



The State of New Hampshire  
**DEPARTMENT OF ENVIRONMENTAL SERVICES**



**Thomas S. Burack, Commissioner**

October 5, 2015

**WATER CONSERVATION PLAN APPROVAL**

Board of Selectman  
Greenville Water Works  
PO Box 343  
Greenville, NH 03048

**Subject: Greenville, Greenville Water Works (PWS ID: 0991010)  
Instream Flow Program – Water Conservation Plan**

Dear Messrs:

On June 29, 2015, the New Hampshire Department of Environmental Services (“DES”) received a Water Conservation Plan (the “WCP”), signed on June 24, 2015, for Greenville Water Works located in Greenville, New Hampshire. Pursuant to RSA 483:9-c and Env-Wq 1900, Protection of Instream Flow on Designated Rivers, Greenville Water Works is an affected water user on the Souhegan River and is required to implement a water management plan. The submitted WCP is part of the water management plan.

DES approves the WCP based on the following conditions, to be implemented no later than the date of this WCP Approval, unless otherwise noted:

1. Meters shall be installed on all new and existing sources, transfers, and either water consuming process prior to distribution or at the point of distribution.
2. All source meters, distribution meters, and any other meters measuring water consuming process prior to distribution shall be read on a monthly basis - no sooner than 27 days and no later than 33 days from the last meter reading.
3. All meters shall be tested and maintained based on the schedule proposed in the WCP. If a schedule is not proposed, meters shall be tested and calibrated based on the following schedule:

Meter Size (inches)	Testing Rate (yr)
<1"	10 yrs
1" - 2"	4 yrs
3"	2 yrs
>3"	1 yr

4. All meters shall be installed per the manufacturer's instructions or American Water Works Association standards.
5. Every two years, a comprehensive acoustic leak detection survey shall be completed in accordance with "Manual of Water Supply Practices, Water Audits and Loss Control Programs", document identification number AWWA M36, American Water Works Association, 2009.
6. Service meters shall be read at least twice in a calendar year, with a goal of quarterly reading.
7. Customers shall be billed twice a year, with a goal of quarterly billing.
8. A water balance, the difference between the system input volume and the metered authorized consumption, shall be reported annually to DES. The water balance shall be reported by March 1 for the prior year using the online reporting tool.
9. Residents shall be charged based on the amount of water each residence uses and the rate shall be structured so that the cost per gallon(s) is either constant or increasing with the amount of water used.
10. Leaks shall be repaired within 60 days of discovery.
11. Within one year of the date of this WCP Approval, an outreach and education program shall be implemented as proposed in the WCP.
12. Every three years from the date of this WCP Approval, a *Water Conservation Plan Ongoing Compliance Reporting Form* shall be submitted to DES documenting how the system has maintained compliance with the WCP. The following records shall be maintained by the water system to include with the report:
  - a. A leak log including the date a leak was discovered, the date a leak was repaired, the type of leak (ex. water main, service line, hydrant, valve), the approximate size of the leak (gpm), and the nearest address to the leak.
  - b. The title of water efficiency materials distributed and the date of distribution.

- c. Date of installation and replacement of all meters, as well as testing and calibration records.
- d. Leak detection survey reports.

13. Revisions to the Plan shall not be implemented without further approval from DES.

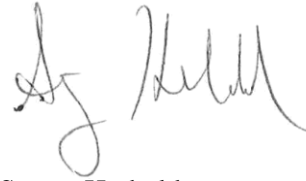
The online *Annual Water Balance Reporting Form* and the *Water Conservation Plan Ongoing Compliance Reporting Form* may be located by going to the DES website, [www.des.nh.gov](http://www.des.nh.gov), clicking on the "A-Z List" in the top right corner of the page, and scrolling down to Water Conservation

Sincerely,



Wayne Ives  
NHDES Instream Flow Specialist  
603-271-3548  
[wayne.Ives@des.nh.gov](mailto:wayne.Ives@des.nh.gov)

Sincerely,



Stacey Herbold  
NHDES Water Conservation  
603-271-0659  
[stacey.herbold@des.nh.gov](mailto:stacey.herbold@des.nh.gov)

Greenville Water Works  
EPA #0991010  
Greenville, NH  
Water Conservation Plan

June 2015

I. INTRODUCTION

The water source for Greenville Water Works is the Tobey Reservoir. Water pumped from the reservoir is treated and distributed for domestic use in the Town of Greenville, New Hampshire and is used by Pilgrim Foods as industrial process water for the production of canned/bottled food products.

A. Contact Information

1. Name and location of system.

Greenville Water Works  
EPA #0991010  
WUID#20047  
Greenville, NH 03048

2. Owner of system and mailing address.

Name: Board of Selectmen  
Address: PO Box 343, Greenville, NH 03048  
Company: Greenville Water Works  
Phone Number: 603-878-2084  
Email: [administrator@greenvillenh.org](mailto:administrator@greenvillenh.org)

3. Name and Mailing address of designer of Water Conservation Plan.

Name: Gerry Curran, Plant Manager  
Address: PO Box 11, Greenville, NH 03048  
Company: Utility Partners  
Phone Number: 603-878-2800  
Email: [gcurran@utilitypartnersllc.com](mailto:gcurran@utilitypartnersllc.com)

Pursuant to RSA 483 and Env-Wq 1900, instream flow rules, Greenville Water Department shall implement a water conservation plan. The instream flow regulations were created to protect instream uses, characteristics, and resources. The Tobey Reservoir intersects the Souhegan River.

B. System Overview

1. Number of existing and proposed connections for each of the following classes:

a. Residential; 295.

NOTE: Greenville Estates is a consecutive system that has another 190 residential connections

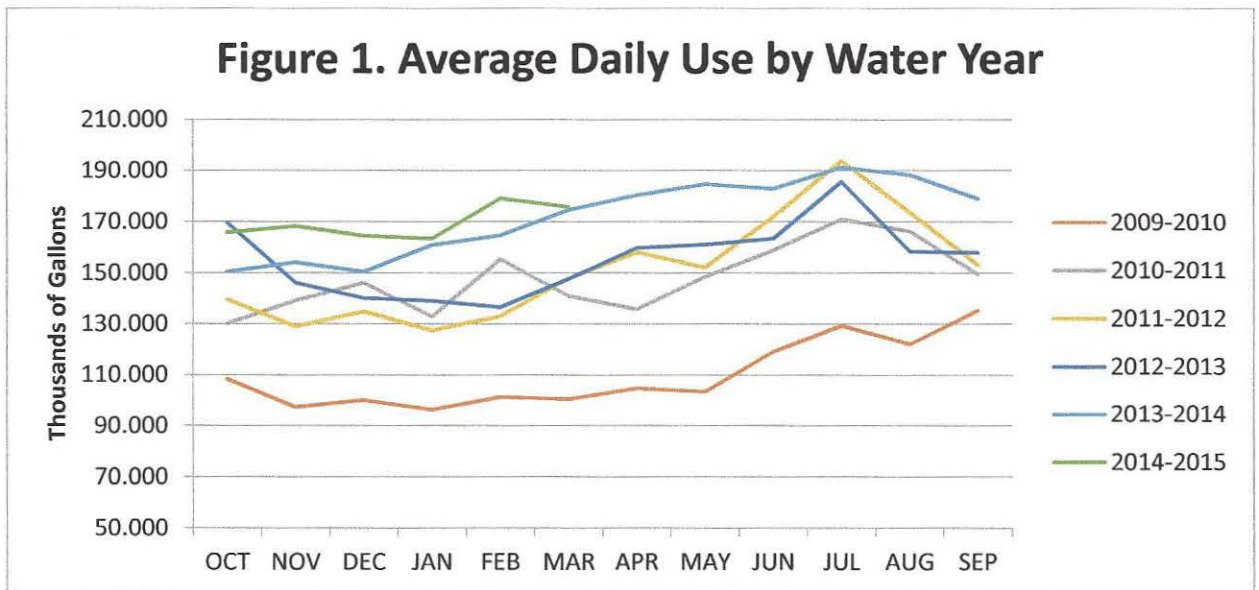
b. Industrial/commercial/institutional; 61

c. Municipal; Town Hall, WTP, WWTP, Pool, SAU, Temple Elem. Police.

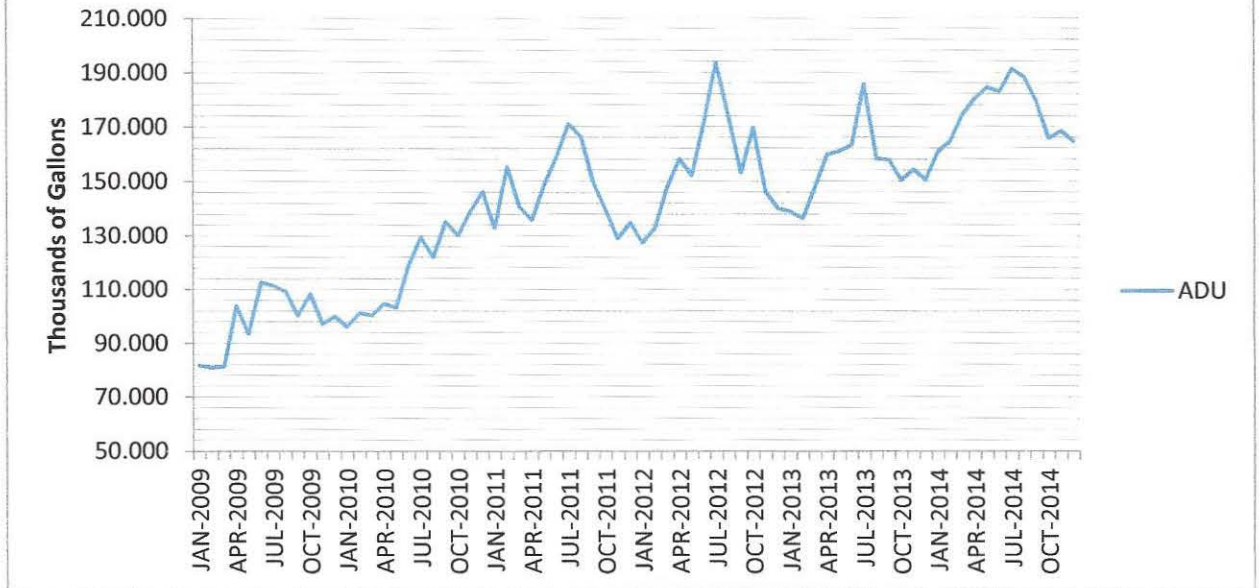
2. Description of any connections that currently receive or will receive more than 20,000 gpd: Pilgrim Foods is a manufacturing facility producing fruit juice, vinegar, mustard and other condiments. They have an Industrial Discharge Permit that allows 25,000 gallons of treated industrial wastewater into the sewer system, but they have disconnected from the wastewater system. They still are connected to the water system.

C. Water Use Trends and Supporting Data / Population Trends:

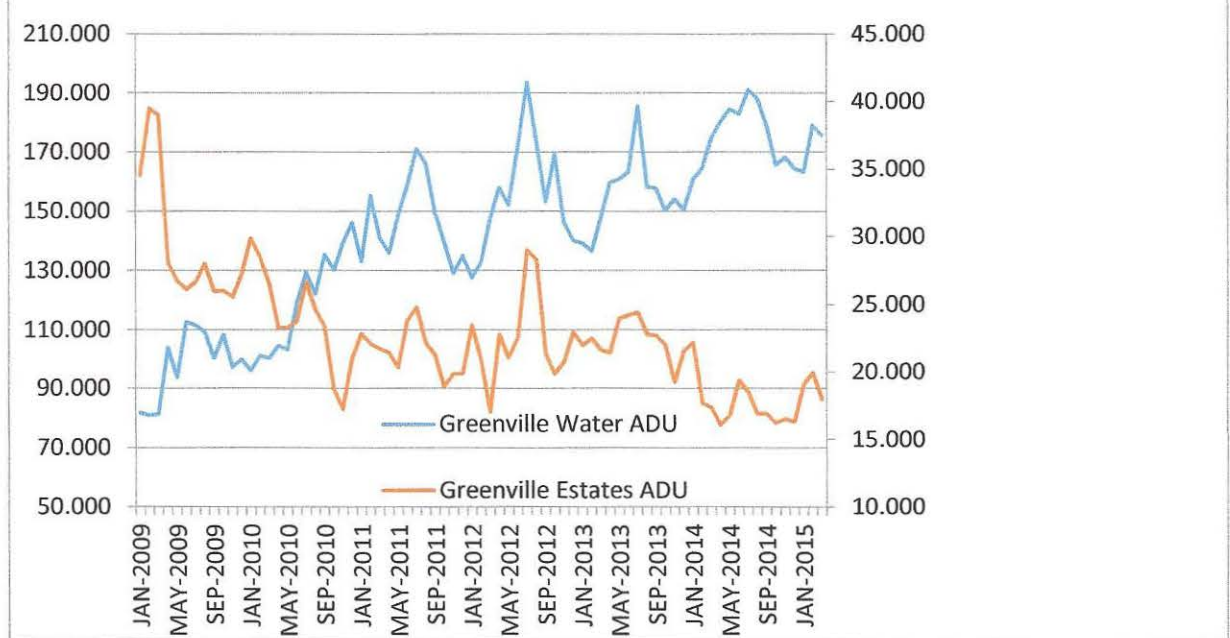
Note\* ADU based on finished water being distributed into system.



**Figure 2. Average Daily Use**



**Figure 3. Average Daily Use for Greenville Water Works and Greenville Estates**



Greenville Village Estates connected to Greenville Water Works in October 2010, resulting in an increase in average daily use by approximately 20,000 to 30,000 gallons per day (Figure 1.).



Between October 2009 and September 2013, water use trends follow a typical pattern of lower water use in the winter and increasing water use in the summer, due to additional demand for outdoor water uses (Figure 2).

ADU during the winter months has increased by approximately 10,000 gallons per day since the winter of 2011-2012. In 2013-2014, ADU was above average for most months and the upward trend continued into the winter of 2014-2015. At the same time, Greenville Estates ADU has decreased (Figure 3.). The increase in ADU for Greenville Water may indicate an increase in leakage, the addition of new connections to the system, or a combination of both.

1. Existing and anticipated seasonal fluctuation in water use and reason for fluctuation. **There are minimal seasonal fluctuations. Typically usage increases during the summer months by approximately 25%.**
2. Anticipated growth in population and seasonal fluctuation in population: **Minimal population growth, but in October 2010, the system began distributing water to Greenville Village Estates Water District.**
3. Average daily water use. 2014= 175,472 gpd
4. Maximum daily water use. July 2014 = 5,928,900 gal = 191,254 gpd
5. Minimum hourly flows (if available).

## II. System Side Management

### A. Source Meters

1. Name designation of each water source. **Tobey Reservoir.**
2. Meter make, model, size, flow range, and date of last calibration for each existing source meter. **Hach SC53**
3. Frequency that source meters will be tested/calibrated: **Annually**
4. Frequency that source meters will be read (at least every 30 days): **Daily**
5. Source meters will be selected, installed, and maintained in compliance with "Manual of Water Supply Practices M6, Water Meters-Selection, Installation, Testing, and Maintenance," (American Water Works Association, 1999).

### B. Distribution Meter

1. Meter make, model, size, flow range, and date of last calibration for each existing distribution meter. **Bailey-Fischer-Porter 4-inch, 0-500 gpm, Model # 10DX3111EDD15P1A2BA14321, calibrated annually and last calibrated 7-8-14.**

### C. Service Meters

1. How many un-metered connections exist? **Zero.**  
**Note\* Greenville Estates has a Neptune compound meter recording normal low and high flows and a meter to register flow during a fire or hydrant flushing. They also have individual meters at each residence. Greenville Estates handles their own meter reading and billing.**

2. Will separate irrigation meters be installed? Yes, upon request.
3. Frequency that service meters will be read (at least every 90 days). 180 Days
4. Description of all methods that will be used to read service meters: Neptune CE5320X Handheld Radio Reader for e-coder meters, and manual readings.
5. Expected number of days needed to read all service meters: 2.
6. Proposed rate of meter testing and/or meter change out:

In 2010, ARRA funding was received to replace all meters with new meters and radio reading capabilities, as well as new billing software. The units were installed in 2010 and have been maintained, tested, and replaced based on failure or inaccurate testing. Residential meters, Neptune T-10s, have a 15 year accuracy warranty and will be changed out or tested upon warranty expiration.

Larger meters for 26 non-residential connections were not replaced as the part of the residential meter program, but have slowly been changed out as finances allow. 12 meters are left to replace.

7. All service connections are and will continue to be selected, installed, and maintained in accordance with procedures described "Manual of Water Supply Practices M6, Water Meters-Selection, Installation, Testing, and Maintenance," (American Water Works Association, 1999).

#### D. Other Meters

1. During flushing events, we will continue to use a Pollard LPD-250 low flow de-chlorinator diffuser with a measuring pitot.

#### E. Water Balance/Water Audit

1. Most recent water audit, differentiating between apparent and real losses, and estimate of non-revenue water and the year it was estimated. In 2014, 64,047,400 gallons of water was introduced into the distribution system. Of that 45,356,094 gallons were registered through individual meters. The estimated amount of water used during the 2014 spring flushing event equated to 81,247 gallons (times 2 = 162,494 gallons). Based on this data, water losses equate to 29% of system input volume, equivalent to a 35 gpm leak.

To reduce water losses to below 15%, as described in #3., below, 50% of the system will be surveyed by a leak detection consultant in 2015 and the remaining 50% will be surveyed in 2016. Also, authorized consumption including flushing will be tracked and logged, as will leaks and estimated leak size and the replacement of older non-residential meters will continue.

2. A yearly water balance (system input volume – metered use) will be reported to DES using the water balance online reporting tool by March 1 for the



previous calendar year on an annual basis. If the water balance is greater than 15% of the system input volume, a water audit will be calculated in accordance with “Manual of Water Supply Practices M36, Water Audits and Loss Control Programs” (American Water Works Association, 2009).

- 3.If water losses exceed 15% system input volume, the water system shall prepare and submit a response plan to the department within 60 days. The response plan shall be based on audit results and identify how the water system intends to reduce the percentage of non-revenue water to below 15 percent within two years.

#### F. Leak Detection

- 1.Fifty percent of the system will be surveyed for leaks in 2015 as part of the DES leak detection grant program.
- 2.Are pipe locations known? If not, include in a statement that a pipe location survey will be conducted in order to perform leak detection. Pipe locations are known.
- 3.Breakdown of pipe material, age, and length. Underwood Engineering upgrades. – 26,165 feet of the distribution system was replaced in 2003 with Class 52 ductile iron pipe.  
The remainder is varying amounts of asbestos cement and galvanized steel and cast iron pipe. There are no plans to replace the aged pipe. The potential to replace pipe that has been the failed recently is being considered in 2015.
- 4.Availability of contact points and adequacy of spacing. Spacing is adequate for leak detection.
- 5.Is pipe material non-metallic? If yes, as leaks are difficult to acoustically detect in non-metallic systems, what additional measures will be taken to detect leaks? To be determined.
- 6.Will zone meters be installed to assist with leak detection identification and location? No
- 7.Will future leak detection surveys be conducted in-house or contracted out? Both in-house and contracted.
- 8.If in-house, what equipment will be used and what training will be required? Initially Granite State Rural Water Association will be asked to assist in the leak detection survey and then subsequent surveys will be conducted in-house.
- 9.If in house, describe the leak detection method to be used. This would be based on results from #8. More research will go into this to find the most effective and affordable equipment.
10. Statement that a comprehensive leak detection survey will be conducted every two years. A comprehensive leak detection survey will be conducted every 2 years.
11. Will leak detection be done all at one time or staggered throughout the two years? If staggered, what is the timeline and what percentage of the system

will be surveyed during each initiative? 50% of the distribution system will be done on each occasion.

12. Leak detection will be conducted in accordance with “Manual of Water Supply Practices M36, Water Audits and Loss Control Programs” (American Water Works Association, 2009).
13. Leaks will be repaired within 60 days of discovery.

#### G. Pressure Management

1. Existing minimum distribution pressure. 5 psi
2. Existing maximum distribution pressure. 135 psi – water main and service connections were replaced between 2001 and 2003 in high pressure zones.
3. How is pressure monitored and how will pressure continue to be monitored? Monitored during hydrant flushing and/or during leak detection surveys.
4. What method will be used to reduce pressure zones found to be in excess of 80 psi? Pressure Reducing Valves were installed at every service connection in 2010 and will subsequently be maintained and replaced as needed by the property owner.
5. What will be the timeframe for reduction (at least within 1 year of source water approval)? N/A
6. If pressure reduction is not feasible, please explain why and describe what additional steps the water system will take to monitor and repair leakage within these zones. N/A

#### H. Intentional Water Loss

1. Are there “bleeders” used within the system at dead ends to improve water quality or prevent freeze-up? If yes, what looping opportunities exist? N/A
2. Are storage tanks intentionally allowed to overflow because of system hydraulics or water quality concerns? If yes, what opportunities exist for the installation of altitude valves or tank mixing systems? Both storage tank levels are monitored and controlled by a Supervisory Control and Data Acquisition system (SCADA) and have high/low level alarms that are active. No overflowing occurs.

### III. Consumption Side Management

#### A. Conservation Rate Structure and Billing

1. Description of proposed rate structure and timeline for implementation (no later than 5 years from source water approval). If unknown, provide a statement that the water system will adopt a rate structure that complies with 2101.05 (o) and that DES will be notified of the new structure no later than the first billing cycle after source water approval. A \$6.50/1000 gallons (133.7 CuFt) rate structure is currently in place.
2. If irrigation meters are installed, will irrigation water be billed at a different rate? Yes, as water only – no sewer rate.



3. Will a seasonal rate structure be utilized in addition to the general rate structure? **No.**
4. Proposed billing frequency (minimum is quarterly). **Semi-annually. Quarterly billing has been considered, but the system will need more staff to achieve this and this is not a priority right5 now.**
5. Informative billing practices to be used (ex. water use in gallons / usage history). **Water users are informed if the total usage in cubic feet, and of their historical usage as part of each bill to help identify any and all unusual increases. In the event of a high bill, and at the request of the property owner, distribution system operators will verify active flow rates (in the event of a leak) and advise the user on how to manually read the meter directly, to also help in identifying leaks.**

**Also, the billing computer software utilized by the Town recognizes water loss through monitoring continued historical usage between billing cycles and notifies the user of potential leaks as a part of their water bill.**

#### B. Educational Outreach Initiative

1. Informational materials that will be used. **Water conservation pamphlets procured from the EPA WaterSense, AWWA, or NHDES website.**

**NDES Fact Sheets:**

**[http://des.nh.gov/organization/divisions/water/dwgb/water\\_conservation/categories/publications.htm](http://des.nh.gov/organization/divisions/water/dwgb/water_conservation/categories/publications.htm)**

**WaterSense: <http://www.epa.gov/watersense/>**

2. Rate of dissemination. **Twice a year water efficiency tips or fact sheets will be either inserted with mailed bills or included with the Consumer Confidence Report.**
3. Does the water system intend on becoming a WaterSense partner?  
**<http://www.epa.gov/watersense/> No.**
4. Will a rebate program be offered to replace older fixtures with WaterSense certified fixtures? **No.**
5. Will consumer audits be offered? **No.**
6. Other outreach plans? **None.**

#### IV. Zoning Ordinance / Bylaws

- A. Are connections to the water system subject to any of the following water efficiency ordinances or bylaws?
  1. Indoor
    - a) Water efficient fixtures beyond the existing plumbing code. **No.**
  2. Landscaping

- a) Minimum topsoil requirements. **No.**
- b) Use of native/drought tolerant plants and grasses. **No.**
- c) Area and slope restrictions for turf grass. **No.**

3. Irrigation System

- a) Prohibition or restrictions to irrigation systems. **No.**
- b) Require soil moisture sensors. **No.**
- c) Require rain sensors. **No.**

4. Other water efficiency ordinances? **None.**

V. Water Use Restrictions

- A. What is the water system's plan relative to implementing water restrictions? **No restrictions have been implemented in the past but an emergency use restriction in place as part of the town's water use ordinance. (Section 7. Water Use Restrictions)**
- B. Who is responsible for enforcing restrictions? **The Board of Selectmen in conjunction with operations contractors.**

VI. Reporting and Implementation

- 1. **The water system will submit a form supplied by DES once every three years documenting how compliance with the water conservation plan is being achieved.**
- 2. **Activities outlined in the water conservation plan will be completed by water personnel under the supervision of a certified water system operator.**

I certify that I have read this Water Conservation Plan, understand the responsibilities of the water system as referenced in the plan, and that all information provided is complete, accurate, and not misleading.

Owner Name (print): Anthony Sfc. Marie

Owner Signature: Anthony Sfc. Marie Date: 6/24/15

Owner Name (print): CARLA C. MARY

Owner Signature: Carla C. Mary Date: 6-24-15

Owner Name (print): Douglas A. BEARDON

Owner Signature: Douglas A. Beardon Date: 6-24-15