer crossings which have minimum clearance, and all fiber optic telephone service lines. Test pits shall be dug and clearances verified prior to installing any portion of the storm sewer system. Test pits as basis of design may be required at the discretion of the Town Engineer.~~
- ~~6. Storm manhole covers shall have the word "STORM" cast into them. (05/16)~~

~~C. Final Inspection and Testing~~

- ~~1. All storm sewer lines shall be internally inspected by closed circuit television camera prior to acceptance. A copy of the inspection video and reports must be submitted to the Town of Berryville Public Works Director for review. All deficiencies noted must be corrected and an additional televised inspection must be submitted to the Town for review and approval.~~
- ~~2. Such inspection shall be made after the storm sewer has been fully backfilled and the associated roadway sub-grade construction has been completed.~~
- ~~3. The cost of these inspections shall be borne by the project's owner.~~

~~Design and capacity of culverts, inlets and piped storm drainage systems shall be in accordance with the requirements of the Virginia Department of Transportation (VDOT) Drainage. (05/16)~~

1. General

- A. The following minimum requirements are considered acceptable to the Town of Berryville for the collection and detention of stormwater runoff. Deviation from these may be allowed if: a) the deviation is in accordance with sound engineering standards; b) the deviation will not increase the likelihood of a system failure; c) the deviation will not adversely impact the environment or others.**
- B. As a general guideline, standards shall be those set forth in the latest editions of the Virginia Erosion and Sediment Control Handbook, the Virginia Stormwater Management Handbook, and the Virginia Department of Transportation Drainage Manual. If the standards set forth in this manual conflict for a particular application, the Director of Public Works shall determine which standard is to be applied.**
- C. When the Town of Berryville standards differ from state and/or federal requirements, the most stringent requirement shall apply.**
- D. All drawings, specifications, and engineer's reports submitted for approval shall be prepared by or under the supervision of a registered professional engineer with a current registration in the Commonwealth of Virginia in accordance with Title 54.1, Chapter 3 of the Code of Virginia, 1950, as amended. Where applicable, design may be performed under the direction of a certified Land Surveyor B, in accordance with § 54.1-408 of the above-cited code. The front cover of each set of drawings, of each copy of the engineer's report, and of each copy of the specifications submitted for review shall bear the signed imprint of the seal of the above licensed professional who prepared or supervised the preparation, and shall be signed with an original signature and date.**
- E. The engineer shall be responsible for obtaining the review and necessary approvals of all drawings and specifications by applicable Town, County, State and Federal agencies having jurisdiction. Copies of such approvals shall be submitted to the Town of Berryville Department of Public Works at the time of final approval.**

2. Stormwater Report

- A. All drainage calculations shall be incorporated into a stormwater report, which shall present the following information as applicable. If the necessary calculations are minimal, they can be included on the plan sheets.**
 - 1. A description of the computer software used and references to charts and tables used. Computer spreadsheets or programs created "in-house," used in lieu of standard forms or standard manual calculations, shall be substantiated, at least initially, with manual calculations showing equivalent results. Acceptance of, or request for**

substantiation of “in-house” spreadsheets and programs will be the decision of the Director of Public Works.

- 2. The following computations shall be shown for both pre-developed and post-developed conditions:**
 - a. The stormwater report or plan set shall show the grading plan with the boundaries, acreages, and C-factors or CN values for all drainage areas contributing storm water to the site.**
 - b. Flow paths and calculations of times of concentration.**
 - c. Runoff computations.**

3. Stormwater Design

A. General

- 1. An evaluation using verifiable engineering calculations shall be performed for all proposed drainage systems including, but not limited to, channels, inlets, and conduits. At a minimum, this evaluation shall show adequate hydraulic capacity for conveyance of the ten year storm event.**
- 2. Due consideration must be given to less frequent storms, up to and including the 100-year storm event. The design of drainage systems shall generally provide for overland relief of the 100-year storm event without flooding or damaging buildings and structures.**
- 3. The drainage system shall be designed with an attempt to closely maintain existing drainage divides and must not create adverse impacts on upstream or downstream properties.**
- 4. Drainage designs must account for any off-site drainage that will be collected by the drainage system or that will flow through any part of the site. Ultimate developed condition of currently undeveloped areas within a watershed shall be based upon the current or anticipated zoning of those areas.**
- 5. All systems shall be designed to convey runoff to the flow line of a natural watercourse or to an adequate conveyance system.**
- 6. The owner or developer may continue to discharge stormwater as sheet flow (non-concentrated) onto an adjoining property if, at the same location:**
 - a. The post-development peak runoff rate based on documentation and calculations does not exceed the pre-development peak rates.**
 - b. The duration of the flow does not increase under post-development conditions.**
- 7. The owner or developer may not create a new discharge of concentrated storm water from a pipe, culvert, channel, or other drainage structure, onto or through lands of others without first obtaining a permanent storm drainage easement, and ensuring that adequate conveyance exists downstream between the point of discharge and the nearest natural or man-made waterway.**
- 8. If off-site downstream construction and easements are required to construct an adequate channel outfall, no plans shall be approved**

until such storm drainage easement, extending to the nearest natural or man-made watercourse, has been obtained and recorded. It will be the responsibility of the developer to obtain all off-site easements.

B. Storm Sewer Systems

- 1. All publicly owned storm inlets and manholes shall include inlet/invert shaping per VDOT standard IS-1.**
- 2. No concentrated flow greater than one cubic foot per second, based on the 10-year storm, shall cross a sidewalk or curb.**
- 3. Culverts and storm sewers shall be of adequate size to transport runoff from the 10-year storm, for the ultimate developed condition of the subject property. Contributions of off-site flow from permanently developed properties shall be based upon existing conditions. Contributions of off-site flow from undeveloped properties shall be calculated based upon the two-year fully developed flow (undetained) from such properties. Plans shall account for overland relief resulting from less frequent events.**
- 4. The hydraulic grade line of storm sewers for the post-developed 10-year storm shall be lower than the gutter line or grate inlet top elevation at all points.**
- 5. All publicly-owned storm sewer pipes within traffic-bearing areas shall be reinforced concrete pipe with a minimum diameter of 15 inches or equivalent elliptical size. Publicly-owned storm sewer pipe in non-traffic bearing areas may be corrugated HDPE pipe with a minimum diameter of 15 inches.**
- 6. All pipes shall terminate with flared end sections or concrete headwalls. Box culverts shall include concrete headwalls and end walls, which shall be located a minimum of 25 feet from the edge of pavement if the culvert is subject to vehicular traffic.**
- 7. The outfall conditions of pipes and culverts shall be designed to withstand the velocities produced during the 2-year storm event without erosion.**
- 8. Pipe shall not deflect between storm structures. Pipe on slopes greater than 20 percent shall be anchored.**
- 9. Minimum cover for storm sewer pipe within the right-of-way shall be according to the Town of Berryville Standard Details 22 and 24. Outside the right-of-way, the minimum cover, from finished grade to the outside crown of pipe, shall be the greater of one foot or half the pipe diameter.**
- 10. In parallel installations, under normal conditions, storm sewer pipes shall be laid at least 10 feet horizontally from water lines and sanitary sewer lines. The distance shall be measured from outside edge to outside edge.**
- 11. In general crossing situations, storm sewer pipes shall maintain a minimum vertical distance of 18 inches from water mains and 12 inches from sanitary sewer lines. In cases where this separation is**

impossible to achieve, the water or sanitary sewer line shall be protected in accordance with the appropriate Town of Berryville utility standard. In cases where the water or sanitary sewer line is not owned by the Town of Berryville, the crossing shall be governed by the regulations of the authority which owns the utility in question.

- 12. Test pits will be required and shall be shown on the plans for all crossings which involve gas lines, water mains 12 inches in diameter and larger, sanitary sewer crossings that have minimum clearance, and all fiber optic telephone service lines. Test pits shall be dug and clearances verified prior to installing any portion of the storm sewer system.**

C. Easements

- 1. An “easement” shall mean any area to which the Town has unlimited access for maintaining adequate drainage.**
- 2. Permanent easements shall be a minimum width of 20 feet. Wider easements may be required where more than one facility may occupy an easement, or in consideration of structure size, depth, or access requirements. The extent of drainage easements shall be dependent on upstream and downstream conditions and the scope of maintenance needed to maintain adequate drainage.**
- 3. Easements shall be recorded and the Deed Book and Page Numbers of the recordation provided to the Planning Department before approval of the as-built plans and release of the construction bonds.**
 - a. No building or other structure, including but not limited to fences and decks, shall be erected over permanent easements.**
 - b. Any plantings installed within an easement may be damaged or destroyed during the course of servicing. The Town is not liable for damage to any improvements or plantings within an easement. The Town will re-seed as necessary any bare or disturbed soil for erosion control purposes.**
 - c. Small and medium shrubs, groundcovers, or grasses may be planted within an easement. Their suitability shall be determined by their likelihood to create or entrap debris, or to obstruct natural flow.**

D. Storm Inlet Design

- 1. Drop inlets shall be sized and spaced such that a minimum of one half of the travel way in each direction shall be free from flooding at the inlet design flow.**
- 2. To properly drain sag vertical curves, it is required on roads classified as minor arterial or higher to place three inlets on each side of the road; one inlet at the low point and one flanking inlet on each side of the low point. The flanking inlets shall be placed so that they will limit the spread in the low gradient (flatter) approaches to the sag point and will act in relief of the sag inlet should it become clogged.**

3. **Drainage flowing in street gutters shall be intercepted 100 percent, at design flow, prior to entering an intersection with another public street.**
4. **Inlets which have bypass flows shall be clearly marked on the plans and bypass flow must be included in the total gutter flow contributing to the next downstream inlet.**
5. **Downstream flow for drop inlets in streets and parking areas shall be computed using the rational method and applying a rainfall intensity of four inches per hour. Design flow for grate inlets located near structures that could be damaged by flooding shall be computed using the 100-year storm and assuming 50 percent blockage of the grate. Design flow for all other grate inlets shall be the same as street inlets but must assume 50 percent blockage.**

E. Stormwater Conveyance Channels

1. **Channel adequacy, hydraulic capacity, maximum velocities, channel linings, and other related design variables shall be determined by the procedures outlined in Chapter 5 of the Virginia Erosion and Sediment Control Handbook, or by approved computer software.**
2. **All open channels shall be designed to contain the 10-year storm with six inches of freeboard below the banks of the channel. Contributions of off-site flow from permanently developed properties shall be calculated based upon the two-year fully developed flow (undetained) from such properties. Plans shall account for overland relief resulting from less frequent events.**
3. **Unless otherwise approved, the need, type, and dimensions of lining for erosion control shall be based on the velocity and depth of flow associated with the ten-year event.**
4. **Maximum side slope for grass lined conveyance channels shall be 3:1 (H:V) with a minimum longitudinal slope of two percent.**

F. Stormwater Quantity

1. **To protect downstream properties and receiving waterways from flooding, the ten (10) year post-development peak rate and velocity of runoff from the land development shall not exceed the two (2) year pre-development peak rate of runoff.**
2. **To protect downstream properties and receiving waterways from channel erosion, the two (2) year post-development peak rate and velocity of runoff from the land development shall not exceed the two (2) year pre-development peak rate and velocity of runoff.**
3. **If the land development is in a watershed for which a hydrologic and/or hydraulic study has been conducted or a stormwater model developed, the program authority may modify the requirements of items 1 and 2 above so that runoff from the land development is controlled in accordance with the findings in the study or model, or to**

prevent adverse watershed storm flow timing, channel degradation, and/or localized flooding problems.

- 4. The program authority may also require that the plan include additional measures to address damaging conditions to downstream properties and receiving waterways caused by the land development.**
- 5. Pre-development and post-development runoff rates shall be verified by calculations that are consistent with accepted engineering practices as determined by the program authority.**

G. Stormwater Quality

- 1. Best management practices shall be designed and sited to capture runoff from the entire land development project area and, in particular, areas of impervious cover within the land development, to the maximum extent practicable.**
- 2. Best management practices shall be designed to remove the difference between post-development and pre-development total phosphorus loads in cases where post-develop loads exceed pre-development loads. The calculation method in Appendix 5D of the Virginia Storm Water Management Handbook shall be used to perform the calculations.**

4. Materials

A. Concrete Pipe

- 1. Circular reinforced concrete culvert and storm sewer pipe shall be in accordance with ASTM C76 and be Class III minimum.**
- 2. Elliptical reinforced concrete culvert and storm sewer pipe shall be in accordance with ASTM C507.**
- 3. Gasketed joints shall be bell and spigot with rubber gasket seal in accordance with ASTM C443. Tongue and groove joints shall be sealed with mortar or pre-formed flexible sealant per ASTM C990, or other suitable sealant.**

B. Corrugated Plastic Pipe

- 1. Pipe shall be in accordance with AASHTO M294 or ASTM 2306.**
- 2. Pipe shall be joined using a bell and spigot joint meeting AASHTO M252, AASHTO M294, or ASTM F2306. The joint shall be soil-tight and gaskets, when applicable, shall meet the requirements of ASTM F477. Gaskets shall be installed by the pipe manufacturer and covered with a removable wrap to ensure the gasket is free from debris. A joint lubricant supplied by the manufacturer shall be used on the gasket and bell during assembly.**
- 3. Fittings shall conform to AASHTO M252, AASHTO M294 or ASTM F2306. Bell and spigot connections shall utilize a spun-on or welded bell and valley or saddle gasket meeting the soil-tight joint performance requirements of AASHTO M252, AASHTO M294, or ASTM F2306.**
- 4. All installation of corrugated plastic pipe shall be per manufacturer's specifications.**

C. Drop Inlets

1. Standard drop inlets shall be per VDOT specifications.
2. For drop inlets in shallow conditions, structures shall be consistent with Standard Details 25A, B and C or shall be a precast or cast-in-place concrete box with a top consistent with Standard Detail 26.
3. For drop inlets requiring a manhole frame and cover for access, the manhole frame and cover shall be as manufactured by Neenah Foundry per Standard Detail 26. Frames and covers shall be manufactured in the United States.

D. Manholes

1. Storm manholes shall be per VDOT specifications.
2. Frames and covers shall be as manufactured by Neenah Foundry per Standard Details 27 - 30, or approved equivalent.

5. Inspection and Testing

A. Concrete Pipe

1. Concrete pipe shall be inspected visually during installation by the Director of Public Works or his/her designee.
2. After installation and backfill, all sand, dirt, and debris from the lines shall be flushed prior to inspection.
3. All lines and manholes shall be visually inspected by the Town of Berryville from every manhole by use of television cameras. The cost shall be the responsibility of the Owner/Developer as identified on the Planning and Zoning Fee Schedule, 2012, as amended.
4. The lines shall exhibit a fully circular pattern when viewed from one manhole to the next.
5. Lines which do not exhibit a true and correct line and grade, or have obstruction or structural defects, shall be corrected to meet these specifications and the barrel left clean for its entire length.

B. Corrugated Plastic Pipe

1. Corrugated plastic pipe shall be inspected visually during installation by the Director of Public Works or his/her designee.
2. Following installation, the contractor shall perform cleaning and video inspection of the installed plastic pipe. The processes listed below shall be followed:
 - a. The CCTV inspection must be completed per this manual and by an impartial, qualified and reputable Inspection Agency in the presence of a Town inspector. The Town reserves the right to reject an Inspection Agency.
 - b. The Owner/Developer shall provide 48 hours notice to the Town prior to televising any pipe to allow an inspector to be on site.
 - c. A written inspection report accompanied by visual recording shall be provided to the Town's Inspector at the end of each day of CCTB inspection. Visual recording shall be digital mpeg4 format.

- The written report shall be in both list form and plan view.
PLEASE NOTE: VHS video tapes will not be accepted.**
- d. It will be the Developer/Contractor's responsibility to demonstrate acceptable joint spacing.**
 - e. Deflection visible on the CCTV monitor will be assumed to be greater than 5%. The Developer/Contractor has the right to challenge this decision by direct measurement or by the use of a GO-NO-GO Mandrel. The pipe will be rechecked for damage after use of the Mandrel.**
 - f. The Developer/Contractor must repair all defects found during inspection. A follow-up CCTV inspection shall be performed by the Developer/Contractor to assure the repairs have been completed satisfactorily.**

IV. Water & Sewer

A. General

A Preliminary Design Report shall be submitted to the Town which shall describe the additions to the water distribution and sewerage collection systems, and at a minimum shall include:

1. Number of units, with the estimates for water usage and wastewater production.
2. Hydraulic calculations for the proposed water system and existing water system to insure that adequate pressure and volume can be sustained to the new development without reducing pressure or volume in other areas of the existing system.
3. Hydraulic calculations for the proposed sewerage collection system and all existing lines or pump stations that may be impacted.

B. Design Practices

1. Scope

- a. This section is included for the clarification, information and benefit of the engineering design community, to act as a guide to the practices of the Town. This section is a compilation of a variety of typical practices to be followed in the layout and design of water distribution and wastewater collection systems of the Town. The information contained in this section must be applied in conjunction with the regulations of the Commonwealth of Virginia Department of Environmental Quality, Virginia Department of Health Waterworks Regulations and the other sections of this manual.
- b. Many criteria listed are minimums. Additional separations and clearances are to be furnished as practical to optimize each design. Attention shall be given to locating utilities so as to facilitate their re-excavation. The Town will consider factors such as depth and magnitude of facility in determining the adequacy of each design, and may relax or increase dimensional requirements accordingly. In general, a design is to be sought which minimizes length of piping and number of appurtenances, while providing a system which minimizes maintenance costs.

- c. Because of the wide variety of situations that arise, it is impossible to address all scenarios. The Town reserves the right to exercise engineering judgement and will have the final decision on the acceptability of design.
 - d. The Town reserves the right to amend or modify this document without notice and to interpret the meaning of all statements made herein.
2. Water Distribution
- a. Design Flows
 - (i) Fire Flows. The water distribution system piping and any extensions thereof shall have adequate capacity to supply the normal (average) and peak hour demands of all customers – domestic, public, commercial and industrial – while maintaining a pressure of not less than 30 pounds per square inch at all points of delivery. In addition, the piping system shall be capable of delivering on the day of maximum customer demand, flows required for fire protection to at least one (1) point within 300 feet of each building being served or proposed to be served by such system and extension, while maintaining a residual pressure of not less than 20 pounds per square inch at the point of service. Flows required for fire protection shall be a minimum of 750 gpm for Single Family Detached Dwelling developments, 1,500 gpm for Attached Residential or Apartment (3 stories or less), and 2,000 gpm for Commercial and Industrial developments.
 - (ii) Daily Demands. The following criteria will be used in estimating demands for water and accomplishing hydraulic design of the system.
 - (a) Average day, maximum day and peak hour demands to be used in system hydraulic design will be estimated using the following parameters:
 - 1. Residential Population
= $N = \text{number of dwelling units} \times 2.75$
 - 2. Average daily water demand of residential population in gallons per day (g.p.d.)
= $R = N \times 100$
 - 3. Average daily commercial and industrial water demand in g.p.d.
= $C = \text{number of commercial and industrial employees} \times 100^*$
*NOTE: Appropriate additional water demand allowance shall be made for commercial and/or industrial establishments of types having water demands in excess of 100 g.p.d. per employee.
 - 4. Average daily school water demand in g.p.d.
= $S = \text{number of staff employees and students} \times 20$
 - 5. Average daily water demand in g.p.d.
= $A = R + C + S$
 - 6. Maximum daily water demand in g.p.d.

$$= M = A \times 2$$

7. Peak hour demand in g.p.m. is calculated using the formula provided in the Waterworks Regulations 12 VAC 5-590-690

$$= Q = 11.4 \times N^{0.544}$$

- (iii) Distribution piping design will be based upon providing flows and service pressures in accordance with these standards from the supply design gradient (HGL) furnished by the Town. Hydraulic design of distribution piping will be based on pipe carrying capacities consistent with head losses determined in accordance with the following:

| <u>Pipe Diameter</u> | <u>Hazen-Williams Coefficient "C"</u> |
|----------------------|---------------------------------------|
| 6" | 100 |
| 8" | 110 |
| 10" | 115 |
| 12" or greater | 120 |

3. Wastewater Collection

a. Design Flows

(i) Tributary Population

- (a) Sewer systems, which provide for a complete watershed, shall be designed and sized assuming the entire watershed to be completely developed according to present or planned land use designation whichever requires the greater capacity.
- (b) Sewer systems initially developed for only a part of a complete watershed shall be sized to provide for the entire watershed. Otherwise, if acceptable to the Town, physical provision shall be made for future increased capacity. Proper modification to allow for the characteristics (i.e. domestic, commercial and industrial wastes, and ground water infiltration) of the area under consideration shall be made.

(ii) Capacities

- (a) In determining the required capacities of sanitary sewers, the following factors shall be considered:
- (1) Maximum hourly quantity of domestic sewage.
 - (2) Additional maximum sewage or waste from industrial plants and commercial areas.
- (b) New sewer systems shall be designed on the basis of an average per capita flow of sewage from the equivalent population served of not less than 100 gallons per capita per day. Lateral and submain sewers shall be designed for a minimum of 400% of the average flow, main and trunk sewers shall be designed for a minimum of 250% of the average flow, and interceptors shall be designed for a minimum of 200% of the average flow.

- (c) Computations shall use a roughness coefficient (n) in the Mannings Formula of 0.014. However, other values may be used for situations where sufficient engineering justification can be demonstrated.
- (d) The 100 gallons per capita per day figure is assumed to cover normal infiltration, but an additional allowance shall be made where conditions are especially unfavorable.
- (e) The minimum allowance for flow from single-family detached residences shall be based on 3.5 people per home. For single-family attached residences or dwelling units in multifamily structures, a basis of 3 people per unit may be used.
- (f) Unless evidence is presented to prove a different flow from industry at ultimate development, the minimum allowance for industrial flow shall be determined by providing an equivalent population of 40 persons per acre or one (1) equivalent population per employee, whichever is the greater, in the industrial area. "Area" shall include the entire area zoned for industry, except public road, street, and highway rights-of-way, flood plains on which construction is prohibited, and "green zones" separating industrial from residential areas, on which construction is prohibited.
- (g) The minimum allowance for flows from commercial areas shall be determined by providing an equivalent population of 30 persons per acre, or one-half (1/2) equivalent population per employee, whichever is the greater, in the commercial area. "Area" shall include entire area zoned for commercial development, including off-street parking and landscaped areas, but excluding the rights-of-way of public roads, streets and highways, flood plains of streams on which construction is prohibited and "green zones" 100 feet or more wide separating commercial from residential areas, on which construction is prohibited.
- (h) Sewer size shall not be less than eight inches in diameter, except under the following condition:
 - 1. Laterals serving six connections or fewer on cul-de-sacs or as sidewalk collector lines may be six inches in diameter.

(i) Minimum Gravity Sewer Slopes

Sewer Size Minimum Slope in Feet per 100 Feet

Nonsettled Sewage

| | |
|---------------|-------------|
| 3 inch | Not Allowed |
| 4 inch | Not Allowed |
| 6 inch | 0.49 |
| 8 inch | 0.40 |
| 10 inch | 0.28 |
| 12 inch | 0.22 |

Town of Berryville Construction Standards and Specifications - April 2015
Section 2 * General Design Standards

| | |
|---------------|-------|
| 14 inch | 0.17 |
| 15 inch | 0.15 |
| 16 inch | 0.14 |
| 18 inch | 0.12 |
| 21 inch | 0.10 |
| 24 inch | 0.08 |
| 27 inch | 0.067 |
| 30 inch | 0.058 |
| 36 inch | 0.046 |

All sewer shall be nonsettled unless pre-approved by the Director of Public Works.

- (j) Minimum flow velocities of 1.3 fps and 2 fps are required for settled and non-settled sewage, respectively.
- (k) Special provisions must be made to protect against internal erosion when flow velocities exceed 15 fps.
- (l) A minimum sewer burial depth to protect against freezing shall be 24".
- (m) In cases where the above criteria are not applicable, an alternate design procedure may be submitted to the Town for approval. A description of the procedure used and justification for the modifications for sewer design proposed shall be included with the Design Analyses and plans submitted for approval.

V. *Easements*

Where the Town of Berryville permits the construction of water, sewer, or storm water improvements (town utilities) outside of the public right-of-way, the following shall apply:

- A. Town utilities approved such that they will not be in the public right-of-way shall be located in easements conveyed to the Town of Berryville. Such easement shall include language and conditions as required by the Town and will be approved by the Town prior to recordation.
- B. Easements shall be located so as to provide access to all parts of the utility without interference from abutting buildings, fences, and other private improvements.
- C. Easements shall not be centered on property lines but shall run parallel to boundary lines to the greatest degree practical. Easements may straddle boundaries, provided that the associated channel or pipeline is offset from the boundary.
- D. Easements must remain clear of buildings, trees, fences, and other improvements, and underground structures other than the designated utility. Fence sections may be erected across an easement section so long as the section contained within the easement is a gate through which personnel and equipment may enter the

property. Trees planted in and/or improvements erected within a utility easement that are damaged or destroyed in the course of utility inspection, maintenance, or reconstruction will not be replaced or paid for by the Town of Berryville.

- E. Easements shall be a minimum of twenty (20) feet in width; however, the Town reserves the right to require wider easements as deemed necessary.
- F. Town utility easements are exclusive. Other utilities may only cross the town's easement, and such crossings must be at or near a 90-degree angle.

VI. Submission of Calculation Data in Digital Format

- A. Engineering calculations used in the design of public improvements shall be submitted to the Town in digital format for review.
- B. Submissions for water system design shall be on a master development plan that includes the locations of the water mains. The plan(s) shall be paper drawings or provided in an AutoCad compatible format. In addition, the plans shall be a scale accurate drawings referenced to the State Plane Coordinate System.
- C. Submissions for sanitary sewer system design should be provided in Microsoft Excel format, or Heastead input/output files.
- D. Submissions for storm drain system, and storm water management design should be provided in Microsoft Excel format, or Heastead input/output files, or Soil Conservation Service TRT -20 or 55 format.

VII. Transferring of Pump Station Ownership

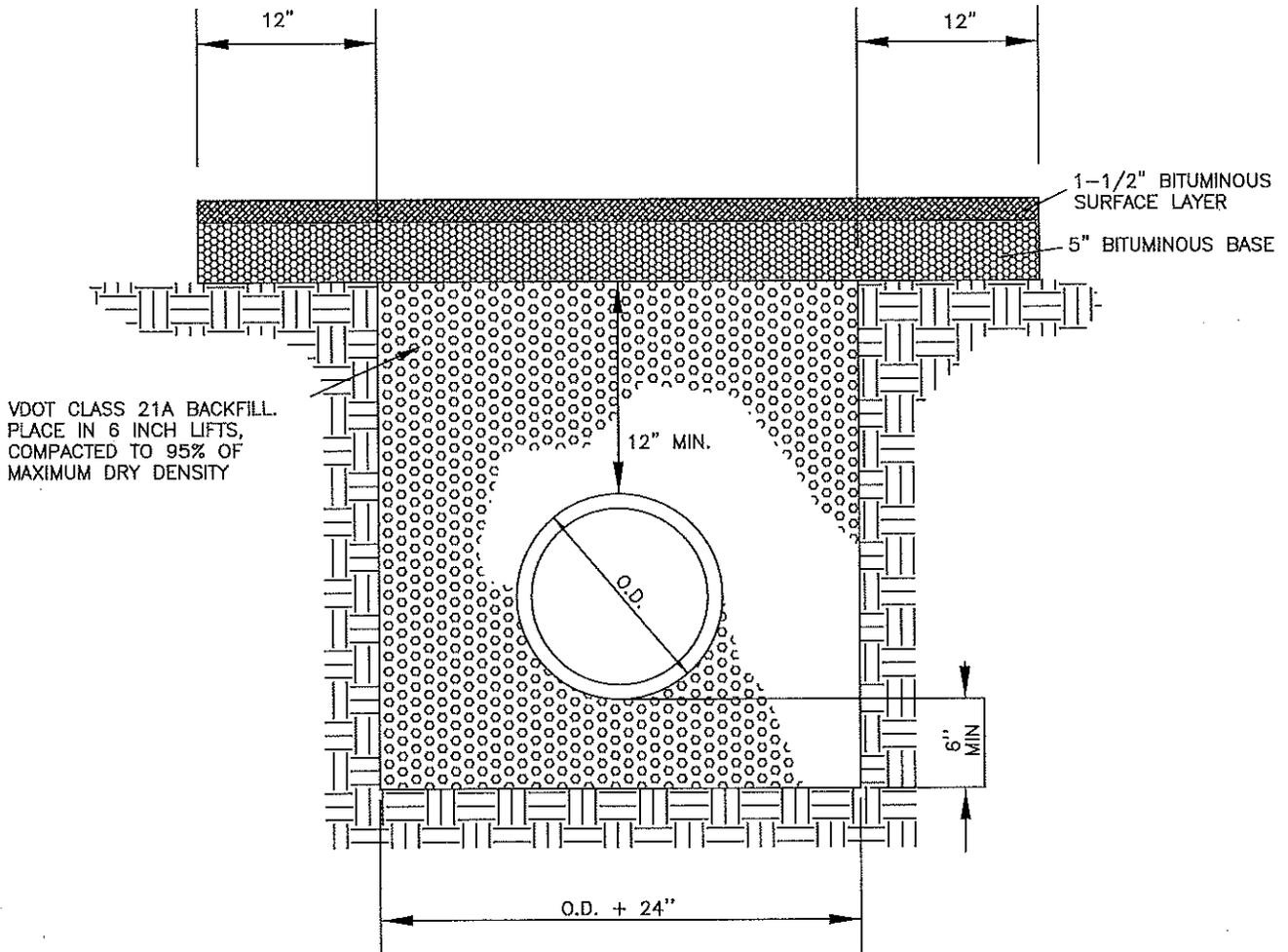
- A. Ownership of pump stations will occur only after final acceptance in writing of a completed project.
- B. The developer will be responsible for any maintenance as a result of construction defects of said facilities for one year from the date of Final Acceptance.

VIII. Streets and Related Improvements in the Public Right-of-Way

- A. All activity performed in the public right-of-way requires an approved permit from VDOT or the Town of Berryville. VDOT maintains public primary roadways (Business Route 7 and SH 340). The Town of Berryville maintains public secondary roadways.
- B. All work performed under a permit issued by the Town of Berryville must be performed in accordance with the following as applicable:
 - 1. Berryville Town Ordinances
 - 2. Berryville Construction Standards and Specifications
 - 3. VDOT Road and Bridge Standards, current edition
 - 4. VDOT Road and Bridge Specifications, current edition
 - 5. Manual on Uniform Traffic Control Devices (MUTCD) including the VDOT supplement
 - 6. VDOT Manuals on Planting and Irrigation in the Right-of-Way
 - 7. VDOT Land Use Permit Manual
 - 8. Virginia Erosion and Sediment Control Handbook

- C. Right-of-way dedication and acceptance of public streets not maintained by VDOT shall be evidenced by authorized signatures on the deed of dedication or other instrument deemed acceptable by the Town of Berryville.
- D. In order to obtain guarantee of performance to assure timely completion and competent construction of physical improvements, the applicant is required to post a bond or other acceptable surety as identified in Article VII. Performance Surety, of the Town of Berryville Subdivision Ordinance and Article III, Section 314.8 Construction and Bonding of the Town of Berryville Zoning Ordinance.
- E. Performance bonds shall be submitted to the Town of Berryville for review and approval for those streets in the Town's system (secondaries).
- F. Dedication and acceptance of public streets shall be in compliance with VDOT Memorandum SR-50-93, Guide for Additions, Abandonments, and Discontinuances, current edition.

- * WHERE THE TRENCH BOTTOM IS ROCK, IT SHALL BE EXCAVATED TO A MINIMUM OF 8" BELOW THE BOTTOM OF THE PIPE AND BACKFILLED WITH BEDDING MATERIAL FREE OF ROOTS, DEBRIS & STONES
- * WHERE SUBGRADE IS UNSTABLE, PIPE SHALL BE BEDDED ON A MINIMUM OF 8" BEDDING MATERIAL

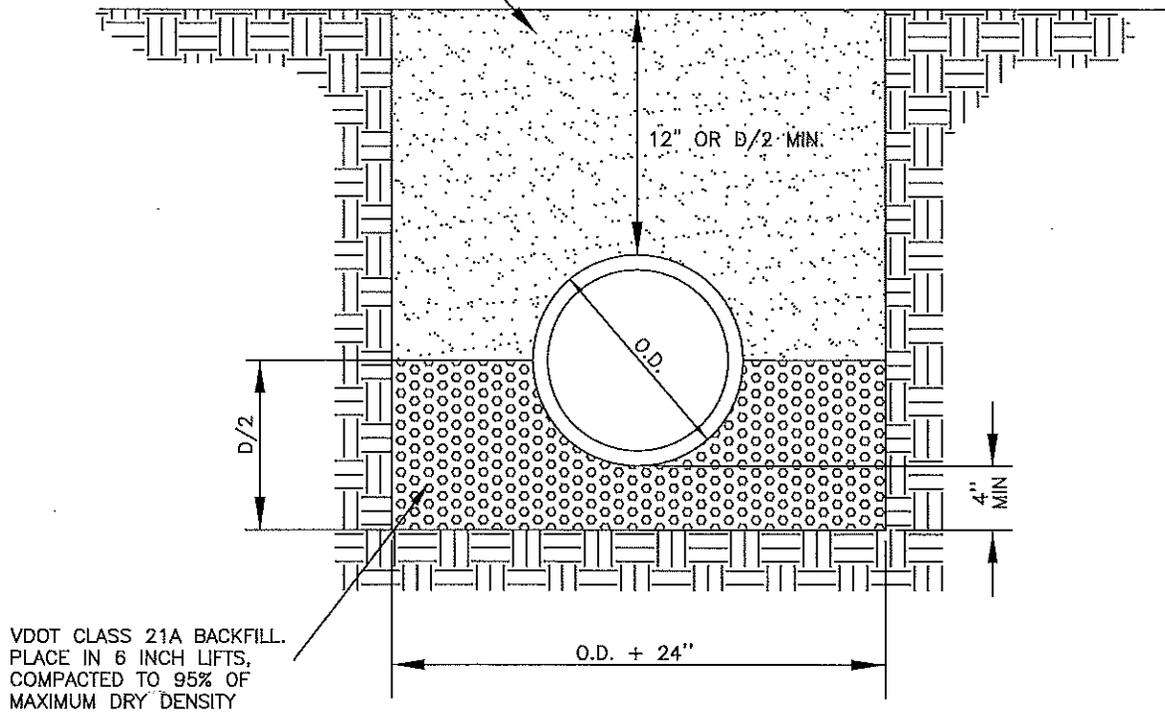


CONCRETE STORM DRAIN BEDDING WITHIN TRAFFIC AREAS (RCP)

Figure 22

- * WHERE THE TRENCH BOTTOM IS ROCK, IT SHALL BE EXCAVATED TO A MINIMUM OF 8" BELOW THE BOTTOM OF THE PIPE AND BACKFILLED WITH BEDDING MATERIAL FREE OF ROOTS, DEBRIS & STONES
- * WHERE SUBGRADE IS UNSTABLE, PIPE SHALL BE BEDDED ON A MINIMUM OF 8" BEDDING MATERIAL

BACK FILL MAY BE EXCAVATED TRENCH MATERIAL EXCEPT HIGHLY AND ORGANIC SILTS & CLAYS FREE OF ROOTS, DEBRIS & STONES LARGER THAN 3" DIAMETER



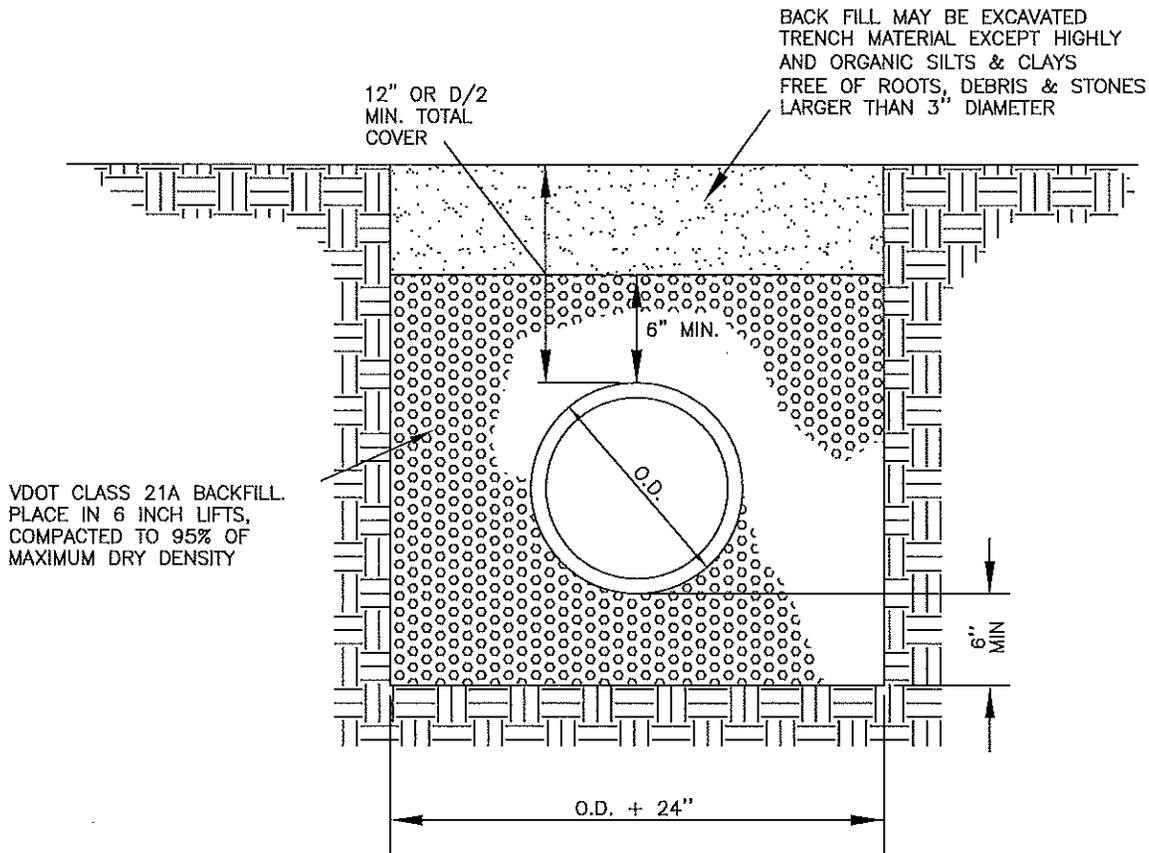
CONCRETE STORM DRAIN BEDDING OUTSIDE TRAFFIC AREAS (RCP)

Figure 23

* WHERE THE TRENCH BOTTOM IS ROCK, IT SHALL BE EXCAVATED TO A MINIMUM OF 8" BELOW THE BOTTOM OF THE PIPE AND BACKFILLED WITH BEDDING MATERIAL FREE OF ROOTS, DEBRIS & STONES

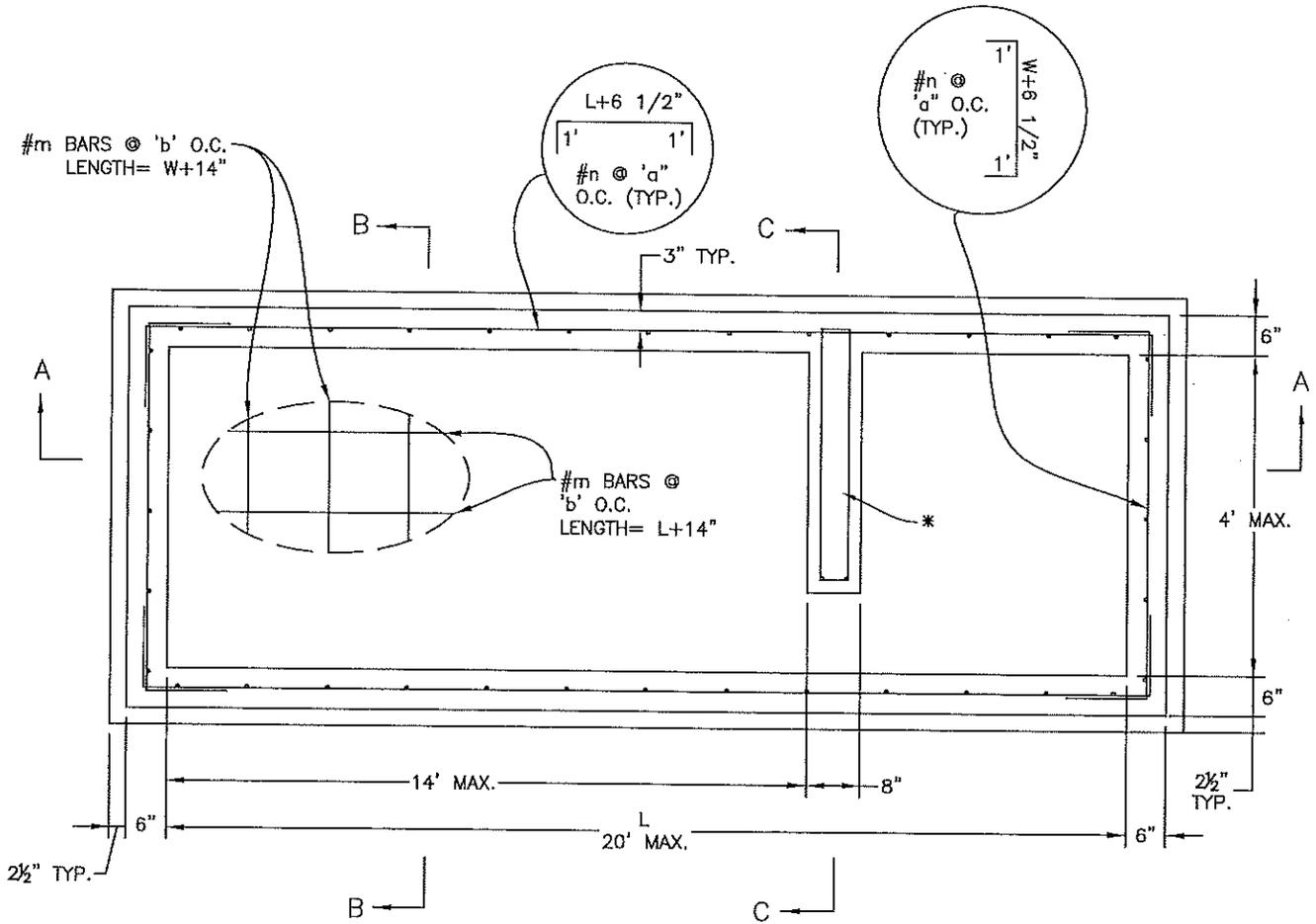
* WHERE SUBGRADE IS UNSTABLE, PIPE SHALL BE BEDDED ON A MINIMUM OF 8" BEDDING MATERIAL

* HDPE PIPE MUST BE INSTALLED PER MANUFACTURERS SPECS



CONCRETE STORM DRAIN BEDDING WITHIN EASEMENT OR NON-TRAFFIC AREAS (CORRUGATED HDPE)

Figure 24



PLAN VIEW
TOP SLAB REMOVED

* CENTER WALL TO BE USED WHEN THROAT LENGTH EXCEEDS 14' (SEE SEC. C--C)

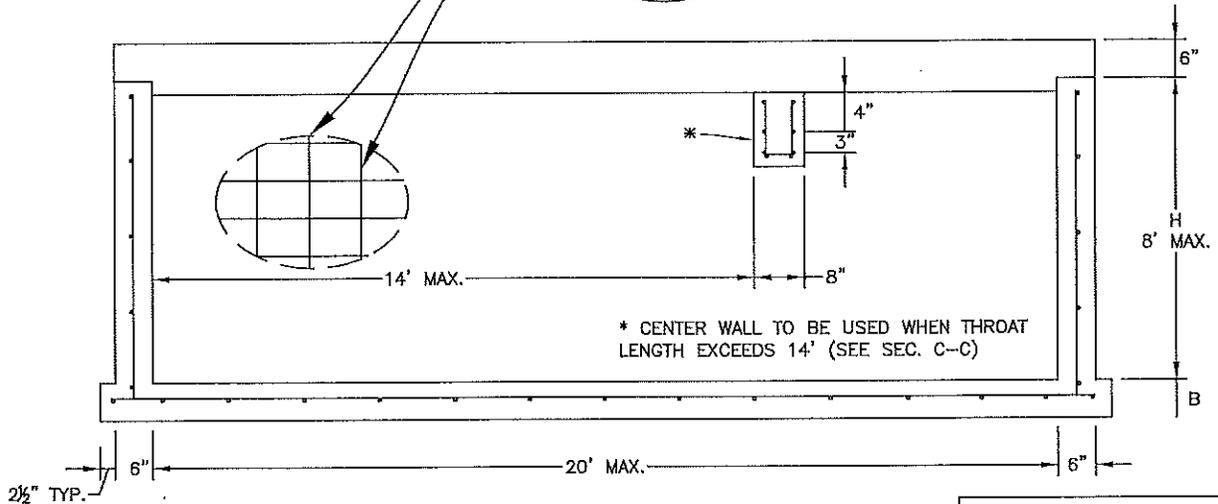
- NOTES:
1. CONCRETE TO BE 4,000 PSI MIN.
 2. STEEL TO BE GRADE 60
 3. DOWEL HOLES PROVIDED TO PREVENT SETTLEMENT OF ADJACENT CONCRETE.
 4. WEEP HOLES PROVIDED
 5. STEPS PROVIDED WHEN HEIGHT IS 4' OR GREATER
 6. GUTTER PAN/THROAT FACE TO BE POURED IN FIELD

| BAR SPACING | | | | |
|-------------|--------|-----|------|-----|
| L | HORIZ. | | BASE | |
| | n | a | m | b |
| - | | | | |
| >16' | 5 | 6" | 4 | 12" |
| >12' | 5 | 9" | 4 | 12" |
| >8' | 4 | 9" | 4 | 16" |
| ≤8' | 4 | 14" | 4 | 16" |

DI-3A, 3B, 3C (SHALLOW)
Figure 25A

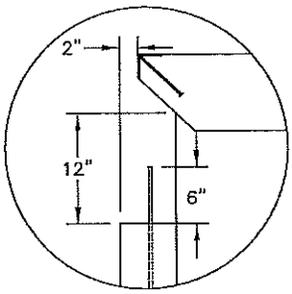
$H-8''+B/2$
#4 BAR
USE SAME
SPACING AS
BASE SLAB BARS
1'

NOTES:
PLACE ADD'L VERT. & HORIZ. BARS
ON EITHER SIDE OF OPENINGS.
PLACE (2) #5 DIAGONALS AROUND
OPENING, BENDING AS NECESSARY
NEAR WALL EDGES. DIAGONAL
LENGTH TO BE OPENING SIZE + 24".

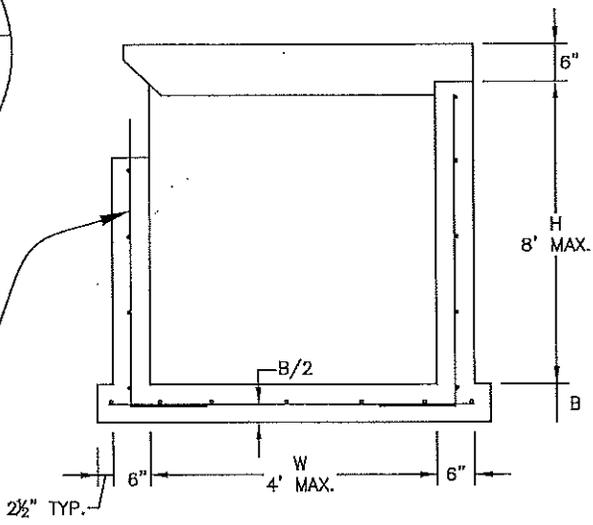


SEC. A-A

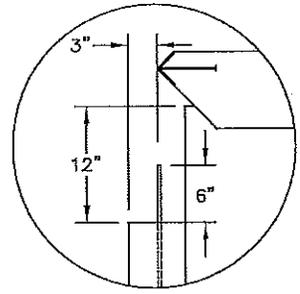
| SLAB THICKNESS | | |
|----------------|--------|----|
| H | L | B |
| >7' | >14' | 8" |
| >7' | ≤14' | 6" |
| ≤7' | ≤1 MAX | 6" |



$H-12''+B/2$
#4 BAR
USE SAME
SPACING AS
BASE SLAB
BARS
1'

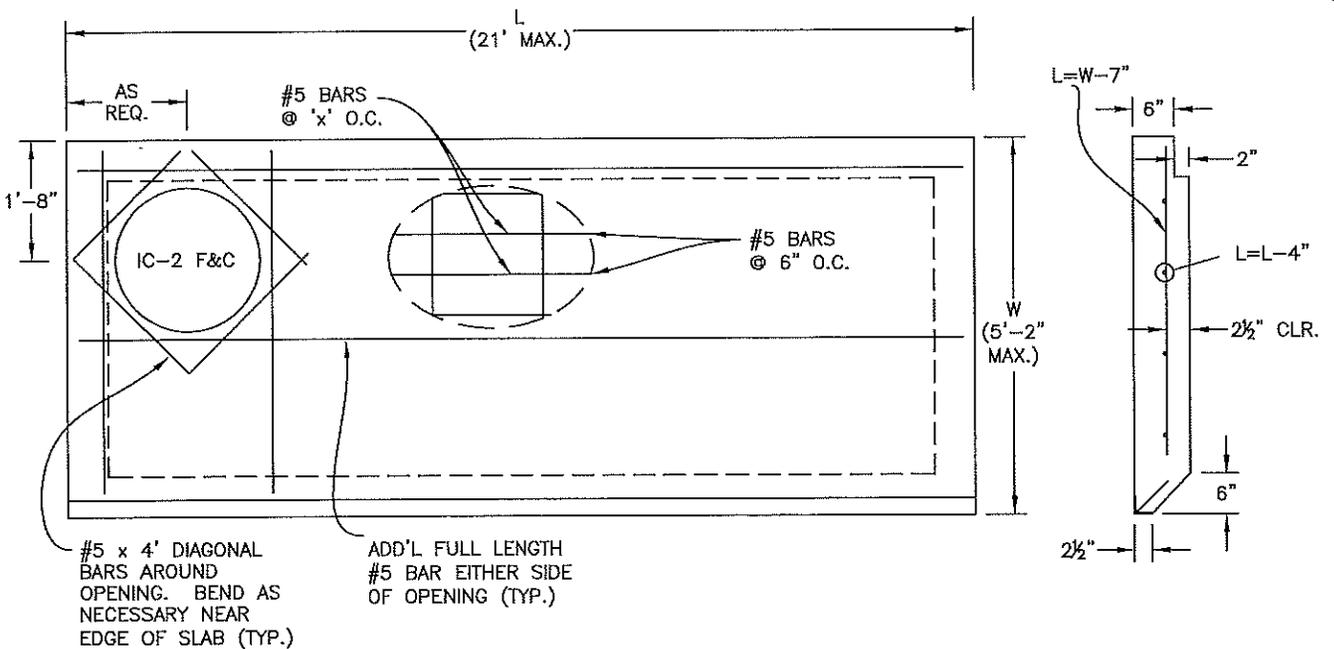
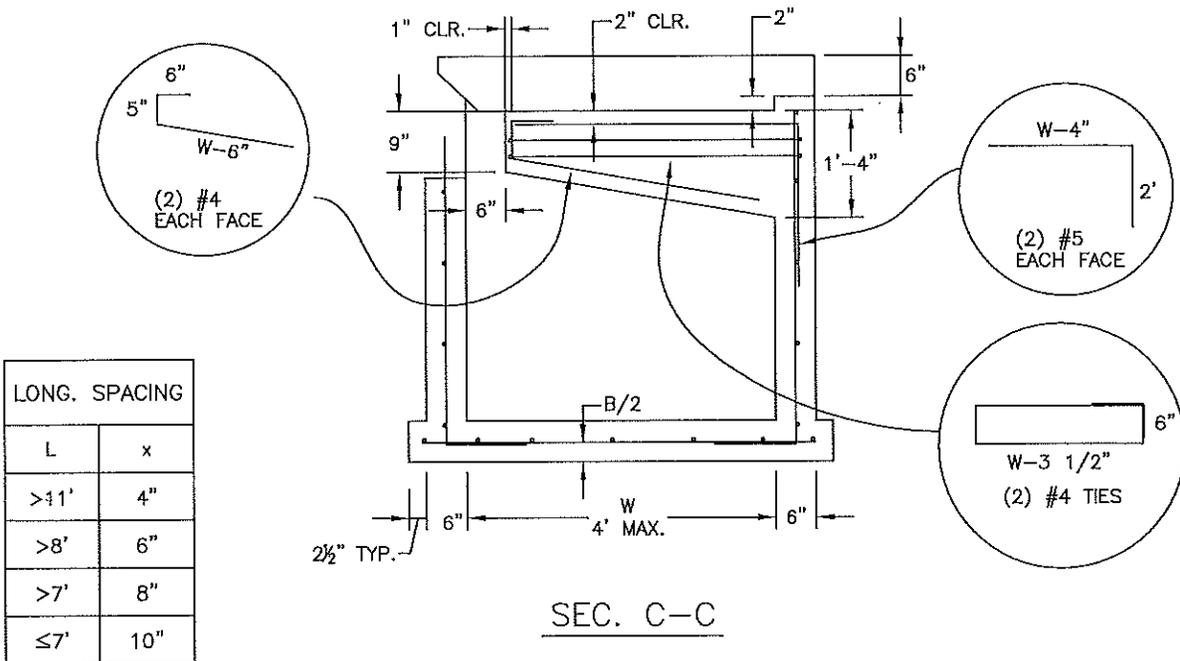


SEC. B-B



FOR USE WITH
CG-3 AND CG-7
CURB AND GUTTER

DI-3A, 3B, 3C (SHALLOW)
Figure 25B



TOP SLAB

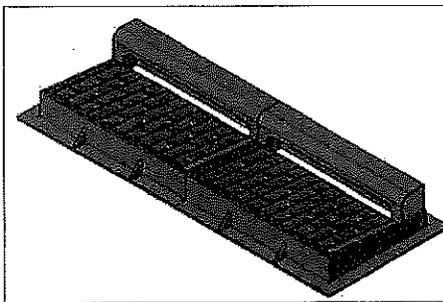
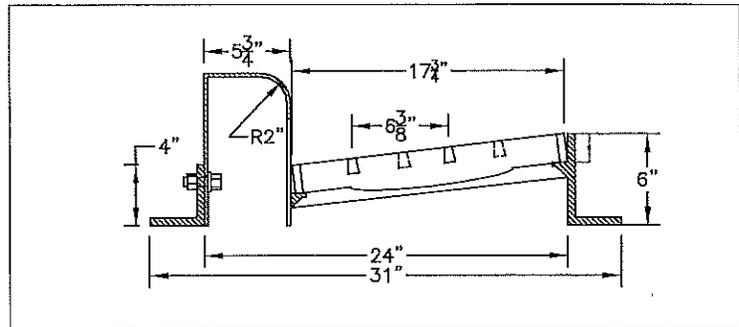
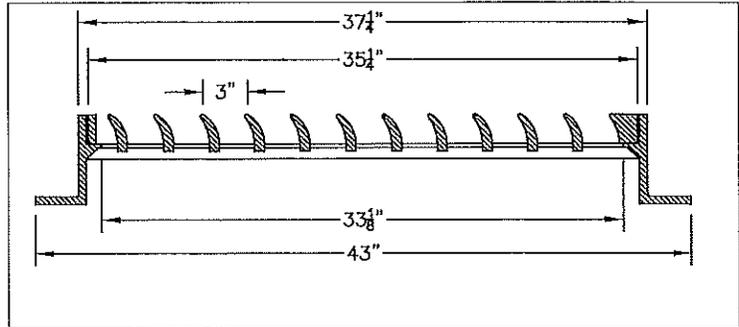
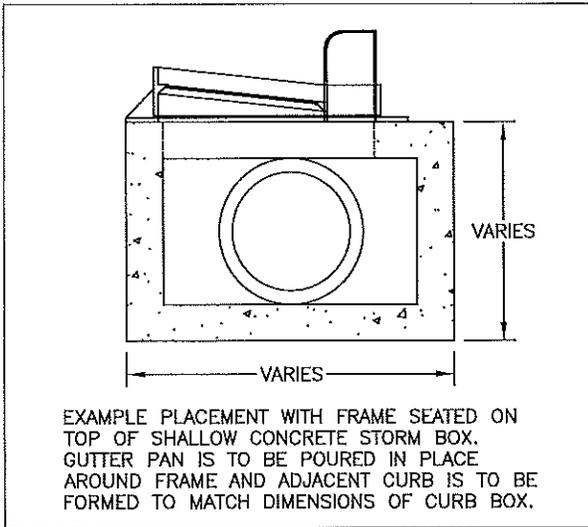
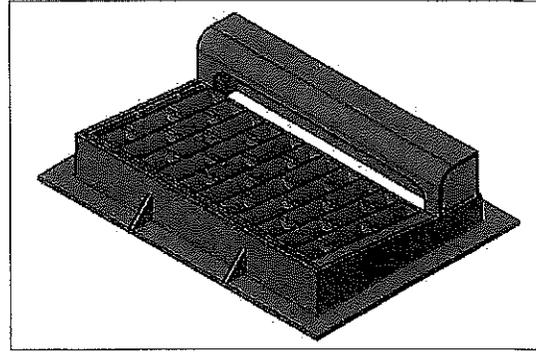
DI-3A, 3B, 3C (SHALLOW)

Figure 25C

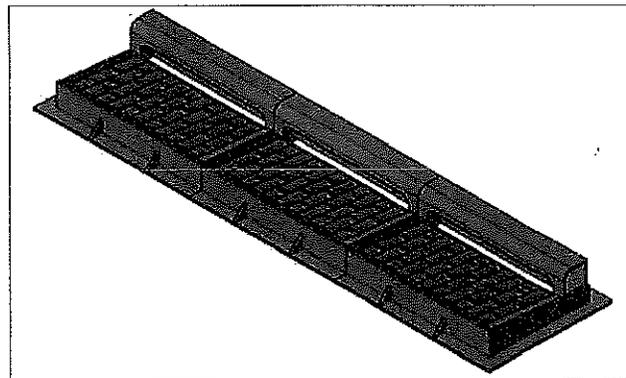
Town of Berryville

Water and Sewer Construction Standards and Specifications 2015

COMBINATION INLET FRAME, GRATE, AND CURB BOX MFG. BY NEENAH FOUNDRY
 MODEL NUMBER R-3295
 TYPE "L" GRATES



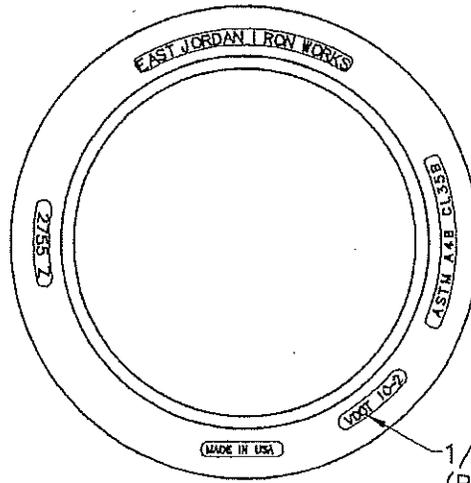
MODEL NUMBER R-3295-2
 FOR DUAL INLET SITUATIONS



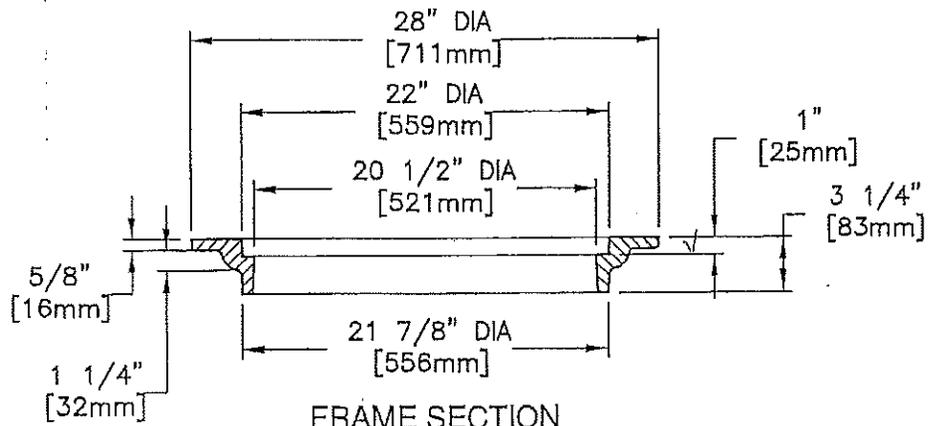
MODEL NUMBER R-3295-3 FOR THREE INLET SITUATIONS. ADD'L MIDDLE UNITS CAN BE ADDED FOR INCREASED LENGTH

MODIFIED DI-1 (SHALLOW)

Figure 26



PLAN VIEW



FRAME SECTION

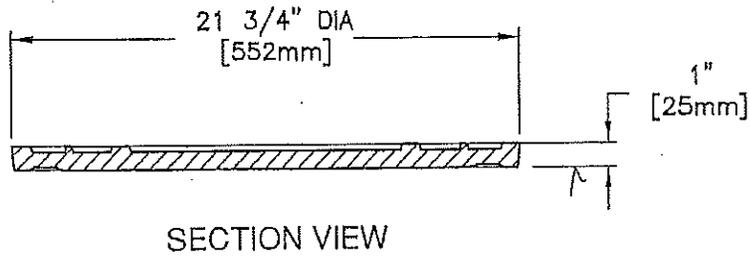
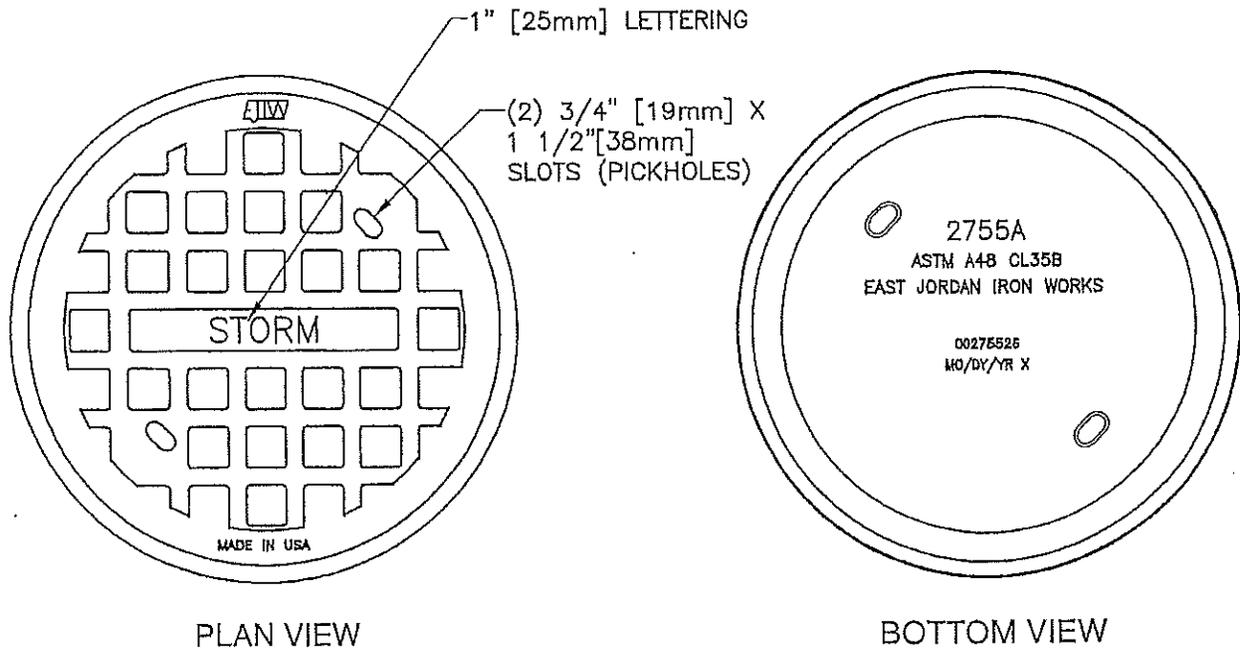
√ MACHINED SURFACE

28" MANHOLE FRAME HEAVY DUTY RATING

Figure 27A

Town of Berryville

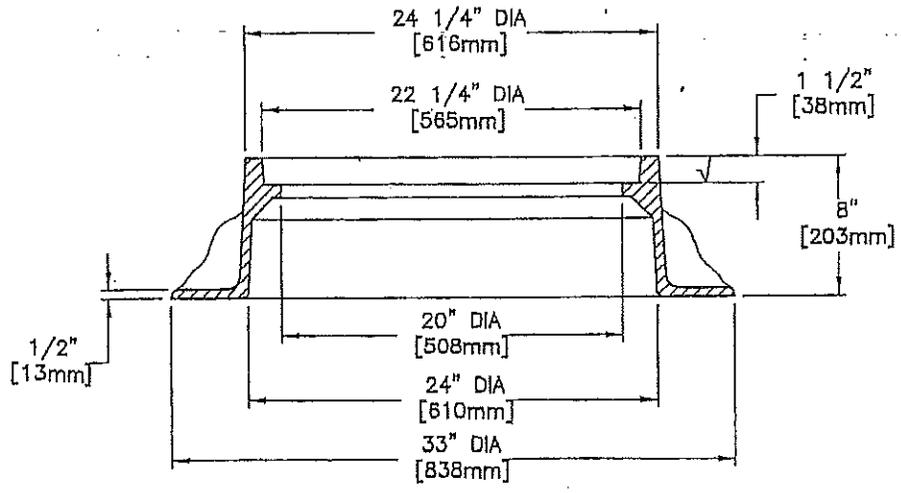
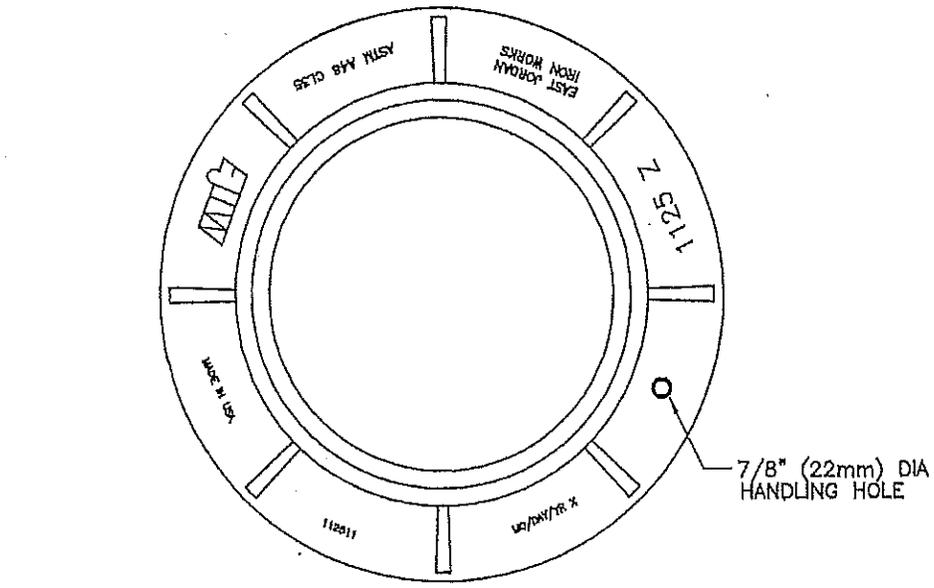
Water and Sewer Construction Standards and Specifications 2015



√ MACHINED SURFACE

**21³/₄" SPECIAL LETTERED COVER
HEAVY DUTY RATING**

Figure 27B

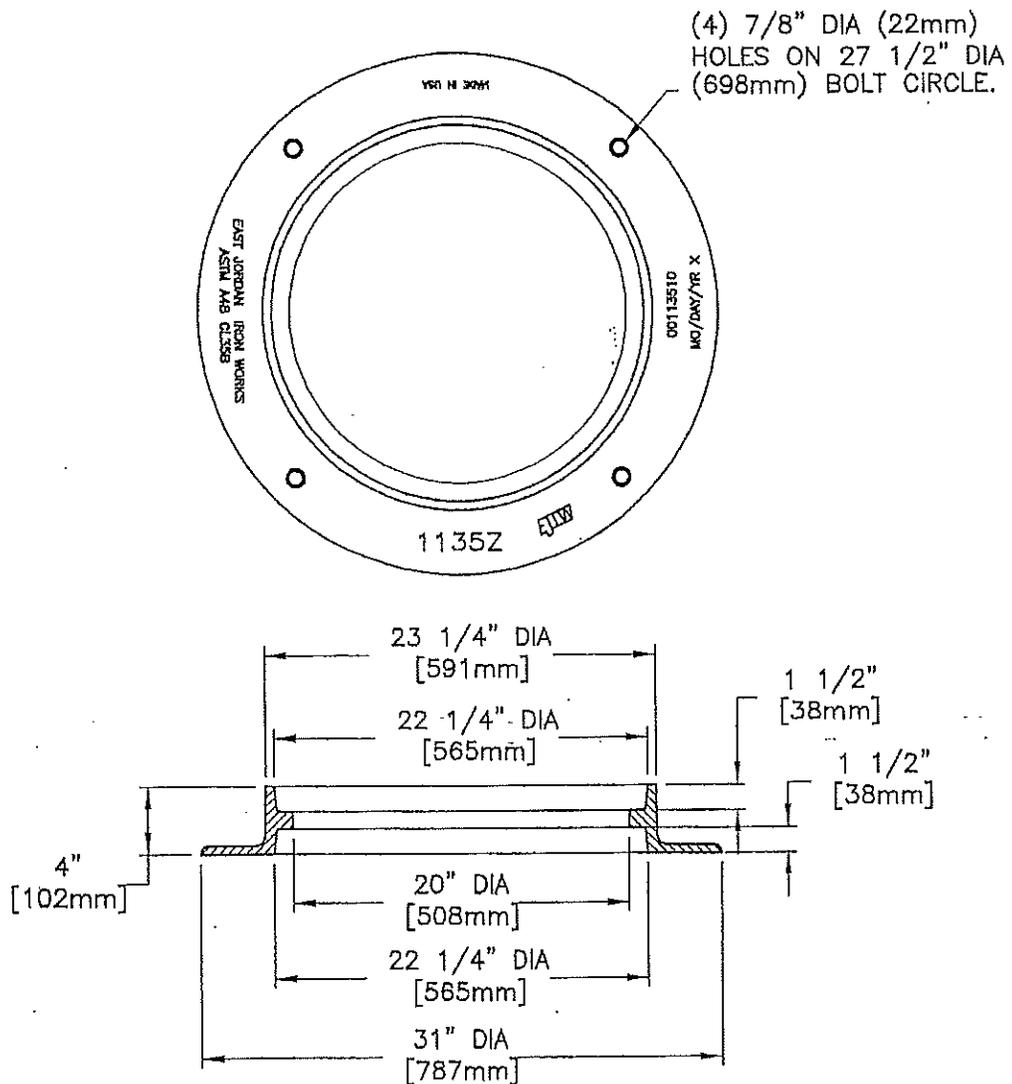


FRAME SECTION

√ MACHINED SURFACE

**24 1/4" MANHOLE FRAME
HEAVY DUTY RATING**

Figure 28

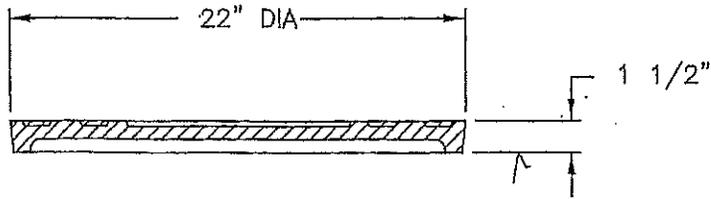
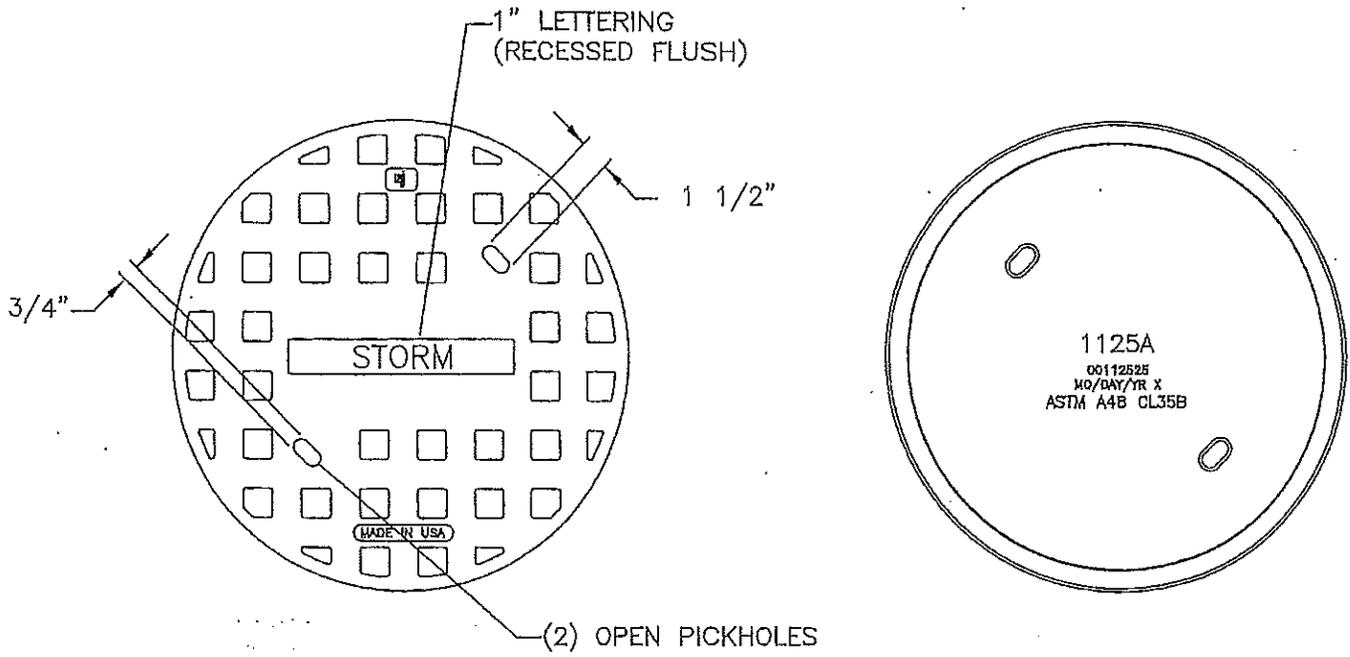


FRAME SECTION

NOTE: FRAME IS REVERSIBLE AND CAN BE INSTALLED AS A TOP FLANGE UNIT.

**23 1/4" MANHOLE FRAME
HEAVY DUTY RATING**

Figure 29



COVER SECTION

**1125A STORM MANHOLE COVER
 FITS 4" AND 8" FRAMES
 HEAVY DUTY RATING**

Figure 30

BERRYVILLE TOWN COUNCIL
MOTION TO APPROVE AMENDMENT TO SECTION 2 GENERAL DESIGN
STANDARDS AND RELATED DETAILS OF THE CONSTRUCTION STANDARDS
AND SPECIFICATIONS MANUAL

Date: September 13, 2016

Motion By:

Second By:

I move that the Council of the Town of Berryville approve amendments to the Construction Standards and Specifications Manual in order to update Section 2 General Design Standards which regulates stormwater management facilities and to add standard details reflecting the updated narrative.

VOTE:

Aye:

Nay:

Absent:

BERRYVILLE TOWN COUNCIL

**Set Public Hearing – Special Use Permit for Professional Office - 208 North
Buckmarsh Street
September 13, 2016**

Georganne Derick Giordano, Owner/Applicant, is requesting a Special Use Permit in order to operate a Professional Office per Section 203.2(b) of the Berryville Zoning Ordinance at the property located at 208 North Buckmarsh Street, identified as Tax Map Parcel number 14A2-((A))-33 zoned R-3 Residential. SUP 04-16

The Planning Commission is holding a public hearing on this matter at their September 27, 2016 meeting and will have comments and recommendations for the request by the October 11, 2016 Town Council meeting.

Ms. Giordano has purchased the property identified above (formerly Steve's Upholstery). The applicant's business includes shared space for licensed and/or certified health and wellness practitioners specializing in Complementary and Alternative Medicines (CAM). A letter from Ms. Giordano is included as part of her SUP application and follows this report.

Mr. Roberson, the previous owner, completed site work on the property as part of his Special Use Permit application that was approved in 1999. These improvements include a commercial entrance; installation of curb around the driveway and parking lot; and the identification of the graveyard that was part of the church use.

Historical Information

Considered a contributing structure in the Berryville Historic District, the church was built between 1870 and 1900. An addition was added to the rear of the building in 1999. The wood frame building was home to the Supreme Council of the House of Jacob and is gothic revival architectural style. Additional information is included on the Historic District Survey Form that was conducted in 1988 as a component to creating the local historic district.

Any exterior modifications to the structure, including signage, lighting, and changes to windows and doors, will be reviewed and approved by the Architectural Review Board.

Site Information

The graveyard is identified on a site plan that was part of the earlier application. The structure, which is approximately 1,800 square feet, requires a minimum of six parking spaces. The graveyard is approximately 2,800 square feet, however it encumbers a significant portion of the rear of the property due to lack of access. This portion of the site shall be maintained by the property owner.

Adjacent Zoning

Adjacent properties are zoned DR-4 Detached Residential to the north; R-2 Residential to the east (rear) and west (across Buckmarsh); and R-3 to the south.

Other

Ms. Giordano has identified hours of operation from 9:00am to 9:00pm Monday through Saturday.

The following items are included with this report:

- Special Use Permit application;
- Letter from the applicant outline the request;
- Site plan identifying parking, graveyard, and signage location;
- Historic District Survey conducted in 1988; and
- Photos of the property.

Recommendation

Set a public hearing for the October 11, 2016 meeting.

Town of Berryville
101 Chalmers Court - Suite A
Berryville, Virginia 22611
Phone: (540) 955-4081 Fax: (540) 955-4524 E-mail: planner@berryvilleva.gov

SPECIAL USE PERMIT APPLICATION

Please Note: This is an application only. The permit will be issued only if approved by the Berryville Town Council after review and recommendation from the Planning Commission.

To be completed by Applicant: _____ Date: 8/16, 2016

Applicant's Name: Georganne Derick Giordano

Applicant's Address: 1055 North Hill Lane, Berryville, VA 22611

Use Applied For: Professional Offices

At the following address: 208 North Buckmarsh St. (R# 340) 22611

Special Conditions: _____

Property Owner's Name: Georganne Derick Giordano

Property Owner's Address: 1055 North Hill Lane, Berryville, VA 22611

Owner or Agent: The information provided is accurate to the best of my knowledge. I understand that the Town may deny, approve, or conditionally approve the request for which I am applying. I certify that all property corners have been clearly staked and flagged.

Signature: [Signature] Date: 8/16/16

Owner: I have read this completed application, understand its intent, and freely consent to its filing. Furthermore, I grant permission to the Town Planning Department and other government agents to enter the property and make such investigations and tests, as they deem necessary. I acknowledge that in accordance with Article X of the Subdivision Ordinance I am responsible for costs incurred for review of subdivision and/or development plans by the Town's engineer and that any other required tests or studies will be carried out at owner/agent expense

Signature: [Signature] Date: 8/16/16

TO BE COMPLETED BY ZONING ADMINISTRATOR

Special Use: PROFESSIONAL OFFICE Zone: R3

Street Address: 208 N. Buckmarsh St Tax Map #: 41A2 (1A)133

Special Use Permit Fee: \$2,000 Paid: \$1,616

Site Plan Fee: \$125 Paid: \$1,616

Signature of Zoning Administrator: _____ Date: _____



Geo Derick, Msc, RH (AHG), Registered Medical Herbalist

1055 North Hill Lane
Berryville, VA 22611
Website: www.geosjoy.com

Phone: 540-955-4769

August 12, 2016

To the Planning Commission of Berryville, VA.

We are requesting a special use permit in order to operate professional offices at the property located at 208 North Buckmarsh St. (Rte 340), identified as Tax Map Parcel number 14A2-((A))-33, zoned R-3 Residential.

The rear lot includes an historic graveyard affiliated with the original AME church. It is our intention to foster wise stewardship of this site, and we look forward to working with Dorothy Davis, the Josephine Museum, and any others interested in protecting and preserving this important site.

Office spaces will be time-shared by licensed or certified health and wellness practitioners specializing in Complementary and Alternative Medicines [CAM]. Additionally, we will now have the potential to attract Colleagues with already thriving practices into our community. Office hours are expected to be from 9 am to 9 pm Monday through Saturday.

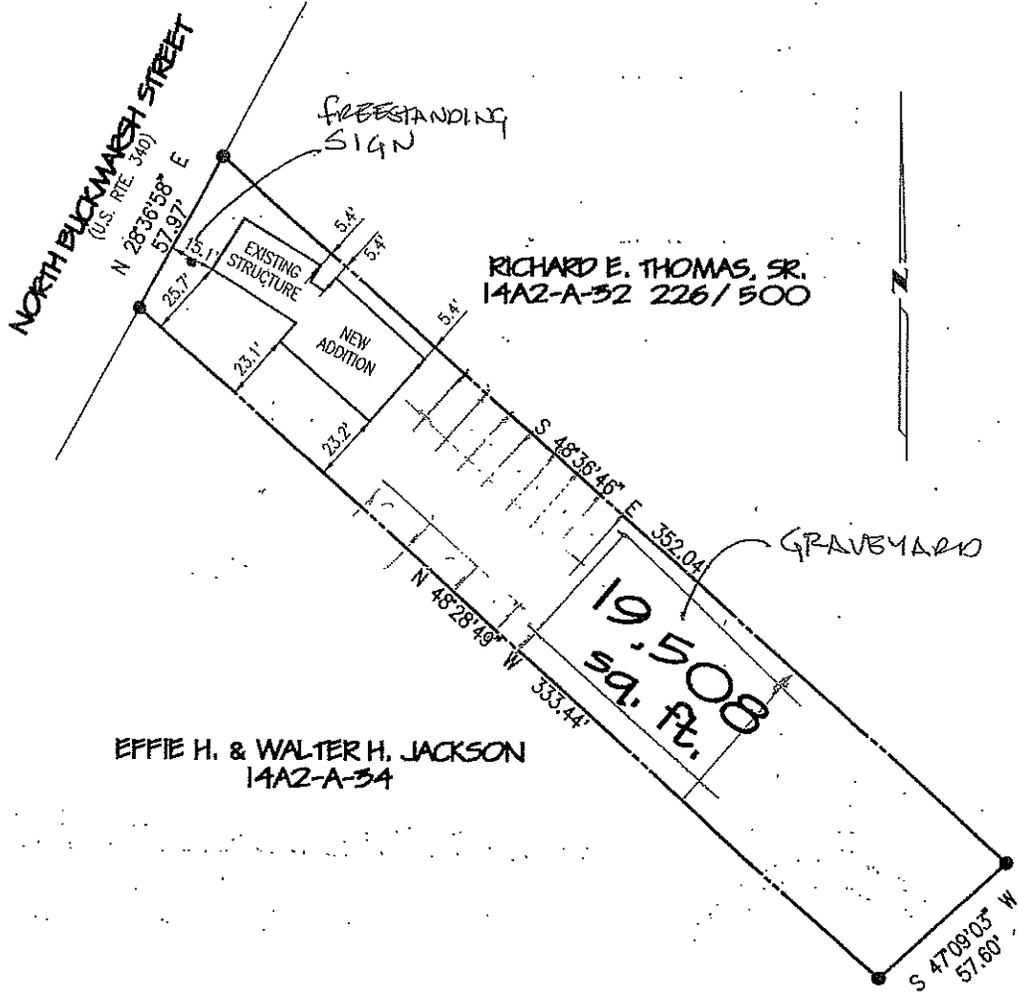
Our specialists will offer preventative, restorative and lifestyle wellness solutions as individualized therapy and education. The group will include among others: nutritionists, health coaches, clinical herbalists, acupuncturists, psychological, energy and movement therapists, and meditation trainers. Up to four practitioners may be working in the space at any one time.

The space behind the building has a large area for parking. Approximately 8 spaces are identified at the rear of the lot.

Respectfully,


Geo Giordano, MSc, RH(AHG)
Registered Clinical Herbalist
Owner of 208 North Buckmarsh St. property

NOT TO SCALE



RICHARD E. THOMAS, SR.
14A2-A-32 226/500

EFFIE H. & WALTER H. JACKSON
14A2-A-34

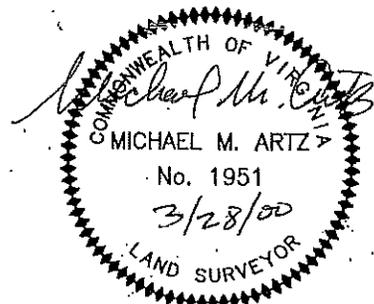
19,508
sq. ft.

HOUSE LOCATION SURVEY OF 19,508 sq. ft.

TOWN OF BERRYVILLE, CLARKE COUNTY, VIRGINIA
SCALE: 1" = 50' DATE: MARCH 28, 2000

PRESENT OWNER:
STEVEN S. & BETTY J. ROBERSON
TM #14A2-A-33 DB 300, PG 502

PROJECT #000055



Artz and Associates
Formerly Ebert & Associates
LAND SURVEYING LAND PLANNING DEVELOPMENT
35 W. BOSCAWEN STREET
WINCHESTER, VA. 22601-4740
TEL. 540-667-3233 FAX 540-667-9188
TOLL FREE 1-800-755-7320

DIVISION OF HISTORIC LANDMARKS

HISTORIC DISTRICT/BRIEF SURVEY FORM

Negative no(s) 894b

Town/Village/Hamlet Berryville Annex (?) County Clarke
 Address or route number Rt 340N U.S.G.S. Quad Berryville
 Historic name 208 N. Beesmas Common name The Supreme Council of the House of Jacob
 Present use Church Building Style Gothic Revival
 Original use Church Building Date(s) c. 1870-1900

1. Construction Materials

wood frame
 brick
 bond: English
 Flemish
 _____course American
 stretcher
 other _____

stone
 random rubble
 coursed rubble
 ashlar dressed
 rock-faced

log:
 squared unsquared
 notching:
 V-notch half dovetail
 saddle full dovetail
 square diamond

concrete block
 terra cotta
 steel frame
 other _____

2. Cladding Material

weatherboard ^{scale} composition siding
 vertical siding stucco
 board & batten aluminum or vinyl siding
 shingle: cast iron
 wood sheet metal
 asbestos enameled metal
 asphalt glass
 bricktex
 other German lap siding on front

3. Stories (number) 1
 low basement stone raised basement

4. Bays (number): front 3 side (church) 3
 symmetrical asymmetrical

5. Roof Type

shed hipped
 parapet? pyramidal?
 gable mansard
 pediment? false mansard
 parapet? gambrel
 clipped end? flat
 cross gable? parapet?
 central front gable? roof not visible
 other _____

6. Roofing Material

shingle
 composition (asphalt, asbestos, etc.)
 wood
 metal
 standing seam
 corrugated
 pressed tin (simulated shingles)

tile
 pantile flat glazed
 slate
 not visible

7. Dormers (number): front _____ side _____
 gable pediment?
 shed NONE
 hipped

8. Primary Porch NONE
 style _____
 stones _____
 levels _____ bays _____
 materials _____
 description and decorative details _____

9. General supplementary description and decoration:
4/4 Gothic Revival windows
Side chimney probably for stove

10. Major additions and alterations:
One bay rear addition with shed roof
New walkway with wrought iron rails

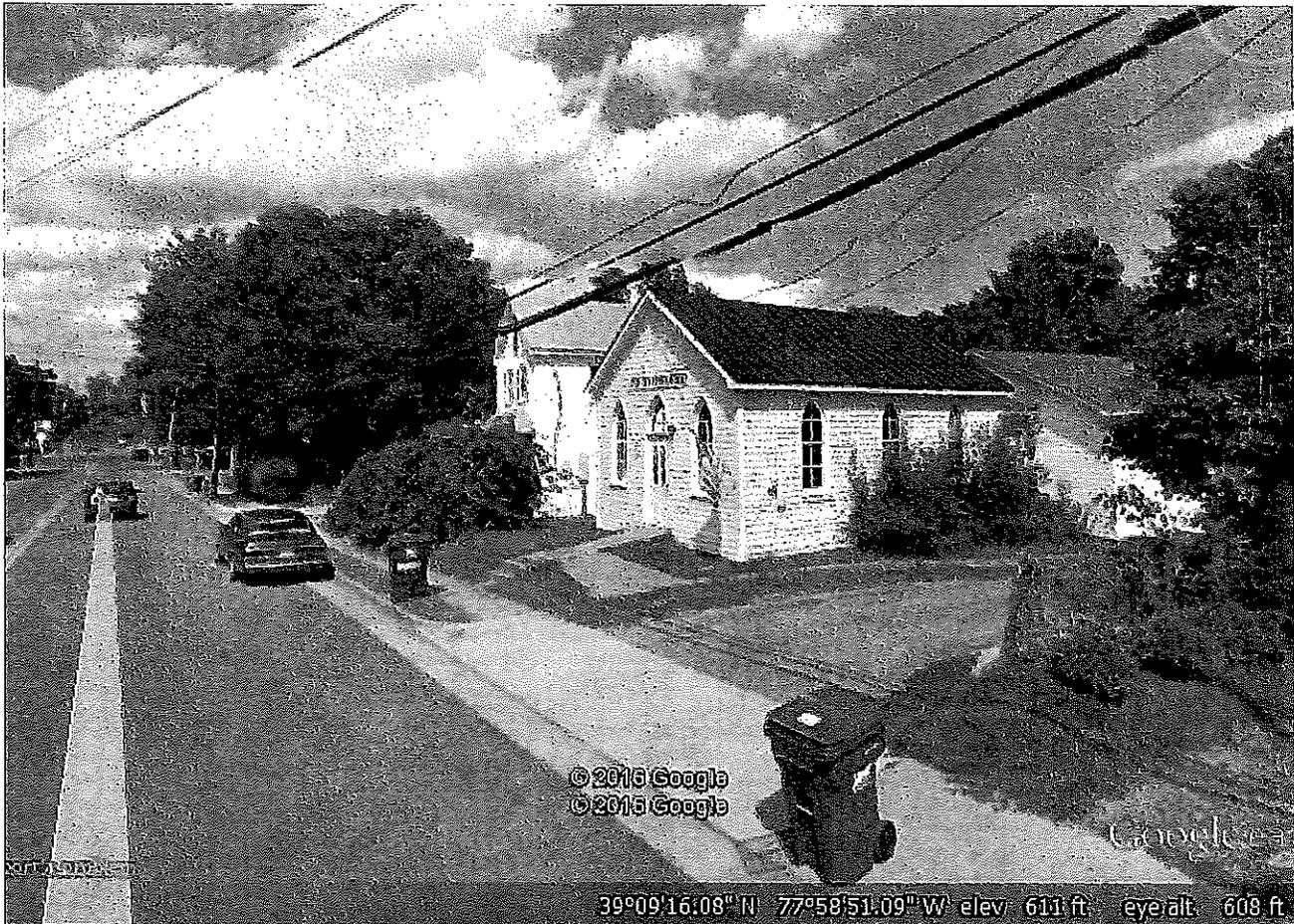
11. Outbuildings:
Vertical siding tool shed or out house
Weatherboard two story single pile house now vacant - pastors house?

12. Landscape Features:

13. Significance:
Wonderful example of church of this style done in a vernacular tradition.



Surveyed by: M. Kalbian Date: 2/2/88



© 2013 Google
© 2013 Google

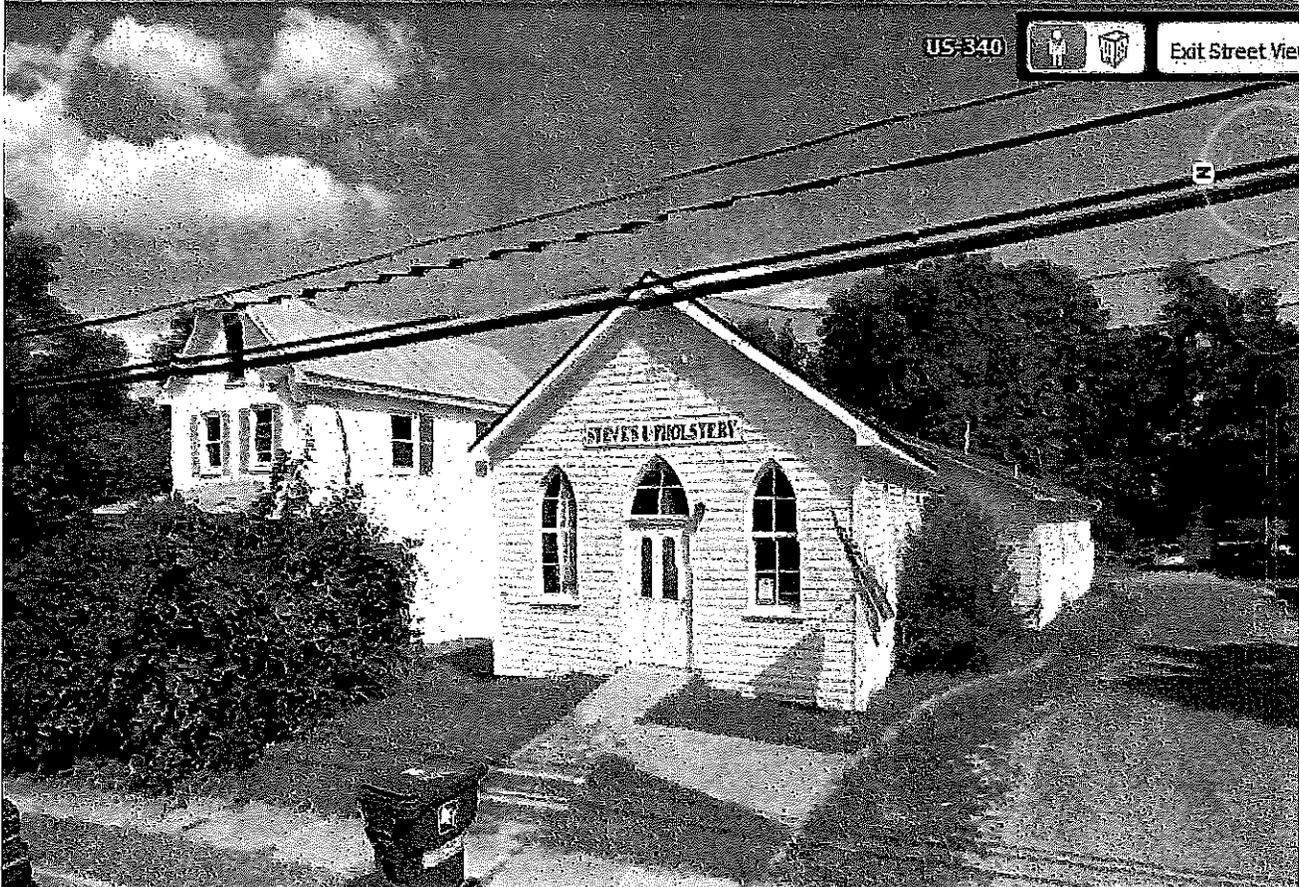
Google

39°09'16.03" N 77°58'51.09" W elev 611 ft eye alt 608 ft

US-340



Exit Street View



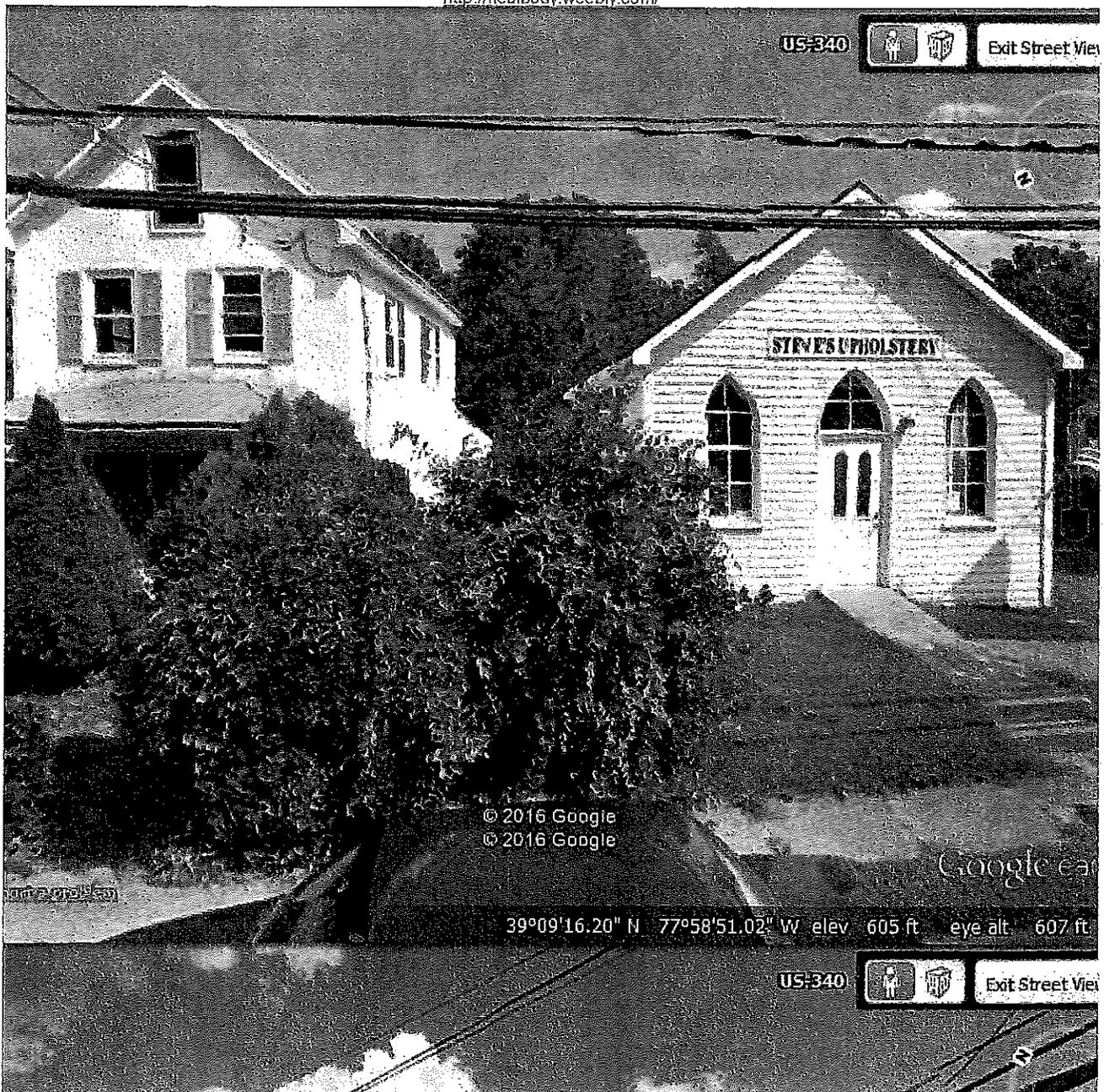
From: Bill Giordano giordanobill1@gmail.com
Subject: 208 N Buckmarsh photos
Date: August 16, 2016 at 9:37 AM
To: Geo Derick geosjoy@rstarmail.com, Georganne Derick geoderick@gmail.com

(attached)
- including some Google Earth

-Expect Miracles-

Bill Giordano
Master Bodyworker-Therapist
Alternative Healing Arts
1055 North Hill Ln
Berryville, VA. 22611
215.696.9091

<http://healbody.weebly.com/>



© 2016 Google
© 2016 Google

Google

© 2016 Google

39°09'16.07" N 77°58'51.10" W elev 605ft eye alt 607ft



BERRYVILLE TOWN COUNCIL

Set Public Hearing – Text Amendment to Section 204.2 of the Berryville Zoning Ordinance

September 13, 2016

The Berryville Planning Commission is initiating a text amendment to Article II, Section 204.2 of the Berryville Zoning Ordinance establishing veterinary hospitals as a use by Special Permit in the C General Commercial Zoning District. TA 07-16

The Planning Commission held a public hearing on this matter at their August 23, 2016 meeting, recommending approval of the text amendment to Town Council.

Dr. Leah Knode, DVM, has requested a text amendment to Section 204, C General Commercial Zoning District of the Berryville Zoning Ordinance in order to allow veterinary hospitals as a use by Special Permit. “Small animal veterinary hospitals, exclusive of boarding” is currently permitted as a use by right in Section 609 L-1 Industrial. The C-1 Commercial district, which is generally located on East Main Street from Cattleman’s Lane east and one block of North Buckmarsh Street, allows “veterinary hospitals” as a use by Special Permit. The B and BC districts, Business and Business Commercial, respectively, allows “veterinary hospitals (small animals), exclusive of outdoor boarding kennels” as a use by Special Permit. A Town zoning map is included with this report.

The applicant owns two mobile vet clinics and two bricks and mortar offices in Loudoun County (Lovettsville and Round Hill). Berryville staff spoke to the Town Clerk in Lovettsville, which is next door to Dr. Knode’s clinic, and she said they have had no issues with the office being located downtown.

The following items are included following this report:

- Land Development Application for Text Amendment to the Berryville Zoning Ordinance;
- Proposed amendment establishing Section 204.2(h);
- Section 503 Special Use Permit of the Town of Berryville Zoning Ordinance;
- Chapter 4 Animals and Fowl, Code of the Town of Berryville;
- Zoning Map for the Town of Berryville; and
- Resolution adopted by the Planning Commission initiating the proposed text amendment.

Recommendation

Set a public hearing for the October 11, 2016 meeting.

Adjacent Zoning

Adjacent properties are zoned DR-4 Detached Residential to the north; R-2 Residential to the east (rear) and west (across Buckmarsh); and R-3 to the south.

Other

Ms. Giordano has identified hours of operation from 9:00am to 9:00pm Monday through Saturday.

The following items are included with this report:

- Special Use Permit application;
- Letter from the applicant outline the request;
- Site plan identifying parking, graveyard, and signage location;
- Historic District Survey conducted in 1988; and
- Photos of the property.

Recommendation

Set a public hearing for the October 11, 2016 meeting.

LAND DEVELOPMENT APPLICATION TOWN OF BERRYVILLE

(Please print or type)

Current Property Owner Jerry Johnson

Owner's Address 37 E Main St. Berryville, VA 22611

Phone 703.928.0431

Agent (Contact Person) Leah Knode VMD (House Paws Animal Hospital Berryville)

Agent's Address P.O. Box 299 Purcellville, VA 20134

Phone (703) 407.2752

Check Appropriate Request:

- Subdivision - creating more than 2 lots
- Minor Subdivision - single lot divided into 2 lots
- Boundary Line Adjustment
- Site Plan
- Rezoning
- Text Amendment: Zoning or Subdivision Ordinance
- ARB Certificate of Appropriateness
- Other: _____

Complete As Applicable:

Nature of Request/Proposal: Text Amendment to ^{section} 204.2 - Veterinary Hospital

Tax Map & Parcel Number(s): N/A

Size of Project Site: N/A

Proposed # of Lots: N/A Existing Zoning _____

Owner or Agent: The information provided is accurate to the best of my knowledge. I understand that the Town may deny, approve, or conditionally approve the request for which I am applying. I certify that all property corners have been clearly staked and flagged.

Signature: [Signature] Date: 7/20/16

Owner: I have read this completed application, understand its intent, and freely consent to its filing. Furthermore, I grant permission to the Town Planning Department and other government agents to enter the property and make such investigations and tests, as they deem necessary. I acknowledge that in accordance with Article X of the Subdivision Ordinance I am responsible for costs incurred for review of subdivision and/or development plans by the Town's engineer and that any other required tests or studies will be carried out at owner/agent expense

Signature: [Signature] Date: 7/20/16

OFFICE USE ONLY

Public Hearing Required? pc/tc Dates Advertised _____

Adjoining Property Owners Notified? N/A

Action Taken: N/A

SECTION 204 - C GENERAL COMMERCIAL DISTRICT

204 STATEMENT OF INTENT

The C General Commercial District covers that portion of the community intended for the conduct of general business to which the public requires direct and frequent access, but which is not characterized either by constant heavy trucking other than stocking and delivery of retail goods, or by any nuisance factors other than occasioned by incidental light and noise of congregation of people and passenger vehicles. This includes such uses as retail stores, banks, theaters, business offices, newspaper offices, printing presses, restaurants and taverns, garages and services stations, and multi-family dwellings.

204.1 USES PERMITTED BY RIGHT

In District C, structures to be erected or land to be used shall be for one or more of the following uses:

- (a) Assembly halls.
- (b) Assembly of high-tech components and /or systems (not including manufacturing).
(6/98)
- (c) Automobile and home appliance services.
- (d) Automobile service stations (with major repair under cover).
- (e) Automobile sales and service.
- (f) Bakeries.
- (g) Banks and financial institutions.
- (h) Barber and beauty shops.
- (i) Nursing homes.
- (j) Churches.
- (k) Day care centers. **(10/94)**
- (l) Department stores.
- (m) Drug stores.
- (n) Dry cleaners.
- (o) Fire and rescue squad stations.
- (p) Fraternal and auxiliary organizations.
- (q) Funeral homes.
- (r) Furniture repair.
- (s) Garages, public and commercial.
- (t) Hardware stores.
- (u) Hospitals, nursing homes, convalescent homes, rest homes.
- (v) (Deleted, 1982.)
- (w) Laundries.
- (x) Libraries.
- (y) Newspaper office buildings, including printing and publishing facilities incidental to such uses.
- (z) Office buildings.
- (aa) Personal and professional services.
- (bb) Pet shops, but excluding boarding kennels.
- (cc) Printing shops.
- (dd) Federal, state, county, or town governmental offices or buildings.

Section 204 General Commercial (C) District

- (ee) Radio and television broadcasting stations and studios, or offices.
- (ff) Restaurants.
- (gg) Retail stores.
- (hh) Single-family detached dwellings. **(3/98)**
- (ii) Theaters, indoor.
- (jj) (Deleted, 1982.)
- (kk) Wearing apparel stores.
- (ll) Public utilities: poles, lines, booster and relay stations, distribution transformers, pipes, meters, and other facilities necessary for the provision and maintenance of public utilities, including water and sewerage facilities.
- (mm) Off-street parking for permitted uses in the district as forth in Section 305.
- (nn) Signs as set forth in Section 307.
- (oo) Fences as set forth in Section 303.
- (pp) Accessory uses clearly incidental to the principal use of the lot.
- (qq) Second story apartments as set forth in Section 310. **(02/14)**

204.2 USES PERMITTED BY SPECIAL PERMIT

- (a) Shopping centers as set forth in Section 308.
- (b) Townhouses as set forth in Section 309.
- (c) First story storefront and basement apartments as set forth in Section 310. **(02/14)**
- (d) Conversion of residential and/or commercial structures into buildings with a greater number of dwelling units.
- (e) Public billiard parlors and poolrooms, bowling alleys, dance halls, health spas and clubs, and similar forms of public amusement only after a public hearing shall have been held by the Governing Body on an application submitted to the Body for such use. The Governing Body may request that the Planning Commission submit a recommendation to them concerning such use applications. In approving any such applications, the Governing Body may establish such special requirements and regulations for the protection of adjacent property, set the hours of operation, and make requirements as they may deem necessary in the public interest, before granting approval to said application.
- (f) Wholesale and distributive establishments which do not create hazards for traffic or adverse impacts on the surrounding area.
- (g) Boarding houses, hotels, motels, and tourist homes.
- (h) Veterinary hospitals (00/16)**

204.3 AREA REGULATIONS

No requirements for commercial uses or for one (1) dwelling unit in conjunction with a commercial use. For two-family or multi-family dwellings, except as specified in Section 204.2, area requirements shall be the same as in the R-3 District for residential units above one (1).

204.4 SETBACK REGULATIONS

No requirement, except for townhouses and apartments as stated in Sections 309 and 310 respectively.

Section 204 General Commercial (C) District

204.5 FRONTAGE AND YARD REGULATIONS

No requirement except that, if the property is adjacent to a residential district, each minimum side yard shall be ten (10) feet and the minimum rear yard shall be twenty (20) feet. Sections 309 and 310 shall apply for townhouses and apartments respectively.

204.6 HEIGHT REGULATIONS

Buildings may be erected up to thirty-five (35) feet in height from grade, except that:

- (a) A public or semi-public building such as a school, church, library, or general hospital may be erected to a height of sixty (60) feet from grade provided that required front, side, and rear yards shall be increased one (1) foot for each foot in height over thirty-five (35) feet.
- (b) Church spires, belfries, cupolas, monuments, water towers, chimney flues, flagpoles, television antennae, and radio aerials are exempt. Parapet walls may be up to four (4) feet above the height of the building on which the walls rest.
- (c) Accessory buildings over one (1) story in height shall be at least ten (10) feet from any lot line. All accessory buildings shall be less than the main building in height.

204.7 SITE PLAN REQUIREMENTS

All new structures, excepting accessory buildings of one hundred fifty (150) square feet or less, shall be subject to final site plan approval. Changes of use or additions to an existing structure requiring additional parking or other significant site changes applicable to a new use shall also be subject to final site plan approval. Site plans shall comply with the conditions of Section 314.

Section 502 – Certificate of Occupancy

- 502.2** Prior to the issuance of a Certificate of Occupancy for a new structure, the Zoning Administrator will verify that all property corners have been set with permanent markers by a land surveyor licensed under the laws of the Commonwealth of Virginia. **(11/00)**
- 502.3** In addition to any other requirements for the issuance of a Certificate of Occupancy, a Certificate of Occupancy for a structure will not be issued unless (1) the structure is served by public water and sewer, (2) required curb and gutter and sidewalks are in place on the lot on which the structure is located and in place between said lot and an existing publicly maintained street, (3) a functional fire hydrant is located within three hundred (300) feet of the lot on which the structure is located, and (4) the lot on which the structure is located fronts on an existing publicly maintained street or street meeting Town requirements for a publicly maintained street. **(8/01)**
- 502.4** In addition to any other requirements for the issuance of a Certificate of Occupancy, after issuance of certificates of occupancy for structures on eighty percent (80%) of the lots in a section of a subdivision, a Certificate of Occupancy for a structure in the section will not be issued unless all public improvements in the section have been completed to Town requirements and all streets have been accepted for maintenance by the Virginia Department of Transportation (VDOT), or a complete application for acceptance thereof has been filed with VDOT. **(8/01)**
- 502.5** Upon written application, delayed installation of public improvements described in 502.3 and 502.4 may be considered by the Zoning Administrator. Approval of the application shall only be granted by the Zoning Administrator after consultation with the respective departments or agencies charged with the inspection, acceptance, and maintenance of the improvements, and only upon a further finding that the delayed installation will not be detrimental to the safety and welfare of the residents in the subdivision and the public. A written request for such delayed installation shall set forth the specific improvements sought to be delayed, the justification for the delay, and a committed date for completion of the improvements. A fifty-dollar (\$50.00) fee shall be paid with the request. If the Zoning Administrator approves the application for delayed installation of public improvements, the approval shall be subject to the applicant executing an agreement to hold harmless the town for any loss or liability occasioned by the lack of the improvements delayed. **(8/01)**

SECTION 503 - SPECIAL USE PERMIT

503.1 PROVISIONS FOR SPECIAL USE PERMITS

- (a) In consideration of an application filed with the Zoning Administrator, the Council may, after a public hearing, authorize the establishment of those uses that are expressly listed as Special Permit uses in a particular zoning district.
- (b) In addition to all applicable conditions and requirements of this Ordinance, the Council may impose any conditions deemed appropriate in the public interest to secure compliance with the provisions of this Ordinance.
- (c) Once a Special Use Permit is granted, the use shall not be enlarged, extended, increased in intensity or relocated unless authorized by the Council.

Section 503 – Special Use Permit

- (d) Whenever a Special Use Permit is granted by the Council, the authorized activities shall be established within two (2) years of the date of approval with an extension of one (1) additional year with Council approval, or such Special Use Permit shall expire without notice. **(4/08)**
- (e) Should the owner or operator of the use covered by the Special Permit fail to observe all requirements of law with respect to the maintenance and conduct of the use and all permit conditions, the Council may, after due notice to permit holder and a public hearing, revoke the Special Use Permit.

503.2 APPLICATIONS

An application for a Special Use Permit may be submitted by the property owner of record, tenant, or contractor owner.

503.3 APPLICATION REQUIREMENTS

Applications for Special Use Permits shall be accompanied by seven (7) copies of the following items:

- (a) Letter of request, signed by property owner and applicant, outlining complete details of special use desired.
- (b) Site development plan.
- (c) Floor plan, front, side, and rear elevations of proposed new buildings.
- (d) Certified house location plat.
- (e) Information deemed necessary by the Zoning Administrator.
- (f) Applicable filing fee.

503.4 APPLICATION PROCEDURE

- (a) Application submitted to Zoning Administrator, which shall be referred to the Planning Commission for recommendation, and a public hearing shall be scheduled by the Town Council.
- (b) Review by the Planning Commission (public hearing if desired) and recommendation to Town Council.
- (c) Public hearing by Town Council.
- (d) Town Council action (In acting upon the application, the Town Council shall consider the following, among other relevant factors):
 - 1. The health, safety, and welfare of the general public.
 - 2. Physical and visual impact on adjoining and abutting properties.
 - 3. Adequate utilities, drainage, parking, and other necessary facilities to serve the proposed use.
 - 4. Compliance with the adopted master plan.
 - 5. Environmental compatibility.
 - 6. Community sentiment.
- (e) Applicant to be notified by Zoning Administrator of Town Council action.

Chapter 4 - ANIMALS AND FOWL

FOOTNOTE(S):

--- (1) ---

Cross reference— Noisy animals and fowl, § 11-16.

State Law reference— General authority of town to regulate animals and fowl, Code of Virginia, § 15.1-870.

ARTICLE I. - IN GENERAL

Sec. 4-1. - Fowl and certain animals prohibited.

- (a) It shall be unlawful and a Class 3 misdemeanor for any person to keep or maintain any hog, pig, swine, horse, mule, goat, or any other animal of the livestock kind, or any chicken, goose or other domestic fowl within the corporate limits of the town; except that horses, mules, cattle or goats may be maintained on parcels larger than ten (10) acres in size, provided that the number of such animals does not exceed one (1) animal per each four acres.
- (b) Each day upon which a violation of this section shall continue shall constitute a separate violation enforceable and punishable by law.

(Ord. of 9-8-92; Ord. of 4-11-00)

Editor's note— Ord. of Sept. 8, 1992, repealed §§ 4-1—4-5 and enacted new provisions designated as §§ 4-1 and 4-2 to read as herein set out. Former §§ 4-1—4-5, pertained to permit to keep livestock; maintenance of premises where livestock kept; keeping of swine prohibited; livestock or fowl running at large; county public nuisance dog ordinance applicable within town. See the Code Comparative Table.

Sec. 4-2. - Commercial kennels and breeding operations prohibited; limitation of dogs kept or maintained.

- (a) It shall be unlawful and a Class 3 misdemeanor for any person to keep or maintain any outdoor commercial boarding and/or breeding kennel or other commercial breeding operation or business, or keep or maintain more than four (4) dogs of more than four (4) months of age within the corporation limits of the town. This prohibition shall not apply to any otherwise lawful pet shop or store located within a fully enclosed structure in a commercial zoning district.
- (b) Each day upon which a violation of this section shall continue shall constitute a separate

violation enforceable and punishable by law.

(Ord. of 9-8-92)

Note— See the editor's note at § 4-1.

Secs. 4-3—4-5. - Reserved.

Note— See the editor's note at § 4-1.

Sec. 4-6. - Destructive cats running at large.

- (a) For the purposes of this section, a "destructive cat" is a cat which injures, damages or destroys property of any person other than the owner or custodian of the cat or which disturbs or scatters garbage or trash canned or bagged for disposal.
- (b) It shall be unlawful for any person to permit a destructive cat owned by him or in his possession or under his control to run at large within the town.
- (c) Upon complaint being made to the chief of police that the provisions of this section are being violated, such officer may, after investigation, give notice of such complaint to the owner or person in possession of such cat and order such owner or person to confine or dispose of such cat. It shall be unlawful for any person to fail to comply with such order.
- (d) A violation of this section shall constitute a Class 4 misdemeanor.

(Ord. of 4-9-74)

Cross reference— Penalty for Class 4 misdemeanor, § 1-11.

Sec. 4-7. - Cruelty to animals.

- (a) Any person who:
 - (1) Overrides, overdrives, overloads, tortures, ill-treats, abandons (except as provided in section 4-8), willfully inflicts inhumane injury or pain not connected with bona fide scientific or medical experimentation to, or cruelly or unnecessarily beats, maims, mutilates or kills any animal, whether belonging to him or another, or deprives any animal of necessary sustenance, food, drink or shelter, or causes any of the above things or, being the owner of such animal, permits such acts to be done by another; or
 - (2) Willfully sets on foot, instigates, engages in or in any way furthers any act of cruelty to any animal; or
 - (3) Shall carry or caused to be carried, in or upon any vehicle or vessel or otherwise, any

animal in a cruel, brutal or inhumane manner, so as to produce torture or unnecessary suffering.

shall be guilty of a Class 1 misdemeanor.

(b) Nothing in this section shall be construed to prohibit the dehorning of cattle.

(Code 1971, § 4-6)

Cross reference— Penalty for Class 4 misdemeanor, § 1-11.

State Law reference— Similar provisions, Code of Virginia, § 18.2-392; general authority of town to prevent cruelty to animals, § 15.1-870; specific authority to adopt above section, § 15.1-29.1:1.

Sec. 4-8. - Abandoning domesticated animals in public place or on property of another.

Any person who shall abandon any dog, cat or other domesticated animal in any public place, including the right-of-way of any public highway, road or street, or on the property of another shall be guilty of a Class 3 misdemeanor.

Cross reference— Penalty for Class 3 misdemeanor, § 1-11.

State Law reference— Similar provisions, Code of Virginia, § 18.2-392; general authority of town to prevent cruelty to animals, § 15.1-870; specific authority to adopt above section, § 15.1-29.1:1.

Sec. 4-9. - Application of sections 4-7 and 4-8 to birds and fowl..

The word "animal," as used in sections 4-7 and 4-8, shall be construed to include birds and fowl.

(Code 1971, § 4-6)

State Law reference— Similar provisions, Code of Virginia, § 18.2-396.

Sec. 4-10. - Disposition of dead animals and fowl.

(a) The owner of any animal or grown fowl which has died, when he knows of such death, shall be forthwith have its body cremated or buried. If he fails to do so, then, pursuant to section 18.2-510 of the Code of Virginia, any judge of a general district court, after notice to the owner, if he can be ascertained, shall cause any such dead animal or fowl to be cremated or buried by an officer, or other person designated for the purpose, and the officer or other person shall be entitled to recover of the owner of every such animal so cremated or buried, the actual cost of the cremation or burial, not to exceed seventy-five dollars (\$75.00), and of the owner of every

such fowl so cremated or buried, the actual cost of the cremation or burial, not to exceed five dollars (\$5.00), to be recovered in the same manner as officers' fees are recovered, free from all exemptions in favor of such owner.

(b) Any person violating the provisions of this section shall be guilty of a Class 4 misdemeanor.

(c) Nothing in this section shall be deemed to require the burial or cremation of the whole or portions of any animal or fowl which is to be used for food or in any commercial manner.

Cross reference— Penalty for Class 4 misdemeanor, § 1-11.

State Law reference— Similar provisions, Code of Virginia, § 18.2-510; burial or cremation of dead dogs, Code of Virginia, § 29-213.27.

Secs. 4-11—4-20. - Reserved.

ARTICLE II. - DOGS

FOOTNOTE(S):

--- (2) ---

Editor's note—Ord. of June 18, 1992, amended the Code by adding provisions designated as Ch. 21. For the purpose of classification and indexing, said provisions have been redesignated as Art. II, §§ 4-21—4-30, at the discretion of the editor.

State Law reference— Authority for above article, Code of Virginia, § 15.1-839; general grant of powers necessary or desirable to secure and promote the general welfare of the inhabitants of the Town of Berryville and the safety, health, peace, good order and comfort of the inhabitants of the Town of Berryville.

Sec. 4-21. - Running at large.

During all months of the year, it shall be unlawful for the owner of any dog to permit his dog to run at large within the town.

For the purposes of this article running at large shall mean the act of roaming, running or self-hunting off the property of its owner or custodian and not under the immediate control of its owner or custodian.

(Ord. of 6-18-92)

State Law reference— Authority for above section, Code of Virginia, § 3.1-796.93.

Sec. 4-22. - License.

It shall be unlawful for any person to own a dog unless such dog is licensed as required by the Code of the County of Clarke, Virginia. Any dog not wearing a collar bearing a license tag of the proper calendar year shall prima facie be deemed to be unlicensed and the burden of proof of the fact that such dog has been licensed, or is not otherwise required to bear a tag at the time, shall be on the owner of the dog.

(Ord. of 6-18-92)

State Law reference— Authority for above section, Code of Virginia, § 3.1-796.94; authorizing the adoption of ordinances which parallel Code of Virginia, §§ 3.1-796.85, § 3.1-796.89.

Sec. 4-23. - Displaying license receipts; dogs to wear tags.

Dog license receipts shall be carefully preserved by the licensees and exhibited promptly on request for inspection by any animal warden or other officer. Dog license tags shall be securely fastened to a substantial collar by the owner or custodian and worn by such dog. The owner of the dog may remove the collar and license tag required by this section when (i) the dog is competing in a dog show, (ii) the dog is confined, or (iii) the dog is under the immediate control of its owner.

(Ord. of 6-18-92)

State Law reference— Authority for the above section, Code of Virginia, § 3.1-796.94; authorizing the adoption of ordinances which parallel Code of Virginia, § 3.1-796.92.

Sec. 4-24. - Leash law.

- (a) It shall be unlawful for the owner, custodian or any person having a dog in his possession to fail to keep and maintain the dog under restraint and control at all times.
- (b) For the purposes of this section, a dog is deemed under restraint and control only when:
 - (1) The dog is securely confined within a parked or moving motor vehicle; or
 - (2) The dog is properly confined within a secure enclosure with the permission of the owner of the property where the enclosure is located; or
 - (3) The dog is securely restrained by a secure collar and leash or other device, not harmful to the dog, having a minimum tensile strength sufficiently in excess of that required to restrict

the dog's movements to a radius of no more than three (3) feet of the person owning, having custody of or possessing the dog who shall be physically capable of restricting the dog's movements.

- (c) This section shall not apply to any person whose dog is under the direct supervision while such dog is participating in a supervised dog show or exhibition, or in a formal dog obedience training class or program.

(Ord. of 6-18-92; Ord. of 7-14-92)

State Law reference— Authority for the above section, Code of Virginia, § 3.1-796.94; authorizing the adoption of ordinances which parallel Code of Virginia, § 3.1-796.95.

Sec. 4-25. - Unlawful to allow dogs to urinate or defecate on public or private property; exception.

It shall be unlawful for any owner or person in custody of a dog to:

- (1) Knowingly or willfully allow the dog to urinate or defecate on the private property of other persons without the consent of such persons.
- (2) Knowingly or willfully allow the dog to urinate or defecate on public property, except that defecation by a dog on public property shall not constitute a violation of this section if the owner or person in custody of the dog immediately removes the material defecated and disposes of it in a safe and sanitary manner.

(Ord. of 6-18-92)

Sec. 4-26. - Barking dogs to be controlled; citizen cooperation; direction by a law enforcement officer.

- (a) It shall be unlawful for any owner of a dog to keep a dog without exercising proper care and control of such dog to prevent it from disturbing the peace of others by unprovoked barking in a continuous or untimely manner, after the owner has been notified of such disturbance. Owners of dogs shall be responsible for exercising control of such dog under this section.
- (b) For the purpose of this section, a continuous manner shall be deemed a dog barking for an uninterrupted period of thirty (30) minutes.
- (c) For the purpose of this section, an untimely manner shall be deemed between the hours of 11:00 p.m. and 7:00 a.m.
- (d) Citizens affected by a barking dog are requested to contact the dog's owner, prior to contacting the town to attempt to resolve differences and objections with the owner of the barking dog.
- (e) A law enforcement officer may direct the owner of a dog found barking in a loud, continuous or

untimely manner to exercise proper control and care of such dog to prevent it from barking in such manner. A law enforcement officer assigned to investigate a violation of this section shall record all initial violations through the use of a compliance notice. Any subsequent violations that occur twenty-four (24) hours after a compliance notice is issued will cause a law enforcement officer on behalf of the town to institute a criminal or civil proceeding against any person he finds in violation of this section.

- (f) Citizens may institute their own criminal or civil proceeding to resolve a barking dog problem.
(Ord. of 6-18-92; Ord. of 9-8-92; Ord. 11-8-11)

Sec. 4-27. - Confinement in case of hydrophobia.

Whenever there may be a case of hydrophobia in the town, the town manager, chief of police, animal control officer and/or health department official shall have the power to direct that all dogs be confined for a reasonable length of time. Upon issuance of a declaration of confinement of all dogs, all dogs shall be confined in accordance with the terms thereof.

(Ord. of 6-18-92; Ord. of 9-8-92)

State Law reference— Authority for above section, Code of Virginia, § 3.1-796.94; authorizing the adoption of ordinances which parallel Code of Virginia, § 3.1-796.100.

Sec. 4-28. - Duties and liabilities of parents or other persons standing in loco parentis.

Any custodial parent or other person standing in loco parentis to a child who has knowledge that such child owns, possesses, harbors, has custody of or is sheltering a dog shall be subject to all the duties, liabilities and responsibilities imposed by this chapter as if such parent or person were the owner of such dog.

(Ord. of 6-18-92)

Sec. 4-29. - Severability.

If any section, sentence, clause, phrase or provision of this article or the application thereof to any person or circumstance is held invalid or unconstitutional by any court of competent jurisdiction, that holding or decision shall not affect other provisions or applications of this article which can be given effect without the invalid provisions or application, and to this end the provisions of this article are severable.

(Ord. of 6-18-92)

Sec. 4-30. - Violation of article.

Any violation of the provisions of this article shall constitute and be punishable as a Class 4 misdemeanor.

(Ord. of 6-18-92)

Cross reference— Penalty for misdemeanors, § 1-11.

State Law reference— Authority for above section, Code of Virginia, § 15.1-901; authorizing municipalities to impose penalties for the violation of ordinances.

Secs. 4-31—4-40. - Reserved.

ARTICLE III. - DANGEROUS OR VICIOUS DOGS

FOOTNOTE(S):

--- (3) ---

Editor's note—Ord. of June 19, 1992, amended the Code by adding provisions designated as Ch. 22. For the purposes of classification and indexing, said provisions have been redesignated as Art. III, §§ 4-41—4-52 at the discretion of the editor.

Sec. 4-41. - Dangerous or vicious dogs.

- (a) As used in this article, dangerous dog means a canine or canine crossbreed which has bitten, attacked, or inflicted injury on a person or companion animal, other than a dog, or killed a companion animal, and vicious dog means a canine or canine crossbreed which has:
- (1) Killed a person;
 - (2) Inflicted serious injury to a person, including multiple bites, serious disfigurement, serious impairment of health, or serious impairment of bodily function; or
 - (3) Continued to exhibit the behavior which resulted in a previous finding by a court that it is a dangerous dog, provided that its owner has been given notice of that finding.
- (b) Any animal control officer who has reason to believe that a canine or canine crossbreed within his jurisdiction is a dangerous dog or vicious dog shall apply to a magistrate of the jurisdiction

for the issuance of a summons requiring the owner or custodian, if known, to appear before a general district court at a specified time. The summons shall advise the owner of the nature of the proceeding and the matters at issue. The animal control officer shall confine the animal until such time as evidence shall be heard and a verdict rendered. If the animal control officer determines that the owner or custodian can confine the animal in a manner that protects the public safety, he may permit the owner or custodian to confine the animal until such time as evidence shall be heard and a verdict rendered. The court, through its contempt powers, may compel the owner, custodian or harbinger of the animal to produce the animal. If, after hearing the evidence, the court finds that the animal is a dangerous dog, the court shall order the animal's owner to comply with the provisions of this section. If, after hearing the evidence, the court finds that the animal is a vicious dog, the court shall order the animal euthanized in accordance with the provisions of § 3.1-796.119 of the Code of Virginia.

- (c) No canine or canine crossbreed shall be found to be a dangerous dog or vicious dog solely because it is a particular breed, nor shall the local governing body prohibit the ownership of a particular breed of canine or canine crossbreed. No animal shall be found to be a dangerous dog or vicious dog if the threat, injury or damage was sustained by a person who was:
- (1) Committing, at the time, a crime upon the premises occupied by the animal's owner or custodian;
 - (2) Committing, at the time, a willful trespass or other tort upon the premises occupied by the animal's owner or custodian; or
 - (3) Provoking, tormenting, or physically abusing the animal, or can be shown to have repeatedly provoked, tormented, abused, or assaulted the animal at other times.

No police dog which was engaged in the performance of its duties as such at the time of the acts complained of shall be found to be a dangerous or vicious dog. No animal which, at the time of the acts complained of, was responding to pain or injury, or was protecting itself, its kennel, its offspring, or its owner or owner's property, shall be found to be a dangerous or a vicious dog.

- (d) The owner of any animal found to be a dangerous dog shall, within ten (10) days of such finding, obtain a dangerous dog registration certificate from the local animal control officer for a fee of fifty dollars (\$50.00) in addition to other fees that may be authorized by law. The local animal control officer shall also provide the owner with a uniformly designed tag which identifies the animal as a dangerous dog. The owner shall affix the tag to the animal's collar and ensure that the animal wears the collar and tag at all times. All certificates obtained pursuant to this subdivision shall be renewed annually for the same fee and in the same manner as the initial certificate was obtained.

- (e) All certificates or renewals thereof required to be obtained under this section shall only be issued to persons eighteen (18) years of age or older who present satisfactory evidence:
- (1) Of the animal's current rabies vaccination, if applicable; and
 - (2) That the animal is and will be confined in a proper enclosure or is and will be confined inside the owner's residence or is and will be muzzled and confined in the owner's fenced-in yard until the proper enclosure is constructed.
- In addition, owners who apply for certificates or renewals thereof under this section shall not be issued a certificate or renewal thereof unless they present satisfactory evidence that:
- (3) Their residence is and will continue to be posted with clearly visible signs warning both minors and adults of the presence of a dangerous dog on the property; and
 - (4) The animal has been permanently identified by means of a tattoo on the inside thigh or by electronic implantation.
- (f) While on the property of its owner, an animal found to be a dangerous dog shall be confined indoors or in a securely enclosed and locked structure of sufficient height and design to prevent its escape or direct contact with or entry by minors, adults, or other animals. The structure shall be designed to provide the animal with shelter from the elements of nature. When off its owner's property, an animal found to be a dangerous dog shall be kept on a leash and muzzled in such a manner as not to cause injury to the animal or interfere with the animal's vision or respiration, but so as to prevent it from biting a person or another animal.
- (g) If the owner of an animal found to be a dangerous dog is a minor, the custodial parent or legal guardian shall be responsible for complying with all requirements of this section.
- (h) After an animal has been found to be a dangerous dog, the animal's owner shall immediately, upon learning of same, notify the local animal control authority if the animal:
- (1) Is loose or unconfined;
 - (2) Bites a person or attacks another animal;
 - (3) Is sold, given away, or dies; or
 - (4) Has been moved to a different address.
- (i) The owner of any animal which has been found to be a dangerous dog who willfully fails to comply with the requirements of this section shall be guilty of a Class 1 misdemeanor.
- (j) All fees collected pursuant to this section, less the costs incurred by the animal control authority in producing and distributing the certificates and tags required by the section, shall be paid into a special dedicated fund in the treasury of the locality for the purposes of paying the expenses of any training course required under § 3.1-796.104:1 of the Code of Virginia.

(Ord. of 6-18-92; Ord. of 10-9-01(1))

State Law reference— Authority for above section, Code of Virginia, § 3.1-796.93:1

Secs. 4-42—4-49. - Reserved.

Editor's note— An ordinance adopted on Oct. 9, 2001, repealed §§ 4-42—4-49. Former §§ 4-42—4-49 pertained to dangerous animals and derived from an ordinance adopted on June 18, 1992.

Sec. 4-50. - Exceptions.

- (a) This article shall not apply to ownership of dangerous animals in conjunction with the conduct in the town of a lawful, licensed business.
- (b) This article shall not apply to any dangerous animal within the town in connection with a circus; carnival; wildlife exhibit or educational program; humane society operation; bona fide scientific endeavor or exhibit; public amusement; religious observance; or the like.
- (c) This article shall not apply to any dangerous animal exhibit within the town in connection with the work or activity of a licensed wildlife rehabilitator.
- (d) This article to any animal used in conjunction with any police department activity.

(Ord. of 6-18-92)

Sec. 4-51. - Severability.

If any section, sentence, clause, phrase or provisions of this article or the application thereof to any person or circumstance is held invalid or unconstitutional by any court of competent jurisdiction, that holding or decision shall not affect other provisions or applications of the article which can be given effect without the invalid provision or application, and to this end the provision of this article are severable.

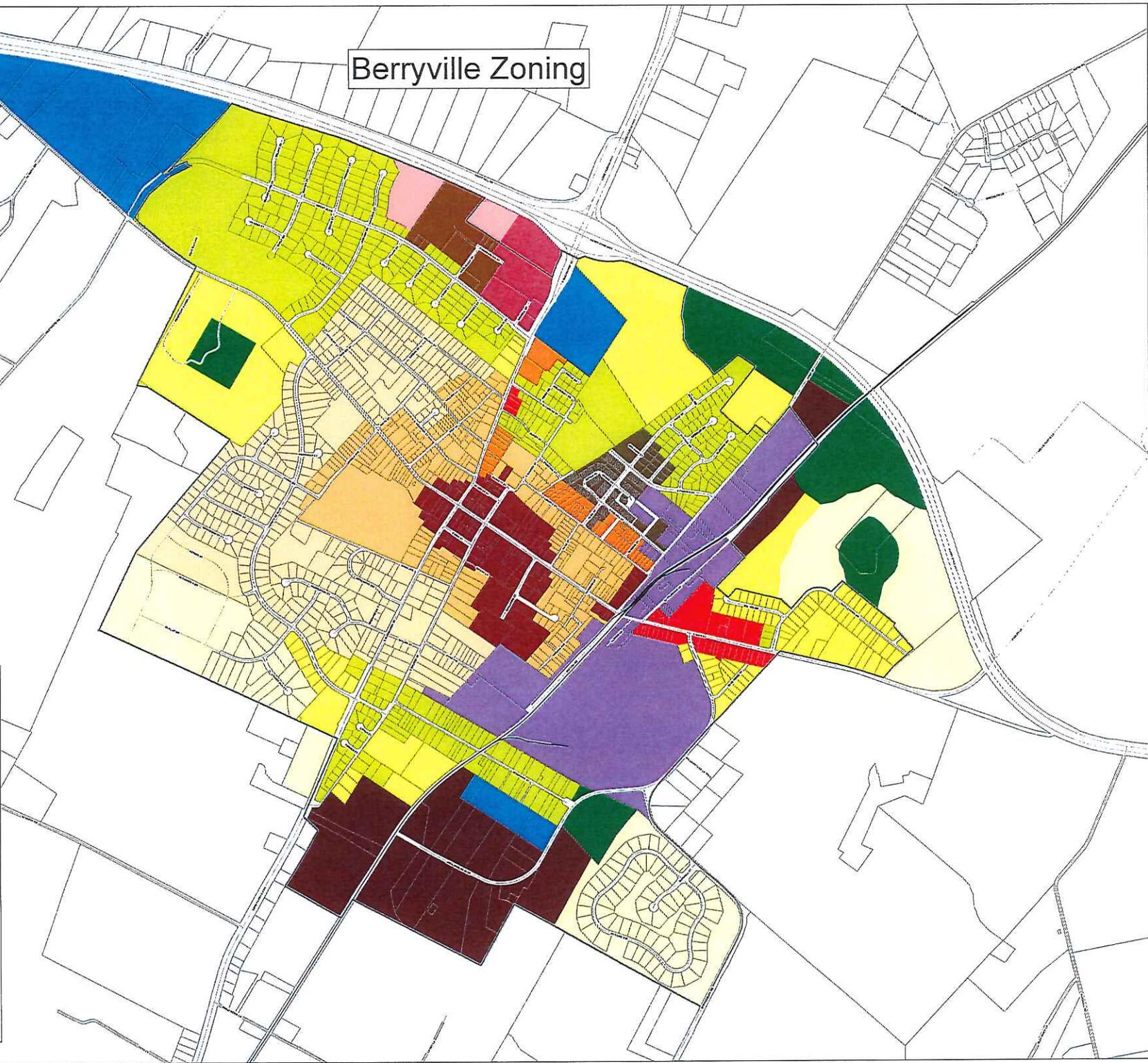
(Ord. of 6-18-92)

Sec. 4-52. - Reserved.

Editor's note— An ordinance adopted on Oct. 9, 2001, repealed § 4-52. Former § 4-52 pertained to violations of this chapter and derived from an ordinance adopted on June 18, 1992.

Berryville Zoning

- Town Boundary (January 1, 2007)
- Road
- Railroad
- Parcel Boundary (Approximate)
- DR-1 (Detached Residential)
- DR-2 (Detached Residential)
- DR-4 (Detached Residential)
- R-1 (Residential)
- R-2 (Residential)
- R-3 (Residential)
- AR (Attached Residential)
- OPR (Older Persons Residential)
- OSR (Open Space/Residential)
- B (Business)
- BC (Business Commercial)
- BP (Business Park)
- C-1 (Light Commercial)
- C (Downtown Commercial)
- L-1 (Light Industrial)
- ITL (Institutional)



Town of Berryville
Berryville-Clarke County
Government Center
101 Chalmers Court Suite A
Berryville, VA 22611



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[F] 540/955-4524
[E] info@berryvilleva.gov

www.berryvilleva.gov

A RESOLUTION: Amendment to Article II, Section 204.2 of the Berryville Zoning Ordinance establishing veterinary hospitals as a use by Special Permit in the C General Commercial zoning district.

WHEREAS, there are currently no veterinary hospitals located within the corporate limits of the Town of Berryville and the need for such a facility has been identified by the applicant; and

WHEREAS, veterinary hospitals are permitted by Special Permit in the B, BC, and C-1 zoning districts and by right in the L-1 zoning district; and

WHEREAS, clients using this facility would increase foot traffic in the downtown area of Berryville; and

WHEREAS, Berryville will receive BPOL and machinery and tools taxes as a result of a veterinary hospital locating into the Town; and

WHEREAS, the Planning Commission of the Town of Berryville supports the veterinary hospital use in the C General Commercial zoning district as a use by Special Permit; and

NOW, THEREFORE, BE IT RESOLVED that the Planning Commission of the Town of Berryville, Virginia hereby initiates the text amendment to establish Section 204.2(h) of the Berryville Zoning Ordinance in order allow veterinary hospitals in the C General Commercial zoning district as a use by Special Permit.

Passed this 23rd day of August, 2016.

Attest: _____

By: Douglas A. Shaffer, Chair

CERTIFICATION

I hereby certify that the above resolution was duly adopted by the Planning Commission of the Town of Berryville, in a duly assembled meeting on the 23rd day of August, 2016.

By: Christy Dunkle, Clerk

Patricia Dickinson
Mayor

Harry Lee Arnold, Jr.
Recorder

Council Members

Donna Marie McDonald
Ward 1

Allen Kitselman, III
Ward 2

Erecka L. Gibson
Ward 3

David L. Tollett
Ward 4

Keith R. Dalton
Town Manager

BERRYVILLE TOWN COUNCIL

Set Public Hearing – Text Amendment to Section 614.2 of the Berryville Zoning Ordinance

September 13, 2016

The Berryville Town Council is sponsoring a text amendment requested by A.C. Echols, Owner/Agent, to Article VI, Section 614 Older Person Residential (OPR), of the Berryville Zoning Ordinance to allow “Housing for Older Persons Residential: Single Family Detached; Single Family Attached – Duplexes, Tri-plexes, Quad plexes, Townhouses, and Multi-family Apartments (including personal service uses of less than 500 square feet)” as a permitted use under Section 614.2(c) and removing “Housing for Older Persons, Medium Density: Single-Family Attached (Townhouses – 5 to 8 attached residential uses), Multi-family (including personal service uses of less than 500 square feet” from Section 614.3.(c). TA 04-16

The Planning Commission held a public hearing on this matter at their August 23, 2016 meeting. After closing the public hearing, they will be discussing the request at their September 27 meeting and forwarding recommendations to Town Council by the October 11, 2016 meeting.

Mr. Echols is requesting modifications to Section 614 Older Person Residential (OPR) zoning district in order to allow all housing types by right under Section 614.2(c) of the Berryville Zoning Ordinance. At the July meeting, Town Council agreed to sponsor a text amendment as requested by A.C. Echols, Jr. Currently single-family attached (5-8 residential Townhouses) and multifamily (including personal service uses of less than 500 square feet) require an approved Special Use Permit (SUP). As part of this action the current Section 614.2(c), which allows these uses by Special Permit, would be deleted. Per Section 503 of the Berryville Zoning Ordinance, which regulates SUP applications, conditions may be set on special permit uses for the public interest in order to secure compliance with provisions of the Zoning Ordinance.

Mr. Echols has submitted four Special Use Permit applications for his property located in the OPR district: two were approved; one did not conform to zoning and comprehensive plan regulations and policies, respectively; and the fourth was withdrawn.

Please note that while a specific parcel is identified on this Land Development Application, this amendment would apply to all parcels within the Older Person Residential (OPR) zoning district.

The following items are included after this report:

- Land Development Application;
- Letter from BADA Vice Chair George Ohrstrom presented to the Planning Commission at their public hearing; and
- Section 614 with changes identified in red.

Recommendation

Set a public hearing for the October 11, 2016 meeting.

LAND DEVELOPMENT APPLICATION TOWN OF BERRYVILLE

(Please print or type)

Current Property - Tax Map 14-5-251B, Section 2B of Battlefield Estates

Owner - A. C. Echols, Jr., Trustee

Owner's Address - 400 Custer Court, Berryville, Virginia 22611

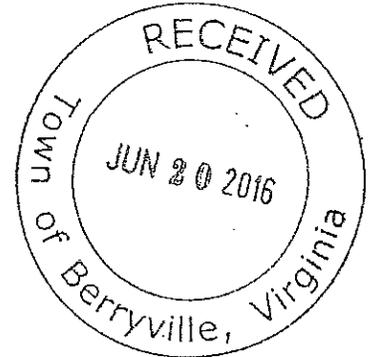
Phone - 540-944-2618 or 703-777-4100

Agent (Contact Person) - A. C. Echols, Jr.

Agent's Address

- 400 Custer Court, Berryville, Virginia 22611

Phone 703-777-4100



Check Appropriate Request:

- Subdivision - creating more than 2 lots
Minor Subdivision - single lot divided into 2 lots
Boundary Line Adjustment
Site Plan
Rezoning

- X Text Amendment: x Zoning or Subdivision Ordinance
ARB Certificate of Appropriateness
Town of Berryville Utilities
Other:

Complete As Applicable:

Text Amendment Request: SECTION 614 - OLDER PERSON RESIDENTIAL (OPR)

An Amendment to Section 614.2 (Permitted Uses) Subsection (c) wherein it is changed to read as follows: Subsection (c) Housing for Older Persons Residential: Single Family Detached; Single Family Attached - Duplexes, Tri-plexes, Quad-plexes, Townhouses, and Multi-family Apartments (including personal service uses of less than 500 square feet), and Section 614.5 - "Maximum Density" to delete the last sentence in the section which reads as follows: "However, not more than three hundred (300) Older Persons Residential units (including not more than one hundred twenty (120) multi-family units) shall be allowed in Annexation Area B as shown on approved subdivision plats or site plans."

Proposed # of Lots: One

Existing Zoning - Older Person Residential (OPR)

Owner or Agent: The information provided is accurate to the best of my knowledge. I understand that the Town may deny, approve, or conditionally approve the request for which I am applying. I certify that all property corners have been clearly staked and flagged.

Signature: A. C. Echols, Jr. - Trustee Date: 6/20/16

Owner: I have read this completed application, understand its intent, and freely consent to its filing. Furthermore, I grant permission to the Town Planning Department and other government agents to enter the property and make such investigations and tests, as they deem necessary. I acknowledge that in accordance with Article X of the Subdivision Ordinance I am responsible for costs incurred for review of subdivision and/or development plans by the Town's engineer and that any other required tests or studies will be carried out at owner/agent expense

Signature: A. C. Echols, Jr. - Trustee

Hello All

I'm sorry that I can't be present at the Berryville Planning Commission meeting August 23, but as a member of The Berryville Area Development Authority for many years, I would like to submit a few comments about our thoughts about OPR unit numbers.

There are many people in Berryville that seem to think that having a cap on the number of older Person Residential units is actually discrimination against older people, but we don't feel that way. We feel that it would be a shame to give up all other types of senior housing in that OPR area. There should be some variations in the housing stock. I don't believe everyone over the age of 60 wants to live in large buildings, with large populations of people living on top of each other. In fact, I feel that in some cases those types of structures are actually warehousing older persons in structures they don't really want to be in; they are there only because there isn't any other option.

I also feel that filling up most of Berryville with OPR housing of any type is not the best idea. I'd like to see a vibrant community of all age groups. I don't believe the numbers I've seen on numerous proposals for revenue to the town are accurate; and while Fire and Rescue problems aren't technically the Town's concern; we are all county residents and as such, we'll all have to share in the expense.

I understand there are some among us who feel that OPR housing should be constructed at every opportunity; I hope you will all think about what's best for the whole community, and not base your decisions on what a smaller but very vocal part of the community has seized on as the answer to all the problems of our town.

Respectfully submitted,
Mr George L. Ohrstrom II

SECTION 614 - OLDER PERSON RESIDENTIAL (OPR)

614.1 PURPOSE AND INTENT

The Older Person Residential (OPR) District is created to provide for residential, office, and service uses for people over 55 years old at locations compatible with the Comprehensive Plan's goals for residential development in the Town of Berryville and within the precincts of the Berryville Area Plan. Maximum densities are established in this district to allow the various types of uses at a scale compatible with the general character of the Town and the nature of the uses. This district may be applied to development with the intent of preserving natural features and vegetation, promoting excellence in site planning and landscape design, and encouraging development with compatible scale, materials and architectural character. Development in the OPR District shall be sensitive to land physiography, provision of adequate public infrastructure, and development of high-quality transportation improvements while achieving optimal siting of dwellings, services, recreation areas, community facilities, and open space.

614.2 PERMITTED USES

- (a) Accessory structures less than one hundred fifty (150) square feet in size
- (b) Community buildings and association facilities, public and private, including recreation areas and other common area improvements associated with residential developments
- (c) Housing for Older Persons **Residential: Single Family Detached; Single Family Attached – Duplexes, Tri-plexes, Quad plexes, Townhouses, and Multi-family Apartments (including personal service uses of less than 500 square feet).** ~~Low Density: Single Family Detached, Two-Family Detached (Duplex), Single-Family Attached (Triples and Quadplex—3 to 4 attached residential units)~~
- (d) Public utilities
- (e) Recreation facilities (indoor or outdoor), including parks, playgrounds, golf courses, swimming pools, tennis courts, etc.

614.3 SPECIAL PERMIT USES

- (a) Day care centers
- (b) Government and other public buildings (including police, fire, library, museum, and postal facilities)
- ~~(e) Housing for Older Persons, Medium Density: Single Family Attached (Townhouses—5 to 8 attached residential uses), Multi-family (including personal service uses of less than 500 square feet)~~
- (d) (Deleted 2010)
- (e) Medical care facilities, licensed
- (f) Places of worship
- (g) Schools, public and private, including nurseries, playgrounds, and related uses

Section 614 Older Person Residential (OPR) District

614.4 AGE REQUIREMENT

An age restriction enforcement plan shall be submitted with each subdivision or site plan application so as to ensure that all occupants of dwelling units conform to the age restrictions established for Housing for Older Persons. Such enforcement plans shall include:

- (a) the covenants, management regulations, or other similar legal instruments with enforcement by the property owner, homeowners association, or other private entity;
- (b) the identity of the private entity which shall be held responsible for any violation of the age restrictions for Housing for Older Persons;
- (c) a provision for an annual report to the Town of Berryville as to age status of the occupants of each unit; and
- (d) a provision which states that no person under nineteen (19) years of age shall reside in any unit for more than ninety (90) days in any calendar year.

614.5 MAXIMUM DENSITY

A Master Plan shall be submitted with a request for OPR zoning showing a general arrangement of uses and density for the subject property and all adjacent areas intended for OPR uses. The Master Plan shall show that the public service needs are no greater for the OPR uses than the public service needs for the uses planned for that sub-area. The number of average daily vehicle trips generated, the amount of sewage generated, the amount of water used, and demand on emergency services will be no greater with the proposed number of older person residential units and service uses than that generated by the maximum density of uses allowed by a property's land use designation. ~~However, not more than three hundred (300) Older Person Residential units (including not more than one hundred twenty (120) multifamily units) shall be allowed in Annexation Area B as shown on approved subdivision plats or site plans.~~

614.6 MINIMUM DISTRICT SIZE

Minimum district size: three (3) acres

614.7 MAXIMUM BUILDING HEIGHT

Maximum building height: forty (40) feet

614.8 REGULATIONS FOR SINGLE FAMILY DETACHED DWELLINGS

- (a) Minimum lot size: 7,500 square feet
- (b) Minimum lot width: 60 feet
- (c) Minimum yard requirements
 - (1) Front Yard: 20 feet
 - (2) Side yard: 10 feet, except for corner lots, the side yard facing the side street shall be 20 feet or more for both main and accessory buildings
 - (3) Rear yard: 40 feet

Section 614 Older Person Residential (OPR) District

- (d) Accessory structures of less than 150 square feet: 5 feet from side and rear lot lines
- (e) Parking Requirements
The number of required off-street parking spaces shall be a total of 2 per unit.

614.9 REGULATIONS FOR TWO FAMILY DETACHED (DUPLEX) DWELLINGS

- (a) Minimum lot size: 10,000 square feet for total duplex structure
4,500 square feet each separate unit within a duplex
- (b) Minimum lot width: 75 feet per duplex structure
35 feet for each unit of a duplex.
- (c) Minimum yard requirements
 - Front yard: 20 feet
 - Side yard: 10 feet, except for corner lots, the side yard facing the side street shall be 20 feet or more for both main and accessory buildings.
 - Rear yard: 40 feet
- (d) Accessory structures of less than 150 square feet: 5 feet from side and rear lot lines
- (e) Where a lot is to be subdivided into individual lots for the sale of single-family attached units, lot lines shall conform with party wall centerlines.
- (f) Maximum lot coverage: 35 percent
- (g) Open Space Requirements
 - 1. An open space plan shall be submitted with a subdivision application.
 - 2. At least 10% of the net site area shall be open space dedicated to common usage and ownership.
 - 3. Refer to Section 615.2 regarding critical environmental area and open space requirements
- (h) Parking Requirements
The number of required off-street parking spaces shall be a total of 2 per unit.

614.10 REQUIREMENTS FOR SINGLE FAMILY ATTACHED DWELLINGS (TRIPLEX & QUADPLEX AND TOWNHOUSES, 5 TO 8 UNITS PER STRUCTURE)

- (a) Minimum lot area per dwelling
 - Interior lot: 2,000 square feet
 - Corner lot: 2,400 square feet
 - Condominium: Not regulated
- (b) Minimum lot width
 - Interior lot: 20 feet
 - Corner lot: 35 feet
 - Condominiums: subject to site plan review and applicable performance zoning criteria
- (c) Minimum yard requirements
 - Front yard: 15 feet
 - Side yard: 15 feet
 - Rear yard: 30 feet
- (d) No side yard requirement shall be applied where dwellings share a party wall.

Section 614 Older Person Residential (OPR) District

- (e) Accessory structures of less than 150 square feet: 5 feet from side and rear lot lines.
- (f) Where a lot is to be divided into individual lots for the sale of single family attached dwelling units:
 - 1. Lot lines shall conform with party wall centerlines.
 - 2. Privacy yard, having a minimum of two hundred (200) square feet, shall be provided on each lot.
 - 3. Privacy yards shall include screening, fencing, patio paving and/or special landscaping treatment.
- (g) Open Space Requirements
 - 1. An open space plan shall be submitted with a site plan application.
 - 2. 25% of the net site area shall be open space dedicated to common usage and ownership.
 - 3. At least 20% of the required open space (5% of the net site area) shall be designed and developed as recreational and active community open space.
 - 4. Refer to Section 615.2 regarding critical environmental area and open space requirements.
- (h) Site Plan Requirements
 - 1. A site plan, which shall govern all development, shall be submitted for approval per Section 6.
 - 2. Site plans shall include provisions for:
 - A. Adequate public facilities, development phasing.
 - B. Storm water management facilities to address the ultimate development coverage within the district, lighting and signing.
 - C. Building placement and lot configuration, screening, buffering, and landscaping, and other special site features and land use considerations deemed necessary to serve the district.
 - D. Any site plan application which is not in strict conformance with a pre-existing approved master plan for the district shall require an amendment to that master plan and preliminary plat, if necessary, prior to site plan approval of the specific use.
 - E. All uses shall be subject to final site plan approval.
- (i) Parking and parking access
 - 1. The number of required off-street parking spaces shall be a total of 1.5 per unit and shall be located not more than one hundred (100) feet from the individual dwelling served.
 - 2. Parking bays shall be no closer than twelve (12) feet to any adjoining property line.
 - 3. Off-street parking spaces shall be accessed via private driveways and shall not be directly accessed from public rights of way.
- (j) Driveways
 - 1. Attached dwelling units shall have access to a private driveway with a minimum width of twenty-three (23) feet. The paved street shall be constructed according to Virginia Department of Transportation standards.
 - 2. No attached dwelling unit may be accessed directly from a public street unless approved by a special use permit.

Section 614 Older Person Residential (OPR) District

3. No private driveway shall be located within twelve (12) feet of any property line.
- (k) Setback, yards, buffering, separation and grouping of units
1. Where adjacent properties are zoned to a district other than the OPR District, all single family attached dwellings shall be set back at least forty (40) feet from the common property line(s).
 2. Where single family attached dwellings are adjacent to a private drive, parking area, and/or walkway intended for the common use of the development's occupants, there shall be a minimum building setback of 15 feet from that drive, area, and/or walk.
 3. Adjacent groupings of single family attached dwellings with their accompanying lots shall be separated from one another by a minimum of fifteen (15) feet. This separation shall allow an unobstructed fire lane on all sides of the structure.
 4. No more than four attached dwellings shall be included in any one physically contiguous grouping.
- (l) Maintenance of improvements, covenants and required improvements
1. All common improvements (including open space, recreational facilities, private streets, walkways, parking areas, and other community facilities) shall be maintained by and be the sole responsibility of the property owner until such time as the owner conveys such common area to a nonprofit (homeowner's) entity consisting of at least all of the individual owners of the dwelling units in the development.
 2. Deed restrictions and covenants shall be included with the conveyance to include, among other things, that assessments, charges and costs of maintenance of such common areas shall constitute a pro-rate share lien upon the individual dwelling lots, such lien inferior only to taxes and recorded trusts. Covenants shall specify the means by which the nonprofit entity shall govern and manage itself and maintain building exteriors, landscaping, lighting, recreation areas, walkways, parking areas, snow removal, and travel ways.
 3. All deed restrictions, covenants, nonprofit (homeowner's) entity incorporation documents, and information related to conveyance programs shall be submitted with the plat and plans, and reviewed by the Berryville Town Attorney.
- (m) General Regulations
1. All refuse shall be contained in completely enclosed and screened facilities.
 2. On-site lighting, signing, and mailboxes shall be of compatible scale, materials, and colors to the primary structures.
- (n) Condominiums
1. Any condominium development under the Condominium Laws of Virginia shall be subject to the following provisions:
 - A. Minimum lot size and yard and open space requirements of the district shall be met as if lot lines existed.

Section 614 Older Person Residential (OPR) District

- B. A site plan shall be required and subject to review by the Berryville Area Development Authority. The site plan shall govern the location of all structures and improvements.
- C. Setbacks, density and other district provisions shall be met.

614.11 REGULATIONS FOR MULTI-FAMILY AND NON-RESIDENTIAL USES:

- (a) Maximum Floor Area Ratio (FAR): .60 of net developable area
- (b) Minimum lot area: 20,000 square feet
- (c) Minimum lot width: 100 feet
- (d) Minimum yard requirements
 - Front yard: 25 feet
 - Side yard: 25 feet
 - Rear yard: 25 feet
- (e) Where a lot is contiguous to a property located in any residential district, a public right of way with limited access or a railroad right of way, all buildings shall have minimum setback of forty (40) feet from common property lines.
- (f) Open Space
 - 1. A landscape and buffer plan shall be submitted with any application for site plan approval.
 - 2. At least twenty-five percent (25%) of the gross site area shall be landscaped open space.
 - 3. Refer to Section 615.2 regarding critical environmental area and open space requirements.
- (g) Site Plan Requirements
 - 1. A site plan, which shall govern all development, shall be submitted for approval per Section 6.
 - 2. Site plans shall include provisions for:
 - A. adequate public facilities, development phasing, stormwater management facilities to address the ultimate development coverage within the district, lighting and signing, building placement and lot configuration, screening, buffering, and landscaping, and other special site features and land use considerations deemed necessary to serve the district.
 - 3. Any site plan application which is not in strict conformance with a pre-existing approved master plan for the district shall require an amendment to that master plan and preliminary plat, if necessary, prior to site plan approval of the specific use.
 - 4. All uses shall be subject to final site plan approval.
- (h) Parking Access and Private Drives
 - 1. A minimum of one parking space per unit shall be provided and shall be located not more than one hundred (100) feet from the individual dwelling served.
 - 2. Off-street parking spaces shall be accessed via private driveways and shall not be directly accessed from public rights of way.
 - 3. Parking bays and private drives shall be no closer than twelve (12) feet to any adjoining property line.

Section 614 Older Person Residential (OPR) District

- (i) Buffering and Landscaping
 1. Where a parcel is contiguous to a residential zoning district or public right of way with limited access, a landscaped buffer strip fifteen (15) feet in width shall be provided.
 2. Landscape materials and their placement shall be subject to final site plan approval. With the approval of the administrative body, walls, fences, or wider buffer strips may be used in lieu of landscaping.
- (j) Storage of Materials and Refuse
 1. All refuse containers shall be screened by a solid wall or fence.
 2. Any establishment involved with the storage of any fuel for sale, for on-site use, or for any other purposes, shall be permitted only if the fuel is stored underground, except where otherwise permitted under provisions granted and stipulations required by the administrative body.
 3. All storage shall be conducted within the principal structure, which is to be completely enclosed.
 4. There shall be no outdoor storage and/or display of goods, with the exception of retail display such as plant materials associated with nurseries.
- (k) Uses, Facilities, and Improvements
 1. All business services (and storage) shall be conducted within the principal structure which is to be completely enclosed.
 2. Signing, mailboxes, site lighting and architectural materials shall be provided and installed by the property's owner-developer and shall be consistent and compatible with the scale and character of the development.
 3. Private driveways, street lighting, sidewalks, curbing and gutters, and parking bays shall be constructed to standards specified by the administrative authority or its agent.

BERRYVILLE TOWN COUNCIL

Set Public Hearing – Text Amendment to Section 614.5 of the Berryville Zoning Ordinance

September 13, 2016

The Berryville Town Council is sponsoring a text amendment requested by A.C. Echols, Owner/Agent, to Article VI, Section 614 Older Person Residential (OPR), of the Berryville Zoning Ordinance in order to remove the maximum number of Older Person Residential units (300), including not more than one hundred twenty (120) multifamily units, permitted in the OPR Zoning District in Annexation Area B as shown on approved subdivision plats and site plans as established in Section 614.5 Maximum Density. TA-05-16

The Planning Commission held a public hearing on this matter at their August 23, 2016 meeting. After closing the public hearing, they will be discussing the request at their September 27 meeting and forwarding recommendations to Town Council by the October 11, 2016 meeting.

At the July meeting, Town Council agreed to sponsor a text amendment requested by A.C. Echols, Jr. to remove the 300 unit cap on Older Person Residential units, as well as the maximum 120 multifamily units, in Section 614.5 of the Berryville Zoning Ordinance.

Mr. Echols is requesting that the number of senior units be unrestricted in the Older Person Residential (OPR) zoning district within Annexation Area B. The current cap of 300 total units, including no more than 120 units of multifamily, was established in the original Berryville Area Plan (1992) and is retained in the updated Plan (2015). No application for a Berryville Area Plan amendment has been submitted.

Previous concerns voiced by BADA and Planning Commission members include:

- sufficient emergency services to accommodate more senior units;
- lack of medical facilities;
- lack of transportation options;
- the community need for such facilities;
- lack of senior housing type options (e.g., townhouses, patio homes, single-family cottages); and
- levels of service expected by those moving to Berryville and Clarke County from urban areas.

The updated Berryville Area Plan as well as the original capped multifamily senior housing in this district to a total of 120 units. With 60 being applied to Mary Hardesty House, there are 60 remaining. The property owner has previously requested a 120-unit development which would go over the cap by 60 units.

Mr. Echols requested that staff include the June 29, 2015 document that was submitted with a previous Special Use Permit application for 120 senior multifamily units.

The following items are included with this report:

- Land Development Application;
- Proposed amendment with changes identified in red;
- Letter and study submitted by Mr. Echols in June 2015 for a previous request for 120 affordable senior units; and

Recommendation

Set a public hearing for the October 11, 2016 meeting.

LAND DEVELOPMENT APPLICATION TOWN OF BERRYVILLE

(Please print or type)

Current Property - Tax Map 14-5-251B, Section 2B of Battlefield Estates

Owner - A. C. Echols, Jr., Trustee

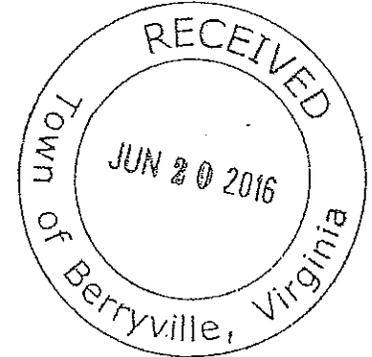
Owner's Address - 400 Custer Court, Berryville, Virginia 22611

Phone - 540-944-2618 or 703-777-4100

Agent (Contact Person) - A. C. Echols, Jr.

Agent's

Address - 400 Custer Court, Berryville, Virginia 22611
Phone 703-777-4100



Check Appropriate Request:

- Subdivision - creating more than 2 lots
- Minor Subdivision - single lot divided into 2 lots
- Boundary Line Adjustment
- Site Plan
- Rezoning

- Text Amendment x Zoning or Subdivision Ordinance
- ARB Certificate of Appropriateness
- Town of Berryville Utilities
- Other: _____

Complete As Applicable:

Text Amendment Request: SECTION 614 - OLDER PERSON RESIDENTIAL (OPR)

An Amendment to Section 614.2 (Permitted Uses) Subsection (c) wherein it is changed to read as follows: Subsection (c) Housing for Older Persons Residential: Single Family Detached; Single Family Attached - Duplexes, Tri-plexes, Quad-plexes, Townhouses, and Multi-family Apartments (including personal service uses of less than 500 square feet), and Section 614.5 - "Maximum Density" to delete the last sentence in the section which reads as follows: "However, not more than three hundred (300) Older Persons Residential units (including not more than one hundred twenty (120) multi-family units) shall be allowed in Annexation Area B as shown on approved subdivision plats or site plans."

Proposed # of Lots: One Existing Zoning - Older Person Residential (OPR)

Owner or Agent: The information provided is accurate to the best of my knowledge. I understand that the Town may deny, approve, or conditionally approve the request for which I am applying. I certify that all property corners have been clearly staked and flagged.

Signature: Alton C. Echols, Jr. Trustee Date: 6/20/16

Owner: I have read this completed application, understand its intent, and freely consent to its filing. Furthermore, I grant permission to the Town Planning Department and other government agents to enter the property and make such investigations and tests, as they deem necessary. I acknowledge that in accordance with Article X of the Subdivision Ordinance I am responsible for costs incurred for review of subdivision and/or development plans by the Town's engineer and that any other required tests or studies will be carried out at owner/agent expense

Signature: Alton C. Echols, Jr. Trustee

Section 614 Older Person Residential (OPR) District

614.4 AGE REQUIREMENT

An age restriction enforcement plan shall be submitted with each subdivision or site plan application so as to ensure that all occupants of dwelling units conform to the age restrictions established for Housing for Older Persons. Such enforcement plans shall include:

- (a) the covenants, management regulations, or other similar legal instruments with enforcement by the property owner, homeowners association, or other private entity;
- (b) the identity of the private entity which shall be held responsible for any violation of the age restrictions for Housing for Older Persons;
- (c) a provision for an annual report to the Town of Berryville as to age status of the occupants of each unit; and
- (d) a provision which states that no person under nineteen (19) years of age shall reside in any unit for more than ninety (90) days in any calendar year.

614.5 MAXIMUM DENSITY

A Master Plan shall be submitted with a request for OPR zoning showing a general arrangement of uses and density for the subject property and all adjacent areas intended for OPR uses. The Master Plan shall show that the public service needs are no greater for the OPR uses than the public service needs for the uses planned for that sub-area. The number of average daily vehicle trips generated, the amount of sewage generated, the amount of water used, and demand on emergency services will be no greater with the proposed number of older person residential units and service uses than that generated by the maximum density of uses allowed by a property's land use designation. ~~However, not more than three hundred (300) Older Person Residential units (including not more than one hundred twenty (120) multifamily units) shall be allowed in Annexation Area B as shown on approved subdivision plats or site plans.~~

614.6 MINIMUM DISTRICT SIZE

Minimum district size: three (3) acres

614.7 MAXIMUM BUILDING HEIGHT

Maximum building height: forty (40) feet

614.8 REGULATIONS FOR SINGLE FAMILY DETACHED DWELLINGS

- (a) Minimum lot size: 7,500 square feet
- (b) Minimum lot width: 60 feet
- (c) Minimum yard requirements
 - (1) Front Yard: 20 feet
 - (2) Side yard: 10 feet, except for corner lots, the side yard facing the side street shall be 20 feet or more for both main and accessory buildings
 - (3) Rear yard: 40 feet

Andrew A. Painter
(571) 209-5775
apainter@thelandlawyers.com



June 29, 2015

Via Email & First Class Mail

Ms. Christy N. Dunkle, Assistant Town Manager/Planner
Town of Berryville
101 Chalmers Court, Suite B
Berryville, Virginia 22611

**Re: Proposed Senior Housing Development
Clarke County Tax Map #14-5-251B
Marlyn Development Corporation**

Dear Ms. Dunkle:

My firm has recently been asked to assist **Marlyn Development Corporation**, the contract purchaser of the above-referenced property (the "Property"), in preparing plans for construction of a 120-unit affordable independent living facility.

Since our meeting with you and Town Manager Keith Dalton in late April, Marlyn has refined its proposal, conducted a fiscal impact analysis, and developed a more formal illustrative concept plan for the Town of Berryville's (the "Town") consideration. Marlyn has also met with local citizens and organizations, including the Battlefield Estates Civic Association, all of which have provided constructive comments that have been incorporated into Marlyn's latest design.

As noted below, Marlyn's proposed plans will provide much-needed affordable housing for Clarke County seniors, and will deliver substantial amenities and public open space. It will also serve as a buffer between commercial uses to the east and the lower-density residential development to the south and west of the Property. As noted in the fiscal impact analysis, the revised proposal is economically viable and overwhelmingly beneficial to the Town from a pecuniary perspective. Marlyn has also made substantial commitments to address concerns over the potential for increased loads on both rescue and fire suppression services.

Marlyn's revised proposal represents a \$14.9 million investment in the Town, and it is clearly the highest and best use of the Property in terms of land use planning, tax benefits, and ability to serve the greatest number of Clarke County seniors. The company looks forward to becoming a long-term corporate citizen, and welcomes your review.

ATTORNEYS AT LAW

703 737 3633 ■ WWW.THELANDLAWYERS.COM
1 E. MARKET STREET ■ SUITE 300 ■ LEESBURG, VA 20176-3014

ARLINGTON 703 528 4700 ■ WOODBRIDGE 703 680 4664

I. Revised Project Summary

From a background perspective, the Property comprises approximately 10.9 acres and is zoned to the Older Person Residential (“OPR”) pursuant to § 614 *et seq.* of the Town of Berryville Zoning Ordinance (the “Zoning Ordinance”). The Property is the last undeveloped OPR-zoned property within the Town’s corporate limits. The Property is also depicted as a part of Annexation Area B in the Berryville Area Plan (the “Plan”). Both the Zoning Ordinance and the Plan recommend a maximum of 300 OPR units within the annexation area, a maximum of 120 of which are recommended to be multifamily units.

At present, 60 OPR multifamily units are provided at Mary Hardesty House, and 60 OPR units are approved, but unbuilt, for the previously-approved Robert Reagan facility on the Property. Marlyn notes that there are full occupancies and waiting lists at Mary Hardesty House and the Greenfield assisted living facility, and it is clear there is an unmet demand for multifamily senior housing options in the Town. Accordingly, Marlyn is asking for an additional 60 OPR multifamily units above and beyond those approved for Robert Reagan (10 percent of which would be market rate) to create a larger 120-unit, three-story independent living facility on the Property.

As depicted on the revised illustrative prepared by Morris & Ritchie Associates, Inc., this proposal would seek to address a number of issues in this quadrant of the Town [see Exhibit 1]. From a transportation perspective, this proposal would share a common driveway with the planned Meridian Healthcare assisted living facility on Tax Map #14A-7-141, and would provide a transportation link to both Mosby Boulevard and Chamberlain Street.

The proposed building would be 34 feet in height (40 feet to the peak of the roof), three stories, and would include elevators and access road around the building. Exterior finishes will include brick, HardiePlank panels, and premium vinyl siding. [See Exhibit 2] The proposal would include a mix of one- and two-bedroom units, with an overall anticipated population of 150 persons. Stormwater management would be provided in an above-ground stormwater facility to the north of the building and throughout green areas around the building.

Approximately 7.21 acres of Property (or 70 percent) is proposed as privately-maintained landscaped open space, which will provide a substantial buffer with the Battlefield Estates community, and provide useable open space for Mary Hardesty House, the 66-bed Greenfield assisted living facility, and Meridian Healthcare’s planned 73-bed assisted living facility. In addition, Marlyn would be amenable to providing a public access easement to permit Town residents use of the property as well.

All sidewalks and entrances across the Property would be ADA-compliant, and access to the building would be restricted through a controlled access entry. For a facility serving 120 units, Marlyn will be able to provide amenities on a size and scale desired by its target demographic. This includes an accessible community garden and interior courtyard, as well as an accessible laundry room and hook-ups in the units for individual laundry machines, library,

business center with computers, fitness center, beauty/barber shop, card and game rooms, resident lounges, cable TV, and walking paths. Marlyn will also employ an activity director and provide a passenger van for community outings.

All living units provided would be ADA "Type B" units and would include fully-finished living space, accessible routes from the parking lot, full handicap accessibility, grab bars and blocking for handrails in bathtubs, clear floor areas and knee spaces, and lowered worktops, as well as usable kitchens, bathrooms, and appliances. The units will also feature a number of standard universal design features, including single-level living, open floor plans, an accessible interior corridor, wider doors, flush thresholds at all doorways, and a variety of kitchen and bathroom features.

Concerning environmental sustainability, the proposed building will include Energy Star windows and appliances, energy-efficient light fixtures and HVAC systems, LED or fluorescent lamps in all common interior building lighting fixtures, and low-emitting emitting materials for all adhesives, sealants, paints, coatings, flooring systems, composite wood, and agrifiber products, as well as furniture and furnishings, if available. The site design will incorporate Low Impact Design ("LID") elements such as but not limited to, bio-retention, bio-swales, curb and gutter removal to direct sheet flow from paved areas into grass areas, disconnection of impervious areas through the use of swales instead of piping storm sewer, native plant species that don't require watering and additional plantings around the parking areas to reduce heat island effect.

The project will also provide upgraded stormwater management conditions. At present, a majority of the Property site drains to the north into an existing stormwater facility constructed concurrent with the Greenfield Assisted Living Facility. The pond was initially used a sediment basin during Greenfield's construction, and was then expected to be transitioned to into a conventional pond once the site had been stabilized. The conversion of the facility never occurred and, due to a lack of maintenance, the facility now has a significant stand of small trees growing in it. Marlyn proposes to upgrade the stormwater pond bring it into conformance with the recently-adopted Department of Environmental Quality regulations. The stormwater pond will be converted into a Level Two extended detention facility, and Marlyn will assume responsibility for its maintenance. Runoff from the Greenfield property will continue to drain to the pond.

Ten percent of the proposed units will be constructed as market-rate units with no income limit; 90 percent of the units would be constructed as affordable housing, but at a slightly higher income and rent structure as compared to Mary Hardesty House. Marlyn's proposal would establish two rent rates set at or below 60 percent of Area Median Income ("AMI") and market rents, which is in contrast with the three rent rates at Mary Hardesty House, all of which are at or below 50 percent of AMI.

Because this proposal would exceed the 120-unit limitation on OPR multifamily units as permitted by the Zoning Ordinance and Plan, Marlyn's proposal would require an amendment to

both documents to allow an additional 60 senior multi-family units (an increase from 120 to 180 units for the OPR district overall) with no overall increase in the total number of units (a maximum of 300 units).

II. Fire and Rescue Concerns

In response to the January 28, 2015 memorandum from Chief Harold Rohde of the John H. Enders Fire Company, Marlyn acknowledges the potential for increased loads on both rescue and fire suppression services with age-restricted housing. It also takes seriously the increased risks associated with evacuating seniors from multifamily structures. It would welcome the opportunity to discuss such concerns in person, and proposes the following measures be incorporated in its plans:

- 1) The proposed facility will be fully licensed and compliant with the currently-adopted National Fire Protection Association (“NFPA”) codes and standards, and would be fully-sprinklered (including in the attic and standpipes) in accordance with the NFPA 13R residential sprinkler design standard;
- 2) The use of natural gas for cooking and heating in individual units will be prohibited. The electric coil stove/range of each unit will be equipped with “Safe T Element” cooking system technology to prevent cooking fires by regulating the temperature of the elements below the auto-ignition point of grease, oil, and clothing.
- 3) The proposed facility will include a fire alarm system with central station monitoring.
- 4) The proposed facility will include fire doors between the wings of the building, a central stairwell at the ends of each wing and near the elevators, and additional emergency lighting and exits;
- 5) The facility will include a loop road around the building with sufficient turning radii for emergency vehicles, as well as a grass-pave driveway for emergency vehicles to access the interior courtyard space;
- 6) To increase the safety of each unit, and to substantially reduce phone call pressure on local emergency services by half, each unit will be equipped with 24-hour emergency push/pull alert buttons which will be connected to a central monitoring station service to provide master system control for all emergency and non-emergency calls originating in the facility. This system will monitor resident and system alerts and, if necessary, alert the Clarke County Communications Facility of a potential emergency. The facility will also include a 24-hour on-call staff person which, concurrent with the centralized monitoring system, will serve as the first line of communication for all alerts.
- 7) In consultation with Chief Rohde and the Director of Fire & Emergency Medical Services, as appropriate, Marlyn will develop pre-incident evacuation and emergency

plans that align with current code, policy, and response criteria, including protect-in-place evacuation scenarios, additional specialized training for staff persons, and the appointment of onsite floor captains and a fire and life safety warden. Planning efforts will also include routine evacuation drills, written procedures, meeting place designations, designating the location of all utilities, emergency power stations, fire protection and smoke control equipment, and effective ways to implement the plan.

- 8) The facility will maintain an updated resident personal information binder, which will include a list of all residents and their room numbers, any special medical or physical conditions of each resident, and photographs, basic floor plans, and the locations of fire extinguishers and fire alarm pull stations. This information will be provided to the John H. Enders Fire Company.
- 9) Marlyn will make a \$25,000 emergency equipment contribution to the Town for distribution to the John H. Enders Fire Company for the purchase of fire-related equipment and rescue services.

Marlyn also notes that, concentrating senior housing at a localized location near emergency services – such as on the Property – makes sense from a service provider perspective and should result in a reduction in the distance emergency responders would otherwise have to travel.

III. Addressing Demographic Trends

Marlyn's proposal will address the needs of Town and Clarke County seniors. As the Property is the last undeveloped OPR-zoned parcel in the Town, Marlyn wishes to serve the greatest number of older Town and Clarke County residents. Marlyn views its proposal as a way to maximize the Town's remaining OPR land and serve as many Clarke County seniors as possible. It is centrally located near a grocery store and emergency services, and will provide a substantial buffer between buildings on Chamberlain Street and the surrounding community.

The 65-plus population in the United States, which totaled 40.3 million in 2010, is expected to reach 54.8 million—a 36 percent growth rate—by the end of this decade, as 40 million Baby Boomers turn 65.¹ 10 percent of the region's population already is 65 or older, and 11.5 percent is between the ages of 55 and 64. In Clarke County, the total senior population has doubled in the past 25 years.² These trends indicate a rising demand for active adult age-restricted communities to accommodate the growing number of County residents entering their late 50s and 60s.

¹ Urban Land Institute Report "Housing in America: The Baby Boomers Turn 65' Explores Opportunities, Challenges in Housing the Nation's Older Citizens" posted on October 17, 2012, by Robert Kruger.

² See Exhibit A (Market Analysis and Financial Impact Report).

Many of the County's Baby Boomers are signaling a preference to "age in Clarke"; that is, a desire to remain in Clarke County and be connected to their community in a safe, independent, affordable, and comfortable manner. Marlyn's research indicates older residents are increasingly searching for maintenance-free living spaces that offer one-level living and open floor plans.³ Anecdotal evidence also indicates that the County's residents do not wish to leave the area where they spent their working lives and raised their families. This has proven a durable pattern, even in a transient region such as Northern Virginia, where many people have relocated from other places.⁴

Concerning the Plan's current recommendation for a mix of senior housing options, Marlyn believes that such a unit mix would be too costly for the marketplace and unrealistic for affordable senior housing. There is no higher or better use for the Property under current zoning, particularly given the landscaping, open space, and amenities which would be made possible by serving the needs of more seniors.

Additionally, market data indicate that, among comparable jurisdictions, the Town has the highest population of seniors, and the lowest percentage of multifamily dwelling units. Marlyn believes it can develop each apartment unit for approximately \$125,000, while quadplex, duplex, and single family senior homes would be more expensive.⁵

IV. Positive Fiscal Impact

Marlyn has requested S. Patz and Associates, Inc. prepare a combined market and fiscal impact analysis based on its revised plans [see Exhibit 3]. Although there is much debate about which homes built in Clarke County will be fiscally positive or fiscally negative, there can be absolutely no debate about whether a multifamily age-restricted development, such as the one Marlyn proposes will be extremely fiscally positive.

Multifamily age-restricted development has proven to have extraordinarily positive fiscal impacts for local governments throughout Virginia. The new residents would drive demand for retail, restaurants, and local-serving office users in the Town, which typically have a very positive fiscal impact on the Town and County. These impacts include indirect economic impacts of this spending, and the size of the indirect impacts show the potential to stimulate new business growth in the Town and County. Finally, the proposed development is age-restricted, it will generate the above benefits without the added burden on schools, which is the largest public cost item associated with residential development. Operating costs are so low because the community will not result in any education costs.

³ National Association of Home Builders article "Baby Boomers Dominate Housing Trends" www.nahb.org.

⁴ An American Association of Retired Persons ("AARP") analysis of census data showed that nine in 10 older adults nationally were living in the same communities where they raised their children and built their lives. Proximity to children, grandchildren and friends is key.

⁵ The starting price for a two-bedroom quadplex unit on the Property would be between \$250,000 and \$300,000; the starting price for duplex units would be between \$290,000 and \$310,000, and the starting price for a new single-family home would be approximately \$325,000.

Marlyn's proposed development will generate approximately \$65,000 in annual revenues to the Town, and nearly \$216,000 in annual revenues to Clarke County. This is in contrast to about \$106,000 in annual operating costs to the Town and County, even after taking account of higher EMT costs per capita than for the average person in the Town. This means that the total annual net fiscal impact at build-out calculated on this simple basis for the proposed development is approximately \$174,000. Looked at another way, for every dollar in revenues the Town receives from the proposed development, the proposed development will only require 50 cents in Town operating costs.⁶

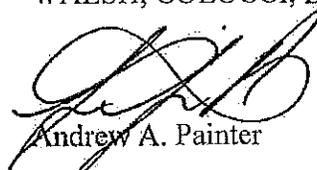
V. Conclusion

As noted above, Marlyn is committed to serving residents of the Town and Clarke County. Its proposal represents a \$14.9 million investment in the Town, and Marlyn will provide housing and affordable dwelling units to meet the needs of Clarke County's aging population. Marlyn's fiscal analysis demonstrates that the proposed community is substantially more fiscally beneficial than lower-density development, in large measure due to the community's tax revenues, absence of school-aged children, and other commitments. Additionally, Marlyn has provided real solutions to address any issues related to fire and rescue services.

I thank you for allowing us to participate in the Town's planning process, and would appreciate you kindly forwarding this letter to BADA for their review as well. We look forward to discussing this project in the coming weeks and, in the interim, please do not hesitate to contact me directly at (571) 209-5775 if I may answer any questions.

Very truly yours,

WALSH, COLUCCI, LUBELEY & WALSH, P.C.



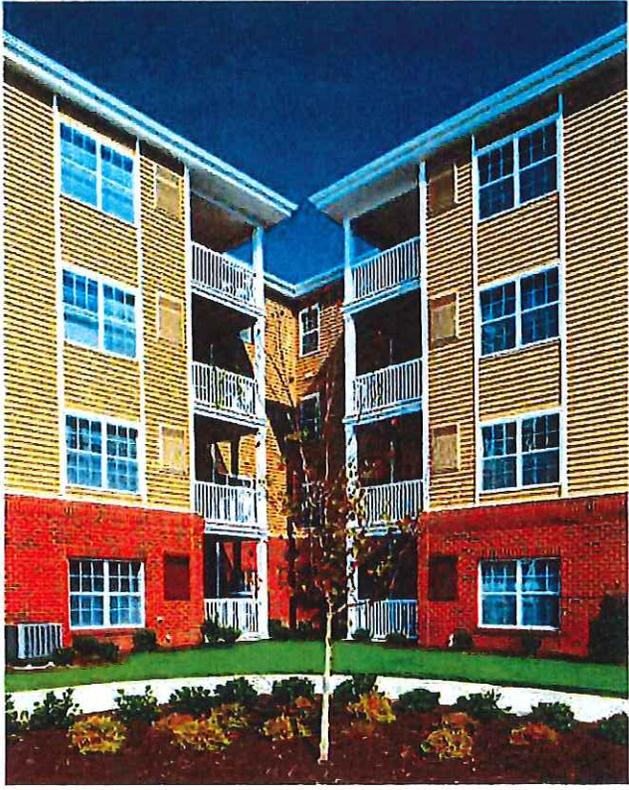
Andrew A. Painter

Enclosures, as stated

Cc: Mr. Francis R. Nance, Marlyn Development Corporation
Mr. Jon K. Erickson, P.E., L.S., Morris & Ritchie Associates, Inc.
Mr. Stuart M. Patz, S. Patz & Associates, Inc.

⁶ Additionally, this proposal will generate approximately \$240,000 in tap fees and, assuming each resident uses at least 50 gallons of water per day, the facility would generate \$60,000 annually in water and sewer fees.

ILLUSTRATIVES





Market and Fiscal Impacts Analyses
Battlefield Estates Senior Housing
Berryville, Virginia

Prepared for:

Mr. Francis Nance
Marlyn Development Corporation

June, 2015

S. Patz and Associates, Inc.
46175 Westlake Drive, Suite 400
Potomac Falls, Virginia 20165



■ S. PATZ & ASSOCIATES, INC ■
■ REAL ESTATE CONSULTANTS ■

June 8, 2015

Mr. Francis R. Nance
Vice President of Development
Marlyn Development Corporation
308 35th Street, Suite 101
Virginia Beach, Virginia 23451

Dear Mr. Nance:

This will submit our market study and fiscal impacts analysis for the proposed development of two commercial properties within the Battlefield Estates subdivision in Berryville, Virginia for new senior housing. The sites are planned for: (1) a 120-unit apartment building designed as affordable housing for active seniors; and (2) a 73-bed Assisted Living Facility for older adults who can no longer live independently. Both sites are planned for start of construction by mid-2016, for apartment unit delivery by year-end 2017.

The study to follow is separated into three sections, plus an Appendix. The Introduction, which is the initial part of the report, is a detailed analysis of the two sites within Battlefield Estates, and the determination of the quality of the sites for age-restricted housing. Also within the Introduction is a full description of the two development proposals.

Section I is a market analysis for affordable housing for active seniors and for assisted living apartment units and the level of demand that exists for each. The proposed apartment units are compared with existing, comparable housing to evaluate each proposal. The market analysis fully supports the two housing proposals, as planned. The market data presented in Section I was used to calculate the fiscal impacts of the developments on the Town of Berryville and Clarke County.

The Fiscal Impacts Analysis presented in Section II shows net annual fiscal benefits to the Town of Berryville of \$33,000+, at completion and lease-up of both facilities. This total is based on total taxes to be generated by the two senior housing complexes, minus annual costs to serve these communities. Data in the following two tables and in the full report may differ slightly due to rounding.

Battlefield Estates Senior Housing
 Mr. Francis R. Nance
 June 8, 2015

| <u>Summary of the Total Direct and Indirect Fiscal Impacts
for the Town of Berryville, Virginia, of the Proposed
Senior Housing at Battlefield Estates Senior Housing
Proposal</u> | | | |
|---|--------------------------------------|-----------------------------------|---------------------------------|
| <u>Type of Tax</u> | <u>Independent
Living</u> | <u>Assisted
Living</u> | <u>Total
Impacts</u> |
| Real Estate Tax | \$29,010 | \$16,480 | \$45,490 |
| Personal Property Tax | \$18,380 | \$9,830 | \$28,210 |
| Motor Vehicle Fees | \$3,270 | \$240 | \$3,510 |
| Sales Tax | \$1,000 | \$200 | \$1,200 |
| BPOL Taxes | \$3,530 | \$8,620 | \$12,150 |
| Meals Taxes | \$8,040 | \$1,200 | \$9,240 |
| Utility Taxes | <u>\$1,970</u> | <u>\$950</u> | <u>\$2,920</u> |
| Total Taxes | \$65,200 | \$37,520 | \$102,720 |
| Less Tax-supported Costs | <u>-\$41,290</u> | <u>-\$28,370</u> | <u>-\$69,660</u> |
| Net Fiscal Benefit | \$23,910 | \$9,150 | \$33,060 |

Clarke County will also benefit from site development in Battlefield Estates at \$210,000+, annually at project completion and occupancy, most of which will come directly from the Town of Berryville. However, outside Berryville, the fact that the County has no active plans for future growth areas means that only \$10,000 in indirect impacts will occur and this represents only a small portion of the full impacts that could be available with more growth area development in the County.

Battlefield Estates Senior Housing
 Mr. Francis R. Nance
 June 8, 2015

| <u>Summary of the Total Direct and Indirect Fiscal Impacts
for Clarke County, Virginia, Battlefield Senior Housing
Proposal</u> | | | |
|--|--------------------------------------|-----------------------------------|---------------------------------|
| | <u>Independent
Living</u> | <u>Assisted
Living</u> | <u>Total
Impacts</u> |
| Direct Impacts | | | |
| Tax Revenue | \$204,540 | \$95,800 | \$300,340 |
| Less Tax-supported Costs | <u>-\$59,200</u> | <u>-\$41,740</u> | <u>-\$100,940</u> |
| Net Fiscal Benefit | \$145,340 | \$54,060 | \$199,400 |
| Indirect Impacts | | | |
| Tax Revenue | \$11,350 | \$13,300 | \$24,650 |
| Less Tax-supported Costs | <u>-\$6,180</u> | <u>-\$8,020</u> | <u>-\$14,200</u> |
| Net Fiscal Benefit | \$5,170 | \$5,270 | \$10,450 |
| Total Impacts | | | |
| Tax Revenue | \$215,890 | \$109,100 | \$324,990 |
| Less Tax-supported Costs | <u>-\$65,380</u> | <u>-\$49,760</u> | <u>-\$115,140</u> |
| Net Fiscal Benefit | \$150,510 | \$59,330 | \$209,850 |
| Sources: Marlyn Development Corporation and S. Patz & Assoc. | | | |

The detailed market and economic data that support these findings and conclusions are presented in the attached report. Please call if additional data or clarification are needed. We remain available to continue to assist you with the successful development of the two attractive proposed senior housing communities.

Sincerely,



Stuart M. Patz
 President

SMP/mes

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Introduction

The following report is a market study and fiscal impacts analysis for the proposed Battlefield Estates Senior Housing development proposal, which will consist of adjacent senior housing buildings. One building will provide affordable housing for active seniors, the other is an Assisted Living Facility (ALF) for older adults who require assisted care for daily needs. The housing for active adults is defined as an affordable Independent Living Facility (ILF) and is expected to serve adults within the age category of 65 to 79 and with incomes within the \$27,000 to \$40,000 category, when incomes are reported in constant 2015 dollars. The ALF is likely to be marketed to persons over 80 years of age and with incomes of \$30,000 and above.

This will be a unique community within the Northern Virginia marketplace and much of Virginia. There are few communities that offer both types of housing, as planned. Some communities, defined as Continuing Care Retirement Communities (CCRC's), also include nursing care, but these are often more expensive, church owned and operated, and with an endowment requirement.

The ILF will be owned and managed by Marlyn Development Corporation. If built, financing will be provided under the federal Low Income Housing Tax Credit (LIHTC) program, as is the case with the nearby Mary Hardesty House. Thus, the ILF will be built as affordable housing, but at a slightly higher income and rent structure compared with Mary Hardesty House. Battlefield Estates Senior Housing will have rents set at or below 60% of Area Median Income (AMI), which is in contrast with the rents at Mary Hardesty House, which are at or below 50% of AMI. The age category for residents will be the same.

For an ILF, as proposed, most residents are in the 65 to 79 age category. However, often, a few residents have disabilities and are under 65 years of age. Some residents at an ILF age in place and exceed 80 years of age. In both cases, these represent a small percentage of residents, so the market study demand data that studies the market for residents of 65 to 79 years of age are likely to be somewhat conservative. The

incomes noted above are based on affordability at 40 percent of income allocated to net rent, but also on maximum income restrictions for LIHTC housing. 120 ILF apartment units are proposed.

For the ALF, 73 "beds" are planned. The ALF will offer basic assisted care for residents who can "function" independently for some daily chores, but who need some level of assistance. The facility will also have a special care wing for residents with alzheimers/dementia, or other disabilities, that require a higher level of care. The monthly fees shown below represent an average of these two levels of care, plus increased fees for additional levels of care for basic AL residents.

Residents of ALF's are typically over 80 years of age, thus, there is a growing need for more special care beds. Financing institutions accept a \$30,000 income to evaluate project feasibility.

The determination of market support for both types of senior housing at the Subject property is the basis for completing the Fiscal Impacts Analysis (FIA). The purpose of the market analysis is to show market support for the proposal, as planned, and to verify the data to be used for the FIA.

The market study is presented first and is divided into two sections, which separates the IL market study from the ALF market study, as each have different income and age requirements, and each has a distinct set of competitive facilities. This is followed by the FIA, which shows the net revenues to accrue to the Town of Berryville annually, at project build out. Fiscal impact data are also shown for Clarke County.

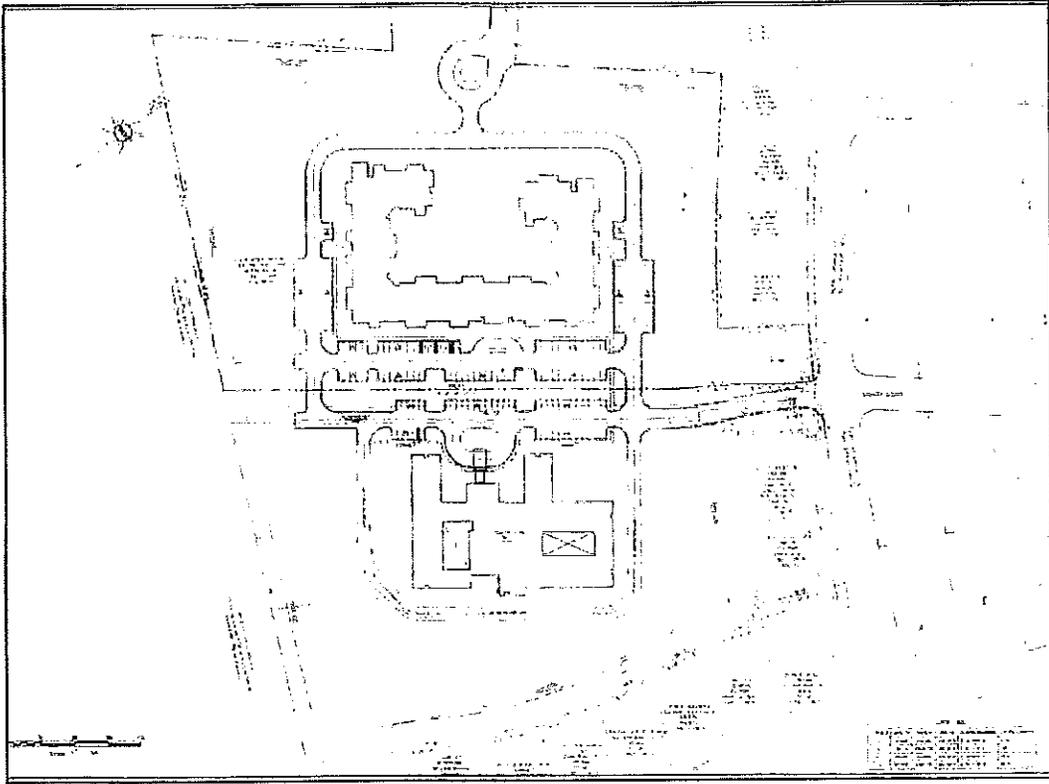
Both buildings are expected to be started by early- to mid-2016. Construction is likely to require approximately 18 months, which would allow for leasing and initial occupancy by late-2017 or 2018. The ability to lease 120 affordable apartment units and 73 ALF beds, and the time required for project lease-up, are part of the market study report findings and an integral part of the FIA.

Site Location and Description

The study site is located at the western end of Chamberlain Street in the Town of Berryville, which is part of the large Battlefield Estates community. Chamberlain Street currently ends at McClellan Street and will be extended to and into the property. A new entrance road will be built from Mosby Boulevard north to the study site, so there will be two access roads to the property. The new road will serve both properties, as will Chamberlain Street extended which currently primarily serves the IL apartment site.

As shown on the site map to follow, the two buildings will face each other along a new private road to be built into the property. The roadway around the two buildings show that additional access is also easily reached via Chamberlain Street and Ashby Court.

The site plan also shows that the property is generally surrounded by single family homes, but to the immediate east of the apartment site is the Greenfield ALF and just east of that property is Mary Hardesty House, an affordable ILF.



Battlefield Estates Senior Housing Site Plan

The apartment site is 10.5± acres and is zoned OPR. The ALF site is 8.6± acres and zoned "B". No rezoning is required for project development. The ALF can be built "by right". The senior apartment building requires additional Town approvals to develop 120 units. Both sites are vacant, as will be shown below. Public water and sewer are to the property and only require extensions from the property line into the sites.

There are no additional off-site improvements required other than the entrance road from Mosby Boulevard, which is to be a private street, and the extension and improvement to Chamberlain Street. Chamberlain Street, from McClellan Street, to the cul-de-sac at the apartment site, will be upgraded and paved, and will include a walking trail and sidewalk.

The first photo to follow (on the left) is a view east from the apartment site along Chamberlain Street, with this part of Chamberlain Street running along the property line for the Greenfield ALF (on the right). This is the current entrance road to the apartment site. Chamberlain Street at this area, and from McClellan Street, is not paved.

The second photo (on the left) is a view west along Chamberlain Street, from McClellan Street, to the apartment site. The photo shows that Chamberlain Street is paved to this point and gravel to the west. Also of note is the wooded area on the north side of Chamberlain Street that buffers the area from U.S. Route 7, which runs along the north side of this section of Berryville (see Map A below).



View East Along Chamberlain Street from Apartment Site



View West Along Chamberlain Street from Apartment Site

The third photo is the site entrance with the location of the water hydrant on the site.



Site Entrance

The next two photos are views of the interior of the apartment site, taken from the site entrance. The site is vacant and predominately level grass area with some tree clusters. For the photo on the right, there is a large treed area that buffers the site from U.S. Route 7. As noted in the photos above, there is a slight rise in the topography from Chamberlain Street to the center of the apartment property.



View West from Site Entrance



View North from Courtyard

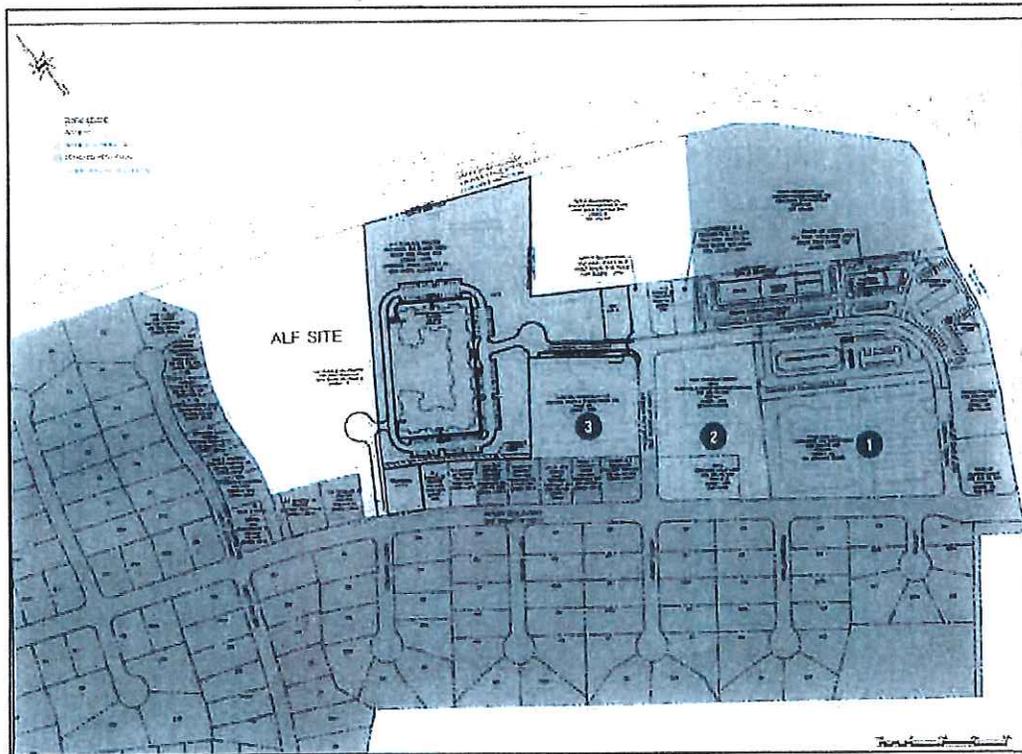
The final photo is a view north from Mosby Boulevard to the ALF site. This site is also level with a mix of grass areas and trees. The area that fronts along Mosby Boulevard is cordoned off and is planned for new single family homes in the future (see site plan on page 4).



View North of ALF Site from Mosby Boulevard

Map A is a larger map of the immediate area of the Battlefield Estates Senior Housing property. Along Mosby Boulevard, at the entrance to Battlefield Estates, is a Food Lion (1), Mary Hardesty House (2), Greenfield ALF (3) and then the Battlefield Estates property.

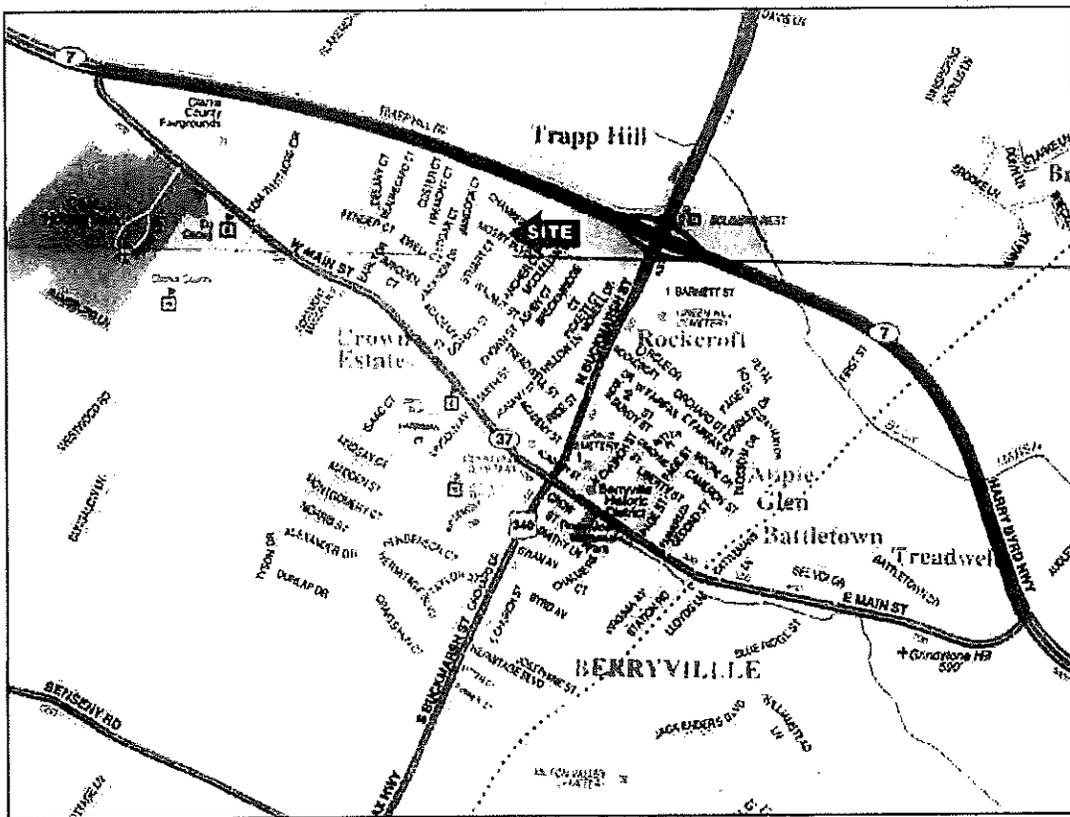
Single family homes are located on the south side of Mosby Boulevard and west of the Battlefield Estates property along Hancock Court. This map shows the entire Battlefield Estates property being located at the southwest quadrant of the Route 7/340 interchange. The two large sites, noted by a "star" are vacant. The area shown in blue, purple and yellow represent the 30 commercial areas of Battlefield Estates.



Map A - Commercial Area of Battlefield estates

The last parts of the site description are the location map of the senior housing site within the Town of Berryville and a regional locational map. The site is part of the large Battlefield Estates community that generally runs from U.S. Route 340 on the east

along Mosby Boulevard west, to the western end of the subdivision. Battlefield Estates also includes the cross streets along Mosby Boulevard, including Walnut Street. The community includes over 100 homes which were built during the 1990's. At the corner of Mosby Boulevard and U.S. 340 is a bank and Food Lion grocery store. The subdivision also has the 60-unit IL apartment building, Mary Hardesty House and the 66- bed Greenfield ALF. A child day care is also part of the community.

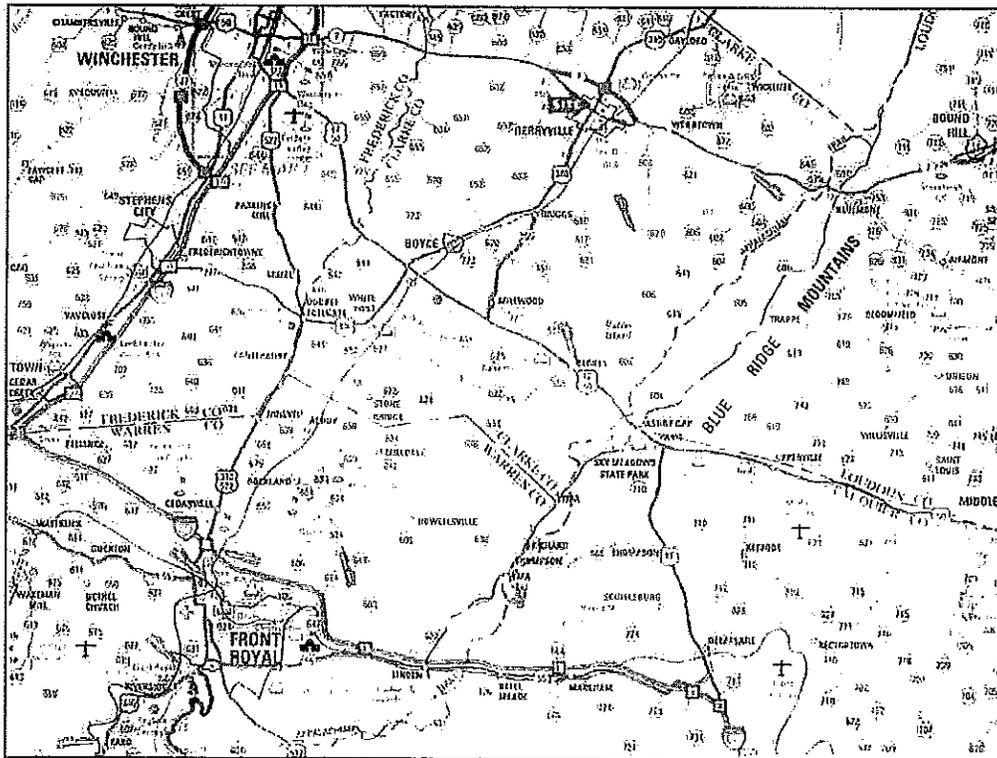


Map B - Site Setting within the Town of Berryville

Berryville is a small town and residents travel to Winchester and/or Leesburg for much of their shopping, health and entertainment needs. However, the Town has proven to be a viable location for AL and IL, as access to Winchester and Leesburg is convenient via Route 7.

Map C is a regional map of the Route 7 corridor on the west side of Northern Virginia. The key points to note on the map are:

- Berryville's close proximity to Winchester. A large shopping center exists on the east side of the City and along Route 7. The new and large Winchester Medical Center is located near the interchange of routes 50 and 37.
- The excellent highway system in the region including Route 7, 340, 50 and I-81.
- Not fully shown, but Purcellville and Leesburg are close by (east of Round Hill) vial Route 7.



Map C - Regional Setting

Battlefield Estates Senior Apartments

The elevation to follow shows a prototype of the apartment building planned for the Battlefield Estates apartment site, although the Berryville apartment building will be only three stories in height. The proposal will include 120 apartment units with a mix of one- and two-bedroom units, and a mix of affordable and market rent units. The following chart summarizes the proposal in terms of unit count, unit sizes and proposed net rents, which include cold water, sewer and trash collection.

Ten percent of the apartment units are two-bedroom units at market rents of \$1,300. These will be approximately 1,160 square feet in size. There are 38 one-bedroom units with 730± square feet. The rents for the 38 affordable one-bedroom units are expected to be \$950; the two-bedroom rents at Mary Hardesty House are lower. The two-bedroom affordable units will be 960± square feet and will rent for \$1,105.

| <u>Battlefield Estates Senior Apartments 1/</u> | | | |
|--|--------------------|---------------------|--------------------|
| | <u>Unit</u> | <u>Unit</u> | <u>Net</u> |
| | <u>Mix</u> | <u>Sizes</u> | <u>Rent</u> |
| One-Bedroom (affordable) | 38 | 730 | \$950 |
| Two-Bedroom (affordable) | 70 | 960 | \$1,105 |
| (Subtotal) | (108) | | |
| Two-Bedroom (market) | 12 | 1,160 | \$1,300 |
| Total | 120 | | |
| Note: 1/ Preliminary | | | |



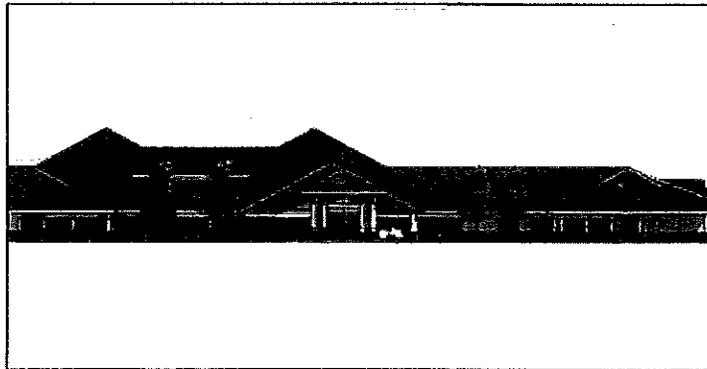
Prototype Elevation for an Affordable IL Apartment Building

There are three differences between the Battlefield Estates affordable apartment proposal and Mary Hardesty House. First, Battlefield Estates Senior Apartments will offer one-bedroom units. Mary Hardesty House has only two's. Second, Battlefield Estates Senior Apartments will have 10 percent market rent units. All units at Mary Hardesty House are affordable. Third, the Battlefield Estates Senior Apartments is proposed for financing with non-taxable bonds and with 4% LIHTC's. The affordable rents will be at or below 60% of AMI. Mary Hardesty House has rents limited to at or below 50% of AMI. The rent differential, shown in the following market study section, means that Battlefield Estates Senior Housing and Mary Hardesty House will serve a different income sector of the ILF housing market.

The development proposal is expected to have a total development cost of approximately \$14.9 million, or \$124,200 per unit. The apartment building will have a full set of on-site amenities for active adults and will be the newest ILF within the defined market area.

Battlefield Estates Assisted Living Facility

The proposed ALF, to be built by MCL Partners and operated by Meridian Senior Services, will be an equally attractive building with the planned elevation shown below. The building will have 73± beds with a mix of 40± percent special care beds and 60% basic assisted living beds. The facility will offer a mix of studio, junior one-bedroom/alcove units and one-bedroom units. All units will be “private pay”, meaning no rent subsidies, and all units are designed for single occupancy. As with all new, upscale ALF’s, Battlefield Estates ALF will have a central, commercial kitchen for three full meals daily, an abundance of on-site passive recreation spaces, on-site staff 24-hours per day, on-site health facilities, on-site nurses and nurses aides, a beauty salon and an activities director. As noted above, the average monthly fee per apartment unit is \$3,800, also reported in constant 2015 dollars.



Rendering for Battlefield Estates Assisted Living Facility

Summary

The above description shows that the proposal will be attractive and has an excellent setting. The proposals for both housing types will be studied below in comparison with existing facilities to document market support for new facilities and show the competitive position of the two senior housing proposals.

Section I Market Area

In this part of the market study, the market analysis, in support of the two senior housing development proposals, is presented. For this part of the study, Section I includes three separate parts. First is the demographic analysis that studies the older adult population in the defined market area for the study site, as described below, and solves for the number and growth of senior-headed households within the two income and age categories under study. The results of the demographic analysis show the level of demand for new senior housing of the type proposed.

The next two subsections analyze the affordable, age-restricted market area apartment market in terms of occupancy rates, rental rates and pipeline proposals. The conclusions of this part of our research is compared with the demographic findings related to whether net demand exists for new affordable age-restricted housing over the forecast period to 2018 and beyond.

The third subsection is an identical analysis for the ALF market.

The market area used for this study is all of Clarke County, including the Town of Berryville; the eastern portion of Frederick County, including the City of Winchester, and the portion of the County between Winchester and Clarke County; and the western portion of Loudoun County, east to Ashburn, and including the Town of Leesburg.

Clarke County/ Berryville is a small community with controlled growth. New housing development within the County and Town is primarily supported by immigration from adjacent areas. Data in Table 1 show the demographic trends for older adults within the County and Town. In 2014, the County, including Berryville, had 2,450± persons in the 65+ age category. This sector of the County population increased by 180 during the 1990's; 430 during the 2000's and 180 for the past four years of the 2010 decade.

For the post-2000 period, the net growth shown for the 65+ population was realized without new age-restricted housing being added. It includes persons aging in place or retiring to the County. These demographic trends show sizable growth in the older adult population, even without any new housing designed for this sector of the population. There is steady growth in the over 75 aged population, including an expanding need for new housing for a wide range of older persons.

| | <u>1990</u> | <u>2000</u> | <u>2010</u> | <u>2014</u> |
|--------------------------------|----------------|---------------|---------------|---------------|
| Total Population | 12,100 | 12,650 | 14,030 | 14,430 |
| 65 to 69 Years | 520 | 540 | 710 | 770 |
| 70 to 74 Years | 430 | 480 | 530 | 570 |
| 75 to 79 Years | 340 | 350 | 430 | 460 |
| 80 to 84 Years | 220 | 260 | 310 | 340 |
| 85 Years and Over | <u>200</u> | <u>220</u> | <u>300</u> | <u>320</u> |
| Total Senior Population | 1,710 | 1,850 | 2,280 | 2,460 |
| Percent of Total | 14.1+ % | 14.6 % | 16.3 % | 17.0 % |

Note: 1/ Includes Berryville
Source: 1990, 2000 and 2010 Census, U.S. Census Bureau, U.S. Department of Commerce; Weldon Cooper Center for Public Service; S. Patz & Associates, Inc.

Population Trends and Projections

Table 2 shows the market area population, and in the attached notes, the Census Tracts that comprise the market area that were used to calculate market area demographics. The 2010 Census count showed a market area population of 205,140±. That total is nearly 81,400± above the 2000 Census count and 108,000± above the market area population in 1990. These data show a modest growth in the market area population during the 1990's, but a sizable growth during the 2000's. The 2014 population estimate, based on the 2013 Census update, is 237,260±, which is 32,100± above the 2010 Census count.

Clarke County's population growth has been modest. This is true for the City of Winchester also. The population more than doubled in western Loudoun County during the 2000's and increased by nearly 30 percent in eastern Frederick County during the same time period.

Overall the market area population is increasing and Clarke County and Berryville is in the center of the growth. Current trends show an expected increase of 22,000 between 2014 and 2018, or 5,500 per year on average.

| Table 2: Population Trends and Projections, Berryville, VA Market Area 1/, 1990-2018 | | | | | |
|--|-------------|------------------------------|-------------|-------------|-------------|
| | <u>1990</u> | <u>2000</u> | <u>2010</u> | <u>2014</u> | <u>2018</u> |
| <u>General Population</u> | | | | | |
| Total Population | 96,680 | 123,780 | 205,140 | 237,260 | 269,260 |
| Clarke County | 12,100 | 12,650 | 14,030 | 14,430 | 14,750 |
| Eastern Frederick County | 25,310 | 35,930 | 45,450 | 49,250 | 53,060 |
| Winchester City | 21,950 | 23,590 | 26,200 | 26,920 | 27,620 |
| Western Loudoun County | 37,320 | 51,610 | 119,460 | 146,660 | 173,760 |
| Group Quarters Population | 1,970 | 2,090 | 3,100 2/ | 3,100 | 3,200 |
| Household Population | 95,010 | 121,690 | 202,040 | 234,160 | 265,990 |
| Persons Per Household | 2.61 | 2.61 | 2.77 | 2.75 | 2.79 |
| Total Households | 36,450 | 46,630 | 72,930 | 85,150 | 95,370 |
| Notes: 1/ Market area includes Clarke County, Winchester City and the following 2010 U.S. census tracts in Frederick County and Loudoun County. | | | | | |
| <u>Frederick County</u> | | <u>Loudoun County</u> | | | |
| ▪ 508.01 | ▪ 6102.02 | ▪ 6106.03 | ▪ 6110.11 | | |
| ▪ 508.02 | ▪ 6104 | ▪ 6106.04 | ▪ 6110.12 | | |
| ▪ 509 | ▪ 6105.03 | ▪ 6107.01 | ▪ 6110.13 | | |
| ▪ 510 | ▪ 6105.04 | ▪ 6107.02 | ▪ 6110.14 | | |
| ▪ 511.01 | ▪ 6105.05 | ▪ 6107.03 | ▪ 6110.16 | | |
| ▪ 511.02 | ▪ 6105.06 | ▪ 6108 | ▪ 6110.17 | | |
| | ▪ 6105.07 | ▪ 6109 | ▪ 6110.24 | | |
| | ▪ 6106.01 | ▪ 6110.04 | | | |
| | ▪ 6106.02 | ▪ 6110.09 | | | |
| 2/ Group Quarters Population includes 1,010 in correctional institutions, 570 in nursing homes, and 1,070 in university housing. | | | | | |
| Source: 1990, 2000 and 2010 Census, U.S. Census Bureau, U.S. Department of Commerce; Weldon Cooper Center for Public Service; S. Patz & Associates, Inc. | | | | | |

Households

Data in Table 2 also show household trends and that total households equaled nearly 73,000±, based on the 2010 Census count. Market area household growth equaled 26,300± over the 2000 decade and the market area household total is estimated at 85,150± in 2014, indicating that households are increasing by over 3,000± per year on average. At that rate, the market area household total is expected to increase to 95,300+ by 2018.

Senior Demographic Data (Independent Living). Data in Table 3 show the demographic trends of the active senior demographics. The market area in 2014 had 22,500+ persons in the 65 to 79 age category and 14,300 households with the household head aged 65 to 79. That figure is approximately 1,800 above the 2010 Census count, meaning that the market area's senior-headed households increased by 450± per year on average since 2010. The market area has a high 17± percent senior households, which is compared with 12.2 percent for the Commonwealth of Virginia.

The 2010 Census count for the active senior population shows an average household size of 1.58 persons per household. That is smaller than most market areas and indicates that almost half of the market area senior-headed households are single person households.

Target Households (Independent Living). Of the total active senior-headed households in the market area in 2014, based on Census data and calculations by SPA, **there are 1,800 households in the age and income categories under study.** This is 12.6 percent of all market area senior-headed households and 2.1 percent of all market area total households. It is also an increase of 220 above the 2010 Census count. By 2018, the market area is expected to have 2,000± active senior-headed households that comprise the potential market for Mary Hardesty House. That would represent a 200 net growth from 2014.

Table 3: ILF Population Trends and Projections, Berrville, VA Market Area, 1990-2018 (Constant 2015 Dollars)

| | <u>1990</u> | <u>2000</u> | <u>2010</u> | <u>2014</u> | <u>2018</u> |
|---|-------------|-------------|-------------|-------------|-------------|
| <u>General Population</u> | | | | | |
| Total Population | 96,680 | 123,780 | 205,140 | 237,260 | 269,260 |
| Group Quarters Population | 1,970 | 2,090 | 3,100/ | 3,100 | 3,200 |
| Household Population | 95,010 | 121,690 | 202,040 | 234,160 | 265,990 |
| Persons Per Household | 2.61 | 2.61 | 2.77 | 2.75 | 2.79 |
| Total Households | 36,450 | 46,630 | 72,930 | 85,150 | 95,370 |
| <u>ILF Senior Demographics (65-79)</u> | | | | | |
| Total Population | 10,590 | 12,980 | 20,130 | 22,530 | 25,030 |
| Percent of Total Population | 11.0% | 10.5% | 9.8% | 9.5% | 9.3% |
| Senior Households | 6,660 | 8,370 | 12,470 | 14,300 | 15,680 |
| Percent of Total Households | 18.3% | 17.9% | 17.1% | 16.8 | 16.5% |
| <u>Active ILF Senior Population 1/</u> | | | | | |
| Households | 880 | 1,070 | 1,580 | 1,800 | 2,000 |
| Percent of Senior Households | 13.2% | 12.8% | 12.7% | 12.6% | 12.5% |
| Percent of Total Households | 2.4% | 2.3% | 2.2% | 2.1% | 2.1% |

Notes: 1/Persons between 65 and 79 years of age with annual incomes ranging between \$27,000 and \$40,000.

Source: 1990, 2000 and 2010 Census, U.S. Census Bureau, U.S. Department of Commerce; Weldon Cooper Center for Public Service; S. Patz & Associates, Inc.

Senior Demographic Data (Assisted Living). The market area has 4,300± households with the household head exceeding 80 years of age. That figure is approximately 740± above the 2010 Census count, meaning that the market area's senior households increased by 190± per year on average since 2010. Approximately 2.6% of the total population falls within this age category. Even with steady population growth, this percentage has held steady. The average household size for this sector of the age-restricted population is 1.4.

Target Population (Assisted Living). Of the total senior-headed households in the market area in 2014, based on Census data and calculations by SPA, there are 2,980 households in the age and income categories under study for AL. This is 68.7 percent of all market area active senior-headed households and 3.5 percent of all market area total households. It is also an increase of 650 above the 2010 Census count. By 2018, the

market area is expected to have 3,620± senior-headed households that comprise the potential market for assisted living. That would represent a 160± net growth from 2014.

| Table 4: <u>ALF Population Trends and Projections, Berryville, VA</u>
<u>Market Area, 1990-2018</u> (Constant 2015 Dollars) | | | | | |
|--|-------------|-------------|-------------|-------------|-------------|
| | <u>1990</u> | <u>2000</u> | <u>2010</u> | <u>2014</u> | <u>2018</u> |
| <u>General Population</u> | | | | | |
| Total Population | 96,680 | 123,780 | 205,140 | 237,260 | 269,260 |
| Group Quarters Population | 1,970 | 2,090 | 3,100 | 3,100 | 3,200 |
| Household Population | 95,010 | 121,690 | 202,040 | 234,160 | 265,990 |
| Persons Per Household | 2.61 | 2.61 | 2.77 | 2.75 | 2.79 |
| Total Households | 36,450 | 46,630 | 72,930 | 85,150 | 95,370 |
| <u>ALF Senior Demographics (80+)</u> | | | | | |
| Total Population | 2,400 | 3,170 | 5,180 | 6,170 | 7,000 |
| Percent of Total Population | 2.5% | 2.6% | 2.5% | 2.6% | 2.6% |
| Senior Households | 1,420 | 2,020 | 3,600 | 4,340 | 5,050 |
| Percent of Total Households | 3.9% | 4.3% | 4.9% | 5.1% | 5.3% |
| <u>Target ALF Senior Population 1/</u> | | | | | |
| Households | 660 | 1,170 | 2,330 | 2,980 | 3,620 |
| Percent of Senior Households | 46.5% | 57.9% | 64.8% | 68.7% | 71.7% |
| Percent of Total Households | 1.8% | 2.5% | 3.2% | 3.5% | 3.8% |
| Notes: 1/Persons exceeding years of age with annual incomes exceeding \$30,000. | | | | | |
| Source: 1990, 2000 and 2010 Census, U.S. Census Bureau, U.S. Department of Commerce; Weldon Cooper Center for Public Service; S. Patz & Associates, Inc. | | | | | |

Competitive LIHTC Apartment Properties

The market area has only three LIHTC apartment properties with age restrictions. One is Mary Hardesty House. The second is the more expensive Wingler House in Ashburn. Levis House with 20 apartment units, is a rent restricted apartment property. Thus, the level of competition for a new facility, such as Battlefield Estates Senior Housing, is limited.

Mary Hardesty House is fully occupied and has a waiting list of 30+. Wingler House has 264 units in two phases of 132 units. Occupancy at Wingler House is 98+

percent. For competitive properties, none have been built since 2003, when Phase II at Winger House opened.

The level of need, or demand, for affordable housing for active adults, can be shown by the 180 seniors who occupy apartment units at LIHTC properties built for families. Nearly 15 percent of apartment units at these eight general occupancy, affordable apartment units are occupied by seniors.

Many of the general occupancy apartment units have waiting lists. The overall market area occupancy rate is 98+ percent.

The market study conclusions are:

1. That a pent-up demand exists for affordable housing for active adults. This conclusion is based on two key market factors:
 - There are 180± active seniors in family apartment units. There is virtually no available housing for older adults who want to move to secure, affordable, maintenance-free housing;
 - The senior market is expanding, but there are no active proposals, other than Battlefield Estates Senior Housing.
2. Winger House II opened in 2003. It is the newest affordable housing in the market area. Any pent-up demand that currently exists will increase.
3. Clarke County/Berryville has 2,460 persons aged 65 and above, or 1,550+ senior-headed households. Of these, 250± can afford to live in new LIHTC apartment units. The Town has only 60 units (at Mary Hardesty House) to support this sector of the housing market.

Table 5: Characteristics of Competitive Age- and Income-Apartment Communities, Berryville Market Area, June, 2015

| | <u>Year Built</u> | <u>Total Units</u> | <u>Senior Units</u> | <u>Vacant Units</u> |
|---|-------------------|--------------------|---------------------|---------------------|
| <u>Age-Restricted Properties</u> | | | | |
| Levis Hill House | 2008 | 20 | 20 | -- |
| Mary Hardesty House | 1998 | 60 | 60 | -- |
| Wingler House I & II | 1993/03 | <u>264</u> | <u>264</u> | <u>--</u> |
| (Subtotal) | | (344) | (344) | (5) |
| <u>Family Properties</u> | | | | |
| Autumn Wind | 2000 | 104 | 20 | -- |
| Evans Ridge | 1996 | 150 | 10 | -- |
| Fields of Leesburg I & II | 1998/99 | 404 | 40 | -- |
| Grove at Flynn's Crossing | 1998 | 168 | 30 | -- |
| Main Street Commons | 2001 | 90 | 25 | -- |
| Maple Avenue Apartments | 2001 | 60 | 10 | -- |
| Potomac Station | 2002 | 130 | 25 | -- |
| Preston Place | 1993/97 | <u>236</u> | <u>20</u> | <u>--</u> |
| (Subtotal) | | (1,342) | (180) | (26) |
| Total | | 1,686 | 524 | 31 |

Source: Field and Telephone Survey by S. Patz and Associates, Inc.

The rents at these apartment properties are summarized below:

| | <u>One-Bedroom</u> | <u>Two-Bedroom</u> |
|---|--------------------|--------------------|
| Mary Hardesty House | -- | \$870-\$890 |
| Wingler House | \$903-\$960 | \$1,113-\$1,128 |
| General Occupancy Apartments 1/ | \$906-\$1,195 | \$970-\$1,315 |
| Battlefield Estates Senior Housing | \$950 | \$1,100 2/ |
| Notes: 1/ Excludes lower rent apartment properties in Winchester.
2/ Excludes market rent apartment units. | | |

These data and comparison show that the rents at the Battlefield Estates Senior Housing proposal are well within the current market.



Mary Hardesty House



Wingler House

Competitive ALF's

The market area has a large ALF market with 12 facilities and 715 "beds". Beds are used for the analysis of ALF's to account for any apartment units with double occupancy. The occupancy rate shown is at 92+ percent, due primarily to the recent opening of Green Valley Commons in Winchester in Fall, 2014. The new facility is half full after eight months. The market area is at a 95± percent occupancy for the ALFs at stabilized occupancy.

Besides the new Green Valley Commons, which opened in Fall, 2014, the only other new facility is the 18 AL beds at the large Village at Orchard Ridge CCRC. The Village at Orchard Ridge has primarily IL housing and a large skilled nursing wing. This facility requires an endowment for admission. All of the AL apartment units are occupied by existing residents of the IL apartments. More IL apartment units may be added here. Williams and Hilltop House have had recent additions and/or expansions.

Seven of the ALF's are in Winchester. Four are in Leesburg. Greenfield is in Berryville. There are other ALF's in and near Sterling and Potomac Falls, but outside of the market area. These are fully occupied facilities also.

Most of these facilities have a mix of basic care wings and specific care wings. These facilities have an average monthly fee of \$5,000, including the “beds” in specific care.

Table 6: Characteristics of Competitive Assisted Living Facilities by Type of Care, Berryville Market Area, VA, June, 2015

| | <u>Year Opened</u> | <u>Total Beds</u> | <u>Vacant Beds</u> |
|--|--------------------|-------------------|--------------------|
| | | <u>ALF</u> | <u>ALF</u> |
| Amerisist of Stephens City | 2002 | 39 | -- |
| Green Valley Commons | 10/2014 | 43 | -- |
| Hilltop House Assisted Living | 1985/90/08 2/ | 90 | -- |
| Shenandoah Valley Westminster-Canterbury | 1987 | 60 | -- |
| Spring Arbor of Winchester | 1998 | 80 | -- |
| Village at Orchard Ridge | 05/2013 | 18 | -- |
| Willows at Meadow Branch | 1998/10 3/ | 79 | -- |
| Greenfield Senior Living | 1999 | 66 | -- |
| Spring Arbor of Leesburg | 2011 | 97 | -- |
| Sunrise of Leesburg | 1984 | 42 | -- |
| Meadow Glen of Leesburg | 2001 | 37 | -- |
| Morningside House of Leesburg | 1994 | <u>64</u> | <u>--</u> |
| Total | | 715 | 56 |

Note: 1/ Three other assisted living facilities in the market area – Apple Manor, Bon Air Stephens City, and Royal Haven are mature and “affordable” ALFs.
Source: S. Patz & Associates field and telephone survey.



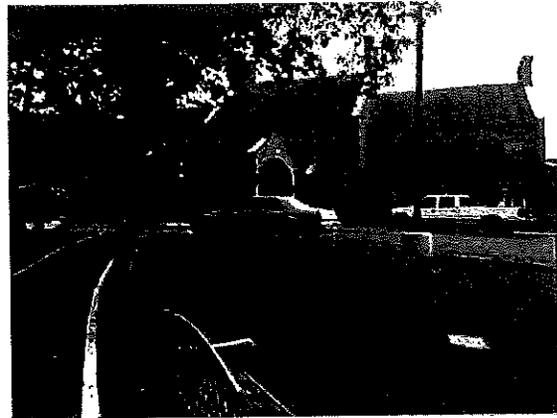
Amerisist of Stephens City



Green Valley Commons



Hilltop House



Shenandoah Valley Westminster-Canterbury



Spring Arbor of Winchester



Village at Orchard Ridge



Willows at Meadow Branch



Greenfield Assisted Living



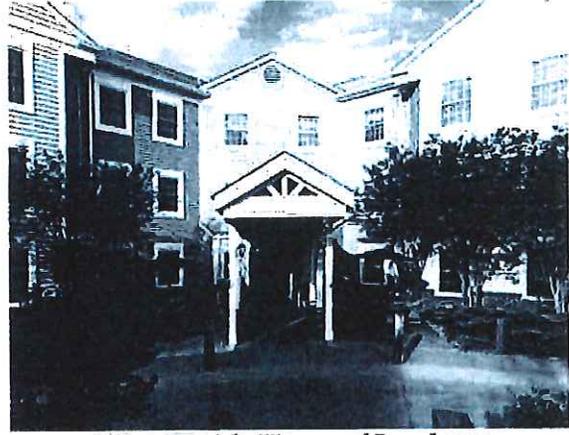
Spring Arbor of Leesburg



Sunrise of Leesburg



Meadow Glen of Leesburg



Morningside House of Leesburg

Summary

The market study findings are very supportive of new development for both types of senior housing planned. These data are the basis for the FIA to follow in Section II.

Section II Fiscal Impacts Analysis

The analysis to follow presents the fiscal impacts that could be derived from the proposed new Battlefield Estates Senior Housing proposals. It is important to emphasize at the outset that the impacts detailed here should be viewed as **potentials** that the Town might capture, if local government and businesses respond to the new development, or if additional businesses can be attracted. It is projected that the Town's economy could capture from 20 percent to 30 percent of the total potential impacts from the development of the proposed ILF and ALF, if such conditions materialize. This report presents the capture that the Town may realize under favorable conditions. The remainder would leak out of the Town to the surrounding County and beyond.

Nearby jurisdictions outside the County that could capture much of the impacts include Leesburg and Winchester. In the case of specialized goods and services that are available more typically on a regional or national bases, the impacts could be far-reaching beyond the Town and Clarke County.

A fiscal impacts analysis compares the tax revenues to be derived for the Town of Berryville from the proposed developments, with the tax-supported costs to the Town for providing services and facilities for the use of the development. County impacts are shown separately in Appendix A.

Taxes are the revenues of interest, since they derive directly from the development. Tax revenues are reported in the annual budget for the General Fund. Revenues from other sources, either are not impacted by the development, or are in direct proportion to the value of services rendered, such as the sale of public materials. For comparison with tax revenues, the costs of providing services to the two senior housing developments are those which must be supported by taxes. These **tax-supported costs** would be relevant to General Fund annual budgeted expenditures. When tax revenues exceed the tax-supported costs to the Town, a net fiscal surplus is created. Costs greater than revenues create a net fiscal deficit.

The new development of interest here, the Battlefield Estates Senior Housing, are a new facility for active, independent living seniors, and a new facility for seniors needing assisted living facilities, as described in the market research part of this report. The independent living facility (ILF) will contain 120 living units, while the assisted living facility (ALF) will contain 73 beds. These facilities constitute the development proposed under study, which is to be located in the commercial section of the Battlefield Estates Subdivision.

The fiscal impacts analysis will be undertaken for the ILF and ALF portions of the development separately. These impacts will derive from two sources, in each case. The first source is revenues and costs for the Town attributable directly to the new developments on site. The second source is what is variously referred as "spin-off", "indirect effects", or "multiplier effects." The term "indirect" effects or impacts will be employed in the analysis to follow. These indirect effects are the new business generated in the Town as merchants, vendors and businesses re-circulate their revenues by purchasing goods and services from each other. Like direct impacts, indirect impacts are potentials that the Town could capture with appropriate businesses. Together, these direct and indirect impacts constitute the full fiscal impacts from the proposed two senior housing proposals.

The following analysis is the study of the impacts for the Town of Berryville. Using the same methodology, impacts on the Clarke County budget is presented separately, in Appendix A.

The fiscal impacts report will begin with estimation of the tax revenues to be derived from each of the two new facilities, both directly and indirectly. This will be followed by calculations of the tax-supported costs to be incurred by the Town of Berryville. **The analysis will show that the ILF and ALF will produce a combined net fiscal surplus of \$33,000+ each year, with all dollar amounts expressed on constant 2015 dollars.** This surplus will be achieved once the facilities are built and are fully operational. The surplus is the difference between tax revenues of \$86,000 and tax-

supported costs of \$69,700, annually, in constant dollars. The ILF will provide a significant surplus of \$13,200 annually, while the ALF covers costs to the Town with a small net surplus of \$3,100. The difference comes from the fact that the independent living residents will spend a greater part of their income locally, while facility operations purchase more goods and services outside the Town (and even outside Clarke County).

Direct Tax Revenues

As explained above, direct tax revenues derive from the direct actions (expenditures) of both residents of the facilities and operations of the facilities. Taxes by type are addressed sequentially, beginning with the real property tax. Other significant taxes include the personal property tax and the business, professional and occupational license (BPOL) tax. Of note will be the significant impact of the meals tax on Town revenues.

Real Property Taxes

Real property is taxed in Berryville at the rate of \$0.186 per \$100 of real property assessment. For the purposes of this study property assessments are assumed to be approximated by construction costs, which will come to a total of \$23.4 million for the two facilities. The ILF will yield real property tax revenues of \$27,000, nearly twice the amount for the ALF, for a total of \$43,000 in tax revenues.

| Table 7. <u>Real Property Taxes for Berryville, Virginia at Battlefield Estates Senior Housing, at Buildout (constant \$2015)</u> | | | |
|--|----------------------------------|-------------------------------|-----------------------------|
| | <u>Independent Living</u> | <u>Assisted Living</u> | <u>Total Amounts</u> |
| Number of Apts./Beds | 120 | 73 | -- |
| Construction Cost | \$14,900,000 | \$8,500,000 | \$23,400,000 |
| Tax Rate Per \$100 | \$0.186 | \$0.186 | \$0.186 |
| Real Estate Taxes | \$27,710 | \$15,810 | \$43,520 |

Sources: Marlyn Development Corporation, and the Town of Berryville, Virginia.

Personal Property Taxes

For residents, the personal property tax is a tax on the assessed value of vehicles, sometimes known as the “car” tax. For businesses, the personal property tax is a tax of the assessed value of furniture, fixtures, and equipment (FF&E) in the businesses facility. Both types of taxes will be applicable at the Battlefield Estates Senior Housing proposal. The residential property tax will be addressed first for the ILF. It is assumed that residents of the ALF do not have significant numbers of vehicles.

Residential Personal Property. To derive the personal property tax for residents requires several steps to determine the average assessed value of vehicles in the Town and the total number of vehicles of residents of the ILF. To determine the average assessed value of vehicles in Berryville, the total residential personal property tax is divided by the tax rate of \$1.25 per \$100 of assessed valuation to yield the total assessed value of residential vehicles in Berryville. This is divided by the number of vehicles in the Town to give the average assessed value of residential vehicles in Berryville.

Table 8 shows \$219,000 in residential personal property taxes in the Town; to this is added \$210,000 in Personal Property Tax Relief Act (PPTRA) funds that is refunded by

the state. Dividing by the tax rate yields an estimate of \$34 million in vehicle assessed value in the Town. The U.S. Census reports a total of almost 3,500 residential vehicles in the Town; dividing this number into the total assessed value yields an average vehicle assessed value of almost \$10,000.

| <u>Table 8. Deriving the Average Assessed Value of Residential Vehicles in Berryville, Virginia, FY 2015-2016</u> | |
|--|----------------------|
| | <u>Amount</u> |
| Current Property Taxes | \$216,000 |
| Delinquent Property Taxes | \$3,000 |
| Subtotal Property Taxes | \$219,000 |
| PPTRA | <u>\$209,900</u> |
| Total Personal Prop. Taxes | \$428,900 |
| Assessed Value of Vehicles | \$34,312,000 |
| Number of Vehicles | 3,453 |
| Assessed Value per Vehicle | \$9,936 |
| Sources: The Draft FY2015-2016 Annual Budget for Berryville, and the U.S. Census of Population. | |

The U.S. Census gives an average of 2.2 vehicles per household in Berryville. However, it is estimated that independent living seniors average no more than one vehicle per unit. For 120 units, this is 120 vehicles at an average assessed value of \$9,900. This is a total assessed value for all 120 units of \$1.2 million. Multiplying by the tax rate of \$1.25 per \$100 of assessed value yields personal property taxes of \$14,900.

| Table 9. <u>Personal Property Tax for the Independent Living Facility Residents at Battlefield Estates Senior Housing, Berryville, Virginia (constant \$2015)</u> | |
|--|-------------|
| Number of Apartments | 120 |
| Vehicles Per Apartment.@ 65% | 1 |
| Total No. of Vehicles | 120 |
| Assessed Value Per Vehicle | \$9,935 |
| Total Assessed Value | \$1,192,312 |
| Personal Property Tax Rate/\$100 | \$0.0125 |
| Personal Property Tax | \$14,900 |
| Sources: Marlyn Development Corporation, and Table 8. | |

Business Personal Property. Table 10 gives the estimated assessed value of furniture, fixtures and equipment (FF&E) at the senior housing facilities at Battlefield Estates Senior Housing. Applying the personal property tax rate gives a total tax of \$26,900 for the two facilities.

| Table 10. <u>Business Personal Property Taxes for Senior Housing at Battlefield Estates Senior Housing Berryville, Virginia (constant \$2015)</u> | | | |
|--|---------------------------|------------------------|---------------------|
| | <u>Independent Living</u> | <u>Assisted Living</u> | <u>Total Amount</u> |
| Business Personal Property | \$1,400,000 | \$750,000 | \$2,150,000 |
| Bus. Property Tax Rate/\$100 | \$0.0125 | \$0.0125 | \$0.0125 |
| Business Personal Property Tax | \$17,500 | \$9,380 | \$26,880 |
| Sources: Marlyn Development Corporation. | | | |

Motor Vehicle License Decals

Above it was shown that there would be 120 private vehicles at the proposed Independent Living Facility; it is estimated that the Assisted Living facility will have four vehicles or vans. At a decal fee of \$25 per vehicle, the total motor vehicle decal fee for the Town of Berryville would be \$3,100, as shown in the chart below.

| | <u>Independent
Living</u> | <u>Assisted
Living</u> | <u>Total
Amount</u> |
|------------------------|--------------------------------------|-----------------------------------|--------------------------------|
| Number of Vehicles | 120 | 4 | 124 |
| Decal Cost Per Vehicle | \$25 | \$25 | \$25 |
| Total Decal Fee | \$3,000 | \$100 | \$3,100 |

Retail Sales Tax

The state of Virginia returns one percentage point of the state’s retail sales tax to the municipality in which the sales of taxable goods or services were transacted. In the case of Berryville, that municipality is Clarke County. The County, in turn, distributes one half of those returned taxes to Berryville. The share of that half that goes to Berryville is 34.36 percent. This results in a net effective sales tax rate of 0.1718 percent of the value of the taxable sales made in Berryville.

The residents of the independent living facility will have gross incomes of \$5.4 million, that is, 120 households at \$45,000 income per household. According to household budgets prepared by the U.S. Bureau of Labor Statistics, households in this income range spend 40 percent of their income on retail goods. It is estimated that 20 percent of this spending could occur in Berryville, the remainder going to the many greater area stores, such as those in shopping centers in Leesburg and Winchester. Because of the small share of County taxes that the Town receives and the extensive “leakage” of sales to stores outside of Town, the net retail sales tax from independent

living residents retail expenditures is quite small, at only \$740. The calculations of this amount are carried out step-by-step in Table 11.

The assisted living facility will also be responsible for retail sales and sales taxes. In this case, the expenditures for retail goods will come from the facility's operating budget rather than from the residents. Of the \$1.5 million in annual operating expenses at the facility, an estimated 20 percent will be on taxable retail goods, as has been the experience at other assisted living facilities. Again, with only 20 percent of these sales made in Berryville, and at the effective tax rate for Berryville, the retail sales taxes from these expenditures yield only \$100 in sales taxes for the Town, also shown in Table 11. Thus, total retail sales taxes for the Town from these two facilities come to only \$840 annually.

| Table 11 <u>Retail Sales Tax from Battlefield Estates Senior Housing for the Town of Berryville, Virginia (constant \$2015)</u> | | | |
|--|----------------------------------|-------------------------------|----------------------------|
| | <u>Independent Living</u> | <u>Assisted Living</u> | <u>Total Amount</u> |
| Total Expenditures | \$5,400,000 | \$1,500,000 | \$6,900,000 |
| Percent Retail | 40% | 20% | 36% |
| Retail Expenditures | \$2,162,200 | \$300,000 | \$2,462,200 |
| Percent In Berryville | 20% | 20% | 20% |
| Berryville Sales | \$432,440 | \$60,000 | \$492,440 |
| Effective Tax Rate | 0.001718 | 0.001718 | 0.001718 |
| Retail Sales Tax | \$740 | \$100 | \$840 |

Sources: Marlyn Development Corporation, The Town of Berryville, Virginia, S. Patz and Associates, Inc., and the U.S. Bureau of Labor Statistics.

BPOL Taxes

Municipalities in Virginia may be entitled to collect Business, Professional, and Occupational License (BPOL) taxes on selected business transactions in the municipality.

Berryville collects taxes ranging from \$0.12 to \$0.25 per \$100 in transactions for selected businesses. The selected business transactions made by the residents and operations of the independent living facility are shown in Table 12, below. Taxes are computed for each expenditure according to the tax rates shown. Resident expenditures are from the U.S. Bureau of Labor Statistics household budget as noted above for retail sales. Expenditures for the facility come from its operating budget. Expenditures that are not taxable include such things as taxes, transfers to other persons, and payrolls. As before, 20 percent of expenditures are expected to be made in Berryville. Total BPOL taxes from the independent living facility will come to \$1,600 annually.

| Table 12 <u>BPOL Taxes from the Senior Housing Facilities at Battlefield Estates Senior Housing, Berryville, Virginia (constant \$2015)</u> | | | | | |
|--|------------------------------|-------------------------------|---------------------------|---------------------|-------------------|
| | <u>Resident Expenditures</u> | <u>Operating Expenditures</u> | <u>Total Expenditures</u> | <u>Taxes /\$100</u> | <u>BPOL Taxes</u> |
| Repair & Maintenance | \$70,280 | \$50,000 | \$120,280 | \$0.12 | \$140 |
| Retail Trade | \$2,162,200 | \$3,000 | \$2,165,200 | \$0.12 | \$2,600 |
| Financial Services/Ins. | \$930,900 | \$45,000 | \$975,900 | \$0.20 | \$1,950 |
| Professional Services | \$597,600 | \$156,000 | \$753,600 | \$0.25 | \$1,880 |
| Personal & Business | <u>\$956,400</u> | <u>\$90,000</u> | <u>\$1,046,400</u> | \$0.15 | <u>\$1,570</u> |
| Totals | \$4,717,380 | \$344,000 | \$5,061,380 | | \$8,140 |
| Percent In Berryville | 20.0% | 20.0% | 20.0% | | 20.0% |
| Berryville Amounts | \$943,480 | \$68,800 | \$1,012,280 | | \$1,630 |

Sources: Marlyn Development Corporation, The Town of Berryville, Virginia, S. Patz and Associates, Inc., and the U.S. Bureau of Labor Statistics.

Operating revenue at the assisted living facility represents expenditures by residents and is taxable as professional or health services. The following table shows that these transactions will result in BPOL taxes of \$7,900 annually, in constant year 2015 dollars. All transactions occur in Berryville, hence the much greater tax impact than for the independent living facility. Together, these two facilities will provide \$9,500 in BPOL taxes.

**Table 13 BPOL Taxes from the
Assisted Living Facility,
 Battlefield Estates Senior
 Housing, Berryville, Virginia
 (constant \$2015)**

| | |
|---------------------|-------------|
| Number of Beds | 73 |
| Occupancy Rate | 95% |
| Occupied Beds | 69 |
| Monthly Fee Per Bed | \$3,800 |
| Annual Fee Per Bed | \$45,600 |
| Total ALF Revenue | \$3,162,400 |
| BPOL Tax Rate/\$100 | \$0.25 |
| BPOL Tax | \$7,910 |

Sources: Marlyn Development Corporation and the Town of Berryville, Virginia

Meals Tax

Berryville has a tax of 4.0 percent on expenditures for food eaten away from home, e.g. at restaurants and other eateries. Table 12 above showed that independent living residents will spend \$312,000 on food annually, of which it is estimated that 25 percent will be for food eaten away from home. Berryville has the potential to capture 40 percent of those expenditures. This would come to about \$125,000 in restaurant and related sales in Berryville. As the chart below shows, at a meals tax rate of 4.0 percent, total meals taxes will be \$5,000 annually. No out-of-facility meals are expected for residents of the assisted living facility

| Independent Living Meals Tax | Amounts |
|-------------------------------------|----------------|
| Food Expenditure | \$312,200 |
| Eating Away From Home | 25% |
| Food away from Home | \$78,050 |
| Percent In Berryville | 40% |
| Berryville Expenditure | \$124,880 |
| Meals Tax Rate | 4.0% |
| Meals Tax | \$5,000 |

Utility Taxes

No data are readily available on total utility bills of the senior housing or on the rate of taxation for utilities in Berryville. For an estimate, the average consumer utility revenue to the Town for each resident and employee will be used. The consumer utility revenue in projected in the FY2015-2016 annual budget for the Town is \$90,000. There are 7,270 residents and employees in the Town, yielding a rate of \$12.38 per capita. There will be 144 residents at the independent living facility (120 units with 1.2 persons per unit) for a utility tax of \$1,780. There will be 69 occupied beds at the assisted living facility for a utility tax of \$850. Together, these facilities will yield \$2,630 in consumer utility taxes.

Summary of Tax Revenues

In total, annual direct tax revenues to be forthcoming to the Town of Berryville from the to-be-built senior housing at Battlefield Estates will come to \$91,500 annually, as shown in the chart below. These are the amounts that have been derived separately. The independent living facility will produce \$57,400 in tax revenues for the Town, and the Assisted Living Facility will produce \$34,200. These are the potential tax revenues that would derive directly from the facilities. In a later section, tax revenues from indirect "spin-off" impacts within the Town's businesses will be addressed.

**Summary of Annual Taxes for the Town of Berryville,
Virginia, from Battlefield Estates Senior Housing, at
Buildout (constant 2015)**

| <u>Type of Tax</u> | <u>Independent
Living</u> | <u>Assisted
Living</u> | <u>Total
Amount</u> |
|---------------------------|--------------------------------------|-----------------------------------|--------------------------------|
| Real Estate Tax | \$27,710 | \$15,810 | \$43,520 |
| Personal Property Tax | \$17,500 | \$9,380 | \$26,880 |
| Motor Vehicle Fees | \$3,000 | \$100 | \$3,100 |
| Sales Tax | \$740 | \$100 | \$840 |
| BPOL Taxes | \$1,630 | \$7,910 | \$9,540 |
| Meals Taxes | \$5,000 | \$0 | \$5,000 |
| Utility Taxes | <u>\$1,780</u> | <u>\$850</u> | <u>\$2,630</u> |
| Total Taxes | \$57,360 | \$34,150 | \$91,510 |

Direct Tax-supported Costs

The two senior housing facilities will entail certain costs of services from the Town of Berryville. For comparison with the taxes generated, estimates of costs should be expressed as "tax-supported" costs to the Town. These are the portions of Town costs of services which must be covered by taxes of the types discussed above. The tax-supported costs for the Town from the two senior housing facilities will be compared to the tax revenues derived above to determine the net fiscal impact of the facilities. (Off-site indirect or spin-off effects will be addressed later in the report.)

Relative Tax Burden

The following table derives the relative tax burden of tax supported costs in Berryville. Table 14 shows the amounts of tax revenues anticipated in the Town's annual budget for FY 2015-2016. Relative tax burden is shown as 58 percent; that is the portion of Town expenditures that must be covered by the selected taxes listed. (The Town Budget is balanced, meaning that total General Fund revenue equals General Fund expenditures.)

Table 14 Summary of Selected Taxes and the Amounts of Tax Revenue Projected for the Town of Berryville, Virginia, for FY 2015-2016, and the Derivation of the Relative Tax Burden.

| <u>Type of Tax</u> | <u>Amount</u> |
|----------------------------|------------------|
| Real Estate Tax | \$891,000 |
| Personal Property Tax | \$219,000 |
| Local Sales Tax | \$175,000 |
| Consumer Utility Tax | \$90,000 |
| Business License Tax | \$185,000 |
| Automobile Decals | \$90,000 |
| Meals Tax | <u>\$185,000</u> |
| Total Selected Taxes | \$1,835,000 |
| Other Gen. Fund Revenue | \$1,330,181 |
| Total General Fund Revenue | \$3,165,181 |
| Relative Tax Burden | 57.97% |

Source: Draft Annual Budget for FY 2015-2016 for the Town of Berryville, Virginia

Tax-supported Costs Per Capita

There are an estimated 7,270 residents and employees in Berryville. The U.S. Census of Population estimates a population of 4,280 residing in the Town of Berryville in 2013, the latest year for which data are available. Based on census data on the locations of where people live and work, it is estimated that 80 percent of the 3,730 workers employed in Clarke County (as of the third quarter of 2014, according to Virginia Employment Commission statistics) work in Berryville. This would be approximately 3,000 workers in Berryville. Total General Fund expenditures in the draft FY 2015-2016 annual budget for the Town are the same as the budgeted revenue, of almost \$3.2 million. Fifty-eight percent of these expenditures must be tax-supported, or

\$1.8 million. Divided by 7,270 persons yields a per capita amount of \$252 in tax-supported General Fund costs needed by the government of Berryville. Other budgeted funds have sources of revenue other than local taxes.

Senior Housing Costs

There will be approximately 144 residents in the independent living facility - 120 units at 1.2 persons per unit. Similarly, there will be 69 residents of the assisted living facility - 73 beds at 95 percent occupancy. This gives a total of 213 persons. The developers report that there will be four employees at the Independent Living Facility and 35 at the Assisted Living Facility. As Table 15 shows, this is a total of 252 persons at the senior housing communities. At the per capita cost of tax-supported revenues required, total costs will come to nearly \$64,000, over \$37,000 at the ILF and over \$26,000 at the ALF.

| Table 15. <u>Direct Tax-supported Expenditures (Costs) for the Town of Berryville, Virginia, from the Senior Housing at the Battlefield Estates Senior Housing, at Buildout (constant \$2015)</u> | | | |
|--|----------------------------------|-------------------------------|----------------------------|
| <u>Sources</u> | <u>Independent Living</u> | <u>Assisted Living</u> | <u>Total Amount</u> |
| Population | 144 | 69 | 213 |
| Employment | 4 | 35 | 39 |
| Total Persons | 148 | 104 | 252 |
| | | | 0 |
| Expenses Per Capita | \$252 | \$252 | \$252 |
| Total Town Expenses | \$37,360 | \$26,340 | \$63,700 |

Sources: Marlyn Development Corporation, U.S. Census of Population, Town of Berryville, and S. Patz & Associates, Inc.

Direct Net Fiscal Impact

The preceding paragraphs have derived the total tax revenue and total tax-supported costs for the Town of Berryville that could come from the senior housing at the Battlefield Estates Senior Housing. These data are summarized in the chart below, giving the net fiscal benefit to the Town from the senior housing, as the difference between tax revenues and tax-supported costs. The net benefit overall would be almost \$28,000.

| <u>Direct Fiscal Impacts</u> | <u>Independent Living</u> | <u>Assisted Living</u> | <u>Total Amount</u> |
|------------------------------|---------------------------|------------------------|---------------------|
| Tax Revenues | \$57,360 | \$34,150 | \$91,510 |
| Less Tax-supported Costs | -\$37,360 | -\$26,340 | -\$63,700 |
| Net Fiscal Benefit | \$20,000 | \$7,810 | \$27,810 |

Indirect Fiscal Impacts

The direct impacts described above will come from the activities of the residents and facilities operations at the senior housing site. In addition, there will be indirect impacts which result from the purchasing and sales of goods and services among vendors which receive direct expenditures from the development. This indirect impact is the "spin-off" or "multiplier effect." These impacts are estimated by application of tables of multiplier coefficients prepared for Clarke County by the Bureau of Economic Analysis of the U.S. Department of Commerce. No multipliers are available for towns such as Berryville, so the results of the analysis are scaled to estimate the impacts that could occur for Berryville alone. Generally, it is estimated that 20 percent to 30 percent of the indirect expenditures made by the residents and facilities will be in Berryville, although this varies by business sector.

There are tables of multipliers for both output (purchases and receipts by vendors) and employment for vendors generated by the direct activities of the senior housing residents and facilities. Output will be subjected to the Berryville tax rates to produce the indirect tax revenue for the Town. Employment will be multiplied by the per capita costs to the Town to give the cost impact of the indirect activity on Berryville. As with the direct impacts, the net fiscal benefit of indirect impacts is the difference between taxes generated and the public tax-supported costs incurred.

Indirect Independent Living Impacts

Taxes for Berryville from indirect impacts are calculated in the same fashion as for the direct impacts described above. The difference is that for the indirect taxes, the tax bases are different amounts from those of direct taxes, the difference being the multiplier effect of the spin-off into the Town from the direct impacts. The multipliers produce indirect spin-off expenditures for twenty sectors, many of which have no impact in Berryville (e.g., agriculture and mining). These sectors are listed below.

- | | |
|---------------------------------|--|
| Agriculture, forestry, fishing | Real estate and rental and leasing |
| Mining | Professional, scientific, and technical services |
| Utilities | Management of companies and enterprises |
| Construction/Maintenance/Repair | Administrative/waste management services |
| Manufacturing | Educational services |
| Wholesale trade | Health care and social assistance |
| Retail trade | Arts, entertainment, and recreation |
| Transportation and warehousing | Accommodation |
| Information | Food services and drinking places |
| Finance and insurance | Other services |

Table 16 summarizes the potential indirect or spin-off tax bases, effective tax rates, and amounts of taxes for the same types of taxes as were examined for direct impacts; the table is for the independent living facility. These tax bases derive from the portion of expenditures made in Berryville by residents of the independent living facility and from the operations of the facility. Most Berryville tax rates are per \$100 of business receipts; here they are shown in their complete decimal format.

The property taxes, the utility tax and the motor vehicle fees are derived from averages for the Town. The property taxes are relatively small because much of the spin-off growth could be handled by a small number of new and existing vendors and do not require much additional property. The BPOL taxes are derived from business receipts in many of the sectors. The meals tax is significant because its tax rate is so much higher than for any other tax. Total indirect tax receipts would come to \$7,800. The indirect impacts would require only 16 new employees in the Town, giving tax-supported costs to the Town of nearly \$4,000. The indirect net fiscal benefit from the independent living facility would come to about \$3,900 annually.

Table 16 Indirect Taxes, Costs and Net Fiscal Benefit from the Independent Living Facility, Battlefield Estates Senior Housing, Berryville, Virginia (constant \$2015)

| <u>Type of Tax</u> | <u>Taxable Amount</u> | <u>Effective Tax Rate</u> | <u>Amount of Taxes</u> |
|-----------------------|-----------------------|---------------------------|------------------------|
| Real Estate Tax | \$700,000 | 0.001860 | \$1,300 |
| Personal Property Tax | \$70,000 | 0.012500 | \$880 |
| Motor Vehicle Fees | 11 | 25 | \$270 |
| Retail Sales Tax | \$151,900 | 0.001718 | \$260 |
| BPOL Tax | \$1,106,800 | 0.001717 | \$1,900 |
| Meals Tax | \$76,100 | 0.04 | \$3,040 |
| Utility Tax | \$32,600 | 0.005828 | \$190 |
| Total Taxes | | | \$7,840 |
| Tax-supported Cost | 16 | \$252 | \$3,930 |
| Net Fiscal Benefit | -- | -- | \$3,910 |

Sources: Marlyn Development Corporation, Town of Berryville and Draft Annual FY 2015-2016 budget for the Town, U.S. Bureau of Economic Analysis, U.S. Department of Labor Statistics, and S. Patz & Associates, Inc.

Indirect Assisted Living Impacts

Indirect fiscal impacts from the Assisted Living facility would derive from the expenditures that the facility makes in Berryville. It is estimated that 20 percent of its expenditures would result in additional business receipts in Berryville. This is lower than the 30 percent estimated for residents of the Independent Living Facility. As with the ILF, the property taxes would be relatively small due to the fact that much of the impact could be absorbed by a small number of vendors. The BPOL tax is significant, since it would be applied to many different kinds of businesses. Again, the meals tax is quite large due to the fact that its tax rate is so much higher than for the other taxes. The impacts are significantly lower than for the independent living facility because of the higher resident expenditures at the independent living facility. Overall, the assisted living facility would produce for the Town taxes of \$3,300 and tax-supported costs of \$2,000, for a net fiscal benefit of \$1,300.

Table 17 Indirect Taxes, Costs and Net Fiscal Benefit from the Assisted Living Facility, Battlefield Estates Senior Housing, Berryville, Virginia (constant \$2015)

| <u>Type of Tax</u> | <u>Taxable Amount</u> | <u>Effective Tax Rate</u> | <u>Amount of Taxes</u> |
|-----------------------|-----------------------|---------------------------|------------------------|
| Real Estate Tax | \$361,100 | 0.001860 | \$670 |
| Personal Property Tax | \$36,100 | 0.012500 | \$450 |
| Motor Vehicle Fees | 6 | \$25.00 | \$140 |
| Retail Sales Tax | \$29,300 | 0.001718 | \$100 |
| BPOL Tax | \$399,700 | 0.001776 | \$710 |
| Meals Tax | \$28,800 | 0.04 | \$1,200 |
| Utility Taxes | \$11,000 | 0.009091 | \$100 |
| Total Taxes | | | \$3,370 |
| Tax-supported cost | 8 | 252 | \$2,030 |
| Net Fiscal Benefit | -- | -- | \$1,340 |

Sources: Marlyn Development Corporation, Town of Berryville and draft annual FY 2015-2016 budget, U.S. Bureau of Economic Analysis, U.S. Department of Labor Statistics, and S. Patz & Associates, Inc.

Summary of Indirect Impacts

Indirect impacts for the senior housing at Battlefield Center Trust property would be quite a bit smaller than the direct impacts. This is due to the fact that the Town's economy is small and does not have the vendors to fully capture the impacts from the housing. The chart below indicates that the expected net indirect fiscal benefits would be on the order of \$5,300 annually. This is the difference between \$11,200 in tax revenues and \$6,000 in tax-supported costs. Of the total net impact, \$3,900 would come from the independent living facility, and \$1,300 from the assisted living facility.

| <u>Indirect Fiscal Impacts</u> | <u>Independent Living</u> | <u>Assisted Living</u> | <u>Total Amount</u> |
|---------------------------------------|----------------------------------|-------------------------------|----------------------------|
| Total Taxes | \$7,840 | \$3,370 | \$11,210 |
| Less Tax-supported Costs | <u>-\$3,930</u> | <u>-\$2,030</u> | <u>-\$5,960</u> |
| Net Fiscal Benefit | \$3,910 | \$1,340 | \$5,250 |

Summary of Fiscal Impacts

The three tables to follow provide a summary of the direct and indirect fiscal impacts of the senior housing proposed for the Battlefield Estates Senior Housing proposal. Each table shows the taxes to be generated for the Town of Berryville and the expected tax-supported taxes that the development will entail.

Direct Fiscal Impacts

The following table shows (together) the direct fiscal impacts of the two senior housing facilities. These would occur directly from activities on site and could be realized with a high degree of probability. The table shows a total of \$91,500 in tax revenues generated by the two facilities. Against this is \$63,700 in tax-supported costs,

for a net fiscal benefit of \$27,800 per year once stabilized operations have been achieved, in constant 2015 dollars.

| Table 18 <u>Summary of the Direct Fiscal Impacts of the Senior Housing by Type, Battlefield Estates Senior Housing</u>
(2015 dollars) | | | |
|---|----------------------------------|-------------------------------|-----------------------------|
| <u>Type of Tax</u> | <u>Independent Living</u> | <u>Assisted Living</u> | <u>Total Impacts</u> |
| Real Estate Tax | \$27,710 | \$15,810 | \$43,520 |
| Personal Property Tax | \$17,500 | \$9,380 | \$26,880 |
| Motor Vehicle Fees | \$3,000 | \$100 | \$3,100 |
| Sales Tax | \$740 | \$100 | \$840 |
| BPOL Taxes | \$1,630 | \$7,910 | \$9,540 |
| Meals Taxes | \$5,000 | \$0 | \$5,000 |
| Utility Taxes | <u>\$1,780</u> | <u>\$850</u> | <u>\$2,630</u> |
| Total Taxes | \$57,360 | \$34,150 | \$91,510 |
| Less Tax-supported Costs | <u>-\$37,360</u> | <u>-\$26,340</u> | <u>-\$63,700</u> |
| Net Fiscal Benefit | \$20,000 | \$7,810 | \$27,810 |

Sources: Marlyn Development Corporation, Town of Berryville and draft annual FY 2015-2016 budget, U.S. Bureau of Economic Analysis, U.S. Department of Labor Statistics, and S. Patz & Associates, Inc.

Indirect Fiscal Impacts

Again, indirect impacts are potentials that could be realized by the Town if appropriate new development should occur in Berryville. Looked at from another viewpoint, these potentials would provide another source of support for such new development if enabled by the Town. The potentials are quite small compared to the direct impact potentials, the total net direct fiscal impact – at \$5,300 per year – being less than half that of the direct impacts. This would be due to extensive reliance of local vendors on suppliers outside Berryville.

Table 19 Summary of the Indirect Fiscal Impacts by Type of Senior Housing at the Battlefield Estates Senior Housing Proposal. (2015 dollars)

| <u>Type of Tax</u> | <u>Independent Living</u> | <u>Assisted Living</u> | <u>Total Impacts</u> |
|--------------------------|---------------------------|------------------------|----------------------|
| Real Estate Tax | \$1,300 | \$670 | \$1,970 |
| Personal Property Tax | \$880 | \$450 | \$1,330 |
| Motor Vehicle Fees | \$270 | \$140 | \$410 |
| Sales Tax | \$260 | \$100 | \$360 |
| BPOL Taxes | \$1,900 | \$710 | \$2,610 |
| Meals Taxes | \$3,040 | \$1,200 | \$4,240 |
| Utility Taxes | \$190 | \$100 | \$290 |
| Total Taxes | \$7,840 | \$3,370 | \$11,210 |
| Less Tax-supported Costs | <u>-\$3,930</u> | <u>-\$2,030</u> | <u>-\$5,960</u> |
| Net Fiscal Benefit | \$3,910 | \$1,340 | \$5,250 |

Sources: Marlyn Development Corporation, Town of Berryville and draft annual FY 2015-2016 budget, U.S. Bureau of Economic Analysis, U.S. Department of Labor Statistics, and S. Patz & Associates, Inc.

Total Fiscal Impacts

The potential net fiscal benefits to the Town from the development are not excessive, being on the order of \$33,100, as shown in the following table. What is also of interest, and not shown previously in this study, are the potentials for \$3.0 million in taxable business receipts in the Town from which these fiscal impacts are derived. These taxable receipts represent about one-third of the potential \$11.1 million in total new business receipts that could take place in the Town. This clearly would support several new businesses and expansions to existing businesses if appropriate facilities were available.

Table 20 Summary of the Total Direct and Indirect Fiscal Impacts By Type for the Town of Berryville, Virginia, of the Senior Housing Proposed at the Battlefield Estates Senior Housing. (constant \$2015)

| <u>Type of Tax</u> | <u>Independent Living</u> | <u>Assisted Living</u> | <u>Total Impacts</u> |
|--------------------------|---------------------------|------------------------|----------------------|
| Real Estate Tax | \$29,010 | \$16,480 | \$45,490 |
| Personal Property Tax | \$18,380 | \$9,830 | \$28,210 |
| Motor Vehicle Fees | \$3,270 | \$240 | \$3,510 |
| Sales Tax | \$1,000 | \$200 | \$1,200 |
| BPOL Taxes | \$3,530 | \$8,620 | \$12,150 |
| Meals Taxes | \$8,040 | \$1,200 | \$9,240 |
| Utility Taxes | <u>\$1,970</u> | <u>\$950</u> | <u>\$2,920</u> |
| Total Taxes | \$65,200 | \$37,520 | \$102,720 |
| Less Tax-supported Costs | <u>-\$41,290</u> | <u>-\$28,370</u> | <u>-\$69,660</u> |
| Net Fiscal Benefit | \$23,910 | \$9,150 | \$33,060 |

Sources: Previous text and Tables.

Appendix A: Summary of Clarke County Impacts from Battlefield
Estates Senior Housing

Summary of Clarke County Impacts

While the fiscal impacts analysis focused on the Town of Berryville, the impact model was also run for potential impacts from the proposed Battlefield Estates Senior Housing on Clarke County. As with the impacts for the Town, these impacts for the County should be viewed as potentials which may not be fully realized if future business expansion does not take place. These potential impacts would, of course, provide market support for such business expansion. The potential impacts for the County are considerably greater than for the Town because the tax rates for the County are significantly higher than for the Town. The fact that there will be no children at the two senior housing facilities also enhances the impacts because there would be no school costs for the County. School costs are generally about 40 percent of the County budget.

The following table presents a summary of the findings on potential impacts for Clarke County in summary form. The tax base for direct impacts for the County is the same as for the Berryville impacts, being the two senior housing facilities, but just at higher tax rates. However, the indirect impacts for the County are quite small, since under current circumstances, there are few opportunities for new development. Altogether, the two facilities would produce a potential for \$210,000 in fiscal surplus annually for the County after full operation (in constant year 2015 dollars). This is the difference between \$325,000 in potential tax revenues, and \$115,000 in tax-supported costs for the County.

Table A-1. Summary of the Total Direct and Indirect Fiscal Impacts by Type for Clarke County, Virginia, Battlefield Senior Housing Proposal
(2015 dollars)

| | <u>Independent
Living</u> | <u>Assisted
Living</u> | <u>Total
Impacts</u> |
|--------------------------|-------------------------------|----------------------------|--------------------------|
| Direct Impacts | | | |
| Tax Revenue | \$204,540 | \$95,800 | \$300,340 |
| Less Tax-supported Costs | <u>-\$59,200</u> | <u>-\$41,740</u> | <u>-\$100,940</u> |
| Net Fiscal Benefit | \$145,340 | \$54,060 | \$199,400 |
| Indirect Impacts | | | |
| Tax Revenue | \$11,350 | \$13,300 | \$24,650 |
| Less Tax-supported Costs | <u>-\$6,180</u> | <u>-\$8,020</u> | <u>-\$14,200</u> |
| Net Fiscal Benefit | \$5,170 | \$5,270 | \$10,450 |
| Total Impacts | | | |
| Tax Revenue | \$215,890 | \$109,100 | \$324,990 |
| Less Tax-supported Costs | <u>-\$65,380</u> | <u>-\$49,760</u> | <u>-\$115,140</u> |
| Net Fiscal Benefit | \$150,510 | \$59,330 | \$209,850 |

Sources: Marlyn Development Corporation and S. Patz & Assoc.

Attachment 4

Rainwater Harvesting

In June, Wayne Webb of 510 Ewell Court contacted the Town regarding his interest in installing a rainwater harvesting system in his home. He plans to utilize the harvested rainwater for use in his home's toilets and for outside watering needs.

Town staff has examined this proposal and is in the process of researching this matter. At present, staff has identified three areas of concern that must be addressed:

- 1) Compliance with Chapter 17 of the Berryville Code
- 2) Compliance with cross-connection / backflow prevention requirements
- 3) Provision of an equitable means by which the Town would bill for wastewater leaving the home but not metered through the water meter

Compliance with Chapter 17

It appears that fairly simple amendments to Chapter 17 of the Berryville Code would be necessary to permit this use but staff needs to complete this review.

Compliance with cross-connection /backflow prevention requirements

This will be a technical review and if the means to discourage cross-connection and prevent backflow (including inspections) meet requirements then there should be no problem in this regard.

Billing

Staff has debated this issue and at present we have concluded that the best way to address this aspect of the proposal is to require the installation of a meter (spec's and replacement schedule not discussed yet) that would register the water that is utilized by the home's internal fixtures. The meter would be read at certain intervals and the property owner billed for the sewer use (we would expect to read this meter either annually or semi-annually).

Please find attached the following:

- Mr. Webb's Rainwater Harvesting Proposal
- Email from Alyson Sappington
 - o Virginia Rainwater Harvesting & Use Guidelines (VDH 3/31/11)
 - o Proposed changes to the USBC/IPC from 2012

Town staff is developing code amendment and policy language for review and adoption by the Town Council but it is not ready for distribution with the packet.

Staff requests that the Council discuss this matter and provide guidance as to whether it is interested in approving code changes / other requirements to permit such a use. Further, if it is, is staff approaching the matter in an acceptable fashion?

Lastly, if Council is amendable to this type of project, then staff will work to provide necessary code changes / other requirements to the Council at its October meeting.

Rainwater Harvesting at 510 Ewell Ct, Berryville

Information is requested for the Town and County requirements for a rainwater harvesting project planned for 510 Ewell Ct Berryville. Are permits required? What are the local and state regulations if any?

The planned water use is for garden and lawn irrigation and toilets. There will be no connections to the Town water system. Outside spigots and inside plumbing will be marked as not potable.

The project will consist of approximately 850-gallon storage reservoir located in an unheated room whose elevation is a little below the house basement floor elevation and a little above the adjacent lawn.

The water distribution system will be pipes in the heated basement of the house leading to toilets and outside spigots. The reservoir will be connected to the distribution system by a shallow well pump/pressure tank located in the heated basement.

The roof capture area of 1117 sq. ft is shown on the picture below. The roof is asphalt shingles.

The rain will be collected using existing gutters and 2 down spouts. The down spouts and gutters have been observed to not over flow during rainfall rates less than 6 inches per hour. Rainfall events exceeding 6 inches per hour have occurred less than 10 times per year in the past 5 years and are less than 15 minutes in duration. The gutters are covered with screens having 6mm diamond shaped openings.

Each down spouts will be connected to a 60-gallon rain barrel. The rain barrels will act as sediment traps with the over flow being routed in 2-inch id plastic pipes to the pre filter for the water reservoir.

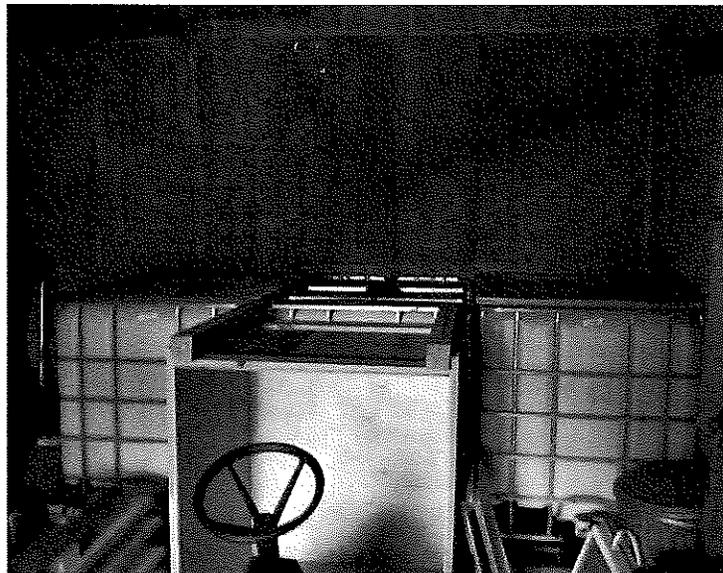
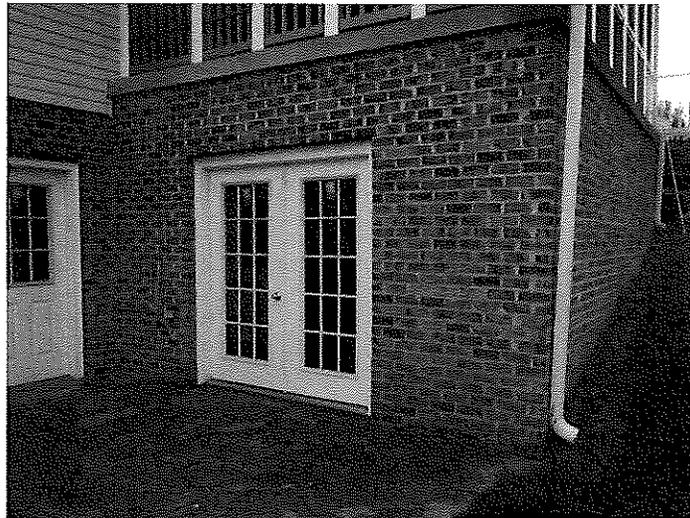
First flush diversion will be the volume of the rain barrel above the lower 20 gallons. The volume above 20 gallons will drain to waste through a small hole during and after a rain event

The pre filter will be routed to a calming outlet in the reservoir. The calming outlet will contain lime stone to increase the pH of the water in the reservoir. The pre-filters will be mesh supported party hose.

Winter operation will be utilizing thermostatically controlled heat tapes. The reservoir will be aerated if there are dissolved oxygen issues that lead to odor problems.

Water demand is about 20 gallons per day for toilets. The rain harvest would have captured a maximum of about 80000 gallons the last 5 years and the toilet demand would have been about 38000 gallons. The capture is based on measured precipitation more than 0.1 inches (The amount for wetting and first flush) and less than 1.2 (The amount to fill the tanks). Should the tanks go dry, make up water will be added by manually running water via a hose to the reservoir (maintaining an air gap).

Over flow of the reservoir and first flush water will be discharged to the lawn area that now receives all the rain water.



RAINWATER HARVESTING PLANS FOR 510 EWELL CT BERRYVILLE, VA

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1 SYSTEM SCHEMATIC DRAWING

2 PLAN VIEW SCHEMATIC

3 RAINBARREL DETAIL

4 RAINBARREL AND CISTERN TANK PICTURES

5 PLAN TEXT 1 OF 3

6 PLAN TEXT 2 OF 3

7 LOCATION PICTURES

8 PIPE FLOW CALCULATIONS

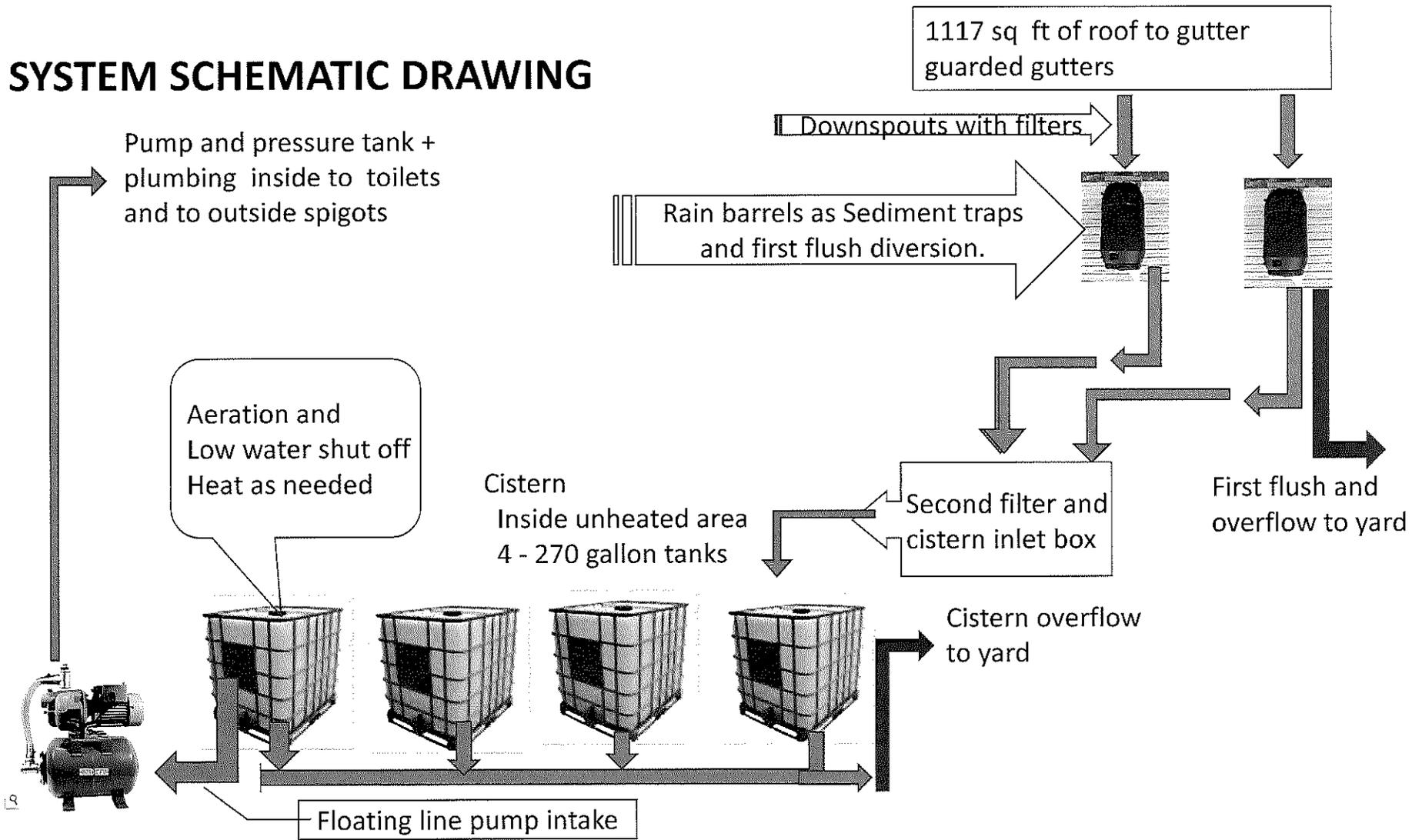
9 PLAN TEXT 3 OF 3

10 SCHEMATIC DIAGRAM OF THE TANK CONNECTED TO THE PUMP

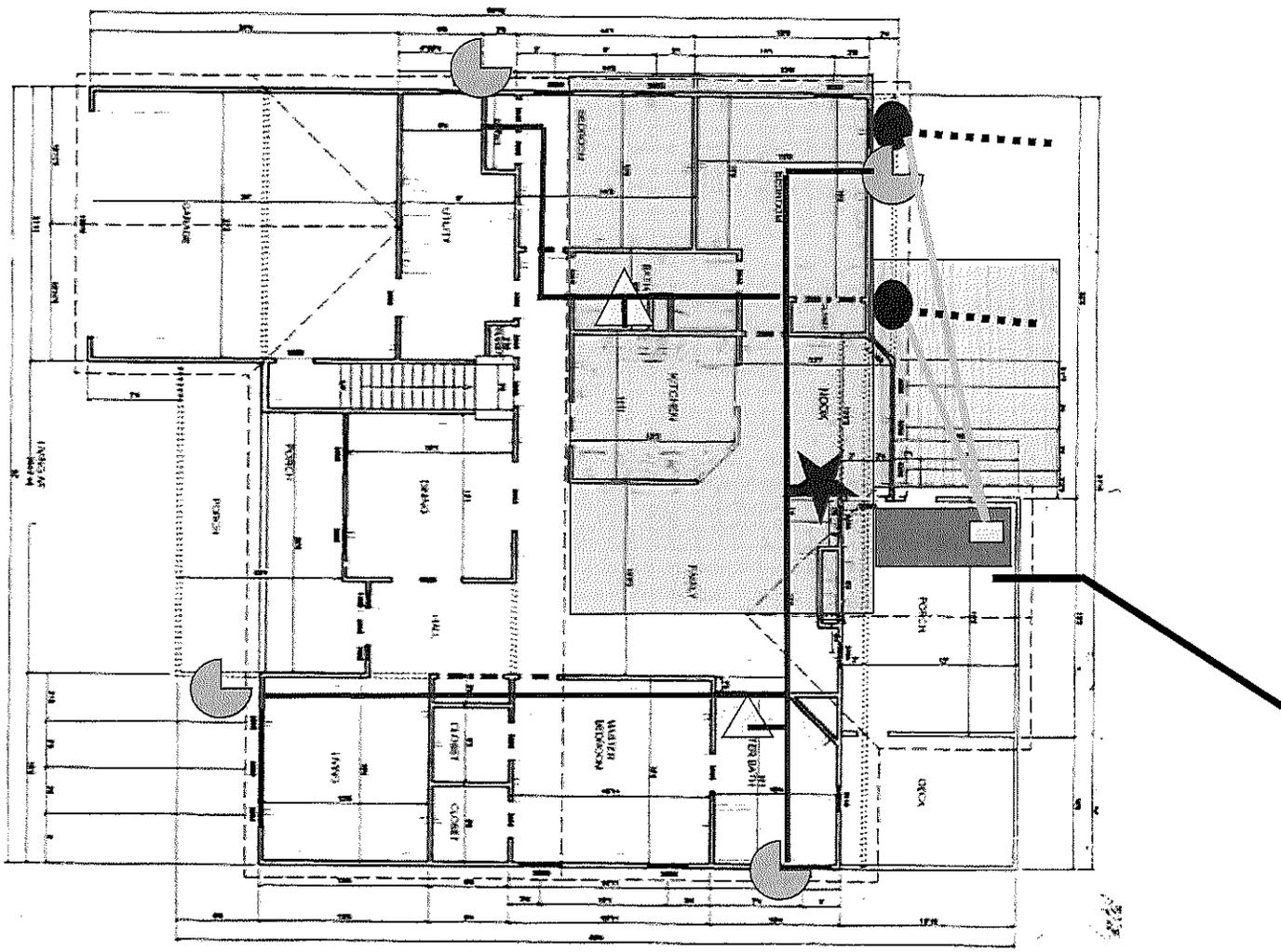
11 SCHEMATIC DIAGRAM OF THE TANK RECEIVING RAIN WATER

12 MAINTENANCE FOR RAINWATER HARVESTING SYSTEM

SYSTEM SCHEMATIC DRAWING



PLAN VIEW SCHEMATIC



Roof area to cistern

Deck

Rain barrels

Cistern on lower level

Shallow well pump and pressure tank

Toilet location

Outdoor freeze proof spigot location

Inside distribution system

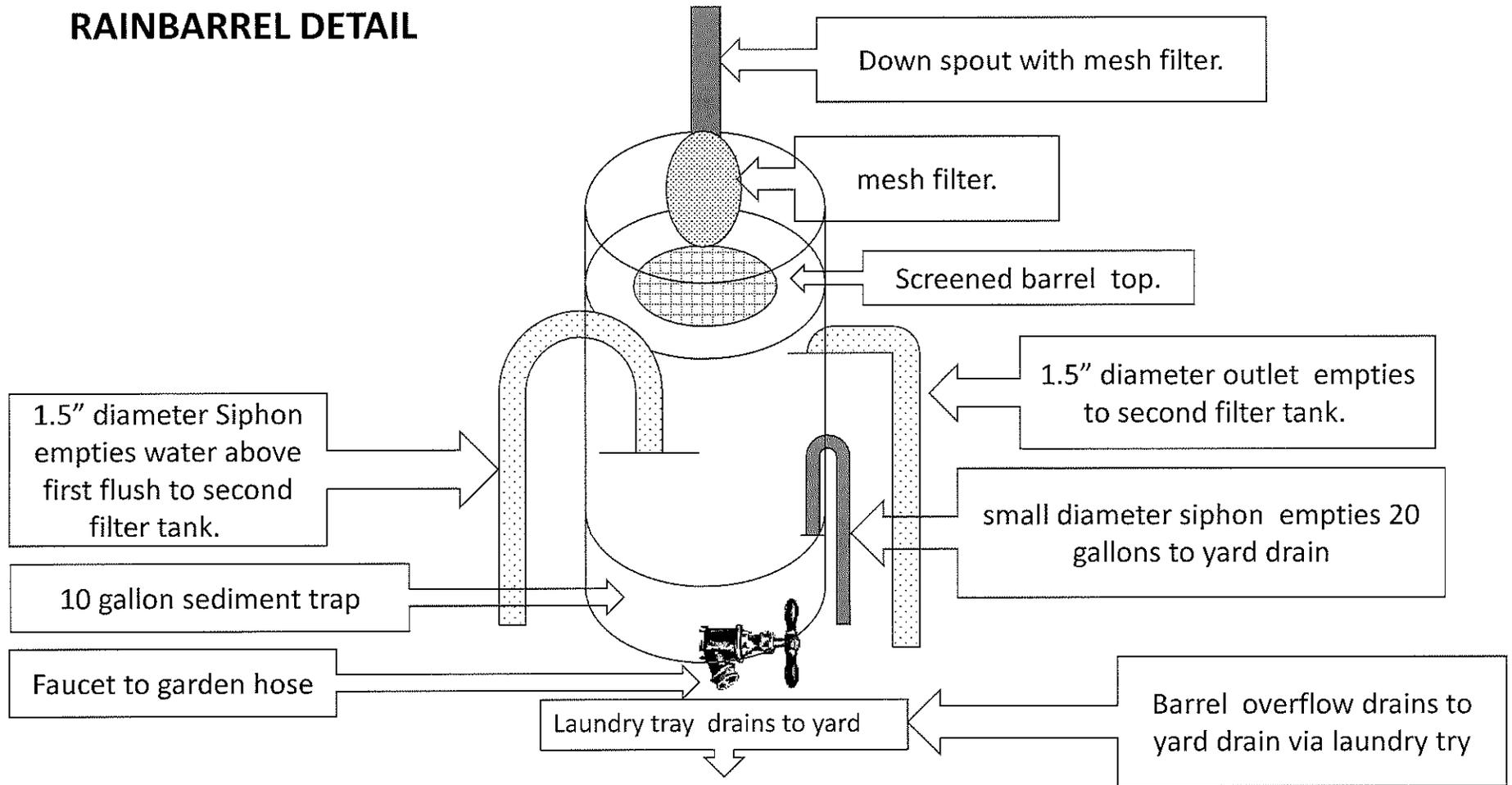
Second filtration

Rain barrels to cistern

Cistern over flow

Existing down spout outlets

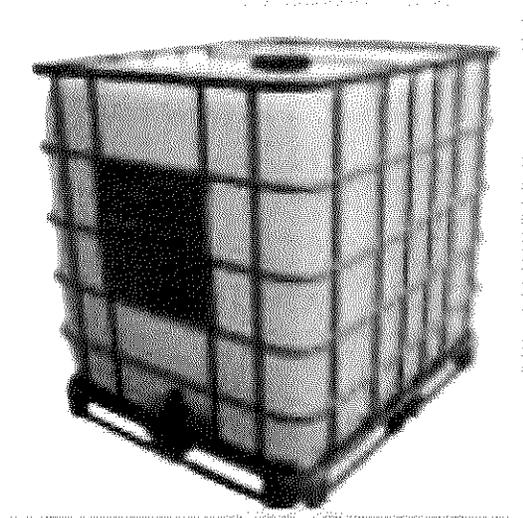
RAINBARREL DETAIL



RAINBARREL AND CISTERN TANK PICTURES



**24" X 36" H rain barrel will use
2 for first flush diversion**



275 Gallon Caged IBC Tote

**40" X 48" X 46" H rain tanks
will use 4 for cistern**

PLAN TEXT 1 OF 3

Rooftop Surface.

sloped roof 3 v to 5 h area to be captured 1117 sq ft

Roof materials are asphalt shingles. There will not be significant human exposure . Water is to be used for toilets and flower gardens and grass. All the roof runoff is now directed to a grass yard.

Collection and Conveyance System.

The collection and conveyance system consists of oversized aluminum gutters with gutter guard and no over hanging trees, and downspouts that channel stormwater runoff through mesh filters supported by a screen on the top of a rain barrel. The rain barrel acts as first flush diversion and splits the runoff between a sediment trap, first flush and the volume directed to the cistern. Two 1.5"ID plastic pipes will drain water for the cistern from the rainbarrels to the second filter tank. The second filter tank drains directly into the cistern.

The existing gutters have been observed to contain rain fall rates of 2 inches per hour which exceed the 1 inch per hour specification .

If the rainfall exceeds the capacity of the pipes from the rain barrels to the cistern the rain barrels overflow be captured in a tray below the barrel and transmitted to the yard using existing pipes.

If the capacity of the cistern is exceeded the excess will be diverted to the yard from an over flow pipe. The frequency of the cistern being topped when the cistern is half full was about 60 times in the last 5 years.

PLAN TEXT 2 OF 3

Pre-Treatment: Screening, First Flush Diverters and Filter Efficiencies.

The existing gutter guards meet the minimal requirement for pre-filtration of small systems, in addition the rain will pass through a settling tank and 2 fine mesh filters. The fine mesh filters will initially be panty hose constrained by a coarse mesh bag. The first filter is before the rain barrel and the second filter will be in the second filter tank. It is anticipated the fine filter will need to be replaced twice a year,

Simple first flush diverters require active management, by draining the first flush water volume to a pervious area following each rainstorm.

The initial first flush from the system is captured in the rain barrels before rainwater flows from the rain barrels to the storage tank. The volume of first flush water will be about 20 gallons per barrel which is equivalent to 0.06 inches of rain on the roof area. The first flush in each barrel will drain through a syphon to the yard over a period not less than 2 hours or more than 24 hours. This system allows for maintenance free, first flush diversion for rain every day. The first flush and any Rain barrel over flow will be directed from the tray under the barrel to the yard at the same location the roof drainage system is now directed.

A design intensity of 1-inch/hour should be used for the purposes of sizing pre-tank conveyance and filter components. 1 inch per hour is equal to about 630 gallons per hour from the captured roof area or about 10 gpm. There will be 2 rain barrels and 2 ,1.5" diameter pipes leading to the second filter tank which acts as a roof washer. Each pipe has a capacity of about 35 gpm thus there is adequate pipe capacity to convey the rain to the cistern from the rain barrels. At maximum flow the each pipe will discharge about 5 gpm

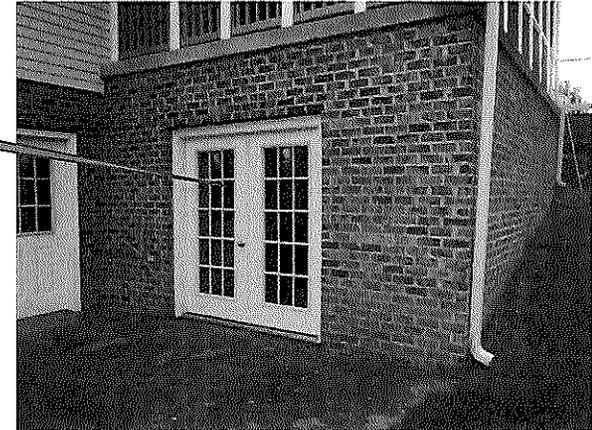
LOCATION PICTURES

GUTTERS AND DOWN SPOUTS

ROOF AREA FOR RAIN
COLLECTION 1117 SQ FT



CISTERN LOCATION

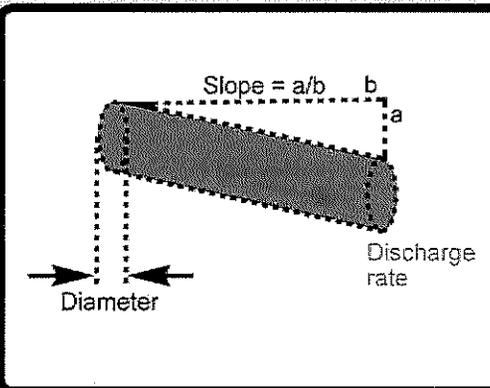


PIPE FLOW CALCULATIONS

Gravity-fed pipe flow

Hazen-Williams formula for a full pipe.

Engineering index
Civil Engineering index



the calc

The gravitational flow form of the Hazen-Williams equation is calculated to provide water velocity and discharge rate that can be achieved through a pipe with provided proportions.

| | | |
|---|---------------------------------------|--|
| Pipe diameter: | <input type="text" value="1.5"/> | <input type="text" value="inches"/> |
| Roughness coefficient: | <input type="text" value="150"/> | |
| Pipe length (b): | <input type="text" value="30"/> | <input type="text" value="feet"/> |
| Drop (a): | <input type="text" value="3"/> | <input type="text" value="feet"/> |
| Velocity: | <input type="text" value="6.42198"/> | <input type="text" value="feet/second"/> |
| Discharge rate | <input type="text" value="35.3715"/> | <input type="text" value="gal(US)/min"/> |
| Pipe slope: | <input type="text" value="0.100000"/> | |
| <input type="button" value="Calculate!"/> | | Add ⊕ |

notes

This calc is mainly for pipes full with water at ambient temperature and under turbulent flow.

If you know the slope rather than the pipe length and drop, then enter "1" in "Length" and enter the slope in "Drop". If the conduit is not a full circular pipe, but you know the hydraulic radius, then enter (Rh×4) in "Diameter".

Typical values of the roughness (friction loss) coefficient include: 100 (concrete, cast iron); 120 (steel); 140 (cement); 150 (copper, plastics).

PLAN TEXT 3 OF 3

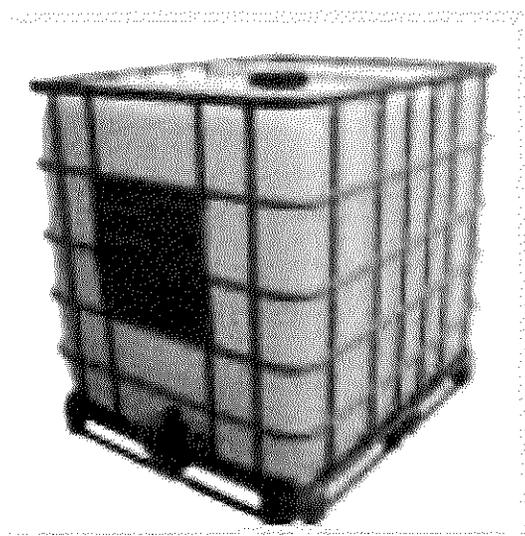
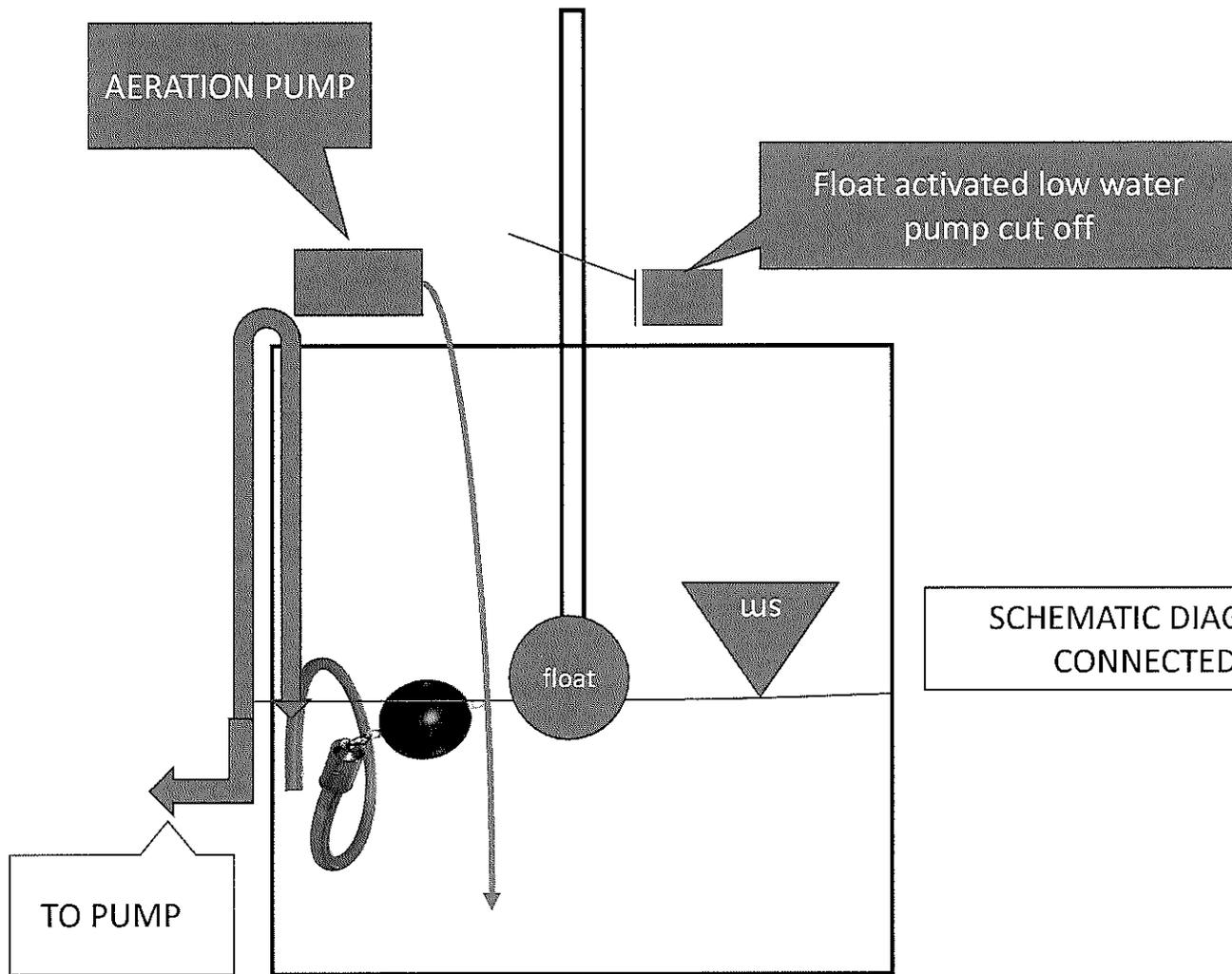
Storage Tanks. The storage tanks for the cistern consists of 4, 270 gallon tanks as shown on the schematic plan. The tanks are placed on a concrete floor adjacent to each other and connected with pipes to balance water levels. Total cistern storage on-site will be 1080 gallons. Storage tanks will be indoors, for UV protection and protected from direct sunlight to inhibit algae growth and will be capped to discourage mosquito breeding and reproduction.

Roof Washer. A roof washer (the second filter) will be placed above one of the storage tanks and used to filter small debris from harvested rainwater. The roof washer will be a utility basin fitted with a 2.5 in. drain leading to a calming device consisting of 2 concentric pipes with several 0.5 inch diameter holes throughout the length of the pipe with the first holes 0.5 feet. above the bottom of the pipes.

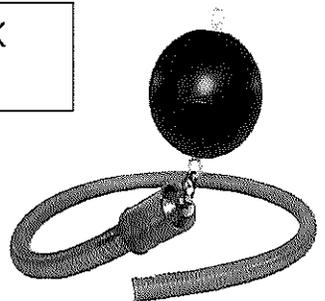
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Overflow

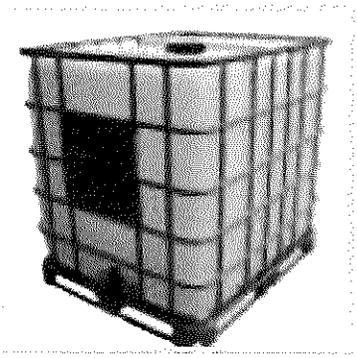
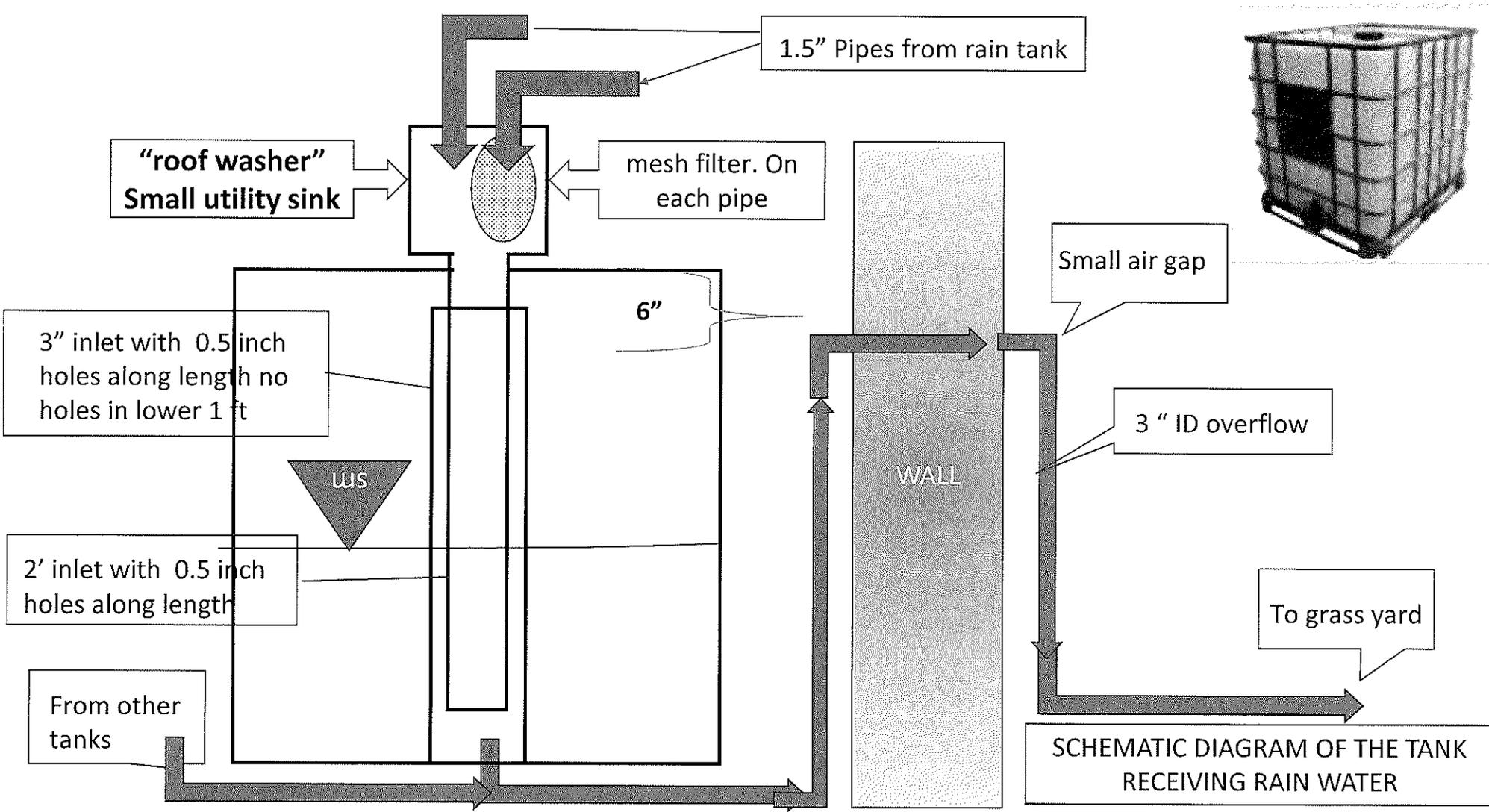
A cistern overflow will be included in the rainwater harvesting system in order to handle an individual storm event or multiple storms in succession that exceed the capacity of the tank. Overflow pipes will have a capacity equal to or greater than the inflow pipe(s) and have a 3" diameter and slope sufficient to drain the cistern while maintaining an adequate freeboard height. The overflow pipe will be screened to prevent access to the tank by rodents and birds



SCHEMATIC DIAGRAM OF THE TANK
CONNECTED TO THE PUMP



1-1/4" Stainless Steel Floating Filter with 1200 micron coarse screen, backflow preventer and 7' hose.



PLAN TEXT 3 OF 3

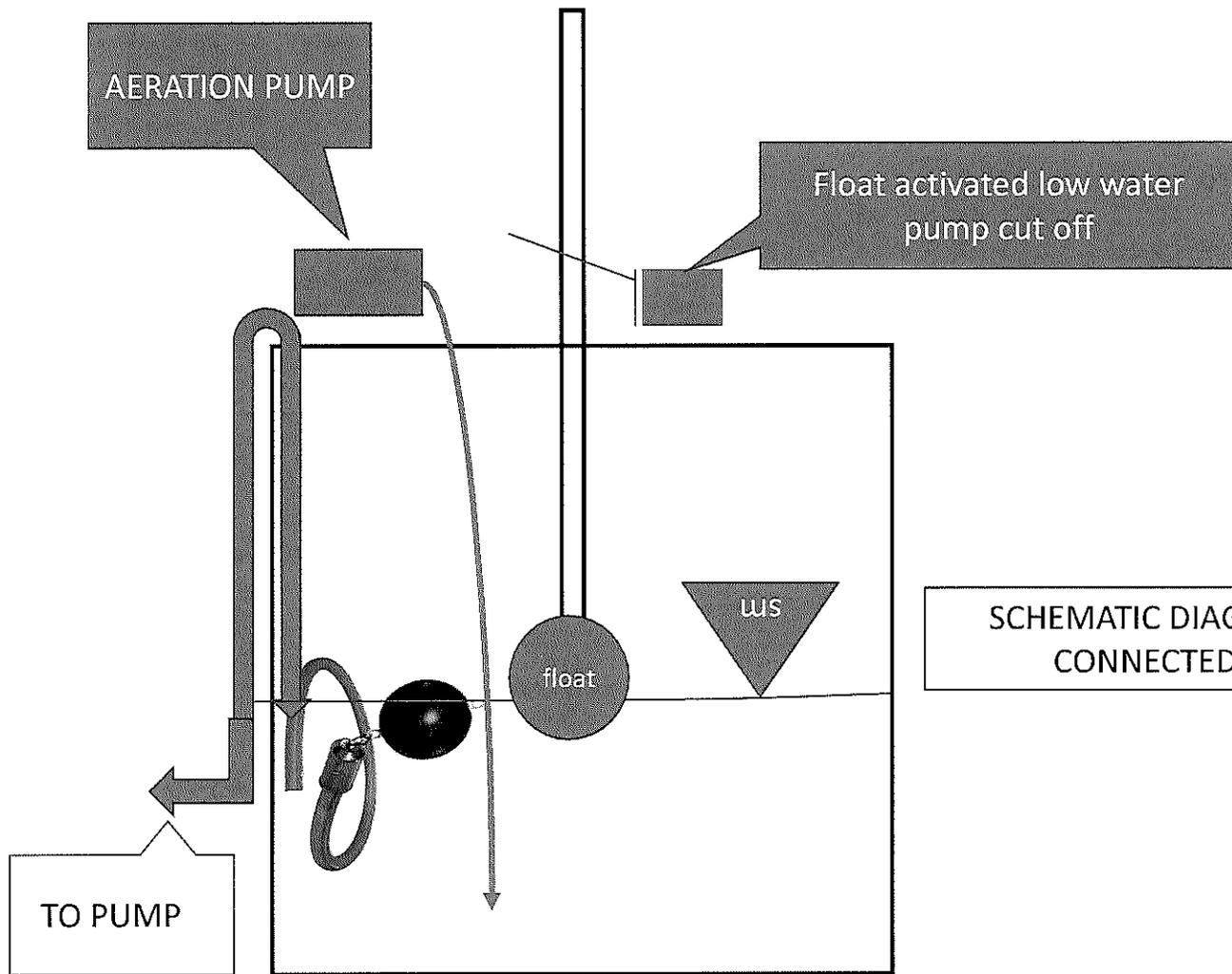
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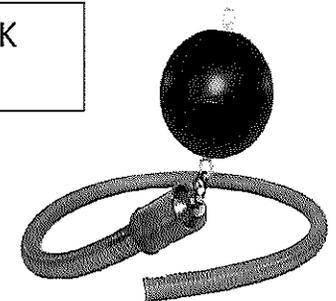
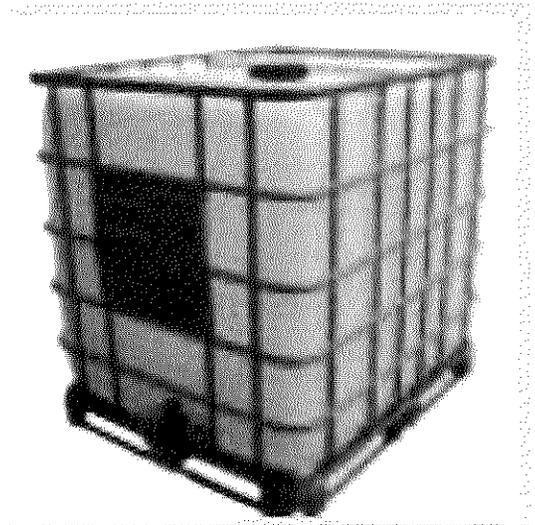
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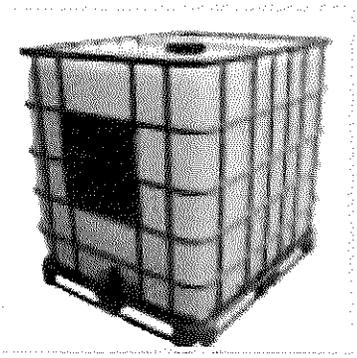
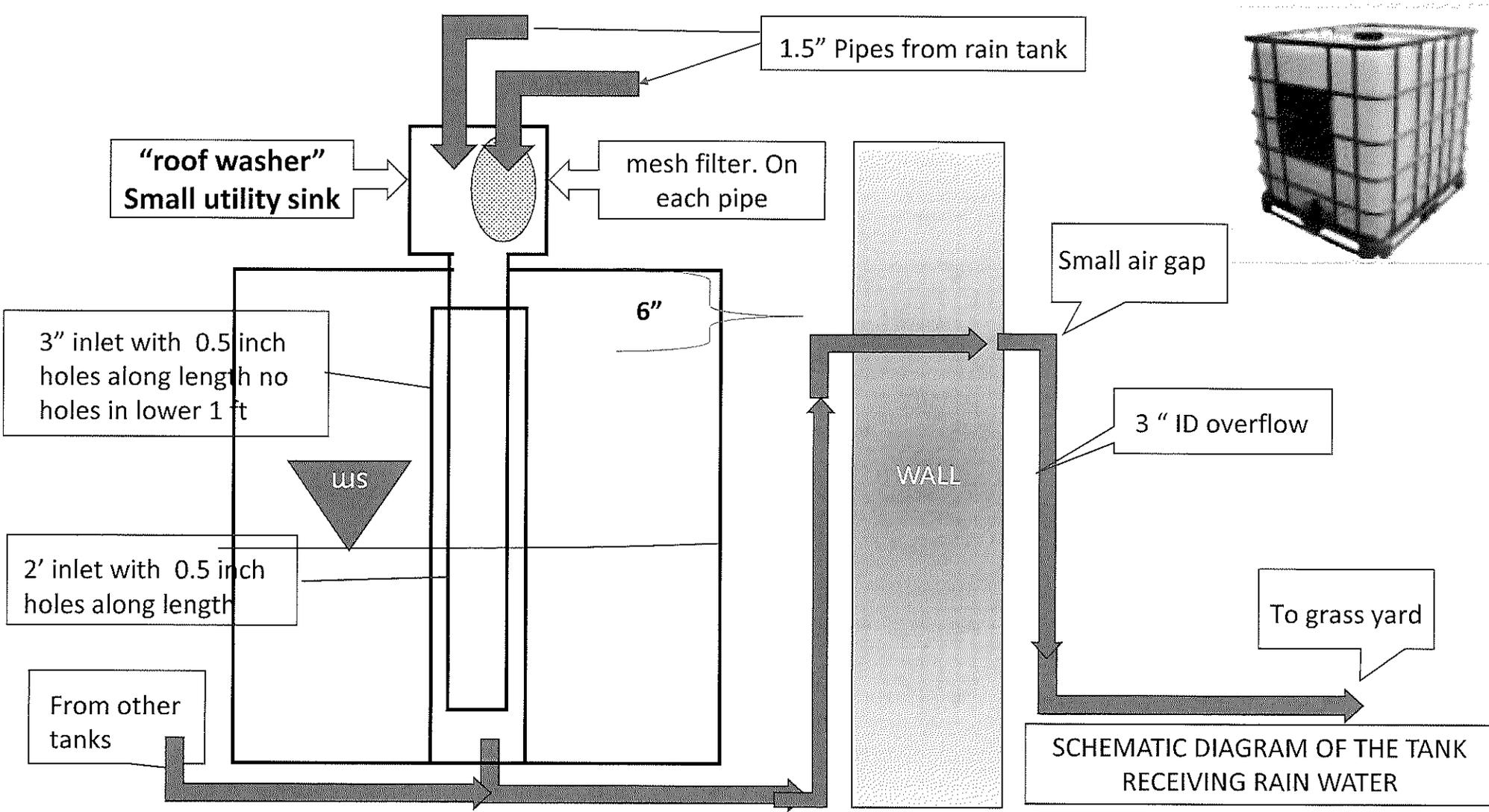
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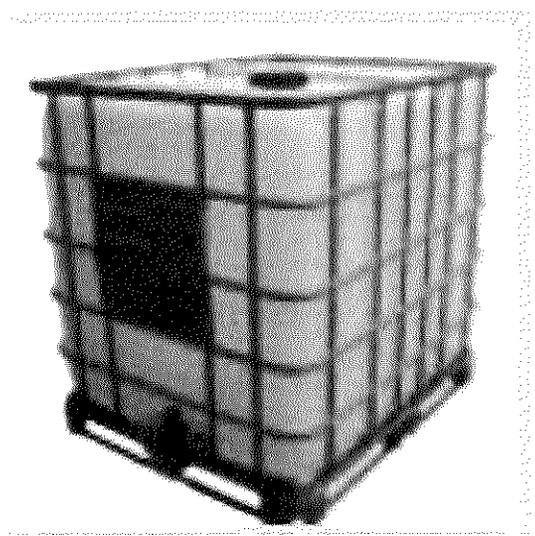
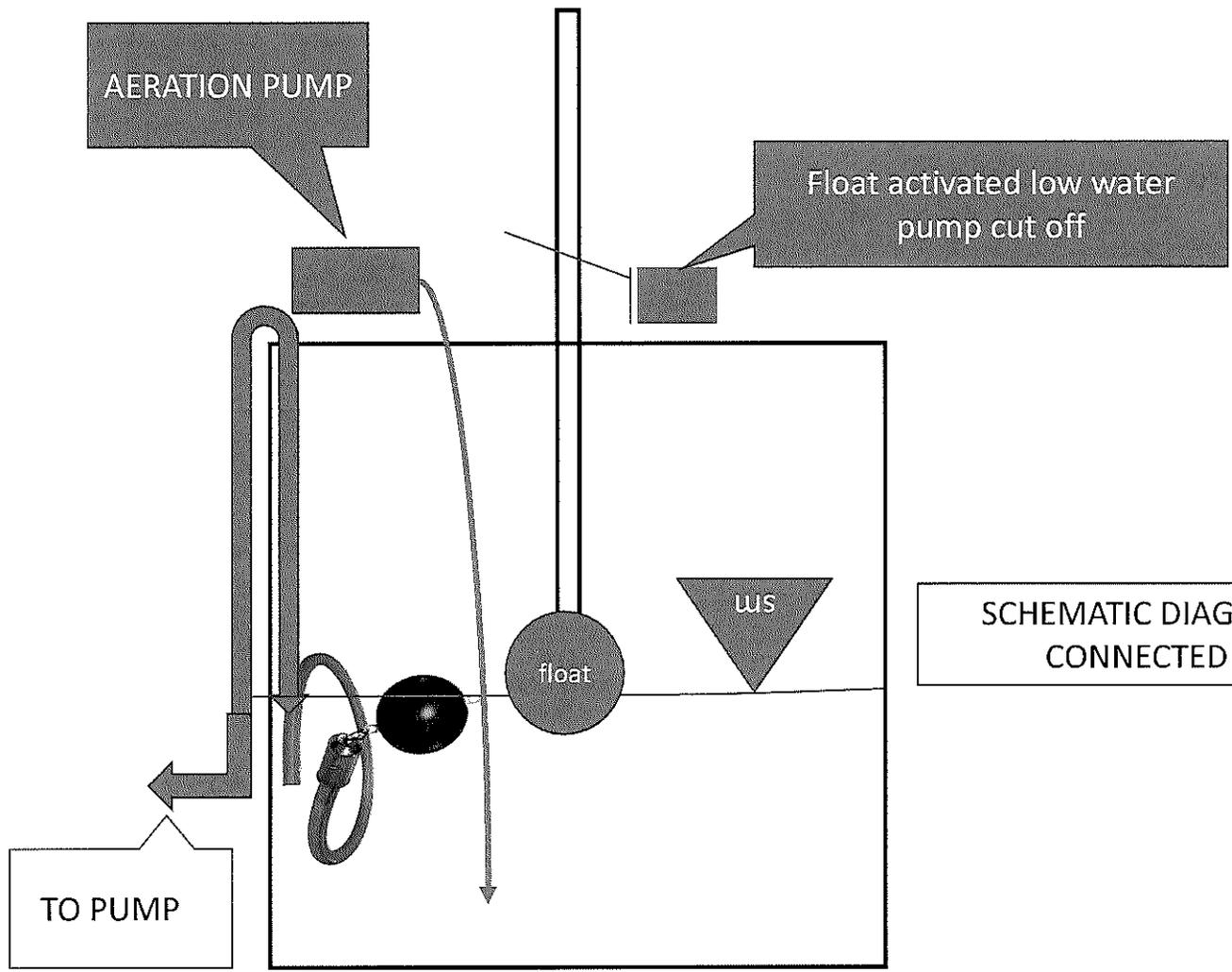


SCHEMATIC DIAGRAM OF THE TANK
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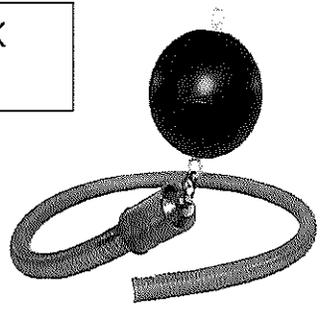


1-1/4" Stainless Steel Floating Filter with 1200 micron coarse screen, backflow preventer and 7' hose.

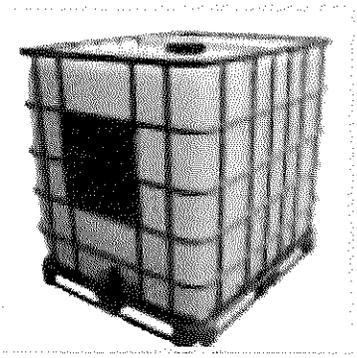
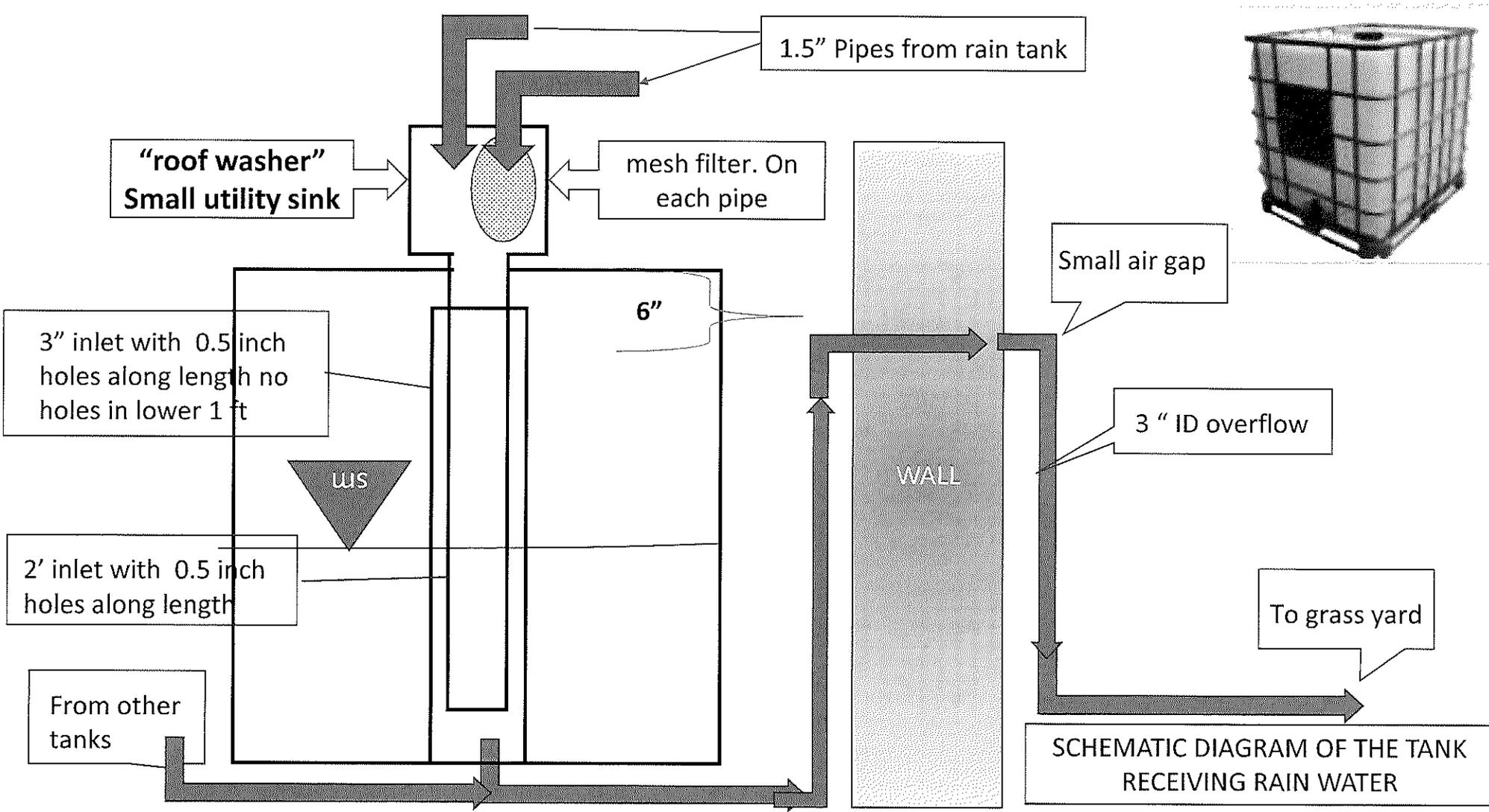




SCHEMATIC DIAGRAM OF THE TANK
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PLAN TEXT 3 OF 3

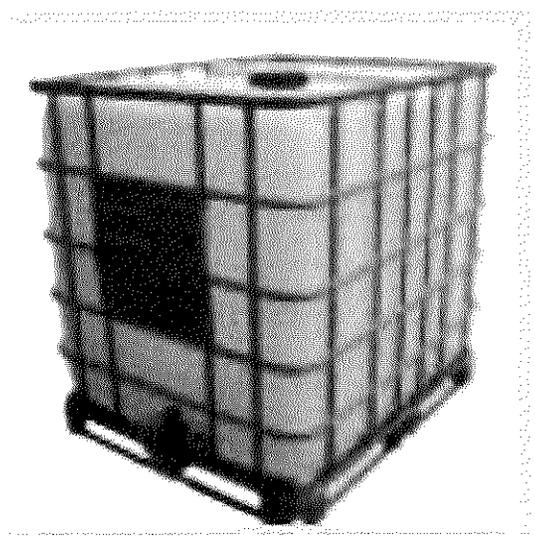
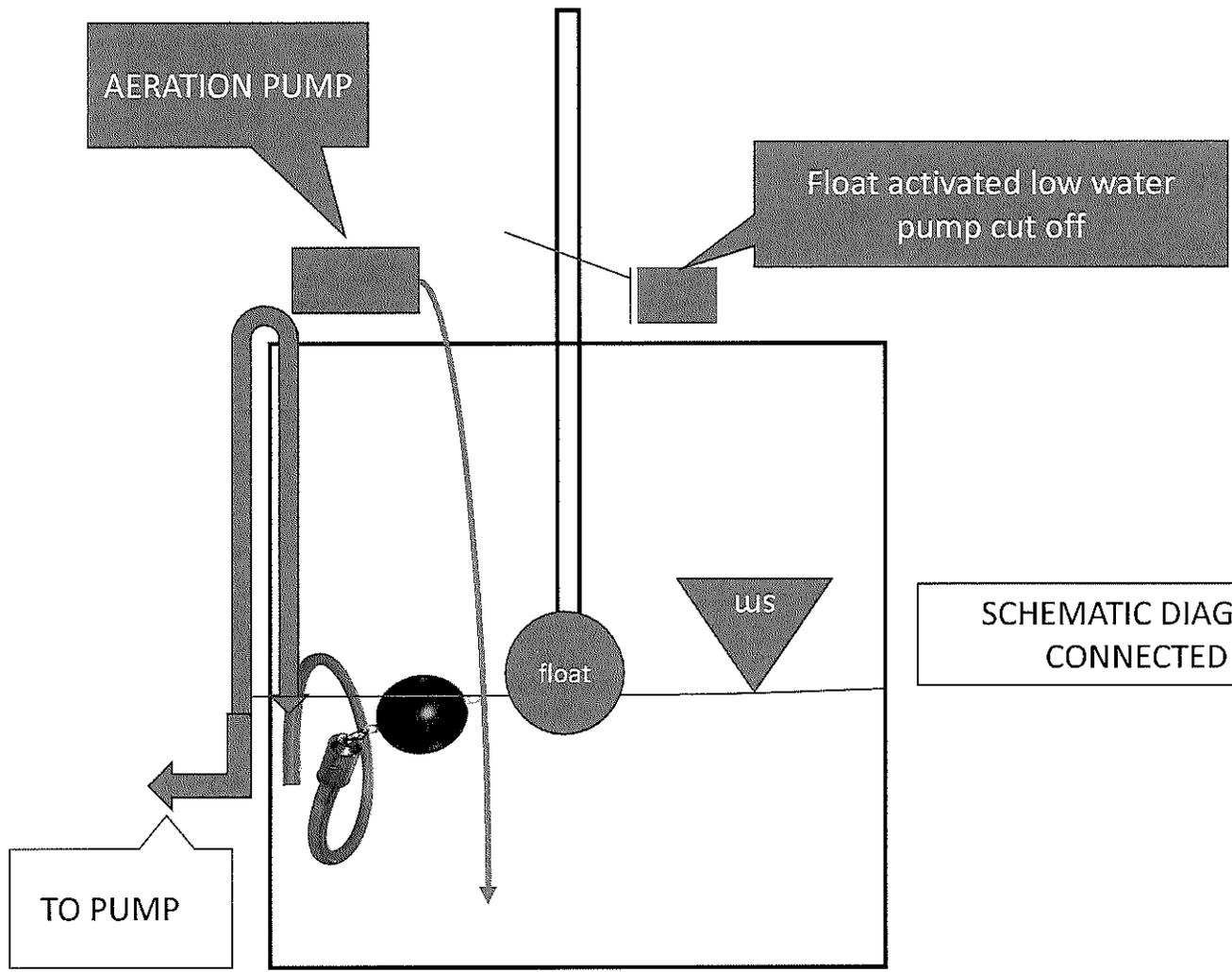
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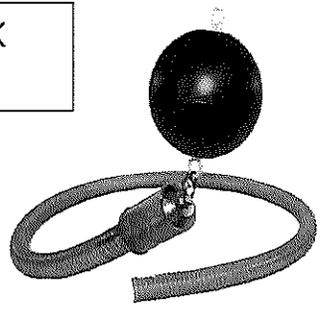
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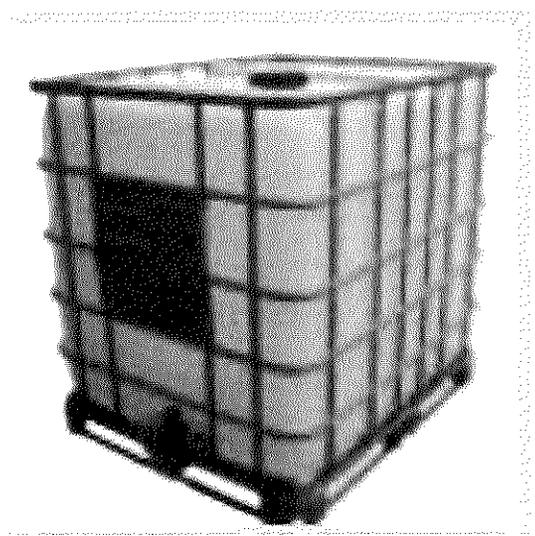
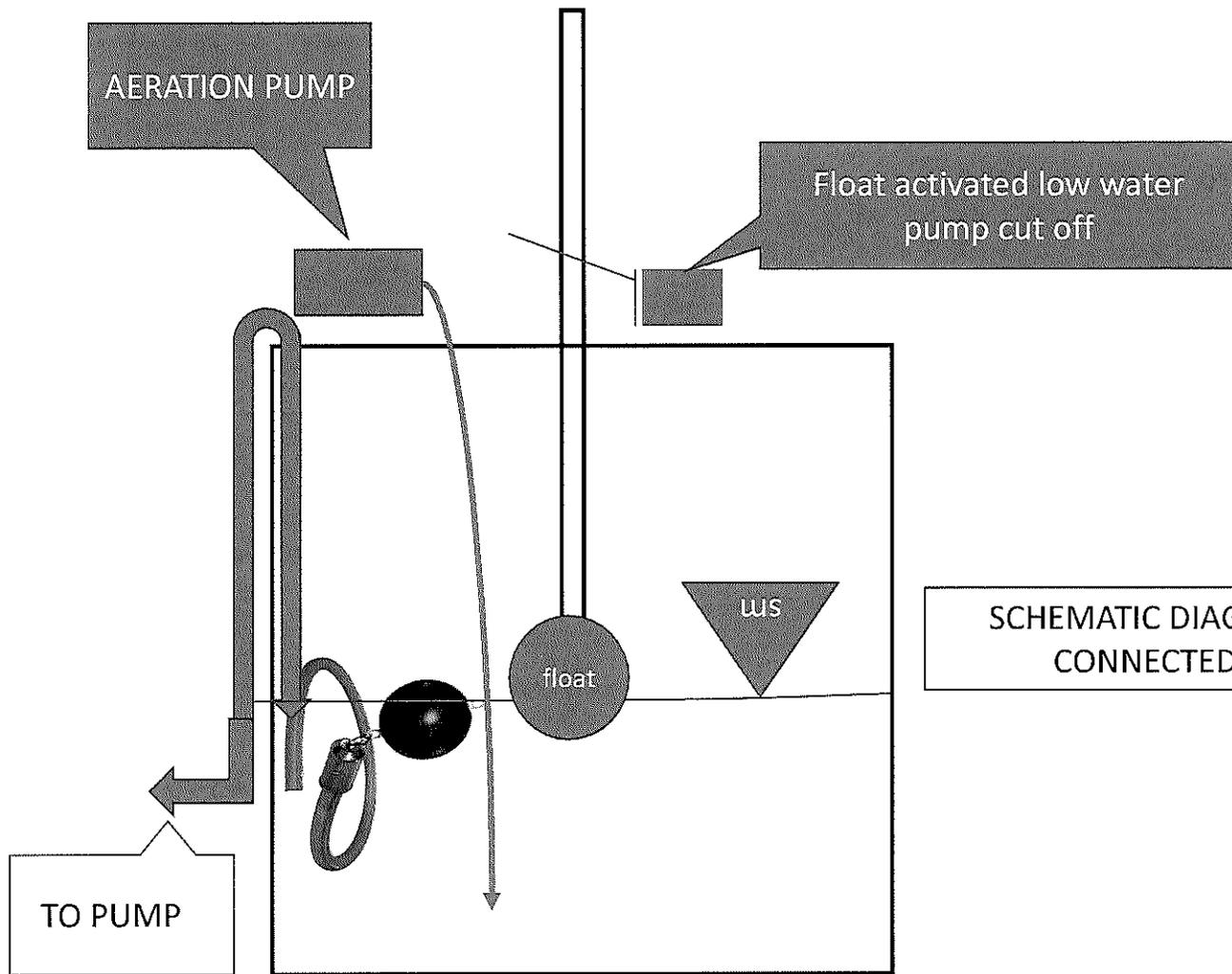
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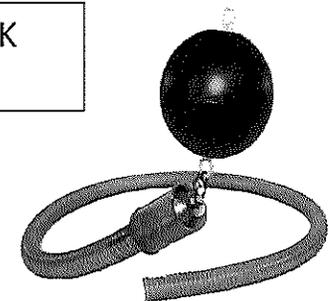
SCHEMATIC DIAGRAM OF THE TANK
CONNECTED TO THE PUMP



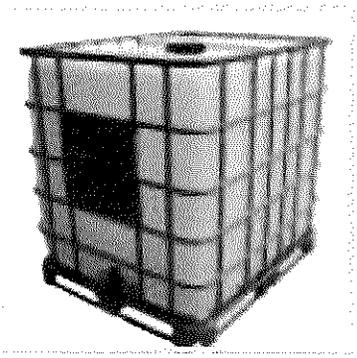
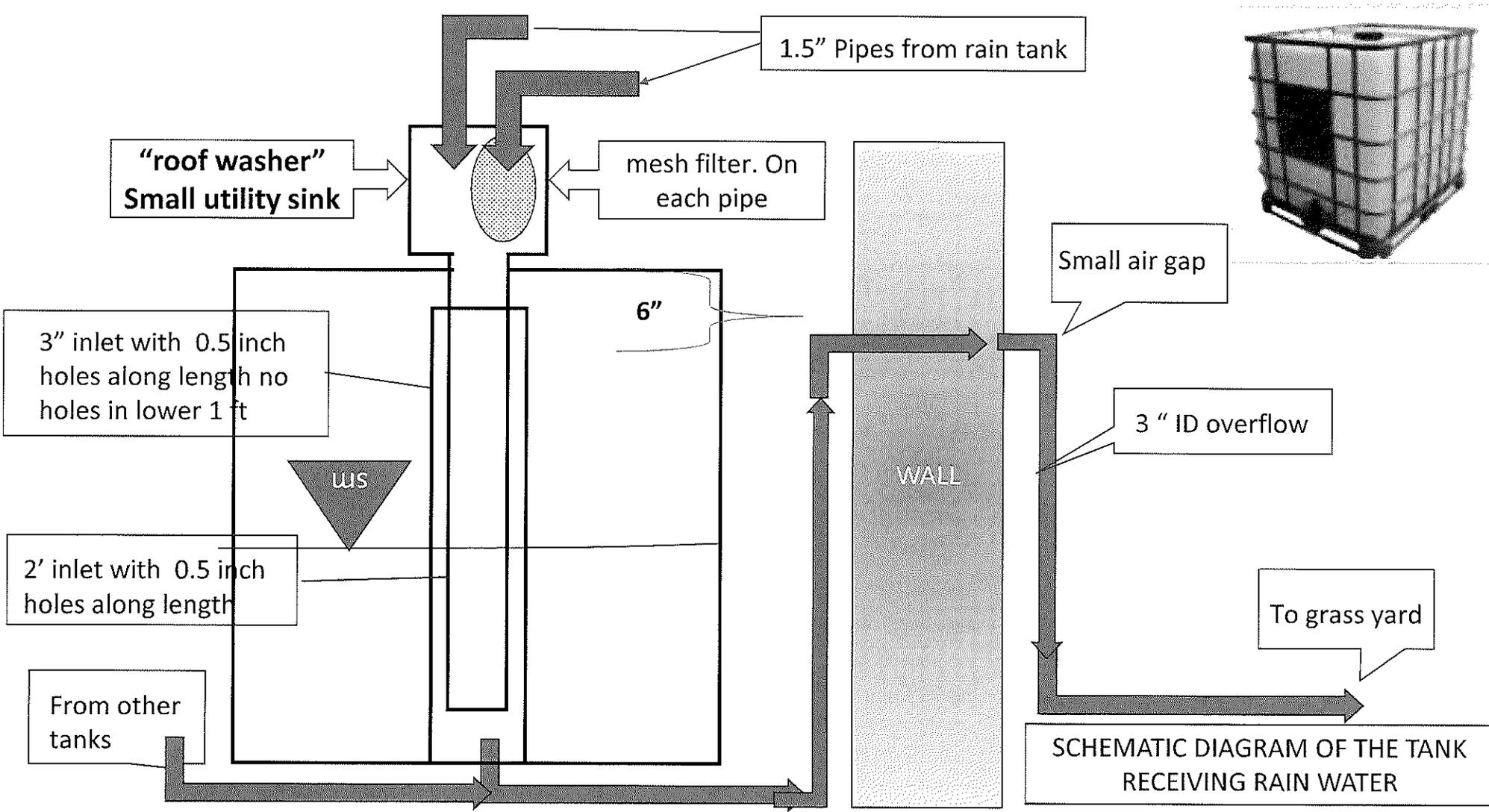
1-1/4" Stainless Steel Floating Filter with 1200 micron coarse screen, backflow preventer and 7' hose.

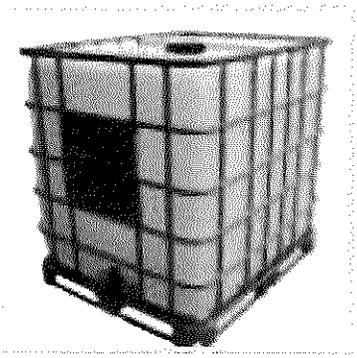
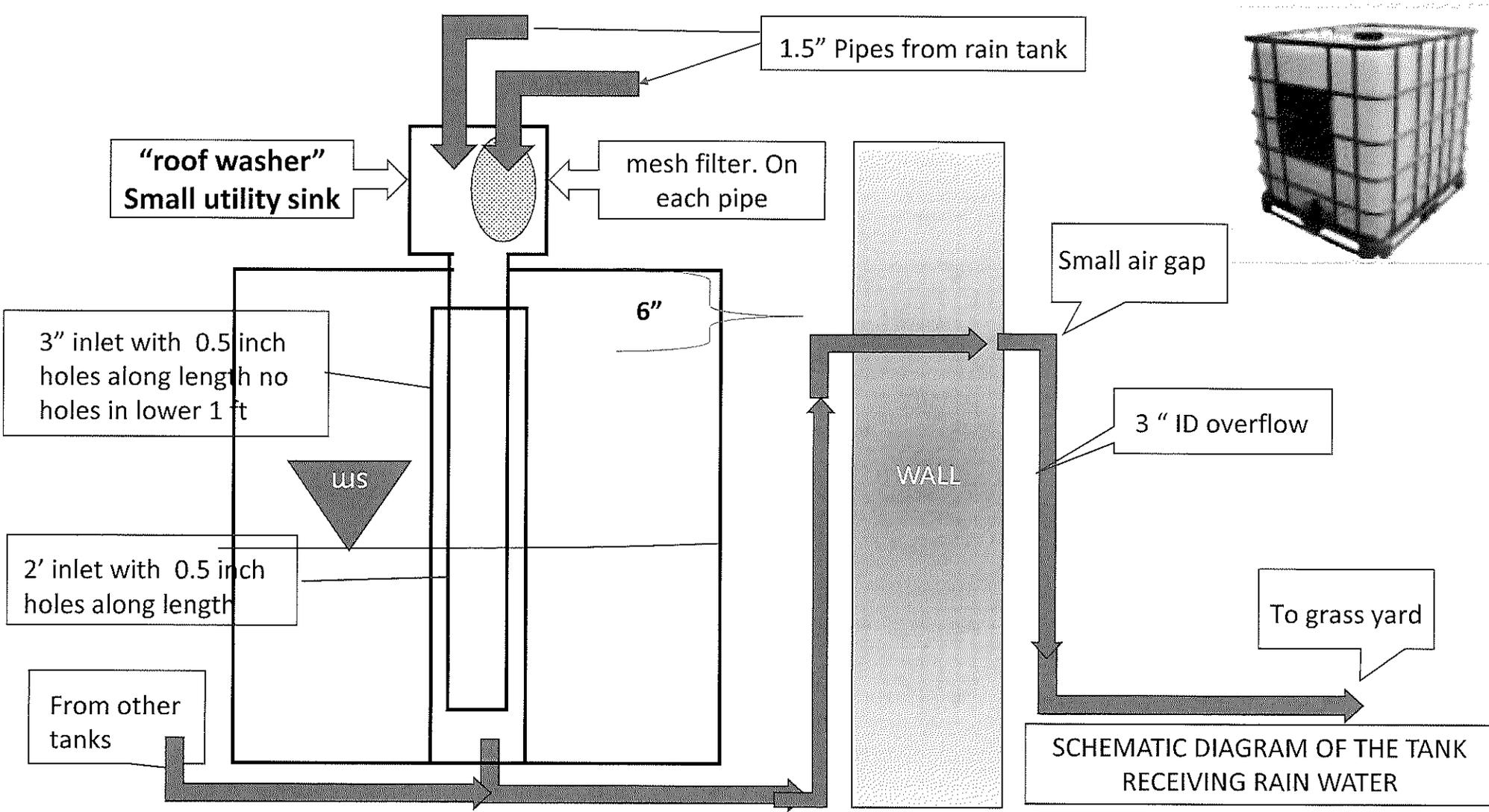


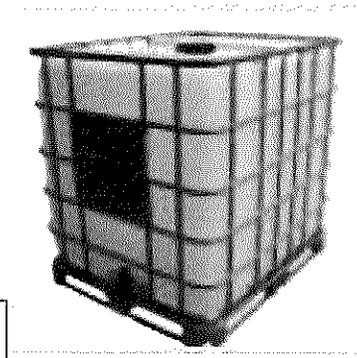
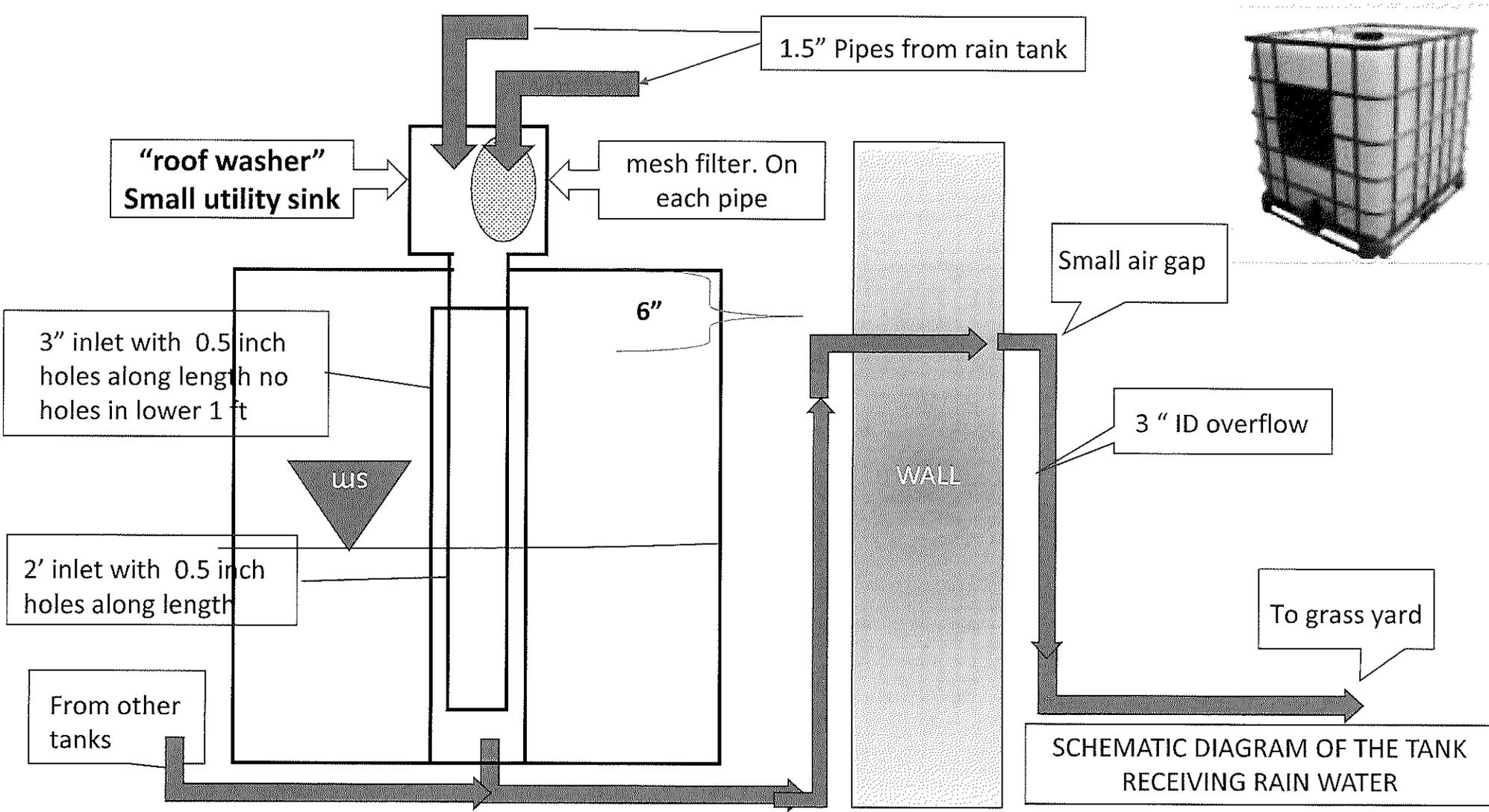
SCHEMATIC DIAGRAM OF THE TANK
CONNECTED TO THE PUMP



1-1/4" Stainless Steel Floating Filter with 1200 micron coarse screen, backflow preventer and 7' hose.







PLAN TEXT 3 OF 3

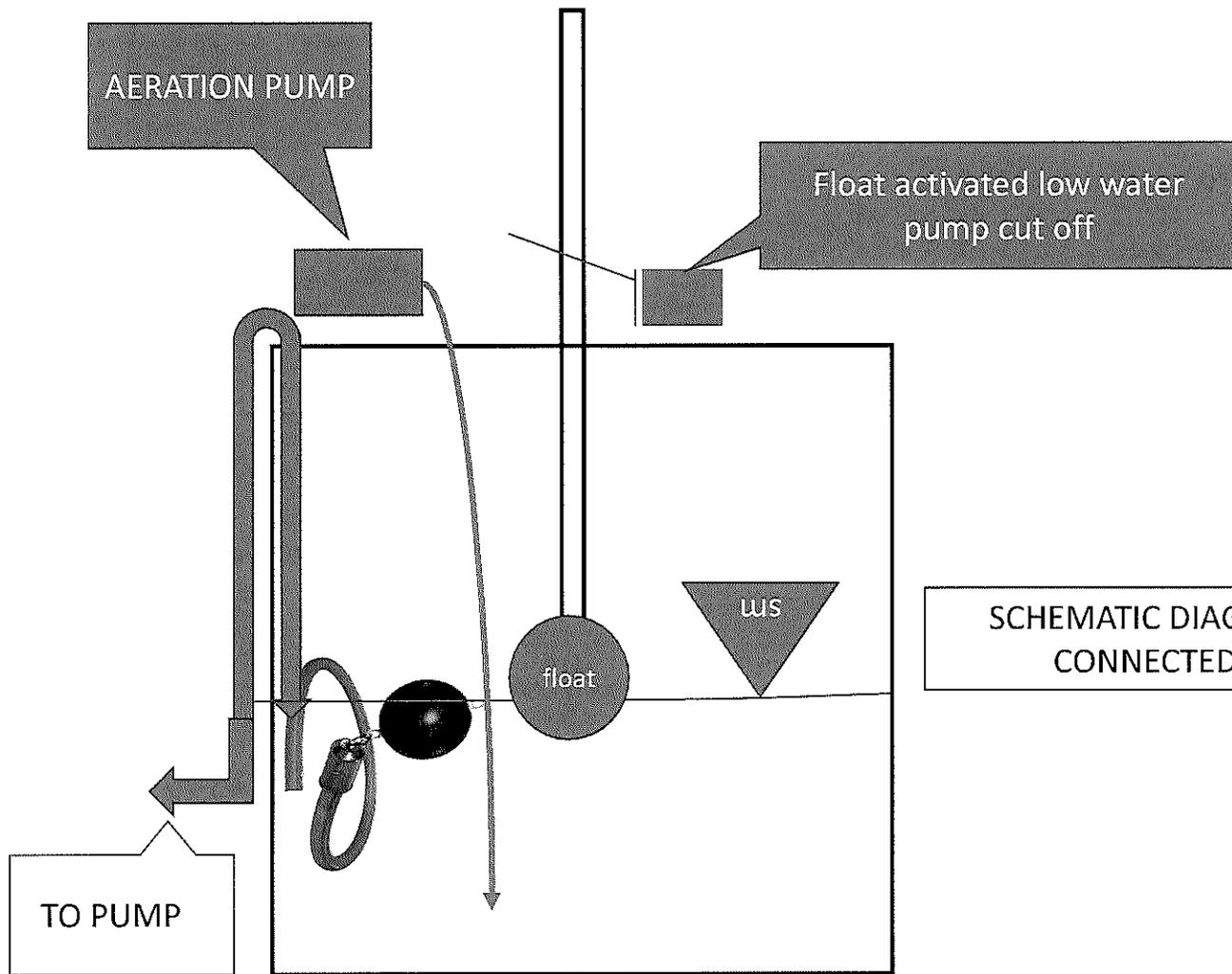
Storage Tanks. The storage tanks for the cistern consists of 4, 270 gallon tanks as shown on the schematic plan. The tanks are placed on a concrete floor adjacent to each other and connected with pipes to balance water levels. Total cistern storage on-site will be 1080 gallons. Storage tanks will be indoors, for UV protection and protected from direct sunlight to inhibit algae growth and will be capped to discourage mosquito breeding and reproduction.

Roof Washer. A roof washer (the second filter) will be placed above one of the storage tanks and used to filter small debris from harvested rainwater. The roof washer will be a utility basin fitted with a 2.5 in. drain leading to a calming device consisting of 2 concentric pipes with several 0.5 inch diameter holes throughout the length of the pipe with the first holes 0.5 feet. above the bottom of the pipes.

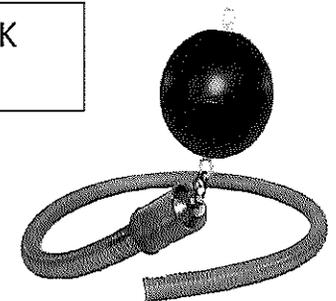
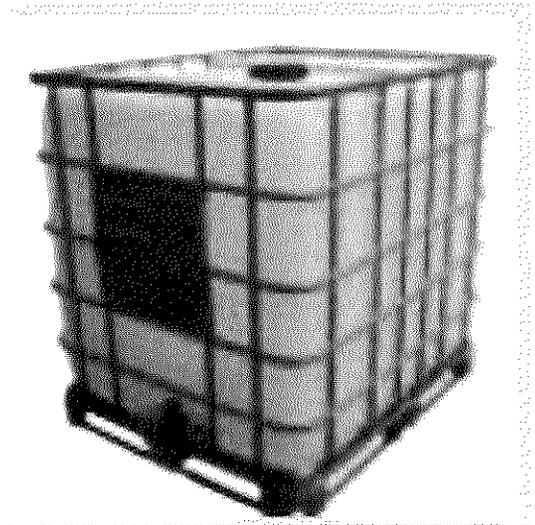
Distribution System The distribution system will be schedule 40 PVC pipes with pressure from a shallow well 110 volt pump and pressure tank located in a heated indoor location. The pipes will be painted purple to distinguish them as non-potable. The distribution system will lead to 2 toilets and 4 outside frost proof faucets. The pump intake will be a floating filter. There will be a low water shutoff for the pump. Aeration will be provided in the pump intake tank if needed.

Overflow

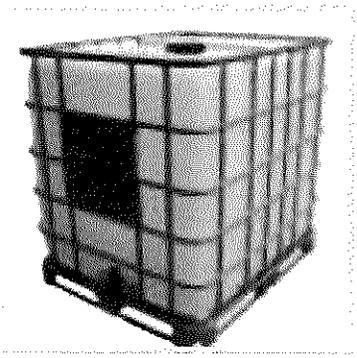
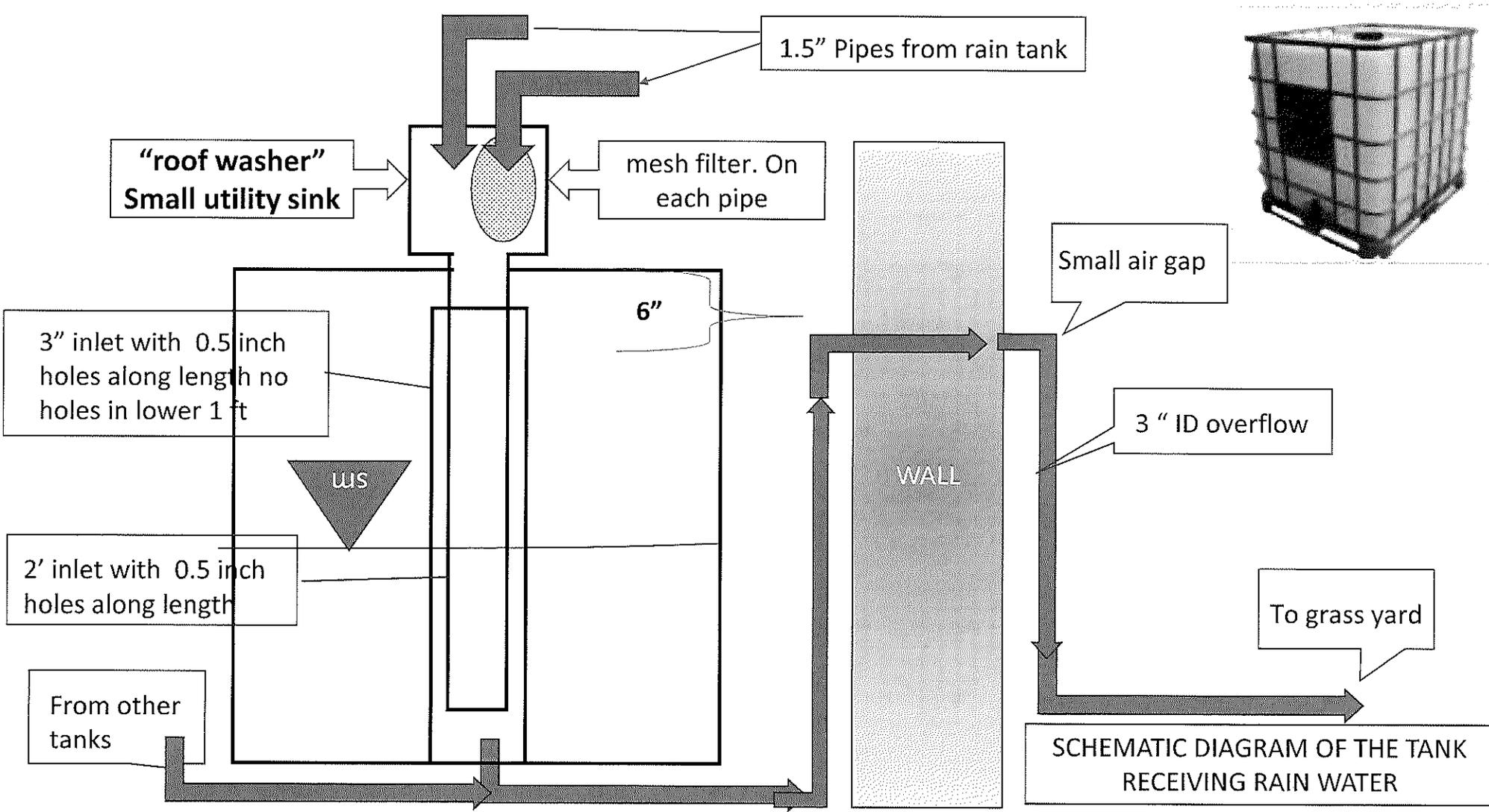
A cistern overflow will be included in the rainwater harvesting system in order to handle an individual storm event or multiple storms in succession that exceed the capacity of the tank. Overflow pipes will have a capacity equal to or greater than the inflow pipe(s) and have a 3" diameter and slope sufficient to drain the cistern while maintaining an adequate freeboard height. The overflow pipe will be screened to prevent access to the tank by rodents and birds



SCHEMATIC DIAGRAM OF THE TANK
CONNECTED TO THE PUMP



1-1/4" Stainless Steel Floating Filter with 1200 micron coarse screen, backflow preventer and 7' hose.



Maintenance for Rainwater harvesting system

| Activity | Frequency |
|--|----------------------|
| Keep gutters and downspouts free of leaves and other debris | O: Twice a year |
| Inspect and clean pre-screening devices and first flush diverters | O: Four times a year |
| Inspect and clean storage tank lids, paying special attention to vents and screens on inflow and outflow spigots. Check mosquito screens and patch holes or gaps immediately | O: Once a year |
| Inspect condition of overflow pipes, overflow filter path and/or secondary runoff reduction practices | O: Once a year |
| Inspect tank for sediment buildup | I: Every third year |
| Clear overhanging vegetation and trees over roof surface | I: Every third year |
| Check integrity of backflow preventer | I: Every third year |
| Inspect structural integrity of tank, pump, pipe and electrical system | I: Every third year |
| Replace damaged or defective system components | I: Every third year |
| Key: O = Owner I = qualified third party inspector | |

Keith Dalton

From: Alyson Sappington <alyson.sappington@tjswcd.org>
Sent: Monday, August 29, 2016 10:52 AM
To: Keith Dalton
Cc: Christy Dunkle; Dave Tyrrell
Subject: RE: Rain Harvesting
Attachments: 2011 03-31 RWH Guidelines VDH.pdf; 2012 09-05 Workgroup meeting with tracked changes.docx; Rain-gray water code change.pdf

Greetings Keith,

Yes, the TJSWCD has had experience with rainwater harvesting projects, including potable systems. When we assisted with such systems (around 2010-2011), there was little guidance and we had to work individually with each of our local VDH offices to get approvals for systems.

Soon after that, there was an effort through the Va Department of Housing and Community Development, that included communications with VDH and DEQ, and resulted in subsequent changes to the USBC. By the time that took place, our systems were installed and I lost track of where this all landed. I've attached the older VDH guidelines (2011), and some proposed changes to the USBC/IPC from 2012.

Cross connections are addressed with required backflow preventers, and metering on the systems is required to deal with the billing issue. I believe this is all now addressed through the code changes, but I'm not sure.

Some individuals that were involved in this effort, and may be able to provide better, more up-to-date information, are:
Guy Tomberlin, Fairfax County, 703-324-1611, guy.tomberlin@fairfaxcounty.gov
Dwayne Roadcap, VDH, Dwayne.roadcap@vdh.virginia.gov
Cindy Davis, DHCD, cindy.davis@dhcd.virginia.gov

(Note – These contacts were from my communications in 2012, so I'm not sure if they all still work in the same positions.)

Sorry I can't be of more help! I'd love to know of any finalized updates if you are able to find them.

Alyson Sappington, District Manager
Thomas Jefferson Soil and Water Conservation District
706G Forest Street
Charlottesville, VA 22903
www.tjswcd.org
phone: 434-975-0224, Ext. 100
fax: 434-975-1367
email: alyson.sappington@tjswcd.org

Click here to like the TJSWCD on Facebook!



From: Keith Dalton [mailto:townmanager@berryvilleva.gov]
Sent: Friday, August 26, 2016 8:28 AM
To: alyson.sappington@tjswcd.org
Cc: Christy Dunkle <planner@berryvilleva.gov>; Dave Tyrrell <dirutilities@berryvilleva.gov>
Subject: Rain Harvesting

Ms. Sappington:

I was given your contact information by Debbie Cross at DCR.

We have a gentleman in town that wants to use water collected from his roof to supply the water for this toilets in his house.

While we do not oppose rain harvesting, we do have some concerns. It is our understanding that the Thomas Jefferson SWCD has some experience with rainwater harvesting projects and wanted to know if you could provide us some guidance.

Our questions /concerns:

- Do localities or sanitary districts that permit rain harvesting have an ordinance that addresses this matter? If so, which ones and would you be so kind as to provide us with a contact there?
- Do such ordinances address cross connection issues?
- Presumably the locality or sanitary district bills sewer usage from the water meter reading. Where water harvesting is used, does the locality or sanitary district address billing for sewer usage that is not accounted for in the water meter reading? If so, which ones and would you be so kind as to provide us with a contact there?

Any assistance / guidance that you can provide us would be greatly appreciated.

Take care,

Keith

Keith R. Dalton, Town Manager
Town of Berryville, Virginia
101 Chalmers Court, Suite A
Berryville, VA 22611

V 540.955.1099
F 540.955.4524

Virginia Rainwater Harvesting & Use Guidelines

Developed by



March 31, 2011

PREFACE

This document provides guidance for the use of water collected through a rainwater harvesting system. This guidance is NOT regulation but does reference Virginia and other states' guidance and regulations relating to the use of rainwater.

DISCLAIMER

The mention of brand names or products in this report does not constitute an endorsement of those products by the Virginia Department of Health, Virginia Department of Environmental Quality, Department of Conservation and Recreation, Department of Housing and Community Development, or the Commonwealth of Virginia.

This document does not include local ordinance information, and any entity implementing a rainwater harvesting solution is responsible for assuring compliance with all local, state, and federal requirements.

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Chapter 1: Introduction

1.1 Purpose and Scope

The harvesting of rainwater has a number of benefits, including but not limited to:

- Supplementing the use of groundwater and surface water sources,
- Reducing the load to stormwater collection systems,
- Improving stormwater quality by reducing potential pollutants associated with runoff,
- Easing demand on public water facilities,
- Reducing potential soil erosion and increase soil infiltration.

The General Assembly of Virginia has directed the Virginia Department of Health (VDH) to develop guidelines regarding the use of gray water and rainwater (Va. Code § 32.1-248.2). This document is not regulation; it provides *guidance* for the harvesting and use of rainwater only.

1.2 Terms

“Rainwater Harvesting,” as used in this document, refers to the collection, conveyance, and storage of precipitation from roof surfaces. Harvested Rainwater is not “gray water” or “reclaimed water.” Rainwater Harvesting may be a part of an overall stormwater management program, but harvested rainwater is not intended for release into a waterway. Subsequent treatment of harvested rainwater may be employed to remove impurities and inactivate disease-causing microorganisms.

Several terms that are used throughout this document are defined in the *Virginia Administrative Code (VAC)* and are repeated below to clarify interpretation of this guidance:

“Auxiliary water system” means any water system on or available to the premises other than the waterworks. The auxiliary water may include water from a source such as wells, lakes, or streams; or process fluids; or used water. (12VAC5-590-10)

“Gray water” means untreated wastewater from bathtubs, showers, lavatory fixtures, wash basins, washing machines, and laundry tubs. It does not include wastewater from toilets, urinals, kitchen sinks, dishwashers, or laundry water from soiled diapers. (9VAC25-740).

“Potable water” means water fit for human consumption and domestic use that is safe and normally free of minerals, organic substances, and toxic agents in excess of reasonable amounts for domestic usage in the area served and normally adequate in quantity and quality for the minimum health requirements of the persons served. (Va. Code § 32.1-167 *et seq.*, 9VAC25-740, and 12VAC5-590-10)

“Reclaimed water” means water resulting from the treatment of domestic, municipal or industrial wastewater that is suitable for a water reuse that would not otherwise occur. Specifically excluded from this definition is “gray water.” (4VAC50-60)

“Stormwater” means precipitation that is discharged across the land surface or through conveyances to one or more waterways and that may include stormwater runoff, snow melt runoff, and surface runoff and drainage. (4VAC50-60)

“Stormwater management facility” means a device that controls stormwater runoff and changes the characteristics of that runoff, including but not limited to, the quantity, quality, the period of release or the velocity of flow. (4VAC50-60)

“Waterworks” means a system that serves piped water for drinking or domestic use to (i) the public, (ii) at least 15 connections, or (iii) an average of 25 individuals for at least 60 days out of the year. The term “waterworks” shall include all structures, equipment and appurtenances used in the storage, collection, purification, treatment and distribution of pure water except the piping and fixtures inside the building where such water is delivered. (12VAC5-590-10)

1.3 Related Virginia Regulations and Guidance

Rainwater harvesting, as described in this guidance, is addressed in the Virginia Uniform Statewide Building Code (VUSBC). The VUSBC is administered by the Department of Housing and Community Development (DHCD).

The Water Reclamation and Reuse Regulations (9VAC25-740) address the reclamation of wastewater and water reuse, taking into account environmental and public health protection. These regulations specifically exclude the use of gray water. The regulations also prohibit direct potable reuse of reclaimed water, the use of reclaimed water for food preparation or in food or beverage products, swimming pools, hot tubs or wading pools, or any purpose inside a residential or domestic dwelling. These regulations are administered by the Virginia Department of Environmental Quality (DEQ).

Virginia's Stormwater Management Regulations (4VAC50-60) specify minimum technical criteria and administrative procedures for stormwater management. The regulations cover administration, implementation and enforcement of a permit program authorized by the federal *Clean Water Act* and the *Virginia Stormwater Management Act*. These regulations are administered by the Department of Conservation and Recreation (DCR). The DCR has developed the Virginia DCR Stormwater Design Specification No.6, Rainwater Harvesting (Version 1.9 dated April 26, 2010). It contains design information for non-potable water use and on-site stormwater disposal/infiltration, including components, configurations, and a cistern design spreadsheet.

The following regulations are administered by the VDH:

The Waterworks Regulations (12VAC5-590) address the location, construction and operation of public water systems. These regulations require every waterworks to establish and enforce a program of cross connection control and backflow prevention.

The Private Well Regulations (12VAC5-630) address the location and construction of private wells. Subsequent operation of private wells and their water delivery systems is not covered by this regulation.

Sewage Handling and Disposal Regulations (12VAC5-610) includes construction requirements for nonpublic water supplies, other than a private well, that might be used in conjunction with an onsite sewage disposal system for new construction. Section 1170 specifies location, protection, and construction standards for cisterns. The regulation allows cisterns when there is no other feasible source of potable water. Adequate treatment and continuous disinfection are required to insure potability. Section 1140 specifies that the system must be capable of supplying an adequate quantity of water at all times.

Chapter 2: Water Source, Use & Quality

2.1 Uses and Water Quality Requirements

Harvested rainwater systems may be installed in a variety of situations. These situations may be grouped by available water supply:

- Dual water supplies (public and private)
- Private water supplies

And also by water use and delivery:

- Single interior plumbing system
- Separate plumbing system for non-potable water use

The operational criteria for the type of application vary. Design and operation features, safeguards, and water quality considerations are described in the following sections.

2.1.1. Cross Connection Control

The International Plumbing Code (§ 608.6.1.) prohibits cross connections between private and public water supplies.

12VAC5-590-590 of the *Waterworks Regulations* prohibits any connection whereby water from an auxiliary water system may enter a waterworks. Waterworks customers having an auxiliary water source, such as rainwater harvesting system, may be classified as "high hazard" under the *Waterworks Regulations*. Backflow prevention for these customers is required.

The *Waterworks Regulations* require every waterworks to have an active cross-connection control and backflow prevention program, approved by the VDH. This program must include the inspection and testing of all backflow prevention devices annually, at a minimum. In accordance with 12VAC5-590-590 B: each auxiliary water system, its method of connection, and use of water must be approved by the waterworks and the VDH.

If a Reduced Pressure Zone (RPZ) device is used, it should meet American Water Works Association standards and be approved by the American Society of Sanitary Engineering (ASSE) and the USC-FCCC (University of Southern California Foundation for Cross Connection Control and Hydraulic Research). An RPZ device must be installed and tested by a Backflow Prevention Device Worker certified by Virginia Department of Professional and Occupational Regulation.

2.1.2. Water Supplement and Use

Review of applicable guidance from other states has shown that non-potable uses account for a significant majority of the overall water use. This guidance recommends that harvested rainwater be restricted to non-potable uses. Fluctuations in rainfall patterns, available storage, and intended use are all key factors that affect the design of rainwater harvesting systems. Guidance from a number of different sources generally

include a means for the user to supplement the harvested rainwater during high demand or low precipitation periods.

Harvested rainwater systems are dependent on the precipitation patterns and may not be able to provide adequate water supply during all parts of the year. Supplementing the harvested rainwater requires an appropriate level of cross connection control and protection for the private or public water system that supplies the supplemental water. Public water systems are regulated and continually tested to ensure that the water is safe for human consumption. They are the recommended source of potable water whenever possible.

2.1.3. Separate Plumbing for Non-Potable Water Use

Separate plumbing systems for non-potable water within a building are governed by the requirements of the VUSBC. Harvested rainwater may be used solely or in conjunction with another water source in separate interior, non-potable plumbing systems. The VDH does not regulate the water quality of these installations.

2.2 Factors Effecting Harvested Rainwater Quality

2.2.1. Component Materials: Roof Surface, Piping, Storage

The pH of rainwater in Virginia tends to be acidic, ranging from 4.5 to 5.0. Other chemical characteristics of harvested rainwater will depend on the water temperature, roof material over which it flows, and the pipe, storage and appurtenances that come in contact with the collected water. Undesirable contaminants, such as asbestos, lead and copper, may be imparted to the captured rainwater when roof surfaces and plumbing contain these elements (*VA DCR Stormwater Design Specification No. 6*). Further information on these topics is available in the *Virginia Rainwater Harvesting Manual*, and other references listed in Chapter 6.

2.2.2. Collection Site: Air Quality, Overhead Vegetation, Animal Access

Dirt, bacteria, molds, algae, fecal matter, and organic matter from vegetation are contaminants that may be imparted to the collected rainwater. The cleanliness of the roof catchment surface will directly affect the water quality. The longer the span of dry days, the more debris is washed off from roof surfaces by a rainfall.

Additional contaminants that may be captured by rainwater include, but are not limited to, dust, smoke, and soot suspended in the atmosphere. The local air quality and prevailing winds will impact the total dissolved solids in rainwater. This depends on the rainwater harvesting site location and air emissions (particulate and gaseous) in the proximity.

Chapter 3: Rainwater Harvesting System Components & Sizing

Rainwater harvesting systems should be designed and sized based on a number of factors that are specific to the site, structure(s) and use(s). The design should include an evaluation of the catchment surfaces, gutters, pre-treatment devices, storage, pumps, piping and appropriate treatment. There are a number of resources that can be used to guide individuals in this process.

3.1 Catchment Surfaces

Rainwater is typically captured from a structure or building roof. Rainwater can also be captured from a constructed conveyance specifically designed to intercept the rainwater for collection. Other impervious surfaces, such as driveways, parking areas, etc. are generally not suitable for rainwater harvesting but may be appropriate for stormwater management.

The roof material will impact the quality and quantity of captured rainwater. Smooth metal or slate surfaces are most efficient. Clay and concrete tiles may collect less rainwater due to porosity, inefficient flow and evaporation. Calculators used to estimate quantity and component sizes may include a "Rooftop Runoff Coefficient" (as described in The Cabell Brand Center's *Virginia Rainwater Harvesting Manual*, and used in DCR's Rainwater Harvesting Spreadsheet) to account for differences in catchment surface materials. Composite shingles, wood shingles, and tar and gravel roofing may leach chemicals into the water, so these should be considered as a part of the design and intended use of the harvested rainwater.

3.2 Gutters, Downspouts & Drains

Gutters are used to capture rainwater at the eaves of a building, and should be sloped towards the downspouts. Their size depends on the roof configuration, surface area, roof slope, number of downspouts and intensity of rainfall. Gutters and downspouts are commonly constructed of PVC, vinyl, aluminum, and galvanized steel.

3.3 Pre-Treatment: Screens, Strainers, First-Flush Diverters, Roof Washers

Leaves and other debris can be prevented from entering the collected rainwater along the gutters using leaf screens or "gutter guards", or in the downspouts with downspout filters or strainer baskets. Other pretreatment devices such as cylindrical screens and filter socks may be installed at the outlet of the downspout or inlet to the storage tank.

A first flush diverter is designed to re-route the initial rainwater runoff that may contain contaminants such as dust, pollen, bird and rodent feces from the harvested water storage tank. One diverter is recommended for each downspout, and there are several designs available. The diverted water should ideally be routed to a pervious area to allow for filtration. The recommended amount of rainwater diverted depends on roof surface, amount of debris, and number of antecedent dry days.

A roof washer is another device for filtering small debris just ahead of the storage tank. Roof washers are commercially available and consist of a 30-50 gallon box or tank, which are usually equipped with a 30-micron filter or other strainer.

There are also devices which combine the functions of first flush diversion and a roof washer. All pretreatment devices require regular maintenance and cleaning.

3.4 Storage Tanks

Storage tanks or cisterns are selected based on size, location, and material of construction. These elements are discussed in detail in the *Virginia DCR Stormwater Design Specification No.6*, which also provides a cistern Design Spreadsheet, and in the *Virginia Rainwater Harvesting Manual*, compiled by The Cabell Brand Center.

Algae growth should be prevented by using opaque tanks, and minimizing light penetration from any openings. Proper screening of all inlets, outlets and overflows is necessary to protect from vectors such as mosquitoes, insects and rodents.

3.5 Pumps & Controls

Submersible pumps, suction or jet pumps are common in rainwater harvesting systems. They are often used in conjunction with a pressure tank and switch for pump control. A floating pump intake equipped with a filter is recommended to withdraw water a few inches below the water surface.

Chapter 4: Treatment

4.1 Treatment Goals & Water Quality Standards

The federal *Safe Drinking Water Act* has established chemical, physical, radiological and microbiological standards for public drinking water. These standards have been adopted by the VDH in the *Waterworks Regulations* (12VAC5-590-340 through 440.) The public drinking water standards cover contaminants that pose acute and chronic health concerns. These guidelines recommend that harvested rainwater be restricted to non-potable activities. In settings with a high potential for human exposure or contact, the primary area of concern is microbial contamination. The public health goal in these settings is to maintain an absence of:

- Bacteria, including *Escherichia coli*, *Legionella*
- Protozoans, including *Giardia lamblia*, *Cryptosporidium*
- Viruses

4.2 Treatment Processes

It is important that potential users understand the need for treatment in order to minimize the risk to those that may come in contact with harvested rainwater. Pretreatment devices described in the previous section are recommended for all rainwater harvesting systems. Additional treatment processes may be necessary, depending on the intended use. Treatment effectiveness can only be established through a regular water testing program, in conjunction with routine maintenance of the rainwater harvesting system.

4.2.1. Filtration

Filtration devices are used to remove particulate matter that may clog piping valves, plumbing fixtures and irrigation devices, stain sinks, toilets and tubs, and harbor pathogenic microorganisms. Cartridge filters of synthetic fiber, ceramic media filters, and activated carbon filters should be used as appropriate. Filters that are certified to meet American National Standards Institute (ANSI)/NSF Standard 61 help ensure that the filter does not impart undesirable contaminants into the water.

The efficiency of the filter is related to the opening size. A recommended size for non-potable use often cited is 5 microns. The intended use of the harvested rainwater should determine the type and opening size of the filter.

Granular Activated Carbon (GAC) Filters provide an additional benefit in adsorbing organic compounds, some which may impart undesirable water characteristics, such as odor. GAC filters are generally used in series with another sediment filter. GAC filters must be installed upstream of chlorine disinfection.

Synthetic membrane filters with smaller openings, such as reverse osmosis units, may also be considered, depending on the proposed use.

4.2.2. Neutralization

Neutralization of acidic rainwater may be necessary to raise the pH to acceptable levels. This is particularly important if the water will contact metal surfaces, pipe, etc. to prevent corrosion. A neutralizing agent, such as lime or soda ash, may be added to the storage tank. Neutralizing filters/contactors with calcium carbonate media, sometimes blended with magnesium oxides, can also be used to raise the pH.

4.2.3. Disinfection

Non-potable water used indoors should be disinfected. Disinfection of non-potable water prevents microbial growth (such as *Legionella* and *E. coli*), odors and fouling of fixtures. All disinfection methods shall follow filtration. The disinfection methods most commonly referenced are: Chlorine, Ultraviolet (UV) Light, and Ozone. VDH recommends that a qualified professional engineer design the system and provide operational recommendations for the appropriate treatment and delivery of harvested rainwater.

- Chlorine is a powerful oxidant chemical that is generally used in conventional drinking water disinfection. Chlorine disinfection may be achieved in various ways, and generally leaves a residual in the finished water to inhibit growth of bacteria. Chlorine disinfection can be achieved through the use of flow-through chlorinators using calcium hypochlorite tablets or pellets. An automated, sodium hypochlorite solution feed system using a metering pump and injector may also be used. Chlorine compounds having ANSI/NSF Standard 60 certification are recommended. Do not use commercial bleaches or chlorine products that contain fragrances or UV stabilizers (particularly cyanide-based UV stabilizers designed for swimming pools). A total chlorine residual of 0.2 mg/L is recommended.
- UV Light disinfection devices for potable water must meet NSF/ANSI Standard 55, Class A. Non-potable water disinfection devices should meet NSF/ANSI Standard 55, Class B, as a minimum. UV light system must be rated for the system design flow rate.
- Ozone is a powerful oxidant that is highly reactive and does not leave a residual disinfectant in the water. In addition to disinfecting microorganisms, it also reduces color, taste and odors. Ozone gas can be a health hazard if inhaled, and accumulation of ozone may pose a risk of explosion.

4.3 Testing

Harvested rainwater should be tested at the storage unit (cistern or tank) to determine the microbial and chemical quality of the water, prior to any subsequent treatment. If treatment is installed, then the harvested water should also be tested downstream of all treatment units to ensure that the treatment is working.

Chapter 5: Operation & Maintenance

The owner of a rainwater harvesting system is responsible for the ongoing operation and maintenance. Duties may include any of the following:

- Monitor tank levels
- Clean gutters and pre-treatment devices
- Repair leaks
- Repair and maintain mechanical and electrical equipment
- Remove sediment buildup in tanks
- Periodically backwash filters or replace filter media
 - Replenish neutralizing filter media as it is absorbed
 - Replace spent GAC media
- Clean UV light bulb and quartz sleeve, replace bulbs as needed
- Replenish chlorine disinfectant (tablets, pellets or solution)
- Regularly test bacteriological water quality.

Owners of rainwater harvesting systems with extensive water treatment equipment may consider contracting maintenance oversight from the system designer or equipment supplier. At a minimum, specific manufacturer's literature should be consulted for more detailed operation and maintenance information.

Chapter 6: References

The following references are recommended for further information on rainwater harvesting:

Managing Wet Weather through Green Infrastructure: Municipal Handbook: Rainwater Harvesting, USEPA, 2008, Doc # EPA-833-F-08-101.

Point-of-Use or Point-of-Entry Treatment Options for Small Drinking Water Systems, USEPA, April 2006, Doc # EPA 815-R-06-010

National Sanitation Foundation (NSF)

Protocol P151: Health Effects from Rainwater Catchment System Components
Standard 42: Drinking Water Treatment Units – Aesthetic Effects,
Standard 53: Drinking Water Treatment Units – Health Effects,
Standard 55: Ultraviolet Microbial Water Treatment Systems,
Standard 58: Reverse Osmosis Drinking Water Systems
Standard 60: Drinking Water Treatment Chemicals – Health Effects
Standard 61: Drinking Water System Components – Health Effects

Virginia Rainwater Harvesting Manual, compiled by the Cabell Brand Center, www.cabellbrandcenter.org.

Georgia Rainwater Harvesting Guidelines, 2009, developed pursuant to the 2009 Georgia State Amendments to the International Building Code.

Georgia State Amendments to the International Plumbing Code, revised January 1, 2010.

The Texas Manual on Rainwater Harvesting, Texas Water Development Board, 3rd edition, 2005.

Virginia Stormwater BMP Clearinghouse, www.vwrrc.vt.edu/swc/, administered by the Virginia Department of Conservation and Recreation and the Virginia Water Resources Research Center.

American Rainwater Catchment Systems Association, www.arcsa.org.

APPENDIX – RAINWATER HARVESTING APPLICATION MATRIX

| Level | Proposed Application | Served by Public Water? | Considerations |
|-------|--|-------------------------|--|
| 1 | Indoor: Non-potable | Yes | Approved Cross-Connection Control
Local building code requirements
System design approved by Waterworks,
Compliance with applicable laws, regulations and ordinances.
Pre-Treatment (1 st flush diverter, etc.)
Storage
Filtration
pH Adjustment
Disinfection
Operational and maintenance requirements |
| 2 | Indoor: Non-potable | No | Approved Cross-Connection Control
Local building code requirements
Compliance with applicable laws, regulations and ordinances
Pre-Treatment (1 st flush diverter, etc.)
Storage
Filtration
pH Adjustment
Disinfection
Operational and maintenance requirements |
| 3 | Outdoor: Non-potable, High Contact (swimming pools, showers, etc.) | Yes or No | Approved Cross-Connection Control
Local building code requirements
System design in compliance with or approved by waterworks
Pre-Treatment (1 st flush diverter, etc.)
Storage
Filtration
Disinfection |
| 4 | Outdoor: Landscape Irrigation | Yes or No | Approved Cross-Connection Control
Local building code requirements
System design in compliance with or approved by waterworks
Pre-Treatment (1 st flush diverter, etc.)
Storage
Filtration |

Chapter 2 Definitions - Add new terms as follows:

Non-potable water systems. Water systems for the collection, treatment, storage, distribution and use or reuse of non-potable water.

Reclaimed water. Water as defined by and meeting the treatment requirements and standards for intended reuses specified in the Water Reclamation and Reuse Regulation (9VAC25-740).

Rainwater. Natural precipitation, including snow melt, from roof surfaces only.

Gray Water – Move from current location in IPC

Non-Potable fixtures and outlets. Fixtures and outlets that are not dependent on potable water for the safe operation to perform their intended use. Such fixtures and outlets may include, but are not limited to, water closets, urinals, washing machines, irrigation, mechanical equipment and hose connections to perform operations, such as vehicle washing and lawn maintenance.

~~(dishwashers,)~~

~~**Rainwater.** Natural precipitation, including snow melt, from roof surfaces only.~~

~~**Reclaimed water.** Water as defined by and meeting the treatment requirements and standards for intended reuses specified in the Water Reclamation and Reuse Regulation (9VAC25-740).~~

Storage Tank. A device used to store water. Such devices include, but are not limited to, vaults, reservoirs, containers, pits or vessels.

Stormwater. Precipitation that is discharged across the land surface or through conveyances to one or more waterways and that may include stormwater runoff, snow melt runoff, and surface runoff and drainage.

Modify and add new sections to existing text in the Sections below as follows

IPC 301.3 - Exception: Bathtubs, showers, lavatories, clothes washers and laundry trays shall not be required to discharge to the sanitary drainage system where such fixtures discharge to an approved non-potable gray water system in accordance with applicable provisions of Chapter 13.

(Add new section as follows) IPC 602.2.1. **Non-potable fixtures and outlets.** , Non-potable water shall be permitted to serve non-potable type fixtures and outlets in accordance with Chapter 13.

IPC 1101.2. Where required. To remain unchanged

(Add new exception as follows) Exception: Rainwater non-potable water systems shall be permitted in accordance with Chapter 13.

Add new Chapter 13 Non-Potable Water Systems

1301 General

1302 Gray water Non-Potable Water Systems

1303 Rainwater Non-Potable Water Systems

1304 Reclaimed Water Non-Potable Water Systems

CHAPTER 13

NON-POTABLE WATER SYSTEMS

SECTION 1301 GENERAL

1301.1 Scope. The provisions of Chapter 13 shall govern the materials, design, construction and installation of ~~the portions of~~ non-potable water systems subject to this code, ~~as set out herein.~~

1301.1.1 Design of non-potable water systems. All portions of non-potable water systems subject to this code shall be constructed using the same standards and requirements for the potable water systems or drainage systems in buildings as those standards and requirements would most closely correlate to the use of the components of the non-potable water system unless otherwise specified in this Chapter..

1301.2 Makeup water. Makeup water shall be provided for non-potable water systems to assure water supply is available for peak demand at all times. The makeup water supply shall be protected against backflow in accordance with Section 608.

1301.2.1 Make up water for reclaimed water. Only potable water shall be provided as makeup water for reclaimed water non-potable water systems. The potable water supply shall be protected against backflow in accordance with the Water Reclamation and Reuse Regulation (9VAC25-740 Reclaimed water shall be permitted to serve as makeup water for other nonpotable water systems.).

1301.2.2 Makeup water supply valve. A full-open valve shall be provided on the makeup water supply line.

1301.2.3 Control valve alarm. Makeup water systems shall be fitted with a warning mechanism that alerts the user to a failure of the inlet control valve to close correctly. The alarm shall activate before the water within the *storage tank* begins to discharge into the overflow system.

1301.3 Sizing. Non potable water distribution systems shall be designed and sized for peak demand in accordance with approved engineering practice methods that comply with Chapter 6.

1301.4 Signage required. All non-potable water outlets, other than water closets and urinals, such as hose connections, open ended pipes, and faucets shall be identified at the point of use for each outlet with signage that reads as follows: "Non-potable water is utilized for [application name]. Caution: non-potable water. DO NOT DRINK." The words shall be legibly and indelibly printed on a tag or sign constructed of corrosion-resistant waterproof material or shall be indelibly printed on the fixture. The letters of the words shall be not less than 0.5 inches in height and in colors in contrast to the background on which they are applied. In addition to the required wordage, the pictograph shown in Figure 1301.4 shall appear on the signage required by this section.

Exception: All components of a reclaimed water non-potable water system shall be identified, labeled and posted with appropriate signage in accordance with the exception noted in Section 608.8 and the Water Reclamation and Reuse Regulation (9VAC25-740).



Figure 1301.4 – Pictograph DO NOT DRINK(insert new pictograph)

1301.5 Permits. ~~Permits issued by the inspector shall be required for the construction, installation, alteration, and repair of non-potable water systems governed by provisions of Chapter 13. Construction documents, engineering calculations, diagrams, and other such data pertaining to the non-potable water system shall be submitted with each application for permit. USBC chapter 1~~

1301.5 Potable water supply system connections. ~~Where a potable water supply system is connected to a non-potable water system is connected to another non-potable water system, the potable water supply shall be protected against backflow in accordance with Section 608.~~

1301.6 Potable water supply system or reclaimed water Non-potable water system connections. ~~Where a potable water supply system is connected to a non-potable water system or a reclaimed water non-potable water system is connected to another non-potable water system, the potable water supply or reclaimed water shall be protected against backflow in accordance with Section 608.~~

1301.7 Approved components and materials. Piping, plumbing components, and materials used in the non-potable water drainage and distribution systems shall be *approved* for the intended application and compatible with the water and any disinfection or treatment systems used.

1301.8 Insect and vermin control. Non-potable water systems shall be protected to prevent the entrance of insects and vermin into storage and piping systems. Screen materials shall be compatible with system material and shall not promote corrosion of system components.

1301.9 Freeze protection. Non-potable water systems shall be protected from freezing in accordance with Chapter 3.

1301.10 Non-potable water system storage tanks. Non-potable water system storage tanks shall be approved for the intended application and comply with Sections 1301.10.1 through 1301.10.12.

1301.10.1 Sizing. The holding capacity of storage tanks shall be sized for peak demand.

Exception: System storage of reclaimed water as defined in the Water Reclamation and Reuse Regulation (9VAC25-740) shall be sized in accordance with the Water Reclamation and Reuse Regulation (9VAC25-740).

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1301.10.2 Inlets. *Storage tank* inlets shall be designed to introduce water into the tank and avoid agitating the contents of the *storage tank*. Inlets to *storage tanks* shall be controlled by fill valves or other automatic supply valves installed to prevent tank overflows.

1301.10.3 Outlets. Outlets shall be located at least 4 inches (102 mm) above the bottom of the *storage tank*, and shall not skim water from the surface.

1301.10.4 Materials and Location. Storage tanks shall be constructed of durable, nonabsorbent, corrosion-resistant materials. Above grade storage vessels shall be constructed using opaque, UV-resistant materials such as tinted plastic, lined metal, concrete, wood, or painted to prevent algae growth. Storage tanks shall be constructed of materials compatible with any disinfection systems used to treat water upstream of the tank and with any systems used to maintain water quality within the tank. Wooden storage tanks shall be provided with a flexible liner. Above grade storage tanks shall be protected from direct sunlight unless their design specifically incorporates the use of the sunlight heat transfer. Storage tanks and their manholes shall not be located directly under any soil or waste piping or any source of contamination.

1301.10.5 Foundation and supports. Storage tanks shall be supported on a firm base capable of withstanding the storage tank's weight when filled to capacity. Storage tanks shall be supported in accordance with the *International Building Code*.

1301.10.5.1 Ballast. Where the soil can become saturated, an underground *storage tank* shall be ballasted, or otherwise secured, to prevent the tank from floating out of the ground when empty. The combined weight of the tank and hold down ballast shall meet or exceed the buoyancy force of the tank. Where the installation requires a foundation, the foundation shall be flat and shall be designed to support the *storage tank* weight when full, consistent with the bearing capability of adjacent soil.

1301.10.5.2 Structural support. Where installed below grade, *storage tank* installations shall be designed to withstand earth and surface structural loads without damage when filled with water or empty.

1301.10.6 Overflow. The *storage tank* shall be equipped with an overflow pipe having a diameter not less than that shown in Table 606.5.4. The overflow outlet shall discharge at a point not less than 6 inches (152 mm) above the roof or roof drain; floor or floor drain; or over an open water-supplied fixture. The overflow outlet shall be covered with a corrosion-resistant screen of not less than 16 by 20 mesh per inch (630 by 787 mesh per m) and by 1/4-inch (6.4 mm) hardware cloth or shall terminate in a horizontal angle seat check valve. In climates subject to freezing drainage from overflow pipes shall not be directed on walkways. The overflow drain shall not be equipped with a shutoff valve. A minimum of one cleanout shall be provided on each overflow pipe in accordance with Section 708.

1301.10.7 Access. A minimum of one access opening shall be provided to allow inspection and cleaning of the tank interior. Access openings shall have an *approved* locking device or other *approved* method of securing access. Below grade *storage tanks*, located outside of the *building*, shall be provided with either a manhole not less than 24 inches (610 mm) square or a manhole with an inside diameter not less than 24 inches (610 mm). Design and installation of access openings shall prohibit surface water from entering the tank. Each manhole cover shall have an effective locking device. Service ports in manhole covers shall be not less than 8 inches (203

mm) in diameter. The service port shall have an effective locking cover or a brass cleanout plug.

Exception: *Storage tanks* under 800 gallons in volume installed below grade shall not be required to be equipped with a manhole, but shall have a service port not less than 8 inches (203 mm) in diameter.

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1301.10.8 Venting. *Storage tanks* shall be vented. The vent shall not be connected to sanitary drainage system. The required vent shall be at least one half of the internal diameter of the drainage inlet pipe(s) connected to the tank. Vents shall be protected from contamination by means of a U-bend installed with the opening directed downward. Vent outlets shall extend a minimum of 4" above grade, or as necessary to prevent surface water from entering the *storage tank*. Vent openings shall be protected against the entrance of vermin and insects. Vents serving gray water tanks shall terminate in accordance with Section 903.

1301.10.9 Drain. Where drains are provided they shall be located at the lowest point of the *storage tank*. The tank drain pipe shall discharge as required for overflow pipes and shall not be smaller in size than specified in Table 606.5.7. A minimum of one cleanout shall be provided on each drain pipe in accordance with Section 708.

1301.10.10 Labeling and signage. Each non-potable water *storage tank* shall be *labeled* with its rated capacity and the location of the upstream bypass valve. *Storage tanks* shall be identified with the words "CAUTION: RECLAIMED WATER – DO NOT DRINK" where the contents of the tank are reclaimed water or "CAUTION: NON-POTABLE WATER – DO NOT DRINK" where the contents of the tank are any other non-potable water. Where an opening is provided that could allow the entry of personnel, the opening shall be marked with the words, "DANGER – CONFINED SPACE." Markings shall be indelibly printed on a tag or sign constructed of corrosion-resistant waterproof material mounted on the tank or shall be indelibly printed on the tank. The letters of the words shall be not less than 0.5 inches in height and shall be of a color in contrast with the background on which they are applied.

Exception: Additional signage and labeling requirements for reclaimed water storage tanks shall apply as specified in the Water Reclamation and Reuse Regulation (9VAC25-740).

1301.10.11 Storage tank tests. *Storage tanks* shall be tested in accordance with the following:

1. *Storage tanks* shall be filled with potable water to the overflow line prior to and during inspection. All seams and joints shall be left exposed and the tank shall remain water tight without leakage for a period of 24 hours.
2. After 24 hours, supplemental water shall be introduced for a period of 15 minutes to verify proper drainage of the overflow system and verify that there are no leaks.
3. Following a successful test of the overflow, the water level in the tank shall be reduced to a level that is at 2 inches below the makeup water off set point. The tank drain shall be observed for proper operation. The makeup water system shall be observed for proper operation, and successful automatic shutoff of the system at the refill threshold shall be verified. Water shall not be drained from the overflow at any time during the refill test.

1301.10.12 Structural strength. Storage tanks shall meet the applicable structural strength requirements of the International Building Code and applicable requirements of Section 606 of this code.

1301.11 System abandonment. If the owner of a non-potable water system that is within or associated with the plumbing of a building or structure elects to cease use of, or fails to properly maintain such system, the system shall be abandoned and shall comply Sections 1301.11.1 through 1301.11.3:

1301.11.1 All system piping connecting to a utility-provided water system shall be physically disconnected and removed.

1301.11.2 The *distribution piping* system shall be replaced with an *approved potable* water supply piping system. Where an existing *potable* pipe system is already in place, the fixtures shall be connected to the existing system.

1301.11.3 The storage tank(s) shall be removed or abandon in place. Abandonment in place shall require either that the tank be filled with sand, grout or equivalent material; or secure the access points in a manner that would prevent entry without the use of tools and restrict any unauthorized access.

1301.12 Trenching requirements for non-potable water system piping. Buried non-potable water ~~drainage and distribution system~~ piping that is part of the plumbing of a building or structure shall be horizontally separated from the *building sewer* and *potable* water piping underground by 5 feet (1524 mm) of undisturbed or compacted earth. Non-potable water ~~drainage and distribution system~~ piping shall not be located in, under or above sewage systems cesspools, septic tanks, septic tank drainage fields or seepage pits. Buried non-potable ~~drainage and distribution system~~ piping shall comply with the requirements of Chapters 3 and 6, and the requirements of this code for the piping material installed.

Exceptions:

1. The required separation distance shall not apply where the bottom of the non-potable water pipe within 5 feet (1524 mm) of the sewer is not less than 12 inches (305 mm) above the top of the highest point of the sewer and the pipe materials conforms to Table 702.3.
2. The required separation distance shall not apply where the bottom of the *potable* water service pipe within 5 feet (1524 mm) of the non-potable water pipe is a minimum of 12 inches (305 mm) above the top of the highest point of the non-potable water pipe and the pipe materials comply with the requirements of Table 605.4
3. Non-potable water pipe is permitted to be located in the same trench with building sewer piping, provided that such sewer piping is constructed of materials that comply with the requirements of Table 702.2.
4. The required separation distance shall not apply where a non-potable water pipe crosses a sewer pipe provided that the pipe is sleeved to at least 5 feet (1524 mm) horizontally from the sewer pipe centerline on both sides of such crossing with pipe materials that comply with Table 702.2.

5. The required separation distance shall not apply where a *potable* water service pipe crosses a non-potable water pipe provided that the *potable* water service pipe is sleeved for a distance of at least 5 feet (1524 mm) horizontally from the centerline of the non-potable pipe on both sides of such crossing with pipe materials that comply with Table 702.2.

1301.13 Outdoor outlet access. Sillcocks, hose bibs, wall hydrants, yard hydrants, and other outdoor outlets that are part of the plumbing of a building or structure and are supplied by *non-potable* water shall be located in a locked vault or shall be operable only by means of a removable key.

1301.14 Drainage and vent piping and fittings. Non-potable drainage and vent pipe and fittings shall comply with the applicable material standards and installation requirements in accordance with provisions of Chapter 7.

1301.14.1 Labeling and marking. Identification of non-potable drainage and vent piping shall not be required.

1301.15 Pumping and control system. Mechanical equipment including pumps, valves and filters shall be accessible and removable in order to perform *repair*, maintenance and cleaning. The minimum flow rate and flow pressure delivered by the pumping system shall be designed for peak demand for the intended application in accordance with Section 604.

1301.16 Water-pressure reducing valve or regulator. Where the water pressure supplied by the pumping system exceeds 80 psi (552 kPa) static, a pressure-reducing valve shall be installed to reduce the pressure in the non-potable water distribution system piping to 80 psi (552 kPa) static or less. Pressure-reducing valves shall be specified and installed in accordance with Section 604.8.

1301.17 Distribution pipe. *Distribution piping* utilized in non-potable water stems shall comply with Sections 1301.17.1 through 1301.17.4.

1301.17.1 Materials, joints and connections. *Distribution piping* and fittings shall comply with the applicable material standards and installation requirements in accordance with provisions of Chapter 6.

1302.17.2 Design. ~~Non-potable~~ distribution piping shall be designed and sized in accordance with provisions of Chapter 6.

1302.17.3 Labeling and marking. ~~Non-potable~~ water distribution piping labeling and marking shall comply with Section 608.8.

1301.17.4 Backflow prevention. Backflow preventers shall be installed in accordance with Section 608.

1301.18 Tests and inspections. Tests and inspections shall be performed in accordance with Sections 1301.18.1 through 1301.18.6.

1301.18.1 Drainage and vent pipe test. Drain, waste and vent piping used for gray water and rainwater non-potable water systems shall be tested in accordance with Section 312.

1301.18.2 Storage tank test. *Storage tanks* shall be tested in accordance with the Section 1301.10.11.

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1301.18.3 Water supply system test. Non-potable *distribution piping* shall be tested in accordance with Section 312.5.

1301.18.4 Inspection and testing of backflow prevention assemblies. The testing of backflow preventers and *backwater valves* shall be conducted in accordance with Section 312.10. ~~need to relate chapter 1 USBC on testing and inspections~~

1301.18.5 Inspection of vermin and insect protection. Inlets and vent terminations shall be visually inspected to verify that each is protected to prevent the entrance of insects and vermin into the *storage tank* and piping systems in accordance with Section 1301.13.

~~1301.18.6 Water quality test. The quality of the non-potable water for the intended application shall be verified at the point of use in accordance with the applicable regulations.~~

1301.19 Operation and maintenance manuals. Operations and maintenance materials for non-potable water systems shall be provided ~~by the designer, contractor, builder~~ as prescribed by the system component manufacturers, and supplied to the owner, ~~in accordance with Sections 1302.19.1 through 1302.19.4.~~

~~1301.19.1 Manual. A manual shall be supplied in electronic or hardcopy form detailing the entire system operation and maintenance requirements and recommendations for the continued performance of the system.~~

~~1301.19.2 Components and schematics. The manual shall include a list of all system components including manufacturer and model numbers, and a detailed system schematic identifying the locations of all system components.~~

~~1301.19.3 Maintenance procedures. The manual shall provide a maintenance schedule and procedures for all system components requiring periodic maintenance. Disposable and/or replaceable parts such as filters shall be identified along with part numbers.~~

~~1301.19.4 Operations procedures. The manual shall include system startup and shutdown procedures. The manual shall include detailed operating procedures for the system.~~

SECTION 1302

GRAY WATER NON-POTABLE WATER SYSTEMS

1302.1 Gray water non-potable water systems. ~~The allowable uses of gray water non-potable water systems are governed by the Virginia Department of Health. Authorization from the Virginia Department of Health is required for all such systems or uses.~~ This code is applicable to the plumbing fixtures, piping or piping systems, storage tanks, drains, appurtenances and appliances which are part of the distribution system for gray water within buildings and to storage tanks and associated piping which are part of the distribution system for gray water outside of buildings. This code does not regulate equipment used for, or the methods of, processing, filtering or treating gray water, which may be regulated by the Virginia Department of Health or Virginia Department of Environmental Quality.

1302.1.1 Separate systems. Gray water non-potable water systems, unless approved otherwise under the permit from the Virginia Department of Health, shall be separate from the potable water

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system of a building with no cross connections between the two systems except as permitted by the Virginia Department of Health.

1301.4 Water quality. Each application of gray water reuse shall meet the minimum water quality requirements set forth in 1301.4.1 through 1301.4.4 unless otherwise superceded by other state agencies.

1303.2.1 Disinfection. Where the intended use or reuse application for non-potable water requires disinfection or other treatment or both, it shall be disinfected as needed to ensure that the required water quality is delivered at the point of use or reuse.

1303.2.2 Residual disinfectants. Where chlorine is used for disinfection, the non-potable water shall contain not more than 4.0 mg/L of free chlorine, combined chlorine or total chlorine. Where ozone is used for disinfection, the non-potable water shall not exceed 0.1 ppm (by volume) of ozone at the point of use.

1303.2.3 Filtration. Water collected for reuse shall be filtered as required for the intended end use. Filters shall be accessible for inspection and maintenance. Filters shall utilize a pressure gage or other approved method to indicate when a filter requires servicing or replacement. Shutoff valves installed immediately upstream and downstream of the filter shall be included to allow for isolation during maintenance

1303.2.4 Filtration required. Gray water utilized for water closet and urinal flushing applications shall be filtered by a 100 micron or finer filter.

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~~1302.2 Sources.~~ Gray water non-potable water systems shall collect waste discharge from the following sources: bathtubs, showers, lavatories, clothes washers, and laundry trays.

~~1302.3 Prohibited sources.~~ Wastewater containing urine or fecal matter shall not be diverted to gray water non-potable water systems. Discharge from reverse osmosis, water softeners, kitchen sinks, dishwasher, and wastewater discharged from commercial hood wash systems shall not be collected for reuse within gray water non-potable water systems.

1302.4 Storage tanks. Storage tanks utilized in gray water non-potable water systems shall comply with Section 1301.10.

1302.5 Retention Time Limits – Untreated gray water shall be retained in storage tanks for a maximum of 24 hours.

1302.56 Tank Location. Storage tanks shall be located with a minimum horizontal distance between various elements as indicated in Table 1302.5.1.

TABLE 1302.5.1
LOCATION OF NON-POTABLE GRAY WATER REUSE STORAGE TANKS

| Element | Minimum Horizontal Distance from Storage Tank (feet) |
|---|--|
| Critical root zone (CRZ) of protected trees | ≥ |

| Element | Minimum Horizontal Distance from Storage Tank (feet) |
|--|--|
| Lot line adjoining private lots | 5 |
| Seepage pits Sewage systems | 5 |
| Septic tanks | 5 |
| Water wells | 50 |
| Streams and lakes | 50 |
| Water service | 5 |
| Public water main | 10 |

1302.6 Valves. Valves shall be supplied on gray water non-potable water drainage systems in accordance with Sections 1302.6.1 and 1302.6.2.

1302.6.1 Bypass valve. One three-way diverter valve certified to NSF 50 or other *approved* device shall be installed on collection piping upstream of each *storage tank*, or drainfield, as applicable, to divert untreated gray water to the sanitary sewer to allow servicing and inspection of the system. Bypass valves shall be installed downstream of fixture traps and vent connections. Bypass valves shall be *labeled* to indicate the direction of flow, connection and *storage tank* or drainfield connection. Bypass valves shall be provided with access for operation and maintenance. Two shutoff valves shall not be installed to serve as a bypass valve.

1302.6.2 Backwater valve. *Backwater valves* shall be installed on each overflow and tank drain pipe to prevent unwanted water from draining back into the storage tank. If the overflow and drain piping arrangement is installed to physically not allow water to drain back into the tank, such as the form of an air gap, backwater valves shall not be required. *Backwater valves* shall be constructed and installed in accordance with Section 715.

SECTION 1303

RAINWATER NON-POTABLE WATER SYSTEMS

1303.1 General. The provisions of Section 1303 shall govern the design, construction, installation, *alteration*, and *repair* of *rainwater non-potable water systems* for the collection, storage, treatment and distribution of rainwater for non-potable applications, as permitted in accordance with Section 1301.3.

1303.2 Water quality. ~~Each application of rainwater reuse shall meet the minimum water quality requirements set forth in 1301.4.1 through 1301.4.4, unless otherwise superceded by other state agencies.~~

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~~1303.2 Rainwater non-potable water systems. Rainwater non-potable water systems designed as separate systems from the potable water system of a building shall comply with this section. The use of rainwater as, or as part of, a potable water system is subject to the approval by the Virginia Department of Health. This code is applicable to the plumbing fixtures, piping or piping systems, storage tanks, drains, appurtenances and appliances which are part of the distribution system for rainwater within buildings and to storage tanks and associated piping which are part of the distribution system for rainwater outside of buildings.~~

1303.2.1 Disinfection. Where the intended use or reuse application for non-potable water requires disinfection or other treatment or both, it shall be disinfected as needed to ensure that the required water quality is delivered at the point of use or reuse.

1303.2.2 Residual disinfectants. Where chlorine is used for disinfection, the *non-potable* water shall contain not more than 4.0 mg/L of free chlorine, combined chlorine or total chlorine. Where ozone is used for disinfection, the *non-potable* water shall not exceed 0.1 ppm (by volume) of ozone at the point of use.

1303.2.3 Filtration. Water collected for reuse shall be filtered as required for the intended end use. Filters shall be accessible for inspection and maintenance. Filters shall utilize a pressure gage or other *approved* method to indicate when a filter requires servicing or replacement. Shutoff valves installed immediately upstream and downstream of the filter shall be included to allow for isolation during maintenance

1303.2.4 Filtration required. ~~Rainwater Non-potable water~~ utilized for water closet and urinal flushing applications shall be filtered by a 100 micron or finer filter.

1303.3 Collection surface. *Rainwater* shall be collected only from above-ground impervious roofing surfaces constructed from *approved* materials. Overflow or discharge piping from ~~roof-mounted~~ appliances/equipment including but not limited to evaporative coolers, water heaters, and solar water heaters shall not discharge onto *rainwater* collection surfaces.

1303.4 Debris excluders. Downspouts and leaders shall be connected to an approved *roof washer* system and shall be equipped with a debris excluder or equivalent device to prevent the contamination of collected *rainwater* with leaves, sticks, pine needles and similar material. ~~Debris excluders and equivalent devices shall be self-cleaning.~~

1303.5 Roof washer. The initial capture of *rainwater* shall be diverted at the beginning of each rain event, and not allowed to enter the *storage tank*, to wash accumulated debris from the collection surface. The amount of rainfall to be diverted shall be field adjustable as necessary to minimize *storage tank* water contamination. The *roof washer* shall operate automatically and not include *manually* operated valves or devices. Diverted *rainwater* shall not be drained to the roof surface, and shall be discharged in a manner consistent with the storm water requirements of the jurisdiction. *Roof washers* shall be accessible for maintenance and service.

1303.6 Roof gutters and downspouts. Gutters and downspouts shall be constructed of materials that are compatible with the collection surface and the *rainwater* quality for the desired end use. Joints shall be made water-tight.

1303.6.1 Slope. Roof gutters, leaders, and *rainwater* collection piping shall slope continuously toward collection inlets. Gutters and downspouts shall have a slope of not less than 1/8 inch per foot along their entire length, and shall not permit the collection or pooling of water at any point.

Exception: Siphonic roof drainage systems installed in accordance with Chapter 11 shall not be required to have slope.

1303.6.2 Size. Gutters and downspouts shall be installed and sized in accordance with Section 1106.6 and local rainfall rates.

1303.6.3 Cleanouts. Cleanouts or other approved openings shall be provided to permit access to all filters, flushes, pipes and downspouts.

1303.7 Drainage. Water drained from the *roof washer* or debris excluder shall not be drained to the sanitary sewer. Such water shall be diverted from the *storage tank* and discharged in a location that will not cause erosion or damage to property in accordance with the *International Building Code*. *Roof washers* and debris excluders shall be provided with an automatic means of self draining between rain events, and shall not drain onto roof surfaces.

1302.8 Storage tanks. *Storage tanks* utilized in rainwater non-potable water systems shall comply with Section 1301.10.

1303.9 Location. *Storage tanks* shall be located with a minimum horizontal distance between various elements as indicated in Table 1303.9.1.

TABLE 1303.9.1
LOCATION OF RAINWATER STORAGE TANKS

| Element | Minimum Horizontal Distance from Storage Tank (feet) |
|---|--|
| Critical root zone (CRZ) of protected trees | 2 |
| Lot line adjoining private lots | 5 |
| Seepage pits Sewage Systems | 5 |
| Septic tanks | 5 |

1303.10 Valves. Valves shall be installed in collection and conveyance drainage piping of rainwater non-potable water systems in accordance with Sections 1303.9.1 and 1303.9.2.

1303.10.1 Influent Diversion. A means shall be provided to divert *storage tank* influent to allow maintenance and *repair* of the *storage tank* system.

1303.10.2 Backwater valve. *Backwater valves* shall be installed on each overflow and tank drain pipe to prevent unwanted water from draining back into the storage tank. If the overflow and drain piping arrangement is installed to physically not allow water to drain back into the tank, such as the form of an air gap, backwater valves shall not be required. *Backwater valves* shall be constructed and installed in accordance with Section 715.

1303.11 Tests and inspections. Tests and inspections shall be performed in accordance with Sections 1303.11.1 through 1303.11.2.

1303.11.1 Roof gutter inspection and test. Roof gutters shall be inspected to verify that the installation and slope is in accordance with Section 1303.5.1. Gutters shall be tested by pouring a minimum of one gallon of water into the end of the gutter opposite the collection point. The gutter being tested shall not leak and shall not retain standing water.

1303.11.2 Roofwasher test. Roofwashers shall be tested by introducing water into the gutters. Diversion of the first quantity of water in accordance with the requirements of Section 1303.4 shall be verified. ~~Need to coordinate with USBC Chapter 1~~

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SECTION 1304

RECLAIMED WATER NON-POTABLE WATER SYSTEMS

~~1304.1 General. The provisions of this section shall govern the design, construction, installation, alteration, and repair of reclaimed water non-potable water systems as permitted in accordance with Section 1301.~~

~~1304.21 General. Reclaimed water non-potable water systems.~~ Water reclamation systems, reclaimed water distribution systems and allowable non-potable water reuse, as defined by the Virginia Water Reclamation and Reuse Regulation (9 VAC 25-740), are governed by the Water Reclamation and Reuse Regulation (9 VAC 25-740). Permits from the Virginia State Water Control Board are required for such systems ~~or and~~ reuses. ~~This code is applicable to the~~ The provisions of Section 1304 shall govern the design, construction, installation, alterations, and repair of plumbing fixtures, piping or piping systems, storage tanks, drains, appurtenances and appliances which are part of the distribution system for reclaimed water within buildings and to non-system storage tanks for reclaimed water as defined in the Water Reclamation and Reuse Regulation (9VAC25-740) and associated piping outside of buildings that deliver reclaimed water into buildings. ~~This code does not regulate equipment used for, or the methods of, processing, filtering or treating reclaimed water and the distribution of reclaimed water from off site to the building.~~

~~1304.2.1 Separate systems. Reclaimed water non-potable water systems, unless approved otherwise under the permit from the Virginia State Water Control Board, shall be separate from the potable water system of a building with no cross-connections between the two systems except as permitted by the Water Reclamation and Reuse Regulation (9 VAC 25-740).~~

~~1304.3 Design of reclaimed water non-potable water systems. The design of reclaimed water non-potable water systems shall conform to applicable requirements of Section 1301.~~

VIRGINIA DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT
DIVISION OF BUILDING AND FIRE REGULATION

Code Change Form for the 2012 Code Change Cycle

Code Change Number: _____

Proponent Information

(Check one): Individual Government Entity Company

Name: Guy Tomberlin

Representing: Fairfax County, VPMIA, VBCOA

Mailing Address: 12055 Government Center Parkway, Fairfax VA 22035

Email Address: guy.tomberlin@fairfaxcounty.gov

Telephone Number: 703-324-1611

Proposal Information

Code(s) and Section(s): Greywater, rainwater, reclaimed water sections. Adding new definitions and chapters

Proposed Change (including all relevant section numbers, if multiple sections):

See attachment ICC proposal P 11.

Supporting Statement (including intent, need, and impact of the proposal):

USBC rainwater provisions need to be updated to available current industry technologies to utilize this valuable natural resource and the other water reuses contained in this proposal.

Submittal Information

Date Submitted: May 21, 2012

The proposal may be submitted by email as an attachment, by fax, by mail, or by hand delivery.

Please submit the proposal to:

DHCD DBFR TASO (Technical Assistance and Services Office)
600 East Main Street
Suite 300
Richmond, VA 23219

Email Address: taso@dhcd.virginia.gov
Fax Number: (804) 371-7092
Phone Numbers: (804) 371-7140 or (804) 371-7150



P11 – 12

202, 301.3, Chapter 13, Chapter 13 (New), Chapter 14 (New)

Proponent: Shawn Strausbaugh representing the ICC PMG Code Action Committee

Add new definitions as follows:

STORAGE TANK. A fixed container for holding water at atmospheric pressure for subsequent reuse as part of a plumbing or irrigation system.

RECLAIMED WATER. Non-potable water that has been derived from the treatment of wastewater by a facility or system licensed or permitted to produce water meeting the jurisdiction's water requirements for its intended uses. Also known as "Recycled Water."

ONSITE NON-POTABLE WATER REUSE SYSTEMS. Water systems for the collection, treatment, storage, distribution, and reuse of non-potable water generated onsite, including but not limited to graywater systems. This definition does not include rainwater harvesting systems.

DISTRIBUTION PIPE. Pressurized or non-pressure piping used within the plumbing system of a building to deliver rainwater or graywater from the storage tank or pump to the point of use.

COLLECTION PIPE. Unpressurized pipe used within the collection system that drains onsite non-potable water or rainwater to a storage tank by gravity.

ALTERNATE ON-SITE NON-POTABLE WATER. Non-potable water from other than public utilities, onsite surface sources and subsurface natural freshwater sources. Examples of such water are graywater, on-site reclaimed water, collected rainwater, captured condensate, and rejected water from reverse osmosis systems.

METER. A measuring device used to collect data and indicate water usage.

RAINWATER. Water from natural precipitation.

Revise as follows:

301.3 Connections to drainage system. Plumbing fixtures, drains, appurtenances and appliances used to receive or discharge liquid wastes or sewage shall be directly connected to the sanitary drainage system of the building or premises, in accordance with the requirements of this code. This section shall not be construed to prevent indirect waste systems required by Chapter 8.

Exception: Bathtubs, showers, lavatories, clothes washers and laundry trays shall not be required to discharge to the sanitary drainage system where such fixtures discharge to an approved gray-water system in accordance with Chapter 13 and 14 for flushing of water closets and urinals or for subsurface landscape irrigation.

Delete existing Chapter 13 and substitute as follows:

CHAPTER 13 GRAY WATER RECYCLING SYSTEMS

CHAPTER 13 NON-POTABLE WATER SYSTEMS

SECTION 1301

GENERAL

1301.1 Scope. The provisions of Chapter 13 shall govern the materials, design, construction and installation of systems for the collection, storage, treatment, and distribution of non-potable water. The use and application of non-potable water shall comply with laws, rules and ordinances applicable in the jurisdiction.

1301.2 Water quality. Non-potable water for each end use application shall meet the minimum water quality requirements as established for the intended application by the laws, rules and ordinances applicable in the jurisdiction. Where non-potable water from different sources is combined in a system, the system shall comply with the most stringent of the requirements of this code that are applicable to such sources.

1301.2.1 Residual disinfectants. Where chlorine is used for disinfection, the non-potable water shall contain not more than 4 mg/L of chloramines or free chlorine when tested in accordance with ASTM D1253. Where ozone is used for disinfection, the non-potable water shall not contain gas bubbles having elevated levels of ozone at the point of use.

1301.2.2 Filtration required. Non-potable water utilized for water closet and urinal flushing applications shall be filtered by a 100 micron or finer filter.

Exception: Reclaimed water sources shall not be required to comply with the requirements of 1301.2.1 and 1301.2.2.

1301.3 Signage required. All non-potable water outlets such as hose connections, open ended pipes, and faucets shall be identified at the point of use for each outlet with signage that reads as follows: "Non-potable water is utilized for [application name]. Caution: non-potable water. DO NOT DRINK." The words shall be legibly and indelibly printed on a tag or sign constructed of corrosion-resistant waterproof material or shall be indelibly printed on the fixture. The letters of the words shall be not less than 0.5 inches in height and in colors in contrast to the background on which they are applied. In addition to the required wordage, the pictograph shown in Figure 1301.3 shall appear on the signage required by this section.



Figure 1301.3 – Pictograph DO NOT DRINK

1301.4 Permits. *Permits shall be required for the construction, installation, alteration, and repair of non-potable water systems. Construction documents, engineering calculations, diagrams, and other such data pertaining to the non-potable water system shall be submitted with each application for permit.*

1301.5 Potable water connections. *Where a potable system is connected to a non-potable water system, the potable water supply shall be protected against backflow in accordance with Section 608.*

1301.6 Approved components and materials. *Piping, plumbing components, and materials used in the collection and conveyance systems shall be manufactured of material approved for the intended application and compatible with any disinfection and treatment systems used.*

1301.7 Insect and vermin control. *The system shall be protected to prevent the entrance of insects and vermin into storage tanks and piping systems. Any screen materials shall be compatible with contacting system components and shall not accelerate corrosion of system components.*

1301.8 Freeze protection. *Where sustained freezing temperatures occur, provisions shall be made to keep storage tanks and the related piping from freezing.*

1301.9 Non-potable water storage tanks. *Where used, non-potable water storage tanks shall comply with Sections 1301.9.1 through 1301.9.11.*

1301.9.1 Sizing. *The holding capacity of the storage tank shall be sized in accordance with the anticipated demand.*

1301.9.2 Location. *Storage tanks shall be installed above or below grade. Above grade storage tanks shall be protected from direct sunlight and shall be constructed using opaque, UV resistant, materials such as, but not limited to, heavily tinted plastic, fiberglass, lined metal, concrete, wood, or painted to prevent algae growth, or shall have specially constructed sun barriers including but not limited to installation in garages, crawlspaces, or sheds. Storage tanks and their manholes shall not be located directly under any soil or waste piping or any source of contamination.*

1301.9.3 Materials. *Where collected onsite, water shall be collected in an approved tank constructed of durable, nonabsorbent and corrosion-resistant materials. The storage tank shall be constructed of materials compatible with any disinfection systems used to treat water upstream of the tank and with any systems used to maintain water quality within the tank. Wooden storage tanks that are not equipped with a makeup water source shall be provided with a flexible liner.*

1301.9.4 Foundation and supports. *Storage tanks shall be supported on a firm base capable of withstanding the storage tank's weight when filled to capacity. Storage tanks shall be supported in accordance with the International Building Code.*

1301.9.4.1 Ballast. *Where the soil can become saturated, an underground storage tank shall be ballasted, or otherwise secured, to prevent the tank from floating out of the ground when empty. The combined weight of the tank and hold down ballast shall meet or exceed the buoyancy force of the tank. Where the installation requires a foundation, the foundation shall be flat and shall be designed to support the storage tank weight when full, consistent with the bearing capability of adjacent soil.*

1301.9.4.2 Structural support. *Where installed below grade, storage tank installations shall be designed to withstand earth and surface structural loads without damage and with minimal deformation when filled with water or empty.*

1301.9.5 Makeup water. *Where an uninterrupted supply is required for the intended application, potable or reclaimed water shall be provided as a source of makeup water for the storage tank. The makeup water supply shall be protected against backflow in accordance with Section 608. A full-open valve located on the makeup water supply line to the storage tank shall be provided. Inlets to storage tank shall be controlled by fill valves or other automatic supply valves installed so as to prevent the tank from*

overflowing and to prevent the water level from dropping below a predetermined point. Where makeup water is provided, the water level shall not be permitted to drop below the source water inlet or the intake of any attached pump.

1301.9.6 Overflow. The *storage tank* shall be equipped with an overflow pipe having a diameter not less than that shown in Table 606.5.4. The overflow pipe shall be protected from insects or vermin and shall be discharged in a manner consistent with storm water runoff requirements of the jurisdiction. The overflow pipe shall discharge at a sufficient distance from the tank to avoid damaging the tank foundation or the adjacent property. Drainage from overflow pipes shall be directed so as not to freeze on roof walks. The overflow drain shall not be equipped with a shutoff valve. A cleanout shall be provided on each overflow pipe in accordance with Section 708.

1301.9.7 Access. A minimum of one access opening shall be provided to allow inspection and cleaning of the tank interior. Access openings shall have an *approved* locking device or other *approved* method of securing access. Below grade *storage tanks*, located outside of the *building*, shall be provided with either a manhole not less than 24 inches (610 mm) square or a manhole with an inside diameter not less than 24 inches (610 mm). Manholes shall extend not less than 4 inches above ground or shall be designed to as to prevent water infiltration. Finished grade shall be sloped away from the manhole to divert surface water from the manhole. Each manhole cover shall be secured to prevent unauthorized access. Service ports in manhole covers shall be not less than 8 inches (203 mm) in diameter and shall be a minimum of 4 inches (102 mm) above the finished grade level. The service port be secured to prevent unauthorized access.

Exception: *Storage tanks* under 800 gallons in volume installed below grade shall not be required to be equipped with a manhole, but shall have a service port not less than 8 inches (203 mm) in diameter.

1301.9.8 Venting. *Storage tanks* shall be provided with a vent sized in accordance with Chapter 9 and based on the aggregate diameter of all tank influent pipes. The reservoir vent shall not be connected to sanitary drainage system vents. Vents shall be protected from contamination by means of a U-bend installed with the opening directed downward or an *approved* cap. Vent outlets shall extend a minimum of 4" above grade, or as necessary to prevent surface water from entering the *storage tank*. Vent openings shall be protected against the entrance of vermin and insects in accordance with the requirements of Section 1307.1.

1301.9.9 Draining of tanks. Where tanks require draining for service or cleaning, tanks shall be drained by using a pump or by a drain located at the lowest point in the tank. The tank drain pipe shall discharge as required for overflow pipes and shall not be smaller in size than specified in Table 606.5.7. A minimum of one cleanout shall be provided on each drain pipe in accordance with Section 708.

1301.9.10 Marking and signage. Each non-potable water *storage tank* shall be labeled with its rated capacity. The contents of *storage tanks* shall be identified with the words "CAUTION: NON-POTABLE WATER -- DO NOT DRINK." Where an opening is provided that could allow the entry of personnel, the opening shall be marked with the words, "DANGER -- CONFINED SPACE." Markings shall be indelibly printed on a tag or sign constructed of corrosion-resistant waterproof material mounted on the tank or shall be indelibly printed on the tank. The letters of the words shall be not less than 0.5 inches in height and shall be of a color in contrast with the background on which they are applied.

1301.9.11 Storage tank tests. *Storage tanks* shall be tested in accordance with the following:

Storage tanks shall be filled with water to the overflow line prior to and during inspection. All seams and joints shall be left exposed and the tank shall remain water tight without leakage for a period of 24 hours.

1. After 24 hours, supplemental water shall be introduced for a period of 15 minutes to verify proper drainage of the overflow system and verify that there are no leaks.

2. The tank drain shall be observed for proper operation.
3. The makeup water system shall be observed for proper operation and successful automatic shutoff of the system at the refill threshold shall be verified.

1301.10 System abandonment. If the owner of an onsite non-potable water reuse system or rainwater collection and conveyance system elects to cease use of, or fails to properly maintain such system, the system shall be abandoned and shall comply with the following:

1. All system piping connecting to a utility-provided water system shall be removed or disabled.
2. The distribution piping system shall be replaced with an approved potable water supply piping system. Where an existing potable pipe system is already in place, the fixtures shall be connected to the existing system.
3. The storage tank shall be secured from accidental access by sealing or locking tank inlets and access points, or filling with sand or equivalent.

1301.11 Trenching requirements for non-potable water piping. Non-potable water collection and distribution piping and reclaimed water piping shall be separated from the building sewer and potable water piping underground by 5 feet (1524 mm) of undisturbed or compacted earth. Non-potable water collection and distribution piping shall not be located in, under or above cesspools, septic tanks, septic tank drainage fields or seepage pits. Buried non-potable water piping shall comply with the requirements of Section 306.

Exceptions:

1. The required separation distance shall not apply where the bottom of the non-potable water pipe within 5 feet (1524 mm) of the sewer is not less than 12 inches (305 mm) above the top of the highest point of the sewer and the pipe materials conforms to Table 702.3.
2. The required separation distance shall not apply where the bottom of the potable water service pipe within 5 feet (1524 mm) of the non-potable water pipe is a minimum of 12 inches (305 mm) above the top of the highest point of the non-potable water pipe and the pipe materials comply with the requirements of Table 605.4
3. Non-potable water pipe is permitted to be located in the same trench with a building sewer, provided that such sewer is constructed of materials that comply with the requirements of Table 702.2.
4. The required separation distance shall not apply where a non-potable water pipe crosses a sewer pipe provided that the pipe is sleeved to at least 5 feet (1524 mm) horizontally from the sewer pipe centerline on both sides of such crossing with pipe materials that comply with Table 702.2.
5. The required separation distance shall not apply where a potable water service pipe crosses a non-potable water pipe provided that the potable water service pipe is sleeved for a distance of at least 5 feet (1524 mm) horizontally from the centerline of the non-potable pipe on both sides of such crossing with pipe materials that comply with Table 702.2.
6. Irrigation piping located outside of a building and downstream of the backflow preventer is not required to meet the trenching requirements where non-potable water is used for outdoor applications.

1301.12 Outdoor outlet access. Sillcocks, hose bibs, wall hydrants, yard hydrants, and other outdoor outlets supplied by non-potable water shall be located in a locked vault or shall be operable only by means of a removable key.

SECTION 1302
ONSITE NON-POTABLE WATER REUSE SYSTEMS

1302.1 General. The provisions of Section 1302 shall govern the construction, installation, alteration, and repair of onsite non-potable water reuse systems for the collection, storage, treatment and distribution of on-site sources of non-potable water as permitted by the jurisdiction.

1302.2 Sources. Onsite non-potable water reuse systems shall collect waste discharge from only the following sources: bathtubs, showers, lavatories, clothes washers, and laundry trays. Water from other approved non-potable sources including swimming pool backwash operations, air conditioner condensate, rainwater, cooling tower blow-down water, foundation drain water, steam system condensate, fluid cooler discharge water, food steamer discharge water, combination oven discharge water, industrial process water, and fire pump test water shall also be permitted to be collected for reuse by onsite non-potable water reuse systems, as approved by the code official and as appropriate for the intended application.

1302.2.1 Prohibited sources. Wastewater containing urine or fecal matter shall not be diverted to onsite non-potable water reuse systems and shall discharge to the sanitary drainage system of the building or premises in accordance with Chapter 7. Water from reverse osmosis system reject water, water softener discharge water, kitchen sink wastewater, dishwasher wastewater, and wastewater discharged from wet-hood scrubbers shall not be collected for reuse within a to onsite non-potable water reuse systems.

1302.3 Traps. Traps serving fixtures and devices discharging wastewater to to onsite non-potable water reuse systems shall comply with the Section 1002.4.

1302.4 Collection pipe. Onsite non-potable water reuse systems shall utilize drainage piping approved for use within plumbing drainage systems to collect and convey untreated water for reuse. Vent piping approved for use within plumbing venting systems shall be utilized for vents within the graywater system. Collection and vent piping materials shall comply with Section 702.

1302.3.1 Installation. Collection piping conveying untreated water for reuse shall be installed in accordance with Section 704.

1302.3.2 Joints. Collection piping conveying untreated water for reuse shall utilize joints approved for use with the distribution piping and appropriate for the intended applications as specified in Section 705.

1302.3.3 Size. Collection piping conveying untreated water for reuse shall be sized in accordance with drainage sizing requirements specified in Section 710.

1302.3.4 Labeling and marking. Additional marking of collection piping conveying untreated water for reuse shall not be required beyond that required for sanitary drainage, waste, and vent piping by the Chapter 7.

1302.5 Filtration. Untreated water collected for reuse shall be filtered as required for the intended end use. Filters shall be accessible for inspection and maintenance. Filters shall utilize a pressure gage or other approved method to provide indication when a filter requires servicing or replacement. Filters shall be installed with shutoff valves installed immediately upstream and downstream to allow for isolation during maintenance.

1302.6 Disinfection. Where the intended application for non-potable water collected onsite for reuse requires disinfection or other treatment or both, it shall be disinfected as needed to ensure that the required water quality is delivered at the point of use. Non-potable water collected onsite containing untreated graywater shall be retained in collection reservoirs for a maximum of 24 hours.

1302.7 Storage tanks. Storage tanks utilized in onsite non-potable water reuse systems shall comply with Section 1301.9.

1302.7.1 Location. Storage tanks shall be located with a minimum horizontal distance between various elements as indicated in Table 1302.7.1.

**TABLE 1302.7.1
LOCATION OF NON-POTABLE WATER REUSE STORAGE TANKS**

| <u>ELEMENT</u> | <u>MINIMUM HORIZONTAL DISTANCE FROM STORAGE TANK (FEET)</u> |
|--|---|
| <u>Critical root zone (CRZ) of protected trees</u> | <u>2</u> |
| <u>Lot line adjoining private lots</u> | <u>5</u> |
| <u>Seepage pits</u> | <u>5</u> |
| <u>Septic tanks</u> | <u>5</u> |
| <u>Water wells</u> | <u>50</u> |
| <u>Streams and lakes</u> | <u>50</u> |
| <u>Water service</u> | <u>5</u> |
| <u>Public water main</u> | <u>10</u> |

1302.7.3 Outlets. Outlets shall be located at least 4 inches (102 mm) above the bottom of the storage tank, and shall not skim water from the surface.

1302.8 Valves. Valves shall be supplied on onsite non-potable water reuse systems in accordance with Sections 1302.8.1 and 1302.8.2.

1302.8.1 Bypass valve. One three-way diverter valve listed and labeled to NSF 50 or other approved device shall be installed on collection piping upstream of each storage tank, or drainfield, as applicable, to divert untreated onsite reuse sources to the sanitary sewer to allow servicing and inspection of the system. Bypass valves shall be installed downstream of fixture traps and vent connections. Bypass valves shall be marked to indicate the direction of flow, connection and storage tank or drainfield connection. Bypass valves shall be installed in accessible locations. Two shutoff valves shall not be installed to serve as a bypass valve.

1302.8.2 Backwater valve. One or more backwater valves shall be installed on each overflow and tank drain pipe. Backwater valves shall be in accordance with Section 715.

1302.9 Pumping and control system. Mechanical equipment including pumps, valves and filters shall be easily accessible and removable in order to perform repair, maintenance and cleaning. The minimum flow rate and flow pressure delivered by the pumping system shall appropriate for the application and in accordance with Section 604.

1302.10 Water-pressure reducing valve or regulator. Where the water pressure supplied by the pumping system exceeds 80 psi (552 kPa) static, a pressure-reducing valve shall be installed to reduce the pressure in the nonpotable water distribution system piping to 80 psi (552 kPa) static or less. Pressure-reducing valves shall be specified and installed in accordance with Section 604.8.

1302.11 Distribution pipe. Distribution piping utilized in onsite non-potable water reuse systems shall comply with Sections 1302.11.1 through 1302.11.4.

Exception: Irrigation piping located outside of the building and downstream of a backflow preventer.

1302.11.1 Materials, joints and connections. Distribution piping shall conform to the standards and requirements specified in Section 605.

1302.11.2 Design. Onsite non-potable water reuse distribution piping systems shall be designed and sized in accordance with Section 604 for the intended application.

1302.11.3 Marking. Onsite non-potable water distribution piping labeling and marking shall comply with Section 608.8.

1302.12 Tests and inspections. Tests and inspections shall be performed in accordance with Sections 1302.12.1 through 1302.12.6.

1302.12.1 Collection pipe and vent test. Drain, waste and vent piping used for onsite water reuse systems shall be tested in accordance with Section 312.

1302.12.2 Storage tank test. Storage tanks shall be tested in accordance with the Section 1301.9.11.

1302.12.3 Water supply system test. The testing of makeup water supply piping and distribution piping shall be conducted in accordance with Section 312.5.

1302.12.4 Inspection and testing of backflow prevention assemblies. The testing of backflow preventers and backwater valves shall be conducted in accordance with Section 312.10.

1302.12.5 Inspection vermin and insect protection. Inlets and vents to the system shall be inspected to verify that each is protected to prevent the entrance of insects and vermin into the storage tank and piping systems in accordance with Section 1301.7.

1302.12.6 Water quality test. The quality of the water for the intended application shall be verified at the point of use in accordance with the requirements of the jurisdiction.

1302.13 Operation and maintenance manuals. Operations and maintenance materials shall be supplied with non-potable onsite water reuse systems in accordance with Sections 1302.13.1 through 1302.13.4.

1302.13.1 Manual. A detailed operations and maintenance manual shall be supplied in hardcopy form with all systems.

1302.13.2 Schematics. The manual shall include a detailed system schematic, locations of all system components, and a list of all system components including manufacturer and model number.

1302.13.3 Maintenance procedures. The manual shall provide a maintenance schedule and procedures for all system components requiring periodic maintenance. Consumable parts including filters shall be noted along with part numbers.

1302.13.4 Operations procedures. The manual shall include system startup and shutdown procedures. The manual shall include detailed operating procedures for the system.

SECTION 1303 NON-POTABLE RAINWATER COLLECTION AND DISTRIBUTION SYSTEMS

1303.1 General. The provisions of Section 1303 shall govern the construction, installation, alteration, and repair of rainwater collection and conveyance systems for the collection, storage, treatment and distribution of rainwater for non-potable applications, as permitted by the jurisdiction.

1303.2 Collection surface. Rainwater shall be collected only from above-ground impervious roofing surfaces constructed from approved materials. Collection of water from vehicular parking or pedestrian surfaces shall be prohibited except where the water is used exclusively for landscape irrigation. Overflow and bleed-off pipes from roof-mounted appliances including but not limited to evaporative coolers, water heaters, and solar water heaters shall not discharge onto rainwater collection surfaces.

1303.3 Debris excluders. Downspouts and leaders shall be connected to a roof washer and shall be equipped with a debris excluder or equivalent device to prevent the contamination of collected rainwater

with leaves, sticks, pine needles and similar material. Debris excluders and equivalent devices shall be self-cleaning.

1303.4 Roof washer. A sufficient amount of *rainwater* shall be diverted at the beginning of each rain event, and not allowed to enter the *storage tank*, to wash accumulated debris from the collection surface. The amount of rainfall to be diverted shall be field adjustable as necessary to minimize *storage tank* water contamination. The *roof washer* shall not rely on *manually* operated valves or devices, and shall operate automatically. Diverted *rainwater* shall not be drained to the roof surface, and shall be discharged in a manner consistent with the storm water runoff requirements of the *jurisdiction*. *Roof washers* shall be accessible for maintenance and service.

1303.5 Roof gutters and downspouts. Gutters and downspouts shall be constructed of materials that are compatible with the collection surface and the *rainwater* quality for the desired end use. Joints shall be made water-tight.

1303.5.1 Slope. Roof gutters, leaders, and *rainwater* collection piping shall slope continuously toward collection inlets. Gutters and downspouts shall have a slope of not less than 1/8 inch per foot along their entire length, and shall not permit the collection or pooling of water at any point.

Exception: Siphonic drainage systems installed in accordance with the manufacturer's installation instructions shall not be required to have slope.

1303.5.2 Size. Gutters and downspouts shall be installed and sized in accordance with Section 1106.6 and local rainfall rates.

1303.5.3 Cleanouts. Cleanouts shall be provided in the water conveyance system so as to allow access to all filters, flushes, pipes and downspouts.

1303.6 Drainage. Water drained from the *roof washer* or debris excluder shall not be drained to the sanitary sewer. Such water shall be diverted from the *storage tank* and discharge in a location that will not cause erosion or damage to property in accordance with the *International Building Code*. *Roof washers* and debris excluders shall be provided with an automatic means of self draining between rain events, and shall not drain onto roof surfaces.

1303.7 Collection pipe. Rainwater collection and conveyance systems shall utilize drainage piping approved for use within plumbing drainage systems to collect and convey captured rainwater. Vent piping approved for use within plumbing venting systems shall be utilized for vents within the rainwater system. Collection and vent piping materials shall comply with Section 702.

1303.7.1 Installation. Collection piping conveying captured rainwater shall be installed in accordance with Section 704.

1303.7.2 Joints. Collection piping conveying captured rainwater shall utilize joints approved for use with the *distribution piping* and appropriate for the intended applications as specified in Section 705.

1303.7.3 Size. Collection piping conveying captured rainwater shall be sized in accordance with drainage sizing requirements specified in Section 710.

1303.7.4 Labeling and marking. Additional marking of collection piping conveying captured rainwater for reuse shall not be required beyond that required for sanitary drainage, waste, and vent piping by the Chapter 7.

1303.8 Filtration. Collected rainwater shall be filtered as required for the intended end use. Filters shall be accessible for inspection and maintenance. Filters shall utilize a pressure gage or other approved method to provide indication when a filter requires servicing or replacement. Filters shall be installed with shutoff valves installed immediately upstream and downstream to allow for isolation during maintenance.

1303.9 Disinfection. Where the intended application for rainwater requires disinfection or other treatment or both, it shall be disinfected as needed to ensure that the required water quality is delivered at the point of use. Where chlorine is used for disinfection or treatment, water shall be tested for residual chlorine in accordance with ASTM D1253. The levels of residual chlorine shall not exceed the levels allowed for the intended use in accordance with the requirements of the *jurisdiction*.

1303.10 Storage tanks. *Storage tanks* utilized in non-potable rainwater collection and conveyance systems shall comply with Section 1301.9 and 1303.10.1 through 1303.10.3.

1303.10.1 Location. *Storage tanks* shall be located with a minimum horizontal distance between various elements as indicated in Table 1303.10.1.

**TABLE 1303.10.1
LOCATION OF RAINWATER STORAGE TANKS**

| <u>ELEMENT</u> | <u>MINIMUM HORIZONTAL DISTANCE
FROM STORAGE TANK (FEET)</u> |
|---|---|
| Critical root zone (CRZ) of protected trees | 2 |
| Lot line adjoining private lots | 5 |
| Seepage pits | 5 |
| Septic tanks | 5 |

1303.10.2 Inlets. *Storage tank* inlets shall be designed to introduce collected rainwater into the tank with minimum turbulence, and shall be located and designed to avoid agitating the contents of the *storage tank*.

1303.10.3 Outlets. Outlets shall be located at least 4 inches (102 mm) above the bottom of the *storage tank*, and shall not skim water from the surface.

1303.11 Valves. Valves shall be supplied on rainwater collection and conveyance systems in accordance with Sections 1303.11.1 and 1303.11.2.

1303.10.2 Backwater valve. *Backwater valves* shall be installed on each overflow and tank drain pipe. *Backwater valves* shall be in accordance with Section 715.

1303.12 Pumping and control system. Mechanical equipment including pumps, valves and filters shall be easily accessible and removable in order to perform *repair*, maintenance and cleaning. The minimum flow rate and flow pressure delivered by the pumping system shall appropriate for the application and in accordance with Section 604.

1303.13 Water-pressure reducing valve or regulator. Where the water pressure supplied by the pumping system exceeds 80 psi (552 kPa) static, a pressure-reducing valve shall be installed to reduce the pressure in the rainwater distribution system piping to 80 psi (552 kPa) static or less. Pressure-reducing valves shall be specified and installed in accordance with Section 604.8.

1303.14 Distribution pipe. *Distribution piping* utilized in rainwater collection and conveyance systems shall comply with Sections 1303.14.1 through 1303.14.3.

Exception: Irrigation piping located outside of the *building* and downstream of a backflow preventer.

1303.14.1 Materials, joints and connections. *Distribution piping* shall conform to the standards and requirements specified in Section 605 for non-potable water.

1303.14.2 Design. *Distribution piping* systems shall be designed and sized in accordance with the Section 604 for the intended application.

1303.14.3 Marking. Non-potable rainwater distribution piping labeling and marking shall comply with Section 608.8.

1303.15 Tests and inspections. Tests and inspections shall be performed in accordance with Sections 1303.15.1 through 1303.15.8.

1303.15.1 Roof gutter inspection and test. Roof gutters shall be inspected to verify that the installation and slope is in accordance with Section 1303.5.1. Gutters shall be tested by pouring a minimum of one gallon of water into the end of the gutter opposite the collection point. The gutter being tested shall not leak and shall not retain standing water.

1303.15.2 Roofwasher test. Roofwashers shall be tested by introducing water into the gutters. Proper diversion of the first quantity of water in accordance with the requirements of Section 1303.4 shall be verified.

1303.15.3 Collection pipe and vent test. Drain, waste and vent piping used for rainwater collection and conveyance systems shall be tested in accordance with Section 312.

1303.15.4 Storage tank test. Storage tanks shall be tested in accordance with the Section 1301.9.11.

1303.15.5 Water supply system test. The testing of makeup water supply piping and distribution piping shall be conducted in accordance with Section 312.5.

1303.15.6 Inspection and testing of backflow prevention assemblies. The testing of backflow preventers and backwater valves shall be conducted in accordance with Section 312.10.

1303.15.7 Inspection vermin and insect protection. Inlets and vents to the system shall be inspected to verify that each is protected to prevent the entrance of insects and vermin into the storage tank and piping systems in accordance with Section 1301.7.

1303.15.8 Water quality test. The quality of the water for the intended application shall be verified at the point of use in accordance with the requirements of the jurisdiction. Except where site conditions as specified in ASTM E2727 affect the rainwater, collected rainwater shall be considered to have the parameters indicated in Table 1303.15.8.

**TABLE 1303.15.8
RAINWATER QUALITY**

| <u>PARAMETER</u> | <u>VALUE</u> |
|------------------|---------------------------------------|
| pH | 6.0-7.0 |
| BOD | Not greater than 10 mg/L |
| NTU | Not greater than 2 |
| Fecal Coliform | No detectable fecal coli in 100 mL |
| Sodium | No detectable sodium in 100 mL |
| Chlorine | No detectable chlorine in 100 mL |
| Enteroviruses | No detectable enteroviruses in 100 mL |

1303.16 Operation and maintenance manuals. Operations and maintenance materials shall be supplied with rainwater collection and conveyance systems in accordance with Sections 1303.16.1 through 1303.16.4.

1303.16.1 Manual. A detailed operations and maintenance manual shall be supplied in hardcopy form with all systems.

1303.16.2 Schematics. The manual shall include a detailed system schematic, locations of all system components, and a list of all system components including manufacturer and model number.

1303.16.3 Maintenance procedures. The manual shall provide a maintenance schedule and procedures for all system components requiring periodic maintenance. Consumable parts including filters shall be noted along with part numbers.

1303.16.4 Operations procedures. The manual shall include system startup and shutdown procedures. The manual shall include detailed operating procedures for the system.

SECTION 1304 **RECLAIMED WATER SYSTEMS**

1304.1 General. The provisions of this section shall govern the construction, installation, alteration, and repair of systems supplying non-potable reclaimed water.

1304.2 Water-pressure reducing valve or regulator. Where the reclaimed water pressure supplied to the building exceeds 80 psi (552 kPa) static, a pressure-reducing valve shall be installed to reduce the pressure in the reclaimed water distribution system piping to 80 psi (552 kPa) static or less. Pressure-reducing valves shall be specified and installed in accordance with Section 604.8 of the *International Plumbing Code*.

1304.3 Reclaimed water systems. The design of the reclaimed water systems shall conform to ASTM E 2635 and accepted engineering practice.

1304.3.1 Distribution pipe. Distribution piping shall comply with Sections 1304.3.1.1 through 1304.3.1.3.

Exception: Irrigation piping located outside of the building and downstream of a backflow preventer.

1304.3.1.1 Materials, joints and connections. Distribution piping conveying reclaimed water shall conform to standards and requirements specified in Section 605 for non-potable water.

1304.3.1.2 Design. Distribution piping systems shall be designed and sized in accordance with the Section 604 for the intended application.

1304.3.1.3 Labeling and marking. Non-potable rainwater distribution piping labeling and marking shall comply with Section 608.8.

1304.4 Tests and inspections. Tests and inspections shall be performed in accordance with Sections 1304.4.1 and 1304.4.2.

1304.4.1 Water supply system test. The testing of makeup water supply piping and reclaimed water distribution piping shall be conducted in accordance with Section 312.5.

1304.4.2 Inspection and testing of backflow prevention assemblies. The testing of backflow preventers shall be conducted in accordance with Section 312.10.

Add new Chapter and next text as follows:

CHAPTER 14
SUBSURFACE LANDSCAPE IRRIGATION SYSTEMS

SECTION 1401
GENERAL

1401.1 Scope. The provisions of Chapter 14 shall govern the materials, design, construction and installation of subsurface landscape irrigation systems connected to non-potable water from onsite water reuse systems.

1401.2 Materials. Above-ground drain, waste and vent piping for subsurface landscape irrigation systems shall conform to one of the standards listed in Table 702.1. Subsurface landscape irrigation underground building drainage and vent pipe shall conform to one of the standards listed in Table 702.2.

1401.3 Tests. Drain, waste and vent piping for subsurface landscape irrigation systems shall be tested in accordance with Section 312.

1401.4 Inspections. Subsurface landscape irrigation systems shall be inspected in accordance with Section 107.

1401.5 Disinfection. Disinfection shall not be required for onsite non-potable reuse water used for subsurface landscape irrigation systems.

1401.6 Coloring. Onsite non-potable reuse water used for subsurface landscape irrigation systems shall not be required to be dyed.

SECTION 1402
SYSTEM DESIGN AND SIZING

1402.1 Sizing. The system shall be sized in accordance with the sum of the output of all water sources connected to the subsurface irrigation system. Where gray water collection piping is connected to subsurface landscape irrigation systems, gray water output shall be calculated according to the gallons-per-day-per-occupant number based on the type of fixtures connected. The gray water discharge shall be calculated by the following equation:

$$C = A \times B$$

(Equation 14-1)

where:

A = Number of occupants:

Residential—Number of occupants shall be determined by the actual number of occupants, but not less than two occupants for one bedroom and one occupant for each additional bedroom.

Commercial—Number of occupants shall be determined by the *International Building Code*.

B = Estimated flow demands for each occupant:

Residential—25 gallons per day (94.6 lpd) per occupant for showers, bathtubs and lavatories and 15 gallons per day (56.7 lpd) per occupant for clothes washers or laundry trays.

Commercial—Based on type of fixture or water use records minus the discharge of fixtures other than those discharging gray water.

C = Estimated gray water discharge based on the total number of occupants.

1402.2 Percolation tests. The permeability of the soil in the proposed absorption system shall be determined by percolation tests or permeability evaluation.

1402.2.1 Percolation tests and procedures. At least three percolation tests in each system area shall be conducted. The holes shall be spaced uniformly in relation to the bottom depth of the proposed absorption system. More percolation tests shall be made where necessary, depending on system design.

1402.2.1.1 Percolation test hole. The test hole shall be dug or bored. The test hole shall have vertical sides and a horizontal dimension of 4 inches to 8 inches (102 mm to 203 mm). The bottom and sides of the hole shall be scratched with a sharp-pointed instrument to expose the natural soil. All loose material shall be removed from the hole and the bottom shall be covered with 2 inches (51 mm) of gravel or coarse sand.

1402.2.1.2 Test procedure, sandy soils. The hole shall be filled with clear water to a minimum of 12 inches (305 mm) above the bottom of the hole for tests in sandy soils. The time for this amount of water to seep away shall be determined, and this procedure shall be repeated if the water from the second filling of the hole seeps away in 10 minutes or less. The test shall proceed as follows: Water shall be added to a point not more than 6 inches (152 mm) above the gravel or coarse sand. Thereupon, from a fixed reference point, water levels shall be measured at 10-minute intervals for a period of 1 hour. Where 6 inches (152 mm) of water seeps away in less than 10 minutes, a shorter interval between measurements shall be used, but in no case shall the water depth exceed 6 inches (152 mm). Where 6 inches (152 mm) of water seeps away in less than 2 minutes, the test shall be stopped and a rate of less than 3 minutes per inch (7.2 s/mm) shall be reported. The final water level drop shall be used to calculate the percolation rate. Soils not meeting the above requirements shall be tested in accordance with Section 1303.7.1.3.

1402.2.1.3 Test procedure, other soils. The hole shall be filled with clear water, and a minimum water depth of 12 inches (305 mm) shall be maintained above the bottom of the hole for a 4-hour period by refilling whenever necessary or by use of an automatic siphon. Water remaining in the hole after 4 hours shall not be removed. Thereafter, the soil shall be allowed to swell not less than 16 hours or more than 30 hours. Immediately after the soil swelling period, the measurements for determining the percolation rate shall be made as follows: any soil sloughed into the hole shall be removed and the water level shall be adjusted to 6 inches (152 mm) above the gravel or coarse sand. Thereupon, from a fixed reference point, the water level shall be measured at 30-minute intervals for a period of 4 hours, unless two successive water level drops do not vary by more than 1/16 inch (1.59 mm). At least three water level drops shall be observed and recorded. The hole shall be filled with clear water to a point not more than 6 inches (152 mm) above the gravel or coarse sand whenever it becomes nearly empty. Adjustments of the water level shall not be made during the three measurement periods except to the limits of the last measured water level drop. When the first 6 inches (152 mm) of water seeps away in less than 30 minutes, the time interval between measurements shall be 10 minutes and the test run for 1 hour. The water depth shall not exceed 5 inches (127 mm) at any time during the measurement period. The drop that occurs during the final measurement period shall be used in calculating the percolation rate.

1402.2.1.4 Mechanical test equipment. Mechanical percolation test equipment shall be of an approved type.

1402.2.2 Permeability evaluation. Soil shall be evaluated for estimated percolation based on structure and texture in accordance with accepted soil evaluation practices. Borings shall be made in accordance with Section 1402.2.1.1 for evaluating the soil.

1402.3 Subsurface landscape irrigation site location. The surface grade of all soil absorption systems shall be located at a point lower than the surface grade of any water well or reservoir on the same or adjoining lot. Where this is not possible, the site shall be located so surface water drainage from the site is not directed toward a well or reservoir. The soil absorption system shall be located with a minimum

horizontal distance between various elements as indicated in Table 1402.3. Private sewage disposal systems in compacted areas, such as parking lots and driveways, are prohibited. Surface water shall be diverted away from any soil absorption site on the same or neighboring lots.

**TABLE 1402.3
LOCATION OF SUBSURFACE IRRIGATION SYSTEM**

| ELEMENT | MINIMUM HORIZONTAL DISTANCE | |
|-------------------------------------|-----------------------------|----------------------------------|
| | STORAGE TANK (feet) | IRRIGATION DISPOSAL FIELD (feet) |
| Buildings | 5 | 2 |
| Lot line adjoining private property | 5 | 5 |
| Water wells | 50 | 100 |
| Streams and lakes | 50 | 50 |
| Seepage pits | 5 | 5 |
| Septic tanks | 0 | 5 |
| Water service | 5 | 5 |
| Public water main | 10 | 10 |

For SI: 1 foot = 304.8 mm.

**SECTION 1403
INSTALLATION**

1403.1 Installation. Absorption systems shall be installed in accordance with Sections 1403.1.1 through 1403.2.1 to provide landscape irrigation without surfacing of water.

1403.1.1 Absorption area. The total absorption area required shall be computed from the estimated daily gray water discharge and the design-loading rate based on the percolation rate for the site. The required absorption area equals the estimated gray water discharge divided by the design-loading rate from Table 1403.1.1.

**TABLE 1403.1.1
DESIGN LOADING RATE**

| PERCOLATION RATE
(minutes per inch) | DESIGN LOADING FACTOR
(gallons per square foot per day) |
|--|--|
| 0 to less than 10 | 1.2 |
| 10 to less than 30 | 0.8 |
| 30 to less than 45 | 0.72 |
| 45 to 60 | 0.4 |

For SI: 1 minute per inch = min/25.4 mm,
1 gallon per square foot = 40.7 L/m².

1403.1.2 Seepage trench excavations. Seepage trench excavations shall be not less than 1 foot (304 mm) in width and not greater than 5 feet (1524 mm) in width. Trench excavations shall be spaced not less than 2 feet (610 mm) apart. The soil absorption area of a seepage trench shall be computed by using the bottom of the trench area (width) multiplied by the length of pipe. Individual seepage trenches shall be not greater than 100 feet (30 480 mm) in developed length.

1403.1.3 Seepage bed excavations. Seepage bed excavations shall be not less than 5 feet (1524 mm) in width and have more than one distribution pipe. The absorption area of a seepage bed shall be computed by using the bottom of the trench area. Distribution piping in a seepage bed shall be uniformly spaced not greater than 5 feet (1524 mm) and not less than 3 feet (914 mm) apart, and greater than 3 feet (914 mm) and not less than 1 foot (305 mm) from the sidewall or headwall.

1403.1.4 Excavation and construction. The bottom of a trench or bed excavation shall be level. Seepage trenches or beds shall not be excavated where the soil is so wet that such material rolled between the hands forms a soil wire. All smeared or compacted soil surfaces in the sidewalls or bottom of seepage trench or bed excavations shall be scarified to the depth of smearing or compaction and the loose material removed. Where rain falls on an open excavation, the soil shall be left until sufficiently dry so a soil wire will not form when soil from the excavation bottom is rolled between the hands. The bottom area shall then be scarified and loose material removed.

1403.1.5 Aggregate and backfill. Not less than 6 inches in depth of aggregate ranging in size from 1/2 to 2 1/2 inches (12.7 mm to 64 mm) shall be laid into the trench below the distribution piping elevation. The aggregate shall be evenly distributed not less than 2 inches (51 mm) in depth over the top of the distribution pipe. The aggregate shall be covered with approved synthetic materials or 9 inches (229 mm) of uncompacted marsh hay or straw. Building paper shall not be used to cover the aggregate. Not less than 9 inches (229 mm) of soil backfill shall be provided above the covering.

1403.2 Distribution piping. Distribution piping shall be not less than 3 inches (76 mm) in diameter. Materials shall comply with Table 1303.10. The top of the distribution pipe shall be not less than 8 inches (203 mm) below the original surface. The slope of the distribution pipes shall be not less than 2 inches (51 mm) and not greater than 4 inches (102 mm) per 100 feet (30 480 mm).

**TABLE 1403.2
DISTRIBUTION PIPE**

| MATERIAL | STANDARD |
|--|--------------------|
| <u>Polyethylene (PE) plastic pipe</u> | <u>ASTM F 405</u> |
| <u>Polyvinyl chloride (PVC) plastic pipe</u> | <u>ASTM D 2729</u> |
| <u>Polyvinyl chloride (PVC) plastic pipe with a 3.5 inch O.D. and solid cellular core or composite wall.</u> | <u>ASTM F 1488</u> |

1403.2.1 Joints. Joints in distribution pipe shall be made in accordance with Section 705 of this code.
Reason: The sections shown to be added to the code are from the IgCC. These sections really need to be in the IPC as these subjects are more applicable to the IPC scope. Currently, the IPC does not address different types of nonpotable water (other than gray water) and therefore provides no guidance as to how nonpotable waters are to be collected, stored and distributed. The current Chapter 13 only deals with the use/reuse of gray water for the flushing of water closets and urinals and subsurface irrigation. It is clarified that gray water and rain water recycling systems must be separate systems and may not be interconnected. This proposal is submitted by the ICC Plumbing, Mechanical and Fuel Gas Code Action Committee (PMGCAC). The PMGCAC was established by the ICC Board of Directors to pursue opportunities to improve and enhance an assigned International Code or portion thereof. This includes both the technical aspects of the codes as well as the code content in terms of scope and application of referenced standards. Since its inception in July, 2011, the PMGCAC has held 2 open meetings, multiple conference calls and multiple workgroup calls which included members of the PMGCAC. Interested parties also participated in all of the meetings and conference calls to discuss and debate the proposed changes.

Cost Impact: None

P11-12

Public Hearing: Committee: AS AM D
 Assembly: ASF AMF DF

301.3-P-STRAUSBAUGH,PMGCAC

M164-12
908.5

Proponent: Guy Tomberlin, Fairfax County Virginia, representing Fairfax County Virginia
(guy.tomberlin@fairfaxcounty.gov)

Revise as follows:

908.5 Water supply. Cooling towers, evaporative coolers and fluid coolers shall be provided with an approved water supply, sized for peak demand. The quality of water shall be provided in accordance with the equipment manufacturer's recommendations. Water-supplies The piping system and protection of the potable water supply system shall be installed as required by the *International Plumbing Code*.

Reason: Various water resources are being utilized across the nation in many different ways. This is being done for many various reasons. Some are because of water shortages, others are in effort to simply conserve our precious resources and others are being done to constructively utilize rain water and properly treated re-use water. Technology provides us with the options for many different water reuses such as reclaimed and rainwater. This proposal clarifies that if the quality of water can be achieved then alternate sources shall be permitted. In addition if an interconnection or back up is provided with the potable system then proper cross connection contamination prevention shall be provided in accordance with the International Plumbing Code. Lastly, the piping system shall be installed according to the International Plumbing Code.

Cost Impact: reduces the cost below current requirements for the initial installation and throughout the life of the structure.

M164-12

| | | | | |
|-----------------|------------|-----|-----|----|
| Public Hearing: | Committee: | AS | AM | D |
| | Assembly: | ASF | AMF | DF |

908.5-M-TOMBERLIN.DOC

M168-12

928.1

Proponent: Guy Tomberlin, Fairfax County VA, representing Fairfax County Virginia
(guy.tomberlin@fairfaxcounty.gov)

Revise as follows:

928.1 General. Evaporative coolers equipment shall:

1. Be installed in accordance with the manufactures instructions.
2. Be installed on a level platform in accordance with section 304.10.
3. Have openings in exterior walls or roofs flashed in accordance with the *International Building Code*.
4. ~~Be provided with potable water backflow protection in accordance with section 608 of the *International Plumbing Code*.~~ Be provided with an approved water supply, sized for peak demand. The quality of water shall be provided in accordance with the equipment manufacturer's recommendations. The piping system and protection of the potable water supply system shall be installed as required by the *International Plumbing Code*.
5. Have air intake opening locations in accordance with Section 401.4.

Reason: This is consistent action in accordance with the proposal submitted to Section 908 for cooling towers. Various water resources are being utilized across the nation in many different ways. This is being done for many various reasons. Some are because of water shortages, others are in effort to simply conserve our precious resources and others are being done to constructively utilize rain water and properly treated re-use water. Technology provides us with the options for many different water reuses such as reclaimed and rainwater. This proposal clarifies that if the quality of water can be achieved then alternate sources shall be permitted. In addition if an interconnection or back up is provided with the potable system then proper cross connection contamination prevention shall be provided in accordance with the International Plumbing Code. Lastly, the piping system shall be installed according to the International Plumbing Code.

Cost Impact: reduces the cost below current requirements for the initial installation and throughout the life of the structure.

M168-12

| | | | | |
|-----------------|------------|-----|-----|----|
| Public Hearing: | Committee: | AS | AM | D |
| | Assembly: | ASF | AMF | DF |

928.1-M-TOMBERLIN.DOC

Attachment 5

Policy regarding Photography, Video Recording, and Audio Recording of Town Meetings

Since the August Town Council meeting a draft policy has been reviewed by legal counsel and recording equipment has been purchased.

There are two versions of the policy attached to this report. One version provides for recording of meetings but not posting the recordings on the website while the other provides for posting the recordings on the website for 12 months. These versions are included because staff has received input from Town Council members that would indicate that there are differing opinions as to how this matter should be approached.

It should be noted that there are other aspects of the policy that may need to be changed prior to approval. While both policies provide for the recording of all public meetings, staff has been provided input that there is a desire to limit the requirement to the meetings of certain public bodies.

Report from August 11, 2013

Discussion

Recording of Town Council meetings and posting meeting recordings on the Town's website

Mayor Dickinson would like to begin the practice of recording Town Council meetings (see attached correspondence on this matter). It is her desire to make these recordings available to the public by posting them on the Town's website. Mayor Dickinson proposes that Town Council meeting recordings would be retained (and posted) for 12 months and then purged as allowed by law.

Staff has completed some research on this matter. Staff wanted to look at the legal, technical, and procurement issues that the Council may face if they determine they want to move forward with recording their meetings. Please find below what staff has found to date:

Legal

Staff has not consulted with legal counsel on this matter. Staff has checked with several localities that record their meetings and none of those contacted have a policy regarding this matter. These localities follow the Virginia Public Records Act regarding retention of recordings. As staff understands it, in accordance with the Virginia Public Records Act, recordings are not permanent records unless they are deemed to be of "historic value". It appears that recordings that have been the subject of a FOIA request must to be preserved for three years.

Staff recommends that prior to initiating meeting recording that the Town Council adopt a policy that at a minimum provides for:

- Where the recordings will be posted
- Destruction schedule for recordings
- How a meeting would be determined to have historic value
- How a FOIA request affects recording retention

It may be a good idea to also address recording by the general public (both video and audio) of Town meetings. Issues there might include:

- Consent (may be an issue for video)
- Non-interference with meeting (lighting or other disturbance)
- Locating equipment in a proper location so as not to interfere with safe ingress/egress

Staff requests guidance from the Town Council regarding its expectations for a policy addressing this matter.

Technical

Meetings can be recorded using a \$50 recorder or a several thousand dollar recording system.

Staff has checked with several localities that record their meetings. Those that post their recordings use a package system designed for this purpose. Companies such as Granicus, FOR THE RECORD, and Earth Channel have been identified as serving the recording needs of localities in the area.

As an example, the Town of Purcellville uses FOR THE RECORD to record their meetings. Purcellville has two permanently installed recording systems (main meeting room and conference room) and one portable recording system (for remote meetings and as a backup to be utilized if one of the permanently installed systems fails).

Staff requests guidance regarding their expectations regarding recording quality.

Procurement

Once Town Council has determined the desired level of sophistication it has in mind and has determined what the budget will be for this item then staff will have a better idea of the process that will need to be followed to complete this project.

BERRYVILLE TOWN COUNCIL

MOTION TO ADOPT POLICY REGARDING PHOTOGRAPHY, VIDEO
RECORDING, AND AUDIO RECORDING OF TOWN MEETINGS

Date: September 13, 2016

Motion By:

Second By:

I move that the Council of the Town of Berryville adopt [Version 1 or Version 2 which includes posting of audio files on the Town website] of the attached policy regarding photography, video recording, and audio recording of Town meetings.

VOTE:

Aye:

Nay: None

Absent: None

ATTEST:

Harry Lee Arnold, Jr., Recorder

{Version 1 – No Posting}
Town of Berryville Policy
Photography, Video Recording, and Audio Recording of Town Meetings

I. Purpose

Meetings of Town public bodies are intended to allow the public bodies to conduct public business in an open and transparent fashion. The Town may record public meetings for its purposes, and the public, including news media, may record meetings as allowed by law. This policy is to provide direction to Town officials regarding how Town recordings will be utilized, disseminated, and destroyed. The policy is also to provide direction to the presiding officers of public meetings regarding how recording and photography may occur during public meetings.

II. Policy

A. Recording by Town Officials

All public meetings, except duly constituted closed meetings held in accordance with the Code of Virginia, will be recorded. The recording may be used by the member of the Town staff responsible for preparing the minutes of the meeting. The recording shall be destroyed after the meeting minutes have been approved by the public body; provided, however, if the recording is determined by an affirmative vote of a majority of the membership of the public body that the recording is of an enduring historically significant nature or describes the current function or organization of the Town's major administrative units, then the recording shall be considered a permanent record pursuant to the Virginia Public Records Act and shall be retained. The destruction of all recordings shall comply with the Virginia Public Records Act. Recordings that are the subject of a Freedom of Information Act request shall be retained in accordance with applicable requirements.

B. Recording of meetings and photography by the public

A member of the public may audio or video record or photograph the Town's public meetings. The public's recording activities may not disrupt the meeting. Disruptions would include noise, supplemental lighting (not approved in advance by the presiding officer), flash photography (not approved in advance by the presiding officer), or blocking the view of other members of the public. No person may position equipment or personnel in a manner that the presiding officer deems an obstruction to emergency egress or accessibility by handicapped individuals.

III. Procedures

A. Recording Meetings

The Town staff person tasked with taking minutes notes for the meeting will begin recording prior to the meeting being called to order and end recording upon meeting adjournment. When a public body enters a closed meeting, the recording will be stopped and recording will resume just prior to the presiding officer announcing that the public body has re-entered open session.

B. Equipment Failures

If during a meeting it is discovered that the recording device is not functioning properly, the staff member recording the meeting will immediately notify the presiding officer of the problem. If the recording device can be made to function or if a backup recording device is available, the remainder of the meeting will be recorded. Otherwise, the meeting will proceed without being recorded. If it is discovered after a meeting that the recording device failed to record the meeting, then the staff member responsible for preparing meeting minutes will notify the presiding officer and the Town Manager of the problem.

{Version 2 – Post on Website}

Town of Berryville Policy

Photography, Video Recording, and Audio Recording of Town Meetings

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II. Policy

A. Recording by Town Officials

All public meetings, except duly constituted closed meetings held in accordance with the Code of Virginia, will be recorded. The recording may be used by the member of the Town staff responsible for preparing the minutes of the meeting. The recording shall be provided to the Town Clerk on the first business day following the meeting. The Town Clerk shall post the recording on the Town website within seven (7) business days following the meeting. The recording shall remain on the Town's website for a period of twelve (12) months, and then the recording shall be destroyed; provided, however, if the recording is determined by an affirmative vote of a majority of the membership of the public body that the recording is of an enduring historically significant nature or describes the current function or organization of the Town's major administrative units, then the recording shall be considered a permanent record pursuant to the Virginia Public Records Act and shall be retained. The destruction of all recordings shall comply with the Virginia Public Records Act. Recordings that are the subject of a Freedom of Information Act request shall be retained in accordance with applicable requirements.

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III. Procedures

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Attachment 6

Calendar of Town Meetings

Please find attached:

- Calendar of Town Council / Town Council Standing Committee Meetings with motion
- Calendar of Town Meetings

The Calendar of Town Council / Town Council Standing Committee Meetings is provided for the Council's approval.

The Calendar of Town Meetings (which includes the events on the Calendar of Town Council / Town Council Standing Committee Meetings) is included to provide the Town Council with the dates and times of all standing Town meetings.

BERRYVILLE TOWN COUNCIL

MOTION TO ADOPT CALENDAR OF TOWN COUNCIL / TOWN COUNCIL
STANDING COMMITTEE MEETINGS

Date: September 13, 2016

Motion By:

Second By:

I move that the Council of the Town of Berryville adopt the attached
Calendar of Town Council and Town Council Standing Committee
Meetings.

VOTE:

Aye:

Nay: None

Absent: None

ATTEST:

Harry Lee Arnold, Jr., Recorder

Calendar of Town Council / Town Council Standing Committee Meetings

Meeting date and time, packet schedule, and staffing (staff with principal responsibility for meeting):

1st Monday / 3:00 p.m. – **Town Council Work Session** (held as needed *) {Packet delivered on Friday prior}

Staff: **Town Manager, Town Clerk**, Planner, Treasurer, Public Works Director, Public Utilities Director, and Police Chief

2nd Tuesday / 7:30 p.m. - **Regular Town Council Meeting** {Packet delivered on Friday prior}

Staff: **Town Manager, Town Clerk**, Planner, Treasurer, Public Works Director, Public Utilities Director, and Police Chief

4th Monday / 7:00 p.m. **Community Improvements Committee Meeting** (held as needed **) {Packet Delivered Friday prior}

Staff: **Planner** and Town Clerk

4th Tuesday / 9:00 a.m. – **Personnel Committee Meeting** (held as needed **) {Packet delivered Friday prior}

Staff: **Town Manager** and Town Clerk

4th Tuesday / 10:30 a.m. – **Budget and Finance Committee Meeting** (held as needed **) {Packet delivered Friday prior}

Staff: **Treasurer**, Town Manager, and Town Clerk

4th Tuesday / 12:00 p.m. – **Streets and Utilities Committee** (held as needed **) {Packet delivered Friday prior}

Staff: **Town Manager**, Town Clerk, Public Works Director, Public Utilities Director, and Planner

4th Thursday / 9:00 a.m. - **Police and Security Committee Meeting** (held as needed **) {Packet delivered Monday prior}

Staff: **Chief of Police**, Town Manager, Town Clerk

* Each month at its regular meeting, the Town Council will determine whether a work session will be scheduled for the subsequent month.

** Each month at the regular Town Council meeting, the Committee will determine whether a committee meeting will be held that month.

Calendar of Town Meetings

Meeting date and time, packet schedule, and staffing (staff with principal responsibility for meeting):

1st Monday / 3:00 p.m. – **Town Council Work Session** (held as needed *) {Packet delivered on Friday prior}

Staff: **Town Manager, Town Clerk, Planner, Treasurer, Public Works Director, Public Utilities Director, and Police Chief**

1st Wednesday / 12:30 p.m. – **Architectural Review Board** (held as needed) {Packet delivered on Friday prior}

Staff: **Planner**

2nd Tuesday / 7:30 p.m. – **Regular Town Council Meeting** {Packet delivered on Friday prior}

Staff: **Town Manager, Town Clerk, Planner, Treasurer, Public Works Director, Public Utilities Director, and Police Chief**

4th Monday / 7:00 p.m. **Community Improvements Committee Meeting** (held as needed **) {Packet Delivered Friday prior}

Staff: **Planner and Town Clerk**

4th Tuesday / 9:00 a.m. – **Personnel Committee Meeting** (held as needed **) {Packet delivered Friday prior}

Staff: **Town Manager and Town Clerk**

4th Tuesday / 10:30 a.m. – **Budget and Finance Committee Meeting** (held as needed **) {Packet delivered Friday prior}

Staff: **Treasurer, Town Manager, and Town Clerk**

4th Tuesday / 12:00 p.m. – **Streets and Utilities Committee** (held as needed **) {Packet delivered Friday prior}

Staff: **Town Manager, Town Clerk, Public Works Director, Public Utilities Director, and Planner**

4th Tuesday / 7:30 p.m. – **Planning Commission** (held as needed) {Packet delivered Friday prior}

Staff: **Planner**

4th Wednesday / 7:00 p.m. – **Berryville Area Development Authority** (held as needed) {Packet delivered Friday prior}

Staff: **Planner**

4th Thursday / 9:00 a.m. – **Police and Security Committee Meeting** (held as needed **) {Packet delivered Monday prior}

Staff: **Chief of Police, Town Manager, Town Clerk**

* Each month at its regular meeting, the Town Council will determine whether a work session will be scheduled for the subsequent month.

** Each month at the regular Town Council meeting, the Committee will determine whether a committee meeting will be held that month.

Attachment 7

MINUTES
BERRYVILLE TOWN COUNCIL
BUDGET AND FINANCE COMMITTEE
Berryville-Clarke County Government Center
Called Meeting
August 18, 2016
10:00 a.m.

Committee members: Present- Erecka Gibson, Chair; Patricia Dickinson

Staff: Keith Dalton, Town Manager; Desiree Moreland, Treasurer/Assistant Town Manager-Finance and Administration; Ann Phillips, Town Clerk

Others: Josh Roller, Robinson Farmer Cox; Harry Lee Arnold, Jr., Gwen Malone;
Brian McClemmons; Ralph Pierce

Press: None

1. Call to Order

Chair Gibson called the meeting to order at 10:00 a.m.

2. Discussion – RFC, Certified Public Accountants

Ms. Gibson said the purpose of the meeting was for the Committee to gain an understanding of how the Town's internal controls were assessed. She said there is a possibility that an RFP for mapping of the internal controls will be issued, and the Committee wants to understand what has been done in the past to address the issue.

Mr. Roller outlined the audit and testing procedures his firm uses. In regard to mapping, he said more extended procedures could be done, or additional and larger sampling could be added.

Ms. Dickinson asked if RFC has done full mapping of internal controls. Mr. Roller said RFC has done full mapping and it could be a separately arranged agreement.

Ms. Gibson asked if work papers from previous audits are accessible to the Town. Mr. Roller said that normal work papers are not available, but if a schedule or reconciliation is produced, those work papers would be available.

Ms. Dickinson asked Mr. Roller his opinion of the firm doing the regular audit also doing the mapping and assessment of internal controls. Mr. Roller said that doing both tasks is common and would not impair the independence of the audit.

Ms. Dickinson asked Mr. Roller to supply a list of clients for whom RFC has done mapping.

Ms. Dickinson asked Mr. Roller to identify the steps in doing the mapping. Mr. Roller said one to two days would be spent at the Town going through procedures and controls, and the report would be complete in approximately three weeks. Ms. Dickinson asked Mr. Roller to confirm

that the report would contain best practices recommendations in addition to the mapping, and Mr. Roller said that it would.

When Ms. Dickinson asked for the cost estimate, Mr. Roller said he would check with the firm and send the estimate to the Town. He added that it would be less expensive than a regular audit fee.

Ms. Gibson asked for clarification on the audit testing procedures parameters. Mr. Roller explained the procedures.

Ms. Dickinson asked if electronic transfers are audited and Mr. Roller said that electronic transfers are tested if they are over a certain threshold, but are not randomly sampled.

Ms. Gibson asked RFC to supply a cost estimate for the mapping and a list of the planned procedures. She also requested an example of what the deliverable product will look like.

Ms. Dickinson said the mapping is half of what is needed, but she also wants recommendations for such things as segregation of duties since the staff is so small.

Ms. Gibson said the staff is too small for segregation of duties, but she expects compensatory controls will be recommended.

In response to Ms. Gibson's question, Mr. Roller said the firm would not issue an opinion on the internal controls without going through the audit process. He said if a problem is discovered, the firm would recommend further action to address the problem.

Ms. Gibson asked whether it is common for mapping to be requested. Mr. Roller said it is not common, and that larger clients may do it internally.

Mr. Roller said he could have the requested items to Town staff within the next week.

Mr. Dalton re-stated the items requested as:

- an estimate for the mapping and best practices recommendation
- an example of the deliverable product
- references from mapping service clients

3. Adjourn

There being no further business, the meeting was adjourned at 10:18 a.m.

Attachment 8

FINANCE AND ADMINISTRATION STAFF REPORT

TO: TOWN COUNCIL
FROM: DESIREE MORELAND, TREASURER
SUBJECT: MONTHLY REPORTS
DATE: 9/8/2016
CC: KEITH DALTON, TOWN MANAGER

A/P Check Listing

Checks issued in August 2016.

There were multiple checks issued to Virasec due to billing issues.

Bank of America/GL Cash Disbursement Entries

July 2016 P-Card Purchases that were paid on August 23, 2016.

There is a credit of \$341.03 for invalid charges made in June.

A/P Check Listing

Vendor Range - 1105 MEDIA EVENTS' - 'ZION BAPTIST CHURCH
Date From - 8/1/2016 Date To - 8/31/2016

Town of Berryville
09/06/2016 09:52 AM

Page: 1 of 3

| Check Number | Bank | Vendor | Date | Amount |
|--------------|------|--|------------|-------------|
| 3589 | 1 | HD SUPPLY WATERWORKS, LTD | 08/09/2016 | \$12,027.20 |
| 3590 | 1 | HD SUPPLY WATERWORKS, LTD | 08/09/2016 | \$4,290.00 |
| 3591 | 1 | Logo Apparel | 08/09/2016 | \$498.00 |
| 3592 | 1 | H. Allen Kitselman | 08/09/2016 | \$325.00 |
| 3593 | 1 | Douglas A. Shaffer | 08/09/2016 | \$115.00 |
| 3594 | 1 | David L. Tollett | 08/09/2016 | \$250.00 |
| 3595 | 1 | Gwen Malone | 08/09/2016 | \$40.00 |
| 3596 | 1 | Debra Zimmerman | 08/09/2016 | \$40.00 |
| 3597 | 1 | Joey Adams | 08/09/2016 | \$142.96 |
| 3598 | 1 | Rappahannock Electric Cooperative | 08/09/2016 | \$4,242.53 |
| 3599 | 1 | VUPS | 08/09/2016 | \$69.30 |
| 3600 | 1 | Sheryl Reid | 08/09/2016 | \$40.00 |
| 3601 | 1 | Dale A. Barton | 08/09/2016 | \$40.00 |
| 3602 | 1 | TOWN OF BERRYVILLE | 08/09/2016 | \$80.68 |
| 3603 | 1 | Michelle K. Marino | 08/09/2016 | \$40.00 |
| 3604 | 1 | Shade Equipment Company | 08/09/2016 | \$8,888.70 |
| 3605 | 1 | Michelle M. Jones | 08/09/2016 | \$997.50 |
| 3606 | 1 | William Steinmetz | 08/09/2016 | \$40.00 |
| 3607 | 1 | Hall, Monahan, Engle, Mahan & Mitchell | 08/09/2016 | \$3,975.00 |
| 3608 | 1 | Treasurer of Frederick County | 08/09/2016 | \$3,247.56 |
| 3609 | 1 | The Winchester Star | 08/09/2016 | \$343.20 |
| 3610 | 1 | Bureau for Child Support Enforcement | 08/09/2016 | \$1,180.00 |
| 3611 | 1 | Anderson's Nursery | 08/09/2016 | \$1,100.00 |
| 3612 | 1 | Willis Shifflett | 08/09/2016 | \$130.86 |
| 3613 | 1 | Robert E Brown | 08/09/2016 | \$2,287.21 |
| 3614 | 1 | Doris Michael | 08/09/2016 | \$3,979.60 |
| 3615 | 1 | Erecka Gibson | 08/09/2016 | \$250.00 |
| 3616 | 1 | Erecka Gibson | 08/09/2016 | \$137.09 |
| 3617 | 1 | Donna McDonald | 08/09/2016 | \$250.00 |
| 3618 | 1 | Patricia Dickinson | 08/09/2016 | \$300.00 |

A/P Check Listing

Vendor Range - 1105 MEDIA EVENTS' - 'ZION BAPTIST CHURCH
Date From - 8/1/2016 Date To - 8/31/2016

Town of Berryville
09/06/2016 09:52 AM

Page: 2 of 3

| Check Number | Bank | Vendor | Date | Amount |
|--------------|------|--------------------------------------|------------|-------------|
| 3619 | 1 | Patricia Dickinson | 08/09/2016 | \$293.57 |
| 3620 | 1 | Treas Association of Virginia | 08/09/2016 | \$175.00 |
| 3621 | 1 | Keith Dalton | 08/09/2016 | \$50.00 |
| 3622 | 1 | Jay Arnold | 08/09/2016 | \$275.00 |
| 3623 | 1 | Berryville Farm Supply | 08/09/2016 | \$45.98 |
| 3624 | 1 | PHILIP MATTHEW BREEDEN | 08/09/2016 | \$225.00 |
| 3625 | 1 | MARGARET ELLEN EVANS | 08/09/2016 | \$24.24 |
| 3626 | 1 | TYRONE BUCKNER | 08/09/2016 | \$123.40 |
| 3627 | 1 | Rappahannock Electric Cooperative | 08/17/2016 | \$6,186.56 |
| 3628 | 1 | Treasurer, Frederick County | 08/17/2016 | \$155.39 |
| 3629 | 1 | Lincoln Financial Group | 08/17/2016 | \$685.58 |
| 3630 | 1 | Christy Dunkle | 08/17/2016 | \$89.10 |
| 3631 | 1 | Berryville Main Street | 08/17/2016 | \$10,000.00 |
| 3632 | 1 | Virginia Municipal League | 08/17/2016 | \$350.00 |
| 3633 | 1 | Virasec, LLC | 08/17/2016 | \$1,610.76 |
| 3634 | 1 | Virasec, LLC | 08/17/2016 | \$1,630.23 |
| 3635 | 1 | Virasec, LLC | 08/17/2016 | \$1,630.23 |
| 3636 | 1 | Nationwide Retirement Solutions | 08/17/2016 | \$805.00 |
| 3637 | 1 | Consolidated Electric | 08/17/2016 | \$90.00 |
| 3638 | 1 | PROPERTY MGMT UNLIMITED LLC | 08/17/2016 | \$765.00 |
| 3639 | 1 | ERA OAKCREST REALTY | 08/17/2016 | \$199.60 |
| 3640 | 1 | DAWN MARIE | 08/17/2016 | \$72.60 |
| 3641 | 1 | Fish c/o Mike Malucci | 08/24/2016 | \$19.80 |
| 3642 | 1 | Rappahannock Electric Cooperative | 08/24/2016 | \$309.94 |
| 3643 | 1 | REYES CONCRETE | 08/24/2016 | \$2,580.00 |
| 3644 | 1 | PENNONI ASSOCIATES INC | 08/24/2016 | \$135.00 |
| 3645 | 1 | The Winchester Star | 08/24/2016 | \$994.65 |
| 3646 | 1 | Bureau for Child Support Enforcement | 08/24/2016 | \$180.00 |
| 3647 | 1 | Bureau for Child Support Enforcement | 08/24/2016 | \$1,000.00 |
| 3648 | 1 | Virasec, LLC | 08/24/2016 | \$1,610.76 |

A/P Check Listing

Vendor Range - 1105 MEDIA EVENTS' - 'ZION BAPTIST CHURCH
Date From - 8/1/2016 Date To - 8/31/2016

Town of Berryville
09/06/2016 09:52 AM

Page: 3 of 3

| Check Number | Bank | Vendor | Date | Amount |
|--------------|------|-----------------------------------|------------|-------------|
| 3649 | 1 | CABINET & APPLIANCE CENTER | 08/30/2016 | \$189.00 |
| 3650 | 1 | USPS | 08/30/2016 | \$732.69 |
| 3651 | 1 | Douglas A. Shaffer | 08/30/2016 | \$40.00 |
| 3652 | 1 | Gwen Malone | 08/30/2016 | \$40.00 |
| 3653 | 1 | Debra Zimmerman | 08/30/2016 | \$40.00 |
| 3654 | 1 | Rappahannock Electric Cooperative | 08/30/2016 | \$12,638.91 |
| 3655 | 1 | Kim S. Kemp | 08/30/2016 | \$40.00 |
| 3656 | 1 | Sheryl Reid | 08/30/2016 | \$40.00 |
| 3657 | 1 | Dale A. Barton | 08/30/2016 | \$40.00 |
| 3658 | 1 | Michelle K. Marino | 08/30/2016 | \$40.00 |
| 3659 | 1 | William Steinmetz | 08/30/2016 | \$40.00 |
| 3660 | 1 | Minnesota Life Insurance Co. | 08/30/2016 | \$125.04 |
| 3661 | 1 | Richard Vanness | 08/30/2016 | \$221.61 |
| 3662 | 1 | Krishan Mathur | 08/30/2016 | \$40.00 |
| 3663 | 1 | Nationwide Retirement Solutions | 08/30/2016 | \$805.00 |
| 75 | | Checks Totaling - | | \$96,732.03 |

Totals By Fund

| | Checks | Voids | Total |
|---------|-------------|-------|-------------|
| 100 | \$47,788.53 | | \$47,788.53 |
| 501 | \$32,064.09 | | \$32,064.09 |
| 502 | \$16,879.41 | | \$16,879.41 |
| Totals: | \$96,732.03 | | \$96,732.03 |



BERRYVILLE TOWN OF
 DESIRÉE MORELAND
 XXXX-XXXX-XXXX-7237
 July 01, 2016 - July 31, 2016

Purchasing Card

Company Statement

| Account Information | Payments Information | Account Summary |
|--|---|---|
| Mail Billing Inquiries to:
BANKCARD CENTER
PO BOX 982238
EL PASO, TX 79998-2238

Customer Service:
1.888.449.2273 24 Hours

TTY Hearing Impaired:
1.800.222.7365 24 Hours

Outside the U.S.:
1.509.353.6656 24 Hours

For Lost or Stolen Card:
1.888.449.2273 24 Hours | Statement Date 07/31/16
Payment Due Date 08/23/16
Days in Billing Cycle 31
Credit Limit \$500,000
Cash Limit \$0
Total Payment Due \$50,768.37 | Previous Balance \$63,383.37
Payments -\$63,383.37
Credits -\$341.03
Cash \$0.00
Purchases \$51,109.40
Other Debits \$0.00
Overlimit Fee \$0.00
Late Payment Fee \$0.00
Cash Fees \$0.00
Other Fees \$0.00
Finance Charge \$0.00
Current Balance \$50,768.37 |

Important Messages

Please do not send payment. Your automatic payment is scheduled to be credited to this account on 08/23/16.

Cardholder Activity Summary

| Account Number
Credit Limit | Credits | Cash | Purchases and
Other Debits | Total Activity |
|--|---------|------|-------------------------------|----------------|
| BOOR, RICK
XXXX-XXXX-XXXX-1273
15,000 | 0.00 | 0.00 | 6,681.77 | 6,681.77 |
| BOOTH, KEVIN
XXXX-XXXX-XXXX-4654
1,000 | 0.00 | 0.00 | 65.35 | 65.35 |

6338337 5076837 5076837 4715291201837237



BANK OF AMERICA
 PO BOX 15731
 WILMINGTON, DE 19886-5731



BERRYVILLE TOWN OF
 DESIRÉE MORELAND
 STE A
 101 CHALMERS CT
 BERRYVILLE, VA 22611-1387

**N0021231

Account Number: XXXX-XXXX-XXXX-7237
 July 01, 2016 - July 31, 2016

Total Payment Due \$50,768.37
 Payment Due Date 08/23/16

Enter payment amount

\$

Check here for a change of mailing address or phone numbers.
 Please provide all corrections on the reverse side.

Mail this coupon along with your check payable to:
 BANK OF AMERICA

1:549990011:000512018372370

GL Cash Receipt Entries

Town of Berryville
9/6/2016 2:15:10 PM

Page 1 Of 2

Batch: 3923

Operator: 4

| Description: | Date | Reference | Bank | Cash Receipt Amount | |
|---|------------|------------------|------|---------------------|----------|
| CITY OF SOUTH MIAMI | 08/25/2016 | 2041 | 1 | \$0.62 | |
| Account Distributions: | | | | Debit | Credit |
| 100-1140000-0000 B/C OPR | | Cash Debit Entry | | \$0.62 | |
| 100-3410201-0000 MISCELLANEOUS REVENUES | | CC | | | \$0.62 |
| Total Distributed: | | | | \$0.62 | \$0.62 |
| SHERWIN-WILLIAMS | 08/25/2016 | 2041 | 1 | \$340.41 | |
| Account Distributions: | | | | Debit | Credit |
| 100-1140000-0000 B/C OPR | | Cash Debit Entry | | \$340.41 | |
| 100-3410201-0000 MISCELLANEOUS REVENUES | | CC | | | \$340.41 |
| Total Distributed: | | | | \$340.41 | \$340.41 |
| Batch Totals: | | | | \$341.03 | \$341.03 |

GL Cash Receipt Entries

Town of Berryville
9/6/2016 2:15:10 PM

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GL Cash Disbursement Entries

Town of Berryville
 9/6/2016 2:16:43 PM
 Batch: 3924

Page 1 Of 13
 Operator: 4

| Description: | Date | Reference | Bank | Cash Receipt Amount |
|---|------------|--------------------|------|------------------------|
| AMAZON | 08/25/2016 | CC | 1 | \$0.55 |
| Account Distributions: | | | | Debit Credit |
| ****Vendor: 1988 Amazon.com | | | | |
| 100-1140000-0000 B/C OPR | | Cash Credit Entry | | \$0.55 |
| 100-4012530-3400 WEB SITE | | CC | | \$0.55 |
| Check: 82516 | | Total Distributed: | | \$0.55 \$0.55 |
| AWWA.ORG | 08/25/2016 | CC | 1 | \$300.00 |
| Account Distributions: | | | | Debit Credit |
| ****Vendor: 92 American Water Works Association | | | | |
| 501-1140000-0000 B/C OPR | | Cash Credit Entry | | \$300.00 |
| 501-4012222-5810 DUES | | CC | | \$300.00 |
| Check: 82516 | | Total Distributed: | | \$300.00 \$300.00 |
| BERRYVILLE AUTO PARTS | 08/25/2016 | CC | 1 | \$159.48 |
| Account Distributions: | | | | Debit Credit |
| ****Vendor: 39 Berryville Auto Parts | | | | |
| 100-1140000-0000 B/C OPR | | Cash Credit Entry | | \$143.48 |
| 100-4031100-3310 REPAIR & MAINTENANCE | | CC | | \$133.48 |
| 100-4041200-6007 MATERIALS & SUPPLIES | | CC | | \$10.00 |
| 502-1140000-0000 B/C OPR | | Cash Credit Entry | | \$16.00 |
| 502-4012222-3310 REPAIR & MAINTENANCE | | CC | | \$16.00 |
| Check: 82516 | | Total Distributed: | | \$159.48 \$159.48 |
| BERRYVILLE TRUE VALUE | 08/25/2016 | CC | 1 | \$395.91 |
| Account Distributions: | | | | Debit Credit |
| ****Vendor: 45 Berryville True Value Hardware | | | | |
| 100-1140000-0000 B/C OPR | | Cash Credit Entry | | \$245.97 |
| 100-4041200-3310 EQUIPMENT MAINTENANCE | | CC | | \$16.60 |
| 100-4041200-3316 STREET SIGN MAINTENANCE | | CC | | \$16.65 |
| 100-4041200-6007 MATERIALS & SUPPLIES | | CC | | \$31.62 |
| 100-4041250-3300 VDOT STREET MAINTENANCE | | CC | | \$143.90 |
| 100-4043200-3310 REPAIR & MAINTENANCE | | CC | | \$14.69 |
| 100-4071310-6018 ROSE HILL | | CC | | \$22.51 |

GL Cash Disbursement Entries

Town of Berryville
9/6/2016 2:16:43 PM

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IMPROVEMENTS

| | | | |
|--|--------------------|----------|----------|
| 501-1140000-0000 B/C OPR | Cash Credit Entry | | \$118.39 |
| 501-4012222-6019 SAFETY EQUIPMENT | CC | \$65.81 | |
| 501-4012224-3330 LINE REPAIR & MAINTENANCE | CC | \$46.91 | |
| 501-4012224-6007 MATERIALS & SUPPLIES | CC | \$5.67 | |
| 502-1140000-0000 B/C OPR | Cash Credit Entry | | \$31.55 |
| 502-4012222-3310 REPAIR & MAINTENANCE | CC | \$31.55 | |
| Check: 82516 | Total Distributed: | \$395.91 | \$395.91 |

| | | | | | |
|--------------------------|------------|----|---|---------|--------|
| BIG DADDY AUTOMOTIVE LLC | 08/25/2016 | CC | 1 | \$48.00 | |
| Account Distributions: | | | | Debit | Credit |

****Vendor: 164 Big Daddy Automotive

| | | | |
|--|--------------------|---------|---------|
| 100-1140000-0000 B/C OPR | Cash Credit Entry | | \$48.00 |
| 100-4041100-3310 VEHICLE REP & MAINTENANCE | CC | \$48.00 | |
| Check: 82516 | Total Distributed: | \$48.00 | \$48.00 |

| | | | | | |
|--------------------------|------------|----|---|----------|--------|
| BODY WORKS OF BERRYVILLE | 08/25/2016 | CC | 1 | \$976.07 | |
| Account Distributions: | | | | Debit | Credit |

****Vendor: 735 BODY WORKS OF BERRYVILLE

| | | | |
|---------------------------------------|--------------------|----------|----------|
| 501-1140000-0000 B/C OPR | Cash Credit Entry | | \$976.07 |
| 501-4012222-3310 REPAIR & MAINTENANCE | CC | \$976.07 | |
| Check: 82516 | Total Distributed: | \$976.07 | \$976.07 |

| | | | | | |
|------------------------|------------|----|---|----------|--------|
| BROWNELLS INC | 08/25/2016 | CC | 1 | \$454.95 | |
| Account Distributions: | | | | Debit | Credit |

****Vendor: 3059 BROWNELLS.COM

| | | | |
|----------------------------------|--------------------|----------|----------|
| 100-1140000-0000 B/C OPR | Cash Credit Entry | | \$454.95 |
| 100-4031100-6010 POLICE SUPPLIES | CC | \$454.95 | |
| Check: 82516 | Total Distributed: | \$454.95 | \$454.95 |

| | | | | | |
|------------------------|------------|----|---|----------|--------|
| CAPITAL COMPRESSOR INC | 08/25/2016 | CC | 1 | \$614.80 | |
| Account Distributions: | | | | Debit | Credit |

****Vendor: 338 Capital Compressor

| | | | |
|---------------------------------------|-------------------|----------|----------|
| 501-1140000-0000 B/C OPR | Cash Credit Entry | | \$340.30 |
| 501-4012222-3310 REPAIR & MAINTENANCE | CC | \$340.30 | |
| 502-1140000-0000 B/C OPR | Cash Credit Entry | | \$274.50 |
| 502-4012222-3310 REPAIR & MAINTENANCE | CC | \$274.50 | |



GL Cash Disbursement Entries

Town of Berryville
9/6/2016 2:16:43 PM

Page 3 Of 13

| | | | | |
|---|------------|--------------------|----------|-----------------------|
| Check: | 82516 | Total Distributed: | \$614.80 | \$614.80 |
| <hr/> | | | | |
| CLARKE CO HEALTH DEPT | 08/25/2016 | CC | 1 | \$65.35 |
| Account Distributions: | | | Debit | Credit |
| ****Vendor: 263 Clarke County Health Department | | | | |
| 100-1140000-0000 B/C OPR | | Cash Credit Entry | | \$65.35 |
| 100-4041100-3110 MEDICAL EXAMS | | CC | | \$65.35 |
| Check: 82516 | | Total Distributed: | | \$65.35 \$65.35 |
| <hr/> | | | | |
| COMCAST | 08/25/2016 | CC | 1 | \$74.90 |
| Account Distributions: | | | Debit | Credit |
| ****Vendor: 91 Comcast | | | | |
| 100-1140000-0000 B/C OPR | | Cash Credit Entry | | \$74.90 |
| 100-4012530-5230 TELECOMMUNICATIONS | | CC | | \$74.90 |
| Check: 82516 | | Total Distributed: | | \$74.90 \$74.90 |
| <hr/> | | | | |
| COULS AUTOMOTIVE | 08/25/2016 | CC | 1 | \$206.24 |
| Account Distributions: | | | Debit | Credit |
| ****Vendor: 2027 Couls Automotive | | | | |
| 100-1140000-0000 B/C OPR | | Cash Credit Entry | | \$206.24 |
| 100-4041100-3310 VEHICLE REP & MAINTENANCE | | CC | | \$206.24 |
| Check: 82516 | | Total Distributed: | | \$206.24 \$206.24 |
| <hr/> | | | | |
| COYNE CHEMICAL | 08/25/2016 | CC | 1 | \$5,055.38 |
| Account Distributions: | | | Debit | Credit |
| ****Vendor: 53 Coyne Chemical | | | | |
| 501-1140000-0000 B/C OPR | | Cash Credit Entry | | \$2,990.46 |
| 501-4012222-6025 CHEMICALS | | CC | | \$2,990.46 |
| 502-1140000-0000 B/C OPR | | Cash Credit Entry | | \$2,064.92 |
| 502-4012222-6025 CHEMICALS | | CC | | \$2,064.92 |
| Check: 82516 | | Total Distributed: | | \$5,055.38 \$5,055.38 |
| <hr/> | | | | |
| DENNY'S | 08/25/2016 | CC | 1 | \$17.46 |
| Account Distributions: | | | Debit | Credit |
| ****Vendor: 3040 DENNY'S RESTAURANT | | | | |
| 100-1140000-0000 B/C OPR | | Cash Credit Entry | | \$17.46 |
| 100-4031100-6010 POLICE SUPPLIES | | CC | | \$17.46 |
| Check: 82516 | | Total Distributed: | | \$17.46 \$17.46 |
| <hr/> | | | | |
| DEPT OF PROFESSIONAL | 08/25/2016 | CC | 1 | \$100.00 |



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| OCCUPATION | | | | Debit | Credit |
|--|------------|--------------------|---|----------|----------|
| Account Distributions: | | | | | |
| ****Vendor: 739 DEPT OF PROFESSIONAL AND OCCUPATIONAL REGULATION | | | | | |
| 502-1140000-0000 B/C OPR | | Cash Credit Entry | | | \$100.00 |
| 502-4012222-2830 CERTIFICATION FEES | | CC | | \$100.00 | |
| Check: 82516 | | Total Distributed: | | \$100.00 | \$100.00 |
| DMV | 08/25/2016 | CC | 1 | \$620.00 | |
| Account Distributions: | | | | Debit | Credit |
| ****Vendor: 1438 DMV | | | | | |
| 100-1140000-0000 B/C OPR | | Cash Credit Entry | | | \$620.00 |
| 100-3410201-0000 MISCELLANEOUS REVENUES | | CC | | \$620.00 | |
| Check: 82516 | | Total Distributed: | | \$620.00 | \$620.00 |
| DUNKIN | 08/25/2016 | CC | 1 | \$18.78 | |
| Account Distributions: | | | | Debit | Credit |
| ****Vendor: 3492 Dunkin Donuts | | | | | |
| 100-1140000-0000 B/C OPR | | Cash Credit Entry | | | \$18.78 |
| 100-4011100-5800 MISCELLANEOUS | | CC | | \$18.78 | |
| Check: 82516 | | Total Distributed: | | \$18.78 | \$18.78 |
| FEDEX FREIGHT INC | 08/25/2016 | CC | 1 | \$151.10 | |
| Account Distributions: | | | | Debit | Credit |
| ****Vendor: 2021 FedEx | | | | | |
| 501-1140000-0000 B/C OPR | | Cash Credit Entry | | | \$151.10 |
| 501-4012224-3330 LINE REPAIR & MAINTENANCE | | CC | | \$151.10 | |
| Check: 82516 | | Total Distributed: | | \$151.10 | \$151.10 |
| FERGUSON ENTERPRISES | 08/25/2016 | CC | 1 | \$152.13 | |
| Account Distributions: | | | | Debit | Credit |
| ****Vendor: 98 Ferguson Enterprises | | | | | |
| 501-1140000-0000 B/C OPR | | Cash Credit Entry | | | \$152.13 |
| 501-4012222-3310 REPAIR & MAINTENANCE | | CC | | \$152.13 | |
| Check: 82516 | | Total Distributed: | | \$152.13 | \$152.13 |
| FISHER AUTO PARTS | 08/25/2016 | CC | 1 | \$72.08 | |
| Account Distributions: | | | | Debit | Credit |
| ****Vendor: 46 Fisher Auto Parts | | | | | |



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| | | | |
|--|--------------------|---------|---------|
| 100-1140000-0000 B/C OPR | Cash Credit Entry | | \$59.69 |
| 100-4041100-3310 VEHICLE REP & MAINTENANCE | CC | \$59.69 | |
| 502-1140000-0000 B/C OPR | Cash Credit Entry | | \$12.39 |
| 502-4012222-3310 REPAIR & MAINTENANCE | CC | \$12.39 | |
| Check: 82516 | Total Distributed: | \$72.08 | \$72.08 |

| | | | | | |
|-----------|------------|----|---|---------|--|
| FOOD LION | 08/25/2016 | CC | 1 | \$39.11 | |
|-----------|------------|----|---|---------|--|

Account Distributions: Debit Credit

****Vendor: 2029 Food Lion # 1164

| | | | |
|--------------------------------|--------------------|---------|---------|
| 100-1140000-0000 B/C OPR | Cash Credit Entry | | \$39.11 |
| 100-4011100-5800 MISCELLANEOUS | CC | \$39.11 | |
| Check: 82516 | Total Distributed: | \$39.11 | \$39.11 |

| | | | | | |
|-------------------------|------------|----|---|------------|--|
| GRIFFITH ENERGY SERVICE | 08/25/2016 | CC | 1 | \$1,933.00 | |
|-------------------------|------------|----|---|------------|--|

Account Distributions: Debit Credit

***Vendor: 102 Griffith Energy Services, Inc.

| | | | |
|---------------------------------|--------------------|------------|------------|
| 100-1140000-0000 B/C OPR | Cash Credit Entry | | \$1,144.06 |
| 100-4041200-6008 GASOLINE & OIL | CC | \$1,144.06 | |
| 501-1140000-0000 B/C OPR | Cash Credit Entry | | \$788.94 |
| 501-4012222-6008 GASOLINE & OIL | CC | \$788.94 | |
| Check: 82516 | Total Distributed: | \$1,933.00 | \$1,933.00 |

| | | | | | |
|--------------|------------|----|---|----------|--|
| HACH COMPANY | 08/25/2016 | CC | 1 | \$419.57 | |
|--------------|------------|----|---|----------|--|

Account Distributions: Debit Credit

****Vendor: 52 Hach Chemical Company

| | | | |
|-------------------------------|--------------------|----------|----------|
| 502-1140000-0000 B/C OPR | Cash Credit Entry | | \$419.57 |
| 502-4012222-6004 LAB SUPPLIES | CC | \$419.57 | |
| Check: 82516 | Total Distributed: | \$419.57 | \$419.57 |

| | | | | | |
|--------------------|------------|----|---|----------|--|
| HELENA CHEMICAL CO | 08/25/2016 | CC | 1 | \$223.40 | |
|--------------------|------------|----|---|----------|--|

Account Distributions: Debit Credit

****Vendor: 1637 HELENA CHEMICAL COMPANY

| | | | |
|---------------------------------------|--------------------|----------|----------|
| 100-1140000-0000 B/C OPR | Cash Credit Entry | | \$223.40 |
| 100-4041200-6007 MATERIALS & SUPPLIES | CC | \$111.70 | |
| 100-4043200-3310 REPAIR & MAINTENANCE | CC | \$111.70 | |
| Check: 82516 | Total Distributed: | \$223.40 | \$223.40 |

| | | | | | |
|--------------------|------------|----|---|----------|--|
| JNO. S SOLENBERGER | 08/25/2016 | CC | 1 | \$283.99 | |
|--------------------|------------|----|---|----------|--|

Account Distributions: Debit Credit



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****Vendor: 113 Jno. S. Solenberger & Co., Inc

| | | | | |
|---------------------------------------|--------------------|--|----------|----------|
| 502-1140000-0000 B/C OPR | Cash Credit Entry | | | \$283.99 |
| 502-4012222-3310 REPAIR & MAINTENANCE | CC | | | \$283.99 |
| Check: 82516 | Total Distributed: | | \$283.99 | \$283.99 |

| | | | | |
|------------------------|------------|----|---|-------------------|
| JOHNNY BLUE INC | 08/25/2016 | CC | 1 | \$82.00 |
| Account Distributions: | | | | Debit Credit |

****Vendor: 67 Johnny Blue

| | | | | |
|---|--------------------|--|---------|---------|
| 100-1140000-0000 B/C OPR | Cash Credit Entry | | | \$82.00 |
| 100-4071310-3160 CONTRACTURAL SER/JN BLUE | CC | | | \$82.00 |
| Check: 82516 | Total Distributed: | | \$82.00 | \$82.00 |

| | | | | |
|------------------------|------------|----|---|-------------------|
| KIRBY BUILT PRODUCT | 08/25/2016 | CC | 1 | \$393.21 |
| Account Distributions: | | | | Debit Credit |

****Vendor: 3055 KIRBY BUILT PRODUCT

| | | | | |
|---|--------------------|--|----------|----------|
| 100-1140000-0000 B/C OPR | Cash Credit Entry | | | \$393.21 |
| 100-4071310-6018 ROSE HILL IMPROVEMENTS | CC | | | \$393.21 |
| Check: 82516 | Total Distributed: | | \$393.21 | \$393.21 |

| | | | | |
|------------------------|------------|----|---|-------------------|
| LOWES | 08/25/2016 | CC | 1 | \$141.16 |
| Account Distributions: | | | | Debit Credit |

****Vendor: 682 Lowe's

| | | | | |
|---------------------------------------|--------------------|--|----------|----------|
| 100-1140000-0000 B/C OPR | Cash Credit Entry | | | \$141.16 |
| 100-4041200-6007 MATERIALS & SUPPLIES | CC | | | \$141.16 |
| Check: 82516 | Total Distributed: | | \$141.16 | \$141.16 |

| | | | | |
|------------------------|------------|----|---|-------------------|
| MARTINS | 08/25/2016 | CC | 1 | \$414.92 |
| Account Distributions: | | | | Debit Credit |

****Vendor: 2151 MARTINS

| | | | | |
|--------------------------------|--------------------|--|----------|----------|
| 100-1140000-0000 B/C OPR | Cash Credit Entry | | | \$414.92 |
| 100-4011100-5800 MISCELLANEOUS | CC | | | \$414.92 |
| Check: 82516 | Total Distributed: | | \$414.92 | \$414.92 |

| | | | | |
|------------------------|------------|----|---|-------------------|
| MCMASTER-CARR | 08/25/2016 | CC | 1 | \$943.54 |
| Account Distributions: | | | | Debit Credit |

****Vendor: 630 McMaster-Carr Supply Co.

| | | | | |
|---------------------------------------|-------------------|--|--|----------|
| 502-1140000-0000 B/C OPR | Cash Credit Entry | | | \$943.54 |
| 502-4012222-3310 REPAIR & MAINTENANCE | CC | | | \$943.54 |



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| | | | | | |
|---------------------------------------|------------|-------------------|--------------------|--------------------|------------------------|
| Check: | 82516 | | Total Distributed: | \$943.54 | \$943.54 |
| <hr/> | | | | | |
| MERRITT SANITATION SERVICE | 08/25/2016 | CC | 1 | \$390.00 | |
| Account Distributions: | | | | Debit | Credit |
| ****Vendor: 237 Merritt's Sanitation | | | | | |
| 502-1140000-0000 B/C OPR | | Cash Credit Entry | | | \$390.00 |
| 502-4012222-3310 REPAIR & MAINTENANCE | | CC | | \$390.00 | |
| Check: 82516 | | | | Total Distributed: | \$390.00 \$390.00 |
| <hr/> | | | | | |
| NEWEGG.COM | 08/25/2016 | CC | 1 | \$70.98 | |
| Account Distributions: | | | | Debit | Credit |
| ****Vendor: 2075 NEWEGG.COM | | | | | |
| 100-1140000-0000 B/C OPR | | Cash Credit Entry | | | \$70.98 |
| 100-4031100-6001 OFFICE SUPPLIES | | CC | | \$70.98 | |
| Check: 82516 | | | | Total Distributed: | \$70.98 \$70.98 |
| <hr/> | | | | | |
| OPTICSPLANET INC | 08/25/2016 | CC | 1 | \$420.00 | |
| Account Distributions: | | | | Debit | Credit |
| ****Vendor: 3048 OPTICS PLANET INC | | | | | |
| 100-1140000-0000 B/C OPR | | Cash Credit Entry | | | \$420.00 |
| 100-4031100-6010 POLICE SUPPLIES | | CC | | \$420.00 | |
| Check: 82516 | | | | Total Distributed: | \$420.00 \$420.00 |
| <hr/> | | | | | |
| PARTY CITY | 08/25/2016 | CC | 1 | \$93.64 | |
| Account Distributions: | | | | Debit | Credit |
| ****Vendor: 3543 Party City | | | | | |
| 100-1140000-0000 B/C OPR | | Cash Credit Entry | | | \$93.64 |
| 100-4011100-5800 MISCELLANEOUS | | CC | | \$93.64 | |
| Check: 82516 | | | | Total Distributed: | \$93.64 \$93.64 |
| <hr/> | | | | | |
| PROCOM | 08/25/2016 | CC | 1 | \$562.07 | |
| Account Distributions: | | | | Debit | Credit |
| ****Vendor: 615 Procom | | | | | |
| 501-1140000-0000 B/C OPR | | Cash Credit Entry | | | \$562.07 |
| 501-4012222-3310 REPAIR & MAINTENANCE | | CC | | \$562.07 | |
| Check: 82516 | | | | Total Distributed: | \$562.07 \$562.07 |
| <hr/> | | | | | |
| RDP TECHNOLOGIES INC | 08/25/2016 | CC | 1 | \$1,492.26 | |
| Account Distributions: | | | | Debit | Credit |
| ****Vendor: 3058 RDP TECHNOLOGIES INC | | | | | |
| 502-1140000-0000 B/C OPR | | Cash Credit Entry | | | \$1,492.26 |

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| | | | | | |
|---|-------|--------------------|---|-------------|-------------|
| 502-4012222-3310 REPAIR & MAINTENANCE | | CC | | \$1,492.26 | |
| Check: | 82516 | Total Distributed: | | \$1,492.26 | \$1,492.26 |
| REPUBLIC SERVICE TRASH 08/25/2016 | | CC | 1 | \$21,279.15 | |
| Account Distributions: | | | | Debit | Credit |
| ****Vendor: 305 Allied Waste Services # 976 | | | | | |
| 100-1140000-0000 B/C OPR | | Cash Credit Entry | | | \$19,392.65 |
| 100-4042300-3220 CONTRACTUAL SERVICES | | CC | | \$14,973.65 | |
| 100-4042300-6225 RECYCLING SERVICES | | CC | | \$4,419.00 | |
| 502-1140000-0000 B/C OPR | | Cash Credit Entry | | | \$1,886.50 |
| 502-4012222-3210 LANDFILL-SOLIDS DISPOSAL | | CC | | \$1,886.50 | |
| Check: | 82516 | Total Distributed: | | \$21,279.15 | \$21,279.15 |
| RIDDLEBERGER BROTHERS 08/25/2016 | | CC | 1 | \$827.51 | |
| Account Distributions: | | | | Debit | Credit |
| ****Vendor: 1271 RIDDLEBERGER BROTHERS | | | | | |
| 502-1140000-0000 B/C OPR | | Cash Credit Entry | | | \$827.51 |
| 502-4012222-3310 REPAIR & MAINTENANCE | | CC | | \$827.51 | |
| Check: | 82516 | Total Distributed: | | \$827.51 | \$827.51 |
| ROBERTS OXYGEN 08/25/2016 | | CC | 1 | \$26.85 | |
| Account Distributions: | | | | Debit | Credit |
| ****Vendor: 1752 ROBERTS OXYGEN CO | | | | | |
| 502-1140000-0000 B/C OPR | | Cash Credit Entry | | | \$26.85 |
| 502-4012222-6008 DIESEL FUEL | | CC | | \$26.85 | |
| Check: | 82516 | Total Distributed: | | \$26.85 | \$26.85 |
| SELECT SPECIALTY PRODUCTS 08/25/2016 | | CC | 1 | \$782.20 | |
| Account Distributions: | | | | Debit | Credit |
| ****Vendor: 274 Select Specialty Products | | | | | |
| 100-1140000-0000 B/C OPR | | Cash Credit Entry | | | \$482.20 |
| 100-4041200-6007 MATERIALS & SUPPLIES | | CC | | \$482.20 | |
| 501-1140000-0000 B/C OPR | | Cash Credit Entry | | | \$300.00 |
| 501-4012220-3170 MISS UTILITY | | CC | | \$300.00 | |
| Check: | 82516 | Total Distributed: | | \$782.20 | \$782.20 |
| STAPLES 08/25/2016 | | CC | 1 | \$367.10 | |
| Account Distributions: | | | | Debit | Credit |
| ****Vendor: 669 STAPLES ADVANTAGE | | | | | |



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| | | | |
|----------------------------------|--------------------|----------|----------|
| 100-1140000-0000 B/C OPR | Cash Credit Entry | | \$46.80 |
| 100-4012530-6001 OFFICE SUPPLIES | CC | \$46.80 | |
| 502-1140000-0000 B/C OPR | Cash Credit Entry | | \$320.30 |
| 502-4012220-6001 OFFICE SUPPLIES | CC | \$320.30 | |
| Check: 82516 | Total Distributed: | \$367.10 | \$367.10 |

| | | | | |
|----------------|------------|----|---|------------|
| STUART M PERRY | 08/25/2016 | CC | 1 | \$4,316.17 |
|----------------|------------|----|---|------------|

Account Distributions: Debit Credit

****Vendor: 109 Stuart M. Perry, Inc

| | | | |
|--|--------------------|------------|------------|
| 501-1140000-0000 B/C OPR | Cash Credit Entry | | \$4,316.17 |
| 501-4012224-3330 LINE REPAIR & MAINTENANCE | CC | \$4,316.17 | |
| Check: 82516 | Total Distributed: | \$4,316.17 | \$4,316.17 |

| | | | | |
|--------|------------|----|---|---------|
| TARGET | 08/25/2016 | CC | 1 | \$11.80 |
|--------|------------|----|---|---------|

Account Distributions: Debit Credit

****Vendor: 2116 TARGET

| | | | |
|--------------------------------|--------------------|---------|---------|
| 100-1140000-0000 B/C OPR | Cash Credit Entry | | \$11.80 |
| 100-4011100-5800 MISCELLANEOUS | CC | \$11.80 | |
| Check: 82516 | Total Distributed: | \$11.80 | \$11.80 |

| | | | | |
|-------------------------|------------|----|---|---------|
| TAYLOR TECHNOLOGIES INC | 08/25/2016 | CC | 1 | \$77.36 |
|-------------------------|------------|----|---|---------|

Account Distributions: Debit Credit

****Vendor: 114 Taylor Tech

| | | | |
|-------------------------------|--------------------|---------|---------|
| 501-1140000-0000 B/C OPR | Cash Credit Entry | | \$77.36 |
| 501-4012222-6004 LAB SUPPLIES | CC | \$77.36 | |
| Check: 82516 | Total Distributed: | \$77.36 | \$77.36 |

| | | | | |
|---------------------|------------|----|---|--------|
| TELRITE CORPORATION | 08/25/2016 | CC | 1 | \$9.14 |
|---------------------|------------|----|---|--------|

Account Distributions: Debit Credit

****Vendor: 768 Telrite Corporation

| | | | |
|-------------------------------------|--------------------|--------|--------|
| 100-1140000-0000 B/C OPR | Cash Credit Entry | | \$9.14 |
| 100-4041100-5230 TELECOMMUNICATIONS | CC | \$9.14 | |
| Check: 82516 | Total Distributed: | \$9.14 | \$9.14 |

| | | | | |
|-----------------------|------------|----|---|------------|
| TENCARVA MACHINERY CO | 08/25/2016 | CC | 1 | \$1,320.60 |
|-----------------------|------------|----|---|------------|

Account Distributions: Debit Credit

****Vendor: 1240 TENCARVA

| | | | |
|---------------------------------------|-------------------|------------|------------|
| 502-1140000-0000 B/C OPR | Cash Credit Entry | | \$1,320.60 |
| 502-4012222-3310 REPAIR & MAINTENANCE | CC | \$1,320.60 | |



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| | | | | |
|--------|-------|--------------------|------------|------------|
| Check: | 82516 | Total Distributed: | \$1,320.60 | \$1,320.60 |
|--------|-------|--------------------|------------|------------|

| | | | | |
|-------------|------------|----|---|----------|
| TOTAL IMAGE | 08/25/2016 | CC | 1 | \$152.99 |
|-------------|------------|----|---|----------|

| | | |
|------------------------|-------|--------|
| Account Distributions: | Debit | Credit |
|------------------------|-------|--------|

****Vendor: 2099 TOTAL IMAGE WORKINGMANS

| | | | |
|--------------------------|-------------------|--|----------|
| 100-1140000-0000 B/C OPR | Cash Credit Entry | | \$152.99 |
|--------------------------|-------------------|--|----------|

| | | | |
|---------------------------|----|--|----------|
| 100-4041200-6011 UNIFORMS | CC | | \$152.99 |
|---------------------------|----|--|----------|

| | | | | |
|--------|-------|--------------------|----------|----------|
| Check: | 82516 | Total Distributed: | \$152.99 | \$152.99 |
|--------|-------|--------------------|----------|----------|

| | | | | |
|------------------------|------------|----|---|---------|
| TOTAL PEST SERVICE INC | 08/25/2016 | CC | 1 | \$79.00 |
|------------------------|------------|----|---|---------|

| | | |
|------------------------|-------|--------|
| Account Distributions: | Debit | Credit |
|------------------------|-------|--------|

****Vendor: 182 Total Pest Services, Inc

| | | | |
|--------------------------|-------------------|--|---------|
| 502-1140000-0000 B/C OPR | Cash Credit Entry | | \$79.00 |
|--------------------------|-------------------|--|---------|

| | | | |
|--|----|--|---------|
| 502-4012222-3145 PROFESSIONAL SERVICES | CC | | \$79.00 |
|--|----|--|---------|

| | | | | |
|--------|-------|--------------------|---------|---------|
| Check: | 82516 | Total Distributed: | \$79.00 | \$79.00 |
|--------|-------|--------------------|---------|---------|

| | | | | |
|----------------|------------|----|---|----------|
| UNITED RENTALS | 08/25/2016 | CC | 1 | \$113.98 |
|----------------|------------|----|---|----------|

| | | |
|------------------------|-------|--------|
| Account Distributions: | Debit | Credit |
|------------------------|-------|--------|

****Vendor: 3029 UNITED RENTALS

| | | | |
|--------------------------|-------------------|--|----------|
| 501-1140000-0000 B/C OPR | Cash Credit Entry | | \$113.98 |
|--------------------------|-------------------|--|----------|

| | | | |
|--|----|--|----------|
| 501-4012224-3330 LINE REPAIR & MAINTENANCE | CC | | \$113.98 |
|--|----|--|----------|

| | | | | |
|--------|-------|--------------------|----------|----------|
| Check: | 82516 | Total Distributed: | \$113.98 | \$113.98 |
|--------|-------|--------------------|----------|----------|

| | | | | |
|---------------|------------|----|---|----------|
| USA BLUE BOOK | 08/25/2016 | CC | 1 | \$387.31 |
|---------------|------------|----|---|----------|

| | | |
|------------------------|-------|--------|
| Account Distributions: | Debit | Credit |
|------------------------|-------|--------|

****Vendor: 116 USA Bluebook

| | | | |
|--------------------------|-------------------|--|----------|
| 502-1140000-0000 B/C OPR | Cash Credit Entry | | \$387.31 |
|--------------------------|-------------------|--|----------|

| | | | |
|---------------------------------------|----|--|----------|
| 502-4012222-3310 REPAIR & MAINTENANCE | CC | | \$325.70 |
|---------------------------------------|----|--|----------|

| | | | |
|-------------------------------|----|--|---------|
| 502-4012222-6004 LAB SUPPLIES | CC | | \$61.61 |
|-------------------------------|----|--|---------|

| | | | | |
|--------|-------|--------------------|----------|----------|
| Check: | 82516 | Total Distributed: | \$387.31 | \$387.31 |
|--------|-------|--------------------|----------|----------|

| | | | | |
|------|------------|----|---|----------|
| USPS | 08/25/2016 | CC | 1 | \$285.24 |
|------|------------|----|---|----------|

| | | |
|------------------------|-------|--------|
| Account Distributions: | Debit | Credit |
|------------------------|-------|--------|

****Vendor: 303 US Postal Service

| | | | |
|--------------------------|-------------------|--|----------|
| 100-1140000-0000 B/C OPR | Cash Credit Entry | | \$285.24 |
|--------------------------|-------------------|--|----------|

| | | | |
|--------------------------|----|--|----------|
| 100-4012530-5210 POSTAGE | CC | | \$276.22 |
|--------------------------|----|--|----------|

| | | | |
|--------------------------|----|--|--------|
| 100-4031100-5210 POSTAGE | CC | | \$9.02 |
|--------------------------|----|--|--------|

| | | | | |
|--------|-------|--------------------|----------|----------|
| Check: | 82516 | Total Distributed: | \$285.24 | \$285.24 |
|--------|-------|--------------------|----------|----------|

| | | | | |
|---------|------------|----|---|----------|
| VERIZON | 08/25/2016 | CC | 1 | \$694.30 |
|---------|------------|----|---|----------|



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| Account Distributions: | Debit | Credit |
|-------------------------------------|--------------------|------------------------|
| ****Vendor: 36 Verizon | | |
| 100-1140000-0000 B/C OPR | Cash Credit Entry | \$136.66 |
| 100-4041100-5230 TELECOMMUNICATIONS | CC | \$136.66 |
| 501-1140000-0000 B/C OPR | Cash Credit Entry | \$163.19 |
| 501-4012222-5230 TELECOMMUNICATIONS | CC | \$163.19 |
| 502-1140000-0000 B/C OPR | Cash Credit Entry | \$394.45 |
| 502-4012222-5230 TELECOMMUNICATIONS | CC | \$394.45 |
| Check: 82516 | Total Distributed: | \$694.30 \$694.30 |

| | | | | |
|------------------|------------|----|---|----------|
| VERIZON WIRELESS | 08/25/2016 | CC | 1 | \$690.43 |
|------------------|------------|----|---|----------|

| Account Distributions: | Debit | Credit |
|-------------------------------------|--------------------|------------------------|
| ****Vendor: 2243 Verizon Wireless | | |
| 100-1140000-0000 B/C OPR | Cash Credit Entry | \$580.53 |
| 100-4012530-5230 TELECOMMUNICATIONS | CC | \$19.04 |
| 100-4031100-5230 TELECOMMUNICATIONS | CC | \$331.96 |
| 100-4041100-5230 TELECOMMUNICATIONS | CC | \$229.53 |
| 501-1140000-0000 B/C OPR | Cash Credit Entry | \$27.47 |
| 501-4012222-5230 TELECOMMUNICATIONS | CC | \$27.47 |
| 502-1140000-0000 B/C OPR | Cash Credit Entry | \$82.43 |
| 502-4012222-5230 TELECOMMUNICATIONS | CC | \$82.43 |
| Check: 82516 | Total Distributed: | \$690.43 \$690.43 |

| | | | | |
|---------|------------|----|---|----------|
| WALMART | 08/25/2016 | CC | 1 | \$301.51 |
|---------|------------|----|---|----------|

| Account Distributions: | Debit | Credit |
|--------------------------------|--------------------|------------------------|
| ****Vendor: 2055 Walmart | | |
| 100-1140000-0000 B/C OPR | Cash Credit Entry | \$301.51 |
| 100-4011100-5800 MISCELLANEOUS | CC | \$16.68 |
| 100-4041200-6011 UNIFORMS | CC | \$284.83 |
| Check: 82516 | Total Distributed: | \$301.51 \$301.51 |

| | | | | |
|-----------------------|------------|----|---|------------|
| WESTERN BRANCH DIESEL | 08/25/2016 | CC | 1 | \$1,645.00 |
|-----------------------|------------|----|---|------------|

| Account Distributions: | Debit | Credit |
|--|--------------------|----------------------------|
| ****Vendor: 2117 WESTERN BRANCH DIESEL | | |
| 502-1140000-0000 B/C OPR | Cash Credit Entry | \$1,645.00 |
| 502-4012222-3310 REPAIR & MAINTENANCE | CC | \$1,645.00 |
| Check: 82516 | Total Distributed: | \$1,645.00 \$1,645.00 |



GL Cash Disbursement Entries

Town of Berryville
9/6/2016 2:16:43 PM

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| Account Distributions: | | | Debit | Credit |
|--|--|--------------------|-------------|-------------|
| <div style="border: 1px solid black; padding: 2px;"> WINCHESTER BUILDING SUPPLY 08/25/2016 CC 1 \$207.03 </div> | | | | |
| ****Vendor: 120 Winchester Building Supply | | | | |
| 501-1140000-0000 B/C OPR | | Cash Credit Entry | | \$207.03 |
| 501-4012224-6007 MATERIALS & SUPPLIES | | CC | \$207.03 | |
| Check: 82516 | | Total Distributed: | \$207.03 | \$207.03 |
| <div style="border: 1px solid black; padding: 2px;"> WINCHESTER BUSINESS/A SIGN PLACE 08/25/2016 CC 1 \$148.70 </div> | | | | |
| ****Vendor: 351 Winchester Business Services/A Sign Place | | | | |
| 100-1140000-0000 B/C OPR | | Cash Credit Entry | | \$148.70 |
| 100-4041200-3316 STREET SIGN MAINTENANCE | | CC | \$148.70 | |
| Check: 82516 | | Total Distributed: | \$148.70 | \$148.70 |
| Batch Totals: | | | \$51,109.40 | \$51,109.40 |



GL Cash Disbursement Entries

Town of Berryville
9/6/2016 2:16:43 PM

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Attachment 9

MINUTES
BERRYVILLE TOWN COUNCIL
COMMUNITY IMPROVEMENTS COMMITTEE
Berryville-Clarke County Government Center
Called Meeting
August 30, 2016

Committee members: Present- Donna Marie McDonald, Chair; Allen Kitselman, David Tollett

Staff: Keith Dalton, Town Manager

Press: Cathy Keuhner, Winchester Star

Others: Patricia Dickinson, Janice Coon, Karen Anderson, Wayne Webb, and Alton Echols

1. Call to Order

Chair McDonald called the meeting to order at 6:00 p.m. She greeted everyone and provided time for introductions.

2. Discussion – Town Run Water Quality

Chair McDonald recognized Wayne Webb. Mr. Webb reviewed the results of water testing that he has performed in Craig’s Run (in the Hermitage SWMA) and in Town Run (in Rose Hill Park). He advised that he recommended posting signs in Rose Hill Park that alerted the public to the presence of E-Coli in the Town Run. He further recommended that the Town fund testing to be performed under the auspices of the Friends of the Shenandoah River. He estimated the cost of the testing for a year to be \$600. There was a general discussion about impaired waters and what can be done to improve water quality in urbanized waterways. Karen Anderson provided information to the committee on stream impairment. The committee expressed gratitude to Mr. Webb for his proactive approach and agreed to discuss this matter with the full Council.

3. Discussion – Committee Priorities

Chair McDonald discussed her desire to set Committee priorities that addressed community needs and asked for suggestions. Mr. Kitselman advised that the results of the last community summit would be a good place to start. Staff was asked to provide those results to the Town Council.

The committee discussed having a public input session and performing a community survey, both intended to reveal public needs and priorities.

Chair McDonald noted that she has spoken with Habitat for Humanity and has been advised that they are working to fill the void left by the closure of Help with Housing. She noted that they do very good work and will be a real asset for the community.

The committee set their regular meeting, to be held as needed, for the 4th Monday of each month at 7:00 p.m.

Ms. Dickinson noted that the Committee needs to be ready to address issues that arise such as the concerns about the Darbybrook HOA and the water quality issues the committee just discussed with Mr. Webb and Ms. Anderson.

4. Other

Chair McDonald noted that Robin Betz was present and wanted to discuss her concerns about the Darbybrook HOA. Mr. Kitselman stated that this matter has been reviewed by the Town Council previously. He also noted that this matter is ultimately a legal matter and that caution was warranted during discussions. Ms. Betz stated that the residents of Darbybrook were surprised when they found out that seven lots were not a part of the association. She said she thinks that there is something amiss here and that the lots in question not being in the HOA is harmful. The Committee requested that the Town Manager review the matter surrounding the exclusion of the seven lots from the HOA and report back to them.

Mr. Kitselman suggested that the Town Council commission a structural assessment of the livery stable behind 23 East Main Street. The importance of the structure was discussed and the committee expressed general support for the concept.

The committee again discussed the idea of having a public input session as well as a survey. Staff was asked to speak with Berryville Main Street to see if they could obtain the results of recent surveys completed by that organization.

Ms. Coon discussed all of the good work that FISH was doing in the community.

Ms. Dickinson discussed the concept of quiet zones that are intended to reduce horn noise from railroad operations.

5. Adjourn

There being no further business, the meeting was adjourned at 7:17 p.m.

Attachment 10



Berryville Police Department

101 Chalmers Ct., Suite A, Berryville, Virginia 22611

policeadmin@berryvilleva.gov

(540) 955-3863 (540) 955-0207 (Fax)

W. Neal White – Chief of Police

MEMO

DATE: 09/08/2016

TO: Town Council

FROM: Chief W. Neal White

CC:

RE: Police Department Monthly Report – 09/13/2016

Monthly Activity Report

The activity report for the month of August 2016 is attached to this memo.

Police and Security Committee

The Police and Security Committee will begin holding monthly meetings on the fourth Thursday of the month at 09:00 am dependent upon items for an agenda. The next regular meeting of the committee would take place on 09/22/2016.

Staffing

All sworn full-time patrol officer positions are now full. Christopher Coderre began working for the department at the end of August and brings several years of experience with him. He previously served with the Loudoun County Sheriff's Office and also worked part-time for the Clarke County Sheriff's Office. We are very excited to have Chris on board.

Praise for Officer

Attached with this report you will find a letter of praise for Officer Don Mason from Sheriff Roper concerning his actions in assisting with the investigation of a shooting incident that occurred in the county. A job well done on the part of Officer Mason.



Berryville Police Department

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(540) 955-3863 (540) 955-0207 (Fax)

W. Neal White – Chief of Police

POLICE AND SECURITY REPORT

| Month: August | Year To Date | August | July |
|-----------------------------------|---------------------|---------------|-------------|
| Year: 2016 | 2016 | 2016 | 2016 |
| <u>Complaints Answered</u> | | | |
| 911 Hang Up: | 25 | 7 | 6 |
| Alarms: | 78 | 12 | 13 |
| Animal Complaint: | 64 | 9 | 10 |
| Assault And Battery: | 12 | 2 | 1 |
| Assist County: | 13 | 3 | 1 |
| Auto Larceny: | 2 | 0 | 0 |
| Burglary: | 5 | 0 | 0 |
| Civil Complaints: | 64 | 10 | 13 |
| Disturbance (Non Violent): | 40 | 3 | 9 |
| Domestic Disturbance: | 2 | 2 | 0 |
| Drunk In Public: | 8 | 1 | 0 |
| Forgery & Uttering: | 0 | 0 | 0 |
| Fraud: | 3 | 1 | 1 |
| Grand Larceny: | 7 | 2 | 2 |
| Harassment/Intimidation: | 22 | 4 | 6 |
| Homicide: | 0 | 0 | 0 |
| Juvenile Related: | 42 | 2 | 13 |
| Noise: | 26 | 2 | 5 |
| Petty Larceny: | 12 | 1 | 3 |
| Public Service: | 32 | 2 | 4 |
| Rape: | 0 | 0 | 0 |
| Robbery: | 0 | 0 | 0 |
| Runaway: | 1 | 0 | 0 |
| Shoplifting: | 0 | 0 | 0 |
| Suspicious Activity: | 104 | 14 | 8 |
| Trespassing: | 10 | 2 | 0 |
| Vandalism: | 19 | 1 | 3 |
| Welfare Check: | 95 | 9 | 15 |
| Miscellaneous Complaints: | 148 | 16 | 17 |
| Total Complaints Answered: | 834 | 105 | 130 |



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policeadmin@berryvilleva.gov

(540) 955-3863 (540) 955-0207 (Fax)

W. Neal White – Chief of Police

Traffic

| | | | |
|----------------------------|-----|----|----|
| Accidents Investigated: | 24 | 5 | 5 |
| Assist Motorist: | 25 | 2 | 4 |
| Child Safety Seat Install: | 18 | 4 | 0 |
| Funeral Escort: | 23 | 5 | 3 |
| Hit & Run: | 8 | 2 | 0 |
| Parking Tickets: | 171 | 88 | 15 |
| Traffic Warnings: | 184 | 33 | 35 |

Traffic Summons Issued

| | | | |
|--------------------------------------|------------|-----------|-----------|
| Defective Equipment: | 2 | 1 | 0 |
| Driving Suspended: | 8 | 2 | 0 |
| Expired Inspection: | 3 | 0 | 2 |
| Expired Registration: | 5 | 1 | 1 |
| Fail To Obey Highway Sign: | 118 | 45 | 31 |
| Fail To Obey Traffic Signals: | 2 | 0 | 1 |
| Fail To Stop/Lights & Siren: | 1 | 1 | 0 |
| Fail To Yield Right Of Way: | 4 | 0 | 0 |
| Hit And Run: | 0 | 0 | 0 |
| No Liability Insurance: | 1 | 1 | 0 |
| No Operator's License: | 5 | 2 | 0 |
| No Seat Belt: | 1 | 1 | 0 |
| Reckless Driving: | 17 | 9 | 0 |
| Speeding: | 64 | 26 | 4 |
| Miscellaneous Summons: | 5 | 2 | 0 |
| Total Traffic Summons Issued: | 236 | 91 | 39 |



Berryville Police Department

101 Chalmers Ct., Suite A, Berryville, Virginia 22611

policeadmin@berryvilleva.gov

(540) 955-3863 (540) 955-0207 (Fax)

W. Neal White – Chief of Police

Criminal Arrests Made

| | | | |
|---------------------------------|----|---|----|
| Abduction: | 0 | 0 | 0 |
| Arson: | 0 | 0 | 0 |
| Assault And Battery: | 10 | 2 | 0 |
| A & B On Police Officer: | 1 | 0 | 0 |
| Auto Larceny: | 0 | 0 | 0 |
| Breaking And Entering: | 1 | 0 | 0 |
| Capias: | 9 | 1 | 2 |
| Disorderly Conduct: | 1 | 0 | 1 |
| Driving While Intoxicated: | 4 | 0 | 0 |
| Drunk In Public: | 6 | 1 | 0 |
| Fail To Obey Police Officer: | 0 | 0 | 0 |
| Fail To Pay Parking Ticket: | 4 | 0 | 0 |
| Forgery: | 0 | 0 | 0 |
| Fraud: | 0 | 0 | 0 |
| Grand Larceny: | 0 | 0 | 0 |
| Homicide: | 0 | 0 | 0 |
| Illegal Drugs/Paraphernalia | 13 | 2 | 2 |
| Petty Larceny: | 1 | 0 | 0 |
| Possess Alcohol Underage: | 0 | 0 | 0 |
| Protective Order: | 22 | 3 | 6 |
| Rape: | 0 | 0 | 0 |
| Resisting Arrest: | 2 | 0 | 0 |
| Robbery: | 0 | 0 | 0 |
| Shoplifting: | 0 | 0 | 0 |
| Trespassing: | 0 | 0 | 0 |
| Vandalism: | 0 | 0 | 0 |
| Weapons Violation | 0 | 0 | 0 |
| | 15 | 0 | 4 |
| Miscellaneous Criminal Arrests: | | | |
| Juvenile Arrest Total: | 0 | 0 | 0 |
| Total Criminal Arrests: | 89 | 9 | 15 |

Found Open At Business In Town

| | | | |
|--------------------------|----|---|---|
| Doors: | 15 | 3 | 2 |
| Windows: | 0 | 0 | 0 |
| Garage Doors Found Open: | 0 | 0 | 0 |



Clarke County Sheriff's Office

Anthony W. Roper, Sheriff
100 North Church Street
Berryville, VA 22611
540-955-1234 / Fax 540-955-4111



August 31, 2016

Chief W. Neil White
Berryville Police Department
101 Chalmers Court, #A
Berryville, VA 22611

Dear Chief White:

While on patrol on Sunday, August 21, 2016, Officer Don Mason executed a traffic stop that ultimately led to a search warrant in Berryville. Had Officer Mason not been exhibiting a great patrol mentality, this would not have happened. The Clarke County Sheriff's Office is lucky to have the pleasure of serving with the Berryville Police Department, and truly appreciates the professionalism of Don Mason and the rest of your department.

Regards,

A handwritten signature in cursive script that reads "Anthony W. Roper".

Anthony W. Roper
Sheriff

Attachment 11

BERRYVILLE TOWN COUNCIL
Streets and Utilities Committee
Tuesday, August 16, 2016
Berryville-Clarke County Government Center
10:00 a.m.

MINUTES

Roll:

Town Council:

Present: Patricia Dickinson, Chair; David Tollett

Absent: Donna McDonald

Staff: Keith Dalton, Town Manager; Rick Boor, Director of Public Works; Christy Dunkle, Planner; Dave Tyrell, Director of Public Utilities, Neal White, Chief of Police; Ann Phillips, Town Clerk

Press: None

Others: Ed Carter, VDOT; Cliff Balderson, VDOT

Public: Gwen Malone

1. **Call to Order**

Chair Dickinson called the meeting to order at 10:00 a.m. It was agreed to rearrange the order of some items on the agenda.

2. **Discussion – Projects in Process: Battletown Drive Water Main**

Mr. Boor reported that the project is almost complete. Mr. Dalton said he is producing a work plan for each of the residents directly affected by the work, noting there are six properties in question. Mr. Boor said the final part of the project will involve abandoning the old water lateral which will take about two days of work.

3. **Discussion – Projects in Process: Academy Court Water Main**

Mr. Boor said the project is going exceptionally well and should be completed in about two weeks.

4. **Discussion – East Main Street Improvements**

Mr. Dalton said the Town desires to see improvements on East Main Street and noted that representatives from VDOT, Mr. Balderson and Mr. Carter, were in attendance to offer guidance and review funding options. Mr. Dalton said the challenges on this street include drainage issues, uncontrolled accesses, and a lack of pedestrian improvements. Ms. Dickinson asked how far new sidewalks are expected to extend. Mr. Dalton responded that sidewalks are not yet planned but would probably extend from the railroad tracks past Battletown Drive to somewhere near the entrance of Clermont or the street that will extend through the Audley Property. Ms. Dickinson asked about doing the construction of the sidewalk in phases. Ms. Dunkle noted that the project

planning and design should be done all at once even if construction were done in phases. Mr. Carter agreed and suggested that waiting for parcels to develop and seeking proffers from the developers is an option.

Mr. Dalton referenced VDOT's 6 year plan for funding requests and noted it has been changed to HB2/Smartscale. He asked how a project this size would get into the HB2/Smartscale program. Mr. Carter offered another option involving federal funding called Tap 21/Transportation Alternatives. He said this option was 80% federal funds and 20% local funds, does not go through the HB2 process, and is competitive but easier to get than HB2. He added that Tap 21/Transportation Alternatives funds are geared toward pedestrian needs. Mr. Carter explained the process for the Tap 21/Transportation Alternatives. He said the Town would make application to the Commonwealth Transportation Board and if approved the Town would manage the project. Ms. Dunkle noted that the funding cycle for this option opens on September 1. Mr. Carter said that VDOT staff would assist the Town with the chosen design contractor, and added this option is faster and cheaper than having VDOT design the project. Mr. Dalton asked if the design costs could be part of the 20% funding by the Town and Mr. Carter replied yes. Mr. Dalton asked if other Towns are using Tap21/Transportation Alternatives funding and Mr. Carter responded Mount Jackson, Strasburg and New Market were doing so.

Mr. Dalton asked about the process. Ms. Dunkle said the Town would need to send a letter of intent by August 22 and would request VDOT technical assistance with the application and design.

Mr. Dalton asked if a combination of funding types could be used, and Mr. Carter said they could, but applications would have to be separate. Mr. Carter added that HB2/Smartscale is very competitive across the state.

There was general discussion of competition and of the urban development area designation.

There was general discussion of the issues of phasing the project, especially storm water management issues.

There was general discussion of the right-of-way on East Main Street. Mr. Dalton noted that discussion of improvements has been on-going for a long time and that at a public hearing in the late 1990s, there was opposition from property and business owners who were concerned about losing property to the improvements.

Ms. Dickinson asked what the next step would be. Mr. Dalton said that the Town Council would have to identify the project as a priority to see what funding options were available. Ms. Dunkle noted the grant funding window closes on November 30. Ms. Dickinson said she would want to know the thoughts of the property owners before

applying for a grant, and did not think the Town would be able to move forward during this cycle.

Mr. Carter noted that for a 3000 foot length of street, the project could easily be \$1,000,000. Ms. Dunkle said the utility relocation will be very expensive. Mr. Carter said the design work is typically 15-25% of the estimate and must be monitored to avoid spending too much on the design leaving too little for construction. Mr. Dalton said he estimates the project will be significantly more than \$1,000,000. He asked if VDOT has any funds to address the pedestrian safety issue separately and Mr. Carter replied the Tap 21/Transportation Alternatives funding is for such uses, and added there are no maintenance funds that can be used for pedestrian safety issues. Mr. Dalton asked about shoulder improvements, and Mr. Carter said VDOT maintenance funds can be used for vehicle safety, but not pedestrian safety issues.

Mr. Carter suggested that if Tap 21/Transportation Alternatives funds were used, shortening the project sections could help with financing the project. There was general discussion of the street and how the sections could be designated. Mr. Tollett said that doing the project in sections or phases is better than doing nothing. Ms. Dunkle noted a possibility of adding a pedestrian path on private property from Bel Voi Drive through the Battletown Business Center that could link with existing or new sidewalk west of Jack Enders Blvd. providing access to residents of Battletown and Bel Voi drives.

Mr. Carter suggested proffers as an aid in funding, and Ms. Dunkle noted that new legislation has made proffers difficult to obtain. Mr. Carter suggested the Town spend enough with a consultant to evaluate the costs of the full project to allow for better project planning.

5. Discussion – School crosswalk at Main and Hermitage

Mr. Carter said VDOT has looked at the site and offered options. There was general discussion of the options. Mr. Balderson said perhaps Safe Routes to School funds could be used on the project. Ms. Dunkle noted the site has to be within a quarter mile of a school for K-8th graders to be eligible, and added it is a long process to secure the funds. Mr. Carter said this project would be appropriate for Tap 21/Transportation Alternatives funding also.

Mr. Carter said the stone wall on the south side of Main Street is an issue for sidewalk extension, and Mr. Dalton noted that the grade on Main Street is also an issue. As various options were discussed, Mr. Carter said adding a crosswalk in the middle of a street rather than at an intersection is not a good idea. Mr. Dalton asked about the requirement for separation between the travel lane and the sidewalk without curb and gutter, and Mr. Carter responded it was 10 feet. Mr. Carter added the Town could include solar powered crosswalk lights to enhance the funding application.

Ms. Dickinson said she likes the idea of extending the sidewalk on the south side of the street and adding a crosswalk.

Chief White said he wanted to look at the site again. He said many issues are involved including sight distance, speed, and other challenges.

Mr. Tollett asked for clarification on where the crosswalk would be planned. Mr. Carter said if the Town decides to apply for funding, VDOT staff will come help with the design. Chief White said the recent marking of the downtown crosswalks was very helpful to motorists and asked if similar marking for the proposed crosswalk is an option. Mr. Dalton said it is an option, but is an expensive option. He noted that the Town has received two very positive comments from sight impaired pedestrians about the newly marked crosswalks downtown.

Once the crosswalk discussion was complete, Mr. Dalton asked the VDOT staff to comment on protocol for re-establishing the shoulder on paving projects on rural street sections. Mr. Balderson listed the options and confirmed that Town staff has followed the accepted procedures.

Ms. Dunkle said that the Town had been awarded a grant for a flashing light at the crosswalk on Buckmarsh Street at Swan Avenue, and asked for the timeframe to get the project underway. Mr. Carter said the Town has one year from the award and needs to have the project started by June 30, 2017. Chief White listed the other upgrades and changes at this intersection to address the speed and noise issue. Ms. Dickinson said there needs to be something else done on the south end of Town to address these issues.

6. Discussion – Projects in Process: Swan Avenue Sidewalk (Safe Routes to School)

Ms. Dunkle said she has preliminary numbers and it appears that the existing funds will cover phase 1 of the project. Mr. Tollett noted the congestion issue when Little League Football activities are in progress at the middle school and suggested the prohibition of on-street parking in this area. Ms. Dunkle said that once the sidewalk project has been completed, the parking issue should be greatly alleviated.

7. Discussion – WWTP Membrane Replacement Proposal

Ms. Dickinson said she thinks this issue should be addressed by the Budget and Finance Committee rather than the Streets and Utilities Committee since all are in agreement that the membrane will need to be replaced. Mr. Tyrrell said that pre-purchasing is a good idea and will save money in the long run. He said that he has received input from GE and is recommending an upgrade that will cost \$100,000 and move the system to new technology producing better shaking of the membranes. There was general discussion of the life of the membranes.

Mr. Dalton noted that with funds already authorized by Town Council to be set aside for membrane replacement, there is \$620,000 available now at year four of the life time of the membranes. Mr. Tyrrell said the expected cost of replacement including other related items will be \$1,400,000, although he said he is still getting prices on some items. Mr. Dalton said the real advantage of the pre-purchase is cost control. Ms. Dickinson said she wants the Budget and Finance Committee to look at this issue in the context of reserves.

At Mr. Dalton's request, Mr. Tyrrell provided an overview of water and waste water treatment operations and maintenance issues. He said the WWTP is operating very well, but he deals with issues of corrosion on equipment in the rough environment of the plant. He added that his bigger issue is at the water plant with 35 year old tanks and concerns about them sitting on concrete, citing a few upgrade and maintenance issues that will need to be addressed. Mr. Tyrrell concluded by saying the water plant is still doing well and producing a quality product. He added that storage tanks will be the next issue needing attention, and Mr. Dalton said the committee will discuss the tanks within the next two months.

8. Discussion – Amendments to Section 2 of the Construction Standards and Details

Ms. Dickinson said she had read the document and she asked why the issue was being addressed. Ms. Dunkle said there are activities the Town is now responsible for since taking over the maintenance of the public street system from VDOT in 2012.

Mr. Tollett moved that the Streets and Utilities Committee recommend approval of amendments to the Construction Standards and Specifications Manual in order to update Section 2 General Design Standards which regulates storm water facilities and to add standard details reflecting updated narrative. Ms. Dickinson seconded the motion which carried.

9. Adjourn

There being no further business, the committee adjourned at 11:29 am.

Attachment 12

Memo

To: Town Council

From: David Tyrrell

Date: September 6, 2016

Re: August 2016 Operations Report

The water treatment plant is in compliance for August 2016 with its monthly parameters per test received to date. We sent a total of 11.375 MG water to the system with a daily average production of 0.392 MGD and a daily max of 0.610 MG.

We have drained and cleaned our presedimentation basins and had the backwash lagoons cleaned and solids removed.

A low flow flush of water system dead ends has been started. We are starting on the high side of town and working out from the northwest elevated tank and systematically flushing each dead end. We are using turbidity to measure the effectiveness of each flush while also checking system chlorine residuals.. To date we have completed the Battlefield Estates subdivision and are moving into the Hermitage subdivision. It is taking on average about three hours to flush each dead end so this is a slow process and being completed only on days when staffing allows us to free someone.

Drought Conditions: Water levels in the Shenandoah River have run above historical averages for the month of August. There is no concern for drought in our area at this time.

The wastewater plant is in compliance with its discharge permit for August per the data received to date. We have treated a total of 7.88 MG with a daily average of 0.25 MGD and a daily max of 0.43 MG.

Total Phosphorous levels have been high in the influent for the past month. We are able to reduce the levels but our average for the month is 0.37 mg/l. This is above our target 0.3 mg/l but we do not have a monthly limit but a yearly average limit. Our average for the year to date is 0.16 mg/l.

We have cleaned out the north side of the influent wet well removing grease and grit buildup from the tank. We tried a new method of disposal of the solids removed which did not work well. We will continue to look for another way

The new Hypochlorite pump has been installed and is working well. The second pump has been removed and sent in for service. Normally this work would be completed on site but these pumps have proven to have unique challenges for us to service on site due to the magnetic drive.

Acid recovery cleans have been completed on membrane trains #1 and #2. Trains #3 and #4 are scheduled for September. We will then complete Hypo cleans on all four trains to ensure they are in top operational condition.

Attached for review is the DMR data report for the wastewater plant, latest InSight report for the membrane performance from GE, and the water plant page 1 operations report for VDH.

FLOWS AND CHEMICAL DOSAGES

August 2016

No. Connections Served: 1610
Population Served: 4185

| DATE | Raw Water Treated MGD | Finished Water Produced MGD | Finished Water Delivered MGD | Hours in Service | Raw Water Chemicals | | | | | | | | | | Finished Water Chemicals | | | | | | | | |
|---------|-----------------------|-----------------------------|------------------------------|------------------|---------------------|-------|-------------|------|-------------|-------|-------------|-------|-------------|-------|--------------------------|------|-------------|-------|-------------|-------|----------------|-------|-------|
| | | | | | Alum | | Carbon | | Chlorine | | Fluoride | | Polymer | | KMnO4 | | Soda Ash | | Chlorine | | Corr Inhibitor | | |
| | | | | | Lbs per Day | mg/L | Lbs per Day | mg/L | Lbs per Day | mg/L | Lbs per Day | mg/L | Lbs per Day | mg/L | Lbs per Day | mg/L | Lbs per Day | mg/L | Lbs per Day | mg/L | Lbs per Day | mg/L | |
| 1 | 0.478 | | 0.436 | 14.3 | 61 | 15.3 | 3 | 0.8 | | | | 6.6 | 1.66 | 0.073 | 0.018 | 6 | 1.5 | | | 14.8 | 3.7 | | |
| 2 | 0.475 | | 0.431 | 14.0 | 56 | 14.1 | 3 | 0.7 | | | | 7.0 | 1.77 | 0.073 | 0.018 | 6.0 | 1.5 | | | 14.6 | 3.7 | | |
| 3 | 0.408 | | 0.365 | 12.0 | 46 | 13.4 | 3 | 0.8 | | | | 3.2 | 0.94 | 0.064 | 0.019 | 0.0 | 0.0 | | | 12.5 | 3.7 | | |
| 4 | 0.421 | | 0.381 | 13.5 | 51 | 14.4 | 3 | 0.9 | | | | 3.5 | 1.01 | 0.064 | 0.018 | 6.0 | 1.7 | | | 14.0 | 4.0 | | |
| 5 | 0.379 | | 0.249 | 11.0 | 41 | 12.8 | 3 | 0.9 | | | | 6.9 | 2.19 | 0.055 | 0.017 | 0.0 | 0.0 | | | 11.5 | 3.6 | | |
| 6 | | | | | | | | | | | | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | | | | | | | | | | | | |
| 8 | 0.454 | | 0.403 | 13.0 | 56 | 14.7 | 4 | 1.0 | | | | 9.5 | 2.51 | 0.074 | 0.020 | 0.0 | 0.0 | | | 13.5 | 3.6 | | |
| 9 | 0.446 | | 0.406 | 13.0 | 51 | 13.6 | 4 | 1.1 | | | | 3.5 | 0.94 | 0.080 | 0.022 | 0.0 | 0.0 | | | 13.5 | 3.6 | | |
| 10 | 0.439 | | 0.397 | 12.8 | 46 | 12.5 | 4 | 1.0 | | | | 6.6 | 1.81 | 0.088 | 0.024 | 0.0 | 0.0 | | | 13.3 | 3.6 | | |
| 11 | 0.542 | | 0.491 | 15.8 | 51 | 11.2 | 9 | 1.9 | | | | 6.8 | 1.50 | 0.057 | 0.013 | 6.0 | 1.3 | | | 16.4 | 3.6 | | |
| 12 | 0.545 | | 0.500 | 16.0 | 61 | 13.4 | 4 | 0.8 | | | | 7.1 | 1.56 | 0.106 | 0.023 | 6.0 | 1.3 | | | 16.7 | 3.7 | | |
| 13 | 0.284 | | 0.250 | 8.0 | 25 | 10.7 | 2 | 0.7 | | | | 3.4 | 1.44 | 0.049 | 0.020 | 0.0 | 0.0 | | | 8.3 | 3.5 | | |
| 14 | 0.278 | | 0.256 | 8.0 | 30 | 13.1 | 2 | 1.0 | | | | 3.4 | 1.47 | 0.040 | 0.017 | 0.0 | 0.0 | | | 8.3 | 3.6 | | |
| 15 | 0.373 | | 0.325 | 11.5 | 46 | 14.7 | 2 | 0.8 | | | | 3.2 | 1.02 | 0.057 | 0.018 | 0.0 | 0.0 | | | 12.0 | 3.8 | | |
| 16 | 0.453 | | 0.413 | 14.0 | 46 | 12.1 | 3 | 0.8 | | | | 3.6 | 0.95 | 0.062 | 0.016 | 0.0 | 0.0 | | | 14.6 | 3.9 | | |
| 17 | 0.39 | | 0.355 | 11.5 | 46 | 14.0 | 3 | 0.9 | | | | 6.9 | 2.12 | 0.079 | 0.024 | 0.0 | 0.0 | | | 12.5 | 3.8 | | |
| 18 | 0.52 | | 0.469 | 14.5 | 56 | 12.9 | 4 | 0.9 | | | | 3.3 | 0.76 | 0.097 | 0.022 | 8.0 | 1.8 | | | 15.7 | 3.6 | | |
| 19 | 0.529 | | 0.481 | 15.5 | 56 | 12.6 | 4 | 1.0 | | | | 6.8 | 1.54 | 0.088 | 0.020 | 6.0 | 1.4 | | | 16.8 | 3.8 | | |
| 20 | 0.324 | | 0.298 | 9.5 | 35 | 13.1 | 3 | 1.0 | | | | 3.4 | 1.26 | 0.044 | 0.016 | 0.0 | 0.0 | | | 10.3 | 3.8 | | |
| 21 | 0.23 | | 0.201 | 6.3 | 25 | 13.2 | 1 | 0.4 | | | | 3.3 | 1.72 | 0.040 | 0.021 | 6.0 | 3.1 | | | 6.8 | 3.6 | | |
| 22 | 0.526 | | 0.477 | 15.5 | 61 | 13.9 | 5 | 1.1 | | | | 6.7 | 1.52 | 0.075 | 0.017 | 0.0 | 0.0 | | | 16.8 | 3.8 | | |
| 23 | 0.528 | | 0.485 | 15.5 | 56 | 12.7 | 4 | 0.9 | | | | 3.7 | 0.84 | 0.070 | 0.016 | 6.0 | 1.4 | | | 16.2 | 3.7 | | |
| 24 | 0.347 | | 0.311 | 10.0 | 25 | 8.8 | 3 | 1.0 | | | | 6.5 | 2.26 | 0.048 | 0.017 | 0.0 | 0.0 | | | 10.4 | 3.6 | | |
| 25 | 0.67 | | 0.610 | 19.5 | 71 | 12.7 | 5 | 0.9 | | | | 6.9 | 1.23 | 0.093 | 0.017 | 8.0 | 1.4 | | | 20.3 | 3.6 | | |
| 26 | 0.631 | | 0.576 | 18.5 | 66 | 12.5 | 4 | 0.8 | | | | 6.9 | 1.31 | 0.100 | 0.019 | 0.0 | 0.0 | | | 19.3 | 3.7 | | |
| 27 | 0.285 | | 0.258 | 8.3 | 25 | 10.7 | 5 | 2.0 | | | | 3.4 | 1.42 | 0.060 | 0.025 | 8.0 | 3.4 | | | 8.6 | 3.6 | | |
| 28 | 0.273 | | 0.258 | 8.0 | 25 | 11.1 | 2 | 0.9 | | | | 3.4 | 1.48 | 0.053 | 0.023 | 0.0 | 0.0 | | | 8.3 | 3.7 | | |
| 29 | 0.446 | | 0.397 | 13.3 | 41 | 10.9 | 3 | 0.9 | | | | 3.6 | 0.96 | 0.053 | 0.014 | 0.0 | 0.0 | | | 13.8 | 3.7 | | |
| 30 | 0.523 | | 0.473 | 15.3 | 56 | 12.8 | 3 | 0.8 | | | | 6.7 | 1.54 | 0.071 | 0.016 | 8.0 | 1.8 | | | 15.9 | 3.6 | | |
| 31 | 0.468 | | 0.423 | 13.8 | 51 | 13.0 | 4 | 1.0 | | | | 6.7 | 1.71 | 0.075 | 0.019 | 8.0 | 2.0 | | | 14.3 | 3.7 | | |
| Total | 12.665 | 0.000 | 11.375 | 371.6 | 1359 | 370.9 | 101 | 27.7 | 0.0 | 0.00 | | 152.3 | 42.4 | 1.99 | 0.552 | 88 | 23.8 | 0.0 | 0.00 | 390.0 | ##### | 0.0 | 0.00 |
| Maximum | 0.670 | 0.000 | 0.610 | 19.5 | 71 | 15.3 | 9 | 2.0 | 0.0 | 0.00 | | 9.5 | 2.5 | 0.11 | 0.025 | 8 | 3.4 | 0.0 | 0.00 | 20.3 | 3.99 | 0.0 | 0.00 |
| Minimum | 0.230 | 0.000 | 0.201 | 6.3 | 25 | 8.8 | 1 | 0.4 | 0.0 | 0.00 | | 3.2 | 0.8 | 0.04 | 0.013 | 0 | 0.0 | 0.0 | 0.00 | 6.8 | 3.50 | 0.0 | 0.00 |
| Average | 0.437 | 0.000 | 0.392 | 12.8 | 47 | 12.8 | 3 | 1.0 | ##### | ##### | | 5.3 | 1.5 | 0.07 | 0.019 | 3 | 0.8 | ##### | #DIV/0! | 13.4 | 3.69 | ##### | ##### |

SIGNED: (OPERATOR IN RESPONSIBLE CHARGE) _____
 PRINTED NAME David A Tyrrell
 TITLE: OPERATOR CLASSIFICATION Class 1
 DPOR CERTIFICATION NO. 1955002813

RAW WATER SOURCE(S) USED DURING MONTH: (SOURCE/DATES)
Shenandoah River - Entire Month

Berryville STP Monthly DMR Data

August 2016

| Date | Effluent Flow
MGD | Eff pH
SU | Eff Temp
Deg C | Eff CBOD
mg/l | Eff CBOD
KG/D | Eff TSS
mg/l | Eff TSS
KG/D | Effluent DO
River
mg/l | Effluent DO
WWTP
mg/l | Eff NO2 /
NO3
mg/l | Eff TKN
mg/l | Eff TKN
KG/D | Eff Total N
mg/l |
|-----------|----------------------|--------------|-------------------|------------------|------------------|-----------------|-----------------|------------------------------|-----------------------------|--------------------------|-----------------|-----------------|---------------------|
| 8/1/2016 | 0.30 | 7.6 | 25.7 | | | | | 7.3 | 6.3 | | | | |
| 8/2/2016 | 0.22 | 7.5 | 25.9 | 0.00 | 0.00 | | | 7.2 | 6.4 | | | | |
| 8/3/2016 | 0.26 | 7.6 | 25.5 | 0.00 | 0.00 | | | 7.5 | 6.2 | | | | |
| 8/4/2016 | 0.27 | 7.5 | 26.0 | 3.00 | 3.02 | | | 7.3 | 5.3 | | | | |
| 8/5/2016 | 0.17 | 7.5 | 25.7 | | | | | 7.3 | 7.0 | | | | |
| 8/6/2016 | 0.25 | 7.5 | 25.6 | | | | | 7.8 | 6.1 | | | | |
| 8/7/2016 | 0.25 | 7.3 | 24.9 | | | | | 9.1 | 9.8 | | | | |
| 8/8/2016 | 0.26 | 7.4 | 26.4 | | | | | 8.4 | 7.8 | | | | |
| 8/9/2016 | 0.31 | 7.3 | 24.9 | 2.00 | 2.33 | 0.00 | 0.00 | 7.3 | 7.2 | 2.20 | 0.71 | 0.83 | 2.91 |
| 8/10/2016 | 0.25 | 7.4 | 25.6 | 4.00 | 3.79 | | | 7.4 | 6.8 | | | | |
| 8/11/2016 | 0.25 | 7.5 | 25.3 | 4.00 | 3.72 | | | 7.4 | 6.5 | | | | |
| 8/12/2016 | 0.24 | 7.4 | 21.0 | | | | | 7.3 | 6.7 | | | | |
| 8/13/2016 | 0.25 | 7.6 | 26.9 | | | | | 7.4 | 6.9 | | | | |
| 8/14/2016 | 0.26 | 7.5 | 25.3 | | | | | 7.3 | 6.9 | | | | |
| 8/15/2016 | 0.29 | 7.3 | 25.3 | | | | | 8.3 | 6.3 | | | | |
| 8/16/2016 | 0.27 | 7.4 | 26.0 | 0.00 | 0.00 | | | 7.0 | 6.6 | | | | |
| 8/17/2016 | 0.25 | 7.4 | 26.0 | 6.00 | 5.61 | | | 6.1 | 6.1 | | | | |
| 8/18/2016 | 0.22 | 7.4 | 27.0 | 7.00 | 5.78 | | | 7.1 | 5.6 | | | | |
| 8/19/2016 | 0.20 | 7.3 | 27.0 | | | | | 7.2 | 5.9 | | | | |
| 8/20/2016 | 0.21 | 7.3 | 26.0 | | | | | 6.9 | 5.7 | | | | |
| 8/21/2016 | 0.19 | 7.3 | 27.0 | | | | | 7.0 | 6.0 | | | | |
| 8/22/2016 | 0.19 | 7.3 | 27.0 | | | | | 7.7 | 6.8 | | | | |
| 8/23/2016 | 0.20 | 7.3 | 25.9 | 0.00 | 0.00 | 0.00 | 0.00 | 7.9 | 7.2 | 2.76 | 0.78 | 0.60 | 3.54 |
| 8/24/2016 | 0.23 | 7.4 | 26.1 | 2.00 | 1.73 | | | 7.2 | 6.7 | | | | |
| 8/25/2016 | 0.21 | 7.5 | 26.1 | 1.00 | 0.79 | | | 7.2 | 7.1 | | | | |
| 8/26/2016 | 0.25 | 7.4 | 26.3 | | | | | 7.9 | 6.8 | | | | |
| 8/27/2016 | 0.27 | 7.4 | 26.7 | | | | | 7.4 | 8.3 | | | | |
| 8/28/2016 | 0.27 | 7.4 | 26.7 | | | | | 7.3 | 6.7 | | | | |
| 8/29/2016 | 0.43 | 7.6 | 26.5 | | | | | 7.5 | 6.9 | | | | |
| 8/30/2016 | 0.33 | 7.7 | 26.5 | | | | | 7.6 | 6.9 | | | | |
| 8/31/2016 | 0.37 | 7.8 | 26.8 | | | | | 6.2 | 6.6 | | | | |
| Minimum | 0.17 | 7.3 | 21.0 | 0.00 | 0.00 | 0.00 | 0.00 | 6.1 | 5.3 | 2.20 | 0.71 | 0.60 | 2.91 |
| Maximum | 0.43 | 7.8 | 27.0 | 7.00 | 5.78 | 0.00 | 0.00 | 9.1 | 9.8 | 2.76 | 0.78 | 0.83 | 3.54 |
| Total | 7.88 | 230.8 | 803.6 | 29.00 | 26.76 | 0.00 | 0.00 | 229.5 | 208.1 | 4.96 | 1.49 | 1.42 | 6.45 |
| Average | 0.25 | 7.4 | 25.9 | 2.42 | 2.23 | 0.00 | 0.00 | 7.4 | 6.7 | 2.48 | 0.75 | 0.71 | 3.23 |
| Geo Mean | 0.25 | 7.4 | 25.9 | 2.12 | 2.01 | 1.00 | 1.00 | 7.4 | 6.7 | 2.46 | 0.7 | 0.70 | 3.21 |

FLOWS AND CHEMICAL DOSAGES

August 2016

No. Connections Served: 1610
Population Served: 4185

| DATE | Raw Water Treated MGD | Finished Water Produced MGD | Finished Water Delivered MGD | Hours in Service | Raw Water Chemicals | | | | | | | | | | Finished Water Chemicals | | | | | | | | |
|---------|-----------------------|-----------------------------|------------------------------|------------------|---------------------|-------|-------------|------|-------------|-------|-------------|-------|-------------|-------|--------------------------|------|-------------|-------|-------------|-------|----------------|-------|-------|
| | | | | | Alum | | Carbon | | Chlorine | | Fluoride | | Polymer | | KMnO4 | | Soda Ash | | Chlorine | | Corr Inhibitor | | |
| | | | | | Lbs per Day | mg/L | Lbs per Day | mg/L | Lbs per Day | mg/L | Lbs per Day | mg/L | Lbs per Day | mg/L | Lbs per Day | mg/L | Lbs per Day | mg/L | Lbs per Day | mg/L | Lbs per Day | mg/L | |
| 1 | 0.478 | | 0.436 | 14.3 | 61 | 15.3 | 3 | 0.8 | | | | 6.6 | 1.66 | 0.073 | 0.018 | 6 | 1.5 | | | 14.8 | 3.7 | | |
| 2 | 0.475 | | 0.431 | 14.0 | 56 | 14.1 | 3 | 0.7 | | | | 7.0 | 1.77 | 0.073 | 0.018 | 6.0 | 1.5 | | | 14.6 | 3.7 | | |
| 3 | 0.408 | | 0.365 | 12.0 | 46 | 13.4 | 3 | 0.8 | | | | 3.2 | 0.94 | 0.064 | 0.019 | 0.0 | 0.0 | | | 12.5 | 3.7 | | |
| 4 | 0.421 | | 0.381 | 13.5 | 51 | 14.4 | 3 | 0.9 | | | | 3.5 | 1.01 | 0.064 | 0.018 | 6.0 | 1.7 | | | 14.0 | 4.0 | | |
| 5 | 0.379 | | 0.249 | 11.0 | 41 | 12.8 | 3 | 0.9 | | | | 6.9 | 2.19 | 0.055 | 0.017 | 0.0 | 0.0 | | | 11.5 | 3.6 | | |
| 6 | | | | | | | | | | | | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | | | | | | | | | | | | |
| 8 | 0.454 | | 0.403 | 13.0 | 56 | 14.7 | 4 | 1.0 | | | | 9.5 | 2.51 | 0.074 | 0.020 | 0.0 | 0.0 | | | 13.5 | 3.6 | | |
| 9 | 0.446 | | 0.406 | 13.0 | 51 | 13.6 | 4 | 1.1 | | | | 3.5 | 0.94 | 0.080 | 0.022 | 0.0 | 0.0 | | | 13.5 | 3.6 | | |
| 10 | 0.439 | | 0.397 | 12.8 | 46 | 12.5 | 4 | 1.0 | | | | 6.6 | 1.81 | 0.088 | 0.024 | 0.0 | 0.0 | | | 13.3 | 3.6 | | |
| 11 | 0.542 | | 0.491 | 15.8 | 51 | 11.2 | 9 | 1.9 | | | | 6.8 | 1.50 | 0.057 | 0.013 | 6.0 | 1.3 | | | 16.4 | 3.6 | | |
| 12 | 0.545 | | 0.500 | 16.0 | 61 | 13.4 | 4 | 0.8 | | | | 7.1 | 1.56 | 0.106 | 0.023 | 6.0 | 1.3 | | | 16.7 | 3.7 | | |
| 13 | 0.284 | | 0.250 | 8.0 | 25 | 10.7 | 2 | 0.7 | | | | 3.4 | 1.44 | 0.049 | 0.020 | 0.0 | 0.0 | | | 8.3 | 3.5 | | |
| 14 | 0.278 | | 0.256 | 8.0 | 30 | 13.1 | 2 | 1.0 | | | | 3.4 | 1.47 | 0.040 | 0.017 | 0.0 | 0.0 | | | 8.3 | 3.6 | | |
| 15 | 0.373 | | 0.325 | 11.5 | 46 | 14.7 | 2 | 0.8 | | | | 3.2 | 1.02 | 0.057 | 0.018 | 0.0 | 0.0 | | | 12.0 | 3.8 | | |
| 16 | 0.453 | | 0.413 | 14.0 | 46 | 12.1 | 3 | 0.8 | | | | 3.6 | 0.95 | 0.062 | 0.016 | 0.0 | 0.0 | | | 14.6 | 3.9 | | |
| 17 | 0.39 | | 0.355 | 11.5 | 46 | 14.0 | 3 | 0.9 | | | | 6.9 | 2.12 | 0.079 | 0.024 | 0.0 | 0.0 | | | 12.5 | 3.8 | | |
| 18 | 0.52 | | 0.469 | 14.5 | 56 | 12.9 | 4 | 0.9 | | | | 3.3 | 0.76 | 0.097 | 0.022 | 8.0 | 1.8 | | | 15.7 | 3.6 | | |
| 19 | 0.529 | | 0.481 | 15.5 | 56 | 12.6 | 4 | 1.0 | | | | 6.8 | 1.54 | 0.088 | 0.020 | 6.0 | 1.4 | | | 16.8 | 3.8 | | |
| 20 | 0.324 | | 0.298 | 9.5 | 35 | 13.1 | 3 | 1.0 | | | | 3.4 | 1.26 | 0.044 | 0.016 | 0.0 | 0.0 | | | 10.3 | 3.8 | | |
| 21 | 0.23 | | 0.201 | 6.3 | 25 | 13.2 | 1 | 0.4 | | | | 3.3 | 1.72 | 0.040 | 0.021 | 6.0 | 3.1 | | | 6.8 | 3.6 | | |
| 22 | 0.526 | | 0.477 | 15.5 | 61 | 13.9 | 5 | 1.1 | | | | 6.7 | 1.52 | 0.075 | 0.017 | 0.0 | 0.0 | | | 16.8 | 3.8 | | |
| 23 | 0.528 | | 0.485 | 15.5 | 56 | 12.7 | 4 | 0.9 | | | | 3.7 | 0.84 | 0.070 | 0.016 | 6.0 | 1.4 | | | 16.2 | 3.7 | | |
| 24 | 0.347 | | 0.311 | 10.0 | 25 | 8.8 | 3 | 1.0 | | | | 6.5 | 2.26 | 0.048 | 0.017 | 0.0 | 0.0 | | | 10.4 | 3.6 | | |
| 25 | 0.67 | | 0.610 | 19.5 | 71 | 12.7 | 5 | 0.9 | | | | 6.9 | 1.23 | 0.093 | 0.017 | 8.0 | 1.4 | | | 20.3 | 3.6 | | |
| 26 | 0.631 | | 0.576 | 18.5 | 66 | 12.5 | 4 | 0.8 | | | | 6.9 | 1.31 | 0.100 | 0.019 | 0.0 | 0.0 | | | 19.3 | 3.7 | | |
| 27 | 0.285 | | 0.258 | 8.3 | 25 | 10.7 | 5 | 2.0 | | | | 3.4 | 1.42 | 0.060 | 0.025 | 8.0 | 3.4 | | | 8.6 | 3.6 | | |
| 28 | 0.273 | | 0.258 | 8.0 | 25 | 11.1 | 2 | 0.9 | | | | 3.4 | 1.48 | 0.053 | 0.023 | 0.0 | 0.0 | | | 8.3 | 3.7 | | |
| 29 | 0.446 | | 0.397 | 13.3 | 41 | 10.9 | 3 | 0.9 | | | | 3.6 | 0.96 | 0.053 | 0.014 | 0.0 | 0.0 | | | 13.8 | 3.7 | | |
| 30 | 0.523 | | 0.473 | 15.3 | 56 | 12.8 | 3 | 0.8 | | | | 6.7 | 1.54 | 0.071 | 0.016 | 8.0 | 1.8 | | | 15.9 | 3.6 | | |
| 31 | 0.468 | | 0.423 | 13.8 | 51 | 13.0 | 4 | 1.0 | | | | 6.7 | 1.71 | 0.075 | 0.019 | 8.0 | 2.0 | | | 14.3 | 3.7 | | |
| Total | 12.665 | 0.000 | 11.375 | 371.6 | 1359 | 370.9 | 101 | 27.7 | 0.0 | 0.00 | | 152.3 | 42.4 | 1.99 | 0.552 | 88 | 23.8 | 0.0 | 0.00 | 390.0 | ##### | 0.0 | 0.00 |
| Maximum | 0.670 | 0.000 | 0.610 | 19.5 | 71 | 15.3 | 9 | 2.0 | 0.0 | 0.00 | | 9.5 | 2.5 | 0.11 | 0.025 | 8 | 3.4 | 0.0 | 0.00 | 20.3 | 3.99 | 0.0 | 0.00 |
| Minimum | 0.230 | 0.000 | 0.201 | 6.3 | 25 | 8.8 | 1 | 0.4 | 0.0 | 0.00 | | 3.2 | 0.8 | 0.04 | 0.013 | 0 | 0.0 | 0.0 | 0.00 | 6.8 | 3.50 | 0.0 | 0.00 |
| Average | 0.437 | 0.000 | 0.392 | 12.8 | 47 | 12.8 | 3 | 1.0 | ##### | ##### | | 5.3 | 1.5 | 0.07 | 0.019 | 3 | 0.8 | ##### | #DIV/0! | 13.4 | 3.69 | ##### | ##### |

SIGNED: (OPERATOR IN RESPONSIBLE CHARGE) _____
 PRINTED NAME David A Tyrrell
 TITLE: OPERATOR CLASSIFICATION Class 1
 DPOR CERTIFICATION NO. 1955002813

RAW WATER SOURCE(S) USED DURING MONTH: (SOURCE/DATES)
Shenandoah River - Entire Month

Berryville STP Monthly DMR Data

August 2016

| Date | Effluent Flow
MGD | Eff pH
SU | Eff Temp
Deg C | Eff CBOD
mg/l | Eff CBOD
KG/D | Eff TSS
mg/l | Eff TSS
KG/D | Effluent DO
River
mg/l | Effluent DO
WWTP
mg/l | Eff NO2 /
NO3
mg/l | Eff TKN
mg/l | Eff TKN
KG/D | Eff Total N
mg/l |
|-----------|----------------------|--------------|-------------------|------------------|------------------|-----------------|-----------------|------------------------------|-----------------------------|--------------------------|-----------------|-----------------|---------------------|
| 8/1/2016 | 0.30 | 7.6 | 25.7 | | | | | 7.3 | 6.3 | | | | |
| 8/2/2016 | 0.22 | 7.5 | 25.9 | 0.00 | 0.00 | | | 7.2 | 6.4 | | | | |
| 8/3/2016 | 0.26 | 7.6 | 25.5 | 0.00 | 0.00 | | | 7.5 | 6.2 | | | | |
| 8/4/2016 | 0.27 | 7.5 | 26.0 | 3.00 | 3.02 | | | 7.3 | 5.3 | | | | |
| 8/5/2016 | 0.17 | 7.5 | 25.7 | | | | | 7.3 | 7.0 | | | | |
| 8/6/2016 | 0.25 | 7.5 | 25.6 | | | | | 7.8 | 6.1 | | | | |
| 8/7/2016 | 0.25 | 7.3 | 24.9 | | | | | 9.1 | 9.8 | | | | |
| 8/8/2016 | 0.26 | 7.4 | 26.4 | | | | | 8.4 | 7.8 | | | | |
| 8/9/2016 | 0.31 | 7.3 | 24.9 | 2.00 | 2.33 | 0.00 | 0.00 | 7.3 | 7.2 | 2.20 | 0.71 | 0.83 | 2.91 |
| 8/10/2016 | 0.25 | 7.4 | 25.6 | 4.00 | 3.79 | | | 7.4 | 6.8 | | | | |
| 8/11/2016 | 0.25 | 7.5 | 25.3 | 4.00 | 3.72 | | | 7.4 | 6.5 | | | | |
| 8/12/2016 | 0.24 | 7.4 | 21.0 | | | | | 7.3 | 6.7 | | | | |
| 8/13/2016 | 0.25 | 7.6 | 26.9 | | | | | 7.4 | 6.9 | | | | |
| 8/14/2016 | 0.26 | 7.5 | 25.3 | | | | | 7.3 | 6.9 | | | | |
| 8/15/2016 | 0.29 | 7.3 | 25.3 | | | | | 8.3 | 6.3 | | | | |
| 8/16/2016 | 0.27 | 7.4 | 26.0 | 0.00 | 0.00 | | | 7.0 | 6.6 | | | | |
| 8/17/2016 | 0.25 | 7.4 | 26.0 | 6.00 | 5.61 | | | 6.1 | 6.1 | | | | |
| 8/18/2016 | 0.22 | 7.4 | 27.0 | 7.00 | 5.78 | | | 7.1 | 5.6 | | | | |
| 8/19/2016 | 0.20 | 7.3 | 27.0 | | | | | 7.2 | 5.9 | | | | |
| 8/20/2016 | 0.21 | 7.3 | 26.0 | | | | | 6.9 | 5.7 | | | | |
| 8/21/2016 | 0.19 | 7.3 | 27.0 | | | | | 7.0 | 6.0 | | | | |
| 8/22/2016 | 0.19 | 7.3 | 27.0 | | | | | 7.7 | 6.8 | | | | |
| 8/23/2016 | 0.20 | 7.3 | 25.9 | 0.00 | 0.00 | 0.00 | 0.00 | 7.9 | 7.2 | 2.76 | 0.78 | 0.60 | 3.54 |
| 8/24/2016 | 0.23 | 7.4 | 26.1 | 2.00 | 1.73 | | | 7.2 | 6.7 | | | | |
| 8/25/2016 | 0.21 | 7.5 | 26.1 | 1.00 | 0.79 | | | 7.2 | 7.1 | | | | |
| 8/26/2016 | 0.25 | 7.4 | 26.3 | | | | | 7.9 | 6.8 | | | | |
| 8/27/2016 | 0.27 | 7.4 | 26.7 | | | | | 7.4 | 8.3 | | | | |
| 8/28/2016 | 0.27 | 7.4 | 26.7 | | | | | 7.3 | 6.7 | | | | |
| 8/29/2016 | 0.43 | 7.6 | 26.5 | | | | | 7.5 | 6.9 | | | | |
| 8/30/2016 | 0.33 | 7.7 | 26.5 | | | | | 7.6 | 6.9 | | | | |
| 8/31/2016 | 0.37 | 7.8 | 26.8 | | | | | 6.2 | 6.6 | | | | |
| Minimum | 0.17 | 7.3 | 21.0 | 0.00 | 0.00 | 0.00 | 0.00 | 6.1 | 5.3 | 2.20 | 0.71 | 0.60 | 2.91 |
| Maximum | 0.43 | 7.8 | 27.0 | 7.00 | 5.78 | 0.00 | 0.00 | 9.1 | 9.8 | 2.76 | 0.78 | 0.83 | 3.54 |
| Total | 7.88 | 230.8 | 803.6 | 29.00 | 26.76 | 0.00 | 0.00 | 229.5 | 208.1 | 4.96 | 1.49 | 1.42 | 6.45 |
| Average | 0.25 | 7.4 | 25.9 | 2.42 | 2.23 | 0.00 | 0.00 | 7.4 | 6.7 | 2.48 | 0.75 | 0.71 | 3.23 |
| Geo Mean | 0.25 | 7.4 | 25.9 | 2.12 | 2.01 | 1.00 | 1.00 | 7.4 | 6.7 | 2.46 | 0.7 | 0.70 | 3.21 |

Berryville STP Monthly DMR Data

August 2016

| Date | Eff Total N
KG/D | Eff Total P
mg/l | Eff Total P
KG/D | E-Coli
No/100ml |
|-----------|---------------------|---------------------|---------------------|--------------------|
| 8/1/2016 | | | | |
| 8/2/2016 | | | | 1 |
| 8/3/2016 | | | | |
| 8/4/2016 | | | | |
| 8/5/2016 | | | | |
| 8/6/2016 | | | | |
| 8/7/2016 | | | | |
| 8/8/2016 | | | | |
| 8/9/2016 | 3.40 | 0.45 | 0.53 | 1 |
| 8/10/2016 | | | | |
| 8/11/2016 | | | | |
| 8/12/2016 | | | | |
| 8/13/2016 | | | | |
| 8/14/2016 | | | | |
| 8/15/2016 | | | | |
| 8/16/2016 | | | | 1 |
| 8/17/2016 | | | | |
| 8/18/2016 | | | | |
| 8/19/2016 | | | | |
| 8/20/2016 | | | | |
| 8/21/2016 | | | | |
| 8/22/2016 | | | | |
| 8/23/2016 | 2.71 | 0.28 | 0.21 | 1 |
| 8/24/2016 | | | | |
| 8/25/2016 | | | | |
| 8/26/2016 | | | | |
| 8/27/2016 | | | | |
| 8/28/2016 | | | | |
| 8/29/2016 | | | | |
| 8/30/2016 | | | | |
| 8/31/2016 | | | | |
| Minimum | 2.71 | 0.28 | 0.21 | 1 |
| Maximum | 3.40 | 0.45 | 0.53 | 1 |
| Total | 6.11 | 0.73 | 0.74 | 4 |
| Average | 3.05 | 0.37 | 0.37 | 1 |
| Geo Mean | 3.03 | 0.35 | 0.34 | 1 |

Berryville STP Monthly DMR Data

August 2016

| Date | Eff Total N
KG/D | Eff Total P
mg/l | Eff Total P
KG/D | E-Coli
No/100ml |
|-----------|---------------------|---------------------|---------------------|--------------------|
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| 8/2/2016 | | | | 1 |
| 8/3/2016 | | | | |
| 8/4/2016 | | | | |
| 8/5/2016 | | | | |
| 8/6/2016 | | | | |
| 8/7/2016 | | | | |
| 8/8/2016 | | | | |
| 8/9/2016 | 3.40 | 0.45 | 0.53 | 1 |
| 8/10/2016 | | | | |
| 8/11/2016 | | | | |
| 8/12/2016 | | | | |
| 8/13/2016 | | | | |
| 8/14/2016 | | | | |
| 8/15/2016 | | | | |
| 8/16/2016 | | | | 1 |
| 8/17/2016 | | | | |
| 8/18/2016 | | | | |
| 8/19/2016 | | | | |
| 8/20/2016 | | | | |
| 8/21/2016 | | | | |
| 8/22/2016 | | | | |
| 8/23/2016 | 2.71 | 0.28 | 0.21 | 1 |
| 8/24/2016 | | | | |
| 8/25/2016 | | | | |
| 8/26/2016 | | | | |
| 8/27/2016 | | | | |
| 8/28/2016 | | | | |
| 8/29/2016 | | | | |
| 8/30/2016 | | | | |
| 8/31/2016 | | | | |
| Minimum | 2.71 | 0.28 | 0.21 | 1 |
| Maximum | 3.40 | 0.45 | 0.53 | 1 |
| Total | 6.11 | 0.73 | 0.74 | 4 |
| Average | 3.05 | 0.37 | 0.37 | 1 |
| Geo Mean | 3.03 | 0.35 | 0.34 | 1 |



Berryville Biweekly InSight Report

Date: 8/23/2016

From: Jeny Chacko - GE Water & Process Technologies
To: David Tyrrell, Jeff Cappel - Town of Berryville
cc: Phil Lander, Al Farrell, Matthew Stapleford - GE Water & Process Technologies

System Equipment

4 x ZW trains, each 3 cassettes, 2x48/1x42 500D (surface area 46920 sq. ft. per train)

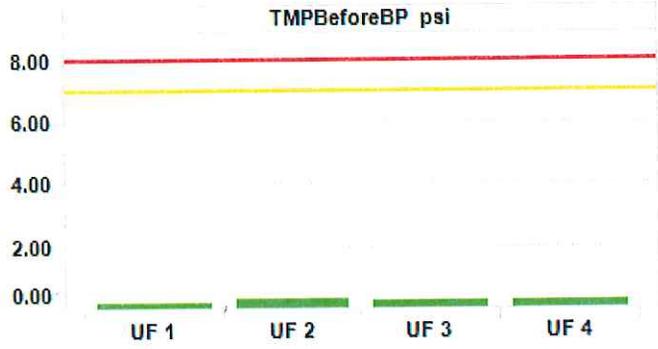
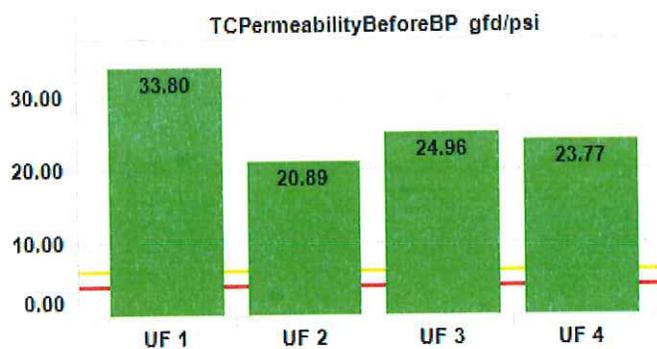
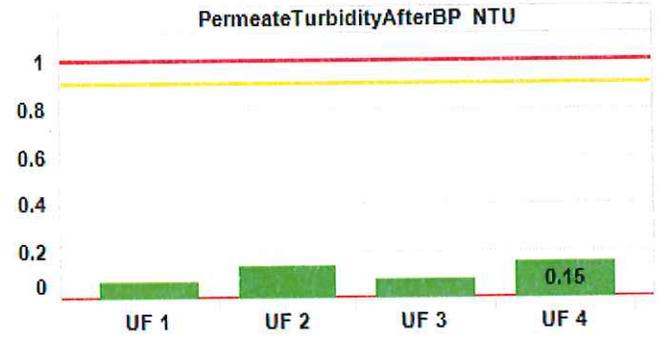
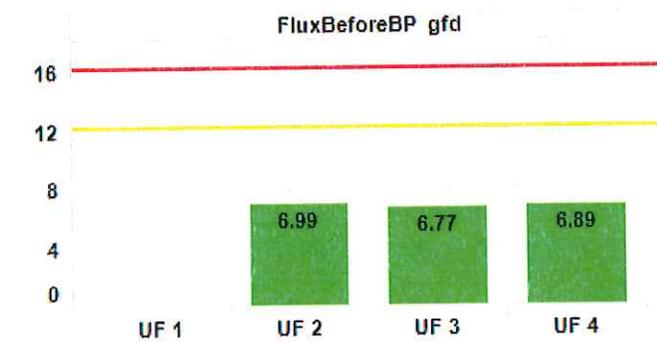
Cleaning Strategy

Maintenance clean dose concentrations - 2 NaOCl/ Hypo @ 200 ppm per week, 1 Citric acid @ 2000 ppm per week

Recovery clean soak concentrations - 2 NaOCl/ Hypo @ 1000 ppm per year, 2 Citric acid @ 2000 ppm per year

KPI Dashboard – Avg values through reporting period

- Action Required
- Caution
- No Limits
- Normal



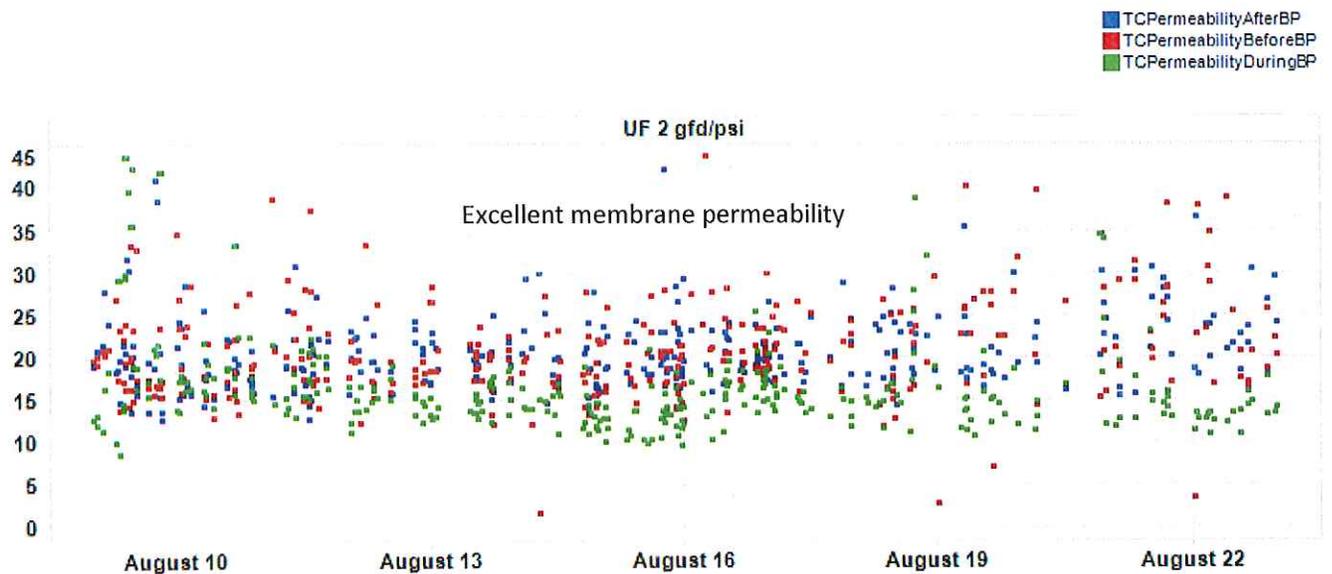
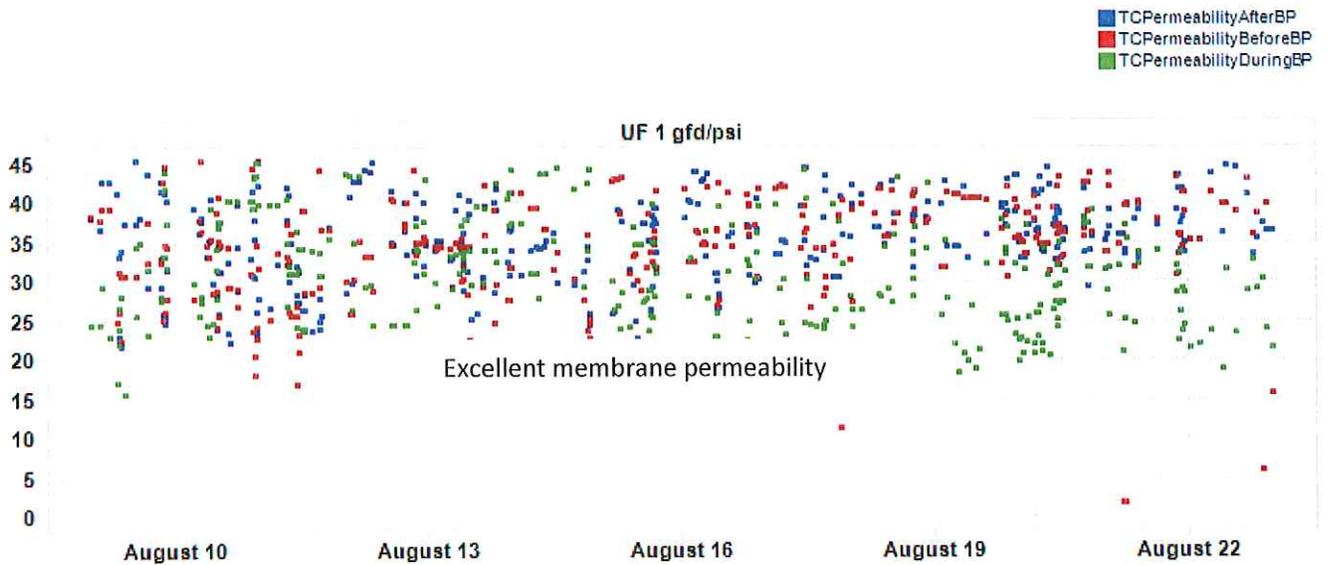


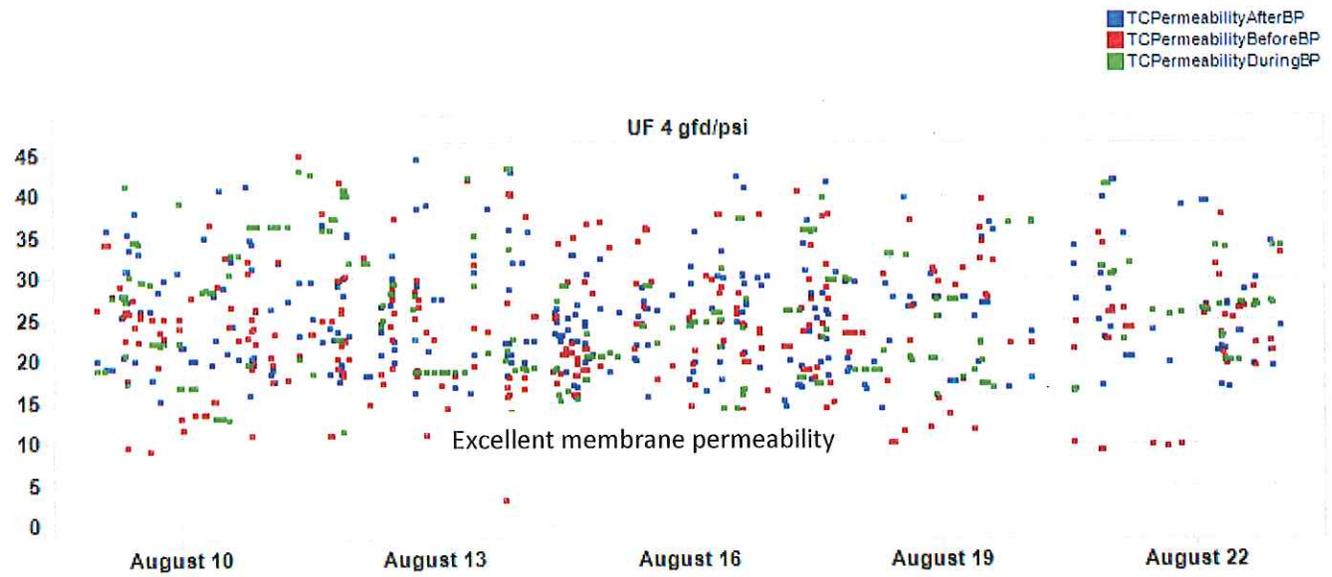
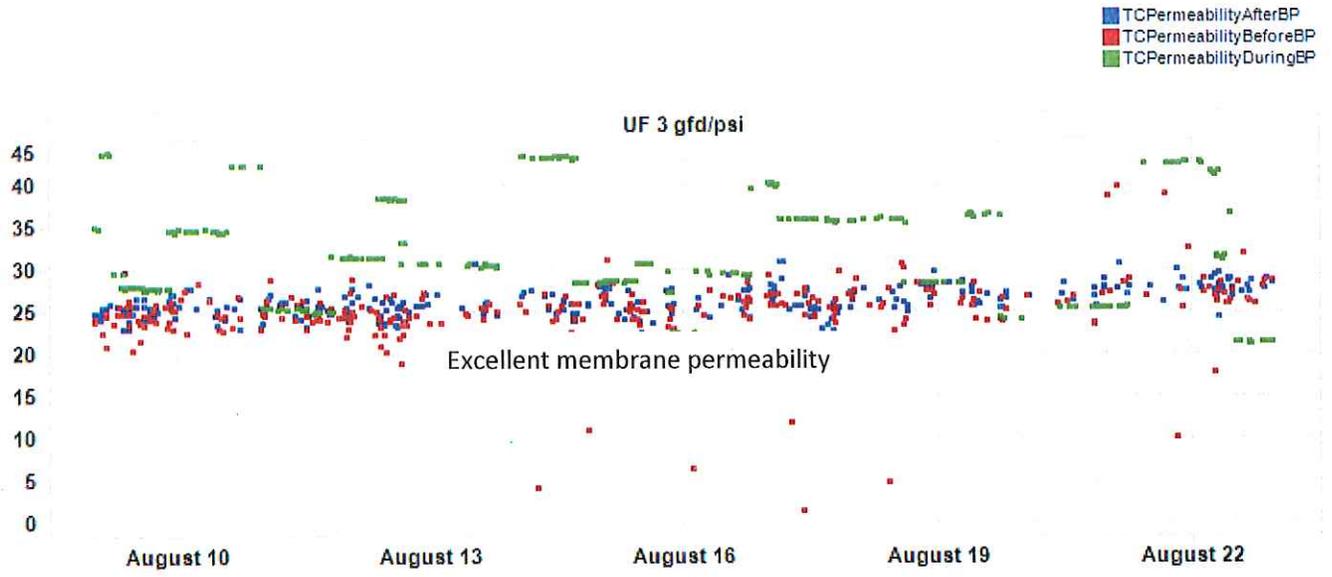
Plant Summary

Daily permeate flow went down by 25-30% compared to production in July. Plant permeate flows averaged at 243K. As a result, production TMPs also saw a slight decline. Temperature corrected production permeability was excellent averaging at 25 gfd/psi across all the trains. Trains operated at an average production flux of 7 gfd, production TMPs were <0.5 psi 99% of the time.

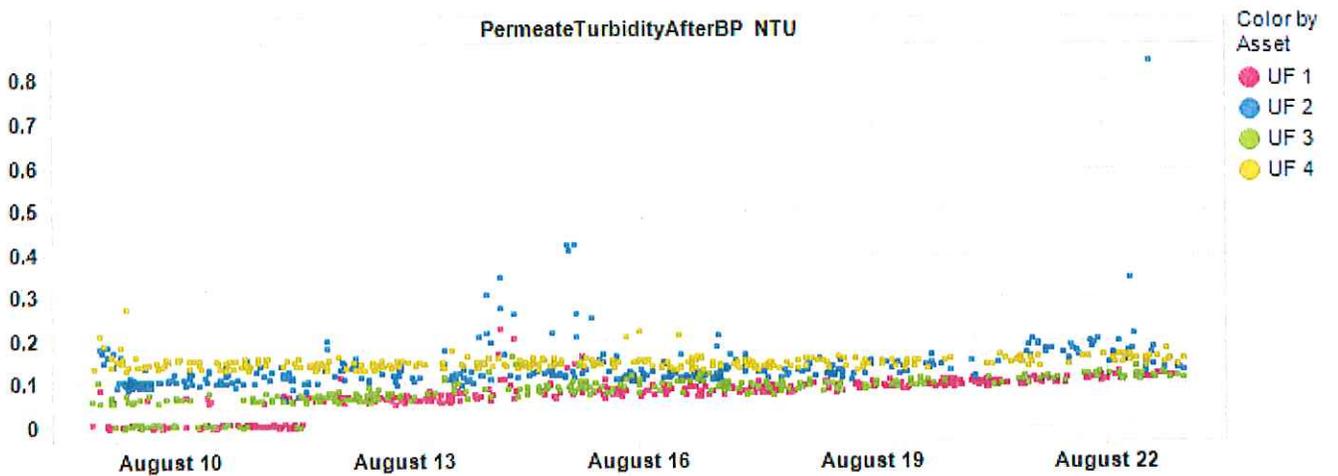
Permeate turbidity on Trains 1 and 3 dropped to a satisfactory range after going upto 2.8 NTU. Regular inspection and cleaning of the turbidimeters is required for accurate readings.

TC Permeability Trends By Train



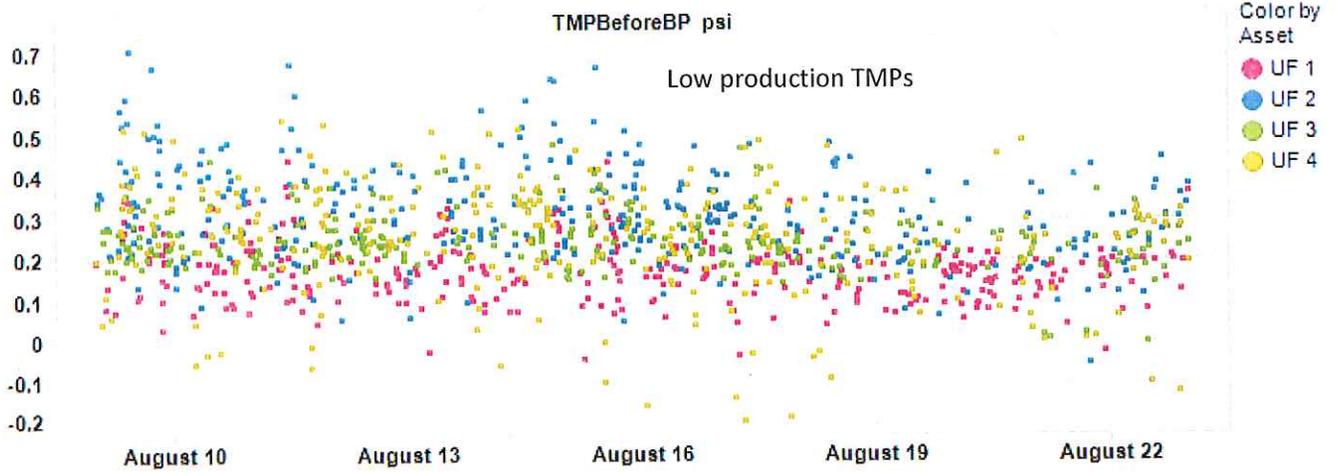


Permeate Turbidity Trend

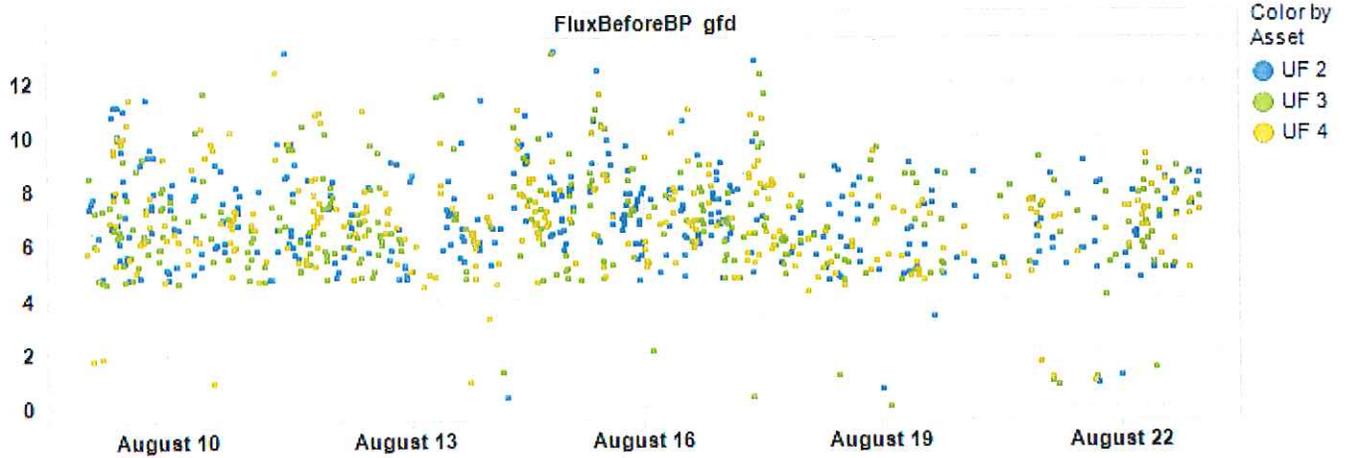




Before BPTMP Trend

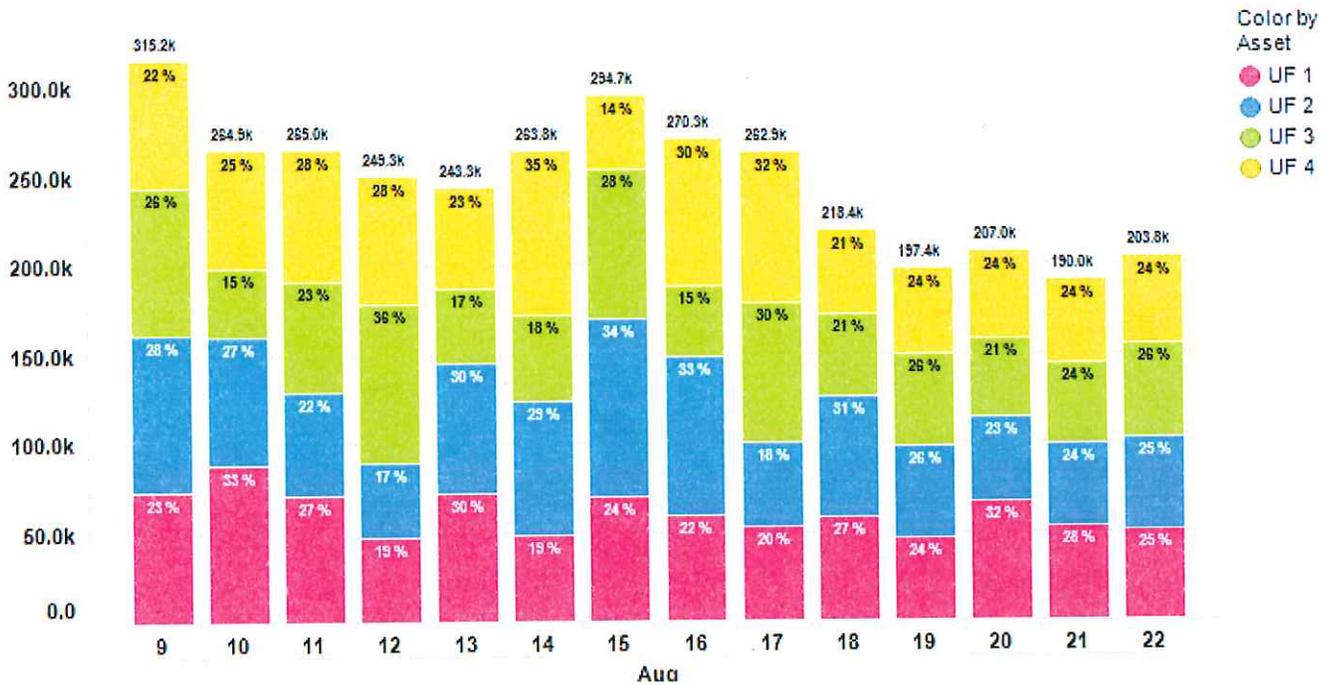


Before BP Flux Trend





Daily Permeate Flow



Average Daily permeate flow from 8/9/2016 to 8/22/2016 is 246.1k gal with a maximum daily flow of 315.2k gal.

Asset Summary

| KPI Parameters | Value/Change | UF 1 | UF 2 | UF 3 | UF 4 |
|--------------------------------|--------------|-----------|----------|-----------|----------|
| FluxBeforeBP gfd | Value | | 6.99 | 6.77 | 6.89 |
| | Change | | -3.28 % | -6.96 % | -2.78 % |
| PermeateTurbidityAfterBP NTU | Value | 0.07 | 0.14 | 0.08 | 0.15 |
| | Change | -908.23 % | -28.29 % | -693.51 % | 4.73 % |
| TCPermeabilityBeforeBP gfd/psi | Value | 33.80 | 20.89 | 24.96 | 23.77 |
| | Change | 3.95 % | 8.45 % | 2.84 % | 3.92 % |
| TMPBeforeBP psi | Value | 0.17 | 0.32 | 0.25 | 0.25 |
| | Change | -15.44 % | -15.64 % | -11.31 % | -9.82 % |
| TotalPermeateFlowDaily gal | Value | 61.29k | 64.97k | 57.41k | 62.46k |
| | Change | -30.95 % | -9.64 % | -35.24 % | -24.32 % |



Plant Summary

| KPI Parameters | Value/Change | UF Plant |
|----------------------------|--------------|----------|
| PermeateTemperature °F | Value | 76.42 |
| | Change | 2.31 % |
| TotalPermeateFlowDaily gal | Value | 246.14k |
| | Change | -24.64 % |

Contract Expiry Date : 09/26/2018

For InSight technical assistance please email insightsupport@ge.com or please call technical support at 1 866 271 5425 or 905 469 7723 and follow the prompts, if you require after hours assistance please contact the 24/7 Emergency number provided in your plant documentation. This email is a summary of issues identified during a manual review of InSight data from the time period above. This review is an analysis of data that is logged by InSight and identifies key plant performance issues determined from this data. This data review was not focused on minor data issues but on identifying possible existing and/or upcoming critical operational issues.

This review was prepared by GE Water & Process Technologies solely to assist water treatment plant owners and/or operators in analyzing and optimizing plant performance and is not intended to be used or relied upon for regulatory compliance or any other purpose. The content of this review is based in whole or in part on operation data obtained from the plant using InSight software. GE Water & Process Technologies makes no representations or warranties as to the accuracy of the plant data utilized in the preparation of this review. GE Water & Process Technologies accepts no liability for consequences or actions taken in whole or in part by any person on the basis of this review or its contents

Attachment 13

Report of the Department of Public Works September 6, 2016

The water line up-grade on Academy Court has progressed well. We finished installing the new main and reconnected the customers and activated the fire hydrant last week. All the top soil and seed has been applied and the temporary water main has been removed. We need to abandon the existing four inch connection and install the base asphalt in the ditch line. These tasks are on schedule to be completed within the next couple of weeks. Work to improve the base in the cul-de-sac should also be completed before winter if possible.

I have contacted Nate Stauffer with Fluid Technologies about doing a leak survey on our water distribution system. We have this survey done every couple of years to check for leaks that normally do not come to surface. He will be here the week of the 12th and will need approximately four days to complete the survey.

We had one sewer related problem last month. The homeowner at 112 Willow Lane called and informed us that it appeared the sewer main was blocked. Public Works responded and found the main was blocked between his residence and Walnut Street. We cleared the blockage by using the jet rodder to clean and flush the line.

I have discussed the rehabilitation of the sewer main on Academy Court with several companies and hope to have pricing to submit soon.

We have been working on painting crosswalks and stop bars throughout the Town. Wilson Asphalt Maintenance will be in the area this week to reinstall the double yellow lines on South Church Street and Tyson Drive.

During the upcoming weeks we will be trimming trees and brush from our right of ways to improve sight distance and to insure safe travel on our walkways.