

Final Report

Wastewater Management Steering Committee

To: The Orleans Board of Selectmen
From: The Wastewater Management Steering Committee
Date: December 15, 2009

Preface

The Board of Selectmen adopted the charge for the new Wastewater Management Steering Committee (WMSC) and began appointing members on July 12, 2000. As you recall, representatives of key town committees (Selectmen, Conservation Commission, Planning, Water Advisory Board and Board of Health) comprised the voting members. A non-voting member from the Finance Committee rounded out the body. The Town Planner and the Planning Office staff supported the WMSC. Valuable staff support was also provided by the Water Department, Health Department, Finance Office and Harbormaster, which facilitated our efforts. The WMSC built strong and effective relationships with both county and state officials. The eventual Draft Comprehensive Wastewater Management Plan (CWMP) could not have been the comprehensive and deliberative document that it turned out to be without the patience and expertise of our consulting engineering team.

The effectiveness of the WMSC was derived from the committees that we represented. We were ordinary Orleans citizens, open-minded, willing to learn, committed to discussion and deliberation and consensus building. As a group, we assessed the issue and worked together to find the best answer for our town. We are pleased to submit this Final Report which summarizes the process and presents recommendations for your consideration.

Committee Members

This was not the labor of a few. The following individuals served as members (*) or alternates during the 10 years of the WMSC:

Board of Selectman

John Hinckley*('00-'08)
Sims McGrath*('09)
Erica Parra
Ken Farrar
Dave Dunford

Board of Health

Gussie McKusick* ('00-'09)

Water Advisory Board

/Board of Water Commissioners

Bob Rich*('00-'04)
Ann Hodgkinson*('04-'09)

Planning Board

Bill Wilcoxson*('00-'04)
Sims McGrath*('04-'09)
John Fallender
Ken McKusick
Mark Zivan

Conservation Commission

Judy Scanlon* ('00-'03)
Don Tomlin * ('03)
Judith Bruce*('03-'09)
Andree Yager
Bob Ward
Bill Parish

Finance Committee

Paul O'Connor* ('00-'03)
Carl Hevert* ('03-'04)
Victor Noerdlinger* ('04-'05)
Charles Ashby* ('05)
Mark Boardman* ('05)
Gail Meyers Lavin* ('05-'06)
Bob Donath* ('06-'08)
Walter Bennett* ('08-'09)
Tom Finan
Dave Dunford
Yoshio Inomata
Chuck Thompson

Grants

The WSMC notes that in addition to its task of developing a CWMP and moving it to a MEPA review that we were sought and were awarded grants of \$145,000:

1. 2003: awarded \$45K from the National On-Site Demonstration Project (Federal). We worked with Horsley Whiten Group and produced a report Orleans Integrated Water Management District. A Holistic Wastewater, Water Supply and Storm Water Management Framework. These funds helped identify the regulatory, legal and administrative structures that the town would need to consider in long term planning.
2. 2004: awarded \$50K from the Wastewater Implementation Committee (County and State) to do a detailed study of the Tri-town Septage Treatment Facility. Working with the approval of the Board of Managers the almost 20-year old regional facility was thoroughly inspected and a variety of recommendations were made. The necessity of repair and maintenance was detailed and costs estimated, as well as identifying any future potential as a sewer treatment and septic treatment facility. This work was done by contract with Wright- Pierce.
3. 2008: awarded \$50K from Cape Cod Water Protection Collaborative of Barnstable County for a project that would have applicability to all 15 towns and would demonstrate the potential for regional options. This contract was awarded to Wright-Pierce. Orleans was the grantee and partnered with Brewster and Eastham to produce Wastewater Regional Study 2009, which demonstrated that a phased regional approach to our common problems could result in millions of dollars of savings.

These reports and background materials that they amassed, enriched the depth and quality of the work to develop Orleans CWMP. The infusion of these monies was a significant savings for the town. It enhanced our work product.

In addition WSMC members participated in regional committees and projects that benefited the town as well as the eventual CWMP itself. Participation in a number of committees associated with the Pleasant Bay Alliance proved helpful.. Participation in county committees, WIC and CCWPC, were also locally beneficial. The WSMC and our town staff participated in the working group that developed the Cape-wide Tools Report, which details a variety of enabling mechanisms toward developing wastewater solutions.

Chronology

The following are some highlights of progress through the years.

2000 Committee established. Started review of existing documents and studies as well as pertinent material from other towns. Developing our own work plan was the theme of committee's early meetings.

2001 Partnership with the Massachusetts Estuaries Project was begun. Set requirement to have three years of marine environment sampling data. Because of existence of sampling program run by the Orleans Water Quality Task Force, the transition to an extensive testing of 45 sites was a less daunting task. The committee began preliminary investigation of Orleans population demographics and started analysis of land-based sources of nitrogen contributions.

2002 The employment, on an hourly basis of an environmental engineer was seen as an essential step to aid in the evaluation and process of data collection and wastewater model development. Wright-Pierce was selected following a competitive evaluation, and began to work closely with the WSMC, the Planning Office and GIS programs to develop the necessary parameters. The concept of a "planning horizon" of 20 years was adopted. The ability to be

flexible to new technologies and evolving conditions necessitated the decision to plan 20 years in advance of where we were at any point in time. The concept of near term, mid term and far term remediation was adopted. Monitoring efforts continued. Stream gages for longer measurement were deployed and fresh water resources added to sampling efforts. The CAC (Citizens Advisory Committee) was established and tasked with providing education to the citizens and input to the WMSC.

2003 As the year drew to a close we had successfully completed the three years data set of measurements that could be used in the MEP/SMASST models to develop Total Maximum Daily Loads (TMDL). Benthic sampling and eelgrass surveys were completed, and hydrology models were in the process. Activities were emerging for regional discussions with the formation of the county Wastewater Implementation Committee (WIC), and the Watershed sub-committee of the Pleasant Bay Alliance. Work was continued with Wright-Pierce on issues such as the realistic maximum growth for Orleans often called "build-out". We were nearing the completion of an initial phase of the committee's work to develop a CWMP, the data collection period.

2004 The Orleans Planning Department and the Planning Board joined our efforts to develop a valid and reproducible build-out model. This proved to be an essential tool in all the planning activities. Indeed the Orleans model has been recognized by the county and will be used as a model for all municipal and regional planning. The DEP also approves of this method and may use it statewide.

With the assistance of several support teams including the DEP, Cape Cod Commission, Pleasant Bay Alliance and the Water Quality Task Force, our intensive water sampling base line information was compiled and we moved into a scaled down monitoring mode.

Orleans was a recipient of a federal grant and began work with the firm of Horsley and Whiten to identify the regulatory, legal and administrative structures that the town would need to consider in long term planning. This occupied a significant amount of our time. However, the discussions and deliberations helped shape and focus the definition of the necessary support structures that needed to be in place to facilitate a long-term implementation and management of a CWMP.

2005 In a critical step for long term planning, the Assessors, Planning and Water Departments were able to link basic water use on a parcel by parcel to further expand the build-out analysis. This had not been done to such a level in regional wastewater planning, and this too has become a regional model for others. The WMSC and other town departments were now fully involved in a second phase of planning. We needed to define how the five years of water, hydrological and benthic sampling data would be organized into a comprehensive town wide plan.

We spent the largest part of our time together reviewing other towns' RFPs for CWMP consultant, and developing our own RFP for one. We interviewed 4 candidate firms and selected Wright-Pierce. Since 2002 we had worked successfully with that firm on an hourly basis and gained confidence in their quality, process and style.

The county awarded us our second grant, this one to evaluate the status, potential and possibilities of the aging Tri-Town facility. As this site might figure prominently in any final recommended solution, funding for an in-depth study was a significant step forward.

A concern about finding some way to review the accuracy of the MEP and SMASST work was emerging. WMSC worked locally and met with representatives of SMASST and the DEP. We also worked through the county wastewater organization to try to start this process.

2006 By year's end it was apparent that the schedule of delivery of the Technical Reports from SMASST on our 5 major estuaries would not be forthcoming in the timely fashion that we had been promised. We were in receipt of a Technical Report for Pleasant Bay. This report resulted in a TMDL from the state DEP that indicated that 52% of controllable sources of nitrogen would need to be removed from Pleasant Bay to enable that estuary to return to healthy conditions. The controllable sources of nitrogen are storm water run-off, fertilizer and human waste. The septic input is the major controllable source.

Continuing to work with Wright-Pierce, we completed a comprehensive Needs Assessment. This document was presented to the BOS and at a public hearing (Snow Library 2/26/06, 6PM). This was the first of many public meetings held by the WSMC. It became our practice to have public hearings and a comment period on all major reports that Wright-Pierce issued. At each presentation about 100 citizens attended. We shared our Reports with our Brewster, Chatham and Harwich neighbors through the Pleasant Bay Alliance the neighbors. Representatives from Eastham were invited to key meetings.

2007 The Draft Technical Reports for Namskaket, Little Namskaket and Rock Harbor arrived. It was gratifying to find that the projections from Wright-Pierce had been accurate. The assimilative capacity for the 2 Namskaket watersheds had not reached maximum; indeed, less, 38% of it's capacity. Projections for using the Tri-Town site as a disposal site and partnering with our neighbors showed that even at build out this site could be safely used and the receiving waters not impaired. Wright-Pierce developed the second significant report, Screening Alternatives, (Snow Library 1/17/07, 6PM), which laid out the myriad possibilities that the town could consider to transport, treat and dispose of wastewater. Nine diverse town-wide options were given, ranging from a totally decentralized approach to a centralized facility. This report, was presented also to the Selectmen and shared with our neighbor towns. Throughout the year, after further study, the options were reduced to 3 very different plans.

In discussions with DEP and SMAST about the extended delays in towns receiving Technical Reports, we pressed for a TMDL value that could be used as a "place holder" for the Nauset Estuary system to allow us to continue town-wide planning. A value of 55% nitrogen removal (+/- 10%) was agreed upon as being a reliable value. Because the DEP concurred on this placeholder, we proceeded with planning efforts using that value. DEP has subsequently said they will accept a FINAL CWMP using this value, and that we should not wait for final Technical Reports from SMAST. (We have received the same assurances during the MEPA review.)

In parallel, the CAC held public educational workshops, spoke at local public organizations and mailed materials related to the need for wastewater management and the possible solutions and emerging plan. The Horsley-Whiten Group Report had identified the need to create a "sewer commission" as an enabling town body. With input from the Board of Water Commissioners and the superintendent of the Water Department about the advisability of combining the functions of water and sewer service administration, and with support from the BOS, we discussed this with the Charter Review Committee towards that end.

2008 The WMSC further refined three conceptual CWMPs. A report, Detailed Evaluation of Alternatives, was presented to the BOS and at public meetings (Snow Library 5/22/08, 1PM and Elementary School, 6 PM). The CWMP concepts each had appealing aspects. It was decided to have town-wide workshops to seek further public input. A town-wide mailing invited the public to one of 7 workshops that were held weekly through the summer. Seventeen large illustrative posters were developed and displayed for two months in the Town Hall. Every Tuesday evening the WMSC and CAC ran educational sessions detailing the three options, complete with the cost for capital outlay and O&M expenses in 2006 dollars. The three options detailed which properties were likely to be connected to sewers, and how each plan would be phased over a twenty-year period. It was emphasized that there would be an evaluation prior to each phase of implementation in order to assure to insure that any unfolding environmental or technical conditions, including the economy were taken into account. Plan One was a decentralized option with a rebuilt Tri-Town treatment plant used for treating septage from pumped septic systems and sludge from the decentralized treatment facilities. This decentralized option would require purchase of 11 properties for treatment and disposal needs and would establish 4 treatment plants across town. Plan 2 was a centralized option, rebuilding Tri-Town to serve as a combined sewer and septage treatment plant. Plan 3 was both centralized and decentralized, to build a smaller facility at the Tri-Town site for sewage and septage with an option to include treatment plant needs for Brewster and South Orleans (the final phased project) and to have a second treatment plant near Pleasant Bay. Opinion surveys asking which concept the public like most, least and why, as well as soliciting general comments

were passed out at the public hearings as well as at the seven workshops. Plan Two was the most favored option for 70% of respondents, and Plan One was the least favored by 73%. Costs appeared to be the most common reason for the decisions.

Early fall was a busy time with analysis of the public input which resulted in a new single plan. It was built around Plan Two the centralized option, but incorporated the addition of several small, decentralized plants to provide earlier treatment to the most impaired waters of the upper reaches of Pleasant Bay. This final plan also incorporated regional opportunities for Brewster and Eastham, and innovative concepts such as water reuse. Since fertilizer reduction and storm water runoff management would also reduce nitrogen, a number of non-structural elements such as load reduction technologies (urine diverting toilets), enhanced flushing and water conservation were added. At the October 27 Town Meeting, the citizens overwhelmingly supported this draft CWMP as presented that evening.

2009 With affirmation by Town Meeting, the WSMC and Wright-Pierce initiated the arduous process of approval of the CWMP by the numerous county, state (MEPA) and federal agencies. Minor modifications of the draft Plan have been made since TM. During this ongoing review, Orleans Draft CWMP has received unusual praise for its comprehensive and thorough approach, and for the extraordinary amount of public involvement and response to citizen input. The Plan has been noted especially that it is phased and has built-in evaluation points to assure so-called *adaptive management*. The MEPA process is lengthy and is yet to be completed. A renewed request for verification prompted the BOS to develop another committee to validate the SMAST Technical Reports for Pleasant Bay. The process unfolded throughout the year. During this time, the WSMC stepped back and only commented and assisted when appropriate.

As we look back on this decade-long process we have calculated that town staff, CAC, water samplers, the WSMC and consultants have expended in excess of 10,000 hours of work. The WSMC notes with pride that there have been in excess of 500 hours of public hearings, meetings and opportunities for public input. The current CWMP is unanimously supported by the members of the WSMC, has been approved by the citizens at TM, and is definitely an Orleans specific Plan, the work product of many. We remain fully confident in the CWMP as an adaptive plan that will serve the Town well. As the MEPA review process proceeds, there most likely will be more questions to answer and more detail to be inserted. This is truly a living document and will need to be continually and periodically re-evaluated for that time and date. This “adaptive management” approach is prudent for the Town and supported by the state’s DEP. Having a Plan that is phased in over an extended period further insures that we can bite off affordable and appropriate pieces as we move forward. We believe that it is imperative to keep moving forward. There may never be unanimous approval, but if all are committed to doing the best for our town, its environment, and the very best for future generations, we will all be winners.

Attached documents

The Draft CWMP outlines a Schedule for Implementation. A revised Table (November 2009) has been drafted and is attached as **Appendix 1**. This is the material George Meservey discussed at the BOS meeting 11/5/09. This schedule should be viewed as the skeleton document accompanying our comments and recommendations.

Appendix 2 is a reference document that helps give deeper insight into the development and exploration of the various intricacies of the Plan. Wright-Pierce issued more than 100 “letters” to the Planning Office, and these best represent our work plan. These detailed documents laid out the concepts, discussion points and supporting science, calculations, tables spreadsheets and the “homework” of the committee through the years. These letters generated literally hundreds of hours of committee discussion and debate during open meetings. Wright-Pierce was given direction as a result of these discussions This Appendix is a chronological record of the subject of the “letters”, author, date they were developed, the date they were

discussed by the WMSC and which set of committee minutes reflect discussion and decisions made as a result of these documents. This index is most valuable to anyone who wishes to delve further into the how's and why's of the final CWMP. We urge anyone with a specific question to seek out this valuable resource material. The documents are filed in the Planning Office.

Recommendations and Comments

As this document will be the final formal account of the WMSC we do have some recommendations we ask that the BOS consider and share with those who will pick up the task of moving the CWMP forward.

1. Take steps to implement and construct the first phase of the Plan. While many comments and concerns have been expressed concerning the full six phases of the proposed sewerage program, it has become clear that the Town will not be able to adopt the "no action" alternative.

Therefore it is recommended that the Selectmen proceed expeditiously to seek the required approvals and funding authorizations needed for design and construction of Phase 1, which includes the construction of one-half of the wastewater treatment plant on the Tri-town site and sewer extensions in the densely developed center of town.

2. The current schedule for implementation of Phase 1 will require that the Town have full control of the Tri-Town site in 2014 in order to commence facility construction.

Therefore it is recommended that the Town accelerate Town control of the site. Negotiate an amendment to the Tri-town Inter-municipal Agreement to allow Orleans to terminate the agreement one year prior to the existing agreement. Solicit assistance from the Cape Cod Water Protection Collaborative to support and assist the regional efforts of the Brewster, Eastham and Orleans Ground Water Protection District to reach an amiable solution and revised Inter-Municipal Agreement that benefits all.

3. Although sufficient funds were allocated at the 2008 and 2008 Annual Town Meetings to begin the pre-design engineering work, some of the money was redirected to fund other wastewater evaluations and the WHG consultant, and other monies were not released. This resulted in a hiatus of the development of valuable pieces of information, in particular the development of specific details of the capital cost of the elements in the first Phase of the draft CWMP.

Therefore, it is recommended that the funds be immediately released and new funding sought to supplement this important pre engineering task. Reevaluate the necessary elements of the scope of services and contract with Wright–Pierce to complete these tasks.

4. Namskaket Marsh has more than adequate capacity to take on projected quantities of treated effluent, which may increase its nutrient levels. However, Little Namskaket Marsh will be close to capacity of nutrient loading at build-out. The CWMP embraces the imperative to insure that these two precious resources never become impaired or the surrounding waters degraded because of discharge of highly treated effluent. In addition, there is an "equity issue" of placing a treatment plant in any location in town where those residents perceive that they will, or in fact will bear whatever related inconveniences there may be, for the entire town. There is mixed sentiment that permitting properties in close proximity to treatment facilities to be hooked up to sewers may eliminate the inequity.

Therefore, it is recommended the first priority for any Plan will be to preserve and protect the Namskaket marsh system and never exceed its assimilative capacity. A second, is to consider working with adjacent property owners for any treatment facility to try to determine what an equitable arrangement may be for all parties

5. Pharmaceutical and Personal Care Products both flushed down the toilet for disposal and excreted in urine are of increasing concern. Greenhouse gas emissions and “carbon footprint” are also emerging issues that we must address in planning any long-term projects. Technologies are now being investigated to remedy these areas of concern.

Therefore, it is recommended that emerging reports and investigations about measures to reduce contaminants and green house gases be closely followed. It is recommended that these measures be explored periodically and, if appropriate, be incorporated into wastewater plant design.

6. When the roads are dug up for sewer pipe installation it would be reasonable and prudent to coordinate other possible repairs or installations that could be done at the same time. The CWMP calls for no road disruptions in the summer months, however the scheduling will be known so far in advance that planning could take place concurrently.

Therefore, it is recommended that starting with Phase 1 when the downtown area is addressed, talks begin to evaluate the feasibility of a number of parallel activities that could occur concurrently. Such activities may include burying overhead wires, standardization of underground installation, completing road surveys and “lay outs”.

7. There has been a hiatus in testing in the Namskaket Marsh area. This needs to be rectified.

Therefore, it is recommended that the town should begin to coordinate with USGS and the project engineer to work with the town WQTF to establish a monitoring program to measure the effect of discharge for any facilities at the Tri town site. The extent and frequency of superficial and deep monitoring, along with a specific protocol, needs to be established and periodically reported upon in a public venue.

8. There has been some suggestion that the draft CWMP be taken back to Annual Town Meeting to again have it ratified. Orleans is the only municipality that chose to take a draft CWMP to a TM for voter approval. That is not a necessary step, but the WMSC felt it was a good indicator of support. Since that vote, there have been numerous concerns raised, some valid and many we believe manufactured. There will be time to address at each step of the Plan over the next several decades. We believe that taking the draft CWMP back to Town Meeting is an unnecessary step; indeed it has been modified several times since 10/08 and will continue to evolve. At every stage along the way, and there will be many, the citizens will have a Town Meeting vote and an “override” vote at the ballot box to express their levels of support with every item that requires money. If a future TM defeats any Draft of the CWMP, we open ourselves to action from the DEP or a lawsuit for not making reasonable steps to meet our regulatory requirements.

Therefore it is recommended that since future Town Meetings will be asked to approve funding of the various costs related to any projects designed to meet our regulatory requirements that the current draft CWMP need not be again presented.

9. As each municipality reaches a certain stage in the planning process, the financial reality of these undertakings falls like a wet blanket. As we each realize the cost we are shocked. The unifying glow of moving forward in a positive direction seems to evaporate and splinter groups form trying to find some way or other way to not sewer, sewer less or try to find less expensive alternatives. We forget to consider what it would cost each of us to replace our Title 5 system if it had failed yesterday. It is necessary at this moment of confusion to have strong leadership, educated citizens and a dialogue that is open and fact based. Orleans is fortunate that the Board of Selectmen began to address the equity issues of what percentage of the capital cost would fall to a property owner, the “betterment cost” and what portion would fall on taxes. It is difficult to apportion cost when all will benefit and not all will be allowed to connect to an off site solution.

Therefore, it is recommended that periodically this issue be raised, and the betterment/tax ratio be explained; and as each request for allocations is made the actual costs be shown and explained. The total impact will not be felt for several decades. Projects will move forward incrementally. All possible funding opportunities, Federal, State, or grants should be explored and the scheduling of projects be taken into consideration in relationship to advantageous financing opportunities. When the ratio of taxes vs. betterments is determined, that ratio needs to be consistent through the entire project and (we recommend) that the rules should not be changed in the middle of the project.

10. The decision that the WMSC be comprised of Orleans citizens representing key town committees, assisted by the technical support of the Town and County and State, was a prime reason for our success. We had the interest and the time to become students of wastewater in the best interests of our Town. Indeed on several occasions the consultant commented on this being a great strength of the WMSC. The Board of Selectmen has many time consuming demands. There needs to be a citizen body, responsible to them, to assist in the ongoing planning and implementation of the CWPM. Indeed, there are two clear tasks that citizen committees need to fill. One is to complete the unfinished tasks of the WMSC, and the second, a Building Committee once those tasks are finished. A Project Manager has been hired, and if supported by a citizen committee with expertise in the building field, that task should go well and relieve the BOS of a huge time consuming activity. On May 12, 2008 at Annual Town Meeting we voted a Charter Change in approving Article 45. In essence the Board of Water Commissioners became the Board of Water and Sewer Commissioners. The article goes on to state in section 6-8-3 that the Board of Water and Sewer Commissioners shall set policy and be responsible for development of a sewer works system consistent with the Comprehensive Wastewater Management Plan and oversight of that system when operational. The Charter changes were ratified by the voters at the ballot box in May 2009. The Board of Selectmen appoints three members and two associates to that seven member Commission, as the Charter requires. This Commission and the Water Department should now be responsible for assisting the BOS in continuing the planning process.

Therefore, it is recommended that the Selectmen ask the Board of Water and Sewer Commissioners to work with them now to help with the ongoing planning tasks.

Final Note

Finally, this has been a lengthy task. We on the Committee believe that we learned from a master, and can never thank the Wright-Pierce consultant team and our staff enough for their patience and guidance in working closely with a group of ordinary citizens on this journey. We accepted this challenge because we believe in our town, the environment and our fellow citizens. We believe this special place and these precious resources are worth protecting, preserving and being restored to health. We know that the natural resources and the beauty of Orleans also provide support for our families with jobs, tourism and local industry. These are all inseparably linked. We invested our time and energy for the future. We thank you for this extraordinary opportunity.

Gussie McKusick, Chair
Walter Bennett, Finance Committee
Judith Bruce, Conservation Commission
Ann Hodgkinson, Board and Water and Sewer Commissioners
Sims McGrath, Jr., Board of Selectmen

Orleans Wastewater Management Steering Committee
December 15, 2009