

**Municipality/Organization:** Town of Medway, MA

**EPA NPDES Permit Number:** MA041132 (expired)

**MassDEP Transmittal Number:** W-

**Annual Report Number** Year 10  
**& Reporting Period:** April 1, 2013 – March 31, 2014

## NPDES PII Small MS4 General Permit Annual Report (Due: May 1, 2014)

### Part I. General Information

Contact Person: Mr. David D'Amico Title: Deputy Director, Dept. of Public Services

Telephone #: 508-533-3275 Email: ddamico@townofmedway.org

Mailing Address: Medway Town Hall, 155 Village Street, Medway, MA 02053

#### Certification:

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

Signature: \_\_\_\_\_



Printed Name: Thomas Holder

Title: Director, Dept. of Public Services

Date: April 29, 2014

## Part II. Self-Assessment

The Town of Medway has continued its efforts to improve regulation enforcement and operating practices as they relate to stormwater related issues. The Town continues to monitor proposed changes in regulation and make comments when appropriate. We believe that EPA staff has a solid understanding of the practical and financial problems associated the proposed new regulations. The Department of Public Services retains Kleinfelder to provide consulting and overall expertise in this area. in anticipation of a new permit. Although the permit continues to be delayed, the town understands that certain basic steps must be taken to improve our position and ultimately, general water quality. As reported previously, Town Meeting approved a \$500,000 loan from the State revolving fund loan program. Under the Integrated Water Resource Management Program, several steps have been undertaken to perform detailed GIS mapping of the stormwater sewer system.

Specifically, during the 2013 reporting period, the Town undertook a major effort to update its Stormwater Program, with the intent that, where feasible, updates would address potential new requirements of the Draft 2010 Permit. In April-May 2013, 70 Priority outfalls (out of 221 total MS4 Outfalls) were GPS-located and inspected for dry-weather flow and condition. Hand-drawn drainage sketches from the town's files were used to compile all 267 outfall locations and update the Town's Townwide Drainage Basemap with capacity to include the following information required under the Draft 2010 Permit:

- outfalls
- USGS drainage sub-basins
- MS4 outfalls
- sewer lines
- wetlands
- failed septic systems
- receiving waters (including impairment level)
- land use
- buildings
- parcels
- streams and ponds

A complete update of the Town's IDDE Program Plan was completed in January, 2014, incorporating the updated Townwide Drainage Basemap. The IDDE Plan was prepared to meet the Draft 2010 Permit requirements. All outfalls were prioritized on the basis of the factors specified in Draft 2010 Permit, Part 2.4.4.8.c, which include density of pollution generating sites, proximity to impaired waters, and other land use factors. In addition to the Town-wide 2013 Stormwater Base Map, Kleinfelder prepared an 11x17-inch sized map book that covers the entire Town. The Map Book is broken into tiles corresponding to the Town's Assessors maps. Each tile is shown on a separate page at a scale of 1 inch equals 200 feet. The 11x17 maps show outfalls, stormwater drainage, topography, parcels, and wetlands on a street map background. The DPS field staff has used the Map Book to mark mapping discrepancies and to add missing infrastructure, to a planning level of accuracy. The paper markups can then be used to update the GIS periodically. The existing level of accuracy for the outfalls on the maps is adequate for planning level purposes and IDDE investigation. As funding allows, the Town will conduct additional survey of outfalls or other drainage infrastructure in priority

catchments.

A draft Municipal Services Operations & Maintenance Manual (A Guide to Good Housekeeping Practices to Prevent Stormwater Pollution) was developed (January 2014) which meets the anticipated requirements of the Draft 2010 Permit. The Manual contains 11 different BMP sheets applying to all aspects of Municipal O&M that impact stormwater (Lawncare, Street sweeping, deicing, vehicle washing, materials management, etc). The manual shall serve as a blueprint for staff training and protocols as it is developed and implemented.

In 2013, the Department of Public Services completed repairs to a major sewer trunk line earlier identified with several inflow and infiltration problems. This line flows to the Charles River Water Pollution Control District for treatment and discharge to the Charles River. Although treated, the flow should be contributing to groundwater resources instead of being directly discharged to the Charles River. The Town now has an established program to inspect and repair in alternating years various segments of the sewer collection system.

Work to improve drainage for an area neighborhood known as "Brentwood" has slowed due to resident concerns and right-of-way issues. Scope of the project has been reduced to eliminate work on residential properties. Overall goals for the project remain unchanged with only slight volume changes noted due to project revisions. The project will move untreated flood waters into the stormwater sewer lines for proper processing. This will improve overall water quality ultimately flowing to the Charles River.

The Department as usual now, participated in volunteer fundraising events with message boards, brochures, hand-outs, and web announcements all designed to raise public awareness. Booths were set-up at Family Day held at Choate Pond and at Medway Pride Day, as well as, other events such as Town meetings, household hazardous waste day, and other open meetings. These events are used to promote an array of conservation initiatives in water, solid waste recycling, and energy. Three separate educational brochures were developed specifically for Medway, and distributed at these events in 2013. One promoted Recycling and described how rain barrels can help decrease stormwater runoff to streams. One dealing with phosphorous, its use and effects. The other brochure focused Yard Waste which was distributed at Clean Sweep (4/27/13), Medway Pride Day & Household Hazardous Waste Day (5/18/13), includes messaging on lawn/yard waste recycling, collection, and disposal that meets Draft Permit requirements.

In 2013, the Town was able to move the conversation of sustainability forward. The IWRMP Advisory Task Force met twice during the reporting period at a publicly held meeting. The purpose of the two meetings was to hold workshops discussing the feasibility of implementing a Stormwater Utility to provide revenue for supporting Medway's Stormwater Program. This was done as part of the Stormwater Utility Feasibility Study undertaken by way of a grant from the MassDEP Sustainable Water Management Initiative (SWMI). In Workshop 1 (4/25/13) the Town's consultants provided general background educational information on stormwater utilities, benefits and challenges. In Workshop 2 (5/29/13), results of analyzing Medway's data for current and future stormwater program costs and possible revenue and rate structures were presented and discussed. The results of the Stormwater Utility Feasibility

Study and the SWMI Grant Study were presented to the public at a Board of Selectmen's meeting on June 11, 2013.

These meetings and topics demonstrate a change in the fundamental understanding of the issues. 2013 appears to mark a turning point. Town officials and residents are now, more than ever, talking in terms of on-going programs and efforts to improve resource management. What was often looked at as one time efforts are now being evaluated as long term strategies and programs with a goal of continuous improvement to watershed areas. Along with this understanding however, is the greater concern that the Town and its residents have only finite resources to dedicate to an on-going mission.

### Part III. Summary of Minimum Control Measures

#### 1. Public Education and Outreach

| BMP ID #     | BMP Description    | Responsible Dept./Person Name | Measurable Goal(s)                 | Progress on Goal(s) – Permit Year extended<br>(Reliance on non-municipal partners indicated, if any)                                                                                                                                                                                                                                                                                                                                     | Planned Activities – Permit Year extended                                                                                                                                                                                                                         |
|--------------|--------------------|-------------------------------|------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1<br>Revised | NEWSPAPER ARTICLES | DPS/ DAVID D'AMICO            | RAISE PUBLIC AWARENESS             | Several articles relating Thayer House project construction and development of the surrounding Choate Pond area. RT 109 75% design submitted to MassDOT generating more articles and public feedback. Medway 300 held Family Day at Choate Park which was highly publicized and attended. Clean Sweep, rain barrel disbursements, household hazardous waste day, Pride Day all held again with corresponding articles.                   | Friends of Choate activities and news articles, similar for Thayer House Development Committee. RT 109 75% comment and right of way acquisition article expected. Repeat successful events with articles.design                                                   |
| 2<br>Revised | PUBLIC MEETINGS    | BOH/STEPHANIE BACON           | CHOATE POND/CHICKEN BROOK CLEAN UP | Public meetings with Conservation Commission, Board of Health, and Parks Commissioners held at duly posted regular meetings. IWRMP Task Force Meeting #1&2 held publicly to discuss the MS4 Program. Topics included background information and stormwater utility finances. The results of the Stormwater Utility Feasibility Study and the SWMI Grant Study were presented to the public at a Board of Selectmen's meeting on June 11, | Continue Board of Health meetings on water quality; increased coordination with ConCom through their agent. Annual Town Meeting in May, 2014 will address funding for added open space/field areas. Additional IWRMP Task Force meetings will take place in 2014. |

|   |                        |                            |                                                           |                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                      |
|---|------------------------|----------------------------|-----------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 3 | SCHOOL OUTREACH        | SCHOOL DEPT/DR. JUDY EVANS | SCIENCE CURRICULUM INCLUDES WATER RESOURCES TOPICS        | Science curriculum includes topics on stormwater pollution and prevention; Worked with local Boy Scout troops on Brookside trail and Sr. Center walking path on awareness projects.                                                     | Work with consultant to develop new elementary programs to include demonstrations on stormwater flows and pollution prevention; work with local Boy Scout troops on resource projects. Continue to use RT 109 project as an educational opportunity. |
| 4 | TOWN WEB SITE          | DPS/ THOMAS HOLDER         | RAISE PUBLIC AWARENESS                                    | Stormwater and water quality information on the Town web site focusing on special events, projects, and general water resource information.                                                                                             | Continue web announcements.                                                                                                                                                                                                                          |
| 5 | CABLE TV               | DPS/ DAVID D'AMICO         | RAISE PUBLIC AWARENESS                                    | Discussed topics on stormwater management during Town Meeting, Selectmen, ConCom, and FinCom meetings aired locally. Several discussions about Water Resources Management Project, Thayer House development, and RT 109 project.        | Continue discussions at aired meetings.                                                                                                                                                                                                              |
| 6 | CATCHBASINS STENCILING | DPS/DAVID D'AMICO          | STENCIL ALL CATCHBASINS WITH DIRECT DISCHARGE TO OUTFALLS | Better mapping information available in 2013. No additional stenciling performed.                                                                                                                                                       | Update and re-stencil as needed.                                                                                                                                                                                                                     |
| 7 | EDUCATIONAL SIGNAGE    | DPS/ DAVID D'AMICO         | RAISE PUBLIC AWARENESS                                    | Sign board postings continued. Two electronic signboards used to display public water messages IWRMP Board was displayed at Medway Pride Day. Distributed 3 different brochures which discuss stormwater pollution at community events. | Continue publishing notices. Looking to include educational areas in drainage areas for RT 109 reconstruction.                                                                                                                                       |

|    |                          |                          |                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                   |
|----|--------------------------|--------------------------|-----------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|
| 8  | PUBLIC FEEDBACK          | TA/ DPS/ /BOH /SELECTMEN | RAISE PUBLIC AWARENESS                                                      | Public at large responding positively to web site, advertisements, public discussions, and CB stenciling. Town now uses a reverse 911 system and school resources for additional outreach with good results. Revised parks & open space Master Plan being implemented and discussed at various meetings. Feedback on use of funds for these programs has been mixed.                                                                                                                                               | Continue to gather, analyze, and adjust to feedback. Continue to use PeopleGIS Forms capability for more surveys/public response. |
| 9  | GREEN COMMUNITY PROJECTS | TA/DPS/ BUILDING INSP    | ASSORTED PROJECTS UNDER GRANT COMPLETED AND PUBLICIZED                      | DPS continued several initiatives in solid waste, water, stormwater, etc. Types of programs included rain barrel installs, rigid plastic recycling, no phosphorous fertilizer use, water conservation efforts, etc. Expanding programs to businesses has been difficult in the slowed economy. Some success with solar panel installations.<br>The FY14 SWMI Grant includes auditing of the top 10 largest water users in Town to promote conservation measures, as well as improved water accounting by the Town. | Continue to look to include businesses in opportunities in all areas.                                                             |
| 10 | RAIN BARREL POGRAM       | DPS                      | Promote sale of rain barrels.<br><br>Track the number of rain barrels sold. | DPS had a public sign-up for rain barrels and distributed 57 of them to the public. Brochures of the benefits were made available.                                                                                                                                                                                                                                                                                                                                                                                 | Repeat program.                                                                                                                   |

|    |                                           |     |                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                       |
|----|-------------------------------------------|-----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 11 | Promote Responsible Yard Waste Management | DPS | <p>Promote Sale of Composters.</p> <p>Track number of composters sold.</p> <p>Distribute brochure that promotes yards waste recycling and composting.</p> <p>Promote use of the Town's recycling center for disposal of yard waste.</p>                                                                                                                                            | <p>DPS had a public sign-up for composters and distributed over 35 of them to the public. Brochures of the benefits were made available.</p> <p>The recycling center is open 20 hours per week. It is provided free of charge to solid waste customers. Yard waste is a substantial portion of the total volume handled at the center.</p> | <p>Evaluate Composter Program (2014). May defer a year for next round.</p> <p>Promote use of the Town's recycling center for disposal of yard waste via the Town's Website (2014)</p> |
| 12 | Promote Responsible Pet Waste Management  | DPS | <p>Intensify the Existing Pet Waste Management Campaign. Update the existing dog park rules brochure to include information regarding the effects of pet waste on water quality, proper pet waste disposal and what pet owners can do to reduce pollution.</p> <p>Distribute and track the number of brochures distributed with the Henry Garnsey Dog Park Permit Application.</p> | <p>Action deferred due to Medway 300 activities.</p>                                                                                                                                                                                                                                                                                       | <p>Update the existing dog park rules brochure .</p> <p>Distribute and track the number of brochures distributed.</p>                                                                 |



|    |                                                                      |  |                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                   |                                                                                                                                                                  |
|----|----------------------------------------------------------------------|--|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 13 | Residential Landscape and Lawn Care Education                        |  | <p>Develop a brochure that educates on the impacts of nutrient loading in Lawn Care and provides helpful lawn care and landscaping tips to help reduce the amount of pollutants from entering the storm water collection system.</p> <p>Distribute brochure at pertinent events. Track events where brochure was made available.</p> | <p>During 2013 an updated Yard Waste Brochure was created and distributed.</p> <p>Brochure on phosphorous use also developed and distributed.</p> | <p>The Town will continue to distribute and post the educational brochure .</p> <p>Pesticide brochure will be developed and distributed at pertinent events.</p> |
| 14 | General Stormwater Awareness                                         |  | Develop a poster on Stormwater Pollution for display at Town Hall, Public Library, and outreach events                                                                                                                                                                                                                               | Poster developed for the Integrated Water Resources Management Plan (IWRMP) includes stormwater educational language.                             | Displayed at various municipal buildings and events including Medway Pride Day. Continue to display. Determine if any updates are necessary.                     |
| 15 | Targeted outreach to Industrial / Commercial / Development audiences |  | Develop a plan for outreach on audience –specific message                                                                                                                                                                                                                                                                            | Action deferred due to Medway 300 activities.                                                                                                     | Develop a plan for outreach on audience –specific messages during 2014.                                                                                          |

### 1a. Additions

|  |  |  |  |  |  |
|--|--|--|--|--|--|
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |

## 2. Public Involvement and Participation

| <b>BMP ID #</b> | <b>BMP Description</b>      | <b>Responsible Dept./Person Name</b> | <b>Measurable Goal(s)</b>                                    | <b>Progress on Goal(s) – Permit Year extended</b><br>(Reliance on non-municipal partners indicated, if any)                                                                                                                                                                                     | <b>Planned Activities – Permit Year extended</b>                                                                                     |
|-----------------|-----------------------------|--------------------------------------|--------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|
| 1               | CROSS COMMITTEE INVOLVEMENT | TOWN ADMINISTRATOR                   | RAISE PUBLIC AWARENESS                                       | Much improved coordination through single engineer consultant, ConCom Agent, and consolidated DPS. Meeting 1 to 3 times per week on issues. IWRMP Task Force meetings held on 4/25/13 and 5/29/13 to discuss Stormwater. Stormwater was discussed at the Board of Selectmens meeting on 6/11/13 | Continue regular meetings with key staff. Review permitting requirements.<br><br>IWRMP Task Force will continue to meet during 2014. |
| Revised         |                             |                                      |                                                              |                                                                                                                                                                                                                                                                                                 |                                                                                                                                      |
| 2               | HHW DAY                     | DPS/TOM HOLDER                       | PUBLIC PARTICIPATION                                         | HHW collection advertised and held w/ 225+ residents.                                                                                                                                                                                                                                           | HHW collection day scheduled for May 17 <sup>th</sup> .                                                                              |
| 3               | POND CLEAN-UPS              | TA/ALLISON POTTER                    | HOLD ANNUAL EVENT                                            | Medway Clean Sweep encompassed entire Town including Choate Park and Charles River areas. Approximately 200 volunteers participated.                                                                                                                                                            | Plan similar event for 2014.                                                                                                         |
| 4               | PUBLIC EVENTS               | PARKS COMM.                          | HOLD ONE OR MORE ANNUAL EVENTS                               | Events held at Choate Park-Air Force Band, Summer Concert, and Christmas Parade end point all held at the park.                                                                                                                                                                                 | Hold similar events.                                                                                                                 |
| 5.              | PUBLIC ACCESS               | DPS/OPEN SPACE COMMITTEE             | OPEN BROOK AND RIVER AREAS TO THE PUBLIC AND RAISE AWARENESS | Volunteers and DPS completed Chicken Brook "Brookside" path and the Charles River Amphitheatre to improve access, remove invasive species, and provide an educational resource.                                                                                                                 | Maintain and advertise areas for public use.                                                                                         |

|   |                                                                             |        |                                                                                                                                                                                                                                                               |                                                                                                     |                                                                                       |
|---|-----------------------------------------------------------------------------|--------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| 6 | DEVELOP AND IMPLEMENT A MEANS FOR RESIDENTS TO REPORT STORMWATER VIOLATIONS | DPS/IT | <p>Establish the electronic form or web link on the Town's website.</p> <p>Advertise the electronic form or web link</p> <p>Track the number of complaints received</p> <p>Track the problems/incidents remedied as a result of the electronic form/link.</p> | Some limited work done using third party software. Time did not permit for complete implementation. | Establish and implement use of the electronic form or web link on the Town's website. |
|   |                                                                             |        |                                                                                                                                                                                                                                                               |                                                                                                     |                                                                                       |

## 2a. Additions

|  |  |  |  |  |  |
|--|--|--|--|--|--|
|  |  |  |  |  |  |
|  |  |  |  |  |  |

### 3. Illicit Discharge Detection and Elimination

| <b>BMP ID #</b> | <b>BMP Description</b>                     | <b>Responsible Dept./Person Name</b> | <b>Measurable Goal(s)</b>         | <b>Progress on Goal(s) – Permit Year extended</b><br>(Reliance on non-municipal partners indicated, if any)                                                                                                                                                                  | <b>Planned Activities – Permit Year extended</b>                                                                                                                                                                                                                                                                                      |
|-----------------|--------------------------------------------|--------------------------------------|-----------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1               | WEEKLY TESTING                             | DPS/DAVID D'AMICO                    | MAINTAIN LOW ECOLI LEVELS         | Swimming program at Choate suspended. Regular testing suspended. No desire to reinstate swimming at this time.                                                                                                                                                               | Reviewing possible reinstatement of swimming at Choate Pond.                                                                                                                                                                                                                                                                          |
| Revised         |                                            | BOH/STEPHANIE BACON                  |                                   |                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                       |
| 2               | MAINTAIN STORM SEWER SYSTEM MAP W/OUTFALLS | DPS/DAVID D'AMICO                    | STORM SEWER SYSTEM MAP MAINTAINED | Completed integration of scanned images into GIS system. Field verified the NPDES outfall mapping produced by record plan data, GPS located MS4 outfalls and conducted detailed outfall inspections on all 71 outfalls. Created new GIS layer of stormwater drainage system. | As funding allows, the Town will continue to update its Drainage Basemap. The components that will need to be mapped based on the anticipated Draft Permit requirements include: catchbasins, drainpipes, drain manholes, open conveyances (swales ,ditches), town owned stormwater treatment structures, other MS4 interconnections. |
| Revised         |                                            |                                      |                                   |                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                       |

|   |                                         |                   |                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|---|-----------------------------------------|-------------------|----------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 3 | SCREEN OUTFALLS FOR ILLICIT CONNECTIONS | DPS/DAVID D'AMICO | SCREEN ALL OUTFALLS AND REMOVE ILLICIT CONNECTIONS | <p>In 2013, hand-drawn drainage sketches from the town's files were used to compile all 267 outfall locations and update the Town's Townwide Drainage Basemap with capacity to include all of the minimum information required under the Draft 2010 Permit.</p> <p>In addition to the Town-wide 2013 Stormwater Base Map, Kleinfelder prepared an 11x17-inch sized map book that covers the entire Town. The Map Book is broken into tiles corresponding to the Town's Assessors maps. Each tile is shown on a separate page at a scale of 1 inch equals 200 feet. The 11x17 maps show outfalls, stormwater drainage, topography, parcels, and wetlands on a street map background. The DPS field staff has used the Map Book to mark mapping discrepancies and to add missing infrastructure, to a planning level of accuracy. The paper markups can then be used to update the GIS periodically. The existing level of accuracy for the outfalls on the maps is adequate for planning level purposes and IDDE investigation. As funding allows, the Town will conduct additional survey of outfalls or other drainage infrastructure in priority catchments.</p> | <p>As funding allows, the Town will continue to update its Drainage Basemap. The components that will need to be mapped based on the anticipated Draft Permit requirements include: catchbasins, drainpipes, drain manholes, open conveyances (swales ,ditches), town owned stormwater treatment structures, other MS4 interconnections</p> <p>Expedientiously re-inspect and sample <b><u>16 outfalls</u></b> where dry weather flow was observed.</p> <p>For any of the sampled outfalls suspected of illicit discharges, begin investigation and elimination procedures.</p> <p>Conduct Initial Dry Weather Inspections on 152 outfalls between 2014 and 2015. Begin with Medium Priority outfalls followed by Low priority outfalls.</p> |
|---|-----------------------------------------|-------------------|----------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|         |                                                                                                                                                                                                                                                                                                                                                                          |                 |                                                                                                                                                                                                                                                                  |                                        |                                                                                                                                    |
|---------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------|
| 4       | <p>INTEGRATE THE SEPTIC SYSTEM DATABASE INTO THE TOWN'S GIS DATABASE AND MAPPING SYSTEMS</p> <p><i>(Promotes centralized storage of records, incorporates data into a format to be used with future phosphorous control mapping, and provides easy format for querying pumping records to identify systems that have been pumped more than four times per year.)</i></p> | Board of Health | <p>Develop septic system records data entry interface for use with the Town's GIS database and mapping systems.</p> <p>Implement use of the new data entry interface.</p> <p>Track the number of septic systems that have failed each year and action taken.</p> | Limited activity on this item in 2013. | Develop septic system records data entry interface for use with the Town's GIS database and mapping systems and implement its use. |
| 5       | <p>SEPTIC SYSTEM MAINTENANCE EDUCATION</p> <p><i>(Educational packets to include literature about caring for a septic system, identifying a failing system and guidance for having a Title V inspection done.)</i></p>                                                                                                                                                   | Board of Health | <p>Develop educational packets.</p> <p>Track the distribution of the public education packets.</p> <p>Post educational information on the BOH's website.</p>                                                                                                     | Limited activity on this item in 2013. | Develop and distribute educational packets.                                                                                        |
| Revised |                                                                                                                                                                                                                                                                                                                                                                          |                 |                                                                                                                                                                                                                                                                  |                                        |                                                                                                                                    |

### 3a. Additions

|  |  |  |  |  |  |
|--|--|--|--|--|--|
|  |  |  |  |  |  |
|  |  |  |  |  |  |

#### 4. Construction Site Stormwater Runoff Control

| BMP ID # | BMP Description         | Responsible Dept./Person Name                       | Measurable Goal(s)                                     | Progress on Goal(s) – Permit Year extended<br>(Reliance on non-municipal partners indicated, if any)                                                              | Planned Activities – Permit Year extended                                   |
|----------|-------------------------|-----------------------------------------------------|--------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|
| 1        | SILT FENCING, HAY BALES | BUILDING/JOHN EMIDY & CONCOM /KARON SKINNER-CATRONE | NO RUNOFF INTO STORMWATER SYSTEM AT CONSTRUCTION SITES | Conservation Agent and Building Inspector are both working to improve enforcement. Some new regulations proposed, however waiting new stormwater permit from EPA. | Continue enforcement of new regulations. Propose new regulations as needed. |
| Revised  |                         |                                                     |                                                        |                                                                                                                                                                   |                                                                             |
| 2        | PUBLIC WAY CLEANUP      | DPS/DAVID D'AMICO                                   | INSURE NO SILT ON THE ROAD ADJACENT TO AREA            | Stabilization pads at all entrance/egresses during construction; street sweeping / catch basin cleaning completed by contractors & DPS.                           | Continue compliance with regulations.                                       |
| Revised  |                         |                                                     |                                                        |                                                                                                                                                                   |                                                                             |

#### 4a. Additions

|  |  |  |  |  |  |
|--|--|--|--|--|--|
|  |  |  |  |  |  |
|--|--|--|--|--|--|

## 5. Post-Construction Stormwater Management in New Development and Redevelopment

| BMP ID # | BMP Description                                                   | Responsible Dept./Person Name                 | Measurable Goal(s)                    | Progress on Goal(s) – Permit Year extended<br>(Reliance on non-municipal partners indicated, if any)                                                                                                                                   | Planned Activities – Permit Year extended                                                                 |
|----------|-------------------------------------------------------------------|-----------------------------------------------|---------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|
| 1        | REGULATE STORMWATER MGT & EROSION CONTROL                         | DPS/DAVID D'AMICO & THOMAS HOLDER/P&EDB       | REGULATIONS PASSED                    | Town engineering firm working through Planning & Economic Development Board to monitor and improve regulation.                                                                                                                         | Continue to review regulations and propose changes as needed.                                             |
| Revised  |                                                                   |                                               |                                       |                                                                                                                                                                                                                                        |                                                                                                           |
| 2        | IMPLEMENT IMPROVED ENG DESIGN FOR INFILTRATION & SEDIMENT CONTROL | PLANNING BOARD                                | NEW DESIGNS INSTALLED                 | New construction being requested to install forebays to better manage sediment and cultic units for below grade infiltration of storm water. Incorporated gravel wetlands into RT 109 reconstruction project. Tree wells not feasible. | Continue progress with new engineering designs incorporating tree infiltration wells and gravel wetlands. |
| 3        | REQUIRE AS-BUILT DOCUMENTATION                                    | PLANNING BOARD/<br>BUILDING INSPECTOR/<br>DPS | AS-BUILTS RECEIVED AND PROPERLY FILED | As-built plans for construction projects received, reviewed, and filed. Documents being filed electronically filed and cataloged.                                                                                                      | Continue as-built plan requirements.                                                                      |
| 4        | PROVIDE LONG TERM MAINTENANCE                                     | DPS/DAVID D'AMICO                             | LONG TERM MAINTENANCE PERFORMED       | Brentwood and Village Street culvert designs complete. Project deferred due to Medway 300. Looking to perform in 2014.                                                                                                                 | Construct Brentwood area drainage work and Village Street culvert work funds permitting.                  |
| Revised  |                                                                   |                                               |                                       |                                                                                                                                                                                                                                        |                                                                                                           |

### 5a. Additions

|  |  |  |  |  |  |
|--|--|--|--|--|--|
|  |  |  |  |  |  |
|--|--|--|--|--|--|



## 6. Pollution Prevention and Good Housekeeping in Municipal Operations

| <b>BMP ID #</b> | <b>BMP Description</b>                            | <b>Responsible Dept./Person Name</b>              | <b>Measurable Goal(s)</b> | <b>Progress on Goal(s) – Permit Year extended</b><br>(Reliance on non-municipal partners indicated, if any)                                                                                                                 | <b>Planned Activities – Permit Year extended</b>                                |
|-----------------|---------------------------------------------------|---------------------------------------------------|---------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------|
| 1               | WASH DOWN AREA                                    | DPS/DAVID D'AMICO                                 | NEW WASH AREA CONSTRUCTED | Wash bay operational.                                                                                                                                                                                                       | Continue operation.                                                             |
| Revised         |                                                   |                                                   |                           |                                                                                                                                                                                                                             |                                                                                 |
| 2               | SALT SHED                                         | DPS/DAVID D'AMICO                                 | COVERED & COFFER DAMED    | Feasibility study for new DPS facility completed. Seeking funding for new construction in 2 years. Committee formed to review need/necessity for BOS.                                                                       | Continue to press need for new DPS Facilities.                                  |
| Revised         |                                                   |                                                   |                           |                                                                                                                                                                                                                             |                                                                                 |
| 3               | CATCHBASIN SUMP CLEANING                          | DPS/DAVID D'AMICO                                 | # CATCHBASINS CLEANED     | Entire Town cleaned. 400+ catch basin sumps cleaned; cost over \$40,000.                                                                                                                                                    | Monitor basins. Funds do not permit deep cleaning on more than an annual basis. |
| 4               | PUBLIC WAY CLEANUP                                | DPS/DAVID D'AMICO                                 | # ROADS SERVICED          | Street sweeping / catch basin cleaning complete throughout Town.                                                                                                                                                            | Street sweeping / catch basin cleaning.                                         |
| 5               | EMPLOYEE TRAINING                                 | DPS/DAVID D'AMICO                                 | # EMPLOYEES TRAINED       | Employees trained in SWMP, new by-laws, illicit connections, etc. DPS includes highway, parks, vehicle maintenance, building maintenance, water, sewer, & solid waste under one department.                                 | Revise program, refresher training to be performed.                             |
| 6               | BEAVER CONTROL POLICY                             | BOH/STEPHANIE BACON, CONCOM/KARON SKINNER-CATRONE | # OF BEAVER DAMS BREACHED | Dams breached rarely and only due to public safety concerns. Water levels rising and causing public concerns.                                                                                                               | Install more water level control devices and leave beaver dams in place.        |
| 7               | REDESIGN AND RECONSTRUCT RT 109 BUSINESS DISTRICT | DPS/DAVID D'AMICO                                 | RT 109 RECONSTRUCTED      | State and Federal funds have been earmarked for the design phase of the project. Greenman-Pederson has been retained to perform the design. 25% design hearing complete and 75% design submitted. Project on 2016 TIP list. | Complete ROW process and complete 100% design submission.                       |

|   |                                                                            |                      |                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                          |                                                                                                                 |
|---|----------------------------------------------------------------------------|----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|
| 8 | TOWN WIDE<br>CLEAN-UP                                                      | DPS/DAVID<br>D'AMICO | ALL STREETS<br>CANVASED AND<br>TRASH PICKED-UP                                                                                                                                                                                                                                     | Completed sweep of entire Town<br>using High School students to both<br>clean areas and raise awareness.                                                                                                                                                                                                                                 | Continue program.                                                                                               |
| 9 | MUNICIPAL<br>OPERATIONS &<br>MAINTENANCE<br>GOOD<br>HOUSEKEEPING<br>MANUAL | DPS/DAVID<br>D'AMICO | Develop and<br>implement a<br>Municipal Services<br>Operations &<br>Maintenance Manual<br>(Good Housekeeping<br>Best Management<br>Practices) landscape<br>and lawn care policy.<br><br>Incorporate the<br>Manual policy<br>requirements into the<br>Employee Training<br>Program. | A Draft Manual was developed<br>(January 2014) which meets the<br>anticipated requirements of the Draft<br>2010 Permit.<br><br>Manual contains 11 different BMP<br>sheets applying to all aspects of<br>Municipal O&M that impacts<br>stormwater (Lawncare, Street<br>sweeping, deicing, vehicle washing,<br>materials management, etc). | Finalize Manual in early 2014 and<br>distribute to relevant Town<br>Departments.<br><br>Conduct staff training. |

|    |                                                       |                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                    |                                                                                                                                                                                 |
|----|-------------------------------------------------------|----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 10 | DEVELOP A<br>STRUCTURAL BMP<br>MAINTENANCE<br>PROGRAM | DPS/DAVID<br>D'AMICO | <p>Inventory all municipally maintained structural BMPS.</p> <p>GPS locate the BMPS.</p> <p>Clean BMPS on an “as needed basis”.</p> <p>Obtain access agreements for BMPS not located on public property of within easements.</p> <p>Track maintenance activities for BMPS.</p> <p>Place a notice on the Town’s website that informs residents that any maintenance requests for municipally maintained detention/retention basins located within their subdivision should be directed to the DPS.</p> | All municipally maintained structural BMPS inspected, cleaned if needed, and logged to GPS system. | Obtain access agreements for BMPS not located on public property. Estimated that access agreements may be obtained at a rate of approx. rate of 10% per year beginning in 2014. |
|----|-------------------------------------------------------|----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

#### 6a. Additions

|  |  |  |  |  |  |
|--|--|--|--|--|--|
|  |  |  |  |  |  |
|--|--|--|--|--|--|

## 7. BMPs for Meeting Total Maximum Daily Load (TMDL) Waste Load Allocations (WLA) <<if applicable>>

| BMP ID # | BMP Description                                  | Responsible Dept./Person Name                 | Measurable Goal(s)                                                                                                                     | Progress on Goal(s) – Permit Year extended<br>(Reliance on non-municipal partners indicated, if any)                                                                                                                                                                      | Planned Activities – Permit Year extended                                                                                                                                                                 |
|----------|--------------------------------------------------|-----------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1        | Develop a Water Quality Strategy for 303d Waters | DPS, Board of Health, Conservation Commission | Summary of pollution prevention efforts, future needs, and responsible parties                                                         | The January 2014 IDDE Plan addresses a number of these of these considerations, as does the Municipal O&M Manual.                                                                                                                                                         | Incorporate the preliminary TMDL strategy into the SWMP Update that will be required following the permit re-issuance.<br><br>Consider information available from Studies in the Charles River Watershed. |
| 2        | Outfall Inspection in Charles stormwater-sheds   | DPS                                           | Inspect at least 70 Outfalls draining to the Charles River                                                                             | GIS Map updating with outfall inventory is complete.<br>Field inspection of 70 outfalls draining to the Charles was completed in 2013.                                                                                                                                    | Conduct follow-up inspections as recommended in IDDE Plan.<br>Continue inspections and mapping of upstream system.                                                                                        |
| 3        | Public Education on TMDL pollutants              | DPS, Board of Health, Conservation Commission | Revisit Existing Public Education BMPs to include additional messaging or target audiences to meet anticipated requirements of new MS4 | Educational materials (septic system brochure, pet licensing materials, yard care brochure, phosphorous use) are being revised to incorporate specific messaging related to stormwater and TMDL pollutants.<br>See Public Education /Outreach BMPs for additional detail. | Implement revisions to educational materials for residential audience.<br><br>Develop new materials for industrial/commercial/developer audiences.                                                        |
|          |                                                  |                                               |                                                                                                                                        |                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                           |

### 7a. Additions

### 7b. WLA Assessment

Unchanged from last year. Awaiting new regulations.

Two TMDLs have been finalized for the Charles River Basin; these include the Final TMDL for Nutrients in the Upper/Middle Charles River, CN272.0, May 2011 and the Final Pathogen TMDL for the Charles River Watershed January 2007, CN 0156.0. Both apply to the area of Charles River located in Medway.

Concurrently, Medway is evaluating changes to its SWMP and developing its Integrated Water Resources Management Plan (IWRMP) to comply with NPDES MS4 Permit changes, TMDLs and the Massachusetts Sustainable Water Management Initiative (SWMI). Changes to the SWMP and the development of the

IWRMP are being considered in the context of all these requirements so that compliance with one program does not jeopardize another. Changes to the SWMP will include actions needed to develop and implement a Phosphorous Control Plan which will be effective in supporting achievement of the WLA for both the Nutrient and Pathogen TMDLs.

## Part IV. Summary of Information Collected and Analyzed

## Part V. Program Outputs & Accomplishments (OPTIONAL)

### Programmatic

|                                                |       |  |
|------------------------------------------------|-------|--|
| Stormwater management position created/staffed | (y/n) |  |
| Annual program budget/expenditures             | (\$)  |  |
|                                                |       |  |
|                                                |       |  |

### Education, Involvement, and Training

|                                                                         |               |  |
|-------------------------------------------------------------------------|---------------|--|
| Estimated number of residents reached by education program(s)           | (# or %)      |  |
| Stormwater management committee established                             | (y/n)         |  |
| Stream teams established or supported                                   | (# or y/n)    |  |
| Shoreline clean-up participation or quantity of shoreline miles cleaned | (y/n or mi.)  |  |
| Household Hazardous Waste Collection Days                               |               |  |
| ▪ days sponsored                                                        | (#)           |  |
| ▪ community participation                                               | (%)           |  |
| ▪ material collected                                                    | (tons or gal) |  |
| School curricula implemented                                            | (y/n)         |  |
|                                                                         |               |  |
|                                                                         |               |  |

## Legal/Regulatory

|                                                    | In Place<br>Prior to<br>Phase II | Under<br>Review | Drafted | Adopted |
|----------------------------------------------------|----------------------------------|-----------------|---------|---------|
| Regulatory Mechanism Status (indicate with “X”)    |                                  |                 |         |         |
| ▪ Illicit Discharge Detection & Elimination        |                                  |                 |         |         |
| ▪ Erosion & Sediment Control                       |                                  |                 |         |         |
| ▪ Post-Development Stormwater Management           |                                  |                 |         |         |
| Accompanying Regulation Status (indicate with “X”) |                                  |                 |         |         |
| ▪ Illicit Discharge Detection & Elimination        |                                  |                 |         |         |
| ▪ Erosion & Sediment Control                       |                                  |                 |         |         |
| ▪ Post-Development Stormwater Management           |                                  |                 |         |         |

## Mapping and Illicit Discharges

|                                        |                    |  |
|----------------------------------------|--------------------|--|
| Outfall mapping complete               | (%)                |  |
| Estimated or actual number of outfalls | (#)                |  |
| System-Wide mapping complete           | (%)                |  |
| Mapping method(s)                      |                    |  |
| ▪ Paper/Mylar                          | (%)                |  |
| ▪ CADD                                 | (%)                |  |
| ▪ GIS                                  | (%)                |  |
| Outfalls inspected/screened            | (# or %)           |  |
| Illicit discharges identified          | (#)                |  |
| Illicit connections removed            | (# )<br>(est. gpd) |  |
| % of population on sewer               | (%)                |  |
| % of population on septic systems      | (%)                |  |
|                                        |                    |  |
|                                        |                    |  |

## Construction

|                                                                                                   |            |  |
|---------------------------------------------------------------------------------------------------|------------|--|
| Number of construction starts (>1-acre)                                                           | (#)        |  |
| Estimated percentage of construction starts adequately regulated for erosion and sediment control | (%)        |  |
| Site inspections completed                                                                        | (# or %)   |  |
| Tickets/Stop work orders issued                                                                   | (# or %)   |  |
| Fines collected                                                                                   | (# and \$) |  |
| Complaints/concerns received from public                                                          | (#)        |  |
|                                                                                                   |            |  |
|                                                                                                   |            |  |

## Post-Development Stormwater Management

|                                                                                                                          |          |  |
|--------------------------------------------------------------------------------------------------------------------------|----------|--|
| Estimated percentage of development/redevelopment projects adequately regulated for post-construction stormwater control | (%)      |  |
| Site inspections completed                                                                                               | (# or %) |  |
| Estimated volume of stormwater recharged                                                                                 | (gpy)    |  |
|                                                                                                                          |          |  |
|                                                                                                                          |          |  |

## Operations and Maintenance

|                                                                                                |                |  |
|------------------------------------------------------------------------------------------------|----------------|--|
| Average frequency of catch basin cleaning (non-commercial/non-arterial streets)                | (times/yr)     |  |
| Average frequency of catch basin cleaning (commercial/arterial or other critical streets)      | (times/yr)     |  |
| Total number of structures cleaned                                                             | (#)            |  |
| Storm drain cleaned                                                                            | (LF or mi.)    |  |
| Qty. of screenings/debris removed from storm sewer infrastructure                              | (lbs. or tons) |  |
| Disposal or use of sweepings (landfill, POTW, compost, recycle for sand, beneficial use, etc.) |                |  |
| Cost of screenings disposal                                                                    | (\$)           |  |
|                                                                                                |                |  |
|                                                                                                |                |  |

|                                                                                      |            |  |
|--------------------------------------------------------------------------------------|------------|--|
| Average frequency of street sweeping (non-commercial/non-arterial streets)           | (times/yr) |  |
| Average frequency of street sweeping (commercial/arterial or other critical streets) | (times/yr) |  |



|                                                                       |                |  |
|-----------------------------------------------------------------------|----------------|--|
| Qty. of sand/debris collected by sweeping                             | (lbs. or tons) |  |
| Disposal of sweepings (landfill, POTW, compost, beneficial use, etc.) | (location)     |  |
| Cost of sweepings disposal                                            | (\$)           |  |
| Vacuum street sweepers purchased/leased                               | (#)            |  |
| Vacuum street sweepers specified in contracts                         | (y/n)          |  |
|                                                                       |                |  |
|                                                                       |                |  |

|                                                                                        |             |  |
|----------------------------------------------------------------------------------------|-------------|--|
| Reduction in application on public land of: (“N/A” = never used; “100%” = elimination) |             |  |
| ▪ Fertilizers                                                                          | (lbs. or %) |  |
| ▪ Herbicides                                                                           | (lbs. or %) |  |
| ▪ Pesticides                                                                           | (lbs. or %) |  |
|                                                                                        |             |  |
|                                                                                        |             |  |

|                                                          |                                                                                           |  |
|----------------------------------------------------------|-------------------------------------------------------------------------------------------|--|
| Anti-/De-Icing products and ratios                       | % NaCl<br>% CaCl <sub>2</sub><br>% MgCl <sub>2</sub><br>% CMA<br>% Kac<br>% KCl<br>% Sand |  |
| Pre-wetting techniques utilized                          | (y/n)                                                                                     |  |
| Manual control spreaders used                            | (y/n)                                                                                     |  |
| Automatic or Zero-velocity spreaders used                | (y/n)                                                                                     |  |
| Estimated net reduction in typical year salt application | (lbs. or %)                                                                               |  |
| Salt pile(s) covered in storage shed(s)                  | (y/n)                                                                                     |  |
| Storage shed(s) in design or under construction          | (y/n)                                                                                     |  |
|                                                          |                                                                                           |  |
|                                                          |                                                                                           |  |