

# PROPOSAL

## WATER CONSERVATION COMPETITIVE GRANT PROGRAM

FEDERAL FISCAL YEAR 2011

### ADMINISTRATIVE SUMMARY

**Name and Address:**

Town of Clinton, MA  
242 Church Street  
Clinton, MA 01510

**Telephone:** 978-365-4110

**Facsimile:** 978-365-4106

**Email:** cmcgown@clintonma.gov

**PROJECT TITLE:**

Town of Clinton Public Works Water Audit and Conservation Project

**MUNICIPALITY AND WATERSHED(S) SERVED BY THIS PROJECT -**

Town of Clinton PWS# 2064000 obtains its water supply from the Wachusett Reservoir and is located in the Nashua Watershed.

**AMOUNT OF FUNDING REQUESTED AND AMOUNT AND PERCENT OF MATCH FUNDING PROPOSED -**

Federal Funds via MassDEP	<u>\$39,900</u>	
Match (25% required)	<u>\$10,000</u>	25% of Requested Grant Amount _____
Total Project Budget	<u>\$49,900</u>	

**PROJECT SUMMARY/OBJECTIVES -**

This project involves a water audit of the Town's water supply and distribution system to better define where water is being lost and where to focus future efforts to reduce water losses. This project will bring an objective, big picture assessment of water losses and how to spend future monies to get the most reduction in losses. The project includes a review of existing methods for calculating unaccounted for water, leak detection, a conservation education program, and a cost analysis and will result in a report that outlines recommendations to reduce water losses and consumption.

**PRINCIPAL CONTACT:**

Christopher J. McGown, Superintendent of Public Works  
Name and Title

(978) 365-4110  
Telephone

cmcgown@clintonma.gov  
Internet

(978)-365-4106  
Facsimile

**AUTHORIZED SIGNATORY:**

Christopher J. McGown, Superintendent  
Signature and Title required

7-30-10  
Date

## PROJECT DESCRIPTION

The following provides a brief description of the project.

Element	Description										
<b>CONCISE STATEMENT OF THE PROBLEM</b>	<p>The Town of Clinton Water Department has been providing water to its customers since 1876. In recent years, the Town of Clinton has been working diligently to reduce water losses within the water supply system. Recent efforts have included:</p> <ul style="list-style-type: none"> <li>• Comprehensive leak detection of the distribution system completed annually;</li> <li>• Annual calibration of source raw water meters, finished water meters and backwash supply meter;</li> <li>• Recent replacement of master meters and implementation of a SCADA system;</li> <li>• Residential meter replacement when meters are discovered to be not functioning properly.</li> </ul> <p>Despite these efforts the unaccounted for water calculated for the year 2009 was 27%. Additionally the Town has had difficulty with calculation of the unaccounted for water. The Town intends on developing a better methodology for monitoring and calculating the unaccounted for water. The following provides the unaccounted for water since 2006.</p> <table border="1"> <thead> <tr> <th>Year</th><th>Unaccounted for Water</th></tr> </thead> <tbody> <tr> <td>2006</td><td>7%</td></tr> <tr> <td>2007</td><td>20%</td></tr> <tr> <td>2008</td><td>13%</td></tr> <tr> <td>2008</td><td>27%</td></tr> </tbody> </table> <p>The Town has an agreement with the MWRA on the amount of water the Town may withdraw from Wachusett Reservoir annually. While the Town is not required to meet maximum unaccounted for water and per capita water usage, the Town recognizes the importance of responsible water management. The Town has set a self imposed goal of 10% unaccounted for water and 65 gallons per capita per day (gpcd).</p> <p>In addition to past efforts, the Town is proposing a water audit to better focus future efforts to reduce unaccounted for water. The project includes a review of existing methods for calculating unaccounted for water, leak detection, a conservation education program, and a cost analysis and will result in a report that outlines recommendations to reduce water losses. This project will help the Town to determine improvements to the water supply system that will reduce the volume of water withdrawn from the source and minimize the environmental impact on the watershed. This grant is needed to help fund this project.</p>	Year	Unaccounted for Water	2006	7%	2007	20%	2008	13%	2008	27%
Year	Unaccounted for Water										
2006	7%										
2007	20%										
2008	13%										
2008	27%										
<b>PROJECT GOAL(s)</b>	The goal of this project is to identify and reduce unaccounted for water loss and consumption from the Town's water system.										

<b>PROJECT STRATEGY</b>	<p>The project will begin with collection, review and analysis of existing information to determine specifics of the system and current methodologies that may require special attention. The Town will work with outside contractor, Comprehensive Environmental Inc. (CEI), who has many years of experience in water auditing and methodologies for making water loss reduction more effective. Water losses from the system will be evaluated through a comprehensive water audit. Comprehensive leak detection will be conducted as well with leak repairs conducted per a newly established priority system of leak repairs. A conservation education program will be implemented to increase conservation awareness and reduce water consumption. Based on the results of these activities, the project will result in recommendations and costs for the appropriate next steps to further reduce water losses and water consumption. The Town is committed to repairing leaks as soon as possible after discovery as prioritized under the new priority system of leak repair.</p>
<b>MILESTONES</b>	See the milestone schedule included.
<b>ACTIVITIES</b>	<p>Activities to be conducted in this grant are summarized below and detailed in the scope of services:</p> <ul style="list-style-type: none"> <li>• Evaluate existing methods and data used to calculate water losses and complete DEP water audit forms, including cost of lost water</li> <li>• Conduct a comprehensive leak detection survey and repair leaks</li> <li>• Develop and implement a conservation education program</li> <li>• Prepare a report of findings and recommendations</li> </ul>
<b>PROJECT EVALUATION</b>	<p>The project meets the following priority criteria:</p> <ul style="list-style-type: none"> <li>• The Town's Water Department is an enterprise fund.</li> <li>• The Town currently utilizes an increasing block rate to encourage conservation.</li> <li>• Water use at all municipal buildings is metered and is recorded as reported in the Annual Statistical Reports.</li> <li>• A leak detection survey is completed annually and all leaks are repaired.</li> <li>• Master meters are calibrated annually.</li> <li>• The Town's goal is to reduce unaccounted for water below 10% and per capita usage below 65 gpcd.</li> <li>• The project includes the ability to quantify the impact in gallons of water and dollars saved.</li> <li>• The project helps to maximize the efficiency of the public water supply system by conducting a water audit.</li> </ul>

## PROPOSAL

### SCOPE OF SERVICES

Provide a brief descriptive statement for each task/activity to be completed under the project, and list and describe the product(s) for each task. Provide an estimated cost for each task. Finally, every response must include reporting requirements (quarterly updates, final project reports, etc.) as a separate task. Attach additional pages as necessary to describe objectives/tasks.

#### TASK/OBJECTIVE #1: **Water Audit**

The Town will conduct a water audit to balance the volume of drinking water produced with the volume billed and account for the remaining water (loss). Use the DEP guidance document provided through the Water Management Act Program – *Water Management Act Program Guidance Document for a Water Audit and Leak Detection Survey*.

The Town will collect information on the cost to pump and treat water into the distribution system including energy, chemical and fuel costs. This information will be used to determine the cost of lost water and justify future expenditures to find and correct lost sources of water. A template will be developed for future use in estimating losses from leaks and other events. Billing software capabilities will be reviewed for the system's potential to flag out of range accounts for potential leakage and losses.

DELIVERABLES: Memo outlining findings and completion of DEP water audit forms.

ESTIMATED COST: \$11,800

GRANT SHARE: \$11,800

MATCH SHARE: \$0

#### TASK/OBJECTIVE #2: **Leak Detection**

The Town will assemble existing maps of distribution system and information on the age and type of existing distribution pipes, pressure zones, booster stations, tanks and river crossings to determine the most appropriate methods to be used for comprehensive leak detection. The Town will submit thorough documentation of the proposed leak detection methodology to obtain written approval of MassDEP.

Upon approval, the Town will conduct a comprehensive leak detection survey of 50 miles of main, hydrants, gate valves, and service connections. The Town and its subcontractors will use sonic detection equipment and a correlator to detect, record, analyze, and pinpoint the sound created by underground water leakage. Where the effectiveness of acoustical survey and leak correlators is limited or where pipe materials and system configuration are not conducive to acoustical or correlation methods, alternative methods may be employed.

Upon completion of the survey, the Town will provide a report summarizing the locations of the identified leaks, the type of leak (i.e. main, hydrant, service connection, etc.), estimated flow rates for all leaks, etc., and a written schedule by which leaks shall be repaired.

#### DELIVERABLES:

- Completed leak detection survey as per Department guidance
- Technical memo summarizing the method or methods by which data was collected
- Priority system of leak repair

ESTIMATED COST: \$15,050

GRANT SHARE: \$15,050

MATCH SHARE: \$0

**TASK/OBJECTIVE #3: Leak Repair**

The Town will establish a priority system to implement leak repairs. Identified leaks will be repaired in accordance with their prioritized status:

Leaks of 3 gallons per minute or more shall be repaired as soon as possible and no later than within twelve months of detection. Leaks of less than 3 gpm at hydrants and appurtenances shall be repaired promptly and no later than within twelve months of detection. Leaks of less than 3 gpm in local roadways, freeway, arterial, or collector roadways shall be repaired when related work on the roadway is being performed.

Leakage repairs will be performed in conformance with industry standards and will be documented with leak repair reports including estimates of leakage rates based on visual observation once infrastructure is exposed. This task is presented as part of the Town's match.

After leaks are repaired, the Town will re-survey the repair sites to confirm that no other leaks remain. As part of the submitted leak detection report and quarterly progress, as applicable, the Town shall provide to MADEP the dates on which leaks were found and repaired, and estimated water savings realized. The Town will also certify that the work was conducted in accordance with industry standards.

**DELIVERABLES:**

- Completed leak repair forms
- Summary table of leaks detected, leaks repaired, total cost, and estimated water savings realized
- Technical memo summarizing the method or methods by which data was collected and repairs were made

**ESTIMATED COST:** \$unknown**GRANT SHARE:** \$N.A.**MATCH SHARE:** \$unknown**TASK/OBJECTIVE #4: Water Meter Replacement**

The Town will provide water meter replacement as in kind services. Residential water meters are replaced as needed when faulty meters are discovered after meter reading. The Town will replace approximately 50 water meters using Town staff and monies to pay for the labor and material costs associated with the meter replacements.

**DELIVERABLES:**

- Documentation of meters replaced and associated costs

**ESTIMATED COST:** \$10,000**GRANT SHARE:** \$0**MATCH SHARE:** \$10,000**TASK/OBJECTIVE #5 Conservation Education**

The Town will implement a conservation education program in the elementary school. The program will be developed to be presented to public elementary school students. The curriculum will be focused on the water cycle and the effects of human activities on the cycle. The program will introduce simple water conservation techniques and provide educational materials for the students and their families. The program will encourage the students and their families to look at the way that they use water and look for ways to reduce their consumption. The program will illustrate benefits of water conservation when implemented across the community, providing a frame of reference for the large benefits that can be obtained from small actions. A focused list of relevant local actions will be developed for the students to implement at home and in the community. Once developed this program can be presented annually to elementary school students.

**DELIVERABLES:**

- Program summary and implementation documentation.

**ESTIMATED COST:** \$6,900**GRANT SHARE:** \$6,900**MATCH SHARE:** \$0



**TASK/OBJECTIVE #6: Quarterly Reporting**

The Town will submit the following Deliverables to the MADEP in accordance with the Milestone schedule.

**DELIVERABLES:**

- Quarterly progress reports to the MADEP's Project Coordinator shall be submitted via email (suitable software as determined by the MADEP) on a standard form provided by the MADEP and shall contain a summary and percentage of all work completed by task during the reporting period and planned activities for the next quarter.
- Quarterly financial reports including reimbursement forms, MBE/WBE utilization forms and match certification forms

ESTIMATED COST: \$2,250

GRANT SHARE: \$2,250

MATCH SHARE: \$0

**TASK/OBJECTIVE #7: Draft and Final Report**

The Town will submit the following Deliverables to the MADEP in accordance with the Milestone schedule.

**DELIVERABLES:**

- Two paper copies of a draft final report shall be provided to the MADEP's Project Coordinator for review and comment at least two months prior to the milestone schedule end date. The report will include a summary of the entire project, including methods, results and conclusions as well as recommendations on actions that should be taken to further reduce water losses and comment on the effectiveness of the project.
- The Final Report will calculate the environmental results of the project and quantify the water savings in both gallons of water and dollar value per year.
- Final report incorporating comments and including all project deliverables.
- One camera ready copy (unbound) and three (3) printed copies of the final report, and two (2) CDs with electronic versions of the final report which are compatible with the Department's systems (Word or searchable Adobe .pdf format)

ESTIMATED COST: \$3,900

GRANT SHARE: \$3,900

MATCH SHARE: \$0

## PROPOSAL

### PROJECT BUDGET

This budget is for response evaluation purposes. Use the whole dollar method. Indicate which items will be paid for by grant funds, and which will be paid for by the match. Attach additional pages as necessary.

Expense Items	Grant Amount	Cost Share (Cash)	Cost Share (In-house)	Total Amount
<b>Salary - By Title and Salary Range</b> <i>(i.e.: Engineer, \$40-50/hr)</i>  Mechanic, Operator, Laborers, Technician (\$20-\$29.50/hr) Superintendent (\$44.20/hr)	\$0	\$0	\$2,500	\$2,500
<b>Subcontractual Services</b> Water Audit Leak Detection Survey Leak Repair Water Conservation Education Program Reporting	\$39,900	\$0	\$0	\$39,900
<b>Equipment</b>	\$0	\$0	\$0	\$0
<b>Supplies</b> (including printing, mailing - should include cost for printing 5 hard copies and 10 on CDs, at a minimum, of the final project report)	\$0	\$0	\$0	\$0
<b>Other</b> Residential Water Meter Replacement	\$0	\$7,500	\$0	\$7,500
<b>Totals</b>	\$39,900	\$7,500	\$2,500	<b>\$49,900</b>

**SOURCE(S) OF MATCH** - List all sources of match funds and the amount of matching funds being contributed by each source. Letters of support from all organizations (on the organization's letterhead) identified as providing a portion of the match for the project **must be submitted with the Response**. These letters must detail the match to be provided by the organization, and must be signed by an authorized signatory for the organization.

**EEO/AA REQUIREMENTS** - Identify all budget categories from which it is anticipated that the M/WBE participation goals will be met. Show the anticipated dollar amount of M/WBE participation in each budget category.

## PROPOSAL

### PROJECT MILESTONE SCHEDULE

Provide a time-line by "xing" out the duration of the task activity. Attach additional pages as necessary.

MONTH	1	2	3	4	5	6	7	8	9	10	11	12	13
TASK #1													
Water Audit	X	X	X	X	X								
TASK #2													
Leak Detection			X	X									
TASK #3													
Leak Repair					X	X	X						
TASK #4													
Water Meter Replacement	X	X	X	X	X	X	X	X	X	X	X		
TASK #5													
Conservation Education			X	X									
TASK #6													
Quarterly Reporting			X			X			X			X	
TASK #7													
Draft and Final Report										X		X	