Town of Wells
The Vision of our Future



2016 Comprehensive Plan Update

Strategic Summary DRAFT 09-15-2016

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2016 Wells Comprehensive Plan Update Summary

I. Introduction

Welcome to the 2016 Wells Comprehensive Plan Update Summary. This document revisits previous Comprehensive Plan's goals, polices and strategies, but incorporates a new way of thinking on how to address these issues and relate them to the community from a holistic approach. This Plan update is no longer required per state statute but is recommended as a guiding document to help manage the Town's growth into the future.

A. Comprehensive Plan Purpose and Use

A Comprehensive Plan's purpose is to document a Town's commitment to achieve a vision. The Comprehensive Plan reflects a long-range (e.g., ten year) view of future issues and opportunities. Issues are identified, projected and options selected to set a course of action. These decisions are the basis for policies and implementation programs.

The adopted Plan is used by citizens, elected officials, Town committees and boards, business investors, and others. They use it to help make daily decisions about the issues and opportunities that shape the Town's physical, social and economic development. It is used to establish the legal foundation for several implementation programs and activities including, but not limited to, the Town's Land Use regulations. While the Comprehensive Plan is not a zoning ordinance, land use regulations shall be consistent with the vision of the Plan or the plan shall be amended.

In addition, the Comprehensive Plan's purpose is to implement Maine State Planning Law and related state and regional development policies.

In order for this Plan to meet the state minimum requirements there are a series of State, Regional and Wells goals that are noted at the beginning of each chapter. These goals relate to a series of issues, which are of great importance to both the State of Maine as well as the community of Wells. These issues include the following:

- **Topography Soils & Water**
- **Habitats and other Critical Natural Resources**
- **Hazard Mitigation**
- **Historic and Archeological Resources**
- **Agriculture & Forestry**
- **Marine Resources**
- **The Economy**
- **Population and Demographics**
- **Land Use Patterns**
- **Housing**
- **Transportation**
- **Recreation and Open Space**
- **Public Facilities and Services**
- **Government and Fiscal Capacity**

B. Comprehensive Plan Adoption History

The Comprehensive Plan is adopted by the Citizens of Wells at a Town Meeting. The first Comprehensive Plan was written in 1963. A new Comprehensive Plan was adopted November 5, 1991. A revision was adopted on November 3, 1993. The current Comprehensive Plan was adopted in 2002 and amended in 2003 with changes to allow for the new Transportation Center zone. The most recent Comprehensive Plan represents amendments completed by a Task Force in 2005 and adopted by the Town on April 29, 2005. It's goals were to build upon, incorporate, consolidate, reformat and update prior Comprehensive Plan policies and implementation programs. The Comprehensive Plan Implementation Committee(CPIC) was established from June 2005 through March 2008 to propose recommended ordinance changes.

This new Comprehensive Plan revisits previous Comprehensive Plan's goals, polices and strategies, but incorporates a new way of thinking on how to address these issues and relate them to the community from a holistic approach.

C. State Planning Requirements

The Maine Legislature adopted the Comprehensive Planning and Land Use Regulation Act in 1988 and the Growth Management Act. (30-A M.R.S.A Sect 4312-4350) The Act required that each municipality in the State, except those under the jurisdiction of the Land Use Regulation Commission (LURC), develop a local growth management program that guides the future growth of that community. The local growth management program must be consistent with State and regional goals and with the State's coastal policies if to be certified by the State Planning Office as compliant with Sect 4347-A(1)&(2).

Under the Act, the local growth management program consists of two parts:

- The preparation and adoption of a Comprehensive Plan by the Town. This Plan must comply with State requirements and must be reviewed by State and regional agencies prior to its final adoption.

- The preparation and adoption of an implementation program that is consistent with the Comprehensive Plan which carries out the goals and policies set forth in the Plan. State and regional agencies must also review this implementation program.

Maine State law no longer requires that Wells update its Comprehensive Plan for certification. This update of the Town's Comprehensive Plan has been prepared to fulfill the requirements for voluntary state certification. The plan will help manage the Town's growth into the future.

D. 2016 Comprehensive Plan Update Summary Structure

The health of the Town of Wells relies on every aspect of our community. When one part of the community is not doing well other parts suffer. This Plan connects all aspects of our community together; after all when one sector of the community does well, every sector can do well.



This document is structured in a way that brings all of the issues that affect the Town of Wells together so that our community is informed to make the wise choices that are needed to make Wells a vibrant, active, and healthy place to be.

In order to make the connection between issues that affect Wells, we have developed an icon system that will represent the various portions of the plan and how they link other portions of the plan together.

Below is our icon representation that you will find throughout the plan:



Built Environment

Understanding the Town's existing developed and undeveloped areas in relation to its demographics and encouraging orderly and appropriate growth to achieve local, regional and state goals.



Economic Health

Recognition of the importance of the diverse existing commercial development and promotion of the local economic climate to encourage and improve small business growth and tourism.



Wellness

Promotion of existing and future recreation opportunities for Wells residents and visitors, and encourage the growth of medical and wellness facilities to serve the community.



Environment

Identification and protection of the Town's natural features which are environmentally sensitive and should be preserved for future generations.

II. The Vision of Our Town

A vision statement helps the community to better understand who they want to be. Having such a statement will assist in the establishment of the Goals, Policies, and Strategies in this plan. This statement will set the overall standard for the community to strive towards.





The following Vision statement was developed through two meetings held in Wells at the beginning of the Comprehensive Plan Update planning process. These meetings were open to the public in order to ask the question: "*Who is Wells and what do we want it to be?*" The municipality also provided an online and paper survey to the community at large in order to obtain as much feedback as possible. The following is the statement developed with the citizen input:

"Wells is a New England seacoast community with friendly people and a great environment. The vision for Wells is to preserve and promote Wells' small-town historic traditional rural character, appearance and values to maintain a high quality of life.

If quality is conformance to a standard, then continually improving quality means continually setting and achieving higher standards for excellence in planning, design, development, service and operations. Citizens drive standards: their aspirations, expectations, their goals and policies."

Setting standards will enable Wells to:

- **Retain and improve the quality of life.**
- **Promote economic opportunity.**
- **Promote health and safety.**
- **Promote educational opportunity.**
- **Promote environmental protection."**

Survey Results

The Town held two visioning workshops and published an 8 page 20 + question Comprehensive Plan Re-Write Survey in 2014. The survey was passed out in public, placed on the town's website, and was provided to the Wells Junior and Senior High School classes in order to get input from the younger residents of the Town. The survey resulted in 498 returns in a community with a total of 8011 household units, or a 6% return. Students comprised approximately 37% of the returns (Age 15-18). In examination of the population breakdown, 15-85+ years of age, it too, is approximately a 6% return. The Town also conducted a second survey in 2016 consisting of 24 questions and write-in comment opportunity which was distributed to over 4,000 year-round households by mail and was available electronically on the Town website and at public locations (Town Hall, Library, Senior Center). The responses totaled 893, an approximate 11% return. It may be of importance to note that 75% of the responders were 55 or older. In examining the responses to similar questions on each survey, most of the results were very close (3-4%). See Inventory for the survey questions and results.

The information from the surveys yielded results that confirm a great deal of the information found in this plan.

Issues Commonly Noted:

There were several issues commonly noted throughout the survey which included:

- The need for a Downtown Center
- Additional sidewalks and paths
- Added Conservation efforts and land preservation
- More things for young people to do
- Architectural and landscaping standards
- Implementation of impact fees
- Limit or eliminate seasonal cottage and condo-hotel uses
- Keep taxes low
- Traffic concerns and continue road maintenance programs
- Maintain the rural character of Wells

The Need for a Downtown Center
There is a considerable amount of documentation found in this plan relating to the Center of Opportunity (Sustain Southern Maine) and Workforce housing analysis completed in 2013 that strongly supports the efforts toward creating more of a Downtown Center somewhere around the Route 9/109, Route 1 & Chapel Road/ Route 109 region of Town. This Comprehensive Plan's Goals, Policies, and Strategies also recommend the development of a Downtown Center as a long term goal for the community to develop. Many other decisions that the Town of Wells will consider also impact the outcome of this issue.

Additional sidewalks and paths
A great deal of the community living and recreating in the Route 1 corridor of Wells feel it is time to not only expand the sidewalk infrastructure along Route 1, but to also expand sidewalks and the availability of trails off from the Route 1 area. Many people walk this corridor during the summer months and, in fact, can get around quicker on bikes in this area due to the traffic congestion found during the summer vacation time. 76%, of the survey responders are seeking the community's assistance in developing more connections to the Eastern Trail and more bike & pedestrian paths.

Added conservation efforts and land preservation
Wells has been a very effective conservation community, preserving many acres of land and coastal areas. The survey did find that many people (62%) want this effort to continue. 76% of the people responding in the survey are encouraging the Town to provide additional protection of the Town's natural resources. Many also seem to be feeling the added pressures of the condominium/seasonal lodging development occurring and want more lands preserved by placing those properties in conservation before they can be purchased for added development.

More things for young people to do
With more than 100 students from the Wells junior and senior classes answering the survey, their responses deserve great consideration. The students seem to feel that there is not enough for them to do. Specifics were not provided as to what they want, however; Teen Centers, Non-Alcoholic Dance clubs and other forms of entertainment seem to work in other vacation communities both for those living in the area and visiting from away. The community may want to hold additional forums with the local teens to find out what they want so that those forms of entertainment can be considered by local entrepreneurs seeking business ideas for the community.

Architectural and landscaping standards
The survey question regarding establishing architectural and landscaping standards for new commercial development resulted in a high percentage of agreement. Also in high agreement was the establishment of architectural standards along Routes 1, 109 and 9.

Many written comments in the survey included comparisons to Ogunquit and Kennebunk downtown area appearance and excessive signage along Route One.

Implementing impact fees
An impact fee ordinance has been adopted by the voters of the Town, but no fees have been studied or enacted. A survey question result indicated agreement with the establishment of such fees for new developments.

Limit or eliminate seasonal cottage and condo-hotel uses
In 2013 seasonal cottages were eliminated as an allowed use in Wells by the voters. New hotel performance standards were also approved by the voters in 2013 which discourages the condominium form of hotel units.

Keep taxes low
The Town Budget Committee and Board of Selectmen continue to govern a well-managed Town budget process which maintains Town services at an acceptable level.

Traffic concerns and continuation road maintenance programs
The Town continuously works with the Maine DOT and Turnpike Authority to address traffic congestion. Solutions have included new traffic lights, "smart" light systems, and intersection reconstructions. The Town actively repaves and reconstructs roads as well as maintains drainage and culvert systems.

Maintain the rural character of Wells
The 2016 survey had a 97% agree response to Question 1, "Work actively to retain the rural character of Wells as defined, in large measure, by its open land, marshes, fields, farms and woodlands. Currently, cluster subdivisions are required in the Rural District which promotes less sprawl development and encourages the preservation of undeveloped open space.



III. Regional Cooperation

State Goal:

- Cooperate with local, regional, and federal agencies to continually improve planning and management

Regional Goal:

- Cooperate with local, regional, state and federal agencies to continually improve planning and management

Wells Goal:

- Cooperate with local, regional, state and federal agencies to continually improve planning and management of Wells and meet civic needs

The Town of Wells is very active with inter-local and regional cooperation efforts. These efforts include inter-agency cooperation with regional, state, and national groups that assist the town on a number of fronts. Lists of those efforts are bulleted below:

- Regionally participates with neighboring Towns on Solid Waste contract with Casella Waste Systems
- Wells Public Safety Dispatching for the Town of Ogunquit
- Joint negotiations with Ogunquit on the Time Warner Franchise Agreement
- Joint ongoing Route 109 Corridor discussions with the City of Sanford including Three Ring Binder fiber high speed internet connection
- Geographic Information System (GIS) coordination with Kennebunk Kennebunkport &Wells Water District (KKWWD) GIS Coordinator and Maine GIS Office
- Inter Library coordination
- Wells Parks & Recreation programs open to residents of Ogunquit and Kennebunk Town
- Wells Conservation Commission Cooperation with Great Works Regional Land Trust (GWRLT) / Lands for Maine's Future to acquire conservation lands and easements

- Regional Household Hazardous Waste Day Participation with the Towns of Kennebunk, Arundel, and Kennebunkport
- Investigating regional dredge equipment purchase with southern Maine coastal communities
- Inter-agency cooperation with:
    - The Wells Reserve
    - Maine Turnpike Authority (MTA) (Wells Train Station) and Northern New England Passenger Rail Authority (NNEPRA) /AMTRAK
    - United States Fish & Wildlife Service
    - Maine Inland Fisheries & Wildlife
    - Department of Marine Resources
    - Maine Community College System
    - Wells-Ogunquit Community School District (WOCSD)
    - Southern Maine Planning & Development Commission (SMPDC)
    - Maine Municipal Association (MMA)
    - Kennebunk Kennebunkport & Wells Water District
    - Wells Sanitary District (WSD)
    - York County Community Action Corporation (YCCAC) Shoreline Trolley System
    - United States Coast Guard
    - Army Corps of Engineers- Navigational Division
    - Healthy Beaches Coalition
- Participation regionally in:
    - Regional Housing and Urban Development (HUD) Grant
    - Regional Hurricane / Disaster Preparedness
    - Climate Change discussions
      Sub-regional discussions with Ogunquit, Kennebunk, Kennebunk port and Arundel on municipal cooperation

Regional Cooperation Policies & Strategies

The Town should consider working with the Kennebunk Kennebunkport & Wells Water District to put the same zoning scheme in place on the Wells side of Branch Brook that Kennebunk has for consistency purposes.



Wells and the Southern Maine Planning and Development Commission should establish a regional standing committee to meet periodically with Sanford, Ogunquit, Kennebunk, North and South Berwick(s) to discuss common issues and how they may work together to achieve common ground on many issues.



Wells, Ogunquit and Kennebunk should consider a joint committee on Sea Level Rise since they all share a common bay.



Wells should engage in a discussion regarding the purchase of dredge equipment with other southern Maine communities in order to realize a cost savings of dredging to the harbor.

IV. The Health of our Built Environment

State Goals:

- No State goal specifically addresses population. But all other goals depend on an understanding of population and demographic data for the municipality and its region.
- To encourage the orderly growth and development in appropriate areas of each community and region, while protecting the State's rural character, making efficient use of public services and preventing development sprawl.
- To encourage and promote affordable, decent housing opportunities for all Maine citizens.
- To plan for, finance, and develop an efficient system of public facilities and services to accommodate anticipated growth and economic development.

Regional Goal:

- Improve the efficiency and effectiveness of public service delivery through formal and informal means of inter-local cooperation and communication.
- To encourage a diversity of affordable housing throughout the region.

Municipal Goals:

- Manage the rate of residential and non-residential growth in a manner that maintains the Town's rural, small-town character and is consistent with the Town's ability to accommodate it.
- Provide opportunity for a variety of individuals to live in Wells.
- Continue to have a balanced pattern of land use that respects its diverse natural, cultural and historic resources.
- Encourage growth that is respectful of the Town's historic, rural and beach/waterfront areas.
- Minimize impact of new growth on environmental, open space and fiscal resources.
- Ensure growth does not exceed the capacity of municipal facilities and services.
- Ensure the identities of the Town neighborhoods are maintained and enhanced.
- Maintain the small town character, rural feeling created by both the physical and social environment.
- Retain open space and natural areas throughout the community.
- Ensure that new development is in character with traditional New England architecture and is of a scale and intensity that is compatible with the existing character of Wells.
- Promote those amenities which foster small town neighborliness such as local businesses, places for people to meet, sidewalks, tree-lined roads and security.

- Protect the scenic quality of the Town along the beaches, marshes, rivers, main roads, and in areas with outstanding scenic beauty.
- Enhance citizens' awareness of the land and its resources.
- Protect and enhance the Town's tourism and economic base.
- Attempt to close the Town's current affordability gap and work to ensure that at least 15% of its future housing is affordable for low and moderate-income households, including both families with children and the elderly.
- Ensure that the quality of the new residential development provides a good living environment for all residents.
- Promote the development of a range of housing to meet the needs of all residents.
- Continue to allow mobile homes in areas that are zoned for single-family housing and in parts that are consistent with state laws and requirements.
- Promote a safe and sustainable transportation system that is consistent with the character of the neighborhood through which it passes.
- Encourage and enhance alternative modes of travel including pedestrian and bicycle traffic.
- Improve and enhance the transportation network through the coordination of state, regional and local planning.
- Promote the management of the roadway network to better manage congested areas such as the Route 1 Corridor.
- Promote the Route 1 Corridor in the "Wells Corner" and "Moody" areas and the Route 109 Corridor in the "Town Hall" and "High Pine" areas as "Main Streets" within the Town of Wells.
- Encourage public/private cooperation in financing necessary improvements to the transportation system.
- Encourage the selective improvement of Route 1 to eliminate safety and operational problems while preserving its role as the spine of the community as opposed to a major regional traffic artery.

Types of Development

Wells continues to become a much diversified community with a strong mix of commercial development along the Route 1 Corridor and residential development continues to expand at a very rapid pace throughout Town.

Land devoted to residential purposes generally falls into five broad areas:

- Beach development
- Development in the Route 1 Corridor on public water and public sewer
- Rural subdivisions
- Centers with established development patterns
- Scattered rural residential uses' along existing roads.

There are two types of residential markets in Wells that needs to be looked at closer in this chapter. One is the year round homeowner and the second is the part time vacation home owner. Even with all of the development occurring, Wells maintains a significant amount of land dedicated to conservation or as open space. This is in part due to the Wells National Estuarine Research Reserve, Wells Conservation Commission, Kennebunk, Kennebunkport, and Wells Water District, and a large number of acres that exist in the Maine Tree Growth Program.

The pattern of residential development in Wells is quite similar to the pattern that was noted in the 1990 and the 2005 Comprehensive Plan updates. In those plans rural subdivisions and centers with established development patterns were considered as one category of residential and mixed development. Given the amount of rural subdivisions that have occurred in the last decade, it would seem appropriate to distinguish rural subdivisions from mixed use existing centers.

Built Environment Policies & Strategies

- Consider making revisions to the zoning districts and requirements for those districts identified and described in the Future Land Use Section for recommended changes.
- Manage the "Gateways" or major roadway entrances into the Town of Wells to protect their historic community character and ensure that any new development is consistent with this historic character.
- Strengthen requirements in the Land Use Code regarding proximity to and impacts on historic and archaeological resources.
- Review the findings and conclusions of the Wells Bay Planning Committee to determine what recommendations should be included in the Town's flood-plain management program and public education activities.
- Identify residential and commercial properties in the Special Flood Hazard Area that would be appropriate candidates for structural improvements such as elevation and retrofitting to reduce the risk of flood damage.

Commercial use of land in Wells occurs in three principal areas:

- Wells Beach at Mile Road/Wells Harbor
- Route 1 Corridor
- Maine Turnpike Interchange location (Exit 19)
- Routes 9 and 109

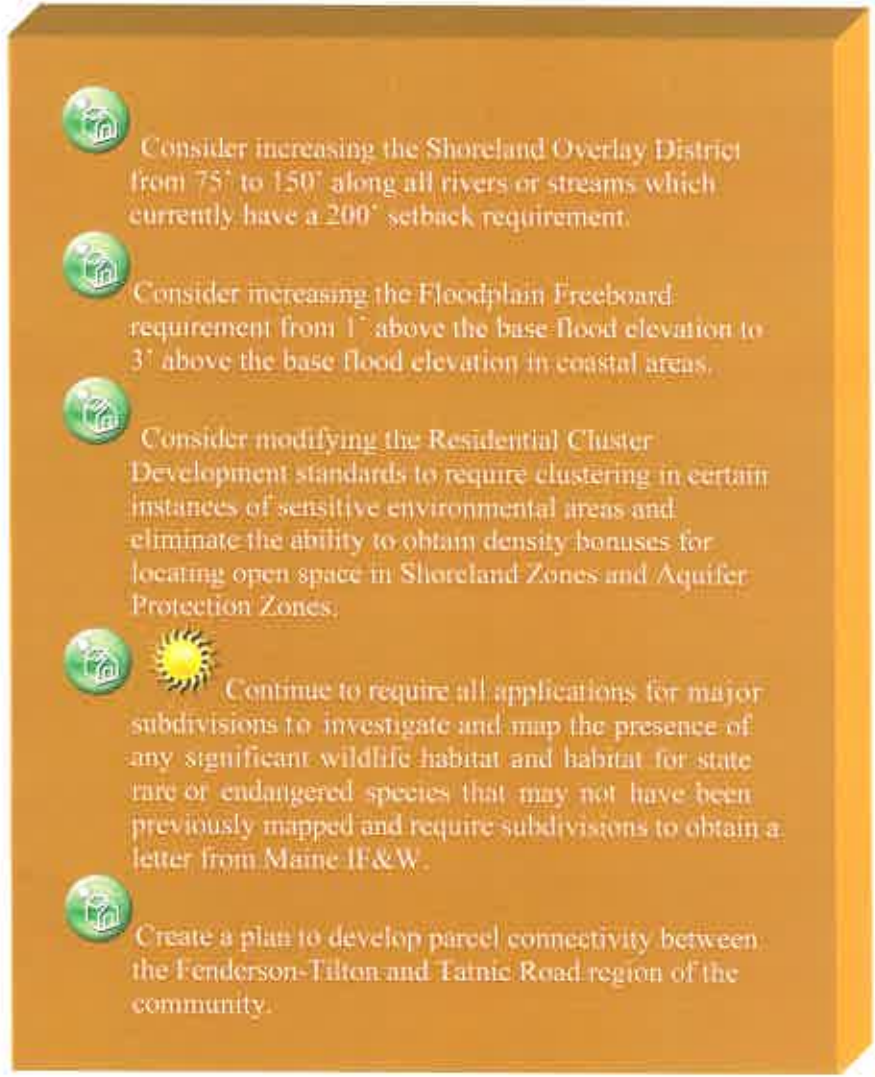
In addition there are a small number of commercial uses scattered in other areas of the Town, a number of which are associated with the traditional service centers or arterial state roads such as Routes 9 and 109. Commercial/industrial use as a whole comprises 3,422 acres of Wells or approximately 10% of the Town's land area.

The Wells Beach commercial area consists of tourist-related uses including motels, restaurants, and shops, as well as small retail uses servicing the residents of the beach area. The intensity of use is high, but the overall area of commercial use is small and concentrated around Casino Square at the beach end of Mile Road.

The Wells Harbor area supports both marine- commercial and recreational uses. This area contains a marina and associated facilities, a restaurant, and public parking lots to support the uses.

Industrial uses of land may be found in three locations:

- Maine Turnpike Interchange Location (Exit 19)
- Pike Mining Operation, Route 9 near the North Berwick town line
- And along Route 9 near and on Willie Hill Road



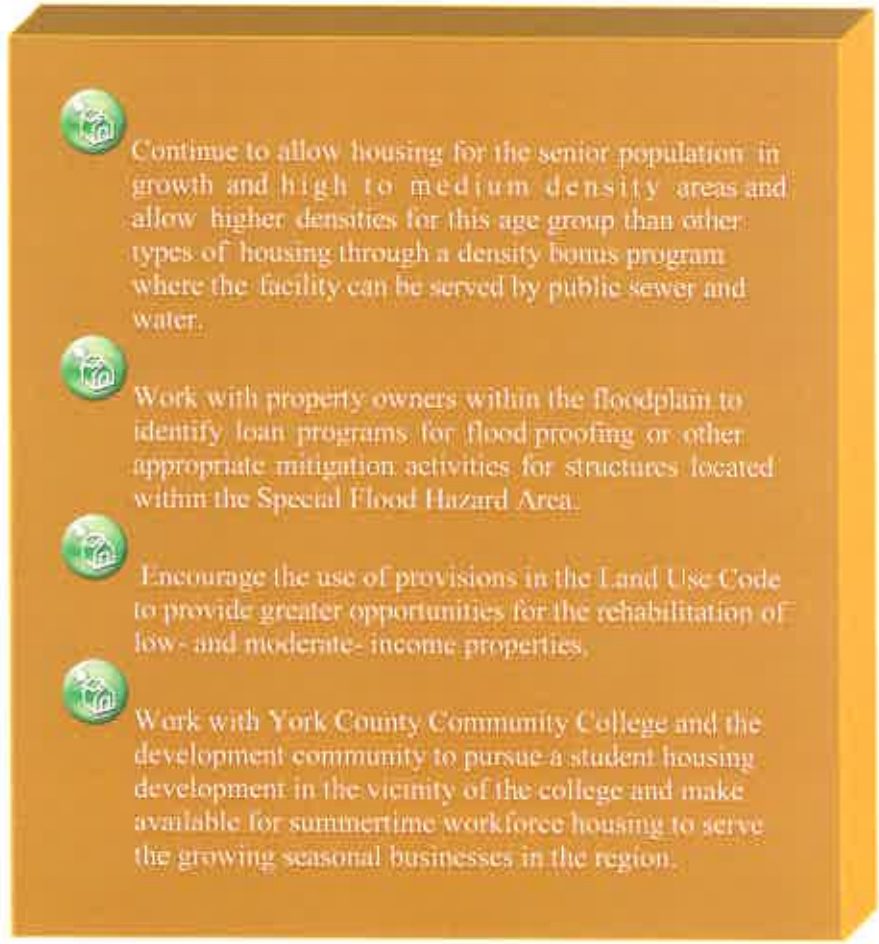
The use of land for industrial establishments is limited to the land between Route 1 and the Burnt Mill Road east of the Maine Turnpike (Spencer Industrial Park). This site is also adjacent to the AMTRAK/ Boston & Maine Rail Road line which has a service spur into the Industrial Park for direct rail access near Depot Road. This area is also served by Unitil Corporation natural gas.
While this is a limited area in scope and size, the uses currently in the Industrial Park include:

- Wasco and Village Candle
- Shaw's Supermarket Warehouse facility
- UPS Distribution Center

These uses encompass approximately 600,000 square feet of building in one area of Town on approximately 50 acres of land.

There are contractors and similar industrial uses in other areas of Town which help in rounding out the Wells Industrial sector such as the Route 9 and Willie Hill Road Business Park which is zoned as Light Industrial.

There are several active gravel pits in Wells, mostly in the western portion of the Town. These facilities are a major source of sand and gravel for the York County area. A major facility for the processing and handling of earth materials (sand, gravel and quarry stone, and pavement production) currently is operated by Pike Industries and is located off Route 9 and Boyd Road near the North Berwick town line.



The Town of Wells owns several parcels of land dedicated to open space and recreational use, including the multipurpose fields on Route 9A (68 acres), the Fenderson Wildlife Commons along the Sanford town line and land near Ell Pond (over 600 acres), and the Wells Heath property (500 acres). In addition, the Town is a major landholder (245 acres). The Wells National Estuarine Research Reserve which includes the Rachel Carson Reserve lands (USA) encompasses approximately 2,250 acres in total. Also other lands held in conservation include: KK&WWD 1,050 acres, Natures Conservancy 562 acres, Great Works Land Trust 562 acres, York Land Trust 141 acres. Approximately 4,900 acres of conservation lands are protected in the Town (10% of total area).

Open space & Conservation Lands

The state and federal governments are also major owners of open space in the Town of Wells. The state owns approximately 200 acres of land adjacent to Laudholm Farm. This land was acquired with the intention of developing a state park. It is now being used as part of the Wells Reserve, which offers beach access to the public.

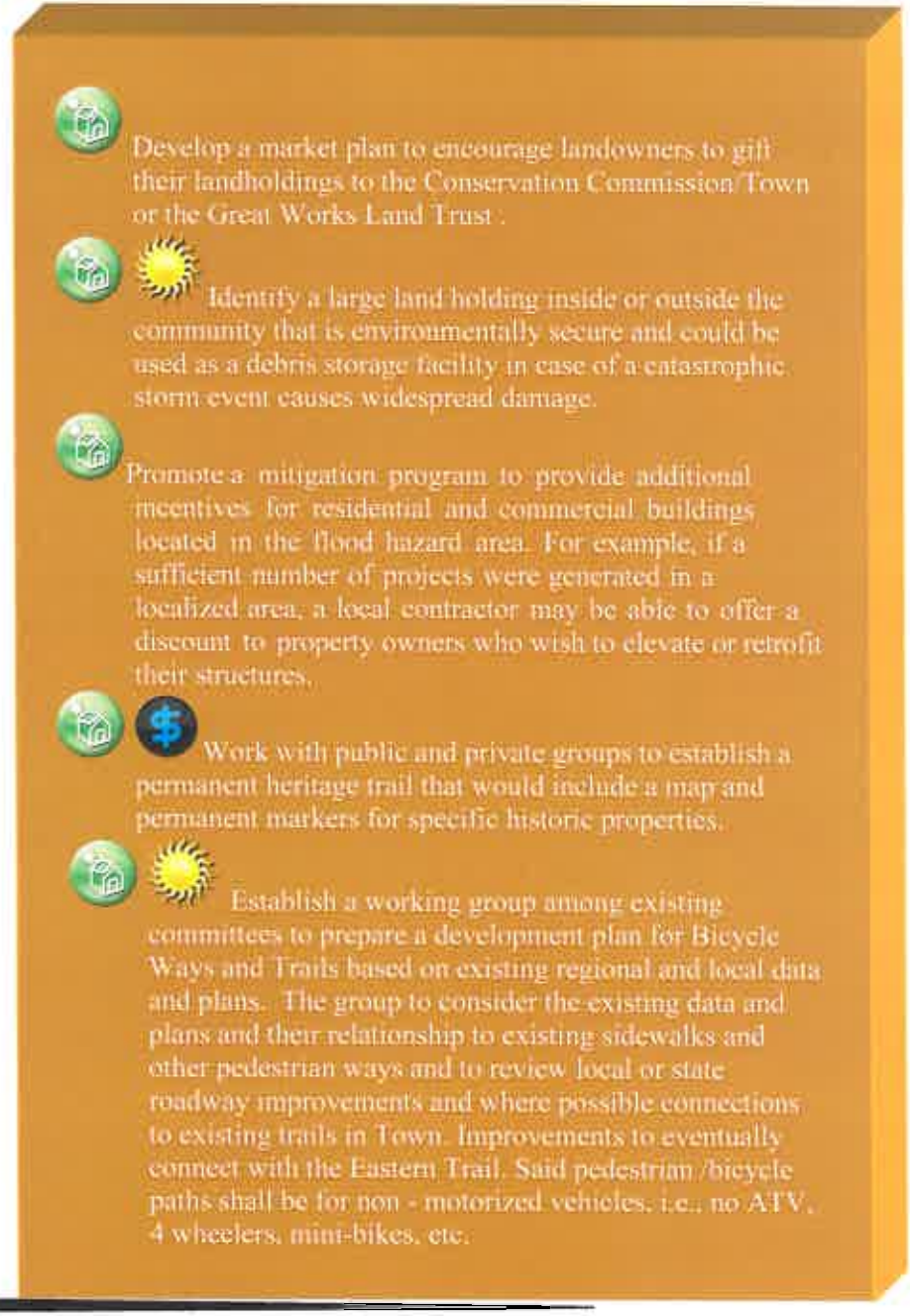
The Rachel Carson National Wildlife Refuge also owns land within Wells. The refuge has acquired approximately 865 acres of coastal wetlands and adjacent upland in Wells and continues to acquire upland fringe areas adjacent to the wetland in an effort to protect wildlife habitat.

There are a number of other dedicated open space areas within Wells. There are more than 200 acres of open space land that qualify for the State's Farm and Open Space Tax Act under 36 MRSA Sec. 1101. These are public-private partnerships between the York Land Trust and the Great Works Regional Land Trust.

There are a number of natural resources in the Town of Wells that should also be considered when making Land Use decisions for future development areas. This discussion occurs in a more focused setting within the natural resources chapter entitled: "The Environmental Health of the Community."

Land Use & the Transportation Connection

Land uses occur based on the transportation network! After all, transportation networks were originally established due to trade routes. In modern times, transportation and land use work hand in hand due to an ever evolving demand by both categories. The link between transportation and land use is important to understand so

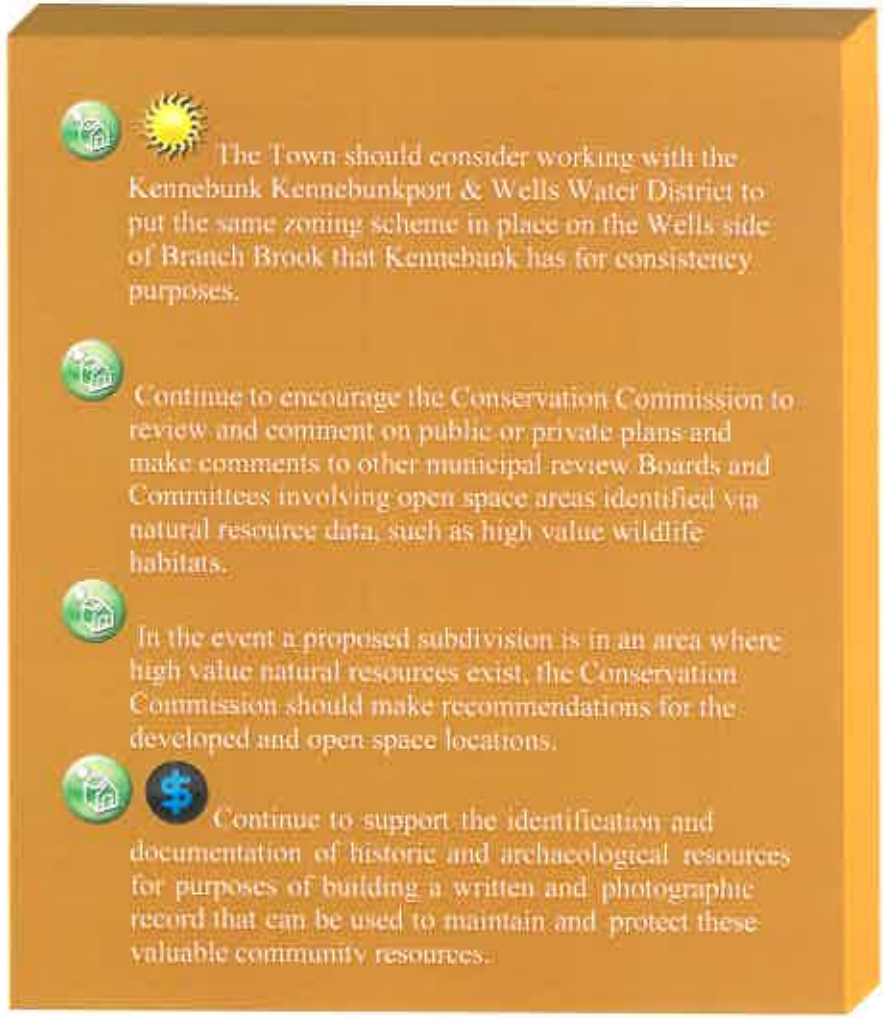


that future land use decisions can be made based on the transportation issues that the community has.

For example, the evolution of the industrial park happens to be adjacent to both the rail line as well as the Maine Turnpike; this is by no coincidence. The commercial area in Wells is along the Route 1 Corridor, long cherished as the shore route traveled by many tourists visiting the region; hence most of the lodging, restaurants, and retail clustering that has occurred along Route 1. Route(s) 9 and 109 are major commuting routes from inland. Both routes are utilized for commuting as well as for those inland travelers seeking the recreational opportunities along the coast in Wells.

Land Use & Sea Level Rise

Being a coastal community, Wells has a great deal of residential development located along the Wells coastline. The Town has been committed to addressing sea level rise and climate change issues in general. Wells is one on the fore front of addressing these matters. In March of 2104, Massachusetts Institute of Technology Science Impact Collaborative Consensus Building Institute and the Wells National Estuarine Research Reserve System completed a 2 year Risk Assessment on sea level rise and climate changes impacts for the Town of Wells. This document can be found in the Inventory.



Historic Places & Properties

The Town of Wells, settled in 1640/1 and incorporated in 1653, has a wealth of historic resources as a result of its longevity as the third oldest town in Maine. Only during this past century have many of these resources been recognized. For example, the Storer Garrison House was listed as significant in 1936 when it was noted by the National Park Service in its Historic American Building Survey and is noted in the National Archives.

It was not until 1978, when the Wells Historic Preservation Committee was formed by a vote of the town and an inventory of the significant old buildings was begun, did the actual nominations to the National Register of Historic Places begin. With the assistance of the Maine Historic Preservation Commission in January 1980, 15 cape-style homes were accepted in a thematic grouping known as the "Early Capes of Wells, Maine." These were scattered throughout the community and were significant for their early 18th century architecture. See Historic and Archaeological Resources section in the Inventory.

Since 1990, three additional properties have been added to the register, bringing the current total to 20. These properties were added when the Historical Society of Wells & Ogunquit added the Historic First Church-now the Meeting House Museum in 1992; the Laudholm Trust had the Wells Reserve Research Facility added, and the Wells Historic Preservation Commission was instrumental in the placement of the Division 9 Schoolhouse. The other two are the Libby Tea Room/Restaurant and a Paleo-Indian site on the Spiller Farm.

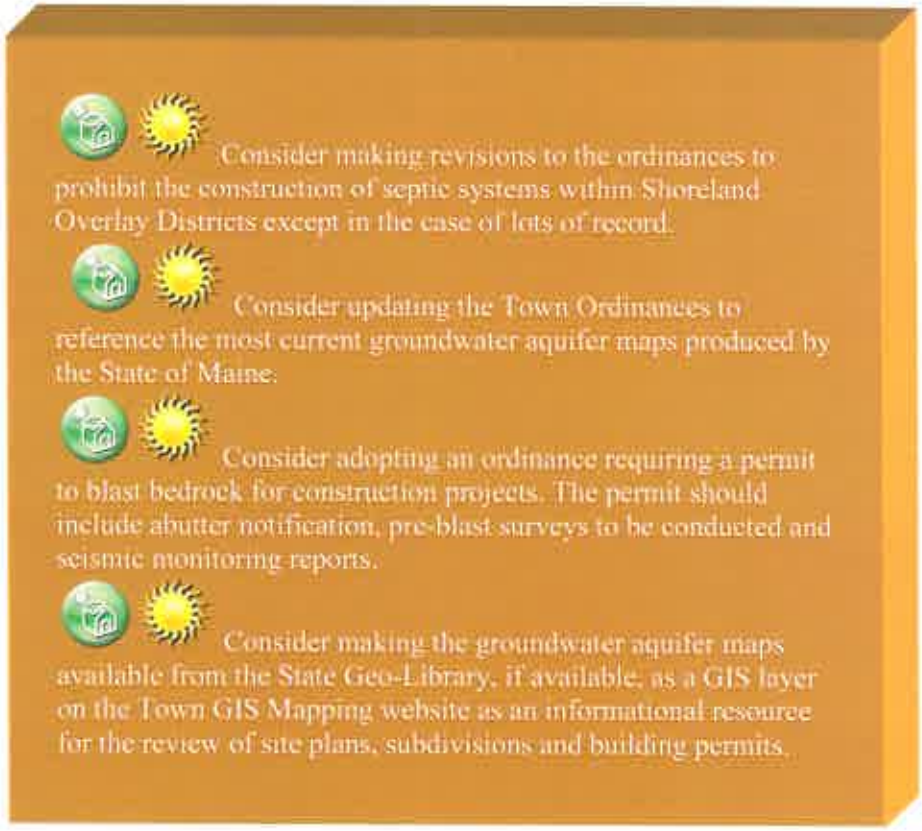
The National Register designation denotes a property as a significant resource. It does not provide protection unless State or federal funding is involved in a project, such as road widening. Any such project must recognize the historic significance of the National Register resource and be consistent with federal guidelines.



Floodplain Areas

The Federal Emergency Management Agency (FEMA) is responsible for documenting and tracking all flood related activities within each community. Since 2013 FEMA has been developing a new Mapping process to document flood prone areas of the community. The Town of Wells has been appealing the proposed mapping because of its concern with the accuracy of the information. If the information is inaccurate, it will affect a number of households when trying to obtain the proper Insurance for the home.

It is important to note that Sea Level Rise in relation to Flood Plain information do not currently impact each other for regulatory purposes, but may in the future.



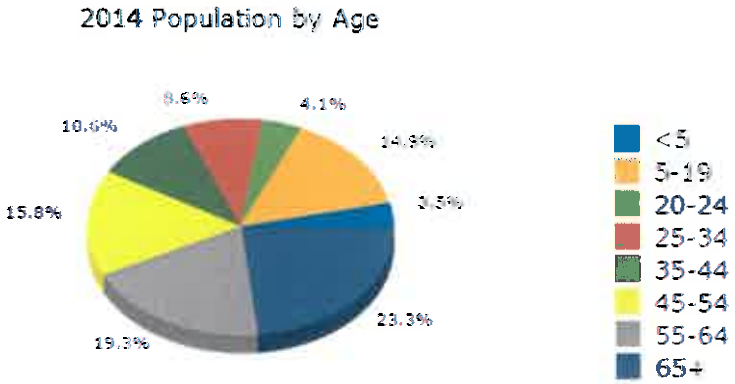
Population

In 1900 the population of Wells was approximately 2,000. By 1950 it had reached 2,321. Over the next 20 years, Wells had almost doubled its population to 4,448. By 1990, the Census reported the population at 7,778 and the 2000 Census tabulated 9,400, representing about a 50% increase from 1980-2000. The 2010 Census tabulated a population of 9,589. See Year Round Population Trends section of the Inventory. Although the population increased by 51% from 1970 to 1980, it slowed to 16% in the 10-year period from 1980 to 1990. During the 1990s the rate of growth increased to 21% although this rate of growth was not as high as the surrounding towns of York, Kennebunk or Ogunquit. Wells' growth was faster than all of the other neighboring municipalities and in York County as a whole. Between 2000 and 2010 the rate of growth slowed and in some cases decreased due to an ailing economy. Wells grew by 2%, the smallest of those communities compared, see table in the Inventory. Neighboring Ogunquit saw the greatest rate of growth at 14% and the county grew at a rate of 5% as a whole during the 2000 to 2010 period.

The Wells' population, like the rest of York County, is a predominantly middle aged population. The population distribution has changed significantly since 2000. In 2000, 34% of the Wells population was between the ages of 35 and 54. However, compared to 2014, the town has a somewhat older population, with a distribution of 35-54 dropping to 26% and 55-74 increasing up to 33%. These population changes suggest a real increase in the retirement community settling into the Town of Wells. Information provided by the U.S. Census Bureau indicates that this trend will continue. This puts the Town in a position of gearing up for providing retirement housing alternatives.

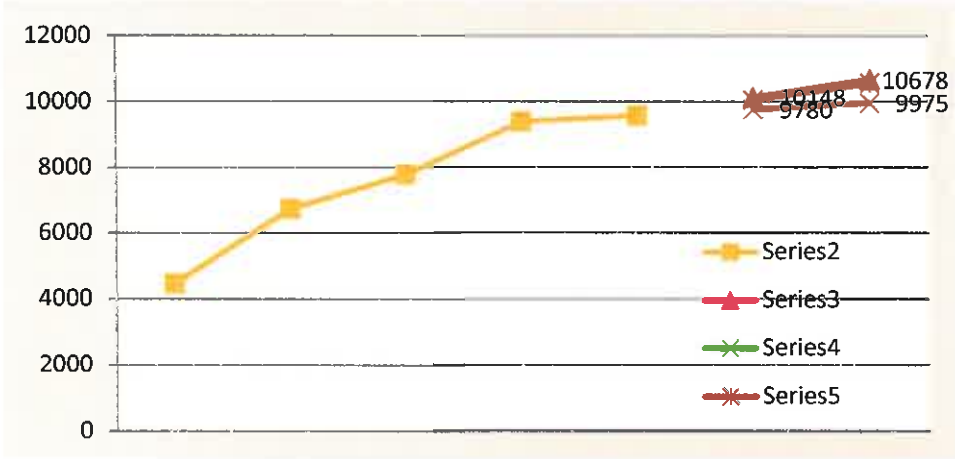
Estimated Population

The Southern Maine Regional Planning Commission (SMRPC) produced estimates of Wells population for the year 2004. The estimates were based on actual building permit activity and expected natural change in population from births and deaths. From 2000 to 2003, there were a total of 467 building permits in Wells, an average of 117 per year. SMRPC estimated that, at this level of development, the 2004 population of Wells would be 10,290. The State Planning Office projection for 2005 put Wells' population for that year at 10,298. Unfortunately, these numbers at the time, did not consider that many new units being constructed would be seasonal in nature and for the recreational population, not the year round population.



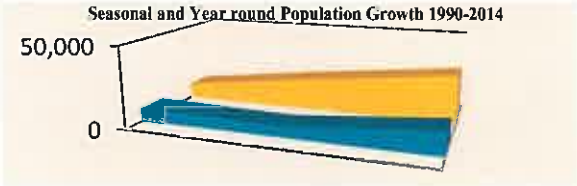
- Consider if Shoreland Overlay zones should be extended along perennial brooks (blue lines on USGS Maps).
- Consider creating Shoreland Overlay zones along brooks that connect two Resource Protection zones.
- Consider modifying Shoreland Overlay zoning restrictions to allow clearing vegetation for agricultural uses.
- Consider defining the edge of the Protected Natural Resource from the op of an adjacent steep (>2 to 1) slope instead of the high-water line.
- Consider allowing the Planning Board to adopt architectural design guidelines for commercial developments to encourage and promote construction that is in character and appearance with New England Colonial and Victorian styled wood homes, buildings or barns.

Year Round Population



The year round population will grow at a very slow pace compared to that of the seasonal population, in fact, two of the projections show very little growth considering the current 2015 year round population is 9,589. All of the scenarios show a very small growth rate. However, based on the data, Series 3 (US Census) seems to make the most sense in that the Town's year round population will grow to about 10,678 by 2020. Because of Wells' coastal location and stock of seasonal housing units, the population of Wells during the summer increases significantly. According to the 1980 Census, the Town had approximately 1,750 seasonal units; 1,526 licensed lodging rooms in motels and hotels; and 1,977 licensed campground sites. By 1990, there were over 1,840 seasonal units. The 2000 Census reported 3,461 seasonal units, but this number likely includes units that are technically reported by the Town of Wells as being lodging units. Since the 2000 Census reports that only 49% of the vacant units in Wells are single-family units, it appears that the overall number of seasonal units has not changed much since 1990. An estimated peak occupancy of 3.5 persons per seasonal unit would mean about 6,440 additional occupants in these units at the height of the summer season.

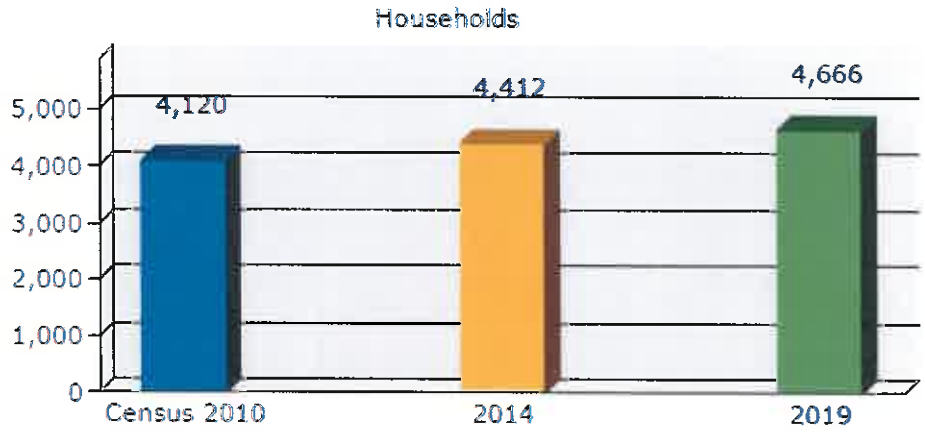
Based on the available data noted above, Wells currently accommodates an additional 20,335 ± population above and beyond the current year round stable population of 9,589. These figures rival the large cities of the state during the summer months. Back in 1990 those numbers were 6,440 seasonal and 7,778 year round for a total of 14,218 people.



Housing

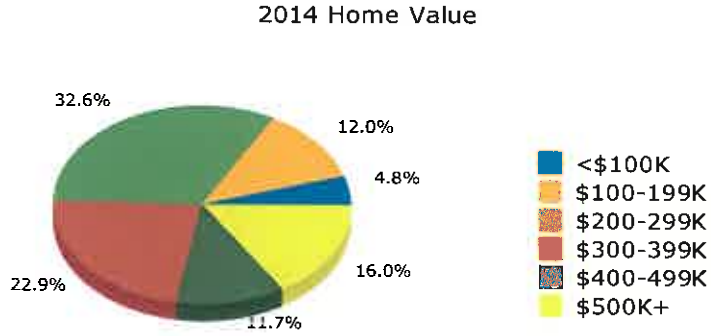
The rate of growth of Wells' households closely matched that of the Town's population. In 1980 there were 2,591 households in Wells. By 1990 there were over 3,056 households, an increase of 465 households during this 10-year period. From 1990 to 2000, household growth was even more rapid as Wells added 948 households for a 2000 total of 4,004, these figures are based on year round housing units occupied on a 12 month bases. Since 2000 year round housing has only jumped to 4412 units. Housing in Wells has taken a drastic change finding itself in the middle of a development boom to provide seasonal housing for part time residence desiring the opportunity to

vacation and season in this region. The number of total housing units in Wells in 2014 numbered 8,011. Of that number of units, 3,599 of them were considered vacant at the time of the study, suggesting these units are seasonal in nature.



During the 1980s and 1990s, Wells continued to witness changes in the composition of households. Household size dropped at a rapid rate during the 1990s. According to the 2000 census it was just 2.35 persons per household compared to 2.55 in 1990, 2.59 in 1980, and 2.83 in 1970. York County as a whole also saw household size drop from 2.75 persons per household in 1980 to 2.63 in 1990 and to 2.54 in 2000. This decrease in household size is the result of lower birth rates, higher divorce rates, increased longevity among seniors and a greater number of younger and elderly individuals living independently in single households. Based upon regional and national trends, this figure is likely to continue to drop, and in fact have dropped to the most recent family size of 2.37 based on the year round housing figures of 2010.

Affordability in York County has been on the decline for several years. As of 2000, the county's overall Affordability Index stood at 0.97, but has fallen every year since then to its current level of 0.78, and now has dipped further to 0.74 as of 2013. The most recent report from the Maine State Housing Authority, 2013, has shown that the York LMA (Labor Market Area) Median home price has now jumped to $300,000. In 2013 the median home price in Wells was $ 245,000 with an affordability index of 0.93. The affordability index is the ratio of home price affordable at median income to median home price.



The Maine Growth Management Law defines the affordability of homes and apartments as follows:

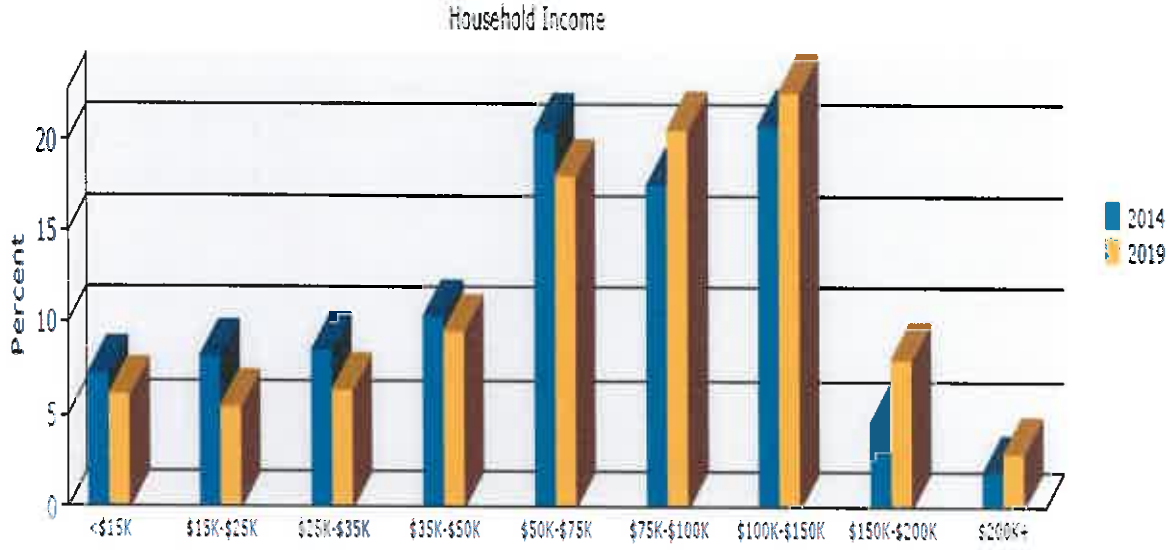
> "A home is affordable to a household if that household can pay its mortgage, utilities, and property taxes for a cost that does not exceed 28-33% of the households' gross annual income. An apartment is affordable to a household if that household can pay rent and utilities for a cost that does not exceed 30% of the households' gross annual income."

The law further requires that new housing stock be provided in the community that can be afforded by households that have incomes categorized as very low, low and moderate. Very low income is defined as income less than 50% of the county median. Low income is 50 to 80% of the county median and moderate income is 80 to 120% of the county median. As of 2012, the county median income level was estimated by the Maine State Housing Authority (MSHA) to be $54,180. To more easily define Very Low, Low, and Moderate levels for the area, this figure has been rounded up slightly to $54,000.

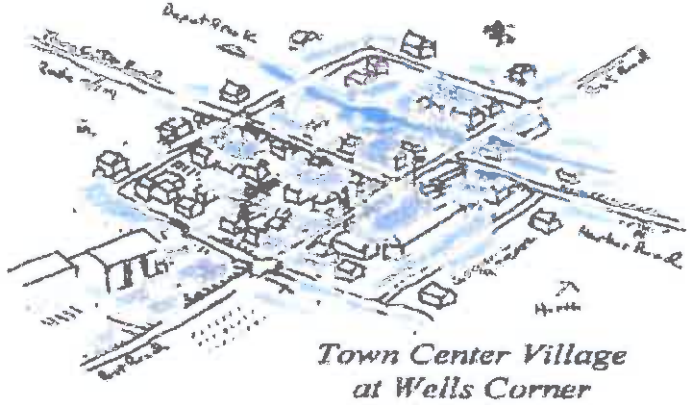
Therefore, the income levels are:

Very Low:	Under $27,000
Low:	$27,000 to $43,000
Moderate:	$43,000 to $65,000

In 2012 and 2013, the Town of Wells went through a series of studies to look at the housing needs and how best to meet them. In 2012, the Greater Portland Council of Governments and the Southern Maine Planning and Development Commission developed a study group under the name of Sustain Southern Maine. This group looked at a number of issues for the Cumberland and York County regions of the State. One of the initiatives analyzed was that of housing needs and how best to achieve the needs. The Town of Wells was considered a community that should be looked at, due to the growth that had been occurring and the lack of a defined downtown village area. In the analysis,



and with public input, it was determined that a village area, which not only served the community commercially, but residentially, should be located in the Route1/ Route 109/Chapel Road area. This area made the most sense for the infill of mixed use development to support a village area. Since that time the SMPDC has developed draft Village District language for Wells to consider in the future, see copy in the Inventory.



[1] Sustain Southern Maine Population and Housing Market Analysis 2013

General Government

Town Hall

The majority of the Town's administrative functions occur in the Town Hall building located at 208 Sanford Road between Route 1 and the Maine Turnpike. Town Hall provides offices for the following departments:

- Town Manager
- Town Clerk
- Assessing
- Planning and Development
- Code Enforcement
- Human Resources
- Finance & Tax Collection
- Information Technology



Wells Town Hall

Fire Facilities

The Town of Wells Fire Department has three stations located in the community:



Wells Fire Department

The Corner Station

The Corner Station is located on Route 1 / Post Road at the intersection of Route 109 / Sanford Road. This is the department's main headquarters and the location of the Fire Department's administrative offices. It is the only station in Town that is staffed 24 hours per day and 7 days per week by career firefighters.

Highpine Station

The Highpine Station is located on Highpine Loop Road, just off Route 109 / Sanford Road and includes a meeting room and kitchen on the 2nd floor. The Town has committed to replacing this station with a new fire station that will also include a community meeting room.

Branch Station

The Branch Station is a former schoolhouse and is located on Route 9A / Branch Road at the intersection of Clark Road and Coles Hill Road. There is also a small meeting room upstairs and a kitchen downstairs.

Hydrants

The department works closely with the Kennebunk, Kennebunkport and Wells (KKW) Water District for installation of hydrants within the KKW district service area. Areas not served by public water are served by public and private dry hydrants.

Vehicles and Equipment

Vehicles and equipment used by the Fire Department need to be replaced on an ongoing basis and are typically planned for replacement within the Capital Improvements planning process.

Personnel

The Department has 11 fulltime employees including the Fire Chief, Administrative Assistant to the Fire Chief, 3 Captains and 6 fire fighters.

Incident Category	Count 2003	Count - 2012
Fire	72	65
Overpressure Rupture, Explosion, Overheat (no fire)	5	2
Rescue & Emergency Medical Service Incident	222	401
Hazardous Condition (no fire)	101	64
Service Call	113	117
Good Intent Call	74	74
False Alarm & False Call	78	128
Severe Weather & Natural Disaster	0	1
Special Incident Type	14	1
Total	679	853

Wells Emergency Medical Service (WEMS)

Wells Emergency Medical Services (WEMS) is a non-profit corporation, owned by the Town of Wells and operated by a Board of Directors who are appointed by the Wells Board of Selectmen. WEMS provides ambulance services to the Wells community and its guests 24 hours a day, 7 days a week. WEMS has three fully equipped ambulances with state of the art equipment and is staffed with 40 part-time EMS licensed professional employees and a full-time Director. WEMS operates three Type III ambulances and three 12- Lead EKG monitors purchased through CIP town funds.

WEMS responds to more than 1,500 ambulance calls annually (many of the calls involve more than one ambulance and/or more than one patient). The number of calls has steadily risen, increasing from 1,038 in 2000 to 1,534 in 2013. Of all calls to WEMS, 72% are medical related and 28% are trauma related. Most hospital transfers by WEMS (66%) are to York Hospital, with 25% going to Biddeford's Southern Maine Health Care Hospital, 7% going to Sanford's Southern Maine Health Care Hospital, and 2% to other hospitals.

During the period from Memorial Day to Labor Day there are four full time personnel on duty 24/7. The remainder of the year, there are three personnel on duty during the day and two on at night for 24/7 coverage. Additional assistance is received when needed from Wells Fire Department and the Wells Police Department.

Police Department

The Wells Police Department is located on Route 1 / Post Road at the intersection of Route 109 / Sanford Road. The Department consists of a Patrol Division (which also includes one animal control officer and two K-9 units), a Criminal Investigation Division (CID), and a Communications Division (Dispatch). The Wells Police Department employs 23 sworn police officers, 5 dispatchers, and 1 animal control officer.

The Police Department is the primary provider of law enforcement and related community service throughout the Town. The Department responds to over 20,000 calls for service yearly and makes thousands of traffic stops. The Police Department makes over 200 criminal arrests a year, ranging from assault to armed robbery.



Wells Police Office and K-9 Unit

The Communications Division dispatches for Police, Fire, EMS, Lifeguard and Highway and handles approximately 60,000 incoming telephone calls yearly, which include both routine business calls and emergency (generally 9-1-1) calls.

Vehicles and equipment used by the Police Department need to be replaced on an ongoing basis and are typically planned for within the Capital Improvements planning process.

Public Works

The Public Works Department is located at 577 North Berwick Road in the recently constructed (2013) highway garage. The Public Works Department is made up of three divisions: Street Maintenance, Beach Services, and the Transfer Station.

Street Maintenance Division
This division consists of 10 employees, including the Assistant Road Commissioner. They are responsible for maintaining over 200 miles of roads in Wells. The crew is supplemented in winter by independent contractors for snow plowing.

Beach Services Division
This division operates from March to late October and includes a number of seasonal employees and volunteers for beach cleaning, parking lot attendants, piping plover monitoring, and restroom cleaning.

Transfer Station
The Town operated transfer station and recycling facility is located at 386 Willie Hill Road off Route 9. In 2011, the town switched to a 'Pay As You Throw' (PAYT) program with bags that can be purchased at various locations throughout the town.

The transfer station charges a fee for the following items: electronics, lights and fixtures, metal, miscellaneous items, shingles, tires and rims, appliances, trees and brush, construction/demolition, and furniture and bulky items. There is no charge for cardboard, paper, bottles and cans, plastic, oil, grass and leaves, and good wood pallets. There are a number of items that are not accepted including, but not limited to gasoline, pesticides, animal waste, bio-hazard materials and expired prescription medications.

The facility suffered a fire in 2015 and has been reorganized and reconstructed.

Vehicles and Equipment

Vehicles and equipment for the Street Maintenance Division, Beach Services Division and Transfer Station need to be replaced on an ongoing basis and are typically planned for within the Capital Improvements planning process.

The Wells Reserve

The Wells National Estuarine Research Reserve encompasses 2,250 acres on the eastern edge of the Wells. It comprises wetlands (salt marsh, red maple swamp, shrub-swamp, and brackish marsh), sand beach, oak-pine forest, mixed second growth forest, shrubland, grassland, and mowed fields. Seven miles of trails, crossing all of these habitats, are open to the public throughout the year. The site is popularly known as the Wells Reserve at Laudholm, as its headquarters and research laboratory occupy the Laudholm Farm campus, which

is listed on the National Register of Historic Places. More than 25,000 people visit the Wells Reserve at Laudholm each year to walk, participate in programs, hear lectures and concerts and attend festivals.

The Carson Trail is located at the headquarters of The Rachel Carson National Wildlife Refuge on Route 9 in Wells. It is a one mile, fully handicap accessible, forested, trail which meanders along the upland edge of the Merriland River on one side, and around to where the Branch Brook River merges with the Merriland River to form The Little River. The trail offers close-up views of salt marshes and, weather permitting, a view to the sea. The self-guided trail features 11 look-out points with a corresponding identification guide. It is open from sunrise to sunset year round. Snowshoeing and jogging are allowed and leashed dogs are welcomed.

Parks and Recreation

The Parks and Recreation Department is located at 412 Branch Road and offers a variety of recreational programs for community members of all ages.

Facilities

The Recreation Park consists of 70 acres which includes nature trails, soccer fields, softball field, playground, tennis courts, picnic area, and horseshoe pits. Public bathrooms are open May through October. The tennis courts are also available for use May through October. Facilities and equipment need to be replaced on an ongoing basis and are typically planned for within the Capital Improvements planning process.

Programs

Some of the more popular youth programs include:

- Summer Day Camp for grades K – 9
- Swim Lessons
- Soccer
- Basketball
- Tee Ball
- Lacrosse
- Gymnastics
- Archery
- Karate
- Track and Field
- Tennis



Wells Harbor Playground

Other non-sport related classes include:

- Children's Theater
- Arts and Crafts
- Mad Science
- Preschool Players

Special Events

Special events and school vacation field trips are always well attended. The Department offers a Haunted Halloween Hayride, Visit Santa Night, Santa calling, and an Easter Egg Hunt. Dances and Socials are held for grades 4 to 8 throughout the year. In the winter the Department rents out skates, snowshoes and cross country skis.

Library

The Wells Public Library is housed in a building on Route 1 that is adjacent to the school complex. The school is further described in the education section of this chapter.

The use of the library has grown steadily over the past seven years. The collection consists of over 53,000 materials, which include adult and children's books, reference resources, audio books, movies, magazines, eBooks, digital audio books, video games, and large print adult books. In 2014 the Library added a total of 2,378 items. Circulation in 2014 was 83,936, down slightly from 2013. The number of adults attending programs has risen significantly, up 30% between fiscal year 2012 and fiscal year 2014. We attribute this to a shift in the public's expectation of what services a library can and should provide.

In 2014 the Library Trustees completed a long-range Strategic Plan that provides a set of goals, objectives and tasks to be undertaken by the Library and Trustees through 2019. This plan prioritizes customer service and access for all including off-site programs.

At present, the Library is over capacity and the conditions are very crowded for programming and materials. Along with the need for additional office space, other possibilities include a community room, a maker-space, a designated teen room, quiet study rooms, a larger children's room, and a computer center. The Library coordinates with the School District for after school programs and reference resources.

The Wells Public Library Foundation is working on a capital campaign to raise part of the funds for an expansion and renovation, and will ask the community for a bond to support the difference.



Health Care

In October 2000 the Wells Urgent Care Facility opened near the Town Hall at 112-114 Sanford Road (Route 1). This facility provides Emergency Care, Walk-in Care and other services including Breast Care, Cancer Care/Oncology, Cardiovascular Care, Surgery Associates of York Hospital, Laboratory Testing, Orthopedic Associates of York Hospital, Pediatric Associates of York Hospital, Physical Therapy, Ultrasound Services, Wound Healing and Hyperbaric Medicine, X-ray services, and York Hospital OB/GYN Surgical & Midwifery Associates. In addition to health care services, the facility has incorporated the Wells Emergency Medical Service facilities.

There are a number of physicians and other health care providers within the community, most of which are located in the Route 1 Corridor. Other hospitals are available in York, Sanford, and Biddeford.

Currently under construction is the Avita facility that will provide services to memory impaired individuals and related family services.

Senior Center

The Wells Ogunquit Senior Center was constructed in 2004 and provides a place of gathering and events and programs for the local aging community.

Education

Public education in Wells is provided by the Wells-Ogunquit Community School District which serves students residing in both Wells and Ogunquit. The District office is located at 1460 Post Road.

Enrollment

The District had a total enrollment of 1,330 students during the 2013/2014 school year and is projected to have approximately the same number in the 2014/2015 school year. This is down from a total of 1,507 Wells and Ogunquit students enrolled in 2013.

Schools



Wells High School

The Wells High School is located at 200 Sanford Road and provides education for grades 9-12. The High School is undergoing a major renovation that will be completed in 2017. The project includes modernizing the classrooms, adding a separate 18,000 square foot building for STEM (Science, Technology, Engineering and Mathematics) studies, a new cafeteria, new performing arts auditorium, a new practice gymnasium, new heating plant, and a walkway/ emergency access road from the High School to the Junior High School.

Wells Junior High School

The Wells Junior High School is located at 1470 Post Road and provides education for grades 5-8. A major renovation project occurred in 2005.

Wells Elementary School

The Wells Elementary School is located at 276 Sanford Road and provides education for grades K-4. This facility was newly constructed in 2002.

Higher Education/Life Long Learning

Wells is one of those fortunate communities where your child can go from pre-school to college in one community. Wells is the host to the York County Community College (YCCC), an institution that offers traditional and non-traditional students an opportunity to expand their horizons. YCCC is very active in the region working with such employers as Pratt & Whitney, the Portsmouth Naval Ship Yard, Goodwill, Workforce Solutions, as well as others, to provide specialized training programs in order to continue the growth of a strong workforce in Southern Maine. YCCC also reaches out to the region by offering programs in the communities of Sanford and Biddeford. Physically, the school is located within 1.6 miles of the Wells school system creating an educational cluster.

Cemeteries

The Ocean View Cemetery Association owns and operates the Ocean View Cemetery on Route 1. This association is a private organization, although, the Town provides financial support for burial of paupers and the maintenance of veterans' graves. There are available gravesites and an undeveloped area within this cemetery. The Town has undertaken the task to map and register all cemeteries in the Town and has created a map depicting the locations and an index of information on each.



Ocean View Cemetery, Wells, Maine

Harbor Facilities

See Marine Resources – Wells Harbor Management Plan. The Wells Harbor Management Plan provides a discussion of the Harbor Facilities and Infrastructure and is located in the Inventory section.

Wastewater Treatment System

Public sewer service in Wells is provided by the Wells Sanitary District (WSD). The district is an independent entity with its own elected trustees.

WSD operates a sewer system with approximately 45 miles of sewers, including 10 pump stations. The sewage treatment plant can treat up to 2 million gallons of wastewater per day (mgd). The service area includes most of the beach areas, the Route 1 Corridor, and adjacent areas. There are some developed areas within the general service area not served by public sewer, primarily along the west side of Route 1. The WSD master plan proposes providing service in these areas.

During 2013, the District treated 261.4 million gallons of sewage with a peak summer flow of approximately 1.4 million gallons a day. In

that year, 1,169 cubic yards of bio-solids were generated, processed and disposed at a licensed facility in Plymouth, Maine. The Wells Sanitary District presently has enough reserve capacity to meet the Town's needs for many years.

Presently, WSD does not provide service beyond the Maine Turnpike. Over the past few years, the Town, developers and the WSD Trustees have discussed the possibility of extending service beyond the Maine Turnpike. To that end, in 2013, WSD purchased a parcel of land in the vicinity of the Maine Turnpike exit 19 entrance on Sanford Road. This purchase will provide a location for a pump station in the event sewer service is extended west of the Maine Turnpike.

Water Service

Public water service in Wells is provided by the Kennebunk, Kennebunkport and Wells Water District (KKWD) and was established in 1921. KKWWD is an independent, legislatively created public district that is governed by a four-member Board of Trustees.

KKWWD system services portions of Wells, Kennebunk, Kennebunkport, Ogunquit, Arundel, Biddeford, and York. In Wells, the service area consists primarily of the beaches, the Route 1 Corridor and adjacent areas.

Until 1980, Branch Brook and the Branch Brook Aquifer had been the primary source to supply all of the KKWWD customers. The District's policy is to meet the needs of future growth and development. This would include both supply and distribution. The District presently passes the cost of system expansion on to new users either in the form of construction costs or system development charges.

In 2010, the District completed a 3,100-foot pipe replacement project along Route 1 in Wells and completed a Forest Management Plan for its nearly 2,000 acres of watershed land, which was an update to the original plan developed in 1982. The Forest Management Plan contains an inventory of tree types and maturity status, and outlines a schedule for timber harvests, tree plantings, and land management priorities. These efforts will help to ensure the continued high quality of Branch Brook as a drinking water supply source by maintaining diverse and healthy forests and minimizing the harmful effects from erosion throughout the watershed. A new fish ladder was opened on Branch Brook in May of 2013 to allow passage of fish like herring, alewife, elvers and trout. Also in 2013, the District saw both a 1.5% growth in customers and a 4.5% increase in water production over the previous year.

Natural Gas

Natural gas is provided through Unitil Corporation off the pipeline that runs through the Town of Wells on the old Boston & Maine Rail Road line. A lateral has been built from the pipeline in the Highpine area and runs along Route 109 to the Wells Industrial Park serving the Wells Transportation Center at the Maine Turnpike exit 19. In 2015 an extension of the lateral commenced to serve the Wells-Ogunquit Community School District campus, Town Hall, the Wells Public Library, and York Hospital. It is hoped that the lateral will then continue to Route 1 in the area of the shopping center.

Utility Rights-of-Way

Wells is crossed by four utility rights-of-way, all of which run in a north-south direction. Verizon (formerly New England Telephone) has two of these rights-of-way and Central Maine Power has the other two.

Verizon has a right-of-way (ROW) that runs through the marshes between Route 1 and the beaches. Bell Atlantic had removed the lines within this ROW and has no need for this ROW any longer. Some adjacent property owners have been able to obtain rights or ownership of portions of the right-of-way from the phone company. Verizon also has a ROW that runs along the Sanford-Wells town line.

Central Maine Power (CMP) has two rights-of-way through the Town. One lies between the Maine Turnpike and Route 1. This ROW has not yet been developed and is in reserve for future expansion of transmission capacity. Given the pressure for residential development in this area of Wells, the potential is great for future land use conflicts around this ROW corridor, as property buyers may not be aware of this area's status. The second ROW for CMP is in the western part of Wells running from the North Berwick town line near Route 9 to Branch Brook, west of Chicks Crossing Road. In addition to the existing transmission lines, there is now a natural gas transmission pipe located within this right of way.

The fourth right-of-way is the old 'Eastern Line,' the original right-of-way of the Boston and Maine Railroad. Rail Service was discontinued when the rail was relocated to the east. In the 1960s, the right-of-way was purchased is now used for an interstate natural gas transmission pipe. This ROW is under investigation for use as a non-motorized trail for the Eastern Trail System Alliance. See the discussion in the Transportation Section.

The Three Ring Binder

One piece of infrastructure no one ever thinks of is that of internet access. In the world of high speed internet, access needs, Wells is one of the fortunate communities to have direct access to the Three Ring Binder. The Three Ring Binder is a trunk line for high speed internet data that runs along the I-95 Corridor through portions of south central Maine. Having such high speed internet capabilities is an incentive for High Tech companies and Hospitals to locate in these regions because they are able to move large volumes of data very quickly; providing the highest data speeds in the state. A plan currently underway by the Town of Sanford with Great Works internet (GWI) would extend high speed service along the Route 109 corridor through Wells to Sanford.

Transportation

Roads, streets, and other means of transportation are often referred to as the Town's circulation system. This system is necessary to move people, goods, and services from one part of Town to another, bring them into and out of Town, and bring them through Town.

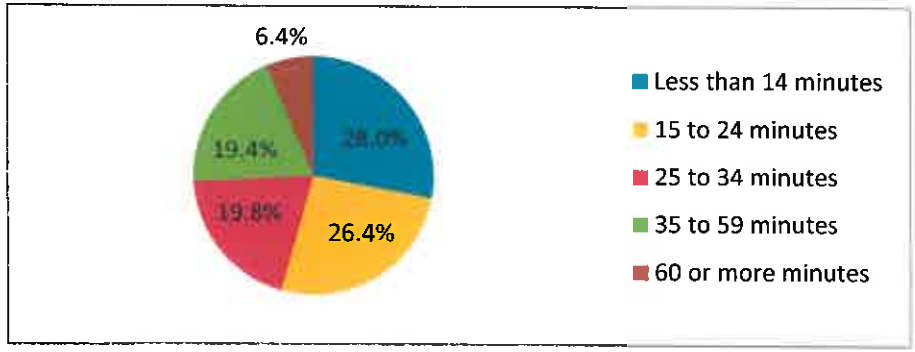
Many of the problems associated with highways in any Town are a result of one, or both of the basic flaws of today's roads and streets: (1) their inability to carry out all of their roles equally well, and (2) their inability to carry out their roles and provide a type of service for which they were designed or built.

Like most Maine communities, the automobile supersedes all other modes, as the predominant mode of transportation for Wells workers (nearly 76 percent of all workers). Of the automobile travelers about 7 percent of all Wells workers carpooled as shown in the 'Commuting to Work in Wells table below. While the automobile is dominant because of its convenience, it is notable that since there are alternatives in Wells, more people are choosing to use the options (see "Other Modes of Transportation' section).

Commuting to Work in Wells		
	Total	Percent
Car, Truck, or Van (Drive Alone)	3,092	75.8%
Car, Truck, or Van (Carpooled)	362	7.4%
Public Transportation (Buses, Trolleys, Train)	68	1.4%
Walked	137	2.8%
Bicycle	117	2.4%
Taxicab, motorcycle, or other means	15	0.3%
Worked at Home	293	6.0%
Total Commuters	4,895	100%
Source: 2012 American Community Survey Data		

Data indicates that most adults living in Wells have access to a vehicle, while approximately 2 percent of the population is without access to a vehicle. More than half (53 percent) of all households have access to at least two vehicles and nearly 32 percent have access to at least three vehicles.

Source: Maine DOT



A consistent traffic issue throughout Maine and the rest of the country is that traffic tends to build up during "commute hours," or times when people go to and come back from work. Approximately 28 percent of people with jobs in Wells have less than a fourteen minute commute to work. Approximately 46 percent have commutes between 15 minutes and 34 minutes. 19 percent of all commuters travel between 35 and 59 minutes and the remainder of commuters (19 percent) have a commute greater than 60 minutes.

Road Safety

The table below indicates that there were 1,666 crashes in Wells between 2008 and 2013. From 2008 to 2013, there has been a decrease by 61 crashes (24.80 percent). 2008 had the most crashes with 307. 2010 had the least amount of crashes with 254.

Town	2008	2009	2010	2011	2012	2013	TOTAL
Wells	307	301	254	290	268	246	**1,666**

MaineDOT has a system that it uses to rate crash locations throughout the state called 'High Crash Locations.' High Crash Locations are given greater attention for funding by MaineDOT for safety programs. In order to qualify, High Crash Locations must be at locations that have had at least eight crashes in the same location for a three-year period. It also must exceed the Critical Rate Factor of crashes. A Critical Rate Factor is the average expected rate of crashes for a location (based on statewide data of similar crashes). In Wells, there were six high crash locations between 2011 and 2013. The number one high crash location in York County between 2011 to 2013 was located at the intersection of Chapel Road and Route 1 with 38 accidents (see High Crash Locations in Wells table below). This intersection will be improved in 2015-2016 by the MaineDOT with Chapel Road at the intersection of Route 1 to be reconstructed with a 90 degree approach. It should be also noted that a traffic light at the Chapel Road and Sanford Road (Route 109) intersection was installed in 2014 by MaineDOT which should also reduce the crash statistics.

High Crash Locations in Wells: 2011-2013	Total Accidents	Critical Rate Factor	Ranking County/ State
Intersection of Chapel Road and Route 1	38	5.76	1/19
Intersection of Garden Street, North Berwick Road, and Sanford Road	12	2.24	22/136
Intersection of Chapel Road and Sanford Road	10	1.68	33/178
Intersection of Branch Road, Crediford Road, and Sanford Road	16	3.99	6/50
Route 1 between Mile Road and Bayview Terrace	21	1.04	32/164
Intersection of Route 1 and Mile Road	13	1.15	24/153

Source: Maine DOT

Pedestrian & Bicycle Infrastructure

The Town of Wells has access to several options for pedestrian and bicycle infrastructure to encourage residents and visitors to walk and bike.



Wells Maine Bike renters

Trails

There are two significant organizations that have created on-road and off-road trails that travel through Wells. The Eastern Trail Alliance created the Eastern Trail network that connects Kittery to South Portland through a series of on-road and off-road trails. In Wells, the Eastern Trail is located on Route 1. The Eastern Trail is part of the larger East Coast Greenway Network that will eventually connect Maine to Florida through a trail system. Another initiative is U.S. Bicycle Route 1 which is a cross-country bicycle route.

Within the Town, the Conservation Commission has created and maintains through volunteers many nature trails throughout acquired conservation land and easements. Trail information and maps are available at their website: wellsconservation.org

Pedestrian Network

Pedestrians are a part of every roadway environment and attention should be paid to their presence. Sidewalks are the primary facility provided to meet pedestrians' needs and care must be taken when designing a pedestrian network to account for all users. Users include children, the elderly, parents with strollers, and pedestrians with physical disabilities and impairments that require the use of wheelchairs and other assistive devices. Future sidewalks are currently planned along Harbor Road and will be extended south along Route 1.

Other Modes of Transportation

The Wells transportation system is in large part a reflection of the historical growth of the Town. At the end of the 19th century and beginning of the 20th century, a light electrical rail service was in operation in Wells and other nearby coastal southern Maine communities. The rail service connected the coastal southern Maine communities with Sanford and Springvale. Long distance railroads with two stations in Wells also served the Town. Similar to the pattern that evolved throughout the United States during the early to middle part of the 20th century, the private automobile became the primary means of transportation in Wells.



While motorized vehicles including automobiles, heavy and light trucks, will continue to be the primary form of transportation in Wells, the Town has been effective in encouraging and planning for other forms of transportation. The most significant example of this planning is the addition of the Wells Transportation Center, which opened for business in December 2002. The Wells Transportation Center is located directly off of Exit 19 of the Maine Turnpike Authority on Route 109/9. It is an intermodal transportation facility serving Southern Maine by passenger rail service, bus service and commuter parking for 220 vehicles.

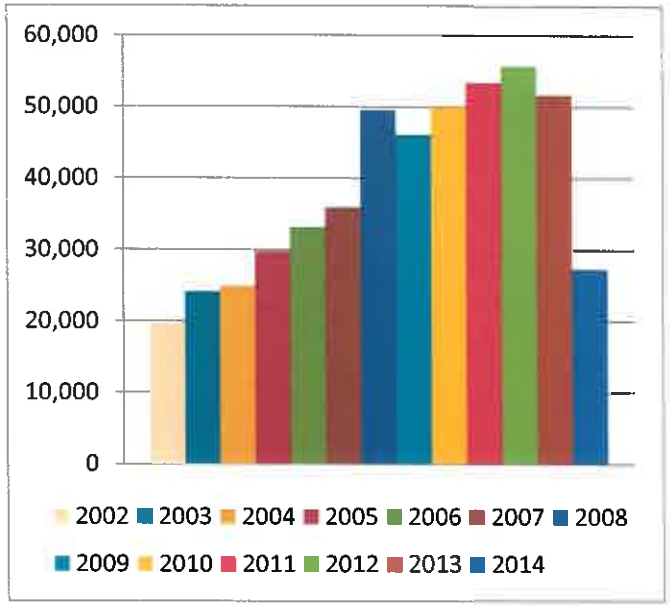
Public Transportation

The York County Community Action Corporation (YCCAC) provides several forms of public transportation for the Town of Wells. YCCAC also provides transportation services for medical/non-emergency and shopping purposes for communities in York County. They provide a weekly service for Wells that connects to the hospital and shopping locations in Biddeford.

The WAVE (Wheels to Access Vocation and Education)
This service provides riders with the opportunity to travel to jobs and to bring their children to daycare. If space is available, the service is open to the general public. The blue and white vans and buses operate 7 days a week. Trips must be arranged in advance. The current service is for an area including Sanford -Springvale Wells, and parts of Lyman and Biddeford. The WAVE service is provided year round. In 2013, they YCCAC provided 34,182 one-way trips though the WAVE service.

The Shoreline Explorer
The Shoreline Explorer provides seasonal trolley service to coastal communities in southern York County. There are four routes that provide seasonal transportation with two routes that provide services in the Town of Wells (The Blue Line/Route 4 and the Orange Line/Route 5). The Blue Line/Route 4 serves Ogunquit, Wells, and Kennebunk. The Orange Line/Route 5 serves Wells and Sanford and provides full-year service.

Rail Ridership by Year



Source: Amtrak

Passenger Rail
Passenger Rail service is provided through the Amtrak Downeaster service at the Wells Transportation Center. With the exception of 2009 and 2013, ridership has increased each year since the service began in 2002. Note that 2014 only includes months from January to July 2014.

V. Economic Health of the Community

State Goals:

- To promote an economic climate that increases job opportunities and overall economic well-being.
- To plan for, finance and develop an efficient system of public facilities and services to accommodate anticipated growth and economic development.

Regional Goal:

- Encourage a diversity of commercial development and expansion of the economic base wherever adequate resources and infrastructure support it.
-

Municipal Goals:

- Improve Wells' economic climate by promoting investment, revenue generation, and year-round good quality job opportunities by encouraging the development of diverse small businesses and industries that are consistent with the community's small town character.
- Provide suitable areas for low-impact businesses that have access to major transportation resources such as the Maine Turnpike.
- Encourage small-scale, neighborhood commercial enterprises in appropriate areas west of the Route 1 Corridor.
- Continue to foster home occupations and home based industries which are compatible with the surrounding neighborhood.
- Enhance and encourage tourist-related activities and development that are consistent with the character and scale of the community and the image of Wells as a family resort area, especially in the Route 1 Corridor/Beach Business Area.
- Restrict the development of commercial tourist "attractions" designed to appeal primarily to the transient tourist or "non-family" travelers, such as nightclubs, bars, amusement parks, and outdoor water slides.
- Continue to encourage, manage and support natural resource based enterprises such as agriculture, forestry and mineral extraction.
- Encourage the development of a Town Center that can serve as an economic engine for the entire community.

The health of municipal finance for Wells lays within the health of the overall economy for the community. How is the Town doing with economic development, employment, tourism, etc.? All of this information is tied directly to the tax rate of the community. Depending on how the municipal finances are will dictate what the community can do to prosper in the future. This chapter examines all of the economic information for Wells and ties it together for the community to consider when making future economic decisions.

Local Economy

In today's world economies have become more dynamic and changes occur more rapidly than ever before. The old model of living and working in a community, while still an option for many today, is rapidly changing. Technological advances and increasing commuting options make it easier for individuals to work from home for institutions and businesses located in other regions or states. Given the rapid speed with technological advances these opportunities will only increase in the future.

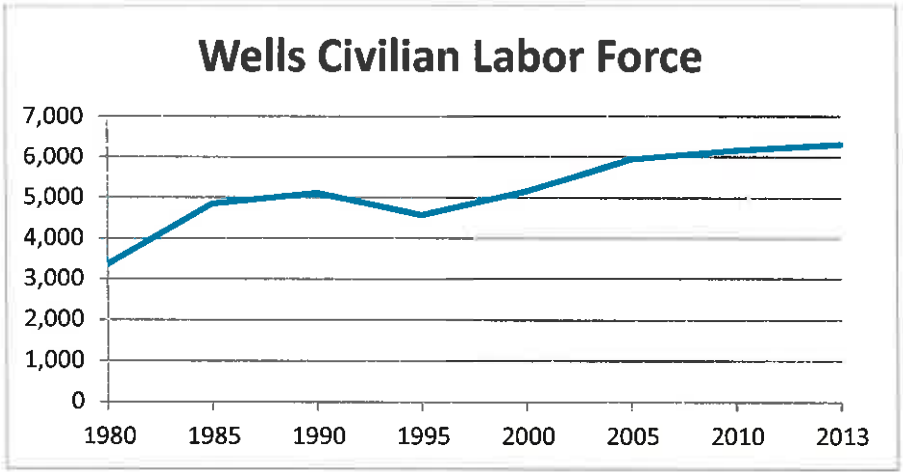
The Town of Wells civilian labor force has experienced positive growth from 2000 to 2013 with a growth rate of 22.3%. The largest increase occurred from 2000 to 2005, where the labor force grew by almost 800 people. Since 2005 the civilian labor force grew by approximately 50 people each year. Positive labor force is an important factor in economic health as new entrants to the labor force are critical to businesses looking to expand as well as to replace retiring employees.

The unemployment rate in Wells fluctuates with the economy: 1980- 6.4%, 1990- 3.3%, 2000- 3.1%, 2010- 7.5%, 2013- 6.0%.

See Inventory, source of data, Maine Center for Workforce Research and Information, Maine Dept. of Labor.

Economic Health Policies & Strategies

- Continue to monitor the space needs of Town Hall and consider future expansion as the need arises, to ensure high quality and efficient level of service.
- Continue to review the needs of all community facilities to determine the need for replacement or additions including, but not limited to: Fire Substations, Police Station, Highway Department and Recreational facilities.
- Continue to monitor all Town-owned properties and resources to ensure there is a rational basis for capital maintenance, repairs and acquisition.
- Program public facility improvements through a Capital Improvement Program (CIP) based upon the policies and actions from this Comprehensive Plan and an appropriate system of priorities.
- Work directly with businesses and community groups of Wells to determine areas where cost sharing for municipal facilities and services may be appropriate.
- Encourage more property owners to place their properties on the National Register of Historic Places.



Slightly over one third of the people who reside in Wells work in Wells. Approximately 70% of the commuters to Wells come from the communities in close proximity to the municipality. The second highest percentage of workers in Wells comes from Sanford. 54% of Wells residents work in surrounding coastal communities from Kennebunk to Kittery. 15% of Wells residents work in Biddeford, Portland, and Sanford. Other significant commuting destinations include Saco, North Berwick, and Portsmouth, NH.

The comparison of the current list of major employers to the one published in the 2005 Comprehensive Plan indicates the major employment base in Wells has remained fairly consistent. One significant difference that jumps out is the closure of Spencer Press and the loss of 550 jobs. The impact of this closure had been somewhat lessened with the relocation of Wasco Skylights and Village Candle to former Spencer Press building. The other major difference is the growth of the York County Community College from 137 to 278 employees. Both the Shaw's Distribution Center and UPS facility are located on land adjacent to the former Spencer Press building. These larger businesses show the importance of the industrial park to the Town of Wells employment base. The remaining list of major employers is in the restaurant and lodging sector.

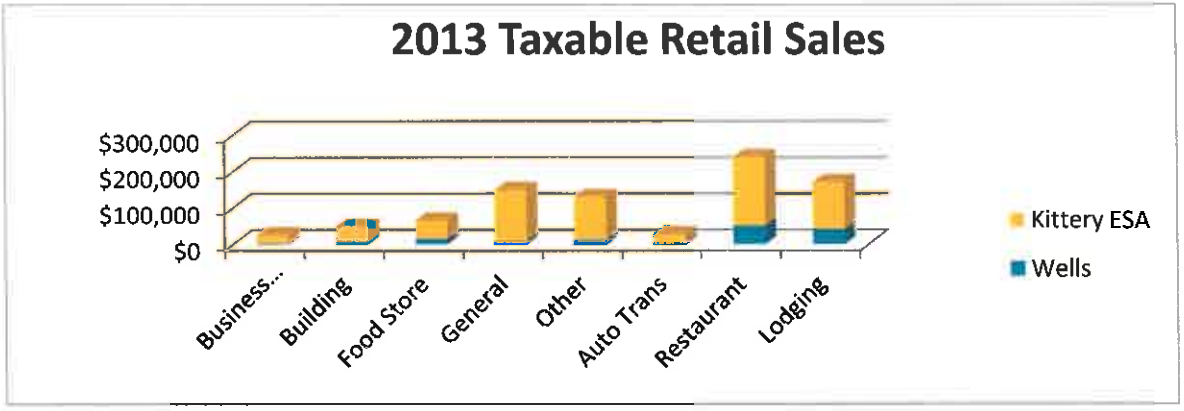
- Establish a committee to explore ecologically oriented tourist opportunities. Said committee should include representatives from business and natural resource oriented organizations such as the Wells Conservation Commission, Wells National Estuarine Research Reserve, Laudholm Trust, Nature Conservancy, Great Works Regional Land Trust, the Rachel Carson National Wildlife Refuge and the Mount Agamenticus Regional Trust.
- Identify areas in Town that would be suitable for future wholesale business, research and development, professional offices, limited retail, light industrial or low-impact businesses such as at the Crediford Road/Route 109/9 area.
- Continue to support the identification and documentation of historic and archaeological resources for purposes of building a written and photographic record that can be used to maintain and protect these valuable community resources.
- Work with public and private groups to establish a permanent heritage trail that would include a map and permanent markers for specific historic properties.
- Continue to maintain Wells Harbor as an active harbor that provides access, service and mooring facilities for both commercial, marine-related vessels and recreational boats.

In addition to larger business employers Wells has a vibrant small business base. Many of these businesses are focused on the hospitality industry. Large numbers of visitors, from both within and outside the region, help to provide a customer base which is critical to many small businesses. These businesses tend to be dynamic, quick growing and constantly evolving to meet changing consumer demand. Examples of these types of businesses include Borealis Bread, the Maine Diner, Congdon's Donuts, Mike's Clam Shack and Hidden Cove Brewing Company. All of these businesses lead to a vibrant economic base which offers opportunity for growth and expansion.

Wells and the Southern Maine Planning and Development Commission should establish a regional standing committee to meet periodically with Sanford, Ogunquit, Kennebunk, North and South Berwick(s) to discuss common issues and how they may work together to achieve common ground on many issues.

Wells should continue to engage in a discussion regarding the purchase of dredge equipment with other southern Maine communities in order to realize a cost savings of dredging to the harbor.

Total retail sales tax receipts have increased by almost 30% from 2004 to 2013. The severe recession had an impact on sales tax receipts as they started to decline in 2008 and did not increase until 2012. It is interesting to note that the strong rebound in retail sales tax revenues in 2012 was mainly due to an increase in the restaurant and lodging sector. The restaurant and lodging sector accounts for 62% of the total retail sales tax in Wells. Wells has now grown to be the 5th highest lodging tax generator in the State of Maine.

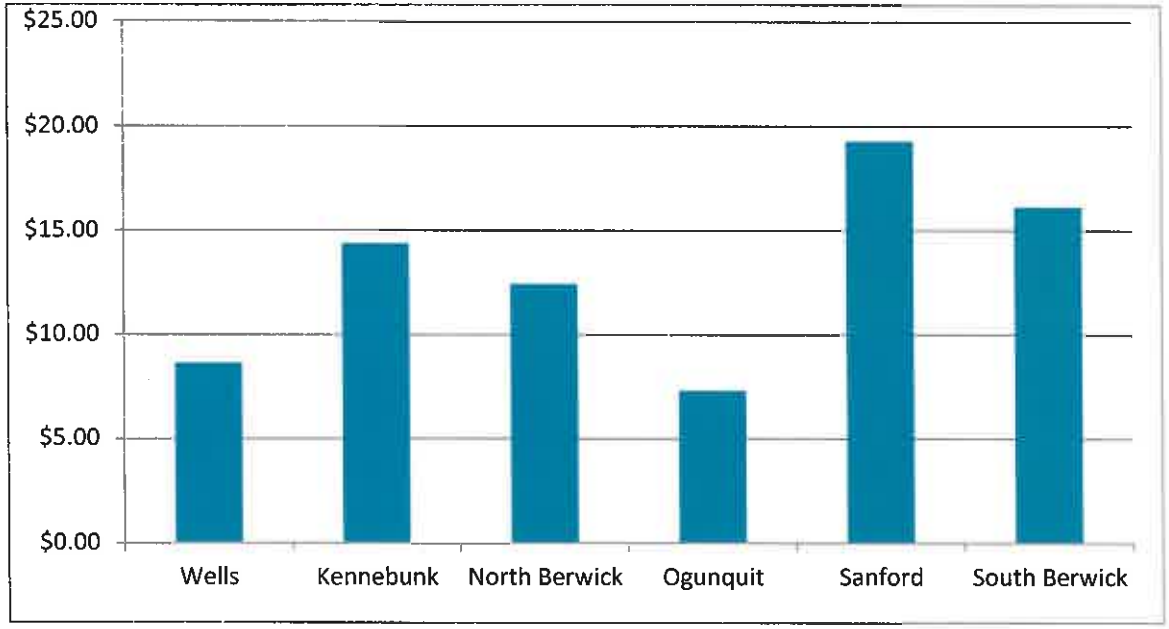


Wells has also recently been designated by the state as a Certified Business Friendly Community.

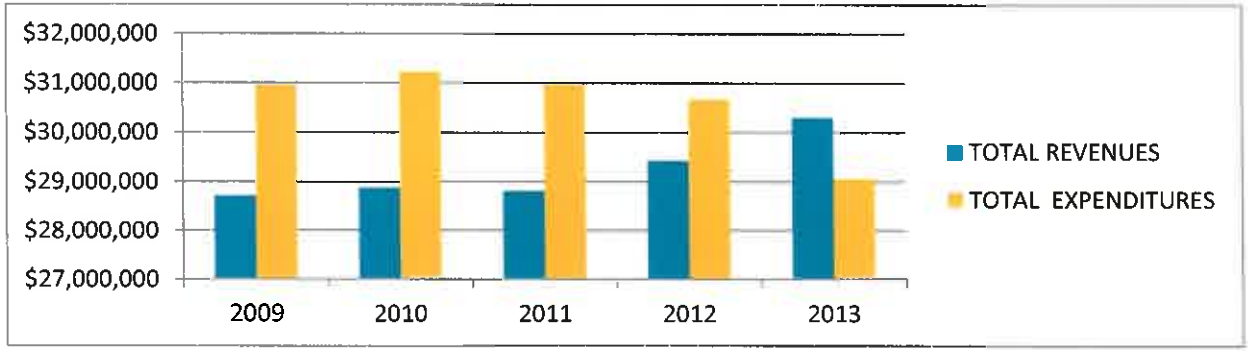
The Municipal Economy

Like all municipalities in Maine Wells is dependent on locally assessed property taxation for its operational revenues. In accordance with Maine Law, Wells assesses both real and personal property. When combined, these two areas make up Wells total assessed valuation. This local valuation may differ from valuation published by the Maine Department of Revenue, as the Maine Department of Revenue valuation depends on estimates rather than on actual assessed real and personal property values. A review of a municipality's valuation history is valuable as it is an indicator of the community's economic health and its ability to fund its operational activities.

Local Tax Rates in the Region



From 2003 to 2013 Well's assessed valuation has consistently shown positive growth. Growth rates were higher from 2004 to 2007. There was a big jump in the valuation in 2006 due to a municipal revaluation. Since 2008 Wells assessed valuation has grown on a yearly basis between one and two percent. Overall, from 2003 to 2013 Wells assessed valuation has grown by 84%. This yearly growth in assessed valuation differs from those estimates published by the Maine Department of Revenue. The equalized state valuation during this time period shows a period of both positive and negative growth. Currently the Wells assessed valuation differs with the equalized state valuation by approximately $160 million which varies year to year.



From 2009 to 2013 the Town of Wells revenues increased from $28,709,758 to $30,298,362; an increase of 5.5%. During this same time period, the Town of Wells expenditures decreased from $30,978,278 to $29,063,811; a decrease of 6.2%.

The Town of Wells uses its revenues primarily to fund local government functions, education and the county tax. Over the past five years since 2010, Wells expenditures have decreased. Breakdowns of expenditures by category show yearly variations but several trends can be seen. Education expenditures have increased by 6.5% from 2009 to 2013. General government and public safety have increased by approximately 2.5% during this same time period. The county tax has increased by approximately 1% and is the fourth highest expenditure category.

As of 2013, the total amount of long-term debts carried by the Town of Wells was $4,765,000. This figure represents the balance remaining as of the end of fiscal year (FY) 2013 for municipal bonds issued in 2004, 2008 and 2013. Wells' total long-term debt as of 2013 is about 1.7% of the Town's state valuation. On April 2, 2013 the Town established, and follows, a formal policy that recognizes the importance of maintaining an appropriate level of unrestricted fund balance in order to comply with the Governmental Accounting Standards Board ("GASB") Statement 54 ("GASB 54"). The purpose of the policy is to establish a target level of fund balance for the General Fund and to establish a process and criteria for the continued evaluation of that target level as conditions warrant. After evaluating the Town's operating characteristics, property tax base, reliability of non-property tax revenue sources, working capital needs, state and local economic outlooks, emergency and disaster risks, and other contingent issues, the Town establishes goals for the unrestricted fund balances of the General Fund of the Town.

The Town's goal is to maintain a minimum fund balance of one month (8.3% or 1/12th) of its annual Operating Budget. The "target balance" is 2 months (16.66% or $1/6^{th}$), and a maximum balance not to exceed 25.0% of the Town's Operating Budget. Any excess above 25.0% is to be assigned to other fund balance categories; however, generally would not be used to fund general or operating expenses. At year- end, capital and certain other budget items, in which appropriated amounts exceed actual expenditures, are reviewed to determine if they should be designated to be carried over to the next year. To the extent that the fund balance is not maintained to the minimum level, the Town would develop a plan, implemented through the annual budgetary process, to bring the balance to the targeted level over a period of no more than three years. See Inventory for Town's annual budget information.

The Capital Improvement Plan

The capital improvement plan is a vital tool used by communities in order to establish long range plans for the funding of capital needs. The needs include such items as: fire, police and public works equipment, long range studies, the purchase of conservation lands or other properties. Many of these items are too costly to purchase in a 1 year budget so spreading to capital costs over a 5 year period helps to ease the burden on the local tax rate.

VI. The Wellness of the Community



State Goals:

- Promote and protect the availability of outdoor recreation opportunities for all Maine citizens, including access to surface waters.

Municipal Goals:

- Promote existing and future parks and recreation facilities and programs that encourage healthy physical activities.
- Encourage the growth of medical and wellness services and facilities that will serve the Wells community.
- Work actively to retain the rural character of Wells as defined, in large measure, by its open land, marshes, fields, farms and woodlands; areas used for passive recreation and personal enjoyment.
- Conserve ample open space, to protect, preserve and maintain our natural resources including native plant and wildlife species.
- Work to educate the public of dangerous invasive species and to minimize their impact.
- Promote and expand neighborhood conservation areas and parks throughout Town such as Fenderson Wildlife Commons.
- Protect public access for traditional outdoor recreation and to protect critical wildlife habitat.
- Promote environmental education opportunities and produce public information materials related to Wells' natural history and the benefits of protecting open space areas.
- Minimize conflicts between natural-resource based industries and outdoor recreation uses.

Outdoor recreation is a large part of the reason why Wells flourishes primarily during the summer months. Wells is diversified in recreational opportunities whether it is recreating at the beaches, boating, biking, using the trail networks or golfing! With Recreation comes the notion of health and wellness.

Parks and Recreation

The Parks and Recreation Department is located at 412 Branch Road and offers a variety of recreational programs for the community members of all ages.

Facilities

The Recreation Park consists of 70 acres which includes nature trails, soccer fields, softball field, playground, tennis courts, picnic area, and horseshoe pits. Public bathrooms are open May through October. The tennis courts are also available for use May through October.

Programs

Some of the more popular youth programs include:

- Summer Day Camp for grades K – 9
- Swim Lessons
- Soccer
- Basketball
- Tee Ball
- Lacrosse
- Gymnastics
- Archery
- Karate
- Track and Field
- Tennis

Wellness Policies & Strategies



Establish a working group among existing committees to prepare a development plan for Bicycle Ways and Trails based on existing regional and local data and plans. The group to consider the existing data and plans and their relationship to existing sidewalks and other pedestrian ways and to review local or state roadway improvements and where possible connections to existing trails in Town. Improvements to eventually connect with the Eastern Trail. Said pedestrian /bicycle paths shall be for non - motorized vehicles, i.e., no ATV, 4 wheelers, mini-bikes, etc.



Work with other communities to create a regional non-profit housing organization to foster affordable housing programs for low-and moderate-income families. Such a group could:

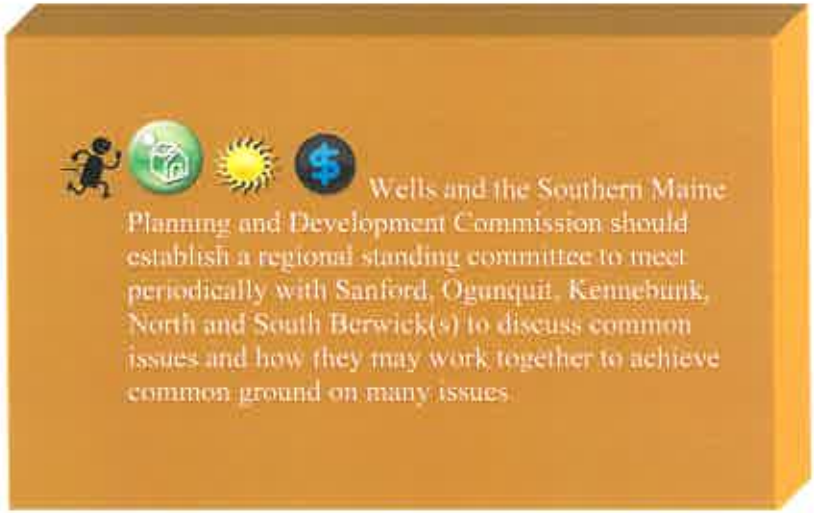
a. Ensure that local land use regulations do not present a barrier to the development of affordable housing.
b. Work cooperatively with nonprofit organizations and private developers to provide opportunities for affordable housing.
c. Seek loans and grants from the State of Maine;
d. Work with area banks through the Community Reinvestment Act.



Continue to support the farmers' market community and develop programs that will encourage local farm to table programs.

Other non-sport related classes include:

- Children's Theater
- Arts and Crafts
- Mad Science
- Preschool Players



Active Recreation

The Town of Wells has access to several pedestrian and bicycle infrastructure options to encourage residents and visitors to walk and bike.

Trails

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Within the Town, the Conservation Commission has created and maintains through volunteers many nature trails throughout acquired conservation land and easements. Trail information and maps are available at their website: wellsconservation.org.

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Special Events

Special events and school vacation field trips are always well attended. The Recreation Department offers a Haunted Halloween Hayride, Visit Santa Night, Santa calling, and an Easter Egg Hunt. Dances and Socials are held for grades 4 to 8 throughout the year. In the winter the Department rents out snowshoes and cross country skis.

Events are also held at the Harbor Park which include the summer concert series, Harbor Fest and the annual Pow Wow.

Health Care



In October 2000 the Wells Urgent Care Facility opened near the Town Hall at 112-114 Sanford Road (Route 1). This facility provides Emergency Care, Walk-in Care and other services including Breast Care, Cancer Care/Oncology, Cardiovascular Care, Kittery Optometric Associates, Surgery Associates of York Hospital, Laboratory Testing, Orthopedic Associates of York Hospital, Pediatric Associates of York Hospital, Physical Therapy, Ultrasound Services, Wound Healing and Hyperbaric Medicine, X-ray services, and York Hospital OB/GYN Surgical & Midwifery Associates. In addition to health care services, the facility has incorporated the Wells Emergency Medical Service facilities.

There are a number of physicians and other health care providers within the community, most of which are located in the Route 1 Corridor. Other hospitals are available in York, Sanford, and Biddeford.

Currently under construction is the Avita facility that will provide services to memory impaired individuals and related family services.

Senior Center



The Wells Ogunquit Senior Center was constructed in 2004 and provides a place of gathering and events and programs for the local aging community.

Vital Links

- York County Community Action:
  - https://www.nassonhealthcare.org/
  - www.yccac.org/index.php/programs/transportation
  - https://www.yccac.org/index.php/programs/energy-assistance
  - https://www.yccac.org/index.php/programs/housing-assistance
  - https://www.yccac.org/index.php/programs/community-outreach

- Sanford Housing Authority – Section- http://www.sanfordhousing.org/section8.htm
- Downeaster Senior Fares
- 211- www.211maine.org/
- Visiting Nurses http://www.homehealth.org/
- United Way - http://www.buildcommunity.org/
- York County Cooperative Extension Service- http://umaine.edu/york/
- York County Activity Guide: http://issuu.com/activguide/docs/activity_guide_pdf4web
- Choose To Be Healthy Coalition –Sue Patterson York Hospital- https://www.facebook.com/choosetobehealthy
- Wells Ogunquit Senior Center - http://www.wocam.org/
- Wells Ogunquit CSD – Adult Ed - http://wells-ogunquit.maineadulted.org/
- Wells Recreation Program- https://www.wellsrec.org/info/activities/
- Wells Reserve at Laudholm: http://www.wellsreserve.org/about/ Programming
- YCCC: Programing for Seniors- YCCC: Programing for Seniors- http://www.yccc.edu/CECT/SoCoastSeniorCollegeAge50Plus
- Wells Food Pantry: http://www.foodpantries.org/ci/me-wells
- AARP Tax Preparation – Wells Library: http://www.aarp.org/money/taxes/info-02-2011/free_tax_preparation_me.html
- Wells Public Library Programming: http://www.wells.lib.me.us/wells/
- Wells wellness checks program
- York Housing Authority Services: http://www.yorkhousingauthority.com/
- Wells Conservation Commission: www.wellsconservation.org



VII. The Environmental Health of the Community



State Goals:

- To protect and manage the quality of the State's water resources, including lakes, aquifers, great ponds, estuaries, rivers and coastal areas.
- To protect the State's other critical natural resources, including without limitation, wetlands, wildlife, fisheries habitat, sand dunes, shoreland, scenic vistas, and unique natural resources.
- To discourage development in natural hazard areas such as flood zones, dunes and bluffs.
- To safeguard the State's agricultural and forest resources from development that threatens those resources.
- To protect the State's marine resources industries, ports and harbors from incompatible development and to promote access to the shore for commercial fisherman, aquaculturists, marine trades, and other water dependent businesses and the public.
- To preserve the State's historic and archeological resources.

Regional Goal:

- Maintain and, where possible, improve the quality of our natural environment through actions that manage resources as a system rather than as local segments.
- Create an awareness of the importance of identifying and preserving historic and archaeological resources.

Municipal Goals:

- Ensure the Town's natural features, including the marshes, wetlands, beaches, aquifers, critical wildlife habitats, and floodplains; areas that are environmentally sensitive and create a truly outstanding but fragile environment; are protected from damage and preserved for future generations.
- Enhance the Town's programs for protecting sensitive, natural resources through regulatory and non-regulatory mechanisms.
- Support programs for acquiring key land areas of environmental concern for the protection of natural resources. Such programs to consider compensation to land owners.
- Work cooperatively with Federal and State environmental regulators to enforce regulations that protect the Town and region's natural resources; develop land use controls that encourage these natural resource areas to be protected; and, permanently set aside ~~as~~ land as development occurs.
- Protect the Branch Brook Aquifer from potential sources of contamination by controlling land use in this area and maintaining the availability and quality of other existing and potential water supplies.

- Identify areas subject to risks of future sea level rise.
- Continue to educate the public of potential sea level rise and storm damage impacts.
- Allow the removal of mineral resources such as sand and gravel, in a manner which minimizes the impact on these natural areas and surrounding neighborhoods, provides for the reclamation of these sites, and protects the groundwater from contamination.
- Continue to ensure ocean beaches continue to be a community resource.
- Protect, manage and support natural resource based enterprises such as agriculture, forestry and mineral extraction.
- Place high value on the protection and long-term management of, and education about, the Town's ecological systems including soils, surface and ground water, wetlands, beaches, natural vegetation, and wildlife. The natural environment should be used as a guide to manage future growth; recognizing that Wells' natural systems provide opportunities and constraints for both conservation and development.
- Continue to ensure public access to the beaches and harbor in Wells, while managing and maintaining these resources in the best interests of the community and adjacent landowners.
- Continue to work cooperatively with the State to manage and regulate the use of critical sand dune areas.
- Continue to ensure the Wells Harbor remains a viable resource since the harbor plays an important role as both an economic and recreational resource for the Town.
- Continue to protect recreational fishing and shell fishing in the Town's coastal waters and estuaries.
- Identify and protect existing populations, buildings and facilities, which are at risk due to potential flooding conditions.
- Identify specific land use policies, projects, and programs and recommend specific actions the Town should take to mitigate and reduce damages caused by coastal and riverine flooding and related flood damages.
- Qualify the Town of Wells for federal flood mitigation grant assistance, which can assist in the implementation of the Comprehensive Plan.
- Conduct a public education and outreach program to inform the public about the risks associated with development in the floodplain.
- Protect and preserve the natural and beneficial functions of floodplains.
- Involve local officials, affected property owners, and the general public in the Comprehensive Plan's preparation so that broad acceptance is achieved.
- Identify, map, preserve, protect the quality of and maintain significant historical, cultural and archaeological resources.
- Educate Town citizens and visitors about Wells' historic and archaeological resources, not just as individual buildings or sites, but as resources in a geographic, social, and economic context.

Topography, Slope, and Soils

Wells is part of the coastal plain of the New England physiographic region, which is characterized by low relief, poorly developed drainage systems, and a mantle of glacial materials in the form of till and large quantities of sand and gravel. The Town rises gently and gradually from east to west with elevations rising from sea level to approximately 140 feet. The hills near Tatnic Road along the South Berwick town line are the highest elevation in Wells at approximately 360 feet.

Elevation and slope are important to planning purposes for several reasons. The increase in slope corresponds to the potential increase for surface runoff and erosion. Soil depth tends to be thinner as slopes increase, thereby decreasing the capacity of the land to support leach fields for private septic systems in areas that lack public sewer services. The Maine State Plumbing Code does not allow installation of septic systems on slopes greater than 20%. Much of the Town of Wells is not served by public sewer so private septic systems are most common.

In Wells, like many coastal communities in Southern Maine, slope is generally between 0% and 8% in most areas. The few areas with slopes steeper than 15% primarily occur along river and stream corridors or coastal waterfronts. There are approximately 1,046 acres of steep slopes in Wells, or about 3% of Wells land area.

Although these steep slope areas present limitations, development is likely further restricted because of Shoreland proximity. However, the lack of adequate slope to promote proper drainage is a more pressing concern to development in Wells.

Shoreland zoning ordinances should be revised to be in compliance with the guidelines of the Maine DEP.

Environmental Health Polices & Strategies

- Ensure that the water quality of Ell Pond is not degraded by working with the City of Sanford to implement a consistent set of standards for water quality protection and Shoreland zoning requirements.
- Cooperate with the City of Sanford and Town of Kennebunk to adopt policies and programs to protect the Branch Brook watershed and aquifer, and continue to encourage the purchase of additional lands for protection.
- Continue a program to identify, prioritize, and protect high value freshwater wetlands including those containing vernal pools of special significance.
- Use the Fenderson Wildlife Commons and other locations for environmental education opportunities for the students of the Wells-Ogunquit Community School District and the public and in conjunction with the Wells Conservation Commission.
- Continue and enhance the education and outreach program for the residents and visitors to Wells regarding the Town's historic and archaeological resources.
- Work with local, State and Federal conservation organizations such as the U.S. Fish and Wildlife Service to identify and acquire parcels in the Special Flood Hazard Area that have the potential to reduce the risk from flooding.

Soil types are derived from the *Soil Survey of York County* produced by the U.S. Department of Agriculture (USDA), Soil Conservation Service (SCS) in 1982. The SCS identified over 36 soil series in Wells. In 1994, the SCS became the Natural Resources Conservation Service (NRCS) and still operates as an agency within the USDA.

There are six general soil associations in Wells. The general characteristics of each association are described below. It should be noted that the soil associations for Wells describe very broad geographic regions that have similar soil-landscape relationships and should only be used to gain a general idea of the nature of soils and landscapes within the Town. The smallest delineation is typically several hundred acres in size and has only minimal value for making land use decisions at the Town wide level.

- The Adams-Colton Association
- Naumberg-Croghan Association
- Hermon Lyman Association
- The Scantic-Raynham-Buxton Association
- Lyman-Rock Outcrop-Scantic Association
- The Sulfihemists-Udipsamments Association



Spiller Farm, Wells, Maine



Prime Farmland Soils

Soils rated as prime farmland soils by the NRCS in Wells include: Allagash, very fine sandy loam; Becket, fine sandy loam; Buxton, silt loam; Colton, gravelly loamy coarse sand; Elmwood, fine sandy loam; Madawaska, fine sandy loam; Marlow, fine sandy loam; Ondawa, fine sandy loam; Peru, fine sandy loam; Podunk and Winooski soils; and Skerry, fine sandy loam.

Chase Farm, Wells, Maine



Work with critical public facilities such as the Wells Sanitary Sewer District facilities and the Kennebunk, Kennebunkport, & Wells Water District systems are properly flood proofed to prevent the infiltration of floodwaters. These facilities should be adequately insured against the risk of flood damage.

Identify a large land holding inside or outside the community that is environmentally secure and could be used as a debris storage facility in case of a catastrophic storm event causes widespread damage.

Establish a working group among existing committees to prepare a development plan for Bicycle Ways and Trails based on existing regional and local data and plans. The group to consider the existing data and plans and their relationship to existing sidewalks and other pedestrian ways and to review local or state roadway improvements and where possible connections to existing trails in Town. Improvements to eventually connect with the Eastern Trail. Said pedestrian /bicycle paths shall be for non - motorized vehicles, i.e., no ATV, 4 wheelers, mini-bikes, etc.

Wells and the Southern Maine Planning and Development Commission should establish a regional standing committee to meet periodically with Sanford, Ogunquit, Kennebunk, North and South Berwick(s) to discuss common issues and how they may work together to achieve common ground on many issues.

Prime Forestry Soils

All of the soils identified as prime farmland in Wells are also rated as prime forestry soils. The Scio soil group has the highest tree growth productivity rating of all York County soils. Much of the land in Wells consists of prime forestry soils. The exceptions include the peat and mucky soils (Biddeford, mucky peat; Chocura peat; Saco, mucky silt loam; Vassalboro peat; and Waskish peat), beaches, and very shallow soils.

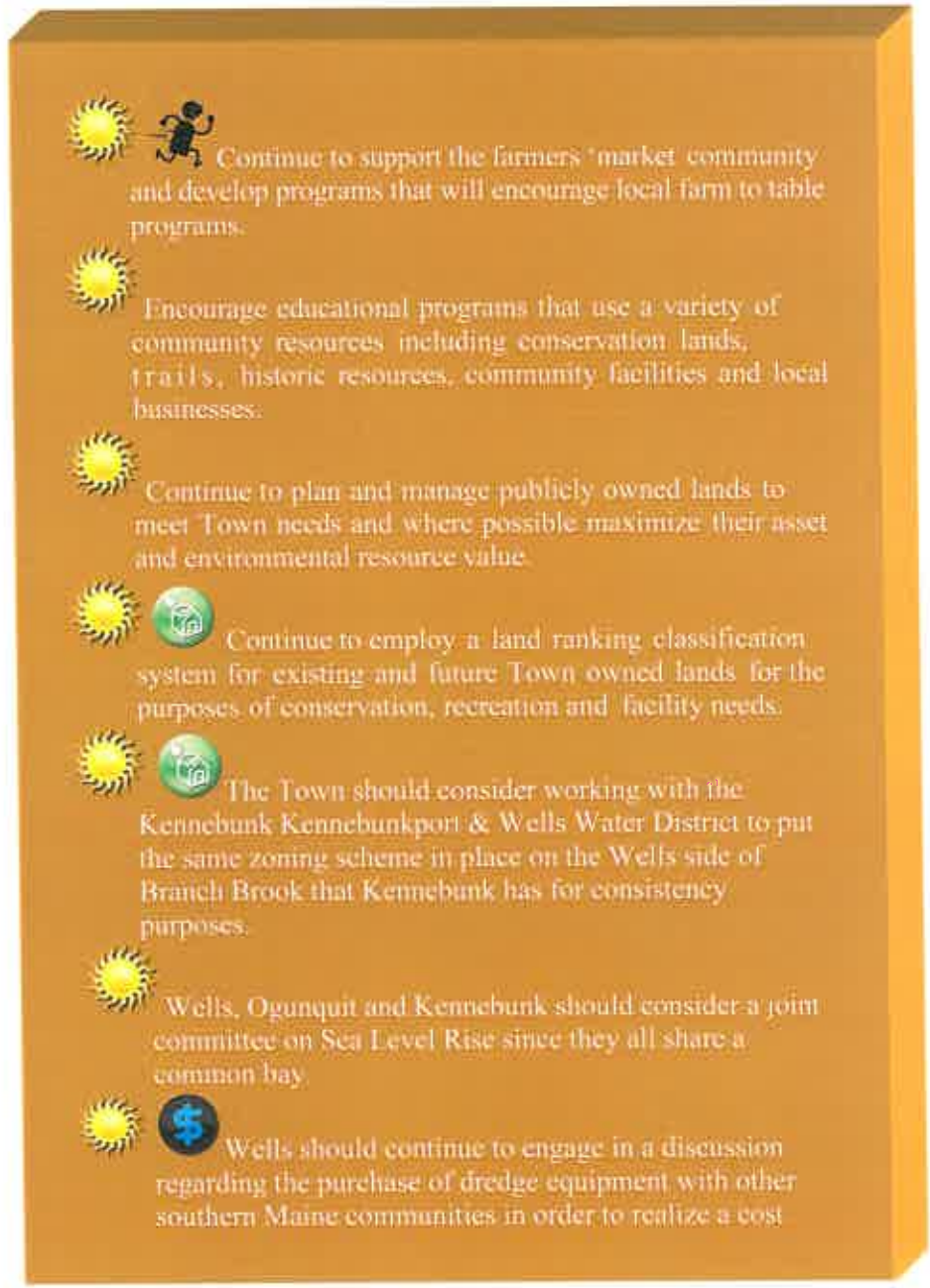
Hydric Soils

Hydric soils have very similar characteristics to wetlands as defined by the Army Corps of Engineers. These include all poorly and very poorly drained soils often associated with marine silts and clays including muck, peat, swamps, and marshes. Hydric soils include such soil types as the Biddeford mucky peat, Chocorua peat, Rumney loam, Scantic silt loam, and Vassalboro peat. The water table for hydric soils is at or near the surface 5 to 9 months of the year.

Wetland Soils

Wetland soils are associated with low lying areas in Wells, such as:

- the tidal marshes east of Route 1;
- large portions of the freshwater wetland area north of Route 9B running northerly to the railroad;
- a large portion of the area bounded by Route 9, Route 109 and Bragdon Road, comprising of the Heath and contributories to West Brook; the freshwater wetland area



west of Quarry Road south of Route 109 and running to the Sanford town line; and

- wetland areas along watercourses such as the Ogunquit River, Merriland River, Branch Brook, and Webhannet River.

Wetlands

Wetlands are found throughout Wells, and throughout Maine. Wetlands assist in managing stormwater, recycling nutrients, filtering pollutants, and recharging ground water. They provide open space and wildlife habitat and are some of Maine's most productive areas providing food and habitat for a wide variety of fish, animal, and bird species. Wells' Shoreland Overlay District Land Use Ordinance protects coastal wetlands and unforested wetlands greater than 10 acres in area.



Fenderson Wildlife Commons, Wells, Maine

Consider making revisions to the ordinances to prohibit the construction of septic systems within Shoreland Overlay Districts except in the case of lots of record.

Consider updating the Town Ordinances to reference the most current groundwater aquifer maps produced by the State of Maine.

Consider adopting an ordinance requiring a permit to blast bedrock for construction projects. The permit should include abutter notification, pre-blast surveys to be conducted and seismic monitoring reports.

Consider making the groundwater aquifer maps available from the State Geo-Library, if available, as a GIS layer on the Town GIS Mapping website as an informational resource for the review of site plans, subdivisions and building permits.

Most wetlands can be identified by the presence of these three characteristics: 1) hydrophytic plants; 2) hydric soils; and 3) a very high water table for at least part of the year. Wetlands also have water present at or near the surface for one week or more during the growing

season. Wetlands perform valuable natural functions and are considered a severe constraint to development since they are protected under the State's Mandatory Shoreland Zoning Act. Such wetlands include:

- Palustrine Forested
- Palustrine Emergent
- Palustrine Scrub Shrub
- Estuarine Wetlands



Threats to Wetlands

In addition to their value for stormwater management, wildlife habitat, and groundwater recharge, wetlands also filter pollutants and sediment from the environment and improve water quality. However, their filtering capacities can be exceeded when impervious surfaces increase run-off, or dumping, or filling of wetlands occur. Pollution and sediments discharged into productive wetlands or estuaries can have an adverse impact on wildlife habitat and shellfish beds. Since wetlands are often part of larger ecosystems, when their functional values are impacted, the effect will likely be felt in other parts of the ecosystem. In Wells, failing septic systems, storm water from impervious surfaces, and non-point pollution from roads, parking lots, fertilized lawns, and pet waste pose a significant threat to wetlands.

High Value Wildlife and Fisheries Habitat

The availability of high quality habitat for fish and wildlife is essential to maintaining an abundant and diverse population for both ecological and sporting purposes. Wells has a significant amount of land that offers quality habitat for a variety of species. The Maine Department of Inland Fisheries and Wildlife (MDIFW) is responsible for assessing the value of and monitoring of wildlife habitats in Maine. MDIFW has identified areas of special concern because of their importance as wildlife, plant, and fish habitat and they publish maps and data through the Beginning with Habitat (BwH) program. Beginning with Habitat (BwH), a collaborative program of Federal, State, local agencies, and non-governmental organizations, is a habitat-based approach to conserving wildlife

and plant habitat in Maine on a landscape scale. The BwH landscape approach to habitat conservation was initially developed by the University of Maine's Cooperative Fish and Wildlife Research Unit (CFWRU) under the direction of the MDIFW. Data on plants, natural communities, and wildlife habitats of national interest were later added by the Maine Natural Areas Program (MNAP) and the U.S. Fish and Wildlife Service (USFWS).

There are portions of three focus areas (out of a total of 140 in Maine) within Wells. These areas are: the Wells-Ogunquit marsh, which stretches across the entire extreme eastern portion of Wells; the Kennebunk Plains – Well Barrens located in northwestern Wells; and the Mount Agamenticus (Tatnic Hills) area in southern Wells.

Essential Wildlife Habitats

The Essential Wildlife Habitat areas include Stevens Brook, Ogunquit River, Ogunquit Beach, Laudholm Beach/ Little River Area and Wells Beach/ Drakes Island. These Shoreland areas have been identified to provide: critical nesting habitat for the Least Tern and Saltmarsh Sparrow and nesting, feeding, and brood-rearing habitat for the Piping Plover



Saltmarsh Sparrow

Significant Wildlife Habitats

The Town also has Significant Wildlife Habitats, as defined by the Natural Resource Protection Act, including:

1. Candidate Deer Wintering Areas:

   During the winter months deer herds tend to migrate to wintering yards that are typically composed of softwood forests. Candidate Deer Wintering Areas in Wells are located in the following areas:

   - northwest of Bald Hill Road at the Sanford town line;
   - along the Webhannet River between the railroad and Route 9B, west of the Maine Turnpike;
   - the Heath bounded by Bragdon Road, Swamp John Road, Route 9, and Route 109; and
   - the Coles Hill Road area, parallel to the Maine Turnpike.

   Their locations and approximate sizes are shown in the maps in the Inventory. IF&W has not rated the habitat value of these yards.

2. Inland waterfowl and wading bird habitats:

Waterfowl and wading bird habitat includes wetland complexes and the 250 feet of upland surrounding them. These areas are used for breeding, migration, and wintering. Nesting habitat includes dense, emergent, herbaceous or shrubby cover for seclusion, concealment, and protections from predation. Wells has four wetland areas categorized as significant inland waterfowl and wading bird habitat scattered throughout the portion of Town west of the Maine Turnpike. See Maps in the Inventory.

3. Tidal waterfowl/wading birds:

This designation includes breeding, migration/staging and wintering areas for coastal shorebirds or breeding, feeding, roosting, loafing and wintering areas for coastal wading birds. Habitat types include aquatic beds, eelgrass, emergent wetlands and mudflats. In Wells, these areas comprise large stretches of the shore and the salt marshes beyond.

4. Shorebird areas:

Shorebirds depend upon coastal habitats as feeding and staging areas to acquire fat reserves sufficient to fuel their transoceanic migrations to wintering areas. These shorebird areas can be feeding or roosting areas or both. In Wells, these areas comprise of large stretches of the shore and portions of the salt marsh.

5. Significant vernal pools:

These habitats are characterized by pool depressions used for breeding by amphibians and other indicator species and 250 feet of critical terrestrial terrain beyond the spring or fall high water mark. These vernal pools lack predatory fish and a permanently flowing inlet or outlet and are of natural origin. There are three significant vernal pools identified in Wells and mapped by the BwH program. One is off Route 109 near the rail line, one is near the Wells Barrens, and the third is near Hobbs Crossing.

6. New England Cottontail:

The New England Cottontail is a small, secretive brown rabbit that relies upon areas of tall dense shrubs and young trees to survive. Cottontails are known to be in the vicinity of the Wells Reserve and Rachel Carson National Refuge. Several areas are active restoration projects to reestablish habitats and rabbit populations.

In Wells, as might be expected, the entire shoreline and the salt marshes are ranked at the top as most important to the species that frequent that type of habitat. Parts of the Heath, wetlands located on either side of the railway along the West and Bragdon Brooks, along the Merriland River, and a few other scattered freshwater wetlands within Wells, are ranked at the top as most important for the species of the freshwater/ wetlands habitat.

The top grasslands/shrub/bare ground habitat for the appropriate priority species in Wells are scattered throughout the Town along roadways, but heavily concentrated in the large area between Branch Brook and Wire Road known as the Wells Barrens, which is permanently protected under the ownership of The Nature Conservancy. West of Route 1, beyond the development that lines Route 1, Wells is mostly forested. Much of this area is ranked of moderate importance with regard to the forested habitat, including forested wetlands habitat types . Areas of top ranked forested habitat are located along rivers and streams with larger patches located near the Heath on the south side of Route 9 from the Heath and between Quarry Road and the Merriland River. Knowing where these habitat types exist in Wells, can assist the Town with planning and open space conservation.



Piping Plover

Rare, Threatened or Endangered Wildlife and Rare or Exemplary Plants and Natural Communities

Not surprisingly, the Shoreland and the extensive salt marshes in Wells are top ranked with both the programs described above by the MDIFW and BwH. The Wells Barren area is also top ranked for both, as is the Heath. A very large area along the Wells/South Berwick town line is top ranked for Rare, Threatened or Endangered Wildlife. Scattered patches of top ranking habitat under both programs are also found in the southern half of Wells. Rare or exemplary natural communities found in Wells are the Sandplain Grassland and Red Maple Swamp communities of the Wells Barrens, the Salt-Hay Saltmarsh and Coastal Dune Marsh Ecosystem communities by the Shoreland areas.

Rare, threatened or endangered bird, reptile and mammal species found in Wells include the New England Cottontail, the Northern Black Racer Snake, and the Harlequin Duck, as well as the Piping Plover and the Least Tern. Rare, threatened or endangered plants include Northern Blazing Star, Slender Blue Flag, Smooth Winterberry Holly, Mountain Laurel, Spicebush, Sassafras, Beach Plum and Sweet Pepper Bush. Maine Natural Areas Program (MNAP) ecologists encourage landowners considering development in areas identified as containing rare plants to check with MNAP for more specific site locations and information or to conduct a field survey.

Floodplains


Wells Reserve, Wells, Maine

Floodplains are the low, mostly flat areas adjacent to rivers, streams, ponds and the ocean that are periodically covered by rising water or waves during periods of rain, high winds or snowmelt. Coastal flooding is generally attributed to high wind and wave action caused by storm activity. The Federal Emergency Management Agency (FEMA) has produced maps of the 100-year FEMA floodplains in Wells.

Shown on the FEMA maps is the area that has a 1% chance of being flooded during any given year. Also shown are 500-year floodplains and "V" or velocity zones that are subject to ocean flooding.
Most of the Town's 100-year floodplain is east of Route 1 in areas associated with the harbor, the beaches and the extensive salt marshes. In addition, there are ribbons and patches of floodplain associated with various rivers and streams that discharge into the Atlantic Ocean such as the Webhannet River, the Merriland River, and Branch Brook. There are also two larger floodplain designated areas associated with wetlands within the Heath and the headwaters of West Brook near the Town of Sanford. A narrow velocity zone runs the entire length of Wells along the Atlantic shoreline.

Climate Change

No Comprehensive Plan or update should neglect to mention the impact that climate change will have on a community's natural resources. Wells is fortunate because it has an excellent report entitled "*Summary Climate Change Risk Assessment*" done in March of 2014 by the Massachusetts Institute of Technology Science Impact Collaborative, the Census Building Institute, and the Wells National Estuarine Reserve System to refer to. While the report's main focus is how climate change will impact the built environment and the related health effects on Wells' residents, there are maps showing sea level rise within the above referenced report and some discussion of ecosystem changes. The changes include flooding events during increasingly severe storm events, which will impair waterways, damage riparian and estuarine habitat, cause erosion of beaches and Shoreland, cause inundation of existing salt marshes by the end of this century, and cause drought, which will stress wetlands, wildlife, and habitat. The report is included in the Inventory of this Comprehensive Plan.

Marine Resources

Wells has approximately seven miles of coastline. The beach is undoubtedly what draws most visitors to Wells and ocean access is one of the top reasons why people want to live in Wells. Wells' coastal region can be viewed as eight distinct areas with differing characteristics:

- Laudholm Beach
- Drakes Island
- Wells Harbor
- Webhannet Estuary
- Wells Beach, including Crescent Beach
- Moody Point
- Moody Beach
- Ogunquit River Estuary



Wells Beach



Wells Beach

Water Dependent Uses

The major water dependent use in Wells is the marina, associated facilities, and mooring area located at Wells Harbor. This is the only marine service facility in Wells and the only mooring area in Wells for both commercial and pleasure boats. The Town's wharf is equipped for sport and commercial fishing operations. In addition, there is a public boat launch for both motorized and non-motorized watercraft. Wells has a small fleet of commercial fishing boats that are used primarily for lobstering, as well as for recreational fishing and clamming.

Wells Harbor



Harbor Facilities

Wells Harbor is the only harbor in Wells and the only area suitable for a harbor since it is protected by the barrier dunes to the east. The harbor is accessible from Harbor Road to the west and via Atlantic Avenue to the east. In 1961, the U.S. Army Corps of Engineers carried out a harbor improvement program, which consisted of constructing two jetties at the mouth of the

Webhannet River and the dredging of the navigation channel and mooring basin. With these improvements came the development of the current marina facilities and expanded mooring capabilities. The harbor requires periodic dredging to maintain the channel and the mooring field. In 2011, the Coast Guard installed a white light for the "WH" (Wells Harbor) entrance buoy to assist boat traffic entering the harbor.

According to Wright-Pierce's *2013 Wells Harbor Management Plan*, under ideal conditions, as when newly dredged, the harbor has the capacity for about 150 moorings including slips for boats under 24 feet and moorings for larger vessels. In 2012, only about 93 moorings were in use due to sedimentation in the harbor. Typically about 75% of the moorings are allocated to recreational users.

Recreation and Public Access

Public access to Laudholm Beach is available through the Wells Reserve and State-owned land. Visitors can park at Laudholm Farm, which serves as headquarters for the Wells Reserve, and walk the trails to the beach.

Access to Drakes Island Beach is unrestricted. There are a number of public rights-of-way to the beach and two parking lots on the island. Access to Wells Beach is also unrestricted. There is public access to the beach at Casino Square at the end of Mile Road and at a number of public rights-of-way along the beach area roads. Public parking is available in Casino Square, at two parking lots off Mile Road and at a large lot at the northern end of Atlantic Avenue. Additional parking is also available on Gold Ribbon Drive. Moody Beach is a private beach with access restrictions that limit the public to use of Town-owned rights-of-way only.



Wells Reserve

The Wells Reserve

The Wells National Estuarine Research Reserve encompasses 2,250 acres on the eastern edge of the Wells. It comprises wetlands (salt marsh, red maple swamp, shrub-swamp, and brackish marsh), sand beach, oak-pine forest, mixed second growth forest, shrubland, grassland, and mowed fields. Seven miles of trails, crossing all of these habitats, are open to the public throughout the year. The site is popularly known as the Wells Reserve at Laudholm, as its headquarters and research laboratory occupy the Laudholm Farm campus, which is listed on the National Register of Historic

Places. More than 25,000 people visit the Wells Reserve at Laudholm each year to walk, participate in programs, hear lectures and concerts and attend festivals.

The Rachel Carson Trail is located at the headquarters of The Rachel Carson National Wildlife Refuge on Route 9 in Wells. It is a one mile, fully handicap accessible, forested, trail which meanders along the upland edge of the Merriland River on one side, and around to where the Branch Brook River merges with the Merriland River to form The Little River. The trail offers close-up views of salt marshes and, weather permitting, a view to the sea. The self-guided trail features 11 look-out points with a corresponding identification guide. It is open from sunrise to sunset year round. Snowshoeing and jogging are allowed and leashed dogs are welcomed.

Wells Harbor Management Plan

In 2013, Wright Pierce completed the *Wells Harbor Management Plan* for the Town. That Plan developed with assistance from the Wells Harbor Committee, Town staff, and community outreach, includes strategies to encourage sustainable, ecologically-oriented, tourist opportunities, and an active harbor capable of accommodating commercial and recreation uses. That plan designates the following overarching goals:

- Balance additional development of the Harbor with its inherent constraints, both natural (marshes, habitat, sensitive plants and wildlife) and built (access roads, limited upland area) to minimize negative environmental impacts.

- Generate revenue from commercial and recreational use of the Harbor to offset the need for investments in support of the goals of the Harbor Plan. Seek Federal and State, as well as private and nonprofit/foundation funds, to support implementation of the Harbor Plan.

- Treat Harbor planning as a continuous process.

Beneath the overarching goals, the plan's goals are designed to address the following elements:

- Natural Areas
- Harbor Economy and Sustainability
- Harbor Facilities and Infrastructure
- Commercial Fishing, Shellfish and Aquaculture

- Harbor Park
- Transportation and Access

Marsh Walk Feasibility Study and Harbor Pedestrian Bridge Study

The Town of Wells has long wanted public access, perhaps in the form of a boardwalk, over the Webhannet Marsh. In 1999, the Town hired a consultant to do a feasibility study which resulted in a list of impediments to building the boardwalk and made several recommendations of possible courses of action. In the intervening years, two of the impediments became less so and the Town centered its vision of the proposed marsh walk on Harbor Park. In 2013, with the *Harbor Management Plan* update on-going and a feasibility study of a possible pedestrian linkage across the harbor also underway, the Town engaged the services of Wright-Pierce to re-examine the possibility of the marsh walk. This feasibility study has led to the project to reconstruct Harbor Road to include our environmental scenic walkway to the Wells Harbor Park.

Open Space

Town-owned

The Town of Wells Conservation Commission has taken an active role in conserving and protecting land in Wells through their desire to ensure that the Town's natural resources are conserved for future generations. More than twenty years ago, the Commission established a land bank through which the residents of Wells invest funds to purchase ecologically significant land or easements to preserve open space. The establishment and use of Town's conservation lands is codified in the Town Ordinance in Chapter 66, entitled Designation of Town Property, giving the Commission the ability to recommend the creation of Town conservation lands and act as stewards for those lands.



Laudholm Farm, Wells, Maine

The Commission formally dedicated its first conservation parcel in 2001 and the Town has acquired many other parcels since. Since the intent of the Commission is to provide wildlife habitat that is shared with people, the Commission calls these properties "wildlife commons." These commons are undeveloped and open to the public for traditional outdoor recreation, wildlife habitat, and environmental education. As adjoining, ecologically desirable parcels become available and/or funds are found, the Commission adds to the contiguous size of some of the parcels. A list of the wildlife commons lands is below:

1. Perkinstown Commons - 288 acres, Thompson Street, off Perry Oliver Road
2. Fenderson Wildlife Commons – over 600 acres, off Route 109 and Horace Mills Road
3. Tilton Homestead Commons - over 136 acres, off Route 109
4. Great Haith (or Great Heath) Commons - 346 acres, off Route 9A, which is in the process of being established.

These common areas are open to the public and have established trails. Trail maps are available to download from the Conservation Commission's website.

Other lands

In addition to the Town-owned conservation lands, Wells has many parcels that are held by the Kennebunk, Kennebunkport, Wells Water District (KKWWD), land trusts, the State, and The Nature Conservancy. Among the notable conservation areas are:

- The Wells Barren Preserve is 367 acres held by The Nature Conservancy
- The adjacent 175 acre parcel that includes Branch Brook headwaters area is owned by KKWWD with a conservation easement held by The Nature Conservancy
- The Tatnic Hills Preserve is 171 acres at the north end of Mt. Agamenticus Conservation area and is held by The Nature Conservancy
- Great Works Regional Land Trust holds an easement on the 170-acre privately-owned Chicks Farm off of Chicks Crossing Road, which currently hosts a CSA (Community Supported Agriculture) Program.
- Wells Reserve at Laudholm Farm off of Laudholm Farm Road is a National Estuarine Research Reserve protecting 2,250 acres of salt marsh, freshwater marsh, beach, dune and forest. The Laudholm Farm and its historic buildings serve as the Reserve's headquarters.

In the fall of 2014, Wells' residents voted to use funds from the CIP Land Bank Reserve to partially fund the purchase of an agricultural easement over the 130-acre Spiller Farm property off of Branch Road.

Water Resources

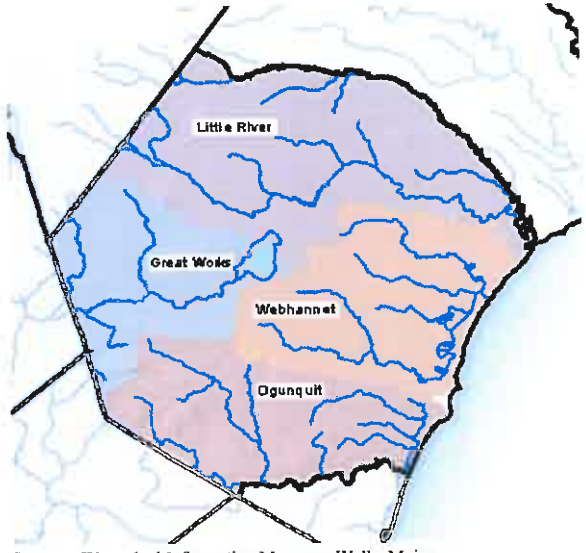
Watersheds and the watercourses within them represent the natural drainage pattern that carries precipitation and ground water from land to the Atlantic Ocean. This natural drainage system can be affected adversely by the following:

- reduction in the ability to accommodate stormwater/runoff through filling, channelization or siltation;
- creating higher stormwater flows as the result of increased impervious surfaces;
- forcing streams underground through pipes.

In addition, watersheds can be threatened by degradation in water quality caused by both point and non-point pollution and runoff containing contaminants like fertilizers and animal waste.

Wells is divided into four major watersheds:

- **Little River (Branch Brook & Merriland River)**
- **Great Works**
- **Webhannet**
- **Ogunquit**



Seacoast Watershed Information Manager, Wells, Maine

Little River Watershed

This watershed includes both the Branch Brook Basin and the Merriland River Basin, which drain the northern portion of Wells. Branch Brook serves as the main water supply for Kennebunk, Kennebunkport, Wells, Ogunquit, Arundel and small portions of Biddeford and York under the auspices of the Kennebunk, Kennebunkport, and Wells Water District. Over the past couple decades there has been residential development in this area. An 18-hole golf course and 174-unit residential development approved in the Branch Brook Basin has not been built but is still actively seeking investors. The Merriland River Basin remains in low-density development areas, although there is continued pressure for additional residential development.

Great Work Watershed

This watershed drains the west central portion of the Town and includes Perkins Brook and West Brook; both of which are tributaries of the Great Woks River in North Berwick. The Heath, a large forested wetland and Ell Pond are part of this watershed as well as several mineral extraction sites and residential developments.

Webhannet Watershed

Located entirely within Wells, this roughly fourteen square mile coastal watershed drains the east central portion of Wells through Depot Brook, Blacksmith Brook, Pope Brook and other smaller tributary watercourses. This watershed includes most of the Town's coastal marshes and is also the most intensively development of the watersheds in Wells. This watershed includes Route 1, Route 109 and Route 9 Corridors. The Webhannet River originates near Bear's Den Road and continues about three miles to its estuary. A golf course and accompanying golf club community has been built with frontage on both sides of the River.

Ogunquit Watershed

This watershed incorporates two sub-basins: The Ogunquit River and Stevens Brook. This watershed also includes Green Brook and Bragdon Brook. This watershed drains the southern portion of Wells. Much of the northerly divide is contiguous with Route 9/ Route 9B. The eastern part of the watershed is intensively developed along the Route One Corridor, while the western portion remains relatively lightly developed with mostly residential uses.

Surface Waters

The streams and rivers identified in the watershed section comprise the major freshwater surface waters in Wells. Hobbs Pond, an impoundment in the Merriland River, is the only sizeable pond solely within the Town. The Hobbs Pond dam is privately owned and the owner would legally be able to remove the dam, though there are no plans to do so. A second pond, Ell Pond, is smaller and straddles the Wells-Sanford town line.



Drakes Island Beach

Wells has no Class AA water bodies. The freshwater sections of the Branch Brook and Merriland River are classified as Class A, and are suitable for drinking water with proper treatment (Branch Brook is a major source of drinking water under the management of the Kennebunk, Kennebunkport, Wells Water District). The remaining streams and rivers are classified as Class B including the Webhannet River, Depot and Blacksmith Brooks, Stevens and Bragdon Brooks, the Ogunquit River and its tributaries including; Green Brook, Perkins Brook, West Brook and their tributaries. In the 2012 MDEP report, a section of Stevens Brook in Wells was designated as impaired based on evidence of certain pollutants. All of Wells marine and estuarine waters are Class B including: the tidal portions of the Webhannet and Ogunquit Rivers and the Blacksmith, Depot, Stevens and Bragdon Brooks. In the 2012 MDEP report, the southern portion of the Ogunquit River and the Webhannet River are listed as impaired due to "elevated fecals" under Category 4A, which means the rivers may have attained all uses for their standard, but there is insufficient new data to confirm this. Many surrounding marine and estuarine waters outside of Wells are listed similarly. MDEP performs testing periodically to classify water Classes and Categories.

Under Maine Healthy Beaches (MHB), Maine has established two "flagship" beaches, one of which is Wells Beach. In 2007, Wells Beach was divided into 3 separate management areas (Casino Square, Wells Beach and Wells Harbor), all of which continued to uphold all standards under policies and guidelines set forth by MHB. In 2013, Casino Square had 7 exceedances where Enterococci values rose above 104 (rate 19.4%; rainfall preceded 85.7%); Wells Beach had 6 exceedances (rate 10.2%; rainfall preceded 100%); and Wells Harbor had 10 exceedances (rate 47.6%, rainfall preceded 100%).

Groundwater Aquifers

These areas of deep sand and gravel are geologically referred to as stratified drift deposits that are capable of yielding significant quantities of water. The highest yielding aquifers identified in Wells can produce 10 to 50 gallons per minute.



The most critical aquifer area in Wells is that associated with Branch Brook, the water source for the Kennebunk, Kennebunkport, and Wells Water District. The aquifer area extends from the Sanford town line almost to the Atlantic Ocean with an apparent break in the Meetinghouse Road/Route 9A area. This area has regulatory protection through the Aquifer Protection District and the 250' Shoreland Overlay District as defined by the Official Zone Map and within in the Town Land Use Ordinance. It is likely that the aquifer is hydrologically connected to the brook and maintains its year-round flow. In addition to the surface water public water supply, there are also four gravel well sites and eight wells operated by the KKWWD. Additional aquifer areas in Wells are along Route 9, in the area along Bragdon Road and near the Sanford town line in the Quarry Road/Perry Oliver Road area.

VIII. Future Land Use

Introduction

This chapter and associated map entitled "Future Land Use Map" outline the recommended long term changes for Wells Land Use and Zoning that should be implemented over time in order to continue in assisting the community to grow, prosper, and develop in a way that the citizens suggested through the Comprehensive Plan planning process.

This future land use chapter and the resulting map should also be periodically reviewed. Strategies found in the Comprehensive Plan should be looked at to determine if they are doing what they were intended to do. Such review should determine if they are they too weak; too restrictive; do they cost too much for the benefit that they bring; have things changed so that the strategies need to be changed? Continually reviewing the Comprehensive Plan should be part of a continuous planning process.

For the purposes of breaking the community into manageable areas for future land use discussions, the attached map illustrates the community in the following corresponding five regions:

Region 1) Seaside Area from the Atlantic Ocean to Route 1

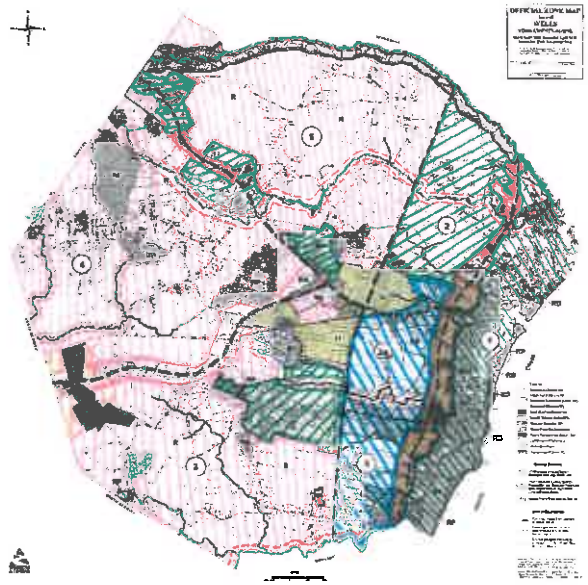
Region 2) Route 1 to the Maine Turnpike bounded by northerly town line of Kennebunk to the southerly town line of Ogunquit

Sub-Region 2A) Route 109 south to Littlefield Road

Region 3) South side of Town, bounded by the Maine Turnpike, Route 9, and the Town of Ogunquit and South Berwick

Region 4) West side of Town bounded by Route 9, the City of Sanford, and Route 109

Region 5) North side of Town bounded by Route 109, the Town of Kennebunk, and the Maine Turnpike



Region 1) **Seaside Area from the Atlantic Ocean to Route 1:**

This region will be the most impacted in the community for years to come. The main reason is sea level rise and storm surge attributed to climate change events. Sea level rise slowly creeps up on us. The increase in water levels is not noticeable at this time, however, looking to the future the increase in water levels is expected to be 3.3 feet by the year 2100. The horizon date of this plan is 2025 and will not have any direct impact on sea level rise; however, planning for sea level rise should begin now. Storm surge on the other hand has impacted the coastline greatly. In more recent times, an increase in storm severity with a slight increase in sea level rise has wreaked havoc on the coast line of Wells. A majority of the area in this region is marsh and wetlands preserved through various methods including the Rachel Carson Refuge and Wells Reserve.

Current Region Use

There are a number of uses in this region with most variation of the uses being located along the Route 1 Corridor. These uses are commercial in nature and relate directly to the tourism and local resident shopping needs. A majority of uses found at the waterfront are supporting marine related uses, some commercial uses, and a large number of high density residential uses.

Future Region Use & Zoning

Based on the predictions found in the *New England Climate Adaptation Project* report for the Town of Wells, it is important that the municipal government start meeting with the property owners of the beach head locations and start having discussions regarding the future of the properties in this area. The Town should consider placing money into a future purchase fund program to buy storm damaged properties as they occur. The Town should also consider rezoning these acquired parcels, on a parcel by parcel basis, into a Resource Protection District. The Town should also consider the establishment of a 3foot freeboard for properties being repaired or improved in this region that meet the definitions under the FEMA flood plain program. An incremental increase in building height restrictions should also be considered in conjunction with sea level rise and future FEMA Map revisions. Properties along the Route 1 Corridor are stable in use and location and not a lot of change is required. However, Wells may want to enter into discussions with the Maine Department of Transportation regarding a transformation of a complete street program which would make a great deal of difference in the feel of development along Route 1. The Town should discourage future development along the waterfront region and encourage higher density of residential development off of the waterfront at higher elevations to compensate for the slowing of development seaside. This region is considered a developed growth area.

Region 2) Route 1 to the Maine Turnpike bounded by northerly town line of Kennebunk to the southerly town line of Ogunquit:

This region includes the properties fronting on the west side of Route 1. This region works in conjunction with Route 1 properties of Region 1.

Current Region Use

This region, with the exception of the property in Sub-Region 2A discussed below, consists of primarily commercial and industrial uses along the entire Route 1 Corridor and in the vicinity of the Route 109 Industrial Park abutting the Maine Turnpike at Exit 19. There is a great deal of property currently located in the Residential A District and in the Rural District. Much of the area can be serviced by public sewer if sewer extensions were to be constructed. Public sewer is more easily available to the south of Route 109. The same holds true with access to the existing public water supply. Mixed uses of commercial, industrial, or higher density residential developments make the most sense in this region due to public utility access.

Future Region Use & Zoning

The community needs to focus a great deal of attention in this region as it is the most visible to the tourists stopping, as well as, passing through. Future development should be contained within this corridor since Branch Brook is located nearby to the North of the Town. Further protection of Branch Brook needs to be considered in order to further protect the water supply which services the community. The Merriland River is also a vital resource in this region of the community which must be protected more than it has been protected in the past. This region is also where the highest concentration of development is, both from a residential stand point, as well as, a commercial stand point. Further development in the Northern portion of region 2 should be discouraged.

The creation of a higher density residential/ mixed use zoning district should be established to consolidate development in this region. This region is served by all utilities and has access to the Route 1 Corridor making this region available to bikers and pedestrians. Wells should focus its attention on the creation of a design review process for building façades in order to replicate a New England aesthetic and design of the region. This will help to restore the New England coastal community appeal to the local citizens and tourism populations. This region is considered a growth area.

Sub-Region 2A) **Route 109 south to Littlefield Road:**

This region of Town is being separated out from the other regions because there have been several analyses completed here over the past several years. These analyses include a Center of Opportunity analysis completed by the Sustain Southern Maine project and a housing analysis conducted by the Workforce Housing Coalition in Southern New Hampshire.

Current Region Use

There is an interesting mix of uses to expand upon and new ideas to consider for the future in this region. This region is adjacent to a train station serving the Amtrak line located opposite the Maine Turnpike Exit 19, several large industrial and warehousing type facilities adjacent to the Maine Turnpike and rail line, mixed housing uses, the Town Hall, the Wells-Ogunquit Community School District campus including the athletic fields, the Wells Public Library and York Hospital. Directly across Route 1 from this region are the Police and Fire Stations. South of Chapel Road on College Drive there are two large seasonal RV Parks and the York County Community College (YCCC). This region currently consists of Residential A, Residential Commercial, General Business, and Rural Districts.

Future Region Use & Zoning

Consideration should be given to utilizing the *Sustain Southern Maine Future Land Use Plan* for the development of a zoning scheme in order to start attracting commercial and higher density residential development to this region of the community. In doing so, there are several advantages to accomplishing this.

1. The community can start to focus its energy on the creation of a Downtown area which currently is not very well defined in Town.
2. The tax base will grow much quicker for Wells if there is a well-defined Downtown area that encourages mixed use developments in a compact and densely developed area.
3. The creation of a Downtown will take a lot of vehicle trips off the Route 1 Corridor as there will be greater pedestrian opportunities.
4. The train station in the adjacent region allows for people to visit Wells by train from away, without worrying about bringing an automobile to vacation in the region, especially if a hotel or bed & breakfast is available to accommodate those visitors within easy walking distances.

As Part of the development of this region, the Southern New Hampshire Workforce Housing Coalition also provided analysis that encouraged affordable workforce housing to be considered in this region. Consideration should be given to working with the YCCC to provide housing that can serve the college as well as summer workforce employment.

While this region currently consists of Residential A, Residential Commercial, General Business, and Rural Districts consideration should be given to the development of a high density residential and commercial mixed use zoning district to encourage the development of a Downtown, while keeping the dimensional requirements to meet the needs of the current property owners and the New England style structures that are desired for this region. This region is considered a growth area.

Region 3) South side of Town, bounded by the Maine Turnpike, Route 9 and the Town of Ogunquit and South Berwick: This region is mostly rural with several resource protected environmental features including Green Brook and Tatnic Brook which flow into the Ogunquit River. This region also borders on the Tatnic Hill region which is part of the Agamenticus to the Sea conservation area. Many of the parcels in this region are large in nature and do not have any major transportation routes other than Route 9 and Route 9B. A large quarry operation is located in the northwesterly quadrant of the region adjacent to Route 9.

Current Region Use

As noted earlier, there are a number of large lots in this region as well as valuable resources. The region also includes a Residential A District consisting of medium density residential areas and an 18 hole golf course. Also found in this region is a very large quarry operation within the Quarry Manufacturing District, a significant amount of Light Industrial zoned property adjacent to Route 9 and the rail line, the Transportation Center serving as a hub for Amtrak service to the region is also found in the northeast corner of this defined region. Currently the zoning in the area is Residential A, Light Industrial, Quarry Manufacturing, and Rural.

Future Region Use & Zoning

A portion of this area should be considered a transitional zone with areas of mixed growth in the Route 9 Corridor. The rest of the region should continue to be rural in nature with the exceptions of the quarry and the area currently in Light Industrial District. Continued expansion of conservation lands in this region should be expanded as well. The purchase or further conservation of lands should be focused around the already conserved areas as well as well as the resource protected areas in order to expand un-fragmented blocks of property. Existing Resource Protection (RP) District areas need to be re-evaluated and remapped based on the most recent State Habitat Maps. Several RP areas should be eliminated and others added and enlarged.

The Residential A District area should be extended to include the existing Old Marsh Development but otherwise remain unchanged in order to accommodate the residential development occurring along Route 9B. The Light Industrial District should be extended as demand requires, as well as the Quarry Manufacturing District if additional land is acquired for the mining operation. The remainder of this region should continue to be preserved as the Rural District, discouraging any

additional density from residential development or increased business activity. This region is a transitional area with a mix of growth and rural areas.

Region 4) West side of Town bounded by Route 9, the City of Sanford, and Route 109:
This portion of Town has a significant amount of newer subdivision lots located near the North Berwick and Sanford town lines. There is a significant amount of resource protected lands along with West Brook and the Merriland River. There are also 2 major utility corridors running in a northeast to southwest direction through this region.

Current Region Use
This region has the most inland resource protected lands in Wells and some newer residential development near the Sanford town line. This region is primarily zoned as Rural with some areas zoned as Residential A and Residential Commercial along the Route 109 Corridor. A great deal of this region has resource protected and conservation lands.

Future Region Use & Zoning
A portion of this area should be considered a transitional zone with areas of mixed growth in the Route 9 Corridor. The existing Residential A District areas and Quarry Manufacturing District area should remain unchanged Continued expansion of conservation lands in this region should be pursued. The Town owns large tracts of land adjacent to the Sanford town line as well as other lands which are conservation ownership. The purchase of or further conservation of lands should be focused around the already conserved areas as well as well as the resource protected areas in order to expand un-fragmented blocks of property. The natural resources and rural areas of this region should continue to be preserved without allowing high density residential development or intensive business activity from occurring. Most of this region is a rural area and should stay as a non-growth area with low density.

Region 5) North side of Town bounded by Route 109, the Town of Kennebunk, and the Maine Turnpike:
This area also hosts a portion of 2 major utility lines as well as the Merriland River Corridor. Probably the most significant part of this region is that it borders with the Town of Kennebunk and the Branch Brook, which is the aquifer serving as the drinking supply to a three town water district (Kennebunk, Kennebunkport, and Wells Water District) and is a vital resource to those communities.

Current Region Use
This region has more traditional older settlement patterns except for several small areas adjacent to the Route 109 Corridor. A resource protection area just south of Route 9A for the Merriland River and Hobbs Pond are critical resources as well as the Branch Brook and the Branch Brook Aquifer . In the center of this region, an 18-hole championship golf course/ residential development was approved and partially started approximately 10 years ago, but remains unfinished. This development has

been reinitiated now that the economy is starting to become stronger. A majority of the land in this region is zoned as Rural with a small amount of land located in the Residential A District and Residential Commercial District along the Route 109 Corridor. The area along the Branch Brook is zoned as the Aquifer Protection District and includes an 800 foot wide protection area.

Future Region Use & Zoning

Future development should be contained to the Route 109 Corridor in this region since the Branch Brook is located to the north of this area of the Town. Further protection of Branch Brook needs to be considered in order to further protect the water supply which services Wells and other communities. The Merriland River is also a vital resource in this area of the community that must be protected at a higher level that has been done in the past. Future development in the Branch Brook Aquifer area should be discouraged. The Residential A and Residential Commercial Districts along the Route 109 Corridor should not be extended in the future due to the proximity of the Aquifer. A majority of the area is in the Rural District and should stay as a low density area. The Aquifer Protection District should be expanded in order to add further protection to the Branch Brook Aquifer. Further protection through Shoreland Overlay District zoning efforts are needed along the Merriland River as well. This region is currently rural in nature and should stay rural in to the future.

Critical Natural Resource (CNR) Areas:

These areas include areas of natural resources that warrant protection from negative impacts of development and include the following:

- Ocean, Beaches, and Coastal Marshes
- Rivers, Streams and Brooks
- Great Ponds
- Large Unforested Freshwater Wetlands
- Resource Protection District areas as identified on the Official Zoning Map
- Significant Wildlife Habitats

(See also "Beginning with Habitat" maps in the Inventory)

Current Use & Zoning

Most of these areas are currently protected by local Resource Protection District zones and Shoreland Overlay zones, or by Federal and/or State law, and are identified by available State Mapping.

Future Use & Zoning

These areas should continue to be protected and in some cases the levels of protection expanded. Locations and boundaries of the natural resource areas need to be updated to reflect the resource mapping provided in the Inventory or as up to date resource mapping from the State is provided. Adjustments to the Official Zoning Map need to be pursued to reflect updated resource areas.

Critical Resource Buffer (CRB) Areas:

These areas are adjacent to Critical Natural Resource (CNR) Areas and provide protection to the natural resources.

Current Use & Zoning

Existing buffer areas include the current Shoreland Overlay zone which varies in width based on the natural resource. Coastal wetlands, beach areas and Resource Protection zones have a 250 foot Shoreland Overlay zone measured from the Resource Protection zone boundary or high water line of a waterbody or wetland. Branch Brook has a 250 foot building setback requirement and restriction for subsurface wastewater disposal systems to be at least 400 feet from the high water line of Branch Brook. Other major rivers and brooks have a 75 foot Shoreland Overlay zone measured from the high water line. Several major rivers and brooks (Ogunquit River, Webhannet River, Merriland River, Perkins Brook and West Brook) also have a 200 foot building setback requirement. Uses vary and are governed by the underlying zoning district.

Future Use & Zoning

The Town should consider increasing the Shoreland Overlay zone from 75 feet to 150 feet along the rivers and brooks which currently have a 200 foot setback requirement and for the easterly portion of the Branch Brook not located in the Aquifer Protection District. The Shoreland Overlay zone requirements for the Town should be updated to be in compliance with the most recent State Guidelines (Chapter 1000) for local Shoreland Zoning. These buffer areas are non-growth areas and are deserving of maximum protection from development to preserve natural resources.

Future Land Map Use Table Legend

Area	Description
Aquifer Protection Area	• Enlarge Aquifer Protection Zone from 800' to 1,000'
Low Density Area	• 100,000 SF / Dwelling density/lot size • Existing Rural Zone and portion of Quarry Manufacturing Zone
Low/Medium Density Area	• 100,000 SF/ Dwelling (no sewer) density/lot size • 40,000 SF/ Dwelling (with sewer) density/lot size • Existing Rural and Residential A Zones
High Density Area	• 20,000 SF or less/ Dwelling (with sewer) density/lot size • Mixed uses • Existing Rural, Residential A and Residential Commercial Zones
Mixed Commercial & Residential Area	• 40,000 SF/ Dwelling (new sewer) density/lot size • 20,000 SF/ Dwelling (with sewer) density/lot size • Existing Residential A, Residential Commercial and Rural Zones
Commercial Area	• Route 1 Corridor – High Density • Existing General Business and Rural Zones
Seaside Area	• High Density Residential, Commercial, Harbor/Marine and Waterfront uses • Existing Residential A, Residential B, Residential D, Beach Business, Harbor, and Resource Protection Zones
Industrial Area	• Commercial and Industrial uses • Existing Light Industrial, Transportation Center, and Quarry Manufacturing Zones
(CNR) Critical Natural Resource Areas	• Ocean/ Beaches/ Coastal Marshes • Rivers/ Streams/ Brooks • Great Ponds • Large Unforested Freshwater (Waterbodies, Resource Protection Zones)
(CRB) Critical Resource Buffer Areas	• Existing and Future Shoreland Overlay Zones • 250 feet from the following: Ogunquit River, Webhannet River, Merriland River, Perkins Brook, West Brook, Branch Brook (non- Aquifer Protection Zone)

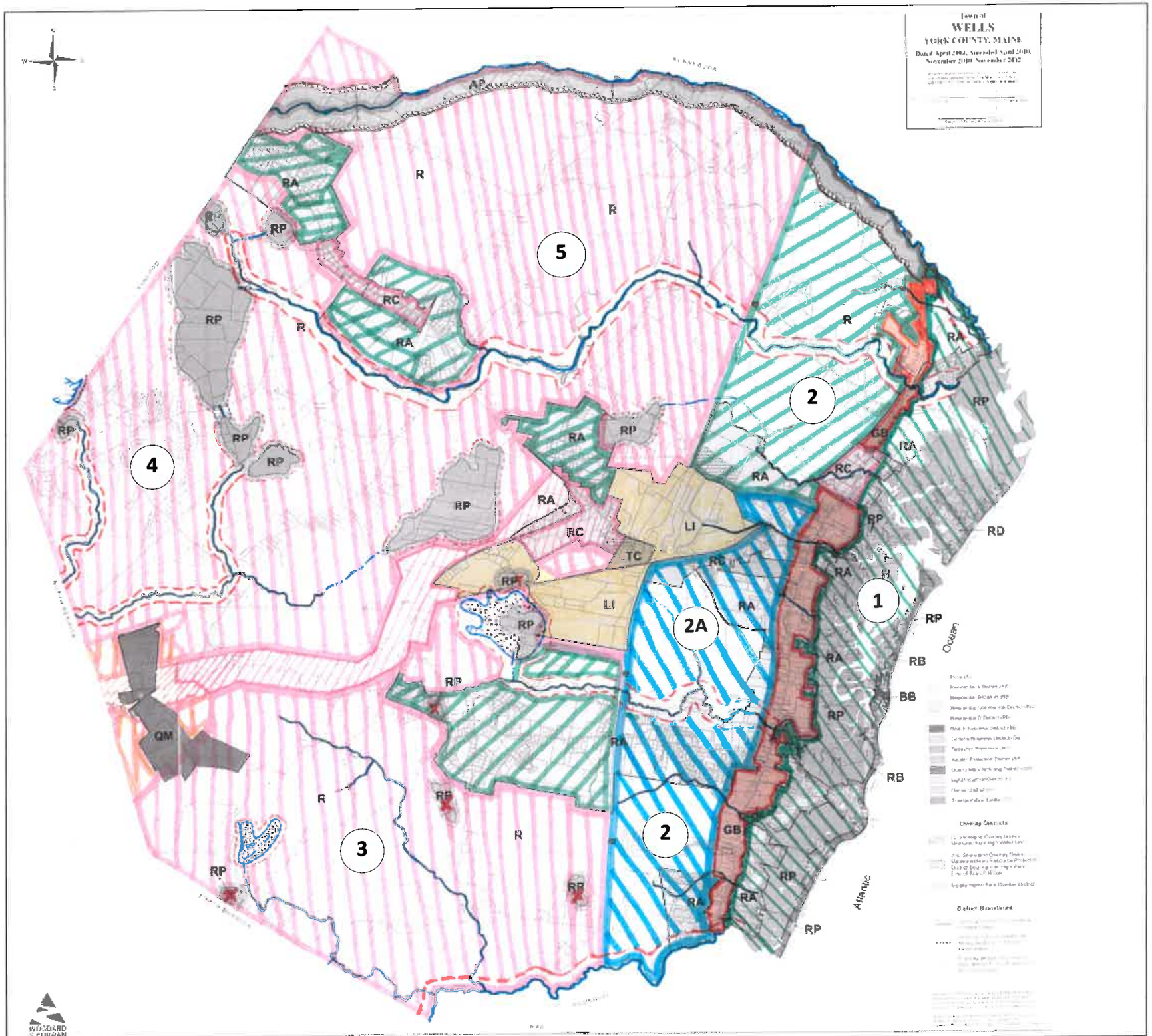
IX. Maps

Map 1	Future Land Use
Map 2	Land Use
Map 3	Building Permits
Map 4	Lodging Properties
Map 5	Public Facilities
Map 6	Cemeteries
Map 7	Conserved Lands Ownership
Map 8	Conserved Lands Aerial
Map 9	Streets and Roads
Map 10	FEMA Firm
Map 11	Water Distribution and Wastewater Collection Systems
Map 12	Watershed Drainage Divides
Map 13	National Wetland Inventory
Map 14	NRCS Soils
Map 15	Wildlife Habitats

Official Zone Map, November 2012

See Inventory Section XIII for 6 Beginning with Habitat Maps:

- Beginning with Habitat (March 2016 by MDIF&W):
  - Water Resources and Riparian Habitats
  - High Value Plant and Animal Habitats
  - Undeveloped Habitat Blocks
- Natural Resource Co-occurrence (April 2016 by MDIF&W)
- Water Resources & Riparian Habitats (April 2016 by MDIF&W)
- High Value Plant & Animal Habitats (April 2016 by MDIF&W)
- Undeveloped Habitat Blocks & Connectors and Conserved Lands (April 2016 by MDIF&W)
- Wetlands Characterization (April 2016 by MDIF&W)
  - Watersheds



Town of Wells Comprehensive Plan

Map 1

Future Land Use

- AQUIFER PROTECTION AREA
- LOW DENSITY AREA
- LOW/MEDIUM DENSITY AREA
- HIGH DENSITY AREA
- MIXED COMMERCIAL/RESIDENTIAL AREA
- COMMERCIAL AREA
- SEASIDE AREA
- INDUSTRIAL AREA

CNR: Critical Natural Resource Areas
- Ocean/Beaches/Coastal Marshes
- Rivers/Streams/Brooks
- Great Ponds
- Large Unforested Freshwater Wetlands (Waterbodies, Resource Protection Zones)

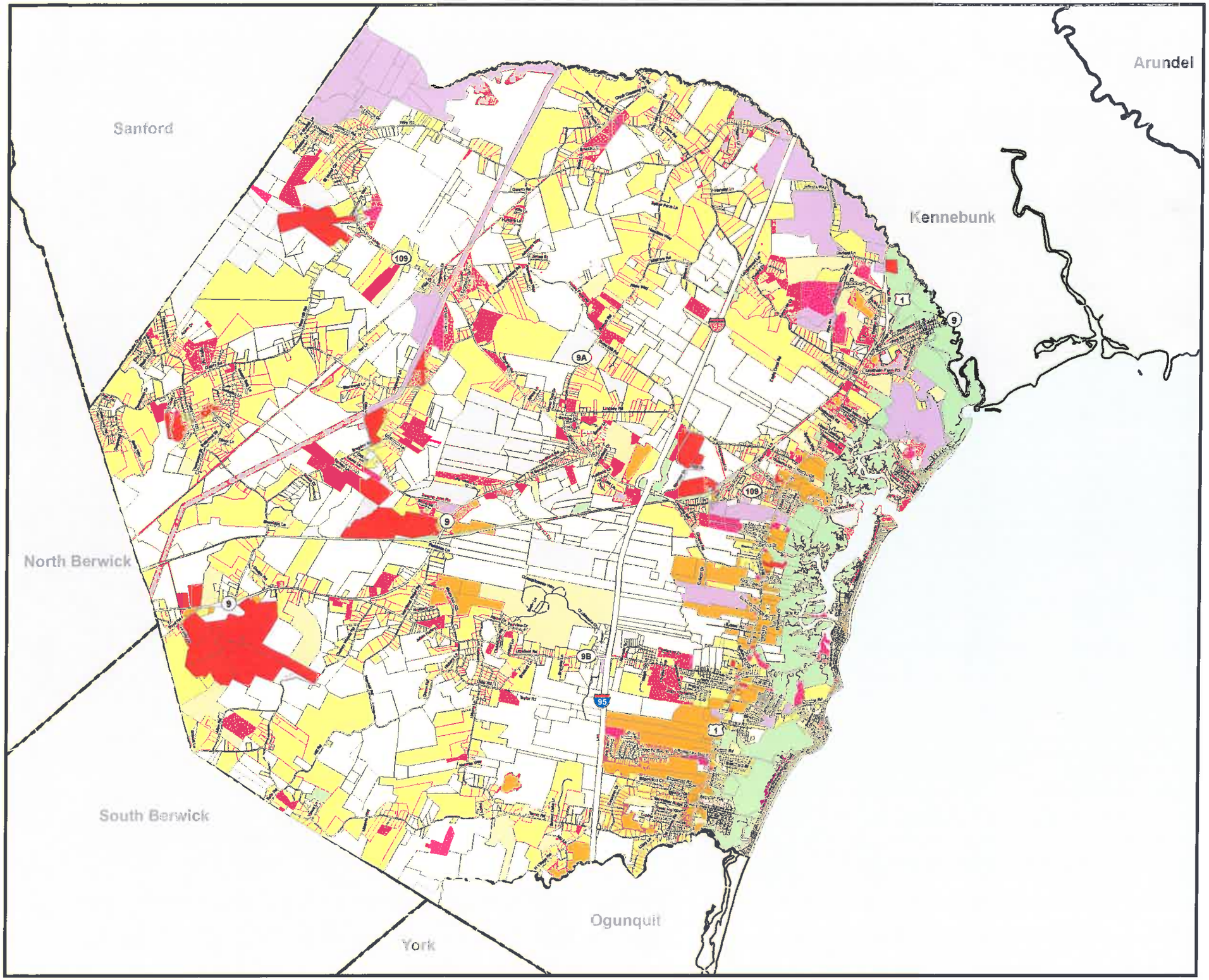
CRB: Critical Resource Buffer Areas
- Existing and Future Shoreland Zones
- 250 Feet from the following: Ogunquit River, Webhannel River, Merriland River, Perkins Brook, West Brook, Branch Brook (Non-AP)

Data provided by the Town of Wells
Notes: Entire parcels are colored according to information on file with the Wells Tax Assessor
Data obtained from the Assessing Database has not been field checked

Town of Wells Comprehensive Plan

Map 2

Land Use



Need Descriptions

Land Use

- Commercial
- Industrial
- Multi-Family or Residential Condominium
- Nonprofit/ Utilities
- Single Family
- State or Federal Property
- Town Property
- Vacant

Data provided by the Town of Wells
Notes: Entire parcels are colored according to information on file with the Wells Tax Assessor.
Data obtained from the Assessing Database has not been field checked.

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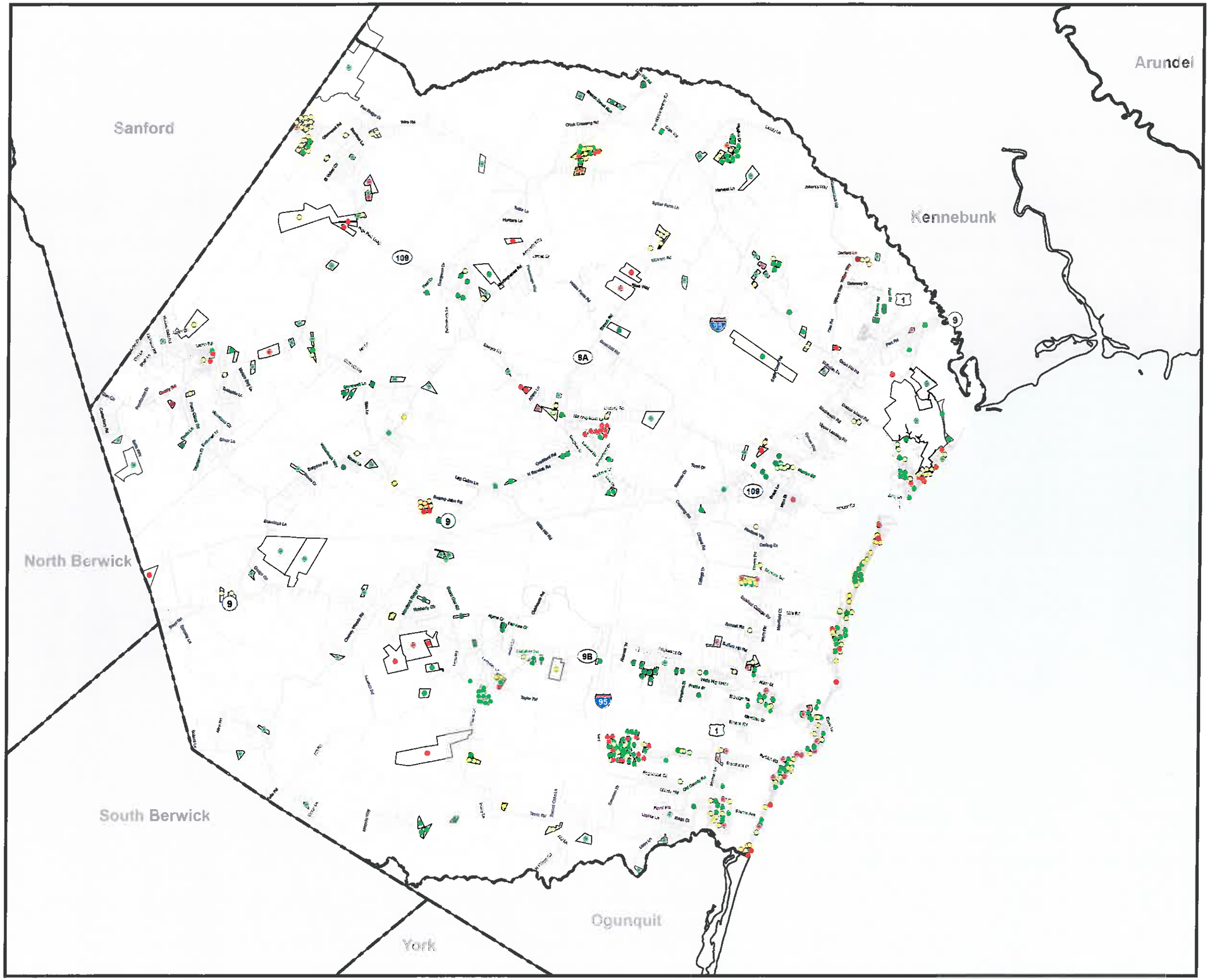
Town of Wells Comprehensive Plan

Map 3

Building Permits



2005-2008

2009-2012

2013-Present

Data provided by the Town of Wells
Notes: Dot symbols are placed in the center of a lots according to information on file with the Wells Code Inforcement Office.
Data obtained from the Assessing Database has not been field checked.

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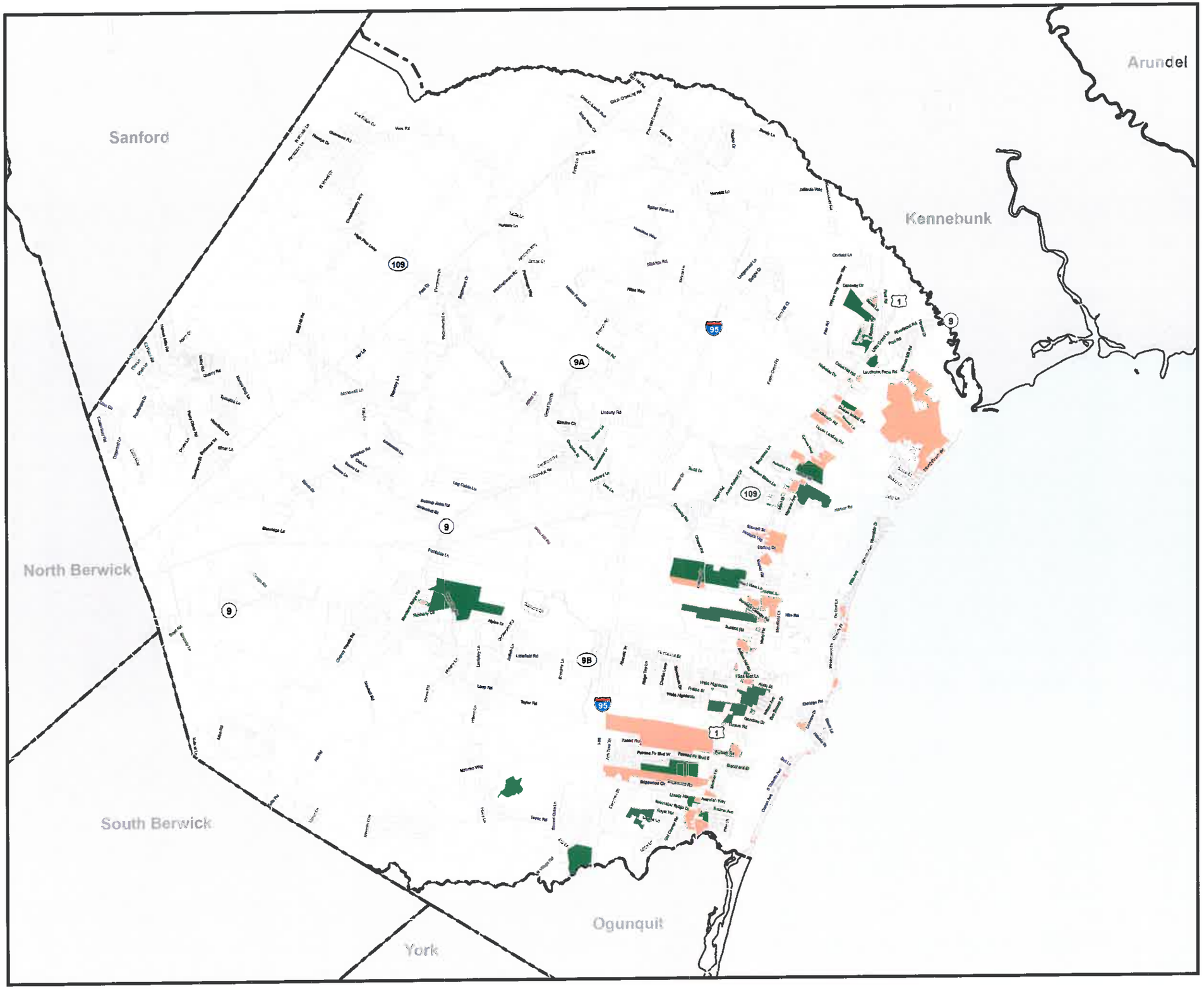
Town of Wells Comprehensive Plan

Map 4

Lodging Properties



Campground

Lodging

Data provided by the Town of Wells
Notes: Entire parcels are colored according to information on file with the Wells Tax Assessor, even if only a portion of the parcel is used for lodging or campgrounds.
Data obtained from the Assessing Database has not been field checked.

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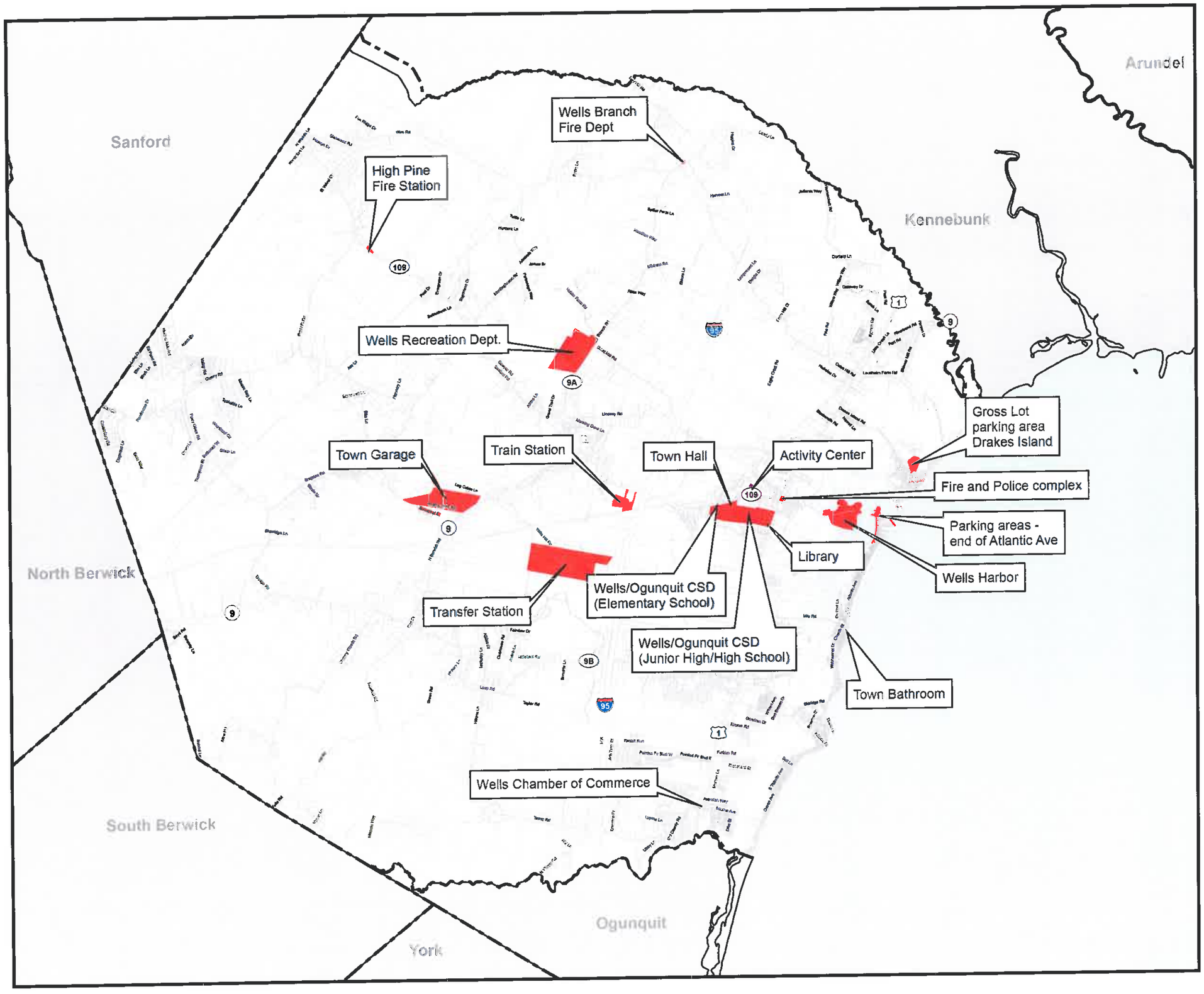
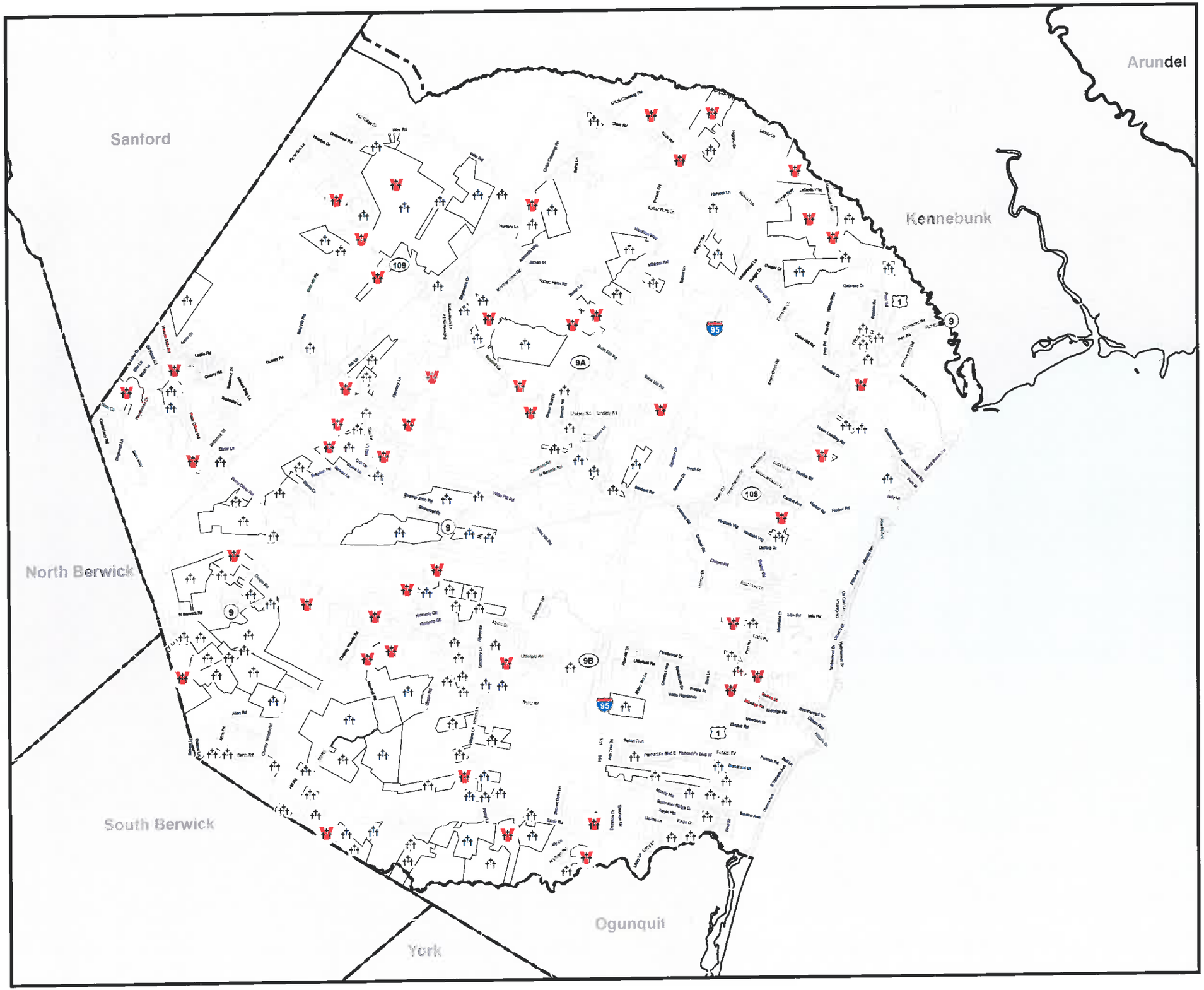
Town of Wells Comprehensive Plan

Map 5

Public Facilities





Town of Wells Comprehensive Plan

Map 6

Lots with Known Cemeteries

- Cemetery
- Cemetery with War Veteran

Data provided by the Town of Wells
Notes: Cemetery locations are approximate and are intended for general reference only.
For more detailed information please contact the Town of Wells.

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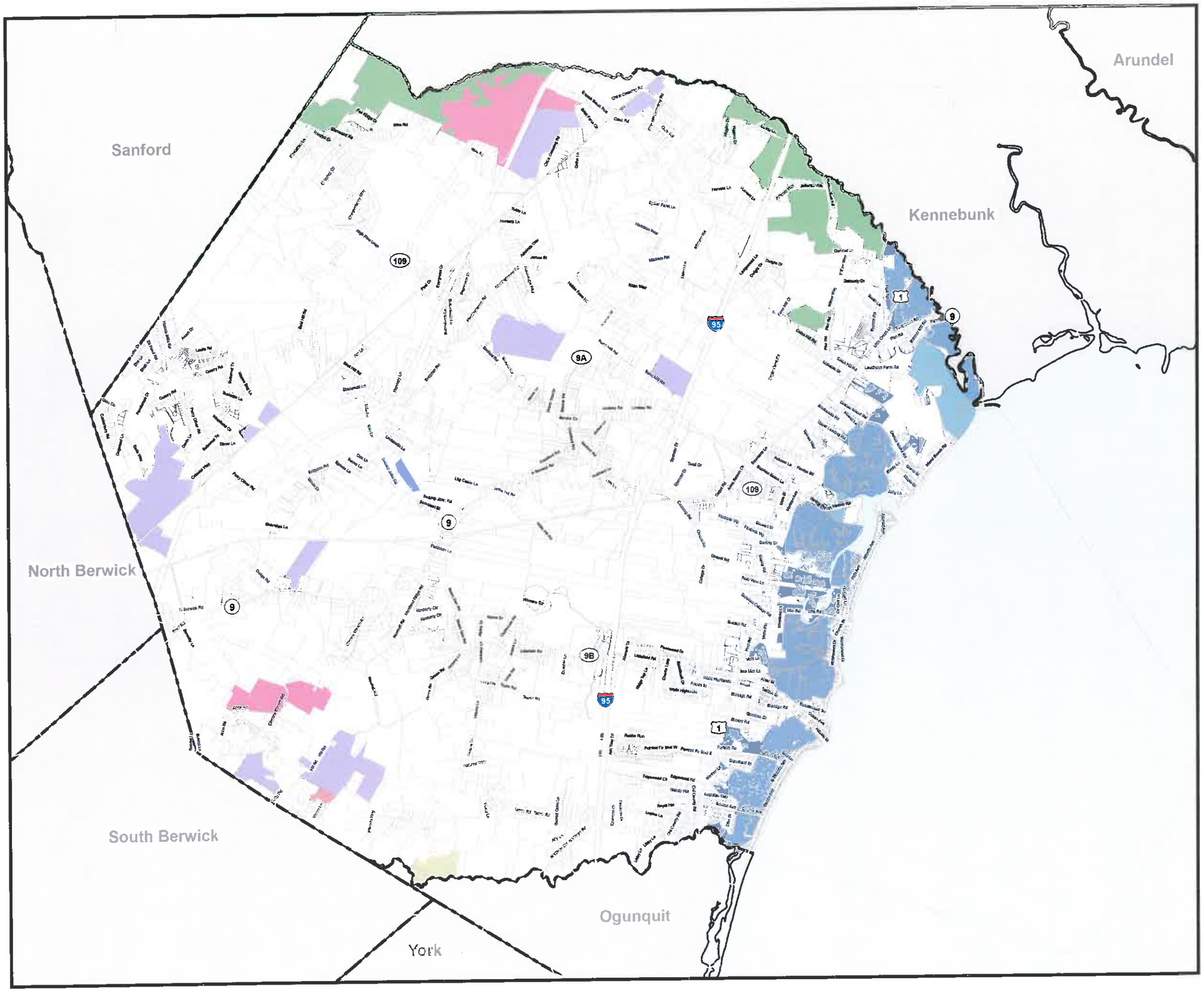
Town of Wells Comprehensive Plan

Map 7

Conserved lands



Conserved Lands

- Great Works Regional Land Trust
- Kennebunk, Kennebunkport and Wells Water Districts
- Laudholm Trust & Wells National Estuarine Research Reserve
- Maine Bureau of Parks and Lands
- Maine Department of Inland Fisheries and Wildlife
- Maine Minor Civil Division
- The Nature Conservancy
- US Fish and Wildlife Service
- York Land Trust, Inc.

Conservation Lands data was created and provided by the Maine Dept. of Agriculture, Conservation and Forestry.

Notes: Conserved Lands was created to provide GIS coverage for the conservation lands database. The ownership lines do not represent legal boundaries nor are the ownership lines a survey. The data contained in Conserved Lands is an inventory only. Users must assume responsibility in determining the usability of this data for their purposes. Data at this scale is suitable for local and regional planning.

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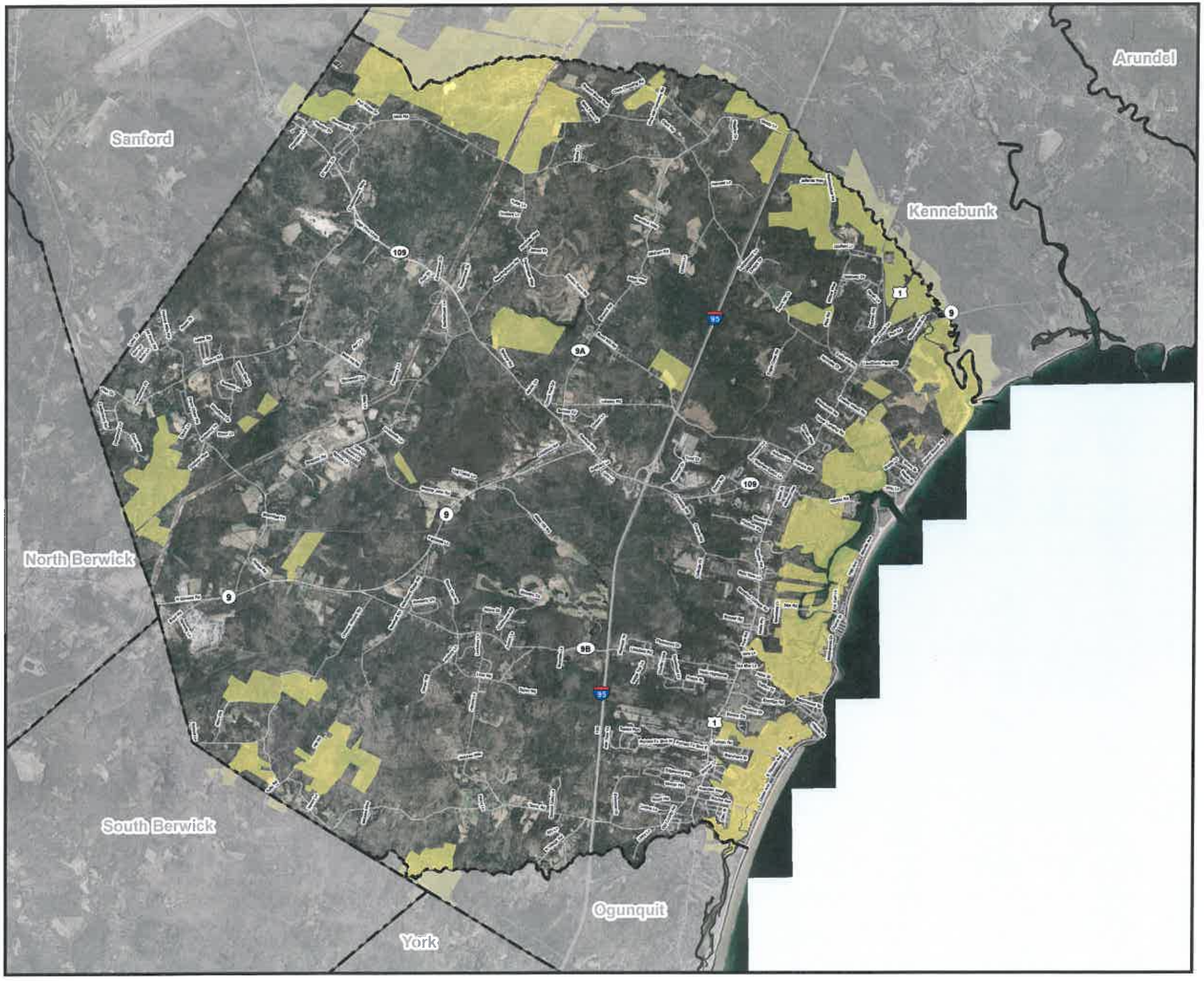

Town of Wells Comprehensive Plan

Map 8

Conserved lands

Conserved Lands

Conserved Lands

Conservation Lands data was created and provided by the Maine Dept. of Agriculture, Conservation and Forestry.

Notes: Conserved Lands was created to provide GIS coverage for the conservation lands database. The ownership lines do not represent legal boundaries nor are the ownership lines a survey. The data contained in Conserved Lands is an inventory only. Users must assume responsibility in determining the usability of this data for their purposes. Data at this scale is suitable for local and regional planning.

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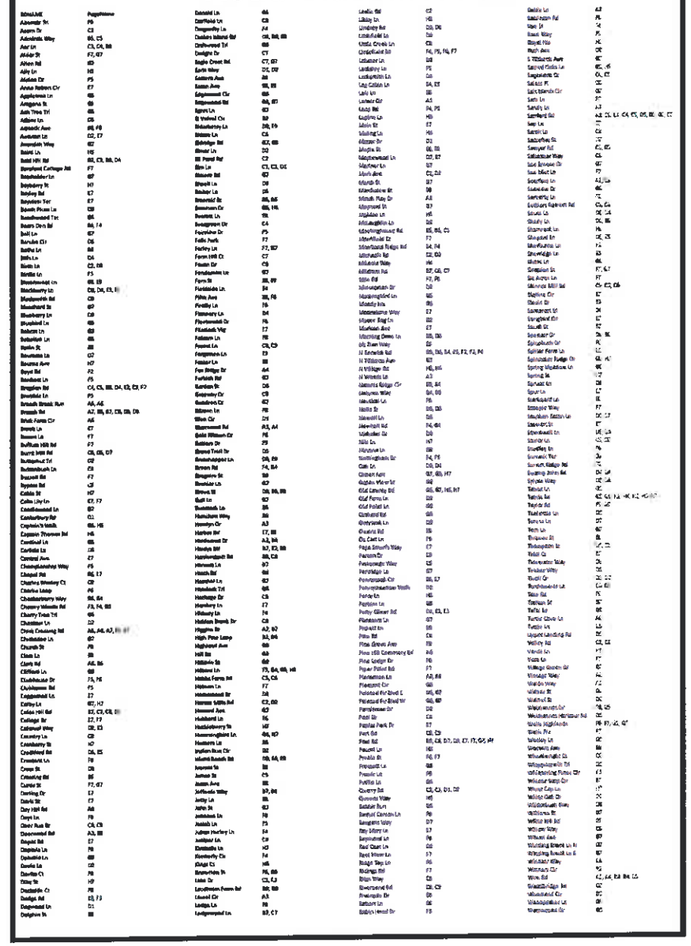
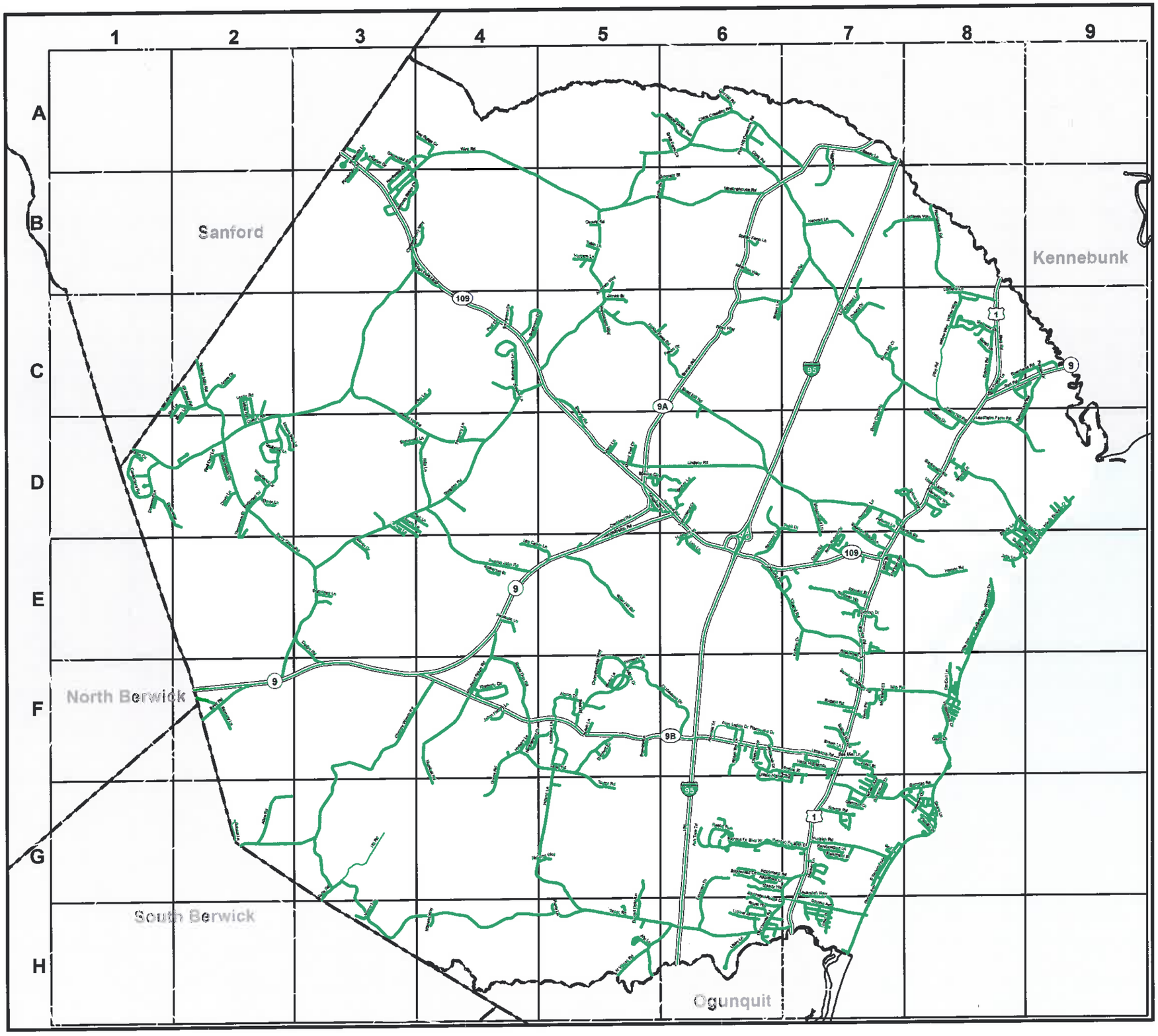
Town of Wells
Comprehensive Plan

Map 9

Road Classification





Data provided by the Town of Wells
Notes: Entire parcels are colored according to information on file with the Wells Tax Assessor, even if only a portion of the parcel is used for lodging or campgrounds.
Data obtained from the Assessing Database has not been field checked.

State
Private
Public

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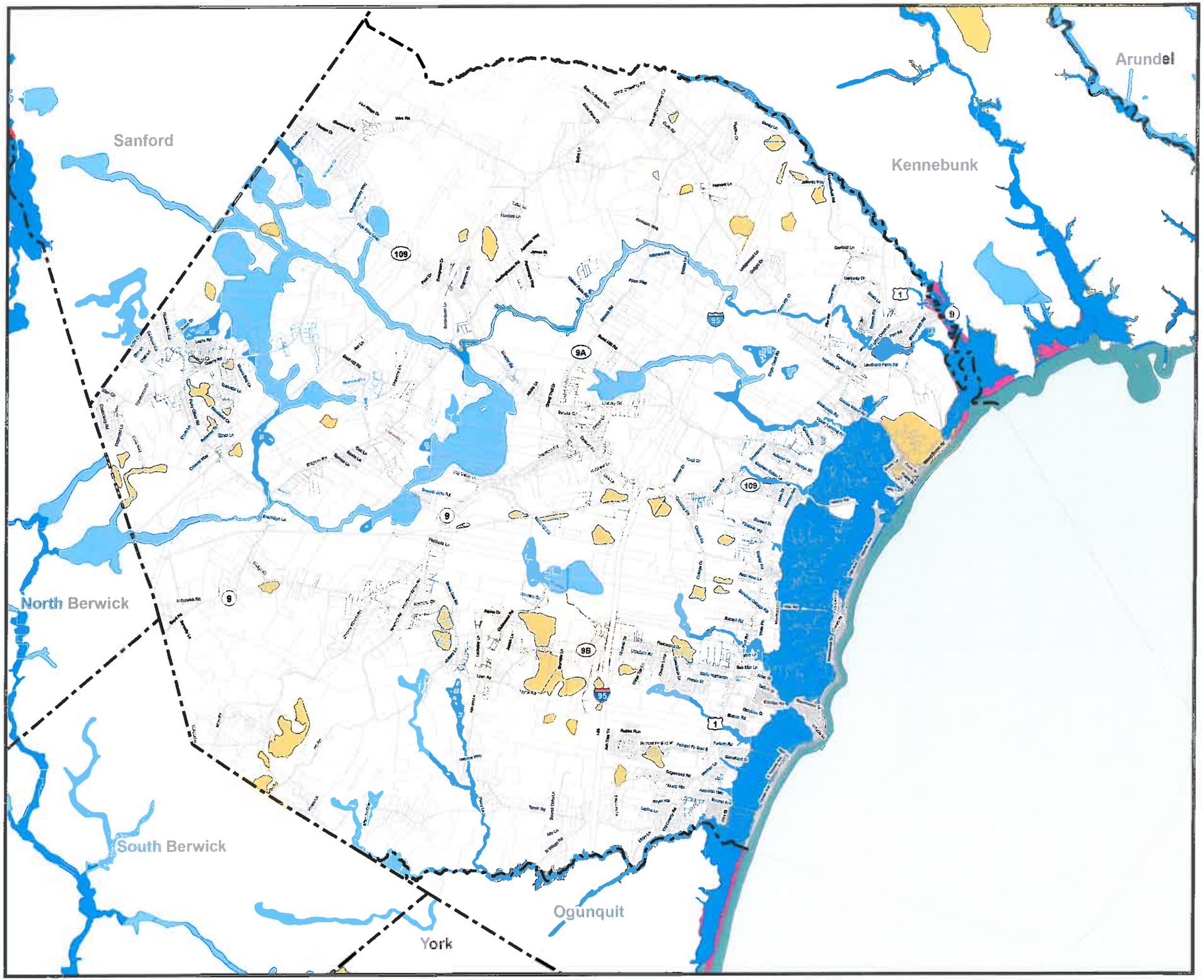

Town of Wells Comprehensive Plan

Map 10

FEMA FIRM

SPECIAL FLOOD HAZARD AREAS INUNDATED BY 100-YEAR FLOOD

- A
  No base flood elevations determined
- AE
  Base flood elevations determined
- AO
  Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
- VE
  Coastal flood with velocity hazard (wave action); base flood elevations determined.
- X
  Areas determined to be outside 500-year floodplain.
- X500
  Areas of 500-year flood; areas of 100-year flood with average depths less than 1 foot Of with drainage areas less than 1 square mile; and areas protected by levees from 100-year flood.

FEMA FIRM data was created and provided by the Federal Emergency Management Agency.

Notes: FIRM is Q3 Flood Data derived from the Flood Insurance Rate Maps (FIRMs) published by the Federal Emergency Management Agency (FEMA) mapped at 1:24000 scale. This data is for use in administering the National Flood Insurance Program; it does not necissarily identify all areas subject to flooding, particularly from local drainage sources of small size or all planimetric features outside Special Flood Hazard Areas.

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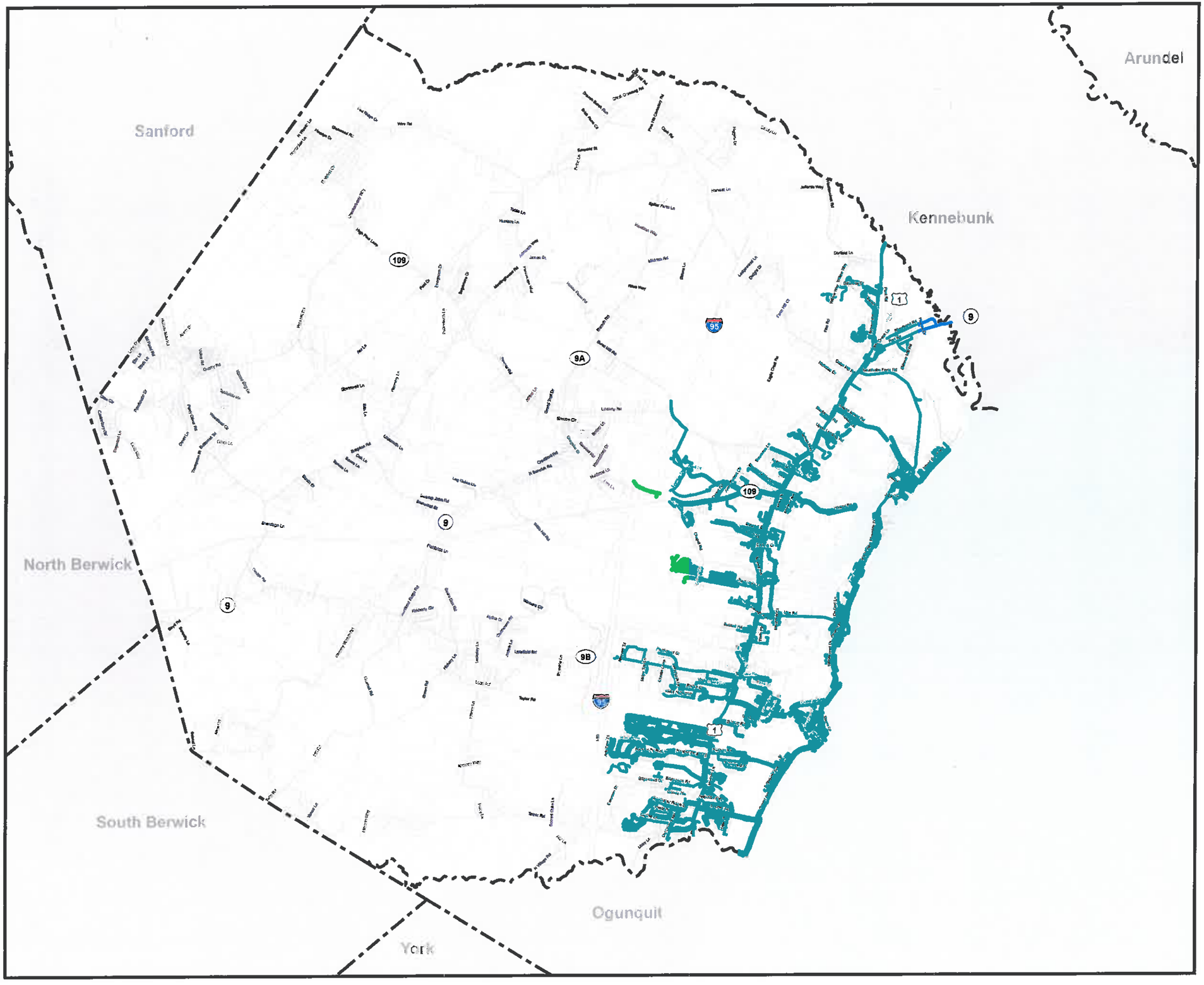

Town of Wells
Comprehensive Plan

Map 11

Existing
Water Distribution and
Wastewater Collection
Systems

As of April 1 2014

Data provided by the Town of Wells, The Kennebunk, Kennebunkport & Wells Water District and the Wells Sanitary District.

Notes: Water distribution systems and wastewater collection systems may change yearly. This map is intented to provide a basic understanding of where water and wastewater is served in the Town of Wells. For more detailed information please contact the Kennebunk, Kennebunkport & Wells Water District or the Wells Sanitary District.

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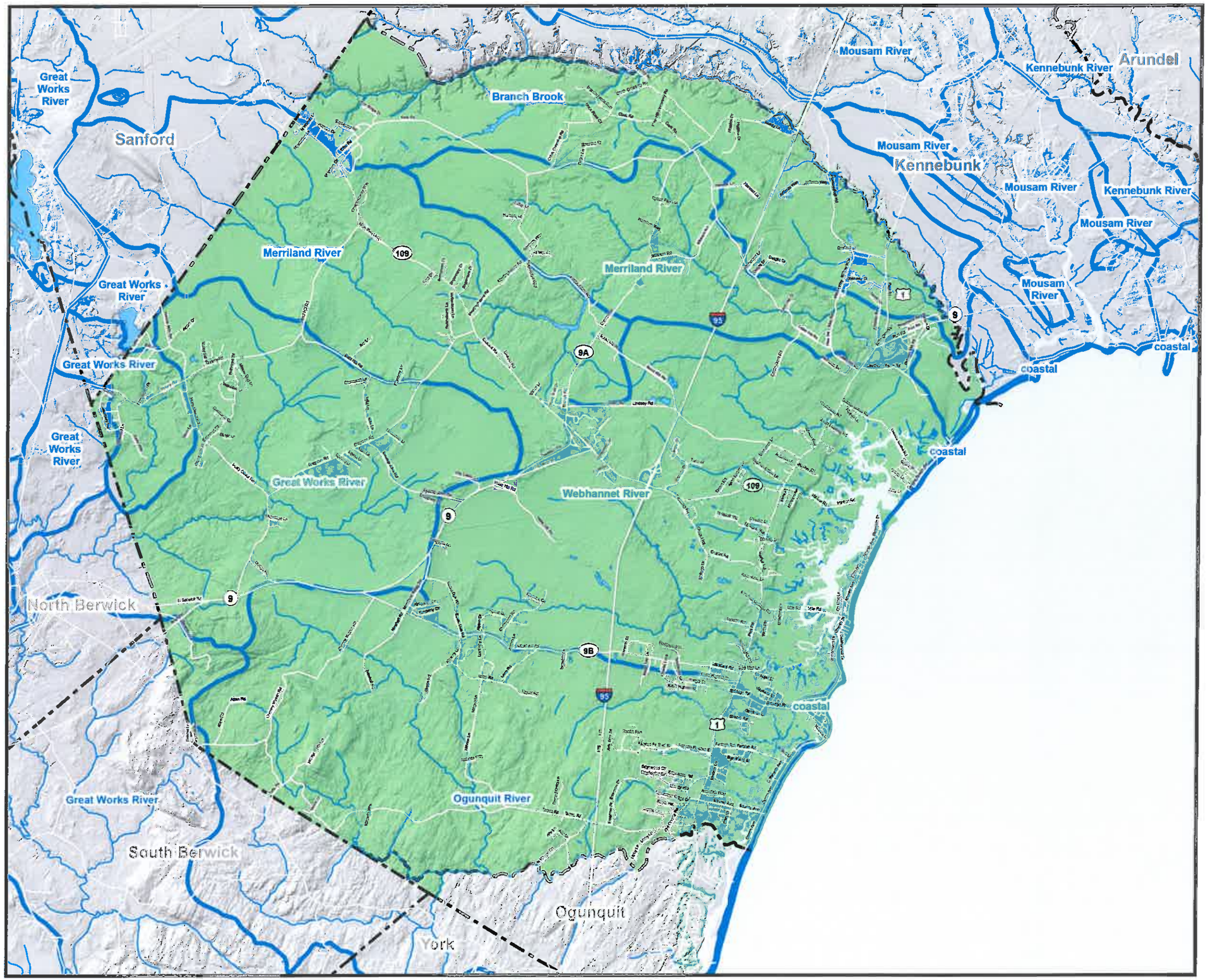
Town of Wells Comprehensive Plan

Map 12

Watershed Drainage Divides



Watershed boundary data provided by the Maine Office of GIS. Notes: Contains watershed boundaries for most ponds and rivers in Maine, based on USGS 1:24,000 scale topography. Drainage boundaries were determined using the 1:24,000 scale contours and were delineated on mylar copies of these maps by USGS staff in Augusta, ME in 1989. The mylars were digitized by Maine Geological Survey (MGS) in 1990 for the Maine Low-Level Radioactive Waste Authority. In 1993 MEGIS staff added the 1:24,000 coastline to this cover to close the coastal drainage.

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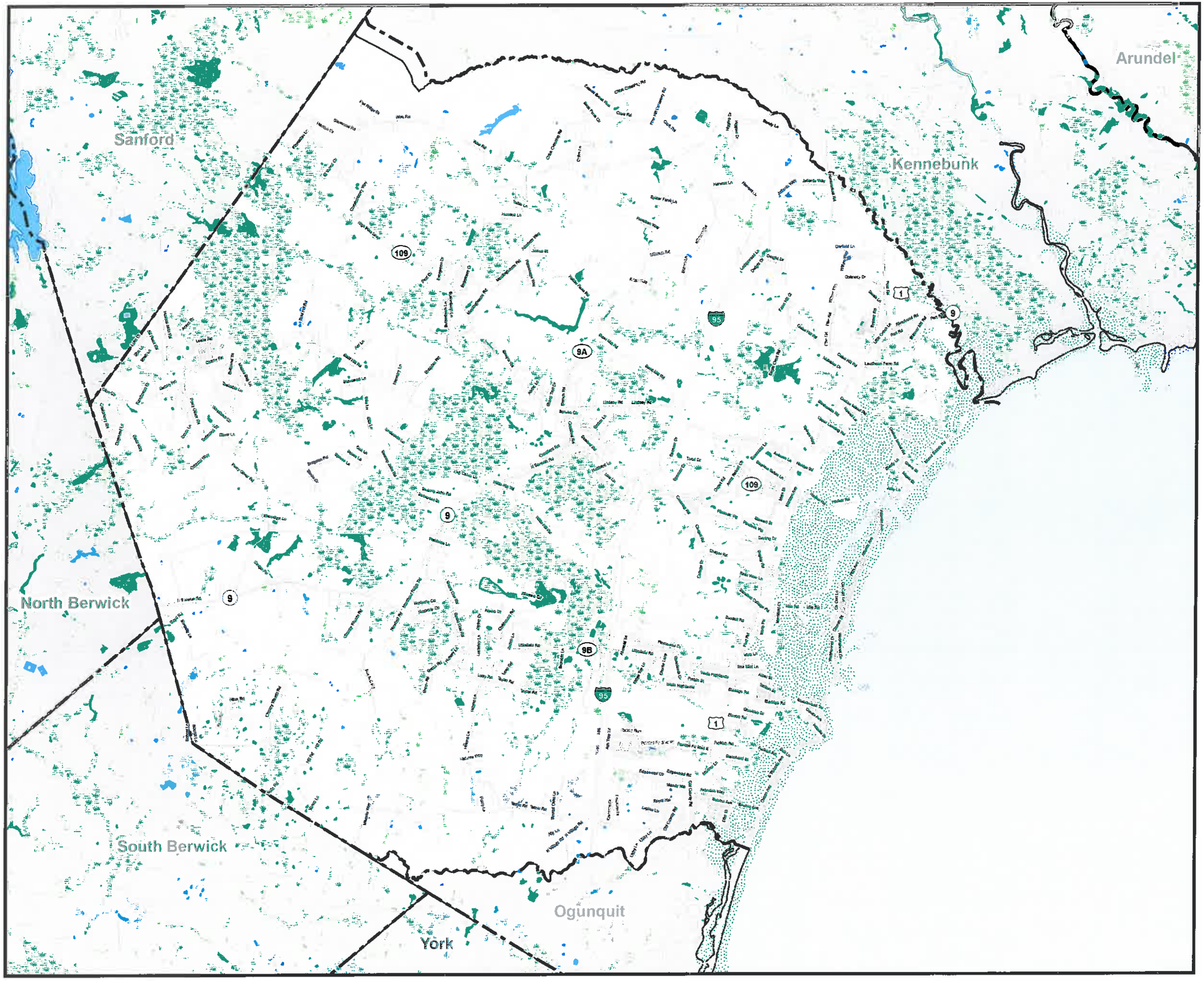

Town of Wells Comprehensive Plan

Map 13

National Wetlands Inventory

NWI Wetlands

- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond or Lake
- Other
- Riverine

National Wetlands Inventory data was created and provided by the U.S. Fish & Wildlife Service. Notes: The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis

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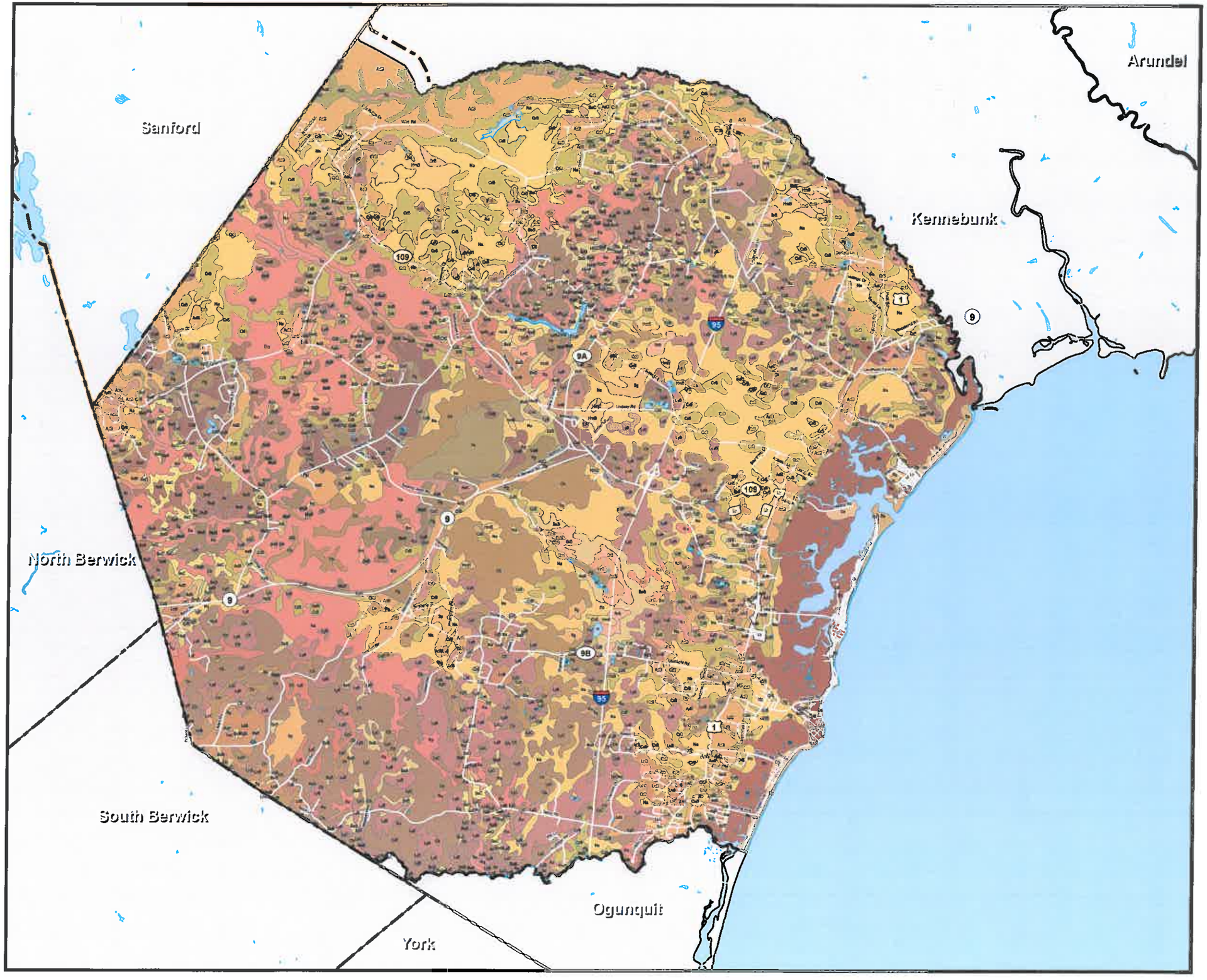
Town of Wells Comprehensive Plan

Map 14



NRCS Soils

- Waponds
- AdB: Adams loamy sand, 0 to 8 percent slopes
- AdC: Adams loamy sand, 8 to 15 percent slopes
- AdD: Adams loamy sand, 15 to 40 percent slopes
- AgB: Adams-Urban land complex, 0 to 8 percent slopes
- AlB: Allagash very fine sandy loam, 3 to 8 percent slopes
- AlC: Allagash very fine sandy loam, 8 to 15 percent slopes
- Ba: Beaches
- BeB: Becket very stony fine sandy loam, 3 to 8 percent slope s
- Bm: Biddeford mucky peat
- BrB: Brayton and Westbury fine sandy loams, 0 to 8 percent slopes
- BsB: Brayton and Westbury very stony fine sandy loams, 0 to 8 percent slopes
- BuB: Buxton silt loam, 3 to 8 percent slopes
- BuC: Buxton silt loam, 8 to 15 percent slopes
- BuD: Buxton silt loam, 15 to 25 percent slopes
- Ch: Chocorua peat
- CoB: Colton gravelly loamy coarse sand, 0 to 8 percent slope s
- CoC: Colton gravelly loamy coarse sand, 8 to 15 percent slopes
- CoD: Colton gravelly loamy coarse sand, 15 to 25 percent slopes
- CoE: Colton gravelly loamy coarse sand, 25 to 45 percent slopes
- CrB: Croghan loamy sand, 0 to 8 percent slopes
- CuB: Croghan-Urban land complex, 0 to 8 percent slopes
- Dm: Dumps
- EmB: Elmwood fine sandy loam, 0 to 8 percent slopes
- EmC: Elmwood fine sandy loam, 8 to 15 percent slopes
- HeB: Hermon fine sandy loam, 3 to 8 percent slopes
- HeC: Hermon fine sandy loam, 8 to 15 percent slopes
- HmB: Hermon very stony fine sandy loam, 3 to 8 percent slope s
- HmC: Hermon very stony fine sandy loam, 8 to 15 percent slopes
- HmD: Hermon very stony fine sandy loam, 15 to 25 percent slo pes
- LnB: Lyman fine sandy loam, 3 to 8 percent slopes
- LnC: Lyman fine sandy loam, 8 to 15 percent slopes
- LnD: Lyman fine sandy loam, 15 to 25 percent slopes
- LyB: Lyman-Rock outcrop complex, 3 to 8 percent slopes
- LyC: Lyman-Rock outcrop complex, 8 to 15 percent slopes
- LyE: Lyman-Rock outcrop complex, 15 to 60 percent slopes
- MaB: Madawaska fine sandy loam, 0 to 8 percent slopes
- Ne: Naumburg sand
- Pg: Pits, gravel
- Po: Podunk and Winooski soils
- Re: Raynham silt loam
- RoC: Rock outcrop-Lyman complex, 8 to 15 percent slopes
- Ru: Rumney loam
- Se: Saco mucky silt loam
- Sc: Scantic silt loam
- SeB: Scio silt loam, 3 to 8 percent slopes
- SeC: Scio silt loam, 8 to 15 percent slopes
- SeD: Scio silt loam, 15 to 25 percent slopes
- Sg: Sebago peat
- SkB: Skerry fine sandy loam, 0 to 8 percent slopes
- SrB: Skerry very stony fine sandy loam, 0 to 8 percent slope s
- SrC: Skerry very stony fine sandy loam, 8 to 15 percent slopes
- Su: Sulfihemists, frequently flooded
- Ud: Udipsamments-Dune land complex
- Ur: Urban land
- Va: Vassalboro peat
- Vp: Vassalboro peat, ponded
- W: Water bodies

Data created and provided by U.S. Department of Agriculture, Natural Resources Conservation Service
Notes:This data set is a digital soil survey and generally is the most detailed level of soil geographic data developed by the National Cooperative Soil Survey. The information was prepared by digitizing maps, by compiling information onto a planimetric correct base and digitizing, or by revising digitized maps using remotely sensed and other information.

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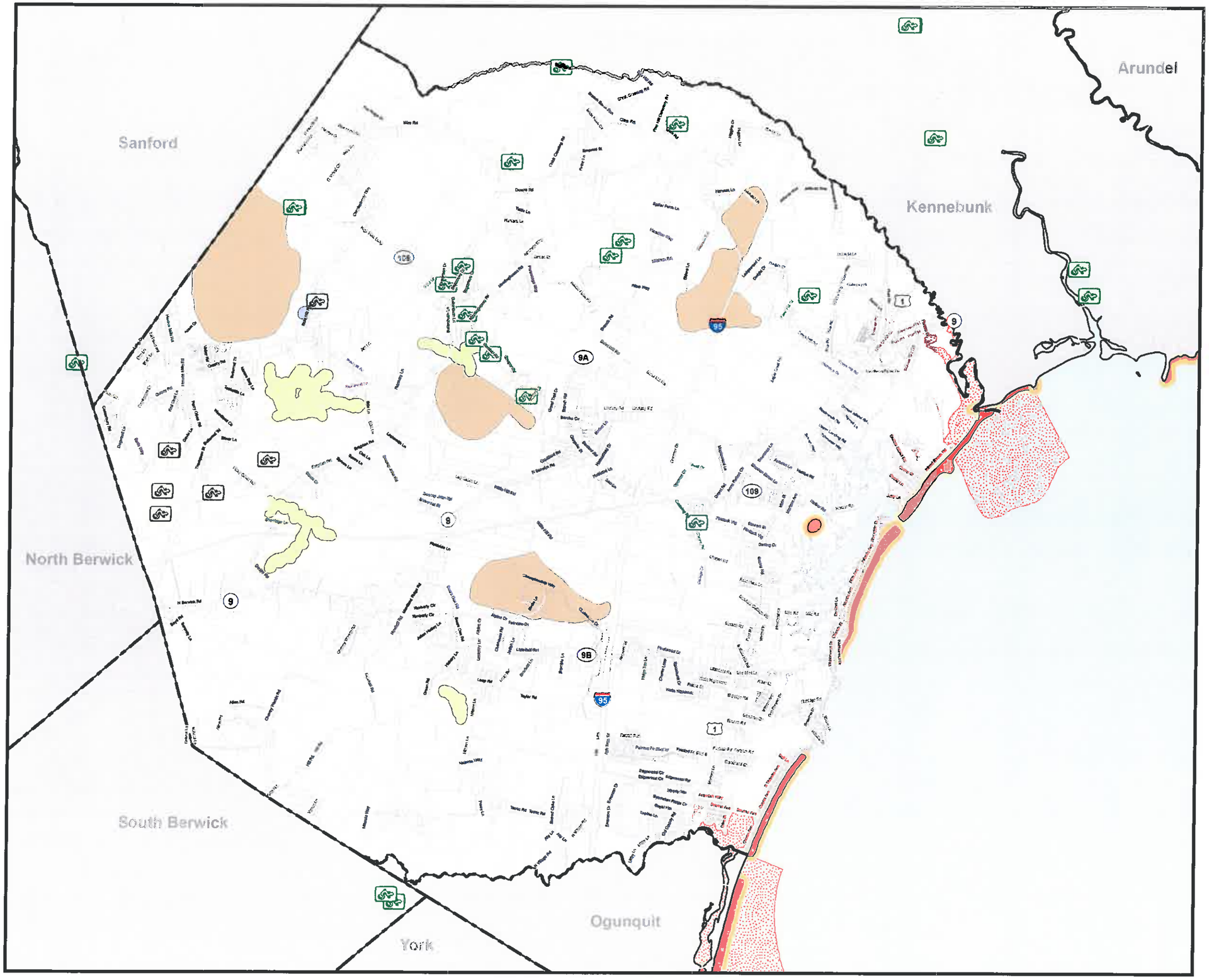
Town of Wells Comprehensive Plan

Map 15

Wildlife Habitiats



- Vernal Pool
- Inland Waterfowl/Wader Habitat - shoreland zoning
- Inland Waterfowl/Wader Habitat - NRPA
- Piping Plover/Least Tern Essential Habitat
- Deer Wintering Areas

Shorebird Habitat

- 100 ft buffer
- 250 ft buffer
- Habitat

Data provided by the Maine Office of GIS
Notes: Entire parcels are colored according to existing land use code on file with the Wells Tax Assessor, even if only a portion of the parcel is used for that purpose. Please note that this will be slightly different then the land use code as used by the Town Zonning code. Esixting Land Use coding was obtained fromt he Assessing Database and has not been field checked.

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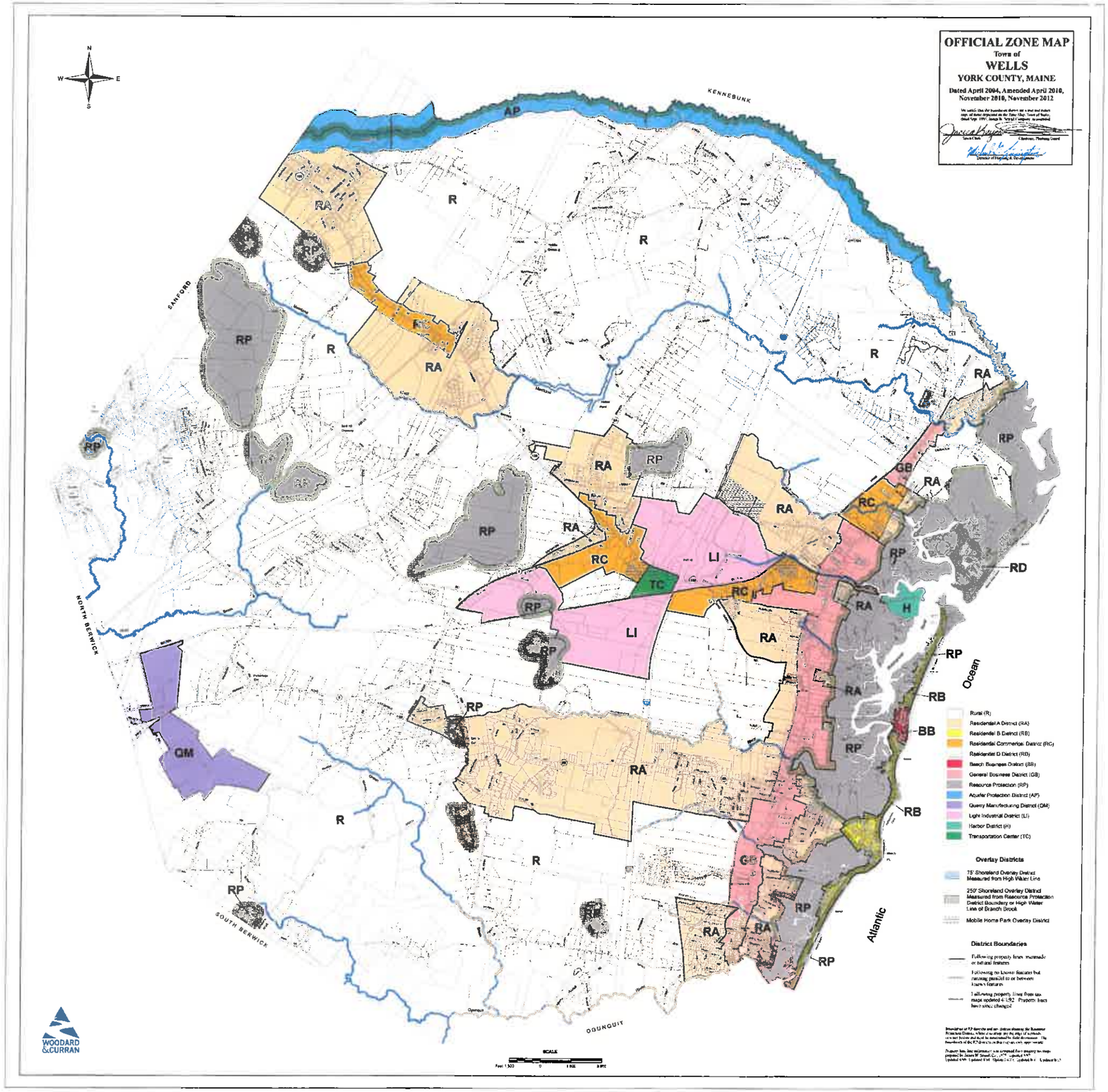

OFFICIAL ZONE MAP
Town of
WELLS
YORK COUNTY, MAINE
Dated April 2004, Amended April 2010, November 2010, November 2012
KENNEBUNK
SANFORD
NORTH BERWICK
SOUTH BERWICK
OGUNQUIT
Atlantic
Ocean
AP
R
RA
RP
RC
RD
RB
BB
GB
LI
TC
H
QM
Rural (R)
Residential A District (RA)
Residential B District (RB)
Residential Commercial District (RC)
Residential D District (RD)
Beach Business District (BB)
General Business District (GB)
Resource Protection (RP)
Aquifer Protection District (AP)
Quarry Manufacturing District (QM)
Light Industrial District (LI)
Harbor District (H)
Transportation Center (TC)
Overlay Districts
75' Shoreland Overlay District Measured from High Water Line
250' Shoreland Overlay District Measured from Resource Protection District Boundary or High Water Line of Branch Brook
Mobile Home Park Overlay District
District Boundaries
Following property lines, manmade or natural features
Following no known features but running parallel to or between known features
Following property lines from tax maps updated 4/1/92. Property lines have since changed
SCALE
WOODARD & CURRAN

X. Definitions & Acronyms

Term	Definitions
Comprehensive Plan	The comprehensive, long range (e.g., ten years), general plan that contains general policies to guide the physical, social and economic development of the Town. The Comprehensive Plan is reviewed and updated as needed.
Construction Plans	Immediate, specific working drawings with detailed specifications for the implementation of an adopted development plan, Site Plan or Subdivision Plan. These plans could be for the construction or development of a street, building, park, etc. The Office of Planning & Development and/or Code Enforcement Office reviews construction plans and development for consistency with an approved development plan, Site Plan or Subdivision Plan and applicable building or other codes and regulations.
Floodplain freeboard	The vertical separation between the designated 1% risk flood elevation and the first floor elevation of a Building
Growth Area	An area that is designated as suitable for orderly residential, commercial or industrial development
High Density	Net land area per dwelling unit of less than 20,000 square feet
Low Density	Net land area per dwelling unit of 100,000 square feet
Medium Density	Net land area per dwelling unit of 20,000 to 40,000 square feet
New England Architecture	Colonial and Victorian styled wood homes, buildings, barns, or barn-like buildings painted in colonial colors
Non-Growth Area	An area that is designated to remain rural with low density
Official Zone Map/ Official Zoning Map	The certified current map as adopted by the Town of Wells voters which depicts Zoning Districts
Rural Area	An area that is designated as deserving some level of regulatory protection from unrestricted development
Rural Character	Retention of fields, farms, woodlands, marshes and low density development

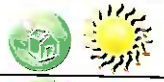
Site Plans	Immediate, specific plans for a site or parcel of land that an applicant proposes to develop. Site Plans require detailed information about the land use, location, development, traffic and circulation, parking, appearance, landscaping, drainage, etc. as described in the Town Land Use Ordinance. These plans are reviewed for consistency with Town Ordinances and applicable State and Federal regulations. The Staff, Staff Review Committee or Planning Board may approve Site Plans.
Small Town Historic/ Traditional	New England seacoast and rural environment in character and appearance
Subdivision Plans	Immediate, specific plan for the legal division and development of a specific parcel of land. Subdivision Plans required detailed information about the street layout, lot size, grading, drainage, impact on water quality, and other information as described in the Town Subdivision and Land Use Ordinances. These plans are reviewed for consistency with the Comprehensive Plan, any applicable Town Ordinances and applicable State and Federal regulations. The Planning Board may approve subdivision plans after a public hearing.
Transitional Area	An area that is designated as suitable for projected residential, commercial or industrial development But with levels of protection for natural and rural resources

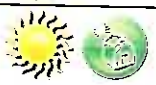
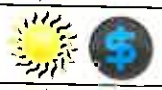
Acronym	Meaning
BwH	Beginning with Habitat
CFWRU	University of Maine's Cooperative Fish and Wildlife
CIP	Capital Improvement Plan
ET	Eastern Trail
FEMA	Federal Emergency Management Agency
GIS	Geographical Information System
GWRLT	Great Works Regional Land Trust
HUD	Regional House and Urban Development
IF&W	Inland Fish and Wildlife
KKWWD	Kennebunk, Kennebunkport, Wells Water District
LMA	Labor Market Area
MaineDOT	Maine Department of Transportation
MDIFW	Maine Department of Inland Fisheries and Wildlife
MHB	Maine Healthy Beaches
MMA	Maine Municipal Association
MNAP	Maine Natural Areas Program
MTA	Maine Turnpike Authority
SMPDC	Southern Maine Planning and Development Commission
WSD	Wells Sanitary District
YCCC	York County Community College

XI. Summary of Goals, Policies & Strategies

The following Goals, Policies and Strategies shall be implemented as determined and assigned by the Town of Wells Board of Selectmen. These Goals, Policies and Strategies follow the icon structure of this Comprehensive Plan Update in an effort to address the issues and concerns our community has identified with regard to our Built Environment, Economic Health, Wellness and Environmental Health. It lays out tasks for the Town to work on and seek to implement and to make Wells a vibrant, active, and healthy place to be.

	Icon	Goals, Policies & Strategies
1.		Consider making revisions to the zoning districts and requirements for those districts identified and described in the Future Land Use Section for recommended changes.
2.		Manage the "Gateways" or major roadway entrances into the Town of Wells to protect their historic community character and ensure that any new development is consistent with this historic character.
3.		Strengthen requirements in the Land Use Code regarding proximity to and impacts on historic and archaeological resources.
4.		Review the findings and conclusions of the Wells Bay Planning Committee to determine what recommendations should be included in the Town's flood-plain management program and public education activities.
5.		Identify residential and commercial properties in the Special Flood Hazard Area that would be appropriate candidates for structural improvements such as elevation and retrofitting to reduce the risk of flood damage.
6.		Consider increasing the Shoreland Overlay District from 75' to 150' along all rivers or streams which currently have a 200' setback requirement.
7.		Consider increasing the Floodplain Freeboard requirement from 1' above the base flood elevation to 3' above the base flood elevation in coastal areas.
8.		Consider modifying the Residential Cluster Development standards to require clustering in certain instances of sensitive environmental areas and eliminate the ability to obtain density bonuses for locating open space in Shoreland Zones and Aquifer Protection Zones.
9.		Create a plan to develop parcel connectivity between the Fenderson-Tilton and Tatnic Road region of the community.
10.		Continue to allow housing for the senior population in growth and high to medium density areas and allow higher densities for this age group than other types of housing through a density bonus program where the facility can be served by public sewer and water.

11.		Work with property owners within the floodplain to identify loan programs for flood proofing or other appropriate mitigation activities for structures located within the Special Flood Hazard Area.
12.		Encourage the use of provisions in the Land Use Code to provide greater opportunities for the rehabilitation of low- and moderate- income properties.
13.		Work with York County Community College and the development community to pursue a student housing development in the vicinity of the college and make available for summertime workforce housing to serve the growing seasonal businesses in the region.
14.		Develop a market plan to encourage landowners to gift their landholdings to the Conservation Commission/Town or the Great Works Land Trust.
15.		Identify a large land holding inside or outside the community that is environmentally secure and could be used as a debris storage facility in case of a catastrophic storm event causes widespread damage.
16.		Promote a mitigation program to provide additional incentives for residential and commercial buildings located in the flood hazard area. For example, if a sufficient number of projects were generated in a localized area, a local contractor may be able to offer a discount to property owners who wish to elevate or retrofit their structures.
17.		Work with public and private groups to establish a permanent heritage trail that would include a map and permanent markers for specific historic properties.
18.		The Town should consider working with the Kennebunk Kennebunkport & Wells Water District to put the same zoning scheme in place on the Wells side of Branch Brook that Kennebunk has for consistency purposes.
19.		Continue to encourage the Conservation Commission to review and comment on public or private plans and make comments to other municipal review Boards and Committees involving open space areas identified via natural resource data, such as high value wildlife habitats.
20.		In the event a proposed subdivision is in an area where high value natural resources exist, the Conservation Commission should make recommendations for the developed and open space locations.
21.		Continue to support the identification and documentation of historic and archaeological resources for purposes of building a written and photographic record that can be used to maintain and protect these valuable community resources.
22.		Continue to employ a land ranking classification system for existing and future Town owned lands for the purposes of conservation, recreation and facility needs.
23.		Consider adopting a specific development plan for Parks and Recreation facilities addressing issues such as maintenance of current facilities and acquisition of new facilities to meet Town needs.
24.		Continue to monitor the CIP programs to assure that long range plans for funding capital needs include such items as fire, police, public works and the purchase of conservation lands and other properties.

25.		Continue the program of installing dry hydrants and certification of existing fire ponds to benefit residential insurance rates.
26.		Ensure that the water quality of Ell Pond is not degraded by working with the City of Sanford to implement a consistent set of standards for water quality protection and Shoreland zoning requirements.
27.		Cooperate with the City of Sanford and Town of Kennebunk to adopt policies and programs to protect the Branch Brook watershed and aquifer, and continue to encourage the purchase of additional lands for protection.
28.		Continue a program to identify, prioritize, and protect high value freshwater wetlands including those containing vernal pools of special significance.
29.		Use the Fenderson Wildlife Commons and other locations for environmental education opportunities for the students of the Wells-Ogunquit Community School District and the public and in conjunction with the Wells Conservation Commission.
30.		Continue and enhance the education and outreach program for the residents and visitors to Wells regarding the Town's historic and archaeological resources.
31.		Work with local, State and Federal conservation organizations such as the U.S. Fish and Wildlife Service to identify and acquire parcels in the Special Flood Hazard Area that have the potential to reduce the risk from flooding.
32.		The Town should consider revisions to the Official Zoning Map to incorporate changes recommended in the Future Land Use Plan to Shoreland zones.
33.		Continue to require all applications for major subdivisions to investigate and map the presence of any significant wildlife habitat and habitat for state rare or endangered species that may not have been previously mapped and require subdivisions to obtain a letter from Maine IF&W.
34.		Continue to recognize and to preserve scenic views along the Route 1 Corridor and other significant locations (see Inventory for existing sites).
35.		Encourage more property owners to place their properties on the local, state and National Register of Historic Places.
36.		Establish a Flood Hazard Mitigation Committee and plan to ensure a mitigation plan remains current. Review this Plan once a year and update it every three years.
37.		Conduct an inventory of all culverts and bridges to determine their adequacy to handle the 100-year flood event i.e., determine their capability to provide for the efficient runoff of peak stormwater discharge and to prevent localized flooding conditions.
38.		Work with critical public facilities such as the Wells Sanitary Sewer District facilities and the Kennebunk, Kennebunkport, & Wells Water District systems are properly flood proofed to prevent the infiltration of floodwaters.

		These facilities should be adequately insured against the risk of flood damage.
39.		Establish a working group among existing committees to prepare a development plan for Bicycle Ways and Trails based on existing regional and local data and plans. The group to consider the existing data and plans and their relationship to existing sidewalks and other pedestrian ways and to review local or state roadway improvements and where possible connections to existing trails in Town. Improvements to eventually connect with the Eastern Trail. Said pedestrian /bicycle paths shall be for non - motorized vehicles, i.e., no ATV, 4 wheelers, mini-bikes, etc.
40.		Wells and the Southern Maine Planning and Development Commission should establish a regional standing committee to meet periodically with Sanford, Ogunquit, Kennebunk, North and South Berwick(s) to discuss common issues and how they may work together to achieve common ground on many issues.
41.		Continue to support the farmers 'market community and develop programs that will encourage local farm to table programs.
42.		Encourage educational programs that use a variety of community resources including conservation lands, trails, historic resources, community facilities and local businesses.
43.		Continue to plan and manage publicly owned lands to meet Town needs and where possible maximize their asset and environmental resource value.
44.		Wells, Ogunquit and Kennebunk should consider a joint committee on Sea Level Rise since they all share a common bay.
45.		Wells should continue to engage in a discussion regarding the purchase of dredge equipment with other southern Maine communities in order to realize a cost savings of dredging to the harbor.
46.		Work with other communities to create a regional non-profit housing organization to foster affordable housing programs for low-and moderate-income families. Such a group could: a. Ensure that local land use regulations do not present a barrier to the development of affordable housing. b. Work cooperatively with nonprofit organizations and private developers to provide opportunities for affordable housing. c. Seek loans and grants from the State of Maine; d. Work with area banks through the Community Reinvestment Act.
47.		Continue to monitor the space needs of Town Hall and consider future expansion as the need arises, to ensure high quality and efficient level of service.

48.		Continue to review the needs of all community facilities to determine the need for replacement or additions including, but not limited to: Fire Substations, Police Station, Highway Department and Recreational facilities.
49.		Continue to monitor all Town-owned properties and resources to ensure there is a rational basis for capital maintenance, repairs and acquisition.
50.		Program public facility improvements through a Capital Improvement Program (CIP) based upon the policies and actions from this Comprehensive Plan and an appropriate system of priorities.
51.		Work directly with businesses and community groups of Wells to determine areas where cost sharing for municipal facilities and services may be appropriate.
52.		Establish a committee to explore ecologically oriented tourist opportunities. Said committee should include representatives from business and natural resource oriented organizations such as the Wells Conservation Commission, Wells National Estuarine Research Reserve, Laudholm Trust, Nature Conservancy, Great Works Regional Land Trust, the Rachel Carson National Wildlife Refuge and the Mount Agamenticus Regional Trust.
53.		Identify areas in Town that would be suitable for future wholesale business, research and development, professional offices, limited retail, light industrial or low-impact businesses such as at the Crediford Road/Route 109/9 area.
54.		Continue to maintain Wells Harbor as an active harbor that provides access, service and mooring facilities for both commercial, marine-related vessels and recreational boats.
55.		Consider making revisions to the ordinances to prohibit the construction of septic systems within Shoreland Overlay Districts except in the case of lots of record.
56.		Consider updating the Town Ordinances to reference the most current groundwater aquifer maps produced by the State of Maine.
57.		Consider adopting an ordinance requiring a permit to blast bedrock for construction projects. The permit should include abutter notification, pre-blast surveys to be conducted and seismic monitoring reports.
58.		Consider making the groundwater aquifer maps available from the State Geo-Library, if available, as a GIS layer on the Town GIS Mapping website as an informational resource for the review of site plans, subdivisions and building permits.
59.		Consider if Shoreland Overlay zones should be extended along perennial brooks (blue lines on USGS Maps).
60.		Consider creating Shoreland Overlay zones along brooks that connect two Resource Protection zones.
61.		Consider modifying Shoreland Overlay zoning restrictions to allow clearing vegetation for agricultural uses.

62.		Consider defining the edge of the Protected Natural Resource from the top of an adjacent steep (>2 to 1) slope instead of the high-water line.
63.		Consider allowing the Planning Board to adopt architectural design guidelines for commercial developments to encourage and promote construction that is in character and appearance with New England Colonial and Victorian styled wood homes, buildings or barns.

XII. Comprehensive Plan Inventory

The Comprehensive Plan Inventory is a separate compilation of various resource materials used in the research and formulation of this Comprehensive Plan Update. The inventory consists of various studies, data sets, reports, mapping, etc. produced by a myriad of local, state and federal agencies, schools, and research groups as compiled by SMRPD in 2014 for the Town. It is the basis of many of the facts, goals and policies incorporated and summarized within the Comprehensive Plan Update.

The following Index outlines the content of the Inventory.

Part 1:

I. **Historic and Archaeological Resources by SMPDC**
- Early History
- Types of Resources for Growth Management Planning
- Historic Resources and Structures
- Local Historic Preservation
- Perkins Cove/ Mousam River Heritage Coastal Area
- Archaeological Resources
- Prehistoric Archaeological Sites
- Cultural Resources
- Town of Wells Cemetery List

II. **Year-Round Population Trends by SMPDC**
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- Year-Round Population Forecasts
- Seasonal Population Forecasts
- Graphic Profile
- Demographic and Income Profile

III. **Local Economy by SMPDC**
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- Commuter Trends
- The Employment Base of Wells
- Retail Sales
- Wells Employees by Industry
- Wells Major Employers Data
- Wells Commuting Data
- Wells Taxable Retail Sales
- Unemployment Rates
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- Operating Revenues and Expenditures
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- Investment Policy
- Fund Balance Policy
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  - Town 2015 CIP Proposed Budget

IV. **Housing by SMPDC**
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- House Stock Characteristics
- Housing Conditions
- Housing/Affordability
- Households In Need of Affordable Housing
- Future Affordable Housing Needs
- Statistical Analysis
- Wells Village Land Use Policies Study by Sustain Southern Maine, 2013
- Workforce Housing Charrette by Workforce Housing Coalition, 2013
- Housing Facts for York County by Main State Housing Authority

V. **Land Use by SMPDC**
- Residential Development
- Commercial/Industrial
- Open Space, Recreation & Natural Resource Land Use
- Land Use and the Transportation Connection
- Land Use and Sea Level Rise
- Future Land Use Regions

VI. **Transportation by SMPDC**
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- The Wells Road Network
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    - Functional Classification
    - Local Roads Assistance Program
    - Capital Improvements
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- Pedestrian & Bicycle Infrastructure
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- Parking
- Other Modes of Transportation
    - Public Transportation
    - Rail
    - Air
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- Maine DOT State Compact Area Map
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- Downeaster Data

VII. **Critical Natural Resources by SMPDC**
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- High Value Wildlife and Fisheries Habitat
- Scenic and Coastal Areas
- Floodplains
- Climate Change
- Marine Resources/ Harbor Facilities
- Open Space
- Watersheds

VIII. **Health, Wellness & Community Services by SMPDC**

IX. **Public Facilities by SMPDC**
- Town Hall
- Fire Department
- Police Department
- Wells EMS
- Public Works
- Transfer Station
- Library
- Education
- Cemeteries
- Harbor
- Wastewater Treatment System
- Water Service

X. **Maps by SMPDC, 2012-2014**
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- KKWWD District Owned Watershed Lands
- Water Distribution and Wastewater Collection Systems
- National Wetlands Inventory
- NRCS Soils
- Watershed Drainage Divides
- FEMA FIRM
- Lodging Properties
- Conserved Lands (aerial)
- Conserved Lands
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XI. **Comprehensive Plan Survey and Results**
- 2014 Survey and Results
- 2016 Survey and Results

XII. **Significant Sand and Gravel Aquifers Map**

XIII. **Beginning with Habitat**
- Kennebunk Plains and Wells Barren Habitat Information
- Mount Agamenticus Habitat Information
- Wells and Ogunquit Marsh Habitat Information
- Beginning with Habitat Maps

XIV. **Public Poll Overview on Climate Change, NECAP**

Part 2:

XV. **Maine Healthy Beaches 2013 Report to US EPA**

XVI. **Wells National Estuarine Survey & Results**
- Choices for Our Land and Water Survey2014
- Choices for Our Land and Water Survey Results by Clark University, 2014
- Sustaining Coastal Landscapes and Community Benefits – Final Report, 2015

XVII. **Summary Climate Change Risk Assessment, 2014**

XVIII. **2013 Wells Harbor Management Plan**

XIX. **Marsh Walk Feasibility Study, 2013**

I. Historic and Archaeological Resources by SMPDC

- Early History
- Types of Resources for Growth Management Planning
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- Perkins Cove/ Mousam River Heritage Coastal Area
- Archaeological Resources
- Prehistoric Archaeological Sites
- Cultural Resources
- Town of Wells Cemetery List

Historic and Archaeological Resources

EARLY HISTORY

Wells was incorporated in 1653 as the third town in the Province of Maine. Prior to this time, there were early settlements on or near the beaches by traders and fishermen. By 1641 Edward Littlefield established a permanent home, sawmill and gristmill at the site of the Webhannet River Falls. Reverend John Wheelright soon followed and in 1642 established a church and a small settlement.

The early settlers took advantage of the numerous rivers and brooks in the area by establishing mills that served clusters of nearby farms. Stores, blacksmith shops and post offices soon grew up in these population concentrations. Original land grants extended 2.5 miles inland from the upper edge of the marsh to what today are Ridge and Brauch Roads. Farmsteads, orchards and pasture lands, hay fields and wood lots were soon developed. Just as the town began to grow, the Indian Wars (first the King Phillip's War and then the French & Indian War) which lasted from approximately 1675 until the mid 1700s took a toll on the residents and stunted the growth of this newly formed community.

Following the Revolution and the War of 1812, Wells prospered from fishing and shipping trade that sent mainly timber to Europe and imported such products as sugar and rum from the West Indies and Europe. This period flourished until after the Civil War. Although overland travel was difficult, by 1825 there were eight taverns serving stage coach travelers. The railroad arrived in the 1840s providing local employment and accessibility from all directions. The rails soon displaced much of the freight transport previously carried by ships. It was during this period that businessman and other residents from inland cities in Maine, New Hampshire and Massachusetts began to discover Wells' beaches during the summer months. By late in the century, the "tourism" business began to materialize. This trend expanded during the 20th century and today Wells has a significant tourist economy.

Although there are remnants of the Wells early history, much of the natural resource-based farming and timber economy has given way to the tourist landscape and residential growth. However, the early settlement patterns have left Wells with a number of village areas including High Pine, Tatnic, Wells Branch and Merriland Ridge.

Types of Resources for Growth Management Planning

The Maine Historic Preservation Commission in establishing guidance to local communities for addressing historic resources has recommended three types of historic and archaeological resources. These are:

- G Historic structures-buildings and other above-ground structures; Prehistoric archaeological sites-Native American sites prior to European arrival; and
- H Historic archaeological sites-mostly European, after written records.

The following discussion accounts for each of these resources in Wells.

Historic Resources and Structures

The town of Wells, settled in 1640/1 and incorporated in 1653, has a wealth of historic resources as a result of its longevity as the third oldest town in Maine. Only during this past century have many of these resources been recognized. For example, the Storer Garrison House was listed as significant in 1936 when it was noted by the National Park Service in its Historic American Building Survey and is noted in the National Archives.

It was not until 1978, when the Wells Historic Preservation Committee was formed by a vote of the town and an inventory of the significant old buildings was begun, did the actual nominations to the National Register of Historic Places begin. With the assistance of the Maine Historic Preservation Commission in January 1980, 15 cape-style homes were accepted in a thematic grouping known as the "Early Capes of Wells, Maine." These were scattered throughout the community and were significant for their early 18th century architecture. See Table 22.

Since 1990, three additional properties have been added to the register, bringing the current total to 20. These properties were added when the Historical Society of Wells & Ogunquit added the Historic First Church-now the Meeting House Museum in 1992; the Laudholm Trust had the Wells Reserve Research Facility added and the Wells Historic Preservation Commission was instrumental in the placement of the Division 9 Schoolhouse. The other two are the Libby Tea Room/Restaurant and a Paleo-Indian site on the Spiller Farm.

The National Register designation denotes a property as a significant resource. It does not provide protection unless State or federal funding is involved in a project, such as road widening. Any such project must recognize the historic significance of the National Register resource and be consistent with federal guidelines.

Properties on the National Register of Historic Places

1.	Storer-Hennessey Homestead	433 Branch Road
2.	Wells Branch Baptist Church Parsonage	1384 Branch Road
3.	Wells Homestead	232 Sanford Road
4.	Dorfield Farm	16 Dorfield Lane
5.	Bragdon House Early Post Office	88 Crossing Road
6.	Littlefield House	2077 Sanford Road
7.	Emery House	2449 Sanford Road
8.	Hatch House	2104 Sanford Road
9.	Littlefield Homestead	1458 Branch Road
10.	Mill House	502 Post Road
11.	Littlefield Tavern	1107 Littlefield Road
12.	Littlefield-Chase Farmstead	1485 North Berwick Road
13.	Littlefield-Dustin Farm	41 Dodge Road
14.	Littlefield-Keeping House	1673 Littlefield Road
15.	Lord Homestead	317 Laudholm Road
16.	(Former) First Congregational Church	938 Post Road
17.	Wells Reserve Research Facility	342 Laudholm Road
18.	Division 9 School	1760 North Berwick Road
19.	Paleo-Indian Site	Post Road

Source: Wells Historic Preservation Commission

Local Historic Preservation

A Preservation Ordinance for Wells was enacted in 1985 that changed the previous Preservation Committee status, which had an unlimited number of members to a Commission with five members. (The number of members was amended at the 2000 Town Meeting. It now has nine members.) The purpose of this Commission is to protect, enhance and preserve buildings possessing historical, cultural or architectural significance; designate significant districts, sites and structures with regulation; and review standards applied to prevent inappropriate exterior alterations, demolition of historic buildings and destroying of historic sites.

The Preservation Commission worked to place nine properties on the local register. Of these, four are on the National Register (Littlefield-Keeping House, Littlefield-Dustin Farm, Former First Congregational Church and Division 9 School). The other five properties are:

- The Moulton Homestead - 61 Post Road
- The Rankin School - 1817 Post Road
- The Eldridge Tavern - 6 Eldridge Road
- The Oliver West Farm - 359 Bald Hill Road
- The Rose Cottage - 224 Sanford Road

After a lapse in meetings in the middle 90s, the Wells Historic Preservation Commission was reactivated in the fall of 1999. An in-depth survey of significant properties and sites in Wells was once again begun. The survey was completed in 2004 and presented to the Board of Selectmen. A community informational program on preserving historic properties is planned to commence in the near future. As of this writing, at least 90 buildings, over 200 cemetery sites and six monument locations are being considered. A full building inventory is listed below. The monuments include:

The Storer State Park & Monument
The Monument at Webhannet Falls
The Monument at site of Edmund Littlefield's house
The Monument at site of the first church
The Monument recognizing Col. John Wheelwright's garrison
Founders Park Monument-recognizing early families (1653-1734)

The Commission, with the assistance of the Department of Public Works, produced a report on *cemeteries-Cemetery Locations in Wells,* Maine in 1997. A second *report-Veteran's Gravesites in Wells* was produced in January, 2000. These reports provided information on name and location of the cemetery as well as brief descriptions of each site.

The Ocean View Cemetery Association owns and operates the Ocean View Cemetery on Route One. This Association is a private organization, although the Town provides financial support for burial of paupers and the maintenance of veterans' graves. There are available gravesites and an undeveloped area within the cemetery.

In 2013, the town approved 2 half-time positions for continued upkeep and maintenance of the town owned cemeteries. The town is currently working on the purchase of a property that sits right next to the Buffum Hill Cemetery. The purpose of this purchase will be to remove the home and create a buffer zone to protect the cemetery from any further encroachment.

In 2003, the Commission designed and published a self-guided driving tour of historic sites in Wells.

In 1976, the Bicentennial Committee (an ad hoc group) renovated School House # 9 on the Berwick Road, furnished it with furniture and equipment and gave it to the town for public use.

The John Wells House, which dates from ca. 1710, is being restored as a museum showing early construction. This will be the only museum of its kind in Maine. The museum is scheduled for opening by early 2005.

Perkins Cove/Mousum River Heritage Coastal Area

A portion of the Perkins Cove/Mousam River Heritage Coastal Area (HCA) is located in Wells. Within Wells, the HCA includes the beaches and marsh systems from the Ogunquit River to Branch Brook.

The Heritage Coastal Area Program is designed to identify, document and protect areas of significance to the State's coastal heritage.

A survey of Wells' Coastal Area was undertaken by the Institute of Maritime History in the fall of 1999 and the spring of 2000. Many wharf and dock sites were documented as part of Wells' Working Waterfronts from the settlement years and into the 20th century. Wrecks of derelict ships were found and examined. A maritime history was written documenting the uses of the Webhannet River inlets, the marsh, the harbor and the beaches from the "Age of Sail", when residents were dependent upon navigation, to the present.

Inventory of Significant Buildings Being Considered		
1.	William Parson House –	6 Tatnic Road
2.	Holiday House –	68 Post Road
3.	Division 4 School –	145 Post Road
4.	Winn Bragdon House –	345 Post Road
5.	Enoch Furbish House –	365 Post Road
6.	George H. Moody House –	387 Post Road
7.	The Williams House –	392 Post Road
8.	The Phillips House –	449 Post Road
9.	The A. Wheelwright House –	525 Post Road
10.	The M. Wheelwright House –	563 Post Road
11.	Division 3 School –	32 Eldridge Road
12.	The Beach Farm –	97 Eldridge Road
13.	The Moody Home –	664 Post Road
14.	The Augustus Littlefield Farmstead –	694 Post Road
15.	The Ivory Littlefield House –	12 Vera Lane
16.	The Hill Homestead –	27 Mile Road
17.	The Junior High School –	1470 Post Road
18.	The Milbray Freeman House –	Post Road
19.	The Parker House –	1516 Post Road
20.	The Capt. Wells House –	1532 Post Road
21.	The N. Littlefield House -	1544 Post Road
22.	The Sayer/Gilman Homestead –	42 Harbor Road
23.	The Lindsey Tavern –	1619 Post Road
24.	The Hubbard House –	1615 Post Road
25.	The Samuel Curtis House –	1637 Post Road
26.	The Congregational Church –	
27.	The S. Littlefield House –	1784 Post Road

28.	The J. P. Rankin House –	1820 Post Road
29.	The W. Rankin House –	1823 Post Road
30.	The S. Rankin House –	1830 Post Road
31.	The JR. Rankin House –	1853 Post Road
32.	The Hobbs Home -	1863 Post Road
33.	The J. Storer House –	1871 Post Road
34.	The Lord & Buzzell House –	Post Road
35.	The E. Stevens House –	Post Road
36.	The J. Littlefield House –	1902 Post Road
37.	The M. Bragdon House –	1908 Post Road
38.	The M. Richardson House –	1914 Post Road
39.	The D. Eaton House –	1983 Post Road
40.	The Goodale House –	1996 Post Road
41.	The E. Pope House –	1999 Post Road
42.	The M. Bragdon House –	2010 Post Road
43.	The Gooch Homestead –	2011 Post Road
44.	The S. Bragdon House –	2016 Post Road
45.	The Wm. Hemmenway House –	2022 Post Road
46.	The R. Hemmenway House –	2023 Post Road
47.	The Bean Home –	2033 Post Road
48.	The Elms School –	2083 Post Road
49.	The Wells Homestead –	2104 Post Road
50.	The N. Cole Farm –	2208 Post Road
51.	The Smith Home –	2204 Post Road
52.	The L. Cole Farm –	2232 Post Road
53.	The S. Parks Home –	19 Laudholm Road
54.	The Blacksmith Shop –	Laudholm Road
55.	The Sammy Wells House –	Skinner Mill Road
56.	The Skinner Mill House –	167 Skinner Mill Road
57.	Libby's Restaurant –	2721 Post Road
58.	Wells Branch Community Hall –	1411 Branch Road
59.	The Goodwin Farm –	83 Chick Crossing Road
60.	The Taylor/Penney Homestead –	144 Chick Crossing Road
61.	The Gowen/Littlefield Homestead –	336 Chick Crossing Road
62.	The D. Chick Store & Post Office –	67 Chick Crossing Road
63.	The S. Chick Farmstead –	779-1 Chick Crossing Road
64.	The Clark Farm –	202 Clark Road
65.	The Weeks/Goodwin Farm –	1285 Branch Road
66.	The Spiller/Wells Farm –	1140 B ranch Road
67.	Capt. Theodore Wells House –	936 Branch Road
68.	The Hobbs/James Farm –	189 Hobbs Farm Road
69.	The Benjamin Storer House –	Meetinghouse Road
70.	The Hilton Farm –	2010 Sanford Road
71.	The Hutchins Home –	2007 Sanford Road
72.	The Dodge House –	1852 Sanford Road
73.	The Brick Oven House –	2039 Sanford Road

74.	The Sanitarium –	2124 Sanford Road
75.	The Division 14 School	
76.	The Homestead –	176 High Pine Loop
77.	The Bragdon Farm –	1389 Bragdon Road
78.	The Wideman Homestead –	22 Sunset Ridge Road
79.	The Johnson Fobey Farm –	1939 North Berwick Road
80.	The Harris Home –	604 North Berwick Road
81.	The George Gray Home –	1607 North Berwick Road
82.	The Lydia Littlefield Tavern –	1401 North Berwick Road
83.	The A. Getchell Homestead –	27 North Berwick Road
84.	The J. F. Littlefield Farm –	65 Merriland Ridge Road
85.	The Curtis Farm –	367 Loop Road
86.	The Merrifield Farm –	504 Hilton Lane
87.	The Littlefield Farm –	553 Hilton Lane
88.	The Hilton Farm –	1105 Tatnic Road
89.	The Kimball Farm –	1643 Tatnic Road
90.	The A. Bragdon Farm –	1735 Tatnic Road
91.	The Hobbs/Matthews Cottage –	567 Ocean Avenue
92.	The George W. Moody Home –	698 Ocean Avenue
93.	Dr. C. Horsch –	702 Ocean Avenue
94.	The Minnetonka/Gray Gull –	475 Webhannet Drive
95.	The Lester Kimball Home –	393 Webhannet Drive
96.	The Webhannet House –	371 Webhannet Drive
97.	The Cambridge Cottage –	174 Webhannet Drive
98.	The Bon-Aire Cottage –	19 Atlantic Avenue
99.	The Eaton Farm -	97 Shady Lane
Source: Wells Historic Preservation Commission		

Archaeological Resources

As of September 1999, the Maine Historic Preservation Commission has inventory data on the following archaeological sites in Wells:

ME 467-01	Little River Site (mid-1600s) Jeffard's Tavern Site (ca 1750-1790)
ME 467-01	Storer Garrison Site (ca 1680-1750) Laudholm Farm (19th century)
ME 467-05	J. Bennett Farmstand Site (19th century) George Bennett Farmstead
ME 467-09	Site (19th century)
ME 467-10	
ME 467-11	

Wells potentially contains numerous sites from the earliest period of English settlement that need documentation. Since very limited professional survey work has been conducted to date in Wells, there is a need to identify, evaluate and protect these resources. The sites of mills, working waterfronts, derelict vessels and garrison houses are but a few to consider.

Prehistoric Archeological Sites

As of August 2000, the State Preservation Commission lists the following sites:

4.13 - Spiller Farm, highly significant (on National Register as of 2004)
4.12 - Ceramic Period Site, small site at the location of the proposed gas storage tank. Not significant.

From maps provided to the Town by Dr. Arthur Spiess, Archaeologist from the Maine State Historic Preservation Commission, potential sites of archaeological resources in Wells are the tidal marshes, the areas surrounding all local rivers and the heath areas in town.

Cultural Resources

There are many cultural resources available in the town of Wells.

The Wells Public Library opened in 1979 and provides resources, programs and services to the public using updated technology for all age groups. Over 35,000 titles are available along with videos, audio cassette books, large print books, copier for public use and an automated circulation and catalog system.

The Meetinghouse Museum with its Historical and Genealogical Research Library is maintained by the Historical Society of Wells & Ogunquit. The Auditorium of this former First Church of Wells is used for historical, educational and cultural events. The annex has Exhibit Rooms displaying artifacts and memorabilia from the Wells & Ogunquit area. The upstairs Annex houses the Esselyn Perkins Memorial Library where a sizable collection of historical and genealogical volumes are used by folks from all over the country researching their roots.

The Rachel Carson National Wildlife Refuge, established in the mid 1970s as the Coastal Maine National Wildlife Refuge, has purchased much of the marshlands of Wells thus providing great opportunities for research and wildlife observation of this area. The Refuge is committed to preserving wildlife habitat and waterfowl migration routes along Maine's coastal estuaries. Visitors experience a mile-long accessible self-guided trail, the "Carson Trail", at the refuge headquarters on Port Road.

Wells' National Estuarine Research Reserve was established at Laudholm Farm in 1986. The Research Department is housed in the buildings that were once used as the farmstead. Today this area contains exhibits, a Welcome Center and meeting room. Seven miles of trails give visitors an extensive view of habitats of a variety of wildlife. The Educational Department provides day and evening nature programs through tours, talks, slide shows, school and group field trips, summer camp, artist's workshops and kayak adventures.

The Wells/Ogunquit Community School District, Adult Education Programs, the York County Technical College, as well as the seven churches in the town provide educational, cultural programs, as well as concerts to the community as a whole. The Senior Service Committee of the town provides additional cultural enrichment for the community's seniors.

Note: Much of the information for this section of the Comprehensive Plan Update was provided by Hope Shelley of the Wells Historic Preservation Commission.

Town of Wells Cemetery List

GIS ID	Name	Location	Abutter	War Vetran
0003-012	Warren Cemetery	Tufts Road	Reverand John Vial	No
0003-012-1	Allen, Chaney Cemetery	Tufts Road	Martin Smith	No
0004-002	Unmarked Hilton, Clark Cemetery	Tatnic Road	Dexter Shepard	No
0004-004	Field Stones	Tatnic Road	Richard Segal	No
0004-009	Allen Cemetery	Tatnic Road	Jeanne Vance	No
0004-012-1	Field Stones	Tatnic Road	Dennis McElaney	No
0004-014	Kimball, Young Cemetery	Tatnic Road	Richard Segal	Yes
0005-004	Field Stones - Jim Place	Tatnic Road	Goodale, etc	No
0005-005	Getchell Cemetery	Tatnic Road	Richard Segal	No
0005-007	Hilton, Fred Cemetery	Tatnic Road	Aaron Perkins	No
0005-011	Field Stones - Cady Place	Tatnic Road	Philip Hilton	No
0008-002	Bedell, Brooks, Welch Cemetery	Tatnic Road	Hubert Reeves	No
0008-012	Welch Cemetery	Tatnic Road	Mary Grace	No
0009-007	Chaney, Stewart Cemetery	Tatnic Road	Bragdon Estate	No
0009-007-A	Field Stone	Tatnic Road	Joseph Hardy	No
0009-009	Baston Cemetery	Tatnic Road	Kathy Weare	No
0010-001	Johnson Cemetery	Tatnic Road	Joseph Hardy	No
0011-001	Littlefield Cemetery	Tatnic Road	Philip Hilton	No
0011-001	Hilton (?) Cemetery	Tatnic Road	Philip Hilton	No
0011-014	Littlefield Cemetery	Hilton Lane	Harry Merwin	No
0011-015	Field Stones	Hilton Lane	John McMillan	No
0011-018	Stuart Cemetery	Hilton Lane	Richard D'Abate	Yes
0011-019	Rogers, Stuart Cemetery	Hilton Lane	Paul Sullivan	No
0011-022	Benjamin (?) Cemetery	Hilton Lane	Timothy Stevens	No
0011-023-3	Boston, Merrifield Cemetery	Hilton Lane	Glenn Farrell	No
0011-025	Hilton, Littlefield Cemetery	Hilton Lane	Greg & Dawn Baston	No
0012-001	Eaton Cemetery	Captain Thomas Road	F. Malcolm Keyes	No
0012-010	Hubbard, Littlefield Cemetery	Tatnic Road	Bertha & Phil Hilton	No
0012-011	Stevens Cemetery	Tatnic Road	Patricia LeBlanc	No
0012-011-25	Stuart Cemetery	Tatnic Road	Craig Stevens	Yes
0012-013	Hilton Cemetery	Tatnic Road	Richard Stevens	Yes
0012-013	Littlefield Cemetery	Tatnic Road	Richard Stevens	Yes
0012-015-1	Stevens Cemetery	Tatnic Road	Julia Smith	No
0012-025	Hilton, Littlefield, Stevens Cemetery	Tatnic Road	James Elwell	Yes
0012-029	Stuart, Stevens Cemetery	Captain Thomas Road	Barbara Stevens	Yes
0014-013-A	Hill Cemetery	Boyd Road	Pike Industries	No
0014-014	Grant, Frost, Dugerardell Cemetery	Boyd Road	Chadbourne et al	No
0014-015	Jepson Cemetery	Boyd Road	Charles Bourne	Yes
0015-001	Sargent Cemetery	Cheney Woods Road	Harry Yates	No
0016-003	Stewart Cemetery	Newhall Road	Lawrence Chaney	No
0016-006	Farnham Cemetery	Tatnic Road	Charles Turnbull	No
0017-005-A	Goodale Cemetery	Hilton Lane	Robert Goodale	No
0017-010	Allen Cemetery	Hilton Lane	Elda Welch	No
0017-010	Welch Cemetery	Hilton Lane	Elda Welch	No
0017-012	Field Stones	Loop Road	Sandra Batchelder	No
0017-014	Butland Cemetery	Hilton Lane	H&R Dufort	No
0019-001	Kimball Cemetery	Old County Road	Caleb Kimball	No
0019-001	Kimball Cemetery	Old County Road	Caleb Kimball	Yes
0019-010	Field Stones	Post Road	Satter Company of NE	No
0020-012	Gatchell Cemetery	Berwick Road	Pike Industries	No
0022-003	Wormwood Cemetery	Bragdon Road	Walter Wormwood	No
0022-004-A	Hatch, Littlefield, Stover Cemetery	Bragdon Road	Bragdon & Clark	Yes
0022-013	Grant Cemetery	Berwick Road	Earl Brown	No
0022-018	Getchell Cemetery	Bragdon Road	Richard Dustin	No
0023-016	Merriland Ridge Cemetery	Berwick Road	Richard Chase, Jr	Yes
0024-001	Chaney, Littlefield, Moody, York Cemetery	Newhall Road	James Maxwell	Yes
0024-003	Williams, Kimball Cemetery	Littlefield Road	Kenneth Keeping	Yes
0024-017	Hatch Cemetery	Littlefield Road	Nelson Brown, Jr.	No
0024-026	Chaney, Johnson, Littlefield Cemetery	Green Road	Glendon Chaney	No
0024-031-B	Littlefield Cemetery	Littlefield Road	Lewis Ulm	No
0025-004	Littlefield Cemetery	Loop Road	William & Rose Brackett	No
0025-011-A	Curtis Cemetery	Loop Road	Donald Guillmette	No
0025-011-A	Slave Cemetery	Loop Road	Donald Guillmette	No
0025-012	Curtis Cemetery	Loop Road	Robert Courtney	No
0025-012-A	Littlefield Tomb	Green Road	Clarence Moulton	No
0025-016	Furbish, Littlefield Cemetery	Loop Road	Oliver Norman	No
0025-020	Littlefield Cemetery	Littlefield Road	Robery Kelly	Yes
0025-021	Slave Cemetery	Littlefield Road	Rosemary Ananis	No
0025-023-A-3	Littlefield Cemetery	Locksley Lane	Donald Prokey	No
0025-023-A-3	Wheelwright Cemetery	Locksley Lane	Donald Prokey	No
0025-028	Littlefield, Stover, Dresser Cemetery	Littlefield Road	Rosemary Ananis	No
0026-006	Furbish, Perkins Cemetery	Post Road	Roland Cole	No
0026-015	Cheney, Cook Cemetery	Littlefield Road	Clayton Langill	No

0027-003-B	Williams Cemetery	Post Road	Ronald Porter	Yes
0029-011	Taylor Cemetery	Perry Oliver Road	Stan Thompson	Yes
0029-014	Field Stone (Lord?)	Berwick Road	Richard Chase	No
0030-002	Bragdon Crossing Cemetery	Bragdon Road	Barbara Kelley	No
0030-004	Hatch Cemetery	Bragdon Road	Anthony Cilluffo	No
0030-008	Dennett, Hatch Cemetery	Perry Oliver Road	John Darling, Jr	No
0030-016	Bennett Cemetery	Bragdon Road	Walter Wormwood	No
0032-005-A	Getchell Cemetery	Berwick Road	Clayton Abbott	No
0032-014	Littlefield, Lowe Cemetery	Merrliand Ridge	Richard Dusseault	Yes
0032-016	Butland Cemetery	Bears Den Road	Craig Stevens	No
0032-019	Littlefield, Dockham, Joy Cemetery	Merrliand Ridge	David Tufts	No
0032-028	Littlefield, Maxwell Cemetery	Berwick Road	Daniel Dickerson	Yes
0036-002	Allen, Chadbourne, Day Cemetery	Quarry Road	Roland Ford	Yes
0036-002	Perkins Cemetery	Quarry Road	Roland Ford	Yes
0036-013	Mills, Perkins, West Cemetery	Horace Mills Road	Pike Industries	Yes
0036-013-A	Perkins Cemetery	Horace Mills Road	Porcupine Invest Group	No
0037-002-A-2	Grant, Johnson, Perkins Cemetery	Quarry Road	Eric Chase	No
0038-004-A	West Cemetery	Bragdon Road	Eric Chase	No
0039-001	Joy, Williams Cemetery	Swamp John Road	Robert Estes	No
0039-014	Bean Cemetery	Bragdon Road	Bragdon Estate	No
0039-014	Gatchell Cemetery	Bragdon Road	Bragdon Estate	Yes
0039-023	Bennett, Hatch, Hilton Cemetery	Swamp John Road	Katherine Cousins	Yes
0040-004	Boston Cemetery	Berwick Road	Joan Farley	No
0040-009	Cheney Cemetery	Berwick Road	Town of Wells	No
0044-050	Perkins Cemetery	Horace Mills Road	Maurice Fenderson	No
0046-005	Hatch Cemetery	Bald Hill Road	Christine Estes	No
0046-013-B	Colorassi Cemetery	Bald Hill Road	Anna Colorassi	Yes
0046-020	Anderson, Hatch, Penny Cemetery	Quarry Road	Laurel Mountain Trust	No
0047-007-A	West Cemetery	Bald Hill Road	John Cavaretta	No
0047-007-C	Hatch, Kimball Cemetery	Bald Hill Road	John Cavaretta	No
0047-016	Hatch, Manson Cemetery	Bragdon Road	Randall & Cutting	Yes
0047-021	Murray, Penney Cemetery	Bragdon Road	Hugh Wilson	Yes
0047-034	Field Stones	Bald Hill Road/ Bills Lane	Ernestine Fenderson	Yes
0047-037	Getchell Cemetery	Bills Lane	Wilber	No
0048-006	Hubbard Cembetery	Sanford Road	Ronald Cheney	Yes
0049-001	Goodwin Cemetery	Crediford Road	Pike Industries	No
0049-009	Crediford Cemetery	Crediford Road	Genest Concrete	No
0049-022	Hatch Cemetery	Branch Road	Dana Scarboro	No
0049-039	Hatch Cemetery	Sanford Road	Delcey Pelky	No
0049-057	Annis, Morrison, Hubbard Cemetery	Nella Road	Betty Bullock	No
0049-064	Unid. Civil War Vetron Cemetery	Crediford Road	William Card, Jr	Yes
0050-021	Bragdon, Cheney Cemetery	Sanford Road	Saudel, Inc.	No
0050-023-1	Heard Tomb	Sanford Road	Albert Gregoire Jr	No
0054-005	Staples Cemetery	Bragdon Road	John Sims	No
0055-008	Hill Cemetery	Sanford Road	Eleanor Tilton	Yes
0055-013	Storer, Carberry Cemetery	Meetinghouse Road	Josephine Mathews	No
0055-018	Annis, Cole, Hill, Littlefield Cemetery	Sawyer Road	Emily Thall	No
0055-023	Brown, Hatch Cemetery	Sanford Road	Mike Geletka	Yes
0056-011	Welch Cemetery	Branch Road	Robert Bourassa	No
0056-027	Annis, Ford Cemetery	Branch Road	Dan Chase	Yes
0057-010	Hilton Cemetery	Lindsey Road	Edward Quinney	Yes
0060-003	Hatch Cemetery	Bald Hill Road	Pike Industries	No
0060-010	Emery, Getchell, Harch Cemetery	Sanford Road	Karl Hilton, Jr	Yes
0060-010	Goodale, Libby Cemetery	Sanford Road	Karl Hilton, Jr	Yes
0060-018	Littlefield Cemetery	Sanford Road	Geo. Fenderson etc	No
0060-018	Littlefield Cemetery	Sanford Road	Geo. Fenderson etc	No
0060-018	Chadbourne Cemetery	Sanford Road	Geo. Fenderson etc	Yes
0060-018	Hatch Cemetery	Sanford Road	Geo. Fenderson etc	Yes
0060-022-A	Elm Brook Cemetery	Sanford Road	Denice Merrill	Yes
0060-028	Littlefield, Lord Cemetery	Bald Hill Road	Rodney Hatch	No
0060-028	Hatch Cemetery	Bald Hill Road	Rodney Hatch	No
0060-028-A	Hatch, Colby, Gordon Cemetery	Sanford Road	Trailer Park	Yes
0061-016-A	Hatch, Littlefield Cemetery	Sanford Road	John Auger	No
0061-022-A	Amee, Emery, Hatch Cemetery	Sanford Road	Paul Pelletier	No
0062-002-1	Field Stones	Meetinghouse Road	James Howard	No
0062-011-B-2	Parsonage Lot Cemetery	Meetinghouse Road	Dean Hudon	Yes
0063-001	Littlefield Cemetery	Branch Road	H. Donald James	Yes
0063-007	Hatch Cemetery	Hobbs Road	H. Donald James	Yes
0063-011	Storer Cemetery	Branch Road	OVC Association	No
0068-002	Green, Hobbs, Lord Cemetery	Orens Road	Flintlock Village Inc	No
0068-008	Holmes, Kimball, Storer Cemetery	Orens Road	Gregory Clark	No
0068-02	Maxwell Cemetery	Wire Road	Flintlock Village Inc	No
0069-007	Field Stones	Meetinghouse Road	Robert Plaisted	No
0069-007	Hobbs, Hatch Cemetery	Meetinghouse Road	Robert Plaisted	Yes

0070-005	Wells Cemetery	Branch Road	Edmund Pitts	No
0070-015	Storer Cemetery	Branch Road	Jane Hendrick	No
0071-009	Clark, Littlefield, Mildram Cemetery	Mildram Road	David Crouthamel	No
0072-004	Taylor, Grant Cemetery	Pike Road	John Suhr et al	No
0073-001	Boothby Cemetery	Bypass Road	Walter LaValle	No
0074-005	Littlefield, Lord Cemetery	Wire Road	Richard Lord	No
0076-035	Goodwin, Avery, Chase Cemetery	Meetinghouse Road	Charles Zois	No
0077-006	Oak Grove Cemetery	Branch Road	Baptist Church	Yes
0078-013-A	Goodale Cemetery	Coles Hill Road	Gerald Burnell	No
0079-002	Indian Burial Site	Harrissecket Road	Len Sevigney	No
0079-005	Littlefield Cemetery	Harrissecket Road	Maine Council of Churches	Yes
0079-005-A-EXE	Jefferds Cemetery	Harrissecket Road	KKW Water District	Yes
0079-007	Gilpatrick Cemetery	Harrissecket Road	Wilbur Cluff	Yes
0079-008	Storer, Ricker Cemetery	Harrissecket Road	KKW Water District	No
0079-008	Bragdon Cemetery	Harrissecket Road	KKW Water District	No
0079-008	Goodwin Cemetery	Harrissecket Road	KKW Water District	No
0079-012	Bragdon, Storer Cemetery	Harrissecket Road	Bonnie LaBlanc	Yes
0080-001-A	Hammand Cemetery	Post Road	Jo Johnson	No
0082-001	Webber Cemetery	Chick Crossing Road	Leigh Bailey	No
0083-009	Littlefield, Shorey Cemetery	Chick Crossing Road	Carl Goodwin	Yes
0083-009	Goodwin, Penney Cemetery	Chick Crossing Road	Carl Goodwin	Yes
0083-039	Pine Hill Cemetery	Pine Hill Road	Martin Schorer	Yes
0084-006	Littlefield Cemetery	Branch Road	Albert LaValley	No
0102-003	Ancient Burial Ground	Tatnic Road	Ruth Gauthier	No
0102-013	Parsons Cemetery	Tatnic Road	James Heil	No
0104-073-A	Maxwell Cemetery	Old County Road		Yes
0105-019	Witham Cemetery	Post Road	Charles Bourne	No
0105-155	Bourne, Moody, Littlefield Cemetery	Post Road	Campground	No
0107-005	Norton Cemetery	Old County Road	Bob Brown	No
0107-038	Boston, Hanson Cemetery	Post Road	Robert E. Brown et al	No
0108-031	Winn Field Stones	Post Road	Peter Garthwaite	No
0108-033	Field Stones	Post Road	US Fish & Wildlife	No
0108-038	Field Stones	Post Road	Joseph Proach	No
0110-010	Stevens Brook Cemetery	Post Road		No
0114-064	Wheelwright Cemetery	Post Road	Mark Batchelder	Yes
0117-014	Eldridge, Littlefield, Winn Cemetery	Post Road	Alcon Management Co.	Yes
0117-039-A	Unmarked Winn Cemetery	Post Road	Harry Margeson	No
0117-043	Butland Cemetery	Buffum Hill	June & Roger Messier	No
0117-055	Cole, Hammond, Littlefield, etc. Cemetery	Post Road	Brynes et al	Yes
0120-007	Chute Cemetery	Buzzell Road	Kevin Harrington	Yes
0120-016	Hilton Cemetery	Post Road	Vander Forbes	No
0129-027-EXE	Ocean View Cemetery	Post Road	Cemetery Association	Yes
0129-031	Hill Cemetery	Post Road	Henry Beaudoin	No
0139-027-B	Keyes, Littlefield, Rankin Cemetery	Post Road		Yes
0141-033	Donnell, Hanson Cemetery	Shadey Lane	Cory Daniels	No
0144-046	Gooch Cemetery	Drakes Island Road	Jack Newell	No
0147-016	Coles Corner Cemetery	Post Road		Yes
0150-007	Campbell Cemetery	Bypass Road	Donald Campbell	No

Town of Wells Comprehensive Plan

Map 2

Lots with Known Cemeteries

Cemetery

Cemetery with War Veteran

Sanford

Arundel

Kennebunk

North Berwick

South Berwick

Ogunquit

York

Data provided by the Town of Wells
Notes: Cemetery locations are approximate and are intended for general reference only.
For more detailed information please contact the Town of Wells.

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II. Year-Round Population Trends by SMPDC

- Age of Population
- Year-Round Population Forecasts
- Seasonal Population Forecasts
- Graphic Profile
- Demographic and Income Profile

Year-Round Population Trends

In 1900, the population of Wells was approximately 2,000. By 1950, it had reached 2,321. In the next 20 years, Wells had almost doubled its population to 4,448. By 1990, the Census reported the population at 7,778 and Census 2000 tabulated 9,400, representing about a 50% increase from 1980-2000. See Table 1. Although the population increased by 51% from 1970 to 1980, it slowed to 16% in the 10-year period from 1980 to 1990. During the 1990s, the rate of growth increased to 21%. Though this rate of growth was not as high as York, Kennebunk or Ogunquit, it was faster than all of the other neighboring municipalities and York County as a whole. Between 2000 and 2010, the rate of growth slowed and in some cases decreased due to an ailing economy. Wells grew by 2%, the smallest of those communities compared in the table below. Neighboring Ogunquit saw the greatest rate of growth at 14% and the county grew at a rate of 5% as a whole during that 10 year period.

	1970	1980	% Change 1970-80	1990	% Change 1980-90	2000	1990-2000	2010	% Change 2000-2010
Wells	4,448	6,719	+51	7,778	+16	9,400	+21	9,589	+2
Kennebunk	5,646	6,621	+17	8,004	+21	10,476	+31	10,798	+3
Sanford	15,812	18,020	+14	20,463	+14	20,806	+2	20,798	-1
North Berwick	2,224	2,878	+29	3,793	+32	4,293	+13	4,576	+6
South Berwick	3,488	4,406	+16	5,877	+33	6,671	+14	7,220	+8
York	5,690	8,465	+49	9,818	+16	12,854	+31	12,529	-2
Ogunquit	NA	1,492	NA	974	-35	1,226	+26	1,429	+14
York County	111,596	139,666	+25	164,587	+18	186,742	+13	197,131	+5

Source: U.S Census Southern Maine Planning and Development Commission

Age of Population

Wells' 2000 population, like the rest of York County is a predominantly middle aged population. The population distribution has changed significantly since 2000. In 2000, 34% of its population was between the ages of 35 and 54. However, compared to today, the town has a somewhat older population, with a distribution of 35-54 dropping down to 29% and 55-74 bringing up another 29.4% of the population, suggesting a real swing toward the retirement community settling into the town of Wells. The attached information provided by the U.S. Censes indicates that this trend will continue, which puts the town in a position of gearing up for providing retirement housing alternatives.

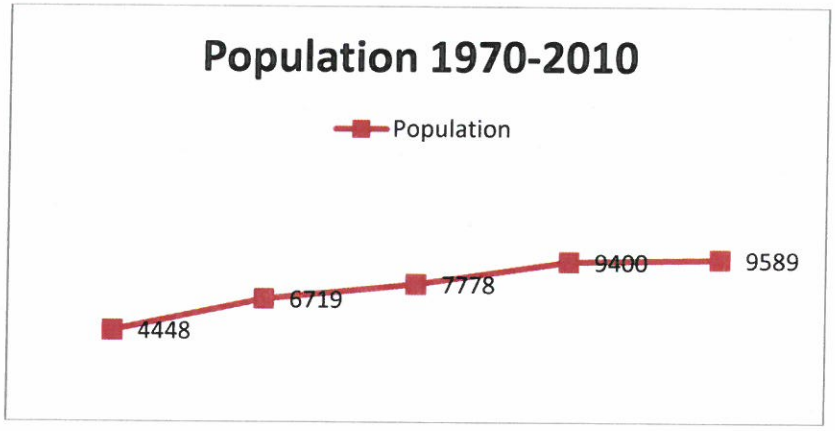
Year-Round Population Forecasts

Real estate development and thus population growth are driven by a variety of factors such as national and regional economic and income growth, numbers of jobs, interest rates, the community's attractiveness as a residential community, the availability and cost of housing, and the natural increase of the population.

Over the past 10 years, Wells has experienced slow but steady growth in its year round household population, as it reached 9,589 by the year 2010. The Maine State Planning Office projects Wells' population would reach 10,300 by 2005 and 11,600 by 2015, this of course did not happen. Partial consideration should be given to the economic decline that occurred after 2008. The economy has been slow to recover making relocations difficult and the out migration of some looking for new job opportunities in other markets.

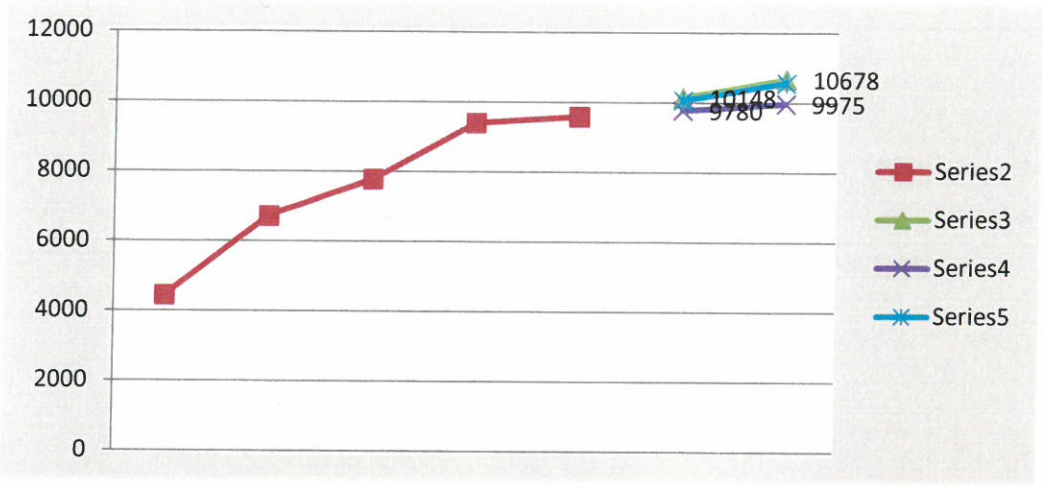
The Southern Maine Regional Planning Commission produced estimates of population for 2004 for Wells, based on actual building permit activity and expected natural change in population from births and deaths. From 2000 to 2003, there were a total of 467 building permits in Wells, an average of 117 per year. SMRPC estimates that, at this level of development, the 2004 population of Wells is 10,290. The SPO projection for 2005 put Wells' population for that year at 10,298. Unfortunately, these numbers at the time, did not consider that many of the units coming on line would be seasonal in nature and for the recreational population.

These numbers must be reassessed and considered more toward the seasonal population growth. For that purpose, the current growth rate noted above was 2% between 2000 and 2010. A realistic approach would be to project a 2%-5% annual growth rate for the year round residence.



The year round projection out to 2019 is as follows: The U.S. Census projects a larger increase in the population then Southern Maine Planning and Development Commission. The Census suggests a growth in population to 10,678 while SMPDC suggests a more conservative outlook with an increase of 2% to a population of 9975.

Year Round Population Projections



Seasonal Population Forecasts

Because of its coastal location and stock of seasonal housing units, the population of Wells during the summer increases significantly. According to the 1980 Census, the Town had approximately 1,750 seasonal homes; 1,526 licensed lodging rooms in motels and hotels; and 1,977 licensed campground sites. By 1990, there were over 1,840 seasonal housing units. The 2000 Census reported 3,461 seasonal housing units, but this number likely includes units that are technically reported by the Town of Wells as being lodging units. Since the 2000 Census reports that only 49% of the vacant units in Wells are single-family units, it appears that the overall number of seasonal dwelling units has not changed much since 1990. At estimated peak occupancy of 3.5 persons per seasonal unit, this would mean about 6,440 additional occupants in these units at the height of the summer season.

The Town of Wells now maintains its own database of lodging units. These numbers are being calculated differently now than in the past so it is somewhat difficult to look at a correlation from the previously used numbers. As of 2014, there are 42 traditional hotel/motel cottages and bed & breakfast facilities under single or corporation ownership with a total of 1,110 units. In addition, there are 33 hotel/motel cottage facilities that are in condominium type ownership with a total of 2,017 units that are occupied or have received approval to be built. The total number of available units for rent at one given time is 3,127 units. As a tourism-based community, the Town also has 18 Recreation Vehicle Parks with a total of 2,683 tent and RV sites available to the traveling and seasonal community.

Since these are seasonal figures for the purpose of determining how the town's population grows during the summer months, a factor of 3.5 will be used for family size since most family units will range in size from 3 to upwards of 5 people per unit.

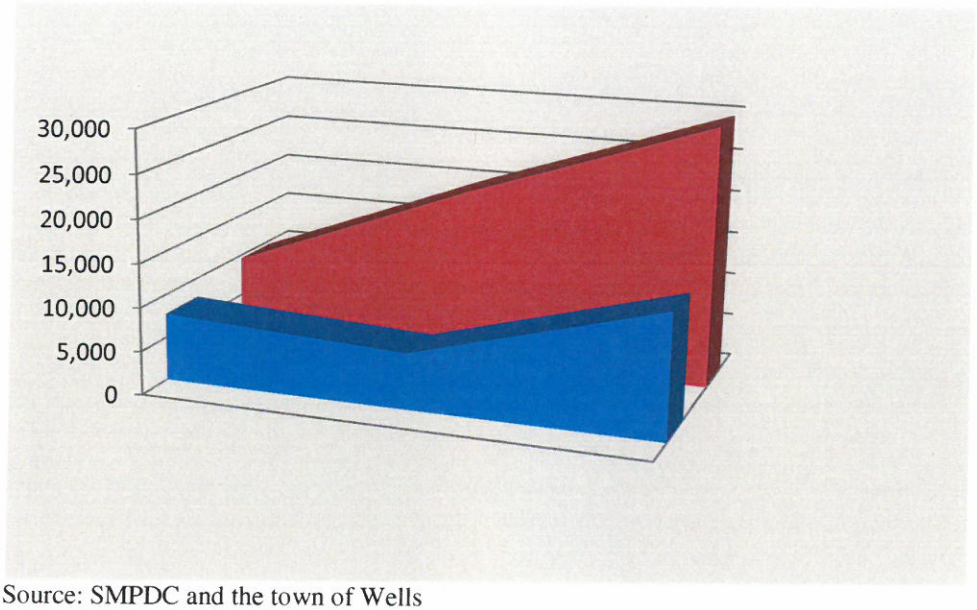
Based on the available data noted above, the community currently accommodates an additional 20,335 $\pm$ population above and beyond the current year-round stable population of 9589. These figures rival the large cities of the state during the summer months. Back in 1990, those numbers

were 6440 seasonal and 7778 year round for a total of 14,218 people.

Seasonal & Year round Population Figures

Year	1990	2014
Year Round	7,778	9,589
Seasonal	6,440	20,335
Total	**14218**	**29,924**

Seasonal and Year round Population Growth 1990-2014



Source: SMPDC and the town of Wells

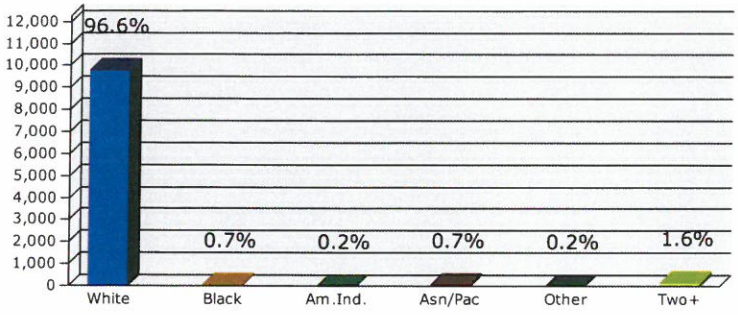
The chart and table above, show the seasonal population growth that has occurred in Wells between 1990 in blue and 2014 in red.

Graphic Profile

Wells town
Wells town, ME (2303181475)
County Subdivision

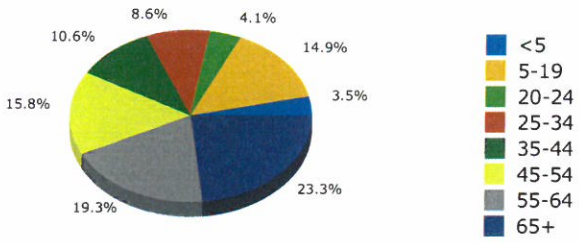
Prepared by SMPDC

2014 Population by Race

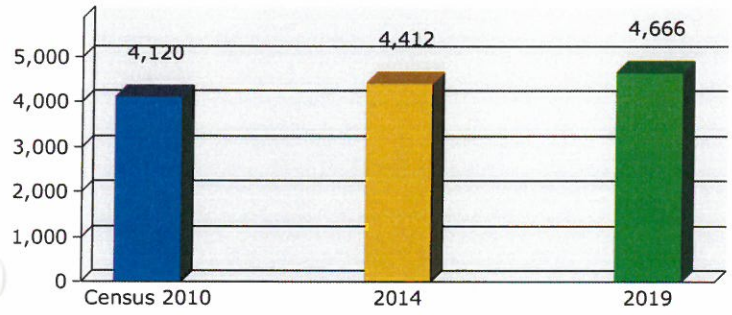


2014 Percent Hispanic Origin:1.4%

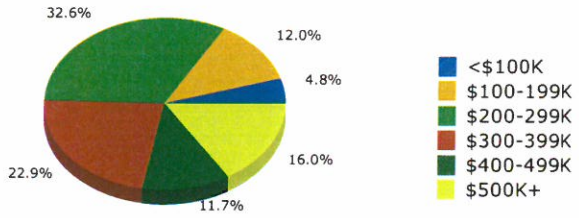
2014 Population by Age



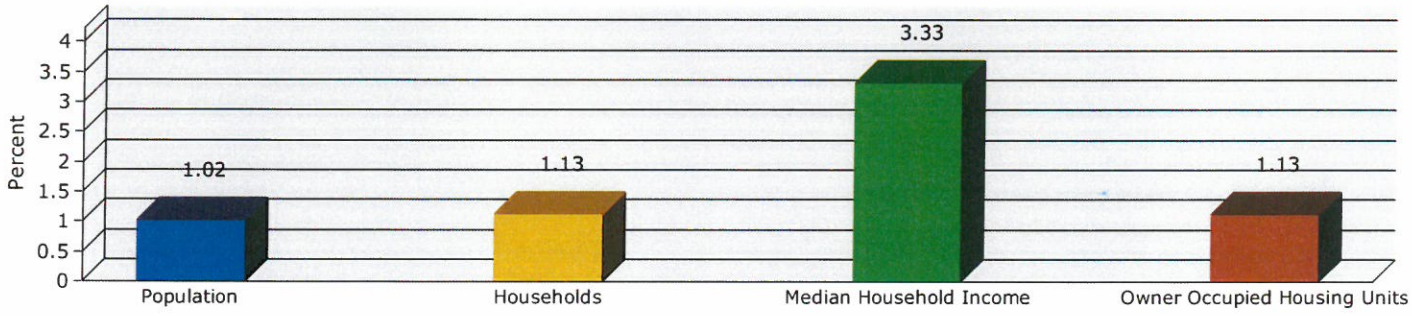
Households



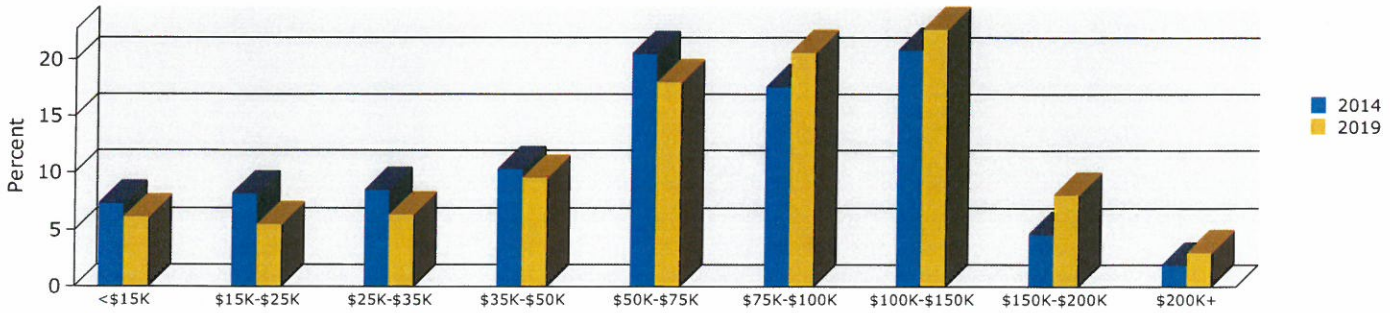
2014 Home Value



2014-2019 Annual Growth Rate



Household Income



Source: U.S. Census Bureau, Census 2010 Summary File 1. Esri forecasts for 2014 and 2019.

July 24, 2014

©2014 Esri

Demographic and Income Profile

Wells town
Wells town, ME (2303181475)
County Subdivision

Prepared by SMPDC

Summary	Census 2010	2014	2019
Population	9,589	10,148	10,678
Households	4,120	4,412	4,666
Families	2,734	2,897	3,039
Average Household Size	2.30	2.28	2.27
Owner Occupied Housing Units	3,417	3,603	3,811
Renter Occupied Housing Units	703	809	855
Median Age	48.5	50.6	52.1

Trends: 2014 - 2019 Annual Rate	Area	State	National
Population	1.02%	0.26%	0.73%
Households	1.13%	0.34%	0.75%
Families	0.96%	0.22%	0.66%
Owner HHs	1.13%	0.37%	0.69%
Median Household Income	3.33%	2.82%	2.74%

	2014		2019	
Households by Income	Number	Percent	Number	Percent
<$15,000	323	7.3%	288	6.2%
$15,000 - $24,999	361	8.2%	256	5.5%
$25,000 - $34,999	376	8.5%	296	6.3%
$35,000 - $49,999	458	10.4%	448	9.6%
$50,000 - $74,999	908	20.6%	840	18.0%
$75,000 - $99,999	775	17.6%	962	20.6%
$100,000 - $149,999	921	20.9%	1,059	22.7%
$150,000 - $199,999	203	4.6%	378	8.1%
$200,000+	87	2.0%	139	3.0%
Median Household Income	$66,977		$78,912	
Average Household Income	$80,893		$90,061	
Per Capita Income	$35,243		$39,441	

	Census 2010		2014		2019	
Population by Age	Number	Percent	Number	Percent	Number	Percent
0 - 4	358	3.7%	354	3.5%	377	3.5%
5 - 9	496	5.2%	437	4.3%	437	4.1%
10 - 14	550	5.7%	555	5.5%	517	4.8%
15 - 19	538	5.6%	522	5.1%	537	5.0%
20 - 24	367	3.8%	416	4.1%	381	3.6%
25 - 34	758	7.9%	872	8.6%	927	8.7%
35 - 44	1,174	12.2%	1,077	10.6%	1,113	10.4%
45 - 54	1,635	17.1%	1,601	15.8%	1,519	14.2%
55 - 64	1,701	17.7%	1,954	19.3%	2,073	19.4%
65 - 74	1,120	11.7%	1,419	14.0%	1,773	16.6%
75 - 84	685	7.1%	708	7.0%	771	7.2%
85+	207	2.2%	233	2.3%	253	2.4%

	Census 2010		2014		2019	
Race and Ethnicity	Number	Percent	Number	Percent	Number	Percent
White Alone	9,316	97.2%	9,803	96.6%	10,234	95.8%
Black Alone	49	0.5%	72	0.7%	104	1.0%
American Indian Alone	15	0.2%	16	0.2%	18	0.2%
Asian Alone	59	0.6%	74	0.7%	92	0.9%
Pacific Islander Alone	1	0.0%	1	0.0%	1	0.0%
Some Other Race Alone	21	0.2%	24	0.2%	29	0.3%
Two or More Races	128	1.3%	158	1.6%	200	1.9%
Hispanic Origin (Any Race)	111	1.2%	144	1.4%	193	1.8%

Data Note: Income is expressed in current dollars.

Source: U.S. Census Bureau, Census 2010 Summary File 1. Esri forecasts for 2014 and 2019.

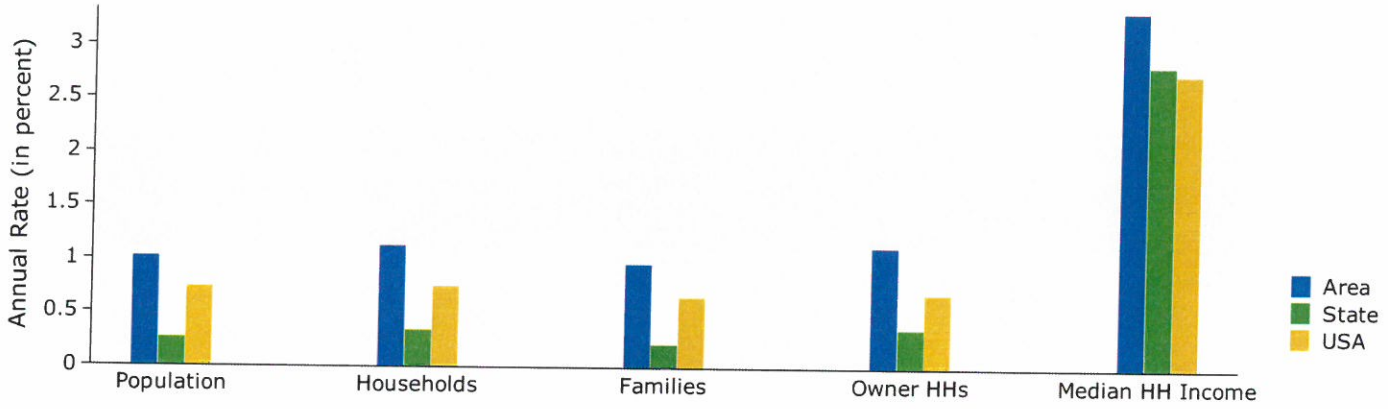
July 24, 2014

Demographic and Income Profile

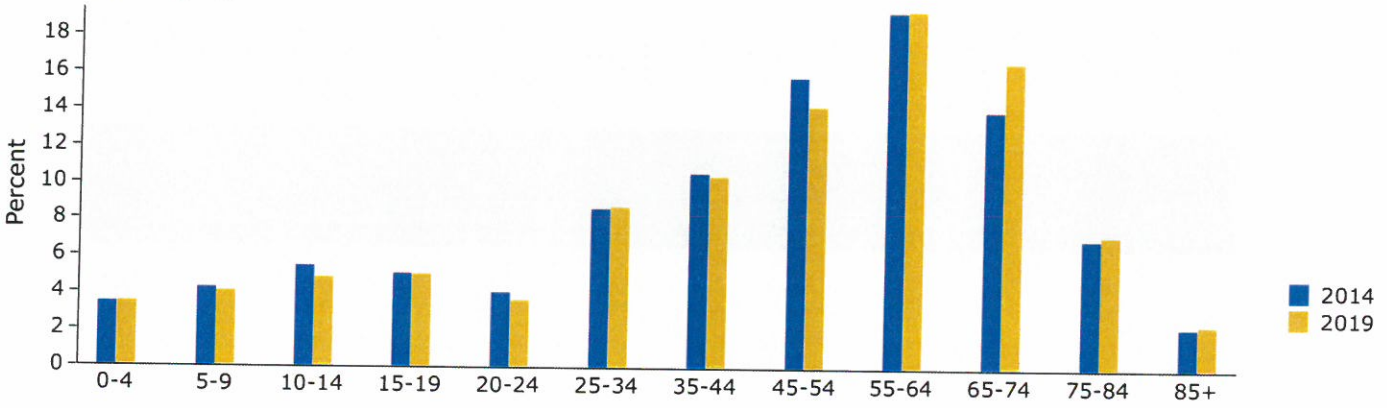
Wells town
Wells town, ME (2303181475)
County Subdivision

Prepared by SMPDC

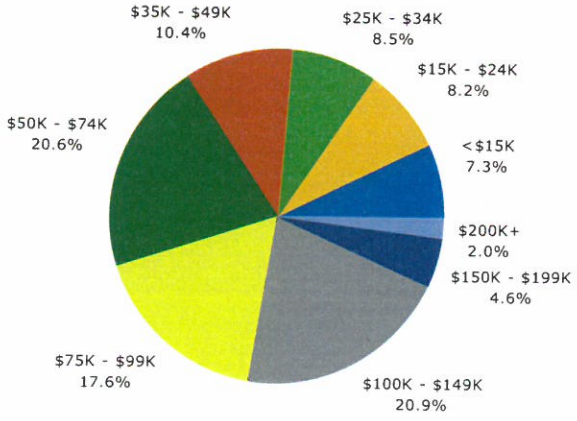
Trends 2014-2019



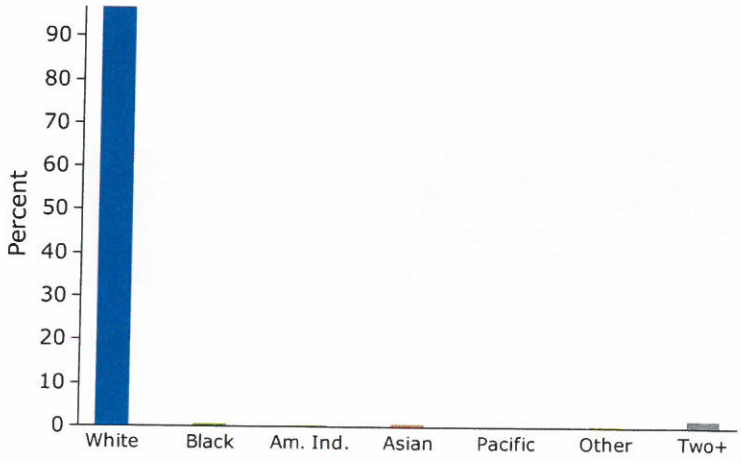
Population by Age



2014 Household Income



2014 Population by Race



2014 Percent Hispanic Origin: 1.4%

Source: U.S. Census Bureau, Census 2010 Summary File 1. Esri forecasts for 2014 and 2019.

July 24, 2014

III. Local Economy by SMPDC

- The Wells Labor Force
- Unemployment Rate
- Commuter Trends
- The Employment Base of Wells
- Retail Sales
- Wells Employees by Industry
- Wells Major Employers Data
- Wells Commuting Data
- Wells Taxable Retail Sales
- Unemployment Rates
- Assessed Valuation and Tax Rate
- Operating Revenues and Expenditures
- Debt
- Property Tax Levy Limit
- Investment Policy
- Fund Balance Policy
- Capital Improvement Plan
    - Town 2015 CIP Proposed Budget

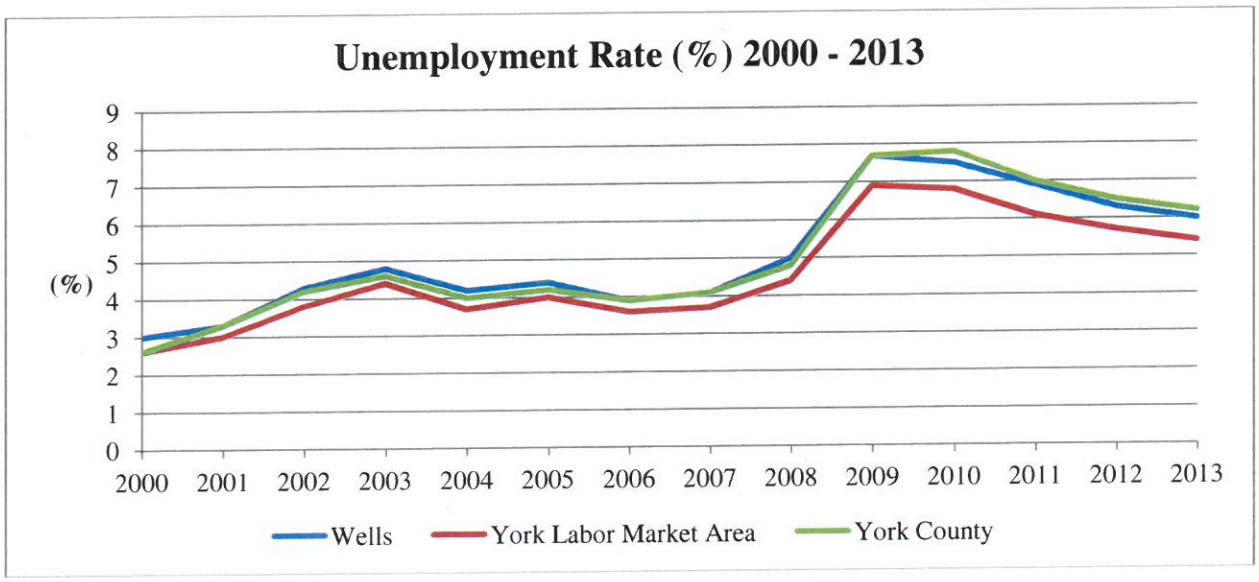
LOCAL ECONOMY

The Wells Labor Force

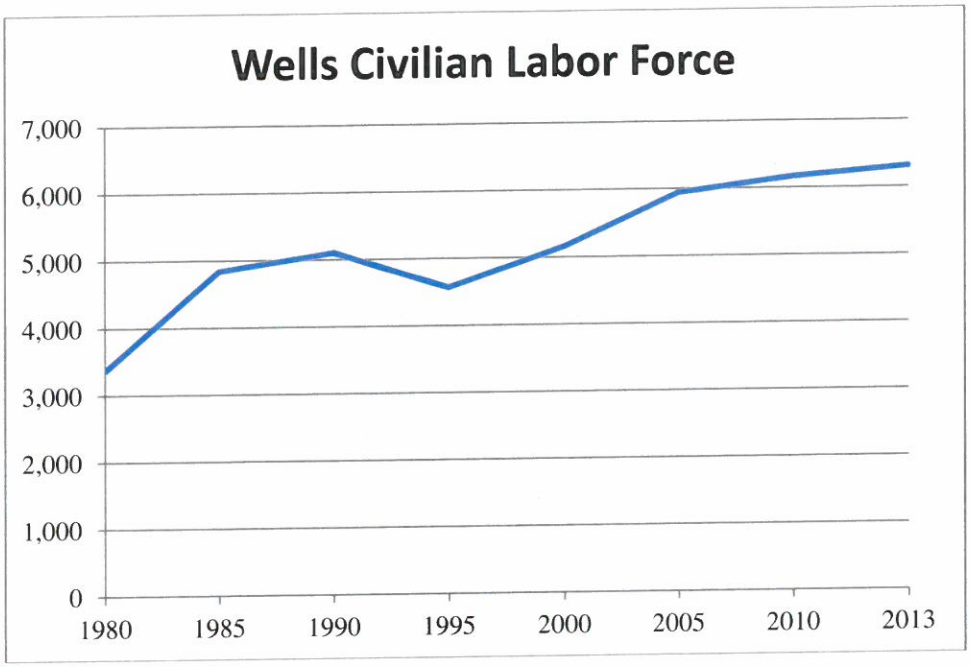
In today's world economies have become more dynamic and changes occur more rapidly then ever before. The old model of living and working in a community, while still an option for many today, is rapidly changing. Technological advances and increasing commuting options make it easier for individuals to work from home and yet work for institutions and businesses located in other regions or states. Given the rapid speed with technological advances occur these opportunities will only increase in the future.

In addition, today's economy is changing and shifting. Manufacturing, particularly mature and labor intensive industries are moving to other areas of the world where labor is much less expensive. Maine and York County has experienced some of these shifts as there have been a number of business closures and downsizings in recent years. In many cases the manufacturing base is being replaced by retail and services industries. This shift can bee seen in York County as well.

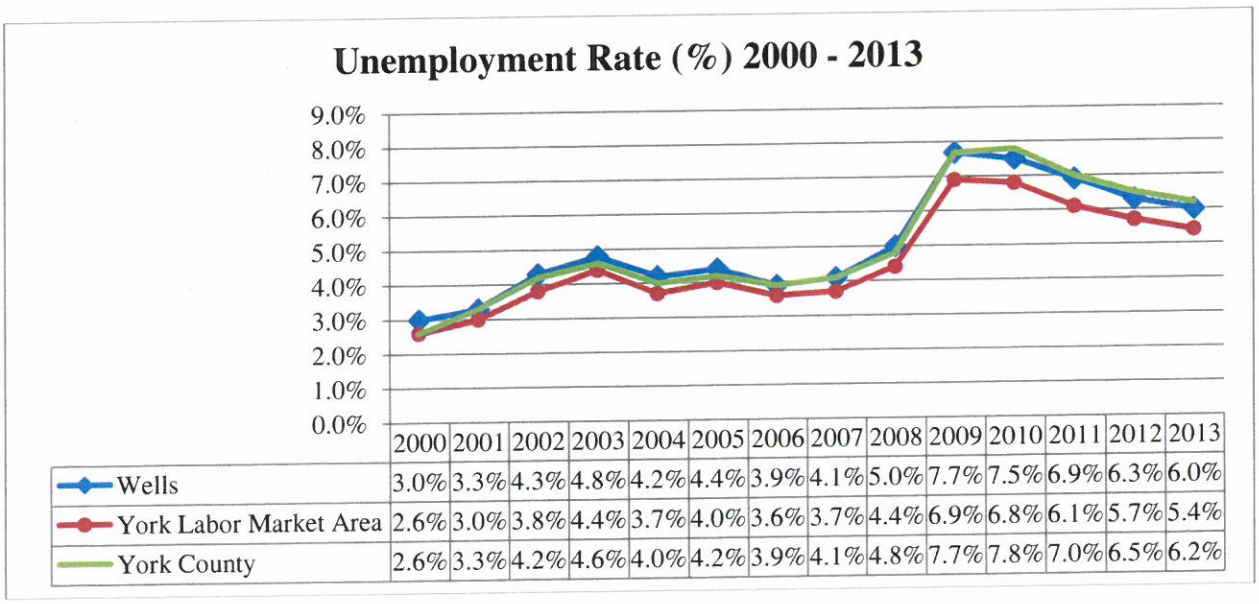
The future of York County looks bright but there are a few issues of concern. York County lies between two dynamic and growing regional economies. Portland to the north and the greater Boston region to the south, place York County in the middle of these two growing regional economies. Technological advances have allowed many persons to be able to choose where they live and "tele-commute" to anywhere in the Country. In many cases these individuals choose to live in rural areas. York County is an appealing option for those who wish to work, play and live in a more rural area yet have access to larger more urban areas.



Well's civilian labor force has experienced positive growth from 2000 to 2013 with a growth rate of 22.3%. The largest increase occurred from 2000 to 2005, where the labor force grew by almost 800 persons. Since 2005 the civilian labor force grew by approximately 50 persons each year. Positive labor force is an important factor in economic health as new entrants to the labor force are critical to businesses looking to expand as well as to replace retiring employees.

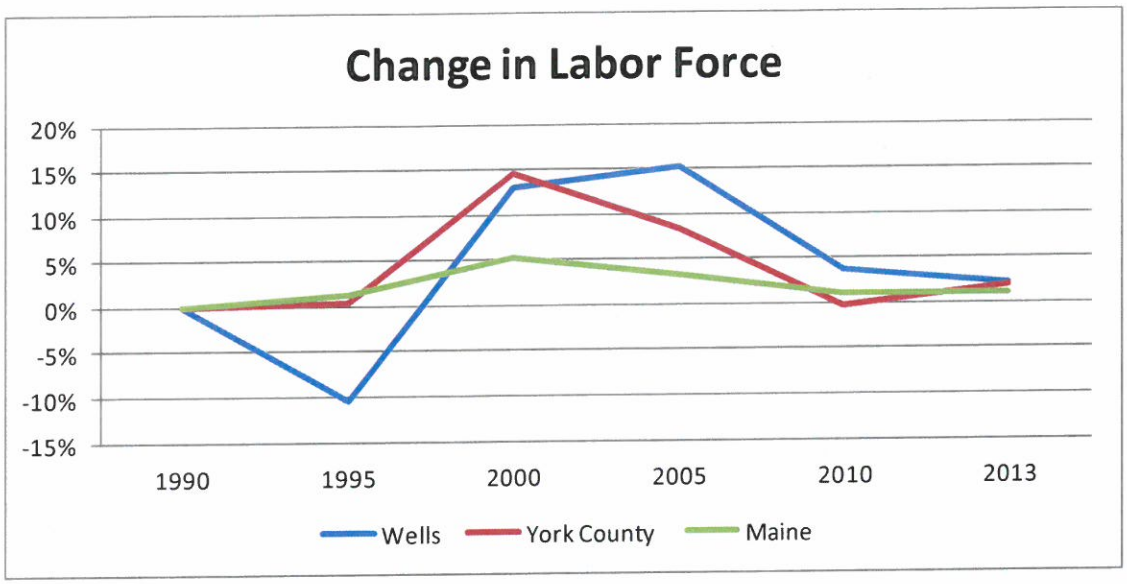


The variations in unemployment rates over time are primarily due to regional and national economic conditions. Historically Wells has had a very low unemployment rate with rates below 4% many times over the last 20 years. Recently, Wells has experienced some of its' highest unemployment rates peaking in 2009 at 7.7%. Overall Well's unemployment rates have mirrored those of York County and are higher than the York County Labor Market Area. Like practically every community in the Country Wells unemployment rates were impacted by the sever recession and currently depend on the improving economy.



	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Wells	3.0%	3.3%	4.3%	4.8%	4.2%	4.4%	3.9%	4.1%	5.0%	7.7%	7.5%	6.9%	6.3%	6.0%
York Labor Market Area	2.6%	3.0%	3.8%	4.4%	3.7%	4.0%	3.6%	3.7%	4.4%	6.9%	6.8%	6.1%	5.7%	5.4%
York County	2.6%	3.3%	4.2%	4.6%	4.0%	4.2%	3.9%	4.1%	4.8%	7.7%	7.8%	7.0%	6.5%	6.2%

There are two principal data sources used to examine a community's labor force. The federal government reports labor force data for the residents of a community while the State of Maine reports labor force data by place of business. When combined, these two data sets provide a good overview of a community's labor force, where residents work and who is employed in the community.



The data from the two sources of data show significant differences between what types of industries employ Wells residents versus those types of industries that are located in Wells. The Maine data shows that four industries in Wells employ 68% of the total employment in the community. These four industries are accommodation and food service (28.1%), transportation and warehousing (14.2%), educational services (12.9) and retail trade (12.5%). In comparison, the federal data indicates that 61% of Wells residents are employed in four industries. These four industries are education services & health care & social assistance (19.4%), arts, entertainment & recreation & accommodation & food services (15.3%), retail trade (13.8%) and manufacturing (12.7%). The most notable difference between these two indices is the larger number of jobs in Wells in the transportation and warehousing industry and the larger number of Wells residents employed in the manufacturing industry and most likely employed outside Wells. Given Wells proximity to major manufacturers such as the Portsmouth Naval Shipyard and Pratt and Whitney, and its' industrial park by the Maine Turnpike these differences should not be surprising.

In terms of the occupations of Wells residents, 81% fall into three occupational categories. The top occupational category is management, business, science and arts occupations at 34.8%, followed by sales & office occupations at 23.6% and service occupations at 22.4%. The occupational breakdowns vary by individual economic sector. Several individual cases are notable. In the transportation and warehousing & utilities sector the two primary occupations are management and sales. The finance, insurance and real estate industry is predominantly management and sales occupations. Approximately three quarters of the manufacturing sector is employed at either management or production occupations. Despite its low total number of workers the wholesale trade sector is entirely comprised of sales and office occupations.

Commuter Trends

Slightly over one third of the people who commute to Wells reside in Wells. The second highest percentage of commuters to Wells comes from Sanford. Approximately 70% of the commuters to Wells come from the communities in close proximity to the municipality. Fifty four percent of Wells residents work in costal communities from Kennebunk to Kittery. Fifteen percent of Wells residents work in Biddeford, Portland, and Sanford. Other significant commuting destinations

include Portsmouth, NH, Saco and North Berwick.

The 2000 US Census indicated that the number of commuter who lived and worked in Wells was 1,222. The next decade saw in increase of 139 persons who lived and worked in Wells. The coastal area from Portland to Portsmouth, NH remains the primary destination for Wells commuters with much small numbers of commuters traveling to destinations away from the coast or in other areas of New Hampshire and Massachusetts.

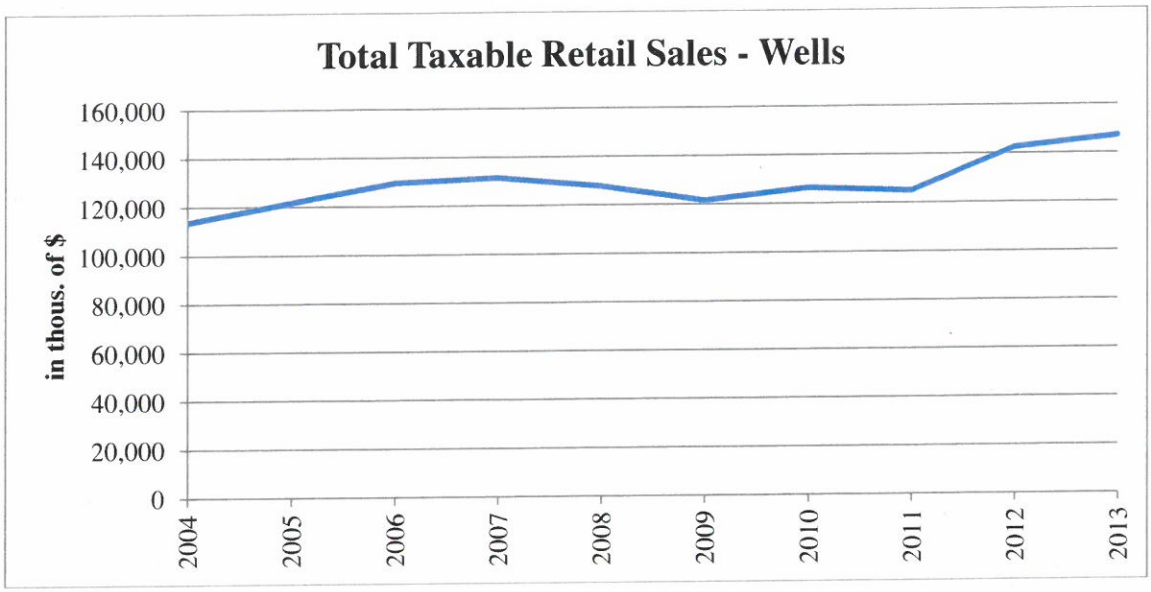
The Employment Base of Wells

The comparison of the current list of major employers to the one published in 2003 indicates the major employment base in Wells has remained fairly consistent. One significant difference that jumps out is the closure of Spencer Press and the loss of 550 jobs. The impact had been somewhat lessened with the relocation of Wasco Skylights and Yankee Candle to former Spencer Press building. The other major difference is the growth of the York County Community College from 137 to 278 employees. Both the Shaw's Distribution Center and UPS facility (also Wasco Skylights and Yankee Candle) show the importance of the industrial park to Wells' employment base. The remaining list of major employers is in the restaurant and lodging sector.

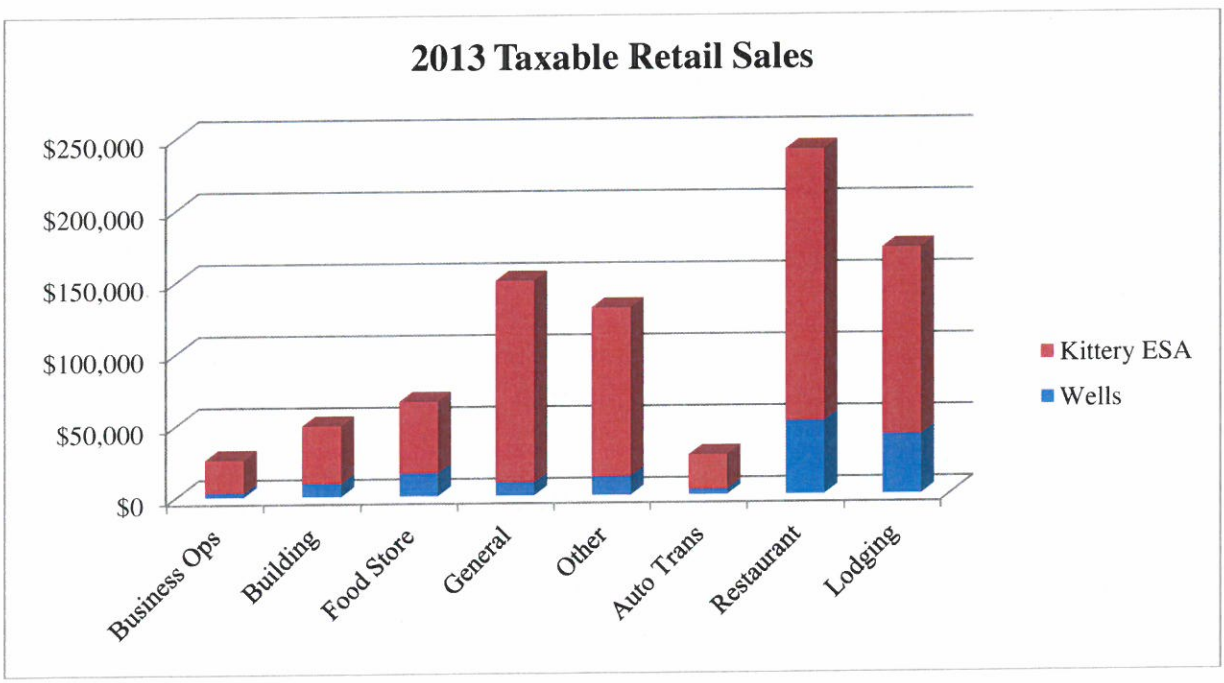
In addition to major employers Wells has a vibrant small business base. Many of these businesses are focused on the hospitality industry. Large numbers of visitors, from both within and outside the region, help to provide a customer base, which is critical to small businesses. These businesses tend to be dynamic, quick growing and constantly evolving to meet changing consumer demand. Examples of these types of businesses include Borealis Bread, the Maine Diner and Hidden Cove Brewing Company. All of these factors lead to a vibrant economic base which offers opportunity for growth and expansion.

Retail Sales

The Retail Sales Tax data provides us with a good overall picture of the economic activity that takes place in a community and region. Retail sales tax data for Wells as an individual community is very useful as we are able to see the economic activity in the community. The Town of Wells is located in the Kittery Economic Summary Area (ESA). The communities and districts that make up the Kittery ESA are: Cape Neddick, Eliot, Highpine, Kittery, Moody, Ogunquit, South Berwick, Webhannet, Wells and York



Total retail sales tax receipts have increased by almost 30% from 2004 to 2013. The severe recession had an impact on sales tax receipts as they started to decline in 2008 and did not increase until 2012. It is interesting to note that the strong rebound in retail sales tax revenues in 2012 was mainly due to increase in the restaurant and lodging sector. The restaurant and lodging sector accounts for 62% of the total retail sales tax in Wells. Despite several periods of negative growth in the recent depression retail sales tax receipts in this sector have consistently grown, with a total growth of 44.3% from 2004 2013. The economic sector that exhibited the highest growth rate from 2004 to 2013 was auto transportation, which grew 104.7% during this time period. One economic sector showed negative growth from 2004 to 2013 and this was building supplies, which declined by 27.2% in this time period. In many communities this has occurred and is primarily due to the growth of big box hardware stores.



Comparing the contribution of Wells retail sales tax revenues to Kittery ESA and York County totals allows us to see the degree of local economic specialization. Clearly the sector that has the highest percentage of regional total is the restaurant and lodging sector which comprises approximately 30% of the Kittery ESA total and approximately 15% of the York County total. It is interesting to note that restaurant and lodging sales tax receipt accounted 3% of the total sales tax revenues received by the State of Maine in 2013. Retail sales tax receipts in the food store sector accounted for approximately one third of those received in the Kittery ESA and 5.5% received in York County. The building supplies sector comprised approximately one quarter of those received in the Kittery ESA and 4.3% of York County. This is a good indication that those businesses in Wells are serving the local and sub-region population.

Wells Labor Force Data

Civilian Labor Force
Town of Wells, Maine
1980-2013

Year	Civilian Labor Force	Employed	Unemployed	Unemployment Rate %
1980	3,361	3,145	216	6.40%
1985	4,842	4739	103	2.10%
1990	5,106	4,939	167	3.30%
1995	4,567	4,341	226	4.90%
2000	5,159	4,999	160	3.10%
2005	5,943	5679	264	4.40%
2010	6,168	5704	464	7.50%
2013	6,308	5932	376	6.00%
% Change 1980-2013	87.7%	88.6%		
% Change 1990-2000	1.0%	1.2%		
2000-2013	22.3%	18.7%		

Source: Maine Center for Workforce Research and Information, Maine Dept of Labor

Wells Employees by Industry

NAICS Title	Establishments	Average Employment	Total Wages	Average Weekly Wage
Total, All Industries	403	3,652	$121,928,776	$642
Mining, Quarrying, and Oil and Gas Extraction	3	18	$873,337	$955
Construction	46	151	$5,704,864	$726
Manufacturing	7	160	$7,921,429	$954
Wholesale Trade	17	39	$2,670,267	$1,303
Retail Trade	62	455	$10,118,013	$427
Transportation and Warehousing	11	517	$23,655,167	$881
Information	6	27	$818,411	$585
Finance and Insurance	12	49	$2,702,251	$1,068
Real Estate and Rental and Leasing	20	101	$2,808,739	$533
Professional and Technical Services	32	97	$4,922,458	$973
Administrative and Waste Services	32	128	$4,324,123	$650
Educational Services	3	471	$17,877,375	$730
Health Care and Social Assistance	21	155	$6,768,454	$840
Arts, Entertainment, and Recreation	8	49	$1,361,200	$536
Accommodation and Food Services	85	1,027	$21,125,047	$396
Other Services, Except Public Administration	25	93	$2,260,087	$469

Industry by Occupation for the Civilian Employed Population 16 Years and Older
2008-2012 American Survey 5-Year Estimates

			Management, business, science and arts occupations	Service Occupations	Sales & Office Occupations	Natural Resources, Construction and Maintenance Occupations	Production, Transportation and Material Moving Occupations
SUBJECT	Total	%	%	%	%	%	%
Civilian employed population 16 years and older	5,001		34.8	22.4	23.6	9.9	9.2
Agriculture, Forestry, Fishing & Hunting & Mining	32	0.6	56.3	43.8	0	0	0
Construction	330	6.6	23.3	0	0	76.7	0
Manufacturing	633	12.7	30.2	0	16.6	7.1	46.1
Wholesale Trade	10	0.2	0	0	100	0	0
Retail Trade	691	13.8	2.2	1.2	80.2	7.7	8.8
Transportation and Warehousing & Utilities	188	3.8	51.6	0	30.9	0	17.6
Information	84	1.7	35.7	0	44	20.2	0
Finance & Insurance & Real Estate & Rental & Leasing	247	4.9	70.9	4	25.1	0	0
Professional, Scientific & Management & Administrative & Waste Management Services	436	8.7	49.3	25	12.4	10.3	3
Education Services & Health Care & Social Assistance	970	19.4	67.8	22.7	8.8	0.7	0
Arts, Entertainment & Recreation & Accommodation & Food Services	764	15.3	17.1	60.5	15.1	3.4	3.9
Other Services, except Public Administration	287	5.7	9.4	42.9	29.6	11.8	6.3
Public Administration	329	6.6	32.5	53.5	4.6	4.9	4.6

Wells Major Employers Data

REPRESENTATIVE EMPLOYERS	TYPE OF BUSINESS	APPROXIMATE NUMBER OF EMPLOYEES
Shaw's Distribution Center	Grocery Chain Warehouse	375
York County Community College	Maine Community College	278
Wells-Ogunquit CSD	Local Schools	256
Town of Wells	Local Government	234
Hannaford	Grocery Chain Store	232
Mike's Clamshack	Restaurant	124
Varano's	Restaurant	115
Steakhouse - Lords	Restaurant	109
United Parcel Service	Parcel Delivery Service	100
Lafayette Properties	Motels	87

Wells Commuting Data

Commuters to Wells, but live in:	Number of Workers	% Wells Workforce	Residents of Wells, but work in:	Number of Workers	% Wells Workers
Wells	1,361	36.47%	Ogunquit	382	10.67%
Sanford	400	10.75%	York	365	10.20%
Biddeford	254	6.81%	Kittery	283	7.91%
Kennebunk	165	4.42%	Kennebunk	277	7.74%
Alfred	153	4.10%	Biddeford	270	7.54%
North Berwick	116	3.11%	Portland	262	7.32%
Saco	116	3.11%	Sanford	215	6.01%
South Berwick	109	2.92%	Portsmouth, NH	153	4.27%
Scarborough	95	2.55%	Saco	145	4.05%
York	72	1.93%	North Berwick	134	3.74%
Acton	67	1.80%	Westbrook	57	1.59%
Lyman	65	1.74%	Windham	56	1.56%
Lebanon	58	1.55%	Boston, MA	56	1.56%
Waterboro	57	1.53%	Andover, MA	54	1.51%
Fairfield	54	1.45%	Dover, NH	53	1.48%
Kennebunkport	46	1.23%	South Portland	51	1.42%
Dayton	40	1.07%	Brewer	46	1.29%
Portland	38	1.02%	Somersworth, NH	37	1.03%
Lewiston	23	0.62%	Bangor	36	1.01%
Cumberland	22	0.59%	Kennebunkport	35	0.98%
Buxton	22	0.59%	Durham, NH	34	0.95%
South Portland	21	0.56%	Arundel	28	0.78%
Kittery	20	0.54%	Rochester, NH	26	0.73%
Shapleigh	19	0.51%	Gray	24	0.67%
North Hampton, NH	19	0.51%	Nashua, NH	24	0.67%
All other	320	8.57%	All other	476	13.30%
TOTAL	3,732	100.00%	TOTAL	3579	100.00%

SOURCE: State of Maine, Department of Labor. Labor Market Information Services: U. S. Department of Commerce, Census Bureau – 2010 data

Wells Taxable Retail Sales (in thous. of $)

Year	Total	Personal	Business Ops	Building	Food Store	General	Other	Auto Trans	Restaurant	Lodging	Rest and Lodging
2004	113722.8	111432.6	2290.2	12817.2	12591.4	8035.4	12055.3	1878.3	36445.6	27609.4	64055
2005	121765.4	120065.6	1699.8	13296.1	13885.3	9635	11595.3	3547.4	37777.5	30329	68106.5
2006	129644.8	127219	2425.8	13621.8	14324.4	10128.5	12210	4008.7	39294.5	33631.1	72925.6
2007	131567.6	129170.9	2396.7	8699.1	14870.4	9874.8	12178.5	3845.7	42079	37623.4	79702.4
2008	127813.1	125300.1	2513	8530.1	15087.2	9656.3	11555.1	2983.9	40447.4	37040.1	77487.5
2009	121664.5	119359.3	2305.2	7168.9	14785.8	9493	12322.9	2483.8	38357.5	34747.4	73104.9
2010	126509.3	124054	2455.3	6652.5	15288.1	9257	12730.9	3309.2	39654.5	37161.8	76816.3
2011	125053.9	122263	2790.9	6900.8	15392	9116.6	13203.6	3511.5	39668.1	34470.4	74138.5
2012	142524.9	139864.6	2660.3	8062.4	15879.4	9185.2	13171.5	3743.1	49297.1	40525.9	89823
2013	147183.2	144176.5	3006.7	9334.1	16055.9	9319.6	13209.1	3845.1	51119.6	41293.1	92412.7
Change	$33,460	$32,744	$717	-$3,483	$3,465	$1,284	$1,154	$1,967	$14,674	$13,684	$28,358
%	29.4%	29.4%	31.3%	-27.2%	27.5%	16.0%	9.6%	104.7%	40.3%	49.6%	44.3%

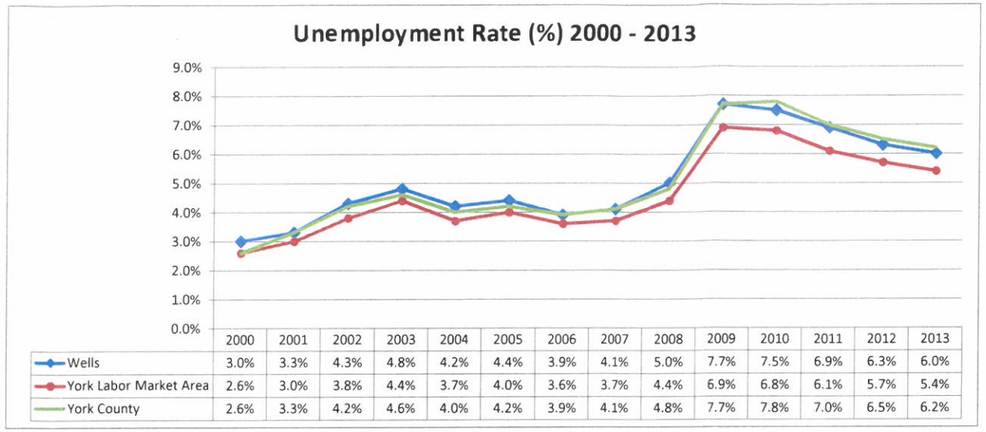
Sources: Maine Revenue Services

2013 Taxable Retail Sales

	Wells	Kittery ESA	York County	Wells Portion of: Kittery ESA	Wells Portion of: York County
Total	147183.2	714698.6	2090249.1	20.6%	7.0%
Personal	144176.5	691691.5	1992876.3	20.8%	7.2%
Business Op	3006.7	23007.1	97372.8	13.1%	3.1%
Building	9334.1	40113.6	218331.6	23.3%	4.3%
Food Store	16055.9	49980.8	213891	32.1%	7.5%
General	9319.6	140482.7	337114.4	6.6%	2.8%
Other	13209.1	117480.8	223988.6	11.2%	5.9%
Auto Trans	3845.1	24027.3	363411.6	16.0%	1.1%
Restaurant	51119.6	189266.2	405959.6	27.0%	12.6%
Lodging	41293.1	130340.1	230179.5	31.7%	17.9%
Rest and Lodge	92412.7	319606.3	636139.1	28.9%	14.5%

Sources: Maine Revenue Services

Area Name	Time Period	Date	Year	Civilian Labor Force	Employment	Unemployment	Wells Unemployment Rate %	York Labor Market Area Unemployment Rate %	York County Unemployment Rate %
Wells	Annual	12/31/2000	2000	5,489	5,326	163	3.0%	2.6%	2.6%
Wells	Annual	12/31/2001	2001	5,584	5,398	186	3.3%	3.0%	3.3%
Wells	Annual	12/31/2002	2002	5,758	5,512	246	4.3%	3.8%	4.2%
Wells	Annual	12/31/2003	2003	5,790	5,512	278	4.8%	4.4%	4.6%
Wells	Annual	12/31/2004	2004	5,858	5,610	248	4.2%	3.7%	4.0%
Wells	Annual	12/31/2005	2005	5,943	5,679	264	4.4%	4.0%	4.2%
Wells	Annual	12/31/2006	2006	6,049	5,813	236	3.9%	3.6%	3.9%
Wells	Annual	12/31/2007	2007	5,954	5,709	245	4.1%	3.7%	4.1%
Wells	Annual	12/31/2008	2008	5,909	5,615	294	5.0%	4.4%	4.8%
Wells	Annual	12/31/2009	2009	5,838	5,388	450	7.7%	6.9%	7.7%
Wells	Annual	12/31/2010	2010	6,168	5,704	464	7.5%	6.8%	7.8%
Wells	Annual	12/31/2011	2011	6,196	5,771	425	6.9%	6.1%	7.0%
Wells	Annual	12/31/2012	2012	6,283	5,887	396	6.3%	5.7%	6.5%
Wells	Annual	12/31/2013	2013	6,308	5,932	376	6.0%	5.4%	6.2%
		Change 2000-2013		14.9%	11.4%		100		



	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Wells	3.0%	3.3%	4.3%	4.8%	4.2%	4.4%	3.9%	4.1%	5.0%	7.7%	7.5%	6.9%	6.3%	6.0%
York Labor Market Area	2.6%	3.0%	3.8%	4.4%	3.7%	4.0%	3.6%	3.7%	4.4%	6.9%	6.8%	6.1%	5.7%	5.4%
York County	2.6%	3.3%	4.2%	4.6%	4.0%	4.2%	3.9%	4.1%	4.8%	7.7%	7.8%	7.0%	6.5%	6.2%

Date	Year	Civilian Labor Force	Employment	Unemployment	Wells Unemployment Rate %	York Labor Market Area Unemployment Rate %	York County Unemployment Rate %
12/31/1999	1999	4,999	4,833	166	3.3		2.7
12/31/1998	1998	4,635	4,457	178	3.8		3.1
12/31/1997	1997	4,645	4,440	205	4.4		3.6
12/31/1996	1996	4,680	4,452	228	4.9		3.9
12/31/1995	1995	4,471	4,245	226	5.1		4.3
12/31/1994	1994	4,395	4,111	284	6.5		5.3
12/31/1993	1993	4,376	4,066	310	7.1		5.8
12/31/1992	1992	4,426	4,103	323	7.3		6.5
12/31/1991	1991	4,436	4,121	315	7.1		6.9
12/31/1990	1990	4,439	4,237	202	4.6		4.8

TABLE 5
Civilian Labor Force
Town of Wells, Maine
1980-2013

Year	Civilian Labor Force	Employed	Unemployed	Unemployment Rate %
1980	3,361	3,145	216	6.40%
1985	4,842	4739	103	2.10%
1990	5,106	4,939	167	3.30%
1995	4,567	4,341	226	4.90%
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% Change 1980-2013	87.7%	88.6%		
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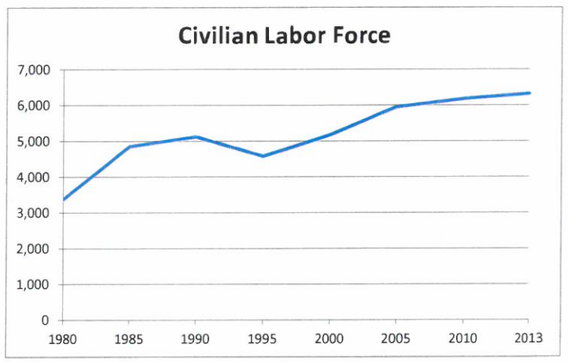
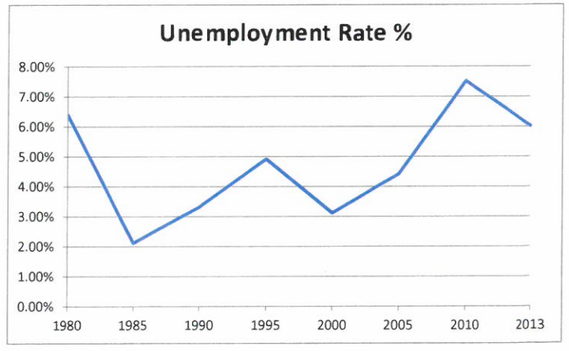
2000-2013	22.3%	18.7%		

Source: Maine Center for Workforce Research and Information, Maine Dept of Labor



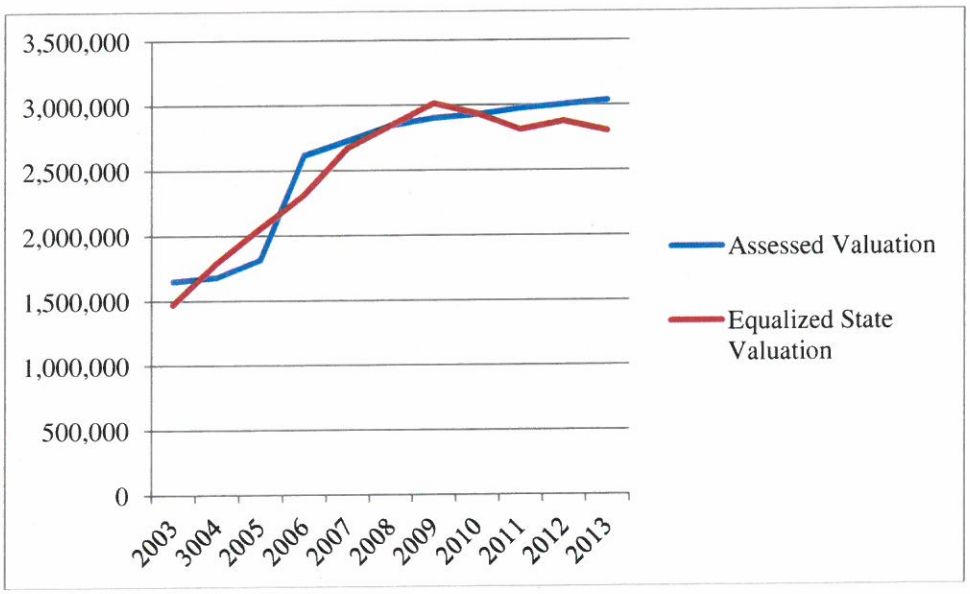


Assessed Valuation and Tax Rate

Like all municipalities in Maine Wells is dependent on locally assessed property taxation for its operational revenues. In accordance with Maine law, Wells assess both real and personal property. When combined, these two areas make up Wells total assessed valuation. This local valuation may differ from valuation published by the Maine Department of Revenue as this valuation depends on estimates as opposed to Wells valuation is based on actual assessed real and personal property values. A review of a municipality's valuation history is valuable as it is an indicator of the community's economic health and its ability to fund its operational activities.

From 2003 to 2013, Well's assessed valuation has consistently shown positive growth. Growth rates were higher from 2004 to 2007. There was a big jump in the valuation in 2006 due to a municipal revaluation (confirm this). Since 2008, Wells assessed valuation has grown on a yearly basis between one and two percent. Overall, from 2003 to 2013, Wells assessed valuation has grown by 84%. This yearly growth in assessed valuation differs from those estimates published by the Maine Department of Revenue. The equalized state valuation during this time period shows A period of both positive and negative growth. Currently the Wells assessed valuation differs with the equalized state valuation by approximately $160 million.

Wells Assessed Valuation and Equalized State Valuation Growth 2003-2013 ($000)

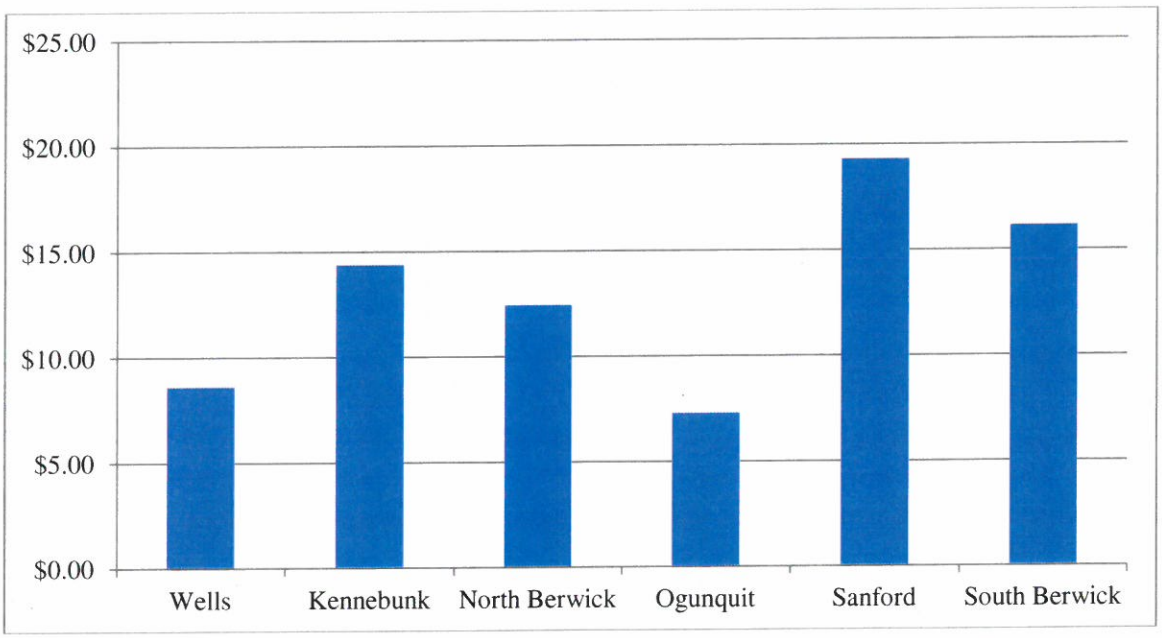


There are reasons why the equalized state valuation differs from the Wells assessed valuation. These reasons are also why Wells has seen positive growth in its assessed valuation from 2003 to 2013. The sales prices of residential homes and property have increased over the past ten years, even with the downturn in the real estate market. Wells has many waterfront and seasonal properties, which tend to hold their valuation and grow, especially since many of these properties are sold to out of state residents. New home construction leads to significant increase in property valuation. Changes in current property activity leads to increases in assessed valuation, and example is the conversion of a motel to a condominium. Lastly, business growth and investment lead to increases in assessed valuation, whether by additions to the

structure or the purchase of new equipment and machinery.

Wells had the second lowest tax rate in 2013 amongst its neighboring communities. The lowest tax rate in the six community area was Ogunquit's rate of $7.31. Wells and Ogunquit were the only two communities with a tax rate under $10.00. The City of Sanford had the highest tax rate in 2013 of $19.32.

Community	2013 Tax Rate
Wells	$8.63
Kennebunk	$14.40
North Berwick	$12.45
Ogunquit	$7.31
Sanford	$19.32
South Berwick	$16.15



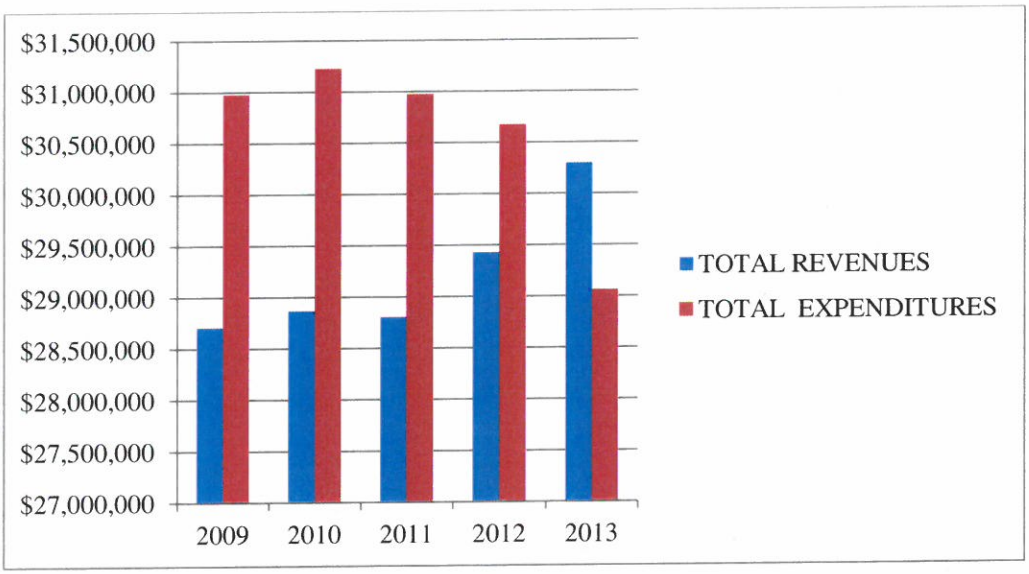
Operating Revenues and Expenditures

Wells operates its municipal budget on a yearly basis. Sections 7.01 through 7.08 of the Town's Charter provides for a formal Budget Process. The fiscal year (or "budget year") of the Town begins on the first day of July and ends on the thirtieth day of June of the next year. Chapter 10 of the Town's Code provides for a Budget Committee comprised of seven members and two alternate members, all of whom are Wells residents and are appointed by the Board of Selectmen for three year terms. Among other responsibilities, the Budget Committee inquires into and makes recommendations on any article presented to an Annual or Special Town Meeting which provides for borrowing, transferring, raising or appropriating any sum of money, the only exception being recommendations on wages and salaries. The Budget Committee also works with the Ogunquit Budget Committee to inquire into and make recommendations on the budget

presented to the Wells-Ogunquit Community School District meeting for consideration. The Board of Selectmen and the Budget Committee are furnished with copy of the proposed annual budget at least 75 days prior to the Annual Town Meeting. The Board of Selectmen complete the proposed budget and an accompanying message at least 45 calendar days before the vote of the Annual Town Meeting; and holds a public meeting at least 10 days before the Annual Town Meeting, at which time such budget is voted on. A copy of the final budget, as adopted, is certified by the Town Manager and filed with the Town Assessor, who establishes a property tax levy[1].

From 2009 to 2013 the Town of Wells revenues increased from $28,709,758 to $30,298,362 an increase of 5.5%. During this same time period, the Town of Wells expenditures decreased from $30,978,278 to $29,063,811, a decrease of 6.2%.

Wells Revenue and Expenditure Trends 2009 – 2013



For its revenues the Town of Wells heavily depends on property tax revenues. The percentage of its total revenues derived from local property tax revenues increased from 2009 to 2013 from 89.7% to 93.3%, an increase of 3.6%. The next tow highest revenue categories are charges for services and investment income. The tax revenue that Wells receives has consistently declined over recent years. It is anticipated that this decline will continue, making Wells highly dependent on local property tax revenues to fund its operations.

The Town of Wells uses its revenues primarily to fund local government functions, education and the County Tax. Over the past five years, Wells expenditures have decreased. Breakdowns of expenditures by category show yearly variations, but several trends can be seen. Education expenditures have increased by 6.5% from 2009 to 2013. General government and public safety have increased by approximately 2 ½% during this same time period. The County tax has increased by approximately 1% and is the fourth highest expenditure category.

[1] this paragraph is from the municipal bond packet

Debt

Wells has a modest level of long-term debt relative to its borrowing capacity. Debt obligations in 2013 amounted to about .16% of the total municipal valuation, in fact. Maine law limits the amount a municipality may incur in long-term debt to 7.5% of its state valuation. Given Wells' 2013 state valuation of $3,039,040, the Town could legally borrow up to $228 million.

As of 2013, the total amount of long-term debts carried by the Town of Wells was $4,765,000. This figure represents the balance remaining as of the end of FY 2013 for municipal binds issued in 2004, 2008 and 2013. Wells' total long-term debt as of 2013 is about 1.7% of the Town's state valuation.

In addition to the Town's debt, Wells owes a much higher level of debt to the Wells-Ogunquit Consolidated School District. As of the end of FY 2012, the CSD's total outstanding debt level was $9,520,000. Of the total amount, Wells' current share is set at 77.71%. This is pegged to present levels of enrollment and property valuation and changes each year as the two variables change. At the current level, though, Wells' obligation is $7,398,453.

Adding together Town and School debts, the total debt level of the Town of Wells as of 2013 is $12,163,453 or .4% of the Town's total property valuation. The Town therefore has substantial capacity to take on additional debt to finance capital projects if it so chooses.

Several recent State and local initiatives been approved and will have an impact on Well's fiscal operations. The State of Maine approved a bill titled the Property Tax Levy Limit. This bill limits a municipality's property tax levy from one year to the next. In 2011 Wells adopted a formal investment policy. In 2013 Wells established a formal policy that recognizes the importance of maintaining an appropriate level of unrestricted fund balance. More detail on these three initiatives can be found in the Appendix.[2]

Tax Levy and Collections

Fiscal Yr. End June 30,	Equalized State Valuation (000)	Assessed Valuation (000)	Tax Rate (000)	Tax Levy (000)	Collections (after Supplements and Abatements)		
					Year End' (000)	% of Levy	I % of Levy A/O 8/31/12
2013	$2,800,800	$3,039,040	$8.63	$26,227	In Process		
2012	2,874,800	3,006,525	8.63	25,946	24,840	95.73%	97.79%
2011	2,810,250	2,976,033	8.43	25,088	24,030	95.78	99.10
2010	2,934,900	2,929,174	8.33	24,400	23,275	95.38	99.88
2009	3,012,150	2,902,019	8.22	23,855	22,765	95.43	99.95
2008	2,843,750	2,846,016	7.95	22,626	21,705	95.92	99.98
2007	2,670,200	2,730,773	7.95	21,710	20,801	95.81	96.63
2006	2,309,200	2,618,123	7.89	20,657	19,810	95.90	97.13
2005	2,053,900	1,813,404	10.48	19,005	18,134	95.42	96.75
2004	1,788,050	1,681,398	10.75	18,196	17,274	94.93	99.96
2003	1,468,800	1,652,034	10.78	17,780	16,810	94.54	97.00

[2] this comes from the municipal Bond packet

Largest Taxpayers

Taxpayer	Business	As of April 1, 2012		
		Assessed Total	Property Tax	% of Levy
Shaws Realty Co & PP	Food Distribution	$23,965,020	$206,818	0.8%
Lafayetts Wells, Inc.	Motel/Lodging	17,396,420	150,131	0.6
JRS Realty Trust of ME	Industrial Factory	15,176,510	130,973	0.5
Pike Industries Inc.	Mineral Extraction	9,964,064	85,989	0.4
Central Maine Power	Electricity provider	9,466,930	81,699	0.3
Maritimes & NE Pipeline	Natural gas provide	8,956,450	77,294	0.3
Wells Hotel LLC	Motel/Lodging	6,253,791	53,970	0.2
Eagle Development LLC	Res Condo Devel.	5,301,920	45,755	0.2
Wells Golf Holdings LLC	Golf Course	5,236,754	45,193	0.2
Gerald Jean	Mult. Properties	4,879,220	42,107	0.2
	% Levy of Total Levy	$106,597,079	$919,929	0.9%

Budgets for Fiscal Year Ending June 30,

REVENUES	2009	2010	2011	2012	2013
Taxes	$25,754,597	$26,150,027	$26,887,955	$27,446,315	$28,066,915
Intergovernmental	959,881	912,815	490,992	403,994	815,067
Charges for services	1,505,150	1,305,245	1,154,100	1,275,600	965,880
Investment income	350,000	200,000	100,000	90,000	50,000
Other revenue	140,130	152,200	175,500	216,500	250,500
Transfers from other	0	0	0	0	150,000
TOTAL REVENUES	28,709,758	28,870,282	28,808,547	29,432,409	30,298,362
EXPENDITURES					
General government	3,806,601	3,874,249	4,032,321	4,083,203	4,251,072
Public safety	3,640,116	3,712,477	3,912,495	3,863,082	4,122,364
Public works	1,462,366	1,575,758	1,529,405	1,054,525	1,003,733
Recreation and culture	457,858	463,358	543,455	512,181	958,698
Health and sanitation	999,257	813,320	509,264	517,354	460,355
Education	15,125,211	15,340,618	15,511,240	16,049,000	16,065,941
County tax	1,337,672	1,440,785	1,488,326	1,505,502	1,521,817
Unclassified	695,884	1,039,492	773,990	531,917	555,043
Debt service	641,543	810,940	749,350	742,421	679,831
Overlay	572,090	416,839	505,277	326,076	492,161
Transfers to other	1,594,700	1,087,285	771,900	831,900	891,657
Other	644,980	651,171	648,296	657,148	627,000
TOTAL EXPENDITURES	30,978,278	31,226,292	30,975,319	30,674,309	29,063,811
Use of fund balance	($2,268,520)	($2,356,010)	($2,166,772)	($1,241,900)	($1,331,310)

Fiscal Yr. End June 30,	State Revenue Sharing	Homestead Exemption	General Assistance	Tree Growth	Other State Aid	Total From State
2012	$372,236	$110,803	$21,252	$62,083	$39,093	$605,467
2011	362,677	91,868	27,627	31,729	46,215	560,116
2010	370,535	144,351	38,573	28,385	49,797	631,641
2009	468,047	141,635	24,146	41,076	3,565	678,469
2008	484,598	143,909	15,061	47,075	9,205	699,848

Debt Summary

Year or Series	Date of Issue	Issue Amount	Date of Final Mat	FY End June 30, 2012	Payments 2012/2013	FY End June 30, 2013
2004	July 1, 2004	$4,225,000	Nov. 1, 2014	$1,450,000	(465,000)	$985,000
2008	October 1, 2008	1,300,000	Nov. 1, 2018	910,000	(130,000)	780,000
			Sub-total	$2,360,000	(595,000)	$1,765,000
2013	July 15, 2013	$3,000,000	Nov. 1, 2024	0	0	3,000,000
Totals				$2,360,000	(595,000)	$4,765,000<[1]

NOTE: (1) While not incurred until after June 30, 2013, the amount is added for illustrative purposes as of July 15, 2013.

Debt Ratios

The following table sets forth the ratio of bonded debt to equalized State Valuation and per capita debt ratios for the end of the nine most recent fiscal years and projected for the current fiscal year:

Fiscal Yr. End Jame 30,	Population	Equalized State Val. (000)	Assessed Valuation (000)	Total Debt	Debt as % Eq. Val.	Per Capita Debt
2013	9,589	$2,800,800	$3,039,040	4,765,000	0.17%	$496.92
2012	9,589	2,874,800	3,006,525	2,360,000	0.08	246.12
2011	9,589	2,810,250	2,976,033	3,005,000	0.11	313.38
2010	9,589	2,934,900	2,929,174	3,635,000	0.12	379.08
2009	9,400	3,012,150	2,902,019	4,303,986	0.14	457.87
2008	9,400	2,843,750	2,846,016	3,527,972	0.12	375.32
2007	9,400	2,670,200	2,730,773	4,036,958	0.15	429.46
2006	9,400	2,309,200	2,618,123	4,530,944	0.20	482.02
2005	9,400	2,053,900	1,813,404	5,084,930	0.25	540.95
2004	9,400	1,788,050	1,681,398	1,063,916	0.06	113.18

TOTAL GENERAL OBLIGATION, OVERLAPPING AND CONTINGENT DEBT

	Direct Debt	Overlapping	Contingent	Total Debt
Town of Wells	$2,360,000			$2,360,000
County of York[0]1		$859,193		$ 859,193
Wells-Ogunquit CSD		7,398,453		7,398,453
Total A/O June 30, 2012	**$2,360,000**	**$8,257,646**	**$0**	**$10,617,646**

Debt as % Eq State Val	0.08%	0.29%
Per Capita Debt	$246.12	$861.16

NOTE: (1) Projected, as of fiscal year ended December 31, 2012.

Property Tax Levy Limit

As previous discussed, unless the Town follows certain procedural requirements under Title 30-A, Section 5721-A of the Maine Revised Statutes, as amended the Town is limited to an increase in the Town's property tax levy from one year to the next to an amount not more than its Municipal Property Tax Levy Limit (see "THE BONDS - SOURCE OF PAYMENT AND REMEDIES - Limitation on Municipal Property Tax Levy" herein). The Municipal Property Tax Limit for subsequent fiscal years is the Municipal Property Tax Levy Limit for the preceding year multiplied by the Growth Limitation Factor. Therefore, in cases where the amount of the prior year's Municipal Property Tax Levy Limit exceeds the amount of the Town's actual property tax levy ("Property Tax Levy"), the Town may carry- forward that difference in establishing its future years' property tax levy. The following table displays the Town's limitation on Municipal Property Tax Levy:

Fiscal year:	2007/2008	2008/2009	2009/2010	2010/2011	2011/2012	2012/2013
State Personal Income Factor:	2.47%	2.24%	2.28%	1.78%	1.66%	1.43%
Town Property Growth Factor:	4.13	1.99	1.93	0.93	1.57	1.87
Growth Limitation Factor:	6.60%	4.23%	4.21%	2.71%	3.23%	3.30%
Property Tax Levy Limit:	$7,036,215	$7,305,771	$7,629,895	$7,862,497	$8,219,024	$8,490,252
Property Tax Levy:	6,661,246	6,819,623	7,201,780	7,583,113	8,065,738	8,146,997
Over/(below) Property Tax Levy Limit:	($374,969)	($486,148)	($428,115)	($279,384)	($153,286)	($343,255)

Investment Policy

The Town established, and follows, a formal Investment Policy since December 20, 2011. Pursuant to its policy and applicable Maine law [Title 30-A, Section 5706 et seq. of the Maine Revised Statutes, as amended (the "Act")] all investments of the Town must be made with the judgment and care that persons of prudence, discretion and intelligence, under circumstances then prevailing, exercise in the management of their own affairs, not for speculation but for investment considering (i) safety of principal and maintenance of capital, (ii) maintenance of sufficient liquidity to meet all operating and cash requirements with which a fund is charged, that is reasonably expected, and (iii) return of income commensurate with avoidance of unreasonable risk. Under its policy, the Town's investment practice is to maintain a cash and investment pool that is available for use by all funds and consists of short-term investments. The Town is invested principally in direct obligations of the United States government and its agencies. The Town is not invested in any obligations typically referred to as derivatives, meaning obligations created from, or whose value depends on or is derived from the value of one or more underlying assets or indexes of asset values in which the municipality owns no direct interest.

Fund Balance Policy

On April 2, 2013 the Town established, and follows, a formal policy that recognizes the importance of maintaining an appropriate level of unrestricted fund balance in order to comply with Governmental Accounting Standards Board ("GASB") Statement 54 ("GASB 54"). The purpose of the policy is to establish a target level of fund balance for the General Fund and to establish a process and criteria for the continued evaluation of that target level as conditions warrant. After evaluating the Town's operating characteristics, property tax base, reliability of non-property tax revenue sources, working capital needs,

state and local economic outlooks, emergency and disaster risks, and other contingent issues, the Town establishes goals regarding to the unrestricted fund balances of the General Fund of the Town.

The Town's goal is to maintain a minimum fund balance of one month (8.3% or 1/12th) of its annual Operating Budget. The "target balance" is 2 months (16.66% or 1/6th), and a maximum balance not to exceed 25.0% of the Town's Operating Budget. Any excess above 25.0% is to be assigned to other fund balance categories; however, generally would not be used to fund general or operating expenses. At year-end, capital and certain other budget items, in which appropriated amounts exceed actual expenditures, are reviewed to determine if they should be designated to be carried over to the next year. To the extent that the fund balance is not maintained to the minimum level, the Town would develop a plan, implemented through the annual budgetary process, to bring the balance to the targeted level over a period of no more than three years.

Capital Improvement Plan

The capital improvement plan is a vital tool used by communities in order to establish long rang plans for the funding of capital needs. The needs include such items as: fire, police and public works equipment, long rang studies, the purchase of conservation lands or other properties. Many of these items are too costly to purchase in a one year budget so spreading to capital costs over a 3-5 year period helps to ease the burden on the local tax rate. The most recent CIP is attached to the back of this chapter for public consumption.

FY'15 CIP- PROPOSED

SECTION 3

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FY 15 CIP Summary by Department

Department	CIP FY 15 Proposed	CIP FY 15 Approp	Proposed From: Taxes	Proposed From: Undistributed Budget	Proposed From: Reserves	Proposed From: Revenue	
Beach	$ 175,000.00	$ 185,000.00	$ -	$ 100,000.00	$ -	$ 75,000.00	Enterprise Fund
Code Enforcement	$ -	$ 25,000.00	$ -	$ -	$ -	$ -	Additional CEO Vehicle
Conservation	$ 100,000.00	$ -	$ -	$ 100,000.00	$ -	$ -	Land
Fire	$ 293,000.00	$ 49,000.00	$ -	$ 255,000.00	$ 38,000.00	$ -	Various
Harbor Master/Harbor	$ 45,000.00	$ 50,000.00	$ -	$ 25,000.00	$ 20,000.00	$ -	Various
Highway	$ 362,000.00	$ 169,500.00	$ 260,000.00	$ 72,000.00	$ 30,000.00	$ -	Equipment Reserve
IT	$ 76,682.00	$ 76,682.00	$ 76,682.00	$ -	$ -	$ -	Server Upgrade, Tech Comm
Library	$ -	$ 21,987.00	$ -	$ -	$ -	$ -	Building Upgrades
Parks & Rec	$ 156,000.00	$ 138,000.00	$ 125,000.00	$ 31,000.00	$ -	$ -	Various
Paving	$ 950,000.00	$ 950,000.00	$ 201,159.00	$ 500,000.00	$ 18,841.00	$ 230,000.00	Reserve Fund
Police	$ 10,000.00	$ 20,000.00	$ -	$ 10,000.00	$ -	$ -	Toughbooks
Public Safety	$ 76,029.00	$ 176,029.00	$ -	$ -	$ 76,029.00	$ -	Future Construction
Town Hall	$ -	$ 37,500.00	$ -	$ -	$ -	$ -	Various
Town Wide	$ 197,500.00	$ 147,500.00	$ 80,000.00	$ 110,000.00	$ 7,500.00	$ -	Various
WEMS	$ 75,000.00	$ -	$ 15,000.00	$ 60,000.00	$ -	$ -	Ambulance & Defib
Totals FY 15	**$ 2,516,211.00**	**$ 2,046,198.00**	**$ 757,841.00**	**$ 1,263,000.00**	**$ 190,370.00**	**$ 305,000.00**	
Totals FY 14	**$ 2,103,328.00**		**$ 414,882.00**	**$ 1,403,500.00**	**$ 55,000.00**	**$ 230,000.00**	
Difference	**$ 412,883.00**		**$ 342,959.00**	**$ (140,500.00)**	**$ 135,370.00**	**$ 75,000.00**	

Tax Rate Impact

	Taxes	Tax Rate Impact	Enterprise Fund Impact	Net Tax Impact
FY 15 CIP Funded by Taxation as Shown Above	757,841.00	0.25	-0.06	0.19
FY 14 CIP Funded by Taxation as Shown Above	414,882.00	0.14	-0.01	0.13

	A	B	C	D	E	F	G	H	I
1	**TABLE 5**								
2	**CIP FUNDING PROGRAM**								
3							**Proposed From**		
4		**EXISTING**	**Balance**	**CIP FY 15**	**CIP FY 15**		**Undistributed**		
5		**FUND**	**@ 10/16**	**Proposed**	**Approp**	**Taxes**	**Budget**	**Reserves**	**Revenue**
6	**Buildings and Building Improvements**								
7	Fire - Electronic Access Ports	0734	149,169.84	15,000.00	15,000.00			15,000.00	
8	Highway - Old Highway Garage	0733	-6,605.36	120,000.00	120,000.00	60,000.00	60,000.00		
9	Library - Security Cameras	0817	165,302.37		13,987.00				
10	Library - Window Replacement	0817	165,302.37		8,000.00				
11	Parks & Rec - Renovate Public Bathrooms	0500	54,547.89	3,000.00		3,000.00			
12	Police - Evidence Building Repairs	0817	165,302.37		10,000.00				
13	Public Safety - Architect	0840	401,219.88		100,000.00				
14	Public Safety - Public Safety Facility	0840	401,219.88	76,029.00	76,029.00			76,029.00	
15	Town Hall - Storage Room Storage System	0817	165,302.37		30,000.00				
16	Town Hall - Window Sach	0817	165,302.37		7,500.00				
17	Town Wide - School House 9	0903	906.51	70,000.00	70,000.00	50,000.00	20,000.00		
18	**Sub Total- Building Improvements**			284,029.00	450,516.00	113,000.00	80,000.00	91,029.00	0.00
19									
20	**Conservation**								
21	Conservation - Land Acquistion	0705	506,769.80	100,000.00			100,000.00		
22	**Sub Total- Conservation**			100,000.00	0.00	0.00	100,000.00	0.00	0.00
23									
24	**Vehicles**								
25	Code - Code Officer Vehicle Replacement	0827	88,194.17		25,000.00				
26	Fire- Truck reserve	0703	725,541.58	250,000.00			250,000.00		
27	Parks & Rec - Dump Truck Replacement	0527	32,465.06	6,000.00			6,000.00		
28	Parks & Rec - Van Replacement	0527	32,465.06	5,000.00			5,000.00		
29	WEMS - Ambulance	0715	9,175.85	60,000.00			60,000.00		
30	**Sub Total- Vehicles**			321,000.00	25,000.00	0.00	321,000.00	0.00	0.00
31									
32	**Technology Plan**								
33	Fire - Fire House & IMC Software	0734	149,169.84		6,000.00				
34	Police - Toughbooks	0742	3,607.45	10,000.00	10,000.00		10,000.00		
35	IT - Tech Committee	0830	133,753.63	41,682.00	41,682.00	41,682.00			
36	IT - Computer System Upgrades	0740	71,670.81	35,000.00	35,000.00	35,000.00			
37	**Sub Total- Technology Plan**			86,682.00	92,682.00	76,682.00	10,000.00	0.00	0.00
38									
39	**Infrastructure**								
40	Harbor - Floats	0012	290,408.80	20,000.00				20,000.00	
41	Harbor Master - Pier Re-decking	0012	290,408.80		25,000.00				

	A	B	C	D	E	F	G	H	I
1	**TABLE 5**								
2	**CIP FUNDING PROGRAM**								
3							**Proposed From**		
4		**EXISTING**	**Balance**	**CIP FY 15**	**CIP FY 15**		**Undistributed**		
5		**FUND**	**@ 10/16**	**Proposed**	**Approp**	**Taxes**	**Budget**	**Reserves**	**Revenue**
42	Highway - Coles Hill Bridge (Year 3 of 10)	0708	477,573.00	50,000.00		50,000.00			
43	Parks & Rec - Additional Parking Lot/Trails	0500	54,547.89	35,000.00	35,000.00	30,000.00	5,000.00		
44	Parks & Rec - Irrigation System	0500	54,547.89	66,000.00	66,000.00	61,000.00	5,000.00		
45	Parks & Rec - Pave Parking near Pavillion	0500	54,547.89	32,000.00	32,000.00	27,000.00	5,000.00		
46	Paving/Culverts& Bridges	0723	747,294.74	950,000.00	950,000.00	201,159.00	500,000.00	18,841.00	230,000.00
47	**Sub Total- Infrastrucure**			1,153,000.00	1,108,000.00	369,159.00	515,000.00	38,841.00	230,000.00
48									
49	**Equipment**								
50	Fire - Radio/Pagers	0734	149,169.84	10,000.00	10,000.00			10,000.00	
51	Fire - Washer Extractor	0734	149,169.84	8,000.00	8,000.00			8,000.00	
52	Highway - Equipment Reserve	0701	197,236.57	150,000.00		150,000.00			
53	Highway - Shop Equipment	0701	197,236.57	10,000.00	10,000.00			10,000.00	
54	Parks & Rec - Tractor Replacement	0527	32,465.06	4,000.00		4,000.00			
55	WEMS- EKG/Defib	0735	17,952.80	15,000.00		15,000.00			
56	**Sub Total- Equipment**			197,000.00	28,000.00	169,000.00	0.00	28,000.00	0.00
57									
58	**Other**								
59	Beach - Beach Sand Movement	0804	345,007.67	75,000.00	30,000.00				75,000.00
60	Beach - Beach Sand Purchase	0900	112,286.79	100,000.00	100,000.00		100,000.00		
61	Beach - Showers	0900	112,286.79		10,000.00				
62	Beach - ROW Upgrade	0900	112,286.79		45,000.00				
63	Fire - Certification Engineer	0922	4,917.26	5,000.00	5,000.00			5,000.00	
64	Fire- Dry Hydrants	0922	4,917.26	5,000.00	5,000.00		5,000.00		
65	Harbor - Harbor Park	0907	986.58	25,000.00	25,000.00		25,000.00		
66	Highway - Crosswalk Lights	0739	16,388.88	12,000.00	19,500.00		12,000.00		
67	Highway - Pit Reclaimation	0701	197,236.57	20,000.00	20,000.00			20,000.00	
68	Parks & Rec - Playground	0500	54,547.89	5,000.00	5,000.00		5,000.00		
69	Town Wide - Beautification	0727	49,831.79	7,500.00	7,500.00			7,500.00	
70	Town Wide - Comprehensive Plan	0739	16,388.88	20,000.00	20,000.00		20,000.00		
71	Town Wide - Municipal Land Reserve	0706	-5,320.51	50,000.00	50,000.00		50,000.00		
72	Town Wide - Sidewalk and Bicycle Reserve	0704	222,975.14	50,000.00		30,000.00	20,000.00		
73	**Sub Total - Other**			374,500.00	342,000.00	30,000.00	237,000.00	32,500.00	75,000.00
74									
75	**Grand Total**			**2,516,211.00**	**2,046,198.00**	**757,841.00**	**1,263,000.00**	**190,370.00**	**305,000.00**
76	**FY 2014 Totals**			**2,103,328.00**		**414,882.00**	**1,403,500.00**	**55,000.00**	**230,000.00**
77	Difference			412,883.00		342,959.00	-140,500.00	135,370.00	75,000.00

	A	B	C	D	E	K
1						
2	**Town of Wells CIP Plan**					
3	**By Department**					
4		**EXISTING**	**Balance**	**CIP FY 15**	**CIP FY 15**	**Fund**
5		**FUND**	**@ 10/16**	**Proposed**	**Approp**	**Description**
6						
7	Beach - Beach Sand Movement	0804	345007.67	75,000.00	30,000.00	Beach Eroison Reserve
8	Beach - Beach Sand Purchase	0900	112286.79	100,000.00	100,000.00	Beach Enterprise
9	Beach - ROW Upgrade	0900	112286.79	-	45,000.00	Beach Enterprise
10	Beach - Showers	0900	112286.79	-	10,000.00	Beach Enterprise
11	Code - Code Officer Vehicle Replacement	0827	88,194.17	0.00	25,000.00	Revolving Vehicle Loan
12	Conservation - Land Acquistion	0705	506769.8	100,000.00	-	Conservation Landbank Reserve
13	Fire - Certification Engineer	0922	4917.26	5,000.00	5,000.00	Dry Hydrant Reserve
14	Fire - Electronic Access Ports	0734	149169.84	15,000.00	15,000.00	FD Misc. Operating Equipment
15	Fire - Fire House & IMC Software	0734	149169.84	-	6,000.00	FD Misc. Operating Equipment
16	Fire - Radio/Pagers	0734	149169.84	10,000.00	10,000.00	FD Misc. Operating Equipment
17	Fire - Washer Extractor	0734	149169.84	8,000.00	8,000.00	FD Misc. Operating Equipment
18	Fire- Dry Hydrants	0922	4917.26	5,000.00	5,000.00	Dry Hydrant Reserve
19	Fire- Truck reserve	0703	725541.58	250,000.00	-	Fire Truck Reserve
20	Harbor - Floats	0012	290408.8	20,000.00	-	Moorings & Floats
21	Harbor - Harbor Park	0907	986.58	25,000.00	25,000.00	Harbor Park Project
22	Harbor Master - Pier Re-decking	0012	290408.8	-	25,000.00	Moorings & Floats
23	Highway - Coles Hill Bridge (Year 3 of 10)	0708	477573	50,000.00	-	Infrastructure Reserve
24	Highway - Crosswalk Lights	0739	16388.88	12,000.00	19,500.00	Town Wide Misc.
25	Highway - Equipment Reserve	0701	197236.57	150,000.00	-	Public Works Equipment Reserve
26	Highway - Old Highway Garage	0733	-6605.36	120,000.00	120,000.00	PW Building Replacement
27	Highway - Pit Reclaimation	0701	197236.57	20,000.00	20,000.00	Public Works Equipment Reserve
28	Highway - Shop Equipment	0701	197236.57	10,000.00	10,000.00	Public Works Equipment Reserve
29	IT - Computer System Upgrades	0740	71670.81	35,000.00	35,000.00	Work Station Refresh
30	IT - Tech Committee	0830	133753.63	41,682.00	41,682.00	Techonology/Self Insurance/GIS Reserve
31	Library - Security Cameras	0817	165302.37	-	13,987.00	Building Improvement
32	Library - Window Replacement	0817	165302.37	-	8,000.00	Building Improvement
33	Parks & Rec - Additional Parking Lot/Trails	0500	54547.89	35,000.00	35,000.00	Recreation Programs
34	Parks & Rec - Dump Truck Replacement	0527	32465.06	6,000.00	-	Parks & Rec Vehicle Replacement
35	Parks & Rec - Irrigation System	0500	54547.89	66,000.00	66,000.00	Recreation Programs
36	Parks & Rec - Pave Parking near Pavillion	0500	54547.89	32,000.00	32,000.00	Recreation Programs
37	Parks & Rec - Playground	0500	54547.89	5,000.00	5,000.00	Recreation Programs

	A	B	C	D	E	K
1						
2	**Town of Wells CIP Plan**					
3	**By Department**					
4		**EXISTING**	**Balance**	**CIP FY 15**	**CIP FY 15**	**Fund**
5		**FUND**	**@ 10/16**	**Proposed**	**Approp**	**Description**
6						
38	Parks & Rec - Renovate Public Bathrooms	0500	54547.89	3,000.00	-	Recreation Programs
39	Parks & Rec - Tractor Replacement	0527	32465.06	4,000.00	-	Parks & Rec Vehicle Replacement
40	Parks & Rec - Van Replacement	0527	32465.06	5,000.00	-	Parks & Rec Vehicle Replacement
41	Paving/Culverts& Bridges	0723	747294.74	950,000.00	950,000.00	Paving/Bridges/Culverts
42	Police - Evidence Building Repairs	0817	165302.37	-	10,000.00	Building Improvement
43	Police - Toughbooks	0742	3607.45	10,000.00	10,000.00	PD Recorder
44	Public Safety - Architect	0840	401219.88	-	100,000.00	Public Safety Facility Reserve
45	Public Safety - Public Safety Facility	0840	401219.88	76,029.00	76,029.00	Public Safety Facility Reserve
46	Town Hall - Storage Room Storage System	0817	165302.37	-	30,000.00	Building Improvement
47	Town Hall - Window Sach	0817	165302.37	-	7,500.00	Building Improvement
48	Town Wide - Beautification	0727	49831.79	7,500.00	7,500.00	Beautification Reserve
49	Town Wide - Comprehensive Plan	0739	16388.88	20,000.00	20,000.00	Town Wide Misc.
50	Town Wide - Municipal Land Reserve	0706	-5320.51	50,000.00	50,000.00	Municipal Landbank Reserve
51	Town Wide - School House 9	0903	906.51	70,000.00	70,000.00	School House 9
52	Town Wide - Sidewalk and Bicycle Reserve	0704	222975.14	50,000.00	-	Sidewalk/Bicycle Reserve
53	WEMS - Ambulance	0715	9175.85	60,000.00	-	Ambulance Reserve
54	WEMS- EKG/Defib	0735	17952.8	15,000.00	-	WEMS EKG/Defib Reserve
55						
56						
57	**FY 2015 Totals**			**2,516,211.00**	**2,046,198.00**	
58	**FY 2014 Totals**			**2,103,328.00**	**1,824,275.00**	

	A	B	C	D	E	F
1						
2	**Town of Wells CIP Plan**					
3	**High to Low**					
4		**EXISTING**	**Balance**	**CIP FY 15**	**CIP FY 15**	**Fund**
5		**FUND**	**@ 10/16**	**Proposed**	**Approp**	**Description**
6						
7	Paving/Culverts& Bridges	0723	747294.74	950,000.00	950,000.00	Paving/Bridges/Culverts
8	Fire- Truck reserve	0703	725541.58	250,000.00	-	Fire Truck Reserve
9	Highway - Equipment Reserve	0701	197236.57	150,000.00	-	Public Works Equipment Reserve
10	Highway - Old Highway Garage	0733	-6605.36	120,000.00	120,000.00	PW Building Replacement
11	Beach - Beach Sand Purchase	0900	112286.79	100,000.00	100,000.00	Beach Enterprise
12	Conservation - Land Acquistion	0705	506769.8	100,000.00	-	Conservation Landbank Reserve
13	Public Safety - Public Safety Facility	0840	401219.88	76,029.00	76,029.00	Public Safety Facility Reserve
14	Beach - Beach Sand Movement	0804	345007.67	75,000.00	30,000.00	Beach Eroison Reserve
15	Town Wide - School House 9	0903	906.51	70,000.00	70,000.00	School House 9
16	Parks & Rec - Irrigation System	0500	54547.89	66,000.00	66,000.00	Recreation Programs
17	WEMS - Ambulance	0715	9175.85	60,000.00	-	Ambulance Reserve
18	Town Wide - Municipal Land Reserve	0706	-5320.51	50,000.00	50,000.00	Municipal Landbank Reserve
19	Highway - Coles Hill Bridge (Year 3 of 10)	0708	477573	50,000.00	-	Infrastructure Reserve
20	Town Wide - Sidewalk and Bicycle Reserve	0704	222975.14	50,000.00	-	Sidewalk/Bicycle Reserve
21	IT - Tech Committee	0830	133753.63	41,682.00	41,682.00	Techonology/Self Insurance/GIS Reserve
22	IT - Computer System Upgrades	0740	71670.81	35,000.00	35,000.00	Work Station Refresh
23	Parks & Rec - Additional Parking Lot/Trails	0500	54547.89	35,000.00	35,000.00	Recreation Programs
24	Parks & Rec - Pave Parking near Pavillion	0500	54547.89	32,000.00	32,000.00	Recreation Programs
25	Harbor - Harbor Park	0907	986.58	25,000.00	25,000.00	Harbor Park Project
26	Highway - Pit Reclaimation	0701	197236.57	20,000.00	20,000.00	Public Works Equipment Reserve
27	Town Wide - Comprehensive Plan	0739	16388.88	20,000.00	20,000.00	Town Wide Misc.
28	Harbor - Floats	0012	290408.8	20,000.00	-	Moorings & Floats
29	Fire - Electronic Access Ports	0734	149169.84	15,000.00	15,000.00	FD Misc. Operating Equipment
30	WEMS- EKG/Defib	0735	17952.8	15,000.00	-	WEMS EKG/Defib Reserve
31	Highway - Crosswalk Lights	0739	16388.88	12,000.00	19,500.00	Town Wide Misc.
32	Fire - Radio/Pagers	0734	149169.84	10,000.00	10,000.00	FD Misc. Operating Equipment
33	Highway - Shop Equipment	0701	197236.57	10,000.00	10,000.00	Public Works Equipment Reserve
34	Police - Toughbooks	0742	3607.45	10,000.00	10,000.00	PD Recorder
35	Fire - Washer Extractor	0734	149169.84	8,000.00	8,000.00	FD Misc. Operating Equipment
36	Town Wide - Beautification	0727	49831.79	7,500.00	7,500.00	Beautification Reserve
37	Parks & Rec - Dump Truck Replacement	0527	32465.06	6,000.00	-	Parks & Rec Vehicle Replacement

	A	B	C	D	E	F
1						
2			**Town of Wells CIP Plan**			
3			**High to Low**			
4		**EXISTING**	**Balance**	**CIP FY 15**	**CIP FY 15**	**Fund**
5		**FUND**	**@ 10/16**	**Proposed**	**Approp**	**Description**
38	Fire - Certification Engineer	0922	4917.26	5,000.00	5,000.00	Dry Hydrant Reserve
39	Fire- Dry Hydrants	0922	4917.26	5,000.00	5,000.00	Dry Hydrant Reserve
40	Parks & Rec - Playground	0500	54547.89	5,000.00	5,000.00	Recreation Programs
41	Parks & Rec - Van Replacement	0527	32465.06	5,000.00	-	Parks & Rec Vehicle Replacement
42	Parks & Rec - Tractor Replacement	0527	32465.06	4,000.00	-	Parks & Rec Vehicle Replacement
43	Parks & Rec - Renovate Public Bathrooms	0500	54547.89	3,000.00	-	Recreation Programs
44	Public Safety - Architect	0840	401219.88	-	100,000.00	Public Safety Facility Reserve
45	Beach - ROW Upgrade	0900	112286.79	-	45,000.00	Beach Enterprise
46	Town Hall - Storage Room Storage System	0817	165302.37	-	30,000.00	Building Improvement
47	Code - Code Officer Vehicle Replacement	0827	88,194.17	-	25,000.00	Revolving Vehicle Loan
48	Harbor Master - Pier Re-decking	0012	290408.8	-	25,000.00	Moorings & Floats
49	Library - Security Cameras	0817	165302.37	-	13,987.00	Building Improvement
50	Beach - Showers	0900	112286.79	-	10,000.00	Beach Enterprise
51	Police - Evidence Building Repairs	0817	165302.37	-	10,000.00	Building Improvement
52	Library - Window Replacement	0817	165302.37	-	8,000.00	Building Improvement
53	Town Hall - Window Sach	0817	165302.37	-	7,500.00	Building Improvement
54	Fire - Fire House & IMC Software	0734	149169.84	-	6,000.00	FD Misc. Operating Equipment

	CIP Yr. 2015	CIP Yr. 2016	CIP Yr. 2017	CIP Yr. 2018	CIP Yr. 2019	CIP Yr. 2020	CIP Yr. 2021	CIP Yr. 2022	CIP Yr. 2023	CIP Yr. 2024	CIP Yr. 2025
on Funding (C) Construction/Implementation (B) Buy/Purchase											
s	CODE	CODE	CODE	CODE	CODE	CODE	CODE	CODE	CODE	CODE	CODE
FD-Electronic Access Ports	B										
Reserve	$ 15,000										
0734											
HW-Old Highway Garage	B										
Taxation	$ 120,000										
0733											
LIB-Renovation/Expansion			B								
Taxation/Bond/Donations			$ 2,500,000								
0851											
LIB-Security Cameras	B										
Taxation	$ 13,987										
0817											
LIB-Window Replacement	B										
Taxation	$ 8,000										
0817											
REC-Renovate Public Bathroom	P										
Taxation	$ 3,000										
0500											
PD-Evidence Building	B	P	P	P	P	P	P	P	P	P	P
Reserve or Taxation	$ 10,000	$ 500	$ 500	$ 500	$ 500	$ 500	$ 500	$ 500	$ 500	$ 500	$ 500
0817											
Public Safety Facility	B										
Reserve	$ 100,000										
0840											
Public Safety Facility	P	P	P								
Reclassify 0911	$ 76,029	$ 50,000	$ 50,000								
0840											

	CIP Yr. 2015	CIP Yr. 2016	CIP Yr. 2017	CIP Yr. 2018	CIP Yr. 2019	CIP Yr. 2020	CIP Yr. 2021	CIP Yr. 2022	CIP Yr. 2023	CIP Yr. 2024	CIP Yr. 2025
n Funding (C) Construction/Implementation (B) Buy/Purchase											
TH-Storage Room Storage	B										
Reserve	$ 30,000										
0817											
TH-Window Sach	B										
Reserve	$ 7,500										
0817											
TW-School House 9	B										
Taxes/Surplus	$ 70,000										
0903											
	CODE	CODE	CODE	CODE	CODE	CODE	CODE	CODE	CODE	CODE	CODE
Land Acquisition	P	P	P	P	P	P	P	P	P	P	P
Surplus or Taxes	$ 100,000	$ 100,000	$ 100,000	$ 100,000	$ 100,000	$ 100,000	$ 100,000	$ 100,000	$ 100,000	$ 100,000	$ 100,000
0705											
	CODE	CODE	CODE	CODE	CODE	CODE	CODE	CODE	CODE	CODE	CODE
CEO-Code Officer Vehicle	B							B			
Taxation	$ 25,000							$ 25,000			
0827											
FD-Truck Reserve	P	P/B	P	P	P	P	P	P	P	P	P
Surplus or Taxation	$ 250,000	$ 783,000	$ 250,000	$ 250,000	$ 250,000	$ 250,000	$ 250,000	$ 250,000	$ 250,000	$ 250,000	$ 250,000
0703											
REC-Dump Truck Replacement	P	B/P									
Taxation or Surplus	$ 6,000	$ 37,000									
0527											
REC-Van Replacement	P	P	P	P	P	P	P	P	P	P	B
Taxation or Surplus	$ 5,000	$ 5,000	$ 5,000	$ 5,000	$ 5,000	$ 5,000	$ 5,000	$ 5,000	$ 5,000	$ 5,000	$ 55,000
0527											
WEMS-Ambulance	P	P	B/P	P	P	P	B/P	P	P	P	B/P
Surplus	$ 60,000	$ 60,000	$ 180,000	$ 60,000	$ 60,000	$ 60,000	$ 180,000	$ 60,000	$ 60,000	$ 60,000	$ 180,000
0715											

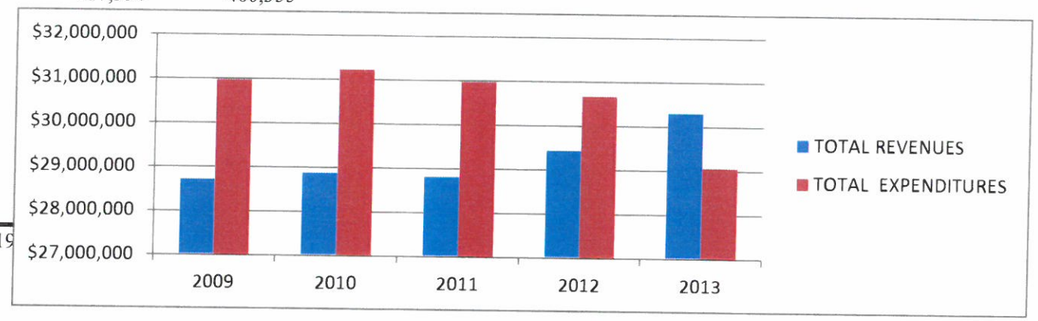
	CIP Yr. 2015	CIP Yr. 2016	CIP Yr. 2017	CIP Yr. 2018	CIP Yr. 2019	CIP Yr. 2020	CIP Yr. 2021	CIP Yr. 2022	CIP Yr. 2023	CIP Yr. 2024	CIP Yr. 2025
on Funding (C) Construction/Implementation (B) Buy/Purchase											
	CODE	CODE	CODE	CODE	CODE	CODE	CODE	CODE	CODE	CODE	CODE
FD-Fire House & IMC Software	B										
Reserve	$ 6,000										
0734											
PD-Toughbooks	B	B	B	B	B	B	B	B	B	B	B
Surplus	$ 10,000	$ 10,000	$ 10,000	$ 10,000	$ 10,000	$ 10,000	$ 10,000	$ 10,000	$ 10,000	$ 10,000	$ 10,000
0742											
IT-Computer System Upgrades	B										
Taxation	$ 35,000										
0740											
Tech Committee	B	B	B	B	B	B	B	B	B	B	B
Taxation	$ 41,682	$ 41,682	$ 41,682	$ 41,682	$ 41,682	$ 41,682	$ 41,682	$ 41,682	$ 41,682	$ 41,682	$ 41,682
0830											
	CODE	CODE	CODE	CODE	CODE	CODE	CODE	CODE	CODE	CODE	CODE
HW-Coles Hill Bridge (10 Yr Plan)	P	P	P	P	P	P	P	P			
Taxation/Surplus	$ 50,000	$ 75,000	$ 75,000	$ 75,000	$ 75,000	$ 75,000	$ 75,000	$ 100,000			
0708											
HAR-Floats	B	B	B	B	B	B	B	B	B	B	B
Harbor Mooring Reserve	$ 20,000	$ 25,000	$ 30,000	$ 35,000	$ 40,000	$ 45,000	$ 50,000	$ 55,000	$ 60,000	$ 65,000	$ 70,000
0012											
HAR-Pier Re-decking	B										
Harbor Mooring Reserve	$ 25,000										
0012											
REC-Additional Parking Lot	B										
Taxation and Surplus	$ 35,000										
0500											
REC-Irrigation System	B										
Taxation and Surplus	$ 66,000										
0500											
REC-Pave Parking Near Pavillion	B										
Taxation and Surplus	$ 32,000										
0500											
Paving/Culverts/Bridges	B	B	B	B	B	B	B	B	B	B	B

	CIP Yr. 2015	CIP Yr. 2016	CIP Yr. 2017	CIP Yr. 2018	CIP Yr. 2019	CIP Yr. 2020	CIP Yr. 2021	CIP Yr. 2022	CIP Yr. 2023	CIP Yr. 2024	CIP Yr. 2025
n Funding (C) Construction/Implementation (B) Buy/Purchase											
Taxation, Surplus, Revenues	$ 950,000	$ 1,000,000	$ 1,000,000	$ 1,000,000	$ 1,000,000	$ 1,000,000	$ 1,000,000	$ 1,000,000	$ 1,000,000	$ 1,000,000	$ 1,000,000
0723											
	CODE	CODE	CODE	CODE	CODE	CODE	CODE	CODE	CODE	CODE	CODE
FD-Radio/Pagers	B										
Reserve	$ 10,000										
0734											
FD-Washer Extractor	B										
Reserve	$ 8,000										
0734											
HW-Equipment Reserve	P	B	B	B	B	B	B	B	B	B	
Surplus	$ 150,000	$ 250,000	$ 120,000	$ 190,000	$ 350,000	$ 340,000	$ 380,000	$ 225,000	$ 90,000	$ 40,000	
0701											
HW-Shop Equipment	B										
Taxation	$ 10,000										
0701											
REC-Tractor Replacement	P	P	P	P	B						
Taxation	$ 4,000	$ 4,000	$ 4,000	$ 4,000	$ 20,000						
0527											
WEMS-EKG/Defib	P	B/P	P	P	P	P	P	P	P	P	B/P
Taxation	$ 15,000	$ 45,000	$ 15,000	$ 15,000	$ 15,000	$ 15,000	$ 15,000	$ 15,000	$ 15,000	$ 15,000	$ 120,000
0735											
	CODE	CODE	CODE	CODE	CODE	CODE	CODE	CODE	CODE	CODE	CODE
BEACH-Beach Sand Movement	B/P	B/P	B/P	B/P	B/P						
Enterprise	$ 75,000	$ 80,000	$ 80,000	$ 80,000	$ 80,000						
0900											

	CIP Yr. 2015	CIP Yr. 2016	CIP Yr. 2017	CIP Yr. 2018	CIP Yr. 2019	CIP Yr. 2020	CIP Yr. 2021	CIP Yr. 2022	CIP Yr. 2023	CIP Yr. 2024	CIP Yr. 2025
on Funding (C) Construction/Implementation (B) Buy/Purchase											
BEACH-Beach Sand Purchase	B/P	B/P	B/P	B/P	B/P	P	P	P	P	P	P
Enterprise	$ 100,000	$ 620,000	$ 50,000	$ 50,000	$ 50,000	$ 100,000	$ 100,000	$ 100,000	$ 100,000	$ 100,000	$ 100,000
0900											
BEACH-ROW Upgrade	B	B									
Enterprise	$ 45,000	$ 45,000									
0900											
BEACH-Showers	B										
Enterprise	$ 10,000										
0900											
FD-Certification Engineer	B										
Reserve	$ 5,000										
0922											
FD-Dry Hydrants	B/P	B/P	B/P	B/P	B/P	B/P	B/P	B/P	B/P	B/P	B/P
Surplus	$ 5,000	$ 5,000	$ 5,000	$ 5,000	$ 5,000	$ 5,000	$ 5,000	$ 5,000	$ 5,000	$ 5,000	$ 5,000
0922											
HAR-Harbor Park	B										
Surplus	$ 25,000										
0907											
TW-Crosswalk Lights	B	B	B								
Reserve Transfer	$ 19,500	$ 19,500	$ 19,500								
0739											
HW-Pit Reclaimation	B										
	$ 20,000										
REC-Playground	B										
Taxation	$ 5,000										
0500											
TW-Beautification	B										
Reserve	$ 7,500										
0727											
TW-Comprehensive Plan	B										
Surplus	$ 20,000										
0739											

		CIP Yr. 2015	CIP Yr. 2016	CIP Yr. 2017	CIP Yr. 2018	CIP Yr. 2019	CIP Yr. 2020	CIP Yr. 2021	CIP Yr. 2022	CIP Yr. 2023	CIP Yr. 2024	CIP Yr. 2025
on Funding (C) Construction/Implementation (B) Buy/Purchase												
	TW-Municipal Land Bank	B										
	Surplus	$ 50,000										
	0706											
	TW-Sidewalk and Bicycle Reserve	P										
	Taxes/Surplus	$ 50,000										
	0704											
		$ 2,804,198.00	$ 3,255,682.00	$ 2,035,682.00	$ 1,921,182.00	$ 2,102,182.00	$ 2,047,182.00	$ 2,212,182.00	$ 1,992,182.00	$ 1,737,182.00	$ 1,692,182.00	$ 1,932,182.00
cliation Request-Short Description (include materials with submission)												

Taxes	$25,754,597	$26,150,027	$26,887,955	$27,446,315	$28,066,915
Intergovernmental	959,881	912,815	490,992	403,994	815,067
Charges for services	1,505,150	1,305,245	1,154,100	1,275,600	965,880
Investment income	350,000	200,000	100,000	90,000	50,000
Other revenue	140,130	152,200	175,500	216,500	250,500
Transfers from other	0	0	0	0	150,000
TOTAL REVENUES	28,709,758	$28,870,282	28,808,547	29,432,409	30,298,362
EXPENDITURES					
General government	3,806,601	3,874,249	4,032,321	4,083,203	4,251,072
Public safety	3,640,116	3,712,477	3,912,495	3,863,082	4,122,364
Public works	1,462,366	1,575,758	1,529,405	1,054,525	1,003,733
Recreation and culture	457,858	463,358	543,455	512,181	958,698
Health and sanitation	999,257	813,320	509,264	517,354	460,355
Education	15,125,211	15,340,618	15,511,240		
County tax	1,337,672	1,440,785	1,488,326		
Unclassified	695,884	1,039,492	773,990		
Debt service	641,543	810,940	749,350		
Overlay	572,090	416,839	505,277		
Transfers to other	1,594,700	1,087,285	771,900		
Other	644,980	651,171	648,296		
TOTAL EXPENDITURES	30,978,278	31,226,292	30,975,319		
Use of fund balance	($2,268,520)	($2,356,010)	($2, 166,772)		



	2009	2010	2011	2012	2013
TOTAL REVENUES	28,709,758	$28,870,282	28,808,547	29,432,409	30,298,362
TOTAL EXPENDITURES	30,978,278	31,226,292	30,975,319	30,674,309	29,063,811

'ENUES	2009		2010		2011		2012		2013	
Taxes	$25,754,597	89.7%	$26,150,027	91.1%	$26,887,955	93.3%	$27,446,315	93.3%	$28,066,915	92.6%
Intergovernmental	959,881	3.3%	912,815	3.2%	490,992	1.7%	403,994	1.4%	815,067	2.7%
Charges for services	1,505,150	5.2%	1,305,245	4.5%	1,154,100	4.0%	1,275,600	4.3%	965,880	3.2%
Investment income	350,000	1.2%	200,000	0.7%	100,000	0.3%	90,000	0.3%	50,000	0.2%
Other revenue	140,130	0.5%	152,200	0.5%	175,500	0.6%	216,500	0.7%	250,500	0.8%
Transfers from other	0		0		0		0		150,000	0.5%
TOTAL REVENUES	28,709,758		$28,720,287		28,808,547		29,432,409		30,298,362	
EXPENDITURES										
General government	3,806,601	12.3%	3,874,249	12.4%	4,032,321	13.0%	4,083,203	13.3%	4,251,072	14.6%
Public safety	3,640,116	11.8%	3,712,477	11.9%	3,912,495	12.6%	3,863,082	12.6%	4,122,364	14.2%
Public works	1,462,366	4.7%	1,575,758	5.0%	1,529,405	4.9%	1,054,525	3.4%	1,003,733	3.5%
Recreation and culture	457,858	1.5%	463,358	1.5%	543,455	1.8%	512,181	1.7%	958,698	3.3%
Health and ·tation	999,257	3.2%	813,320	2.6%	509,264	1.6%	517,354	1.7%	460,355	1.6%
Education	15,125,211	48.8%	15,340,618	49.1%	15,511,240	50.1%	16,049,000	52.3%	16,065,941	55.3%
County tax	1,337,672	4.3%	1,440,785	4.6%	1,488,326	4.8%	1,505,502	4.9%	1,521,817	5.2%
Unclassified	695,884	2.2%	1,039,492	3.3%	773,990	2.5%	531,917	1.7%	555,043	1.9%
Debt service	641,543	2.1%	810,940	2.6%	749,350	2.4%	742,421	2.4%	679,831	2.3%
Overlay	572,090	1.8%	416,839	1.3%	505,277	1.6%	326,076	1.1%	492,161	1.7%
Transfers to other	1,594,700	5.1%	1,087,285	3.5%	771,900	2.5%	831,900	2.7%	891,657	3.1%
Other	644,980	2.1%	651,171	2.1%	648,296	2.1%	657,148	2.1%	627,000	2.2%
Total Expenditures	30,978,278		31,226,292		30,975,319		30,674,309		29,063,811	

IV. Housing by SMPDC

- Household Change
- House Stock Characteristics
- Housing Conditions
- Housing/Affordability
- Households In Need of Affordable Housing
- Future Affordable Housing Needs
- Statistical Analysis
- Wells Village Land Use Policies Study by Sustain Southern Maine, 2013
- Workforce Housing Charrette by Workforce Housing Coalition, 2013
- Housing Facts for York County by Main State Housing Authority

Housing

Housing statistics are being delivered and analyzed in very different ways then has been done in previous census and other reporting methods. This analysis will look at alternative methods of reporting rather than the previous way comprehensive plans have looked at things. Housing statistics are being delivered in two reports. The first report comes from the U.S. Census American Community Survey ACS and the second is an Affordable Housing Fact Sheet of York County prepared by Maine State Housing Authority has also been included in this report.

Household Change

The rate of growth of Wells' households closely matched that of the Town's population. In 1980 there were 2,591 households in Wells. By 1990 there were over 3,056 households, an increase of 465 households during this 10-year period. From 1990 *to* 2000, household growth was even more rapid as Wells added 948 households for a 2000 total of 4,004, these figures are based on year round housing units occupied on a 12 month bases. Since 2000 year round housing has only jumped to 4412 units. Housing in Wells has taken a drastic change finding itself in the middle of a development boom to provide seasonal housing for part time residence desiring the opportunity to vacation and season in this region. The number of total housing units in Wells now numbers 8,011 of that number of units 3,599 of them were considered vacant at the time of the study, suggesting these units is seasonal in nature.

Understanding how the number of households is changing is important for planning purposes since in terms of land use and municipal services, this figure is often the key unit for determining demand on public services. Knowing this information in a community like wells is even more important since there is a major demand being put on services during the summer months when the population more than doubles based on the number of total housing units available compared to the year round residency number.

During the 1980s and 1990s, Wells continued to witness changes in the composition of households. Household size dropped at a rapid rate during the 1990s: according to the 2000 census it was just 2.35 persons per household compared to 2.55 in 1990, 2.59 in 1980 and 2.83 in 1970. York County, as a whole, also saw household size drop from 2.75 persons per household in 1980 to 2.63 in 1990 to 2.54 in 2000. This decrease in household size is the result of lower birth rates, higher divorce rates, increased longevity among seniors and a greater number of younger and elderly individuals living independently in single households. Based upon regional and national trends, this figure is likely to continue to drop, and in fact have dropped to the most recent family size of 2.37 based on the year round housing figures.

This phenomenon of an increasing population with a decrease in the size of households has a significant effect on growth and residential development. In effect, it requires a greater number of households to house the same number of people. This affects the number of housing units as well as the amount of land needed for residential uses.

Below is a breakdown of the units added to the town's stock since 2005 and the estimated value added to the communities assessed value:

Residential			
New Home Permits		Other Permits	Estimated Value
2012	99	395	22,569,187.05
2011	104	490	28,691,222.32
2010	95	459	25,701,287.00
2009	61	434	22,444,905.72
2008	129	444	23,495,473.21
2007	122	565	27,117,347.00
2006	186	541	32,639,894.98
2005	164	853	68,761,814.79

Source: Town of Wells Building Permit Records

Housing Stock Characteristics

In addition to total housing supply and growth, it is also important to examine the composition of a municipality's housing growth. The availability of different types of housing units (i.e., single family, multi-family, manufactured (mobile) and renter occupied versus owner occupied) is significant if the housing needs of all segments of the community are to be served adequately. According to 2000 Census data, Wells had a total of 4,333 year-round housing units compared to 8011 units according to the ACE reports in 2012. Among these units, 4,004 were occupied and 329 were vacant-a vacancy rate of about 8.2%, which is vastly less than the current numbers of today, which indicate that the Vacant or Seasonal units are equal to 3966 and the occupied units are 4045. It is assumed that most of the vacant units were considered rental units, but *it* is possible that some of these were not really vacant housing units but were actually lodging units.

Housing Conditions

A large percentage of the Town's housing units (about 54%) have been built since 1980. Consequently, Wells is quite likely to have only a few substandard housing units. However, Wells has only been enforcing building codes since the late 1980s, so some units built prior to that time may have not been built to today's standards.

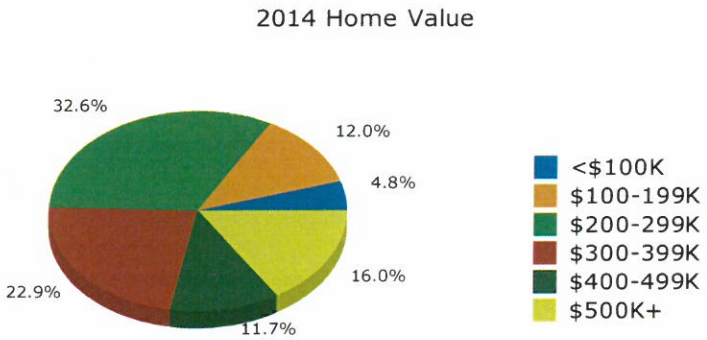
Housing Affordability

The Maine State Housing Authority (MSHA) tracks the status of Maine's housing by town and housing market. MSHA includes Wells in the York, ME LMA housing market, which is quiet different than previous reporting that categorized Wells in the Biddeford market. This suggests a major change in the housing occurring in the Southern Maine area in general. MSHA' s chief indicator of housing affordability is its Affordability Index, which compares the affordable housing price for a household

earning the median income level in a given area with the actual median home sale price in that area for the past year.

Affordability in York County has been on the decline for several years. As recently as 2000, the county's overall Affordability Index stood at 0.97, but has fallen every year since then to its current level of 0.78, and now has dipped further to 0.74 as of 2013. During that span, the county's median home sale price ballooned from $124,500 to $184,000-an increase of 48% in just three years, the most recent report has shown that the York LMA Median home price has now jumped to $300,000

Another issue related to affordability is that Wells has put emphases on exempting affordable units from its residential growth ordinance. Accessory units that are attached to existing units are exempt from the growth ordinance, as are certain types of general and elderly affordable units. These exemptions are playing a strong role in increasing the Town's inventory of affordable units.



Households In Need of Affordable Housing

The Maine Growth Management Law defines the affordability of homes and apartments as follows:

A home (apartment) is affordable to a household if that household can pay its mortgage, utilities and property taxes for a cost that does not exceed 28-33% of its gross income. An apartment is affordable to a household if that household can pay rent and utilities for a cost that does not exceed 30% of its gross income.

The law further requires that new housing stock be provided in the community that can be afforded by households that have incomes categorized as very low, low and moderate. Very low income is defined as income less than 50% of the county median. Low income is 50 to 80% of the county median and moderate income is 8<Ho 120% of the median. As of 2012 the county median income level was· estimated by the Maine State Housing Authority (MSHA) to be $54,180. To more easily define Very Low, Low, and Moderate levels for the area, this figure has been rounded up slightly to $54,000.

Therefore, the income levels are:

- Very Under $27,000
- Low: $27,000 to $43,000
- Moderate: $43,000 to $65,000

Not all households within the very low, lower, and moderate-income ranges have an unfulfilled need for housing. Some are renters who are in an acceptable unit at a price that is affordable to them. Some are renters who because of their stage in life would not choose to buy a home even if they had the opportunity. Others, including many senior households or people whom inherit family property, may have a relatively low income but already own a home and are content where they are.

Based on the income to housing cost thresholds defined above, as well as current interest rates, utility rates and property tax bills, MSHA estimates that, to afford a housing unit, a York County household's income should be at least 33.75% of the value of the home. By this standard, if a household earns $54,000 per year, its maximum affordability level for a housing unit would be about $190,000.

An issue that is very difficult to quantify is that while the number represented above in this chapter are the County numbers the town of Wells numbers are very different. According the MSHA data, the town of Wells Median Home Price is $245,000 requiring a Medium Household Income of $66,661 to be capable of affording a home roughly $227,000.

Future Affordable Housing Needs

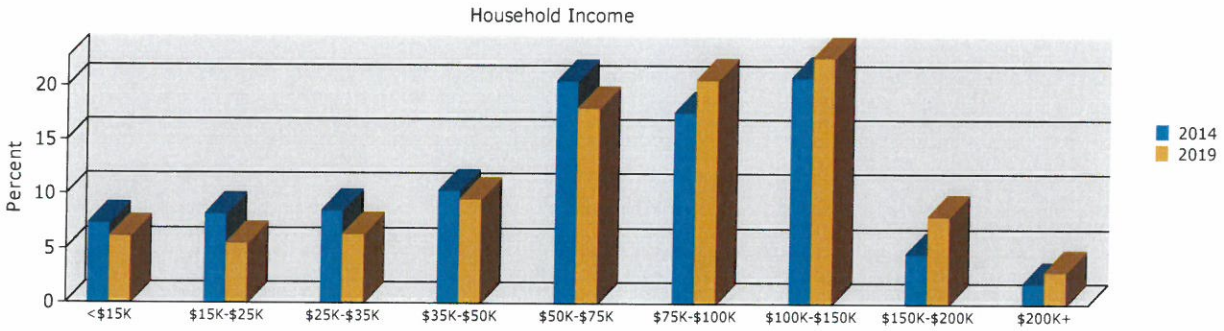
In 2012 and 2013, the Town of Wells went through a series of studies to look at the Housing needs and how best to meet them. In 2012, the Greater Portland Council of Governments and the Southern Maine Planning and Development Commission developed a study group under the name of Sustain Southern Maine. This group looked at a number of issues for the Cumberland and York County regions of the State. One of the initiatives analyzed was that of Housing needs and how best to achieve the needs. The town of Wells was considered a community that should be looked at, due to the growth that had been occurring and the lack of a defined downtown village area. In the analysis and public input, it was determined that a village area, which not only served the community commercially, but residentially, should be located in the Route 109/Chapel road area. This area made the most sense for the infill of mixed use development to support a village area. Since that time the SMPDC has developed draft Village District language for the community to consider in the future.

The other analysis that was undertaken in Wells was through the Workforce Housing Coalition of the Greater Seacoast out of Southern New Hampshire. This analysis also zoomed in on the area of the Route 109 region with direct access to the Transportation Center in order to achieve more access to Public Transportation

As the analysis is all tied together to look at the community as a whole, it is important to consider the future aging population. The population data has shown an increase to an aging population. With that being the case, the community needs to consider alternative forms of housing. When thinking about this, it is not only in terms of the traditional elderly housing, or aging in place

developments, which should also be amongst the mix in housing styles for the future, but also think in terms of affordable 1-story housing units developed with flexibility built in to handicapped accessibility for the independent living person, bathrooms with shower facilities for the less mobile etc.

Housing these needs to come in even more shapes and sizes than has been provided in the past.



Statistical Analysis

On the next several pages are a series of Housing statistics that are provided by the U.S. census Bureau, American Community Survey (ACS) as well as the Maine State Housing Authority 2013 York, Maine LMA Housing Market.

Sustain Southern Maine
Land Use Policies
&
Development Standards Analysis

Town: Wells

Background

While some of the amenities of a town center may be in place, the separation of centers contributes to a lack of town identity. There are few places for by-chance social interaction among residents, and day-to-day goods and services are either unavailable or scattered far apart from each other. Most businesses, spread out on major roadways, appear to be aimed at pass-through traffic rather than local residents

The goal with the study is to create a conceptual master plan for Wells Village as a baseline for how the community's comprehensive plan may be updated. The Village is considered the triangular area bounded by Route 109, Route 1, and Chapel Road; it extends to the Transportation Center.

Within this area, the objectives are to explore:

- how the interchange area might develop,
- what intensity and mix of use certain large parcels of undeveloped land in this area might attract,
- what additional street connections would benefit the village,
- re-envision street cross sections to slow traffic and make bicycling and walking more attractive.
- concepts for new development that depict the use of design standards the town may explore adopting.



Growth forecasts: Based on projections done in the late 2000's and adjusted after 2010 census, results were made available. The town may to host 2328 additional housing units in the next 25-35 years along with nearly 1200 jobs. If 50% of those units and 75% of those jobs were captured within this village area, that would mean 1164 housing units and 900 could be realized (an average of 54 units and 38 jobs per year over 30 years). If however, only 25% of the units and 50% of the projected jobs were captured within this area, some 560 units and 600 jobs (on average 19 units and 20 jobs annually over a 30 year horizon) would result.

Identity: Strive to establish a village center that hosts municipal services, and a mix of commercial and residential development, an area that would become the focus of civic life in Wells.

Mix of uses: Strive for a mix that can share traffic, customers, and parking; and that will allow customers and residents to meet a reasonable number of needs within walking distance of homes and job locations. The mix can build on the substantial array of convenience goods and services (food, hardware, drug stores, banking and other personal services, etc.) already in the Wells shopping areas.

Street connections: Improve vehicular and pedestrian connections within the pilot area. Consider whether and how at least one additional east-west and/or one additional north-south connection can be made through the pilot area. For example, is there a way to extend College Drive to Route 1 at Mile Road or to connect Flintock Village with Chapel Road or Route 109? Consider alternatives, such as, but not limited to addition of transit service, which may make it easier for current and future residents and workers to utilize the train service.

Depot Book: Be aware of Depot Brook's status as a critical natural resource, which makes up the northern border of the study, and of the related buffers/treatment requirements to protect the stream.

Commercial: There are a variety of commercial uses along Rt 109; a large printing company, a distribution center for Shaw's Supermarkets, automotive supply and repair shops, gift shops, etc. Route 1 is the main commercial center of town with everything from lodging and dining facilities, to fuel stations, gift shops, antique stores, convenience stores, hardware stores, etc.

Residential: There is a variety of single and multi family housing units along Rt 109 and Chapel Rd.

Other: The Maine Turnpike interchange makes up the northwest corner of the study area, an Amtrak train station and park-n-ride lot are adjacent to it, which has year-round bus service to Sanford, making it a true multimodal center. The area also has some vacant land in the vicinity allowing for the possibility of Transit Orient Development projects.

Civic elements include a Town Hall, Elementary School, High School, Urgent Care medical facility located along Rt 109. York County Community College is located off of Chapel Rd. The Junior High School and Public Library are off of Route 1.

DRAFT

Existing Land Use Policies

Comprehensive Plan and Zoning: The Town of Wells Comprehensive Plan is due to be updated in 3 years. This study is a way to lay some groundwork in how the new comp plan looks at these areas. The existing Comprehensive Plan has the area designated as:

G1 - Developed Areas and previously designated growth areas
T2 - Community College (transitional area)
R1 - Rural Area previously designated (rural)
R2 - Chapel Road Rural extension (rural)

The study area contains portions of the following zoning districts:

- Light Industrial District and Transportation Center Zone around the Maine Turnpike interchange
- Residential Commercial District along Rt 109
- General Business district along Route 1,
- Residential A District and Rural District on either side of Chapel Rd.

Policies Statements Inconsistent with Village Center Objectives

The main area being considered as a potential Village Center is currently in the Rural zoning district on the west side of Chapel Rd. The comprehensive plan looks at this area as place for active forest management with the future potential as protected open space.

Existing Development Standards

There are 3 primary zones located in the defined study area, the Residential A (RA), Residential Commercial (RC) and the Rural (R) districts.

- Buildings are to be less than 30' (3 stories) in height in residential districts (RA, RC) and less than 40' (or 3 stories) in the Rural district
- Residential density is in the range of 1 to 2 units per acre of net lot area (depending on whether on public sewer.) in residential districts. Density of 1 unit per acre if on sewer or 1 unit per 100,000 ft^2 without sewer in the Rural district.

Development Standards Inconsistent with Village Center Objectives

In Wells, the Rural district standards are inconsistent with the creation of a Village Center. The permitted lot sizes are too large and residential densities to low to create the necessary amount of demand to support village center businesses. Even the current Residential/Commercial district does not provide for densities high enough to support a commercial mixed use village center. The creation of a new zoning district specific to Village Center design is most appropriate.

DRAFT

The current lack of one multi-use center at the core of Wells, combined with the recent growth of the town provides a powerful opportunity to create a successful center over the next decades. Strategically placing infill residential development and small businesses, and creating better connections throughout the area will lead to the development over time of a town center, supported by market incentives, town planning and community support. The development of a mixed use Village zone would be appropriate, which included: High density residential development (10-15 units per acre) along with a commercial/retail use list. This area would also be right for a design component that reflects New England Village.

DRAFT

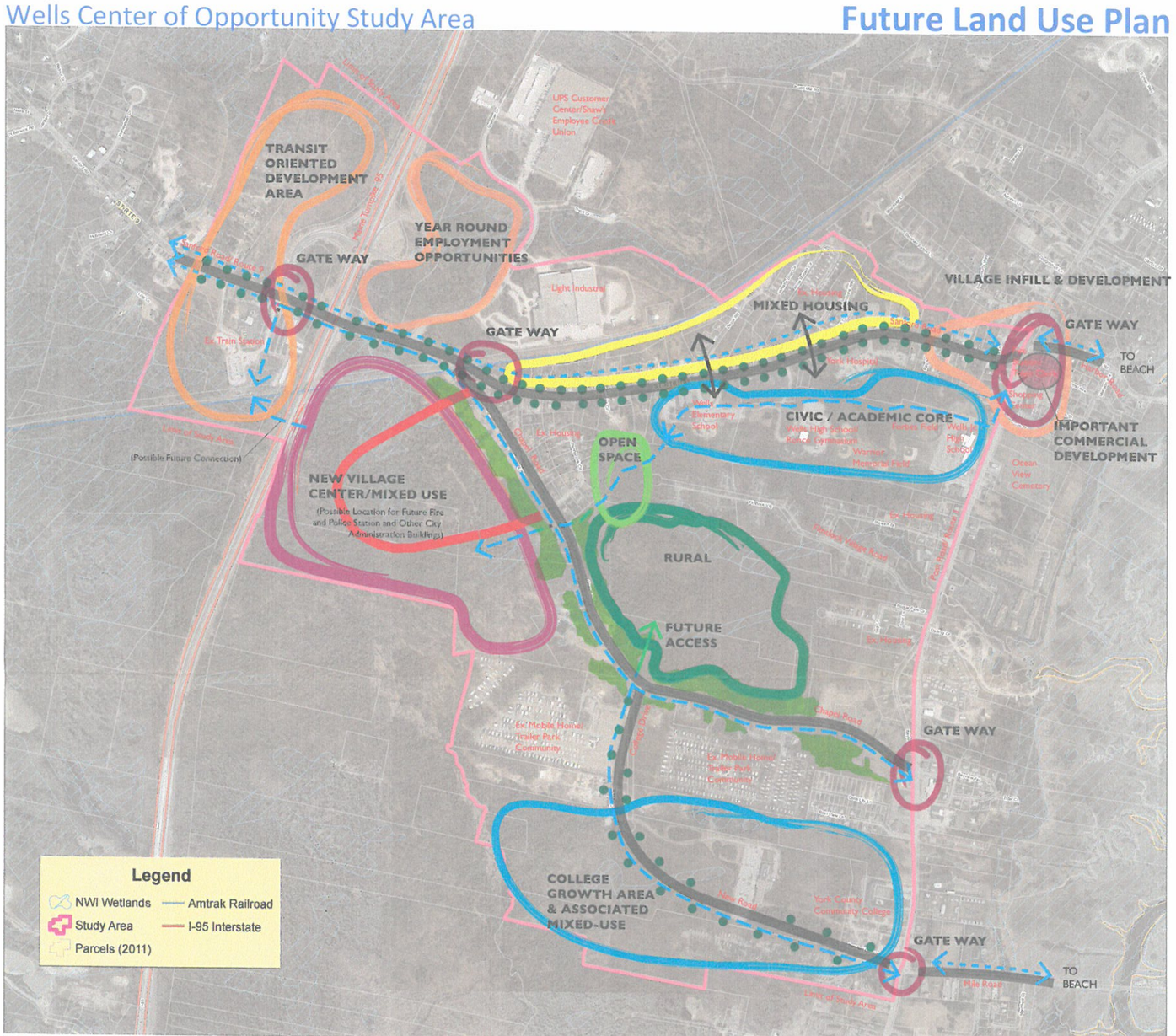
SUSTAIN SOUTHERN MAINE
Partnering to strengthen our economy, environment and community

Richardson & Associates, Landscape Architects
11 middle street, saco, me 04072/t. 207.286.9291

WELLS MAINE

Wells Center of Opportunity Study Area

Future Land Use Plan



ZONES

Village Center/Mixed Use
New Village Center
- Municipal
- Civic
- Recreational Opportunities
- Retail/ Commercial
- Paths, Trails
- Open Space

Business Related Development
1. Transit Oriented Development Area
   - Multimodel
2. Year-Around Development Area
   - Larger Footprint Buildings

Academic Core
1. College Growth Area / Student Services
   - Coffee shop, Bookstores, Supplies
   - Convenient Stores,
   - Copy Shop
   - Internet Services
2. Civic/Academic Core/Athletic Activities
   - Schools, Recreational Fields
   - Gymnasiums

Housing
Mixed Housing/ In Residence Business Opportunities
- Live/Work Opportunities
- In Home Business
- Model & Modest Housing
- Single Family, Duplex
- Year round affordable housing

Rural
- *Streetscape*
- *Wayfinding*

Gateways
1. Off Ramps - Turnpike/Roue 9
2. Sanford Road and Route 1
3. Chapel Road and Route 1
4. York County Community College
5. Sanford Road and Chapel Road
   - Streetscape
   - Wayfinding

Circulation
Sidewalks/ Multi-Use Paths
Multi-use Paths
Sidewalks
New Roads
Streets with Bike Lanes and Sidewalks
Key Connections & Access Points

Street Treatments
Traditional Street Trees and Lighting
Wooded Buffer

N W E S

0' 400' 800' 1600'

Scale: 1"=400' (original drawing size)
Original Drawing Size: 36"x48"
Reproduction:

Original Issue Date: 05/03/2013
Revision Date:
1. Issue for Client Review
2.
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Where to find more information...

SMRPC
Southern Maine Regional Planning Commission
Serving the Municipalities of Southwestern Maine



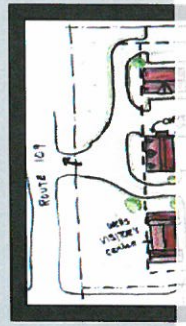












WORKFORCE
HOUSING COALITION
OF THE GREATER SEACOAST
Opening Doors to Vibrant Communities

WELLS, MAINE WORKFORCE HOUSING CHARRETTE

October 17-18, 2013

Sponsored by:

Kennebunk Savings

York Hospital

TOWN OF WELLS

Introduction

The Workforce Housing Coalition of the Greater Seacoast organized a workforce housing design charrette in Wells Maine over the course of 2013. Held over a two-day period, the process included a Site-walk, Listening Session, and Design Workshop, culminating in a Design Reveal on October 18, 2013. This, our fourth annual design charrette, produced conceptual designs for the development of two sites in Wells that included workforce housing opportunities.

What is a charrette?

A charrette is an intensive planning session where citizens, designers, and others collaborate on a vision for development. Charrettes often take place in multiple sessions in which the group divides into sub-groups. Each sub-group then presents its work to the full group as material for further dialogue. Such charrettes serve as a way of quickly generating multiple design concepts while integrating the aptitudes and interests of a diverse group of people.

A charrette is a unique opportunity to...

- Envision workforce housing developments possible under current regulations.
- Suggest modifications to current regulations to better suit workforce housing.
- Test the financial feasibility of design concepts.
- Provide proposals to decision-makers for potential development of the subject sites.

The charrette process can be summarized in nine steps.

1. Identify study area.
2. Reach out to property owners and stakeholders.
3. Research study area.
4. Recruit volunteer teams.
5. Walk the site with owners and stakeholders.
6. Listen to needs and concerns of neighbors and stakeholders.
7. Creation of design options by volunteer team members.
8. Present designs and recommendations to all stakeholders.
9. Prepare a Summary Publication with recommendations.

[1] Maine Housing, 2012 Housing Facts for York County
[2] Graph: Sustain Southern Maine Population and Housing Market Analysis 2013

Typical charrette team members include:

- Design and planning professionals - Architects, landscape architects, engineers, environmental consultants, municipal and consulting planners.
- Financing and Development professionals - Developers, construction estimators, bankers and realtors.

Charrette team members are unpaid volunteers, contributing an average of 12 hours, plus travel time, to the Wells charrette process. This amounts to over 300 volunteer hours of professional talent and time put into the Wells project.

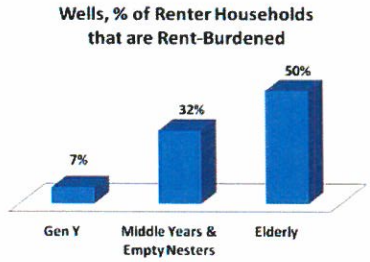
Why Wells Maine?

Wells Housing Facts

Wells Maine, like many coastal communities in Southern Maine, is a desirable community to live in. While many residents are able to pay to purchase a home, many are not.

In order for a home to be considered affordable, the cost of a monthly mortgage payment plus utilities should not exceed 30% of the owner's monthly income. Likewise, affordable rental housing.

A study conducted by Maine Housing, 2012 Housing Facts for York County[1], revealed that in Wells, the median price for a home in 2012 was $220,500, which could only be afforded with an annual income of $58,861. For rentals, data are only available at the county level and indicate that 10,657 households (xx%) in York County are unable to afford the average two-bedroom rent of $886 per month with utilities, as it would require a $35,436 yearly income, figures also determined by the Maine Housing study.





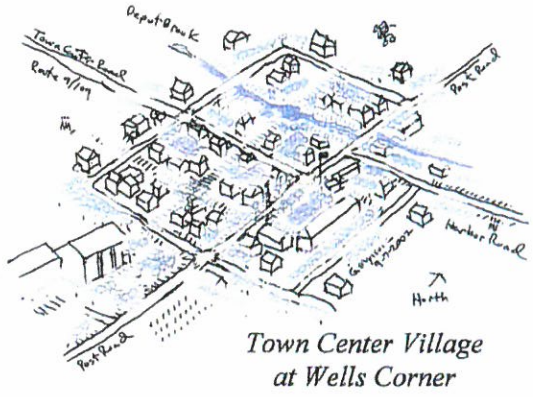
Sustain Southern Maine's 2013 Population and Housing Market Analysis reports some startling facts about Wells' housing situation. [1]

- About 61% of Wells' households can't afford the median priced home.
- Half of elderly tenants are rent-burdened, paying 35% or more of their incomes for rent. Surprisingly, only 7% of Gen Ys are rent-burdened.
- Over half of Wells' housing units have 3+ bedrooms. Larger homes are more expensive and may be harder for Gen Y households to purchase.
- While the town does offer 0-2 bedroom housing options, competition with seasonal uses limits their availability for year-round residents and drives their costs up.

Why the Transportation Center and Wells Corner?

Two areas of potential development were the focus of the charrette. The first location is an area near the train station, also known as the Transportation Center. The second is an area close to the intersection of Route 109 and Route 1, known as Wells Corner.

Potential development in both these areas of town has been the focus of residents' attention, as well as several planning efforts over the years. In 2002, the Town of Wells developed an initial concept for the creation of a town center in the Wells Corner area.



Town Center Village at Wells Corner

[1] Sustain Southern Maine Population and Housing Market Analysis 2013

Then in 2006, the Town of Wells worked with partners from the EPA's Office of Smart Growth, Maine Sea Grant, and Sparh and Dabrowski Consultants to conduct a three-day design workshop for the "gateway" area from the Transportation Center to Wells Corner, with special attention on sustaining the environmental health of Depot Brook.



In 2013, the Town worked with partners from the Sustain Southern Maine initiative to develop a concept for centers of opportunity in Wells and consistently, these two areas were identified as focus areas for planner by stakeholders.

So with attention focused on the Transportation Center and Wells Corner, the Town of Wells worked with Maine Sea Grant to identify property owners in the two areas who might be interested to voluntarily include their properties in the study area that would become the focus of the charrette. It was made clear to the property owners that the charrette was a brainstorming session and that they were under no obligation to take any action as a result of participating in the workshop. Ultimately, the response to the invitation was very positive, and five owners (One in the Transportation District and four in Wells Corner) agreed to include their properties in the charrette study area.

The Town of Wells and the Workforce Housing Coalition Committee jointly decided to evaluate the potential for future development of workforce housing in two distinct areas - Wells Corner and Transportation Center.



It Takes Teamwork

The Wells charrette was made possible only through the dedicated participation of nearly 40 people. *We would like to thank them all for joining us.*

Charrette Planning Committee

Kristen Grant, Maine Sea Grant and UMaine Cooperative Extension - Chair
Jonathan Carter. Town Manager, Town of Wells
Tom Emerson, Studio B-E Design Consulting
Tom House, THA Architects
Ashlee Iber, WHC Executive Director
Jack Mettee, Mettee Planning Consulting
Rebecca Perkins, Orr & Reno
Ralph Pope, Coldwell Banker Residential Realty
Kim Rogers, G. L. Rogers & Company Inc.
Gayle Sanders, Gayle Sanders Home Design



Wells Corner Design Team

Tom House, THA Architects - Team Leader
Richard Clark, Selectman, Town of Wells
Jeff Clifford, Altus Engineering
Elizabeth Dudley, Ironwood Designs
Bob Georgitis, Kasperzak Land Holdings
Greg Gosselin, Gosselin Realty Group
Nick Isaak, Isaak Design
Hiroko Lindsey, Lindsey Architects
Jack Mettee, Mettee Associates
Rip Patten, Credere Associates
George Reagan, NH Housing Finance Authority
Gayle Sanders, Gayle Sanders Home Design

Transportation District Design Team

Tom Emerson, Studio B-E Design Consulting - Team Leader
Jodine Adams, Code Enforcement Officer, Town of Wells
Francine Cram, Kennebunk Savings Bank
Valerie Giguere, Underwood Engineering
Kristi Kenney, K.W. Architects
Mike Livingston, Town of Wells
Kim Rogers, G.L. Rogers & Company Inc.
Paul Schumacher, So. ME Regional Planning Commission
Ina Toth, RE/MAX Realty One
Adam Wagner, DeStefano Architects

Worked with both teams

Kristen Grant, UMaine Cooperative Extension/Sea Grant
Jonathan Carter, Town of Wells Town Manager
Ralph Pope, Coldwell Banker Residential Brokerage

Property Owners

Jonathan Hall
Kathy Levesque
Pam Moody Maxon
Moe and (Teresa??) Steele



Charrette Sponsors

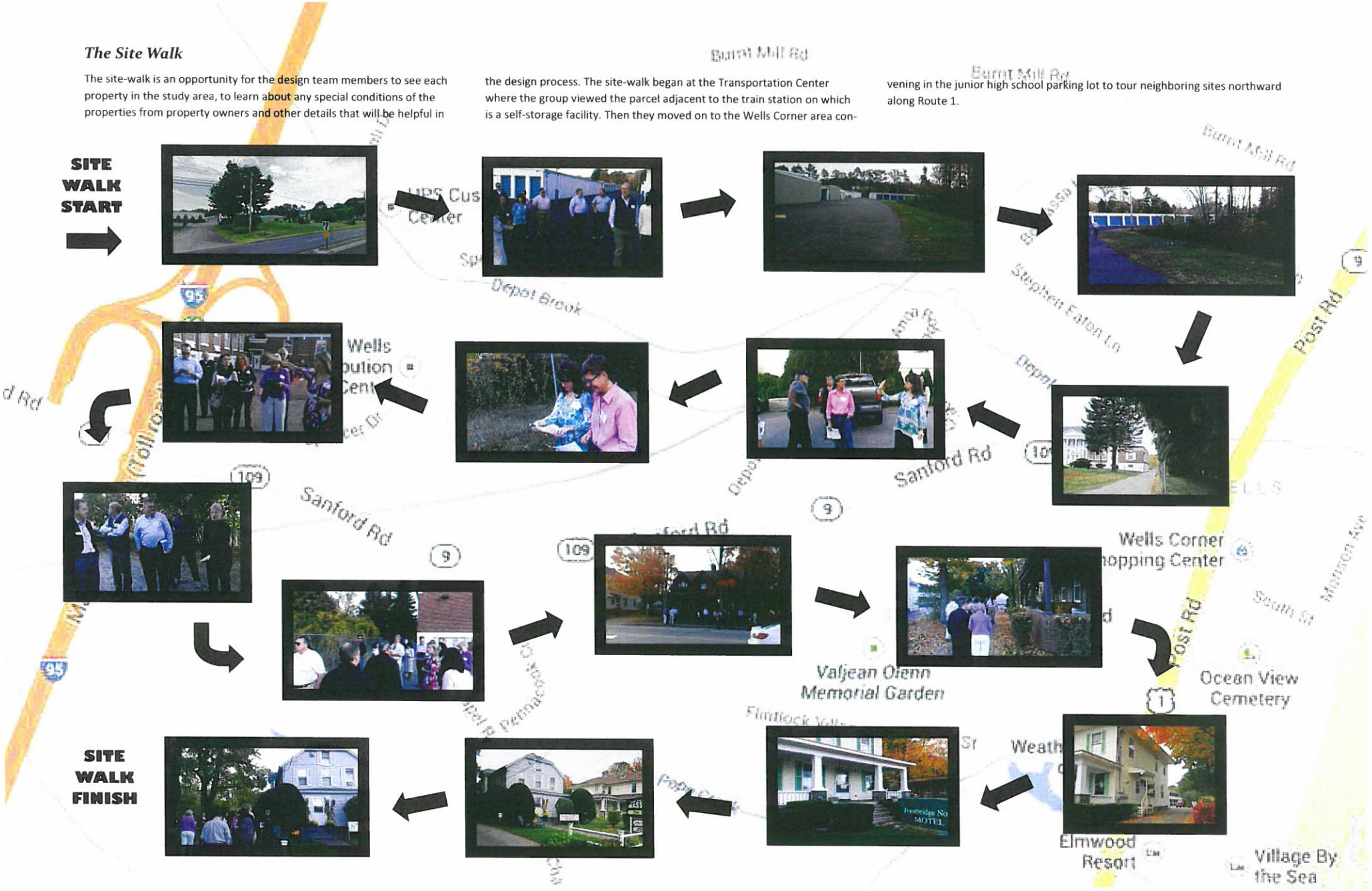
Kennebunk Savings Bank
Town of Wells Maine
York Hospital

Additional Support provided by:

Coldwell Banker Residential Realty
Congdon's Doughnuts
Dairy Queen
Hannaford Supermarket
IGA Supermarket
Lindt & Sprungli
Mike's Clam Shack
Pizza by Para
Town of Wells Maine
When Pigs Fly Bakery

The Site Walk

The site-walk is an opportunity for the design team members to see each property in the study area, to learn about any special conditions of the properties from property owners and other details that will be helpful in the design process. The site-walk began at the Transportation Center where the group viewed the parcel adjacent to the train station on which is a self-storage facility. Then they moved on to the Wells Corner area convening in the junior high school parking lot to tour neighboring sites northward along Route 1.





Stakeholder Listening Session

Input from stakeholders is a key ingredient of the charrette process. Charrette site property owners, abutters, neighborhood residents, business owners and community members were invited to a Stakeholder Listening Session on Thursday, October 17 from 5:00 pm to 6:30 pm at the Wells Activity Center.

The purpose of a public session is to give charrette team members and property owners an opportunity to hear community members' hopes and concerns about potential future development of the sites.

The session started with a presentation on workforce housing by Ashlee Iber, Workforce Housing Coalition Executive Director. It included information on what is meant by workforce housing, who needs workforce housing, and the need for workforce housing in Wells. The charrette process was explained and the audience was invited to ask questions of the three member panel - Ashlee Iber, Workforce Housing Coalition Executive Director; Kristen Grant, Maine Sea Grant and UMaine Cooperative Extension; and Jonathan Carter, Town Manager, Town of Wells .



Kristen Grant initiated a brainstorming activity to generate ideas, hopes and concerns about potential development at the sites.

Ideas for the Transportation Center

What would you like to see?

- Attractive and affordable housing for seniors and young professionals
- Employment opportunities
- Extension of water and sewer systems
- Linkages to community services, shopping and entertainment
- Pedestrian-friendly
- Recreational area or dog park
- Small-town feel

What wouldn't you like to see?

- Any housing at all
- Indian Casino
- Massive development west of the turnpike
- Too much density
- Too much development

Opportunities?

- Enhanced gateway - seen first by train riders/people coming into town off the turnpike
- Making things more available to people who don't own a car, whether or not they live in the area, including those who are on vacation
- Train stop or C&J Bus stop

Challenges?

- Pump station costs - $250K - $100+ per foot - Extend beyond workforce housing
- Regulations - Excessive Town Hall requirements - no such thing as " affordable "
- Sewer system - How funded? - Bond -Will people want to spend their taxes on its upkeep?
- Sewer system - Final alternate funding source - Hotel, retail, business
- Sewer system design - Pipes - Where to stop - Bulk of water - Would have to dig trenches
- Traffic management

"It's important that the town is involved in the decision-making process"

--- Rip Patten, Credere Associates

Participants were asked to consider: ***What would you like to see? What wouldn't you like to see? What are the unique considerations associated with this site? Opportunities? Challenges?*** Participants wrote ideas on notes that were then read aloud and posted together by theme, which are captured here. These ideas were then recorded and reviewed with the charrette team members prior to beginning the designing, in order to guide their process.



Themes from the Stakeholder Listening Session

Some consistent themes emerged regarding both sites. Stakeholders expressed a desire for:

- Housing that is attractive and affordable to seniors and young people.
- Linkages between services like banking, schools, retail, salons, eateries, and entertainment.
- Development that is pedestrian-friendly and have a small-town feel.
- More local employment opportunities.

Two primary concerns stood out.

- Water and sewer lines.

The area near the transportation center lacks town sewer and water. Jonathan Carter, Town Manager, Town of Wells, reported that land has been purchased by the sanitary district for a pump station in the area of the Transportation Center. How these water and sewer improvements would be funded was at issue as well, specifically whether tax payers would be held responsible for the cost.

Town officials explained that a funding option could include an offer to a potential developer of a tax incentive to bring water and sewer lines to the Transportation Center area. Wells Code Enforcement Officer, Jodine Adams, mentioned that the sewer district is working also on a grant to bring the sewer lines over to the Transportation Center.

Ideas for Wells Corner

What would you like to see?

- Attractive and affordable housing for young people
- Attention to other sites - Clam Shell Alley & Route 1 provide good access
- Employment opportunities
- Mixed-use 3-4 story structure at corner
- Village - Town center
- Walkable, pedestrian-friendly

What wouldn't you like to see?

- Housing near the Junior High School
- More traffic

Opportunities?

- Design - Eliminate overhead utilities
- Jobs - Create year round jobs in the private sector
- Make local zoning more accommodating for free-standing accessory dwelling units - Use accessory dwelling units for workforce housing
- Make workforce housing like Hidden Pond Resort in Kennebunkport (modular) - a development model
- Merge vacant backyards of all individual properties
- Shared parking - Business by day/ residents by night

Challenges?

- Capacity for public services
- Change - Some residents were resistant to change
- Character - Maintaining historic fabric of the community
- Development costs - Who would pay for this and future development?
- Lack of local attractions - Why would single young adults or young couples without children want to live in Wells?
- Seniors putting more strain on local medical providers when many are not taking new patients
- Traffic - Increased traffic! – Need alternate route developed - Reduce traffic impact
- Vacant sites - When the new public safety building is done, what happens to the site at the intersection of Route 109/1?
- Young families increasing the strain on schools

- Increased traffic.

Increased traffic concerned many community members. From May to October, traffic volumes increase significantly in most areas of the Town. Comments were adamantly against development that would exacerbate traffic issues.

"Slowly, the sanitary district and the water district are realizing that things are starting to happen."

---Jonathan Carter, Town Manager, Town of Wells

SITE 1: The Transportation Center

Observations from the Site-walk

The site being evaluated is two parcels, currently used as a privately owned self storage facility The site is adjacent to Interstate 95, off exit 19. To the property's west is the Wells Transportation Center. The Transportation Center area houses Amtrak Downeaster Train Service, and several other businesses, such as a bussing company.

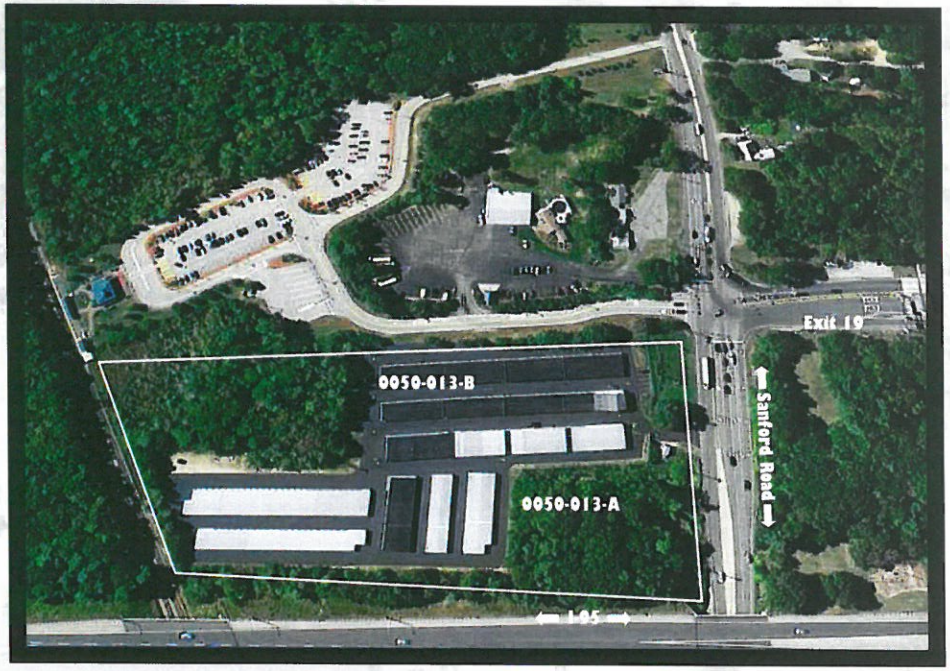
Within approximately one mile east of the site are various community services (town hall, library, police station, hospital and medical offices), retail and other consumer services (banking, supermarket, and shopping).

The Transportation Center is not currently zoned for residential development or a town center type of building density. Dimensional standards suit highway/commercial/transportation-oriented uses, and current permitted uses are not compatible with the development of workforce housing.

To accomplish development of workforce housing, zoning would need to be modified to include multi-family housing as an allowed use. Additionally, extending the water and sewer would also be necessary to spur development on that site and adjacent properties.

The charrette team members met for the first site walk with Jonathan Hall, owner of Wells Storage Solutions lots. During the discussion, a key theme was the opportunity to be "car-less" in Wells. As a tourist destination, the "car-less vacation" that promotes visitors to use the Downeaster train linking them to the local trolley service was seen as an opportunity, especially if a hotel were available at the site.

Jonathan Carter, Town Manager, Town of Wells, told the group that town officials envisioned more development when the train station was built 10 years ago. *"That hasn't happened,"* Carter said, explaining that the lack of sewer and water service discouraged development, and likewise, the lack of development discourages the extension of sewer and water service.











Transportation Center Designs & Rationale

The intent is to create a mixed use, Transit Oriented Development (TOD). The site's location adjacent to the highway and to the train station will allow it to become a multi-modal transportation hub. Future residents could access employment centers in either the Dover/Portsmouth, New Hampshire area or Portland, Maine via car, bus or railway without contributing to traffic congestion. Locating supporting retail within walking distance of the residential uses will also reduce traffic and enhance current and future Transportation Center user experiences while making the area attractive to future residents.

Transition from transportation-only to transit-oriented, mixed-use zoning and completion of the water and sewer infrastructure to support it will allow for appropriate development to occur in the Transportation Center area. Making the zone comprehensive enough to include areas on either side of the highway interchange will spread the cost of infrastructure improvements over a larger number of property owners, potentially reducing the amount of the Town's contribution.

The concept design for the Transportation Center area includes mixed-uses - retail, restaurant, traveler services, workforce housing units, short and extended stay residential units.

The site is a great location for an extended stay hotel for tourists and summer workers due its accessibility to the summer beach trolley and the Amtrak train, which carries passengers north to Portland and south to Portsmouth New Hampshire and to Boston Massachusetts.

Transportation Center Zoning & Infrastructure

The presence of public water and sewer is certainly required for higher density development, such as workforce housing. The town might want to consider a public/private venture to enable construction of the needed infrastructure. Creation of a TIF (Tax Increment Financing) district may also want to be considered.

Current zoning of the Transportation Center site is 20,000 sq. ft. sewer; 100 ft. coverage, 45 ft. or 3-story maximum building height. Setbacks are 40 ft. state highway, 25 ft. lot line or railroad.



"The first thing we asked was how many units are allowed under the current zoning of the area? The answer was zero. So, we were going to go home, but we decided to take another stab at it."

---Adam Wagner, DeStefano Architects









Transportation Center Concept Design

The design is comprised of mixed-use buildings with retail space on the ground floors, as well as a Visitor's Center and a coffee shop, and 29 residential units above. Workforce housing would be one-bedroom (700 sq. ft.) and two-bedroom (850 sq. ft.) units.

The design also includes a 28,800 sq. ft. extended stay hotel. There would be a need to offset the housing development costs. The hotel could be used as housing for summer workers and shorter term tourist stays. These hotel units would be equipped with kitchenettes, making them appropriate for extended stays. The design is in keeping with architecture styles appropriate to the Seacoast area and includes natural forest and wetland areas.



Transportation Center Concept Design: Retail units on the ground floor with workforce housing rental units above

SITE 2: Wells Corner

Observations from the site walk

The Wells Corner study area is located at the heart of what most residents would consider the de facto town center. Wells Corner is the core of the town's:

- Municipal services - town hall, police and fire stations, library, and activity center;
- Academic institutions - elementary, junior high, and high schools, and at the outskirts, York County Community College;
- Medical services – urgent care center, medical offices;
- Small business district – grocery store, restaurants, home and personal care businesses.

But while Wells Corner is home to these amenities, a recognized town center has not been identified. This is because the town's original center was Ogunquit Village, which formed its own town in the 1980's. The creation of definable town center has been under consideration among officials and residents for decades though, and this goal formed the main planning theme of the charrette.

Four property owners representing five, privately-owned parcels were officially considered in the Wells Corner study area (Inc lot map with study area defined). The parcels' total acreage equals XX and includes:

- Two large, undeveloped lots that do not have Route 1 frontage;
- A massage/spa business and personal residence;
- A motel with XX units and personal residence;
- A pet grooming business and personal residence.

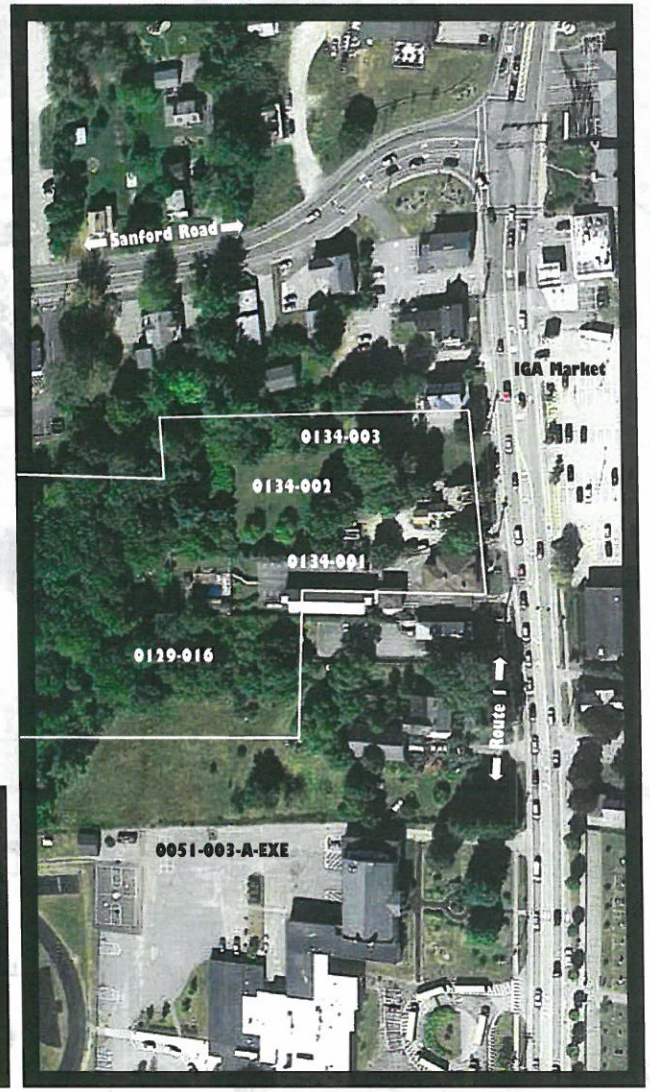
Current regulations in the study area are for General/Business zoning which includes a wide range of permitted uses, and dimensional standards are geared to a highway/commercial zone. Some of these existing standards may not be compatible with the goal of creating a town center that provides a gathering place for the community and retains small town character.

The charrette team members met for the second site walk with Pam Moody Maxon, Moe and (Teresa??) Steele, and Kathy Levesque, owners of four of the five properties included in the study area. During the discussions, key themes included creating :

- A walkable town center;

The proximity of the area's services promotes a "park once" opportunity, enabling community members to walk between businesses, schools, and municipal services. Walkability is also key due to the need to ensure safe travel for students walking in the vicinity of the three schools. Shared parking for schools, residences, and business was also considered as a way to manage parking demand between daytime and nighttime uses.

- A community gathering place where outdoor social, educational, and arts events could be held;
- Housing affordable and attractive to local, young people and families;
- An access road between Route 109 and Route 1 to provide travel alternatives and alleviate traffic pressure on the Wells Corner intersection.









Wells Corner Designs & Rationale

One of the main design goals was to create a walk-able community. Housing that is within walking distance to services, retail, restaurants, and schools can reduce traffic congestion and the cost of bussing students. Housing opportunities established within walking distance to the existing middle school, which is located near the Wells Corner area, could potentially entice a larger applicant pool of teachers and other school workers.

One design concept includes combining the three focus area parcels to produce three multi-use buildings that would allow both small retail and residential units. Eight residential units in each, totaling 24 units - workforce housing, market-rate housing, or a combination.

An alternative is to keep the three parcels as private individually-owned lots and adding accessory units or individual buildings to increase the number of housing units on each parcel, utilizing the existing available open space. Charrette team members recommend that the additional units would be best located at the back of the lots.

There also remains the option to supplement or tie into the York Hospital location nearby. Partnering with the hospital could potentially create shared parking for patients during the day and residents at night.

"Workforce housing is available to the middle income households in the community."

----George Reagan, NH Housing Finance Authority









Design Option 1

The first concept would entail removal of existing structures and all new construction to include mixed-use, retail/commercial/studios and two multi-family apartment buildings. Four units of first floor retail space, four units of second floor commercial space, eight studio apartments, and 16 units in each of two multi-family residential buildings, totaling 32 apartments.

Market-rate for two-bedroom units ranges from $925 to $1250 per month, excluding utilities. Market-rate for studio apartments averages $850 per month, excluding utilities. Retail space averages $12 sq. ft/yr triple net. Second floor commercial space averages $8 sq. ft/yr triple net

Design Option 2

The second concept envisions amending existing structure to include two mixed-use, multi-family buildings as well as adjacent retail space. One would contain 39 market-rate residential housing units and the other would be targeted as workforce housing containing 43 units. Both buildings might also contain retail space at ground level.

Market rate for two-bedroom units range from $925 to $1250 per month, excluding utilities. Residential rental units priced at $850 per month gross rent are considered affordable to the area's median renter income.

Wells Corner Zoning & Infrastructure

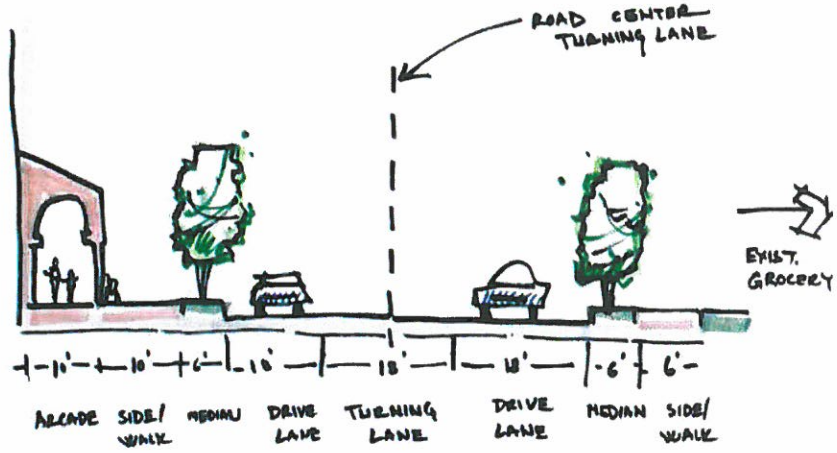
The design team recommends the following allowances and changes to the Town's zoning and building design standards to accommodate work-force housing development and to achieve the goals of the project.

- ► Create a Town Center overlay district;
  - ⇒ Mixed uses including live, work, shop opportunities.
    Permitted uses to include:
    - Multi-family residential;
    - Small business/retail - grocery, convenience, book-store, personal and professional services;
    - Restaurant/cafe;
    - Art/craft gallery.

    Option of conditional use permit to allow flexibility of uses if applicant meets additional standards.
  - ⇒ Flexible design standards that build on the existing, small town New England character of the area, while retaining existing, historical buildings and addressing:
    - Scale, height, roofing, windows, facades, materials, landscaping.
  - ⇒ Dimensional standards t allow greater density:
    - 5,000 sq. ft. lot/per unit, as Wells Beach area;
    - Smaller front setbacks; zero lot line;
    - Reduce road frontage minimum requirement;
    - Increase building height maximum to ~40 - 45 feet, such as 3 stories with dormered 4th floor.
  - ⇒ With increased density, develop environmental impact standards to promote low impacts development that addresses impervious cover, storm water management, etc.
  - ⇒ Pedestrian-friendly streetscape.
  - ⇒ Lower existing parking requirements; manage parking demand throughout the area including shared parking
- ► Provide incentives for development of workforce housing;
  - ⇒ Density bonus.

Aside from slowing traffic, a welcoming pedestrian-oriented experience can be reached by maximizing a physical separation from traffic.

The following techniques and goals may be incorporated to support existing Town measures, as practical, to increase pedestrian safety, traffic calming and other "complete streets":

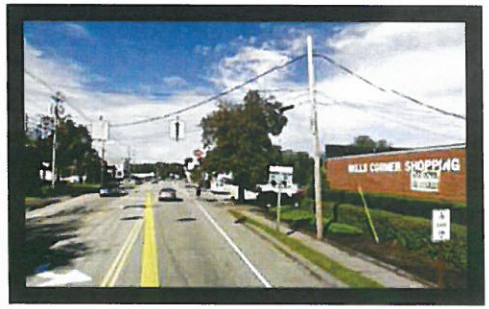


- ► Curb extensions or "bump-outs" to shorten crossing distances;
- ► Wide sidewalks for events and café dining;
- ► Street trees for traffic calming and climate enhancement;
- ► Medians to separate and slow traffic ;
- ► Medians as stopping points for pedestrian crosswalks;
- ► Pavement markings;
- ► Pavement surface and accent treatments;
- ► Signs, signals, and lighting;
- ► High visibility crosswalks;
- ► Pedestrian activated lights;
- ► Pedestrian scale lighting and amenities at crosswalks to accentuate the areas for pedestrian safety;
- ► Embracing barrier-free design and universal accessibility.









About the Workforce Housing Coalition

The Greater Seacoast of Southern Maine and New Hampshire is one of the least affordable regions in the country. Many cannot afford to live in the communities in which they work, so they endure long commutes: it's harmful to the environment and limits time spent at family and volunteer activities. Some decide to leave the area, leaving behind employers who are unable to hire and retain the workers they need to sustain and grow their businesses.

The Workforce Housing Coalition of the Greater Seacoast is a 501c3 non-profit organization with an office in Portsmouth New Hampshire. Our mission is to be a catalyst for the development of a range of housing options for the diverse workforce in the Greater Seacoast region. We build support for workforce housing by educating municipal officials, developers and community members about the benefits of a balanced supply of housing options for our area's diverse workforce.

With the support of members, the Coalition tackles the complex issues that contribute to the Greater Seacoast region's limited housing options. We offer planners and developers advice and resources on how to meet the housing need. Through our annual design charrettes we inspire dialogue and generate concept designs that include innovative ways to increase the local supply of workforce housing.

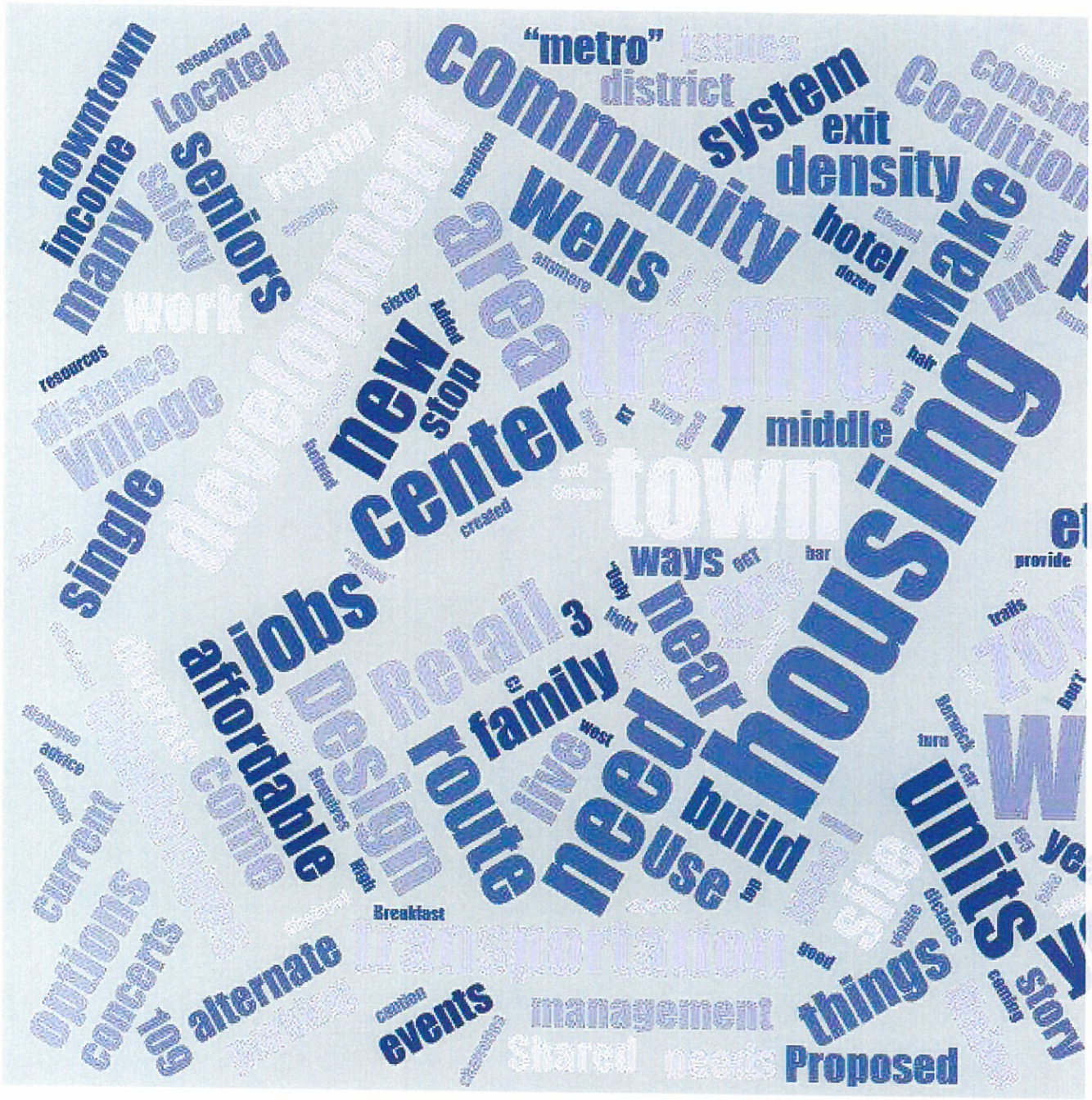
Since our inception in 2001, we have helped nearly two dozen communities in the Greater Seacoast region of New Hampshire and Maine improve their housing regulations. In turn, local developers have created over 350 new units of workforce housing. Learn more about how you can support the Workforce Housing Coalition and help to promote a friendlier climate for workforce housing development in your community, visit www.seacoastwhc.org.

WORKFORCE
HOUSING COALITION
OF THE GREATER SEACOAST
Opening Doors to Vibrant Communities









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OF THE GREATER SEACOAST
Opening Doors to Vibrant Communities

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New Hampshire Housing
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United Way
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of the Greater Seacoast

2012 Housing Facts for York County

Homeownership Affordability Index

York County	Year	Index	Median Home Price[1]	Median Income[2]	Income Needed to Afford Median Home Price	Home Price Affordable to Median Income
	2008	0.76	$218,500	$53,366	$69,906	$166,801
	2009	0.90	$184,950	$53,848	$59,900	$166,263
	2010	0.83	$205,900	$55,476	$66,685	$171,289
	2011	0.94	$200,000	$52,839	$56,187	$188,085
	2012	0.94	$205,000	$52,860	$56,482	$191,853
Kennebunkport		0.58	$423,750	$66,476	$114,492	$246,037
Ogunquit		0.70	$328,500	$60,436	$86,253	$230,175
Old Orchard Beach		0.74	$183,000	$40,696	$55,233	$134,834
York		0.75	$340,000	$66,737	$89,486	$253,565
Kittery		0.75	$262,000	$54,262	$71,951	$197,587
Biddeford		0.80	$178,000	$41,543	$51,989	$142,235
York, ME LMA Housing Market		0.81	$284,970	$61,090	$75,537	$230,467
Portsmouth, NH-ME MA Housing Market		0.84	$259,900	$59,582	$70,909	$218,385
Saco		0.86	$223,000	$53,431	$62,137	$191,756
Acton		0.87	$174,600	$44,384	$51,092	$151,676
Kennebunk		0.87	$247,750	$64,031	$73,435	$216,023
Arundel		0.88	$252,500	$60,306	$68,680	$221,712
Portland-South Portland MA Housing Market		0.89	$215,000	$54,459	$61,133	$191,529
Alfred		0.89	$196,725	$48,019	$53,814	$175,539
Congressional District 1		0.91	$197,900	$51,223	$56,135	$180,581
Parsonsfield		0.92	$145,000	$38,664	$42,006	$133,462
York County		0.94	$205,000	$52,860	$56,482	$191,853
Wells		0.96	$220,500	$56,584	$58,861	$211,969
Maine		0.96	$165,000	$45,530	$47,305	$158,811
Shapleigh		0.97	$192,000	$49,247	$51,013	$185,352
Eliot		0.98	$258,150	$68,723	$69,968	$253,556
Sanford Micropolitan Housing Market		1.00	$146,900	$42,501	$42,320	$147,529
Lebanon		1.02	$170,000	$46,109	$45,229	$173,309
Sanford		1.06	$135,000	$41,402	$38,939	$143,537
Dayton		1.07	$220,000	$65,490	$61,321	$234,958
Lyman		1.07	$199,900	$57,839	$53,976	$214,206
South Berwick		1.09	$216,000	$65,638	$60,090	$235,943
Rochester-Dover, NH-ME MA Housing Mark		1.11	$181,500	$55,856	$50,492	$200,780
North Berwick		1.12	$176,638	$54,493	$48,668	$197,780
Berwick		1.12	$166,500	$54,055	$48,222	$186,639
Newfield		1.20	$130,000	$41,942	$35,060	$155,518
Limington		1.20	$158,000	$52,273	$43,594	$189,458
Hollis		1.21	$180,000	$58,169	$48,162	$217,398
Buxton		1.23	$165,950	$55,206	$45,040	$203,405
Limerick		1.30	$134,500	$48,909	$37,495	$175,443
Waterboro		1.39	$135,000	$53,277	$38,260	$187,986

The Homeownership Affordability Index is the ratio of Home Price Affordable at Median Income to Median Home Price. An index of less than 1 means the area is generally unaffordable - i.e., a household earning area median income could not cover the payment on a median priced home (30 year mortgage, taxes and insurance) using no more than 28% of gross income.

MaineHousing
Maine State Housing Authority

2012 Housing Facts for York County

Households Unable to Afford Median Home

Location	Households Unable to Afford Median Home: Percent	Households Unable to Afford Median Home: Number	Total Households	Median Home Price[1]	Income Needed to Afford Median Home: Annual	Income Needed to Afford Median Home: Hourly
Kennebunkport	71.8%	1,144	1,594	$423,750	$114,492	$55.04
Kittery	69.1%	3,021	4,373	$262,000	$71,951	$34.59
Ogunquit	68.3%	337	493	$328,500	$86,253	$41.47
Arundel	66.5%	1,066	1,603	$252,500	$68,680	$33.02
York	65.6%	3,637	5,546	$340,000	$89,486	$43.02
Old Orchard Beach	65.6%	2,883	4,396	$183,000	$55,233	$26.55
Portsmouth, NH-ME MA Housing Market	63.7%	4,409	6,918	$259,900	$70,909	$34.09
York, ME LMA Housing Market	63.1%	7,617	12,067	$284,970	$75,537	$36.32
Biddeford	60.7%	5,219	8,602	$178,000	$51,989	$24.99
Kennebunk	59.7%	2,837	4,750	$247,750	$73,435	$35.31
Acton	58.5%	604	1,033	$174,600	$51,092	$24.56
Saco	58.2%	4,501	7,728	$223,000	$62,137	$29.87
Portland-South Portland MA Housing Market	57.2%	87,411	152,926	$215,000	$61,133	$29.39
Alfred	56.1%	677	1,206	$196,725	$53,814	$25.87
Congressional District 1	55.4%	156,802	282,823	$197,900	$56,135	$26.99
Parsonsfield	54.9%	433	789	$145,000	$42,006	$20.20
Eliot	54.5%	1,388	2,545	$258,150	$69,968	$33.64
York County	53.9%	44,275	82,149	$205,000	$56,482	$27.15
Maine	53.1%	301,417	567,261	$165,000	$47,305	$22.74
Shapleigh	52.1%	575	1,104	$192,000	$51,013	$24.53
Wells	52.0%	2,182	4,193	$220,500	$58,861	$28.30
Sanford Micropolitan Housing Market	49.5%	5,286	10,683	$146,900	$42,320	$20.35
Lebanon	49.0%	1,106	2,259	$170,000	$45,229	$21.74
Sanford	47.4%	4,051	8,546	$135,000	$38,939	$18.72
Lyman	45.6%	776	1,701	$199,900	$53,976	$25.95
Dayton	45.2%	331	731	$220,000	$61,321	$29.48
Rochester-Dover, NH-ME MA Housing Market	44.7%	3,507	7,849	$181,500	$50,492	$24.28
Berwick	44.5%	1,256	2,820	$166,500	$48,222	$23.18
South Berwick	44.2%	1,225	2,770	$216,000	$60,090	$28.89
North Berwick	43.1%	791	1,835	$176,638	$48,668	$23.40
Newfield	41.4%	267	646	$130,000	$35,060	$16.86
Limington	40.1%	575	1,434	$158,000	$43,594	$20.96
Buxton	38.8%	1,220	3,142	$165,950	$45,040	$21.65
Hollis	37.3%	631	1,692	$180,000	$48,162	$23.16
Limerick	35.3%	403	1,140	$134,500	$37,495	$18.03
Waterboro	31.5%	902	2,863	$135,000	$38,260	$18.39

Unattainable Homes as a Percentage of Homes Sold

Location	Percentage of Unattainable Homes	Affordable Homes Sold	Unattainable Homes Sold

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2012 Housing Facts for York County

Ogunquit	83.9%	9	47
Kennebunkport	80.8%	15	63
Biddeford	76.6%	36	118
Old Orchard Beach	76.6%	41	134
Kittery	75.0%	29	87
York	72.0%	68	175
Portsmouth, NH-ME MA Housing Market	68.2%	57	122
Arundel	66.7%	11	22
Saco	65.4%	71	134
York, ME LMA Housing Market	62.8%	218	368
Portland-South Portland MA Housing Market	60.1%	1,805	2,717
Kennebunk	58.6%	82	116
Acton	58.5%	22	31
Congressional District 1	57.8%	3,341	4,568
Parsonsfield	57.7%	11	15
York County	56.2%	1,073	1,378
Shapleigh	56.1%	18	23
Alfred	55.0%	9	11
Wells	54.0%	114	134
Maine	53.7%	6,229	7,237
Eliot	52.4%	30	33
Sanford Micropolitan Housing Market	50.0%	133	133
Lebanon	47.2%	28	25
Sanford	45.9%	93	79
Newfield	41.4%	17	12
Dayton	41.2%	10	7
Berwick	40.0%	39	26
South Berwick	39.6%	32	21
Lyman	39.1%	28	18
North Berwick	38.5%	24	15
Rochester-Dover, NH-ME MA Housing Market	35.7%	110	61
Hollis	31.3%	22	10
Buxton	30.4%	48	21
Waterboro	25.3%	62	21
Limerick	23.3%	23	7
Limington	17.0%	39	8

Rental Affordability Index

York County	Year	Index	Average 2 BR Rent (with utilities)[3]	Renter Household Median Income[2]	Income Needed to Afford Average 2 BR Rent	2 BR Rent Affordable to Median Income
	2008	0.88	$945	$33,363	$37,814	$834
	2009	0.92	$912	$33,557	$36,494	$839
	2010	0.98	$884	$34,636	$35,370	$866
	2011	0.89	$928	$33,217	$37,139	$830
	2012	0.95	$886	$33,781	$35,436	$845

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Biddeford	0.83	$863	$28,817	$34,513	$720
Sanford	0.89	$831	$29,585	$33,235	$740
Sanford Micropolitan Housing Market	0.90	$831	$29,922	$33,235	$748
Portland-South Portland MA Housing Market	0.91	$970	$35,387	$38,786	$885
Maine	0.92	$800	$29,554	$31,986	$739
York County	0.95	$886	$33,781	$35,436	$845
York, ME LMA Housing Market	0.97	$999	$38,894	$39,958	$972
Congressional District 1	0.99	$835	$33,091	$33,414	$827

The Rental Affordability Index is the ratio of 2-Bedroom Rent Affordable at Median Renter Income to Average 2-Bedroom Rent. An index of less than 1 means the area is generally unaffordable – i.e., a renter household earning area median renter income could not cover the cost of an average 2-bedroom apartment (including utilities) using no more than 30% of gross income.

Renter Households Unable to Afford Average 2 Bedroom Rent

Location	Households Unable to Afford Average 2 BR Rent Percent	Households Unable to Afford Average 2 BR Rent Number	Total Renter Households	Average 2 BR Rent (with utilities)[3]	Income Needed to Afford Average 2 BR Rent Annual	Income Needed to Afford Average 2 BR Rent Hourly
Biddeford	58.6%	2,285	3,901	$863	$34,513	$16.59
Sanford	55.8%	1,874	3,360	$831	$33,235	$15.98
Sanford Micropolitan Housing Market	55.4%	1,996	3,606	$831	$33,235	$15.98
Portland-South Portland MA Housing Market	54.3%	25,039	46,143	$970	$38,786	$18.65
Maine	53.7%	82,993	154,519	$800	$31,986	$15.38
York County	52.4%	10,657	20,352	$886	$35,436	$17.04
York, ME LMA Housing Market	51.3%	1,104	2,152	$999	$39,958	$19.21
Congressional District 1	50.5%	40,357	79,949	$835	$33,414	$16.06

Demographics

	% Change 1990-2012	1990	2008	2009	2010	2011	2012
Population	21.0%	164,587	204,186	202,700	202,737	204,443	199,102
Households	32.8%	61,848	84,003	82,125	82,138	84,092	82,149

Endnotes

[1]This data is derived from Maine Real Estate Information System ("MREIS") and MREIS reserves all rights including all proprietary rights in the data set forth herein and any use or publication of this data or any portion thereof without the express written consent of MREIS is prohibited. Any reproduction, sale or exchange of this data, in whole or in part, is likewise prohibited. All rights to the data remain the exclusive property of MREIS to the extent owned by MREIS.

[2]Source: Claritas

[3]Source: MaineHousing Quarterly Rent Survey. All rent data reported adjusted to include the cost of utilities (heat, hot water, and electricity).

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2013 Housing Facts for York County

Homeownership Affordability Index

York County	Year	Index	Median Home Price[1]	Median Income[2]	Income Needed to Afford Median Home Price	Home Price Affordable to Median Income
	2009	0.90	$184,950	$53,848	$59,900	$166,263
	2010	0.83	$205,900	$55,476	$66,685	$171,289
	2011	0.94	$200,000	$52,839	$56,187	$188,085
	2012	0.94	$205,000	$52,860	$56,482	$191,853
	2013	0.91	$210,000	$54,180	$59,666	$190,693
Ogunquit		0.49	$404,500	$53,096	$108,152	$198,584
Kennebunkport		0.56	$396,000	$58,810	$104,508	$222,843
York		0.63	$347,000	$59,962	$95,306	$218,315
Old Orchard Beach		0.71	$210,000	$43,372	$60,979	$149,364
Kittery		0.71	$252,500	$51,731	$72,647	$179,801
York, ME LMA Housing Market		0.74	$300,000	$60,335	$82,012	$220,706
Portsmouth, NH-ME MA Housing Market		0.80	$252,600	$57,951	$72,471	$201,990
Biddeford		0.81	$179,900	$43,460	$53,532	$146,052
Arundel		0.84	$254,500	$61,381	$73,370	$212,914
Kennebunk		0.87	$255,500	$64,816	$74,126	$223,409
Alfred		0.88	$216,250	$54,609	$62,035	$190,365
Portland-South Portland MA Housing Market		0.90	$222,500	$57,471	$64,091	$199,518
Congressional District 1		0.91	$208,000	$53,888	$59,525	$188,304
York County		0.91	$210,000	$54,180	$59,666	$190,693
Saco		0.92	$208,900	$56,806	$61,481	$193,014
Wells		0.93	$245,000	$61,845	$66,661	$227,299
Dayton		0.94	$208,500	$57,681	$61,344	$196,050
Eliot		0.95	$254,000	$68,682	$72,666	$240,074
Acton		0.97	$193,000	$52,540	$54,112	$187,394
Maine		0.97	$169,900	$47,728	$49,034	$165,374
Shapleigh		0.99	$197,000	$53,287	$53,861	$194,899
Parsonsfield		0.99	$150,000	$43,722	$44,076	$148,796
Newfield		0.99	$145,000	$39,478	$39,788	$143,869
North Berwick		1.06	$200,000	$59,791	$56,396	$212,040
South Berwick		1.07	$220,100	$69,557	$65,287	$234,497
Rochester-Dover, NH-ME MA Housing Mark		1.09	$191,000	$61,296	$56,324	$207,862
Berwick		1.10	$182,000	$58,776	$53,670	$199,315
Sanford Micropolitan Housing Market		1.12	$140,000	$44,053	$39,398	$156,542
Sanford		1.13	$121,500	$41,867	$37,129	$137,005
Buxton		1.13	$177,000	$55,723	$49,215	$200,406
Hollis		1.20	$170,000	$56,470	$47,196	$203,406
Lyman		1.31	$167,350	$61,371	$46,905	$218,961
Limerick		1.31	$134,200	$49,847	$37,938	$176,329
Waterboro		1.35	$147,000	$56,284	$41,766	$198,098
Lebanon		1.35	$141,900	$54,325	$40,175	$191,876
Cornish		1.42	$112,000	$45,500	$31,970	$159,398
Limington		1.49	$138,500	$56,762	$38,114	$206,262

The Homeownership Affordability Index is the ratio of Home Price Affordable at Median Income to Median Home Price. An index of less than 1 means the area is generally unaffordable - i.e., a household earning area median income could not cover the payment on a median priced home (30 year mortgage, taxes and insurance) using no more than 28% of gross income.

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2013 Housing Facts for York County

Households Unable to Afford Median Home

Location	Households Unable to Afford Median Home		Total Households	Median Home Price[1]	Income Needed to Afford Median Home	
	Percent	Number			Annual	Hourly
Ogunquit	82.3%	381	463	$404,500	$108,152	$52.00
York	76.4%	4,179	5,470	$347,000	$95,306	$45.82
Kennebunkport	73.6%	1,168	1,586	$396,000	$104,508	$50.24
Kittery	70.8%	3,113	4,398	$252,500	$72,647	$34.93
York, ME LMA Housing Market	67.5%	8,078	11,962	$300,000	$82,012	$39.43
Old Orchard Beach	65.7%	2,996	4,562	$210,000	$60,979	$29.32
Arundel	65.3%	1,037	1,587	$254,500	$73,370	$35.27
Portsmouth, NH-ME MA Housing Market	64.8%	4,504	6,947	$252,600	$72,471	$34.84
Wells	62.9%	2,653	4,221	$245,000	$66,661	$32.05
Biddeford	59.5%	5,150	8,653	$179,900	$53,532	$25.74
Kennebunk	59.4%	2,838	4,779	$255,500	$74,126	$35.64
Alfred	57.9%	696	1,202	$216,250	$62,035	$29.82
Portland-South Portland MA Housing Market	56.2%	85,436	151,963	$222,500	$64,091	$30.81
Congressional District 1	55.4%	155,391	280,710	$208,000	$59,525	$28.62
York County	55.1%	45,448	82,437	$210,000	$59,666	$28.69
Saco	54.9%	4,317	7,859	$208,900	$61,481	$29.56
South Berwick	54.8%	1,504	2,745	$220,100	$65,287	$31.39
Eliot	54.6%	1,391	2,549	$254,000	$72,666	$34.94
Dayton	53.3%	390	732	$208,500	$61,344	$29.49
Maine	52.3%	292,965	559,674	$169,900	$49,034	$23.57
Acton	51.5%	530	1,029	$193,000	$54,112	$26.02
Shapleigh	50.6%	554	1,093	$197,000	$53,861	$25.89
Newfield	50.4%	327	649	$145,000	$39,788	$19.13
Parsonsfield	50.4%	409	811	$150,000	$44,076	$21.19
North Berwick	47.1%	852	1,808	$200,000	$56,396	$27.11
Rochester-Dover, NH-ME MA Housing Market	45.6%	3,551	7,784	$191,000	$56,324	$27.08
Sanford Micropolitan Housing Market	45.3%	4,860	10,733	$140,000	$39,398	$18.94
Sanford	45.0%	3,871	8,611	$121,500	$37,129	$17.85
Berwick	44.8%	1,253	2,798	$182,000	$53,670	$25.80
Buxton	43.4%	1,366	3,145	$177,000	$49,215	$23.66
Hollis	40.6%	675	1,662	$170,000	$47,196	$22.69
Cornish	38.1%	243	636	$112,000	$31,970	$15.37
Limerick	36.3%	412	1,136	$134,200	$37,938	$18.24
Lebanon	36.2%	812	2,241	$141,900	$40,175	$19.32
Lyman	34.1%	583	1,711	$167,350	$46,905	$22.55
Limington	32.2%	462	1,433	$138,500	$38,114	$18.32
Waterboro	31.6%	906	2,868	$147,000	$41,766	$20.08

Unattainable Homes as a Percentage of Homes Sold

Location	Percentage of Unattainable Homes	Affordable Homes Sold	Unattainable Homes Sold

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Ogunquit	90.0%	6	54
York	83.6%	44	224
Kennebunkport	79.6%	20	78
Kittery	79.4%	26	100
Old Orchard Beach	77.4%	43	147
Biddeford	76.6%	39	128
Portsmouth, NH-ME MA Housing Market	76.6%	45	147
Arundel	73.2%	11	30
York, ME LMA Housing Market	69.7%	197	454
Eliot	66.7%	22	44
Kennebunk	63.5%	76	132
Alfred	60.7%	11	17
Portland-South Portland MA Housing Market	59.9%	2,104	3,143
Congressional District 1	57.3%	3,908	5,254
York County	56.8%	1,218	1,603
Saco	56.7%	109	143
Wells	56.4%	122	158
Acton	55.9%	26	33
Dayton	55.2%	13	16
Newfield	55.2%	13	16
Maine	52.3%	7,278	7,990
Parsonsfield	51.6%	15	16
Shapleigh	51.1%	23	24
North Berwick	46.5%	23	20
Berwick	45.3%	47	39
Rochester-Dover, NH-ME MA Housing Market	42.5%	119	88
Sanford Micropolitan Housing Market	41.2%	194	136
South Berwick	41.1%	43	30
Cornish	38.9%	11	7
Sanford	37.5%	140	84
Hollis	34.0%	31	16
Buxton	33.7%	57	29
Limerick	29.3%	29	12
Lyman	28.6%	20	8
Limington	27.8%	26	10
Lebanon	22.9%	37	11
Waterboro	17.0%	93	19

Rental Affordability Index

York County	Year	Index	Average 2 BR Rent (with utilities)[3]	Renter Household Median Income[2]	Income Needed to Afford Average 2 BR Rent	2 BR Rent Affordable to Median Income
	2009	0.92	$912	$33,557	$36,494	$839
	2010	0.98	$884	$34,636	$35,370	$866
	2011	0.89	$928	$33,217	$37,139	$830
	2012	0.95	$886	$33,781	$35,436	$845

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2013	0.85	$1,008	$34,313	$40,335	$858
Portland-South Portland MA Housing Market	0.81	$1,114	$36,234	$44,561	$906
York County	0.85	$1,008	$34,313	$40,335	$858
Maine	0.90	$826	$29,841	$33,028	$746
Congressional District 1	0.91	$924	$33,599	$36,954	$840

The Rental Affordability Index is the ratio of 2-Bedroom Rent Affordable at Median Renter Income to Average 2-Bedroom Rent. An index of less than 1 means the area is generally unaffordable – i.e., a renter household earning area median renter income could not cover the cost of an average 2-bedroom apartment (including utilities) using no more than 30% of gross income.

Renter Households Unable to Afford Average 2 Bedroom Rent

Location	Households Unable to Afford Average 2 BR Rent		Total Renter Households	Average 2 BR Rent (with utilities)[3]	Income Needed to Afford Average 2 BR Rent	
	Percent	Number			Annual	Hourly
Portland-South Portland MA Housing Market	59.4%	28,785	48,437	$1,114	$44,561	$21.42
York County	57.0%	12,457	21,861	$1,008	$40,335	$19.39
Maine	54.5%	87,379	160,458	$826	$33,028	$15.88
Congressional District 1	54.0%	44,980	83,221	$924	$36,954	$17.77

Demographics

	% Change 1990-2013	1990	2009	2010	2011	2012	2013
Population	21.1%	164,587	202,700	202,737	204,443	199,102	199,396
Households	33.3%	61,848	82,125	82,138	84,092	82,149	82,437

Endnotes

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[2]Source: Claritas

[3]Source: MaineHousing Quarterly Rent Survey. All rent data reported adjusted to include the cost of utilities (heat, hot water, and electricity).

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2012 Housing Facts for York, ME LMA Housing Market

Homeownership Affordability Index

York, ME LMA Housing Market	Year	Index	Median Home Price[1]	Median Income[2]	Income Needed to Afford Median Home Price	Home Price Affordable to Median Income
	2008	0.63	$320,000	$61,917	$97,803	$202,587
	2009	0.80	$250,500	$62,650	$78,511	$199,892
	2010	0.71	$287,650	$64,434	$90,155	$205,586
	2011	0.82	$275,000	$60,718	$74,382	$224,481
	2012	0.81	$284,970	$61,090	$75,537	$230,467
Ogunquit		0.70	$328,500	$60,436	$86,253	$230,175
York		0.75	$340,000	$66,737	$89,486	$253,565
York, ME LMA Housing Market		0.81	$284,970	$61,090	$75,537	$230,467
Congressional District 1		0.91	$197,900	$51,223	$56,135	$180,581
York County		0.94	$205,000	$52,860	$56,482	$191,853
Wells		0.96	$220,500	$56,584	$58,861	$211,969
Maine		0.96	$165,000	$45,530	$47,305	$158,811
North Berwick		1.12	$176,638	$54,493	$48,668	$197,780

The Homeownership Affordability Index is the ratio of Home Price Affordable at Median Income to Median Home Price. An index of less than 1 means the area is generally unaffordable - i.e., a household earning area median income could not cover the payment on a median priced home (30 year mortgage, taxes and insurance) using no more than 28% of gross income.

Households Unable to Afford Median Home

Location	Households Unable to Afford Median Home Percent	Households Unable to Afford Median Home Number	Total Households	Median Home Price[1]	Income Needed to Afford Median Home Annual	Income Needed to Afford Median Home Hourly
Ogunquit	68.3%	337	493	$328,500	$86,253	$41.47
York	65.6%	3,637	5,546	$340,000	$89,486	$43.02
York, ME LMA Housing Market	63.1%	7,617	12,067	$284,970	$75,537	$36.32
Congressional District 1	55.4%	156,802	282,823	$197,900	$56,135	$26.99
York County	53.9%	44,275	82,149	$205,000	$56,482	$27.15
Maine	53.1%	301,417	567,261	$165,000	$47,305	$22.74
Wells	52.0%	2,182	4,193	$220,500	$58,861	$28.30
North Berwick	43.1%	791	1,835	$176,638	$48,668	$23.40

Unattainable Homes as a Percentage of Homes Sold

Location	Percentage of Unattainable Homes	Affordable Homes Sold	Unattainable Homes Sold
Ogunquit	83.9%	9	47
York	72.0%	68	175
York, ME LMA Housing Market	62.8%	218	368
Congressional District 1	57.8%	3,341	4,568
York County	56.2%	1,073	1,378
Wells	54.0%	114	134
Maine	53.7%	6,229	7,237
North Berwick	38.5%	24	15

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2012 Housing Facts for York, ME LMA Housing Market

Rental Affordability Index

York, ME LMA Housing Market	Year	Index	Average 2 BR Rent (with utilities)[3]	Renter Household Median Income[2]	Income Needed to Afford Average 2 BR Rent	2 BR Rent Affordable to Median Income
	2008	0.89	$1,098	$38,886	$43,931	$972
	2009	0.90	$1,093	$39,227	$43,737	$981
	2010	0.90	$1,117	$40,060	$44,683	$1,002
	2011	0.86	$1,099	$37,784	$43,958	$945
	2012	0.97	$999	$38,894	$39,958	$972
Maine		0.92	$800	$29,554	$31,986	$739
York County		0.95	$886	$33,781	$35,436	$845
York, ME LMA Housing Market		0.97	$999	$38,894	$39,958	$972
Congressional District 1		0.99	$835	$33,091	$33,414	$827

The Rental Affordability Index is the ratio of 2-Bedroom Rent Affordable at Median Renter Income to Average 2-Bedroom Rent. An index of less than 1 means the area is generally unaffordable – i.e., a renter household earning area median renter income could not cover the cost of an average 2-bedroom apartment (including utilities) using no more than 30% of gross income.

Renter Households Unable to Afford Average 2 Bedroom Rent

Location	Households Unable to Afford Average 2 BR Rent Percent	Households Unable to Afford Average 2 BR Rent Number	Total Renter Households	Average 2 BR Rent (with utilities)[3]	Income Needed to Afford Average 2 BR Rent Annual	Income Needed to Afford Average 2 BR Rent Hourly
Maine	53.7%	82,993	154,519	$800	$31,986	$15.38
York County	52.4%	10,657	20,352	$886	$35,436	$17.04
York, ME LMA Housing Market	51.3%	1,104	2,152	$999	$39,958	$19.21
Congressional District 1	50.5%	40,357	79,949	$835	$33,414	$16.06

Demographics

	% Change 1990-2012	1990	2008	2009	2010	2011	2012
Population	24.4%	22,363	29,500	30,055	30,247	30,601	27,830
Households	39.7%	8,636	12,646	12,667	12,753	13,104	12,067

Endnotes

[1]This data is derived from Maine Real Estate Information System ("MREIS") and MREIS reserves all rights including all proprietary rights in the data set forth herein and any use or publication of this data or any portion thereof without the express written consent of MREIS is prohibited. Any reproduction, sale or exchange of this data, in whole or in part, is likewise prohibited. All rights to the data remain the exclusive property of MREIS to the extent owned by MREIS.

[2]Source: Claritas

[3]Source: MaineHousing Quarterly Rent Survey. All rent data reported adjusted to include the cost of utilities (heat, hot water, and electricity).

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2013 Housing Facts for York, ME LMA Housing Market

Homeownership Affordability Index

York, ME LMA Housing Market	Year	Index	Median Home Price[1]	Median Income[2]	Income Needed to Afford Median Home Price	Home Price Affordable to Median Income
	2009	0.80	$250,500	$62,650	$78,511	$199,892
	2010	0.71	$287,650	$64,434	$90,155	$205,586
	2011	0.82	$275,000	$60,718	$74,382	$224,481
	2012	0.81	$284,970	$61,090	$75,537	$230,467
	2013	0.74	$300,000	$60,335	$82,012	$220,706
Ogunquit		0.49	$404,500	$53,096	$108,152	$198,584
York		0.63	$347,000	$59,962	$95,306	$218,315
York, ME LMA Housing Market		0.74	$300,000	$60,335	$82,012	$220,706
Congressional District 1		0.91	$208,000	$53,888	$59,525	$188,304
York County		0.91	$210,000	$54,180	$59,666	$190,693
Wells		0.93	$245,000	$61,845	$66,661	$227,299
Maine		0.97	$169,900	$47,728	$49,034	$165,374
North Berwick		1.06	$200,000	$59,791	$56,396	$212,040

The Homeownership Affordability Index is the ratio of Home Price Affordable at Median Income to Median Home Price. An index of less than 1 means the area is generally unaffordable - i.e., a household earning area median income could not cover the payment on a median priced home (30 year mortgage, taxes and insurance) using no more than 28% of gross income.

Households Unable to Afford Median Home

Location	Households Unable to Afford Median Home		Total Households	Median Home Price[1]	Income Needed to Afford Median Home	
	Percent	Number			Annual	Hourly
Ogunquit	82.3%	381	463	$404,500	$108,152	$52.00
York	76.4%	4,179	5,470	$347,000	$95,306	$45.82
York, ME LMA Housing Market	67.5%	8,078	11,962	$300,000	$82,012	$39.43
Wells	62.9%	2,653	4,221	$245,000	$66,661	$32.05
Congressional District 1	55.4%	155,391	280,710	$208,000	$59,525	$28.62
York County	55.1%	45,448	82,437	$210,000	$59,666	$28.69
Maine	52.3%	292,965	559,674	$169,900	$49,034	$23.57
North Berwick	47.1%	852	1,808	$200,000	$56,396	$27.11

Unattainable Homes as a Percentage of Homes Sold

Location	Percentage of Unattainable Homes	Affordable Homes Sold	Unattainable Homes Sold
Ogunquit	90.0%	6	54
York	83.6%	44	224
York, ME LMA Housing Market	69.7%	197	454
Congressional District 1	57.3%	3,908	5,254
York County	56.8%	1,218	1,603
Wells	56.4%	122	158
Maine	52.3%	7,278	7,990
North Berwick	46.5%	23	20

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Maine State Housing Authority

2013 Housing Facts for York, ME LMA Housing Market

Rental Affordability Index

York, ME LMA Housing Market	Year	Index	Average 2 BR Rent (with utilities)[3]	Renter Household Median Income[2]	Income Needed to Afford Average 2 BR Rent	2 BR Rent Affordable to Median Income
	2009	0.90	$1,093	$39,227	$43,737	$981
	2010	0.90	$1,117	$40,060	$44,683	$1,002
	2011	0.86	$1,099	$37,784	$43,958	$945
	2012	0.97	$999	$38,894	$39,958	$972
York County		0.85	$1,008	$34,313	$40,335	$858
Maine		0.90	$826	$29,841	$33,028	$746
Congressional District 1		0.91	$924	$33,599	$36,954	$840

The Rental Affordability Index is the ratio of 2-Bedroom Rent Affordable at Median Renter Income to Average 2-Bedroom Rent. An index of less than 1 means the area is generally unaffordable – i.e., a renter household earning area median renter income could not cover the cost of an average 2-bedroom apartment (including utilities) using no more than 30% of gross income.

Renter Households Unable to Afford Average 2 Bedroom Rent

Location	Households Unable to Afford Average 2 BR Rent Percent	Households Unable to Afford Average 2 BR Rent Number	Total Renter Households	Average 2 BR Rent (with utilities)[3]	Income Needed to Afford Average 2 BR Rent Annual	Income Needed to Afford Average 2 BR Rent Hourly
York County	57.0%	12,457	21,861	$1,008	$40,335	$19.39
Maine	54.5%	87,379	160,458	$826	$33,028	$15.88
Congressional District 1	54.0%	44,980	83,221	$924	$36,954	$17.77

Demographics

	% Change 1990-2013	1990	2009	2010	2011	2012	2013
Population	23.9%	22,363	30,055	30,247	30,601	27,830	27,706
Households	38.5%	8,636	12,667	12,753	13,104	12,067	11,962

Endnotes

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[2]Source: Claritas

[3]Source: MaineHousing Quarterly Rent Survey. All rent data reported adjusted to include the cost of utilities (heat, hot water, and electricity).

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V. Land Use by SMPDC

- Residential Development
- Commercial/Industrial
- Open Space, Recreation & Natural Resource Land Use
- Land Use and the Transportation Connection
- Land Use and Sea Level Rise
- Future Land Use Regions

Land Use

Wells continues to become a very diversified community with a strong mix of Commercial development along the Route 1 corridor. Residential development continues to expand at a very rapid pace. There are two types of Residential markets in Wells that needs to be looked at closer in this chapter. There is the year round homeowner and the part-time vacation home ownership development. With all of the development occurring, Wells does find itself with a very strong position with Conservation and Open space land, impart due to the Wells National Estuary Reserve and a large number of acres that exists in the Maine Tree growth program. Further analysis will be discussed in the following pages.

Residential Development

Residential land use in Wells is by far the largest use of developed land - about 10,300 acres on more than 5,000 parcels, representing 29% of Wells' total land area. This includes approximately 400 parcels coded as Waterfront by the Wells Assessor's Office and 33 parcels coded as Hotel Condominium, which were previously considered Commercial development. Waterfront parcels are primarily seasonal, but continue become increasingly populated by year-round residents in the past few years.

The pattern of residential development in Wells is quite similar to the pattern that was noted in the 1990 and 2005 Comprehensive Plan update. In that plan, rural subdivisions and centers with established development patterns were considered as one category. Given the additional rural subdivisions that have occurred in the last decade, it would seem appropriate to distinguish it from the established centers. Thus the land devoted to residential purposes generally falls into five broad categories:

- beach development
- development in the Route One corridor on public water and sewer
- rural subdivisions
- centers with established development patterns
- scattered rural residential uses' along existing roads.

The Land Use Map provides a great visual opportunity to better understand the current patterns of development. The Existing Land Use Map from the 2005 plan and the new map generated for this plan are attached in order to make a comparison to the land use changes between 2005 and now. The data for this information has been generated from the town's assessing data base.

The existing residential development on Drakes Island, Wells Beach, and Moody Beach is relatively high density (more than five units per acre) on small lots. The majority of structures are one and two-family homes. These areas are virtually fully developed, with only a small number of vacant, buildable lots. These neighborhoods are quite stable.

Residential use in the Route 1 corridor varies widely in terms of type and density. Most of these areas are serviced by public sewer and water. The bulk of housing in the area is newer housing built at densities of about two units per acre.

West of US Route 1 and the Maine Turnpike, there is a drastic change in the type of residential development, in general it tends to be at a lower density and much more of a year round style of housing development. There are a number of locations with established residential development areas around the older rural centers. These include such centers as Wells Branch and High Pine. These rural centers contain many historic structures on small lots that were developed as railroad villages. Though they are built at higher densities, they lack public water or sewer and often have concerns about environmental resources (particularly in Wells Branch).

Development in the rural areas of Wells is dependent on on-site water supply and septic disposal, although those closer to Route 1 may have public water and sewer. The predominant housing type in these areas is single-family homes with a small number of two-family or multifamily units

Commercial/Industrial

Commercial use of land in Wells occurs in three principal areas:

- Wells Beach/Wells Harbor
- Route One corridor
- Maine turnpike Interchange location

In addition, there are a small number of commercial uses scattered in other areas of the Town, a number of which are associated with the traditional service centers or arterial state roads such as Routes 9 and 109. Commercial/industrial use as a whole comprises 3,422 acres of Wells or approximately 10% of the Town's land area.

The Wells Beach commercial area consists of tourist-related uses including motels, restaurants, and shops, as well as small retail uses servicing the residents of the beach area. The intensity of use is high, but the overall area of commercial use is small and concentrated around Casino Square.

The Wells Harbor area supports both marine commercial and recreational uses. This area contains a marina and associated facilities, a restaurant and public parking lots to support the uses.

The Route One commercial area runs from the Ogunquit Town line to Cozy Comer (Route 9 intersection to Kennebunk). The commercial character of this area varies from segment to segment. From Cozy Corner to south of Drakes Island Road is an intensely developed stretch with a variety of commercial uses, including motels, campgrounds, and retail uses. To the south of this area is a segment with limited commercial development. · Within this area, the historical building character has been maintained, even though many older properties have been converted to commercial use.

The area in the vicinity of Wells Comer is extensively developed for commercial uses and to a limited extent: functions as the center of the Town. This area includes a mix of retail, restaurant, public, and motel uses.

The area of Route One north and south of the Mile Road is the most intensely developed portion of the corridor. This area includes the Town's major shopping facilities, fast food establishments, retail uses, restaurants, and motels. The southernmost section of the corridor is

centered on the Moody area and is only moderately developed for commercial use. Uses include motels, campgrounds, offices, and scattered retail uses.

There are a number of commercial activities west of the Maine Turnpike. Although they are not concentrated in any specific area, there are commercial uses at the intersection of Routes 9 and 109, along Route 9B in the High Pine area and in Perkinstown. These uses are predominantly local businesses serving local markets.

Industrial uses of land may be found in two locations:

- Maine Turnpike Exit 19
- Pike Mining Operation Rout 9 @ the North Berwick Town line

The use of land for industrial establishments is limited to the Spencer Industrial Park between Route 1 and the Burnt Mill Road east of the Maine Turnpike. The site is also adjacent to the Pan Am Rail line and has a service spur into the Industrial park for direct rail access. The area is also served by Unitil gas, while this is a limited area in scope and size, the uses currently existing in the park include:

Wasco and Village Candle
Shaw's Supermarket Warehouse facility
UPS Distribution Center

Comprising approximately 600,000 square feet in one location of town on approximately 50 acres of land, there are a few contractors and similar uses in other areas of the Town which help in rounding out the local Industrial sector. Route 9 also has Light Industrial land as needed.

There are several active gravel pits in Wells, mostly in the western portion of the Town. These facilities are a major source of sand and gravel for the York County area. A major facility for the processing and handling of earth materials (sand, gravel and quarry stone) currently operated by Pike Industries is located off Route 9 and the Boyd Road near the North Berwick border.

The town has added large value to the community since 2005. Below is a table showing the number of Commercial permits issued, and the estimated value of growth the town has seen:

Fiscal Year Ended June 30,	Commercial	
	Permits	Estimated Value
2012	221	14,673,592.18
2011	130	6,338,040.00
2010	175	16,817,325.39
2009	111	5,280,208.00
2008	98	8,728,967.00
2007	103	9,611,674.00
2006	403	23,865,555.60
2005	291	23,709,963.00

Open Space, Recreation & Natural Resource Land Uses

The Town of Wells owns several parcels of land dedicated to open space and recreational use, including the multipurpose fields on Route 9A (68 acres), the Fenderson Wildlife Commons along the Sanford line and land near Ell Pond (over 400 acres) and the Wells Heath property (500 acres). In addition, the Town is a major landholder (245 acres) within the Wells National Estuarine Research Reserve, which is approximately 1,600 acres in total.

The state and federal governments are also major owners of open space in the Town. The State owns an approximately 200 acre parcel of land adjacent to Laudholm Farm. This land was acquired with the intention of developing a state park. It is now being used as part of the Wells Reserve, although there is public beach associated with this parcel. The Rachel Carson National Wildlife Refuge is also a major owner of land within the community. The Reserve has acquired approximately 865 acres of coastal wetlands and adjacent upland in Wells and continues to acquire upland fringe areas adjacent to the wetland in an effort to protect wildlife habitat. These lands are also included in the Wells Reserve. The Reserve has a lease and easement agreement with the town which allows the Reserve to manage and preserve 245 acres on the town behalf.

There are a number of other dedicated open spaces within Wells. There are more than 200 acres of open space land that qualify for state's Farm and Open Space Tax Act under 36 MRSA Sec. 1101. These are public-private partnerships between the York Land Trust, the Great Works.

There are a number of Natural Resources in the town of Wells that should be considered in making Land Use decisions in the future when it comes to the planning considerations for future development areas. This discussion occurs in a more focused setting within the Natural Resources chapter

Land Use & the Transportation Connection

Land uses occur based on the transportation network After all transportation networks were originally established due to trade routes. In modern times, transportation and land use work hand-in-hand due to an ever evolving demand by both categories. Transportation will be discussed at length in its' own chapter, however this link is important to understand so that future land use decisions can be made based on the transportation issues that the community has.

For example, the evolution of the industrial park happens to be adjacent to both the rail line as well as the Maine Turnpike. This is by no coincidence, while the commercial area is along the Route 1 corridor, long cherished as the shore route traveled by many tourists visiting the region, hence all of the retail clustering that has occurred. Route(s) 9 and 109 are major commuting routes from inland, both utilized as commuting routes as well as the major carriers for those inland seeking the recreational opportunities along the coast.

Wells is a Transportation hub for the region. It serves as a Turnpike Interchange location across the street it has a large parking lot that hosts an AMTRAK station as well as a transfer facility for a local bus (trolley) service for the route 1 Corridor. The transportation section of the plan provides additional detail regarding this. From a land use prospective, this area is a logical

growth area to attract new development which does not relay heavily on the Automobile to get around..

Land Use and Sea Level Rise

Being a coastal community, Wells has a great deal of residential development located along the Wells Harbor Coastline. The town has been committed to addressing Sea Level Rise and Climate change issues in general. The community is one on the forefront of addressing these matters. In March of 2104, *Massachusetts Institute of Technology Science Impact Collaborative Consensus Building Institute and the Wells National Estuarine Research Reserve System completed a 2-year Risk Assessment on these impacts for the town of Wells.* This document should be referred to for a full reading of this matter for the town.

The Federal Emergency Management Agency (FEMA) is responsible for documenting and tracking all flood related activities within each community. Since 2013 FEMA has been developing a new Mapping process to document flood prone areas of the community. The town of Wells has been appealing the proposed mapping because of its concern with the accuracy of the information. If the information is inaccurate, it will affect a number of households when trying to obtain the proper Insurance for the home.
It is important to note that Sea Level Rise and Flood Plain information do not impact each other for regulatory purposes.

Future Land Use

The future Land Use Planning document and map is the visual document for all of the recommended long term changes to the community based on the zoning that should be established over time in order to continue in assisting the community to grow, prosper and develop in a way that the citizens suggested through the planning process.

The future land use chapter and the resulting map should also be periodically reviewed. Strategies found throughout the plan should be looked at to determine if they are doing what they were intended to do. Are they too weak? to restrictive? Do they cost too much for the benefit that they bring? Have things changed so that the strategies need to be changed? Continually reviewing the Comprehensive Plan should be part of a continuous planning process.

For the purposes of breaking the community into manageable areas for future land use discussions, the attached map illustrates the areas of the community with the corresponding regions:

1) Coastal Zone from the Atlantic to Route 1

2) Route 1 to the Maine Turnpike bounded by Kennebunk to the north and Ogunquit to the south

2A) Route 109 south to Littlefield Road

3) South side of town, bounded by the Maine Turnpike, Route 9 and the town of Ogunquit

4) West side of town bounded by Route 9, the City of Sanford and Route 109

5) North side of town bounded by Route 109, the town of Kennebunk and Route 1

1) **Coastal Zone from the Atlantic to Route 1** This region will be the most impacted in the community for years to come. The main reason is Sea Level Rise and Storm Surge attributed to Climate Change events. Sea Level rise slowly creeps up on us. The increase in water levels is not noticeable at this time however looking to the future, the increase in water levels is expected to be 3.3 feet by the year 2100. The horizon date of this plan is 2025 and will not have any direct impact on the SLR however; planning for this should begin now. Storm Surge on the other hand has impacted the coastline greatly, in more recent times storm severity has increased and the slight increase in SLR has wrecked havoc on the coast line. A majority of the area in this region is marsh and wetlands preserved through various methods including: the Rachel Carson Refuge and Wells Reserve

Currently there are a number of uses in this area, most of the uses along the Route 1 corridor are commercial in nature and relate directly to the tourism and local resident shopping needs. A majority of uses found down on the waterfront are supporting marine related uses, some commercial in nature and a great deal of Residential.

In the Future Based on the predictions found in the *New England Climate Adaptation Project* report for the town of Wells, it is important that the municipal government start meeting with the property owners on the beach head locations and having discussions regarding the future of the properties in this area. The town should consider placing money into a future purchase fund program to buy storm damaged properties as they occur and rezone on a parcel by parcel basis into a Resource Protection zone. The town should also consider at a minimum the establishment of a 3' freeboard for properties being repaired or improved and that meet the definitions under the FEMA flood plain program. Properties along the Route 1 Corridor are stable in use and location that not a lot of change is required however the community may want to enter into discussions with the Maine Department of Transportation engaged in a discussion regarding a transformation of a complete street program would make a great deal of difference of the feel with development along this corridor.

Zoning should discourage future development along the waterfront region and encourage higher density of residential development off the waterfront in higher elevations to compensate for the slowing of development seaside.

2) Route 1 to the Maine Turnpike bounded by Kennebunk to the north and Ogunquit to the south This location takes in to consideration the properties fronting on the west side of Route 1 which works in conjunction with Route 1 properties discussed in area 1 above.

Currently This region with the exception of the property in area 2A discussed below, is primarily of a commercial and Industrial nature along the entire Route 1 corridor and in the vicinity of the Industrial Park abutting the Maine Turnpike at Exit 19. There is a great deal of property currently located in the Residential A zone and in the Rural zone. Much of the area can

be serviced by Sewer with extensions to the system and more easily to the South of Route 109. These areas seem to make the most sense for future mixed use development of Commercial, Industrial or High density residential development due to the utility access. The same holds true with access to the existing water supply.

In the Future The community really needs to focus a great deal of attention in this region as it is the most visible to the tourists stopping as well as passing through. This is also the highest concentration of development in the community both from a residential stand point as well as a commercial stand point.

Zoning The creation of a higher density residential/mixed use zone should be established to consolidate a great deal of development in this area. It is serviced by all utilities; the access to the Route 1 corridor makes this region available to bikers and walkers. The community should focus its' attention on the creation of a Design Review process for building façades in order to replicate a New England Feel and design of the area which will help to restore the New England Coastal Community appeal to the local citizens and tourism population.

This area is considered a Growth Zone

2A) **Route 109 south to Littlefield Road** This region of town is being separated out from other areas because there has been a great deal of analysis completed here over the past several years. That work includes a Center of Opportunity analysis completed by the Sustain Southern Maine project, A Housing analysis conducted by the Workforce Housing Coalition in Southern New Hampshire and a future analysis is being considered to look at a Route 1 By-Pass connector between Littlefield Road and Chapel Road.

Currently there is an interesting mix of uses to expand upon and new ideas to consider for the future. This area consists of a Train Station serving the Amtrak line located opposite the Maine Turnpike Authority Exit 32, there is a several large Industrial and Warehousing type facilities adjacent to the Turnpike and Rail line, mixed housing, Civic/Academic core with Town Hall, the School system and several ball fields and York Hospital. Directly across Route 1 from this area along Route 9 are the Police and Fire Stations. South of Chapel Road there is 2 large seasonal RV parks and the York County Community College.

In the Future consideration should be given to utilizing the Sustain Southern Maine Future Land Use Plan for the development of a zoning scheme in order to start attracting commercial and higher density residential development to this are of the community. In doing so, there are several advantages to this recommendation. **First**, the community can start to focus its energy on the creation of a mixed use Downtown area that is not very well defined in town. **Second,** the tax base will grow much quicker for the community if there is a well defined downtown area that encourages mixed use developments in a compact and densely developed area. **Third,** this concept will take a lot of vehicle trips off the route 1 corridor and **Fourth,** with the Amtrak station in the immediate area a mixed use development allows for people to visit the community by train from away without worrying about bringing an Automobile to vacation in the region, especially if a hotel or bed & breakfast is available to accommodate those visitors within easy walking distances.

As Part of the development of this area, the Southern New Hampshire Workforce Housing Coalition also provided analysis that encouraged affordable workforce housing be considered in this region. Consideration should be give to working with the YCCC to provide housing that can serve the college as well as summer workforce employment.

Zoning in this region currently exists of **Residential A, Residential C, General Business and Rural**. Consideration should be given to the development of a High Density Residential and Commercial Mixed use zone to encourage the development of a Downtown Core for the community while keeping the design to meet the needs of the current property owners and the New England style structures.

This area is considered a Growth Zone

3) South side of town, bounded by the Maine Turnpike, Route 9 and the town of Ogunquit This region is somewhat rural with several Resource protected environmental features including Chick Brook which feeds the Ogunquit River. Many of the parcels in this area are large in nature and do not have any major transportation routes other than Route 9B. A large quarry operation is located Northwesterly quadrant of the area adjacent to Route 9.

Currently As noted earlier, there are a number of large lots in this region as well as valuable resources, also found in this region is a very large quarry operation, a significant amount of Light Industrial area adjacent to Route 9 and the Rail line, also found in the northeast corner of this defined area is the Transportation Center serving as a hub for Amtrak service to the region. Continued expansion of conservation lands in this area should be expanded throughout the region. The purchase or further conservation of lands should be focused around the already conserved areas as well as well as the resource protected areas in order to expand unfragmented blocks of property.

In the Future This area should be considered to be a Transitional zone with a small area of Growth in the Route 9B corridor and the rest of the region continuing to be rural in nature with the exceptions of the Quarry and the small area currently in Light Industrial.

Zoning Currently the zoning in the area is Residential A, Light Industrial, Quarry Manufacturing, and Rural. The Residential A area should be extended up Route 9B to the Route 9 corridor in order to accommodate the residential development occurring along that road. The light Industrial should be extended as demand requires as well as the Quarry zone if additional land is acquired for the mining operation. The remainder of this region should continue to be preserved as a Rural zone discouraging any additional density from residential development occurring or increased business activity.

This is a Transitional area with a mix of Growth and Rural areas

4) West side of town bounded by Route 9, the City of Sanford and Route 109 This portion of town has a significant amount of newer subdivision lots located near the North Berwick and Sanford town lines. There is a significant amount of resource protected lands along with West

Brook and the Marrilands River. There are also 2 major utility corridors running in a Northeast to Southwest direction through this area.

Currently This region has the most Resource Protected lands in the community and some newer residential development near the town line.

In the Future Continued expansion of conservation lands in this area should be expanded throughout the region. The town owns large tracts of land adjacent to the town line and other lands are in conservation ownership. The purchase or further conservation of lands should be focused around the already conserved areas as well as well as the resource protected areas in order to expand unfragmented blocks of property.

Zoning This region is primarily Rural with a little Residential A along the Route 109 corridor and a great deal of resource protected land throughout. The resource and rural areas should continue to be preserved without allowing any additional densities from occurring

This area is a rural area and should stay as such

5) North side of town bounded by Route 109, the town of Kennebunk and Route 1 This area also hosts a portion of 2 major utility lines as well as the Marrilands River corridor. Probably the most significant part of this region is that it borders with the town of Kennebunk and the Branch Brook which is the aquifer region serving the Drinking supply to a three town water district and is a vital resource to those communities.

Currently This region has more traditional older settlement patterns except for several small areas adjacent to the Route 109 corridor. A resource protection area just south of route 9A the Marrilands River and Hobbs pond are critical resource that must be protected in the future but most importantly to the region of town is the Branch Brook and the protection of the Aquifer.

In the Future A majority of the land in this region is Rural with a small amount of land in Residential development along the Route 109 corridor. Future development should be contained to this corridor since Branch Brook is located nearby to the North of the town. Further protection of Branch Brook needs to be considered in order to further protect the water supply which services the community.

Zoning This area only has a small amount of Residential A along the Route 109 corridor which should not be extended ion the future due to the location near the Aquifer. A majority of the area is in the Rural zone and should stay in a low density rural zone while the AP zone should be expanded from 800feet in width to 1000 feet in order to add further protection to the Branch Brook Aquifer.

This area is currently rural in nature and should stay rural in to the future

VI. Transportation by SMPDC

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- Wells' Transportation System Users
- The Wells Road Network
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    - Functional Classification
    - Local Roads Assistance Program
    - Capital Improvements
    - Maine DOT Work Plan
    - Municipal Partnership Initiative
    - Maine DOT Map Viewer
    - Maine DOT Highway Corridor Priorities
    - Maine DOT Customer Service Levels
    - Traffic Volumes
    - Road Safety
    - Access Management
- Corridor/ Transportation Studies
    - Wells Town Center Development Plan, 2002
    - Route 109 Corridor Study, 2004
    - HUD Center of Opportunity, 2013
    - Central York County Connections Study, 2012
- Bridges, Sidewalks, and Bicycle Routes
    - Bridges
- Pedestrian & Bicycle Infrastructure
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    - Pedestrian Network
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- Parking
- Other Modes of Transportation
    - Public Transportation
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- Maine DOT Access Management Program Map
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- Maine DOT State Compact Area Map
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TRANSPORTATION

Introduction

Roads, streets, and other means of transportation are often referred to as the town's circulation system. This system is necessary to move people, goods, and services from one part of town to another, into town, out of town, and through town.

The highway system also provides access to private property. Roads may be thought of as the framework upon which the town is built. In addition to these functions the highway system is also the setting from which we view much of the town. The views from the roads in town - views of fields, forests, and ocean the places where people live and work - form the visual impressions of our community. The efficiency of our town, the value of our land, and how we view and experience our surroundings are all affected by the highway system and how well it carries out often conflicting roles.

Many of the problems associated with highways in any town are a result of one or the other, or both of the basic flaws of today's roads and streets: (1) their inability to carry out all of their roles equally well, and (2) their inability to carry out these roles and provide a type of service for which they were never designed or built.

The following transportation inventory presents information necessary to develop a management plan for Wells future transportation system. It begins with general information with a description of how Wells residents act as users of the transportation system (section two), followed by a summery of the characteristics of the road network, including how it is managed and how it is used (section three), a discussion about bridges, sidewalks, and bicycle routes (section four), a summary on Town parking (section five), a summery of other modes of transportation available to residents of Wells (section six).

Well's Transportation System Users

Data from this section comes from the American Community Survey, and the Census Transportation Planning Products. The American Community Survey is conducted every year by the Census Bureau to supplement data collected every ten years as part of the official Census count. Like the Census, The American Community Survey collects demographic information to help determine funding allocations for each state. Demographic data included in the American Community Survey is not included in the Census process. The American Community Survey invites approximately one household out of every 38 households to participate. Participants are allowed to fill out paper forms or on-line forms. The Census Transportation Planning Products takes the American Community Survey data and allows creating easy to use maps with the data.

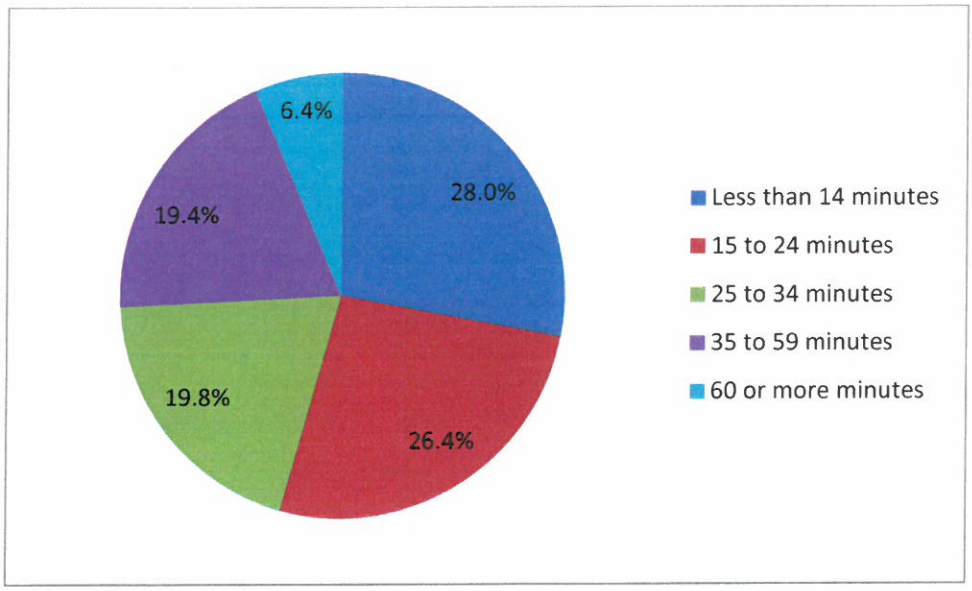
Like most Maine communities, the automobile supersedes all other modes as the predominant mode of transportation for Wells workers (nearly 76 percent of all workers). About 7 percent of all workers carpooled. While the automobile is dominant because of its convenience, it is notable that since there are alternatives in Wells, more people are choosing to use the options (see alternative transportation section).

Commuting to Work in Wells		
	Total	Percent
Car, Truck, or Van (Drive Alone)	3,092	75.8%
Car, Truck, or Van (Carpooled)	362	7.4%
Public Transportation	68	1.4%
Walked	137	2.8%
Bicycle	117	2.4%
Taxicab, motorcycle, or other means	15	0.3%
Worked at Home	293	6.0%
Total Commuters	4,895	100%
Source: 2012 American Community Survey Data		

Data indicates that most adults living in Wells have access to a vehicle, with approximately 2 percent of the population without access to a vehicle. More than half (53 percent) of all households have access to at least two vehicles and nearly 32 percent have access to at least three vehicles.

Vehicles Available in Wells		
	Total	Percent
0 Vehicle Available	117	2.4%
1 Vehicle Available	616	12.6%
2 Vehicles Available	2,596	53.1%
3 or More Vehicle Available	1.555	31.8%
Total Vehicles Available	4,889	100%
Source: 2012 American Community Survey		

A consistent traffic issue throughout Maine and the rest of the country is that traffic tends to build up during "commute hours," or times when people go to and come back from work. Approximately 28 percent of people with jobs in Wells have less than a fourteen minute commute to work. Approximately 46 percent have commutes between 15 minutes and 34 minutes. 19 percent of all commuters travel between 35 and 59 minutes and the remainder of commuters (19 percent) has a commute greater than 60 minutes.



Most residents (nearly 72 percent) of Wells work in York County and only a small amount (nearly 15 percent) work outside of York County. Of those that work outside of York County, approximately 14 percent work outside of the state of Maine.

Place of Work	Percent
Worked in State of Residence	86.3%
Worked in County of Residence	(71.6%)
Worked Outside County of Residence	(14.7%)
Worked Outside State of Residence	13.7%
Total	100%
Source: 2012 American Community Survey	

The Wells Road Network

The town's roadway system ranges from rural country-type roads to the six-lane Maine Turnpike, which serves as the Maine's gateway from the Boston metropolitan area and the eastern United States. The Maine Turnpike is a heavily traveled highway, especially during the ten-week summer tourist season from late June through Labor Day. The local road system experiences similar seasonal demands while the year-round population and travel activity in Southern Maine continues to rise.

Wells's transportation network consists of 54.26 miles of public roadways. There are 0 miles of interstate, 9.03 miles of state highway roads, 0.28 miles of state aid highway roads, 40.90 miles

of town/seasonal roads, and 2.74 miles of additional seasonal roads. Road systems are grouped and classified for several reasons. Some important reasons to classify roads include:

- To design appropriate capacity, safety measures and design speed for roads.
- To guide investment priorities for roads.
- To provide a framework for a road maintenance program.
- To guide land use related regulations and access management standards with frontage on the roadway system.

Road Maintenance

There are four different jurisdictional categories used to classify how roads are maintained: state highways, state-aid highways, local roads, or private roads. The fourth category, which is important to distinguish is private roads and indicate that they are roads that are neither maintained nor owned by the town or the state.

State Roads are a system of connected main highways throughout the state which primarily serve arterial or through traffic. State highways are primarily maintained by the MaineDOT. The exceptions are the state roads located in urban compact areas, which are then maintained by the municipality. State Roads include Route 1, Route 9, Portland Road, and Route 109.

In 2013, MaineDOT performed several maintenance tasks in Wells related to the state roads outside of the urban compact area. These accomplishments are listed in the table below.

MaineDOT Activity Completed (2012)	
Drainage Structures Cleaned	1
Shoulder Miles of Sweeping	2.00
Linear Feet of Bridge Rail Repaired or Replaced	124.00
Bridges Cleaned	7
Bridges Washed	9
Square Feet of Bridge Piers Repairs	200
Bridge Inspections Performed	1
Ton(s) of Cold Patch Applied	6.50
Shoulder Miles of Mowing	42.00
Miles of Striping Applied	26.3 Miles
Linear Feet of Shoulder Rebuilt	150.00
Linear Feet of Guardrail or Fence Maintained	45.00
Shoulder Miles of Litter and Debris Removal	58.00
Linear Feet of Brush Removed	2,050
Minor Sign(s) Installed or Maintained	52
Miles of Shoulders Graded	0.50

Linear Feet of Brush Removed	1,100.00
Source: MaineDOT	

State aid highways are those highways not included in the system of the state highways which primarily serve as collector and feeder routes connecting local service roads to the arterial state highway system. Generally, State-Aid Highways in the rural area are maintained by the MaineDOT in the summer and by the town in the winter. Any State-Aid Highways in the urban compact area are maintained by the town. The State-Aid Highways include Route 9A and Route 9B.

Urban compact areas have populations greater than 7,000 and have sections of highway where buildings are closer than 200 feet for at least 0.25 miles. Under the rules of the Urban Compact Areas: the town of Wells and MaineDOT are required to complete the following maintenance:

Town of Wells	**MaineDOT**
Winter Snow and Ice Control	Route and Designation Signs
Pothole Repair	Bridge and Minor Span Maintenance
Pavement Markings per MUTCD (Centerline, Arrows, Words, Symbols, Crosswalks, and Edge Lines)	Speed Limit Signs on State or State Aid Highways when first installed or when changed due to MaineDOT Review
Traffic Signs per MUTCD (Regulatory, Warning, and Advisory)	
Ditching	
Driveway and Cross Culvert Cleaning, Repair, and Replacement	
Catch Basin Cleaning and Repair	
Surface Treatments i.e. Sand Seals, Chip Seals, Crack Sealing, Asphalt Shimming, Thin Overlays (typically less than 1 inch thick and do not improve strength)	
Traffic Signal Maintenance	
Guardrail Installation or Repair	
Railroad Signs and Pavement Markings	
Brush Cutting, Erosion Control, Mowing, Herbicide Application	
Tree Pruning or Removal	
Retaining Walls	
Sidewalk Maintenance	
Dust Control, Sweet Sweeping	
Source: MaineDOT	

Local roads are highways not included in the state highways and state-aid highway systems, which are maintained by the towns and primarily serve as local service roads providing access to

adjacent land. The town of Wells is also responsible for maintenance of local roads, which include local roads and roads that are included in the urban compact area.

Functional Classification

As was mentioned in the introduction to this chapter, many of the problems associated with highways is the fact that the highways' roles often conflict with one another, and all highways do not perform all of these functions equally well. Also, highways of today are often expected to perform functions and carry the type and amount of traffic for which they were never designed or built.

It is important, therefore, to understand the function of the highways in town in order to prevent their misuse and possible safety problems. From a standpoint of function, roads and streets can be classified into three (or more) functional classifications. For our purposes we have classified the roads in Wells as local roads and streets, collectors, or arterials.

Arterials – MaineDOT defines arterials as roadways that provide long-distance connections between towns and regional centers. Volumes of traffic typically range from 5,000 to 30,000 vehicles per day. Arterials are divided between *principle* arterials and *minor* arterials. MaineDOT, in its regulating driveways and entrances on state and state-aid highways, further classifies arterials into *mobility* and *retrograde* arterials. A *mobility* arterial corridor is a rural arterial with a posted speed limit of 40 miles per hour or more that carries 5,000 or more vehicles per day for at least fifty percent of its length. A *retrograde* arterial corridor is a type of *mobility* arterial on which crash rates due to vehicles entering and existing driveways exceed the 2001 state average crash rate of such crashes. Arterials roads in Wells include:

- *Principle Arterials:* 1-95/Maine Turnpike
- *Other Freeways and Expressways:* None
- *Other Principle Arterials:* Route 109
- *Minor Arterials:* US 1, Route 4, Route 9

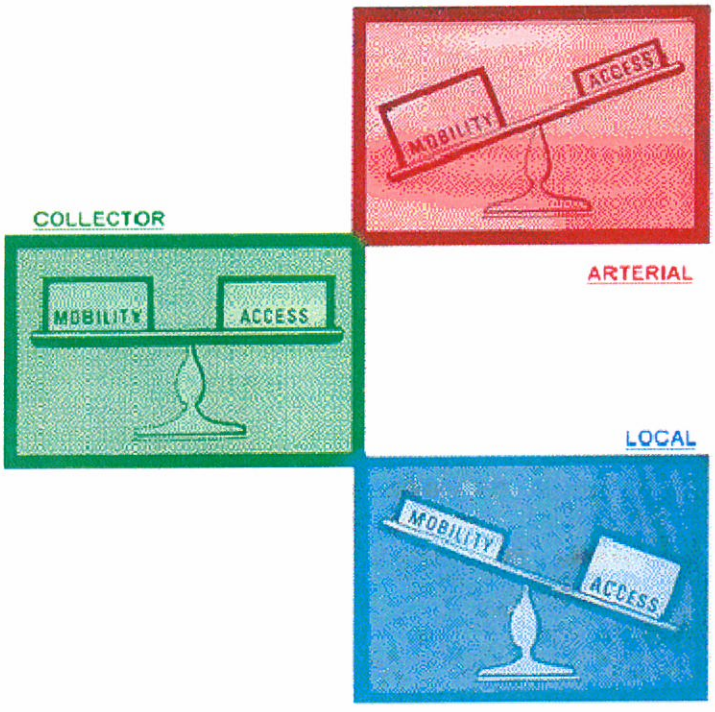
It is here at the arterial level where the conflict between the traffic service function of the highway and the land or property service function is most extreme. As traffic volumes increase and land use intensifies, this conflict also increases. There are three ways to eliminate or prevent this conflict from causing possible safety problems associated with misuse: (1) provide additional capacity in the highway (additional lanes), (2) provide additional highways, or (3) manage the access to the existing arterial highways.

Collectors – Collectors act as connecting roads between local or residential neighborhoods and arterials. Collectors also provide an element of community aesthetics. These roadways are the locations from which many of us view our community. Traffic is *collected* from local roads and delivered to arterial roadways, which are designed for higher speed and improved mobility. Typically, traffic volumes on collector roads range from 1,000 to 5,000 vehicles per day. Like

arterials, MaineDOT further divides classification of collectors into *major* and *minor* collectors. MaineDOT requires driveway and entrance permits for all collector roads. Collector roads in Wells include:

- *Major Collectors:* Route 9A from Route 109 to the Kennebunk Town Line and Route 9B from Route 1 to Route 1
- *Minor Collectors:* Bragdon Road

Local Roads – Local roads and streets provide access to individual parcels of land. Moving traffic is only of secondary importance. Volumes typically carry up to 1,000 vehicles per day. All roads not classified by MaineDOT as arterial or collectors are considered local roads. Local roads maybe be town-owned or private and its important for towns to make that distinction. Local roads and streets are also a part of the residential (and sometimes commercial and industrial) design features. The curves, straight sections, street trees, landscaping, street lighting, and so forth can provide a strong element of community aesthetics. Local roads and streets also provide the sites for building.



Source: MaineDOT Website

Local Roads Assistance Program

The MaineDOT has a system to help municipalities maintain local and minor collector roads. In 1999, MaineDOT adopted the Urban Rural Initiative Program (URIP). Beginning July 1, 2013 URIP became known as the Local Road Assistance Program (LRAP). The new program

eliminates the *hold harmless* portion of the law. The LRAP continues to be focused on municipal aid toward highway and bridge *capital improvements*. Prior to 1999, the use of these *local road* funds was only for the *maintenance or improvement of public roads*. Since 1999, these funds must be used for *capital improvements* to local roads. The table below indicates the LRAP funding the town of Wells has received and will receive during federal fiscal year 2014. All towns are receiving less funding during Fiscal Year 2014 because the total LRAP funding was reduced for Fiscal Year 2014 and 2015.

Fiscal Year	**Total Funding**
2015	$200,664
2014	$237,404
2013	$230,810
2012	$240,991
2011	$232,391
Source: MaineDOT Local Roads Program	

Capital Improvements

There are two different entities that fund the road system in Wells: the town and MaineDOT. The town of Wells spends town funding on maintaining and improving local roads. There are several different sources of funding from MaineDOT that are available to Wells. Beginning 2013, MaineDOT will be listing projects in a calendar year method instead of federal fiscal year. The federal fiscal year begins in October and ends in September.

MaineDOT Work Plan – The MaineDOT's new Calendar Year 2014-2015-2016 Work Plan (Work Plan) supports the department's mission, "To responsibly provide our customers with the safest, most reliable transportation system possible, given available resources." This Work Plan contains projections of transportation resources (federal, state, other) and MaineDOT's strategy to apply them to the planning, engineering, construction, operation and maintenance of transportation infrastructure of all modes throughout Maine. The Work Plan emphasizes focusing scarce transportation resources on existing critical infrastructure needs—primarily roads and bridges—to the greatest extent possible. Projects that are included in the MaineDOT Work Plan focus on airports, bridges, and road infrastructure.

Project ID: 020477.00

Calendar Year: 2014

Scope of Work: Bridge Construction

Highway Corridor Priority: 1

Location: Wells, Ogunquit

Description: Donnell's Bridge (#2239) which carries Route 1 over the Ogunquit River at the Wells/Ogunquit Town Line.

Estimated Funding: $1,500,000

Project ID: 020203.00

Calendar Year: 2014

Scope of Work: Highway Safety and Spot Improvements

Highway Corridor Priority: 1

Location: Wells

Description: Located at the intersection of Route 1 and Route 109.

Estimated Funding: $195,000

Project ID: 020566.00

Calendar Year: 2014

Scope of Work: Highway Safety and Spot Improvements

Highway Corridor Priority: 1

Location: Wells

Description: Interconnect and modify traffic signals and upgrade pedestrian facilities at Mile Road and at Route 9B.

Estimated Funding: $1,958,500

Project ID: 020474.00

Calendar Year: 2015-2016

Scope of Work: Bridge Construction

Highway Corridor Priority: 1

Location: Wells, Kennebunk

Description: Pumping Station Bridge (#2693) which carries Route 1 over Branch Brook at the Wells/Kennebunk Town Line.

Estimated Funding: $800,000

Project ID: 020278.00

Calendar Year: 2015-2016

Scope of Work: Highway Preservation Paving

Highway Corridor Priority: 1

Location: Wells

Description: Beginning 0.13 of a mile north of the Ogunquit/York Town Line extending northerly 3.72 miles to 0.06 of a mile north of South Street.

Estimated Funding: 855,600

Project ID: 022673.00

Calendar Year: 2015-2016

Scope of Work: Highway Safety and Spot Improvements

Highway Corridor Priority: 1

Location: Wells

Description: Reconstruct Chapel Road approach to 90 degrees.

Estimated Funding: $165,000

Project ID: 022704.00

Calendar Year: 2015-2016

Scope of Work: Highway Safety and Spot Improvements

Highway Corridor Priority: N/A

Location: Wells

Description: Replace flashing beacon at Laudholm Farm Road, at Drake's Island Road in Kennebunkport, and at Durrell's Ridge Road in Wells.

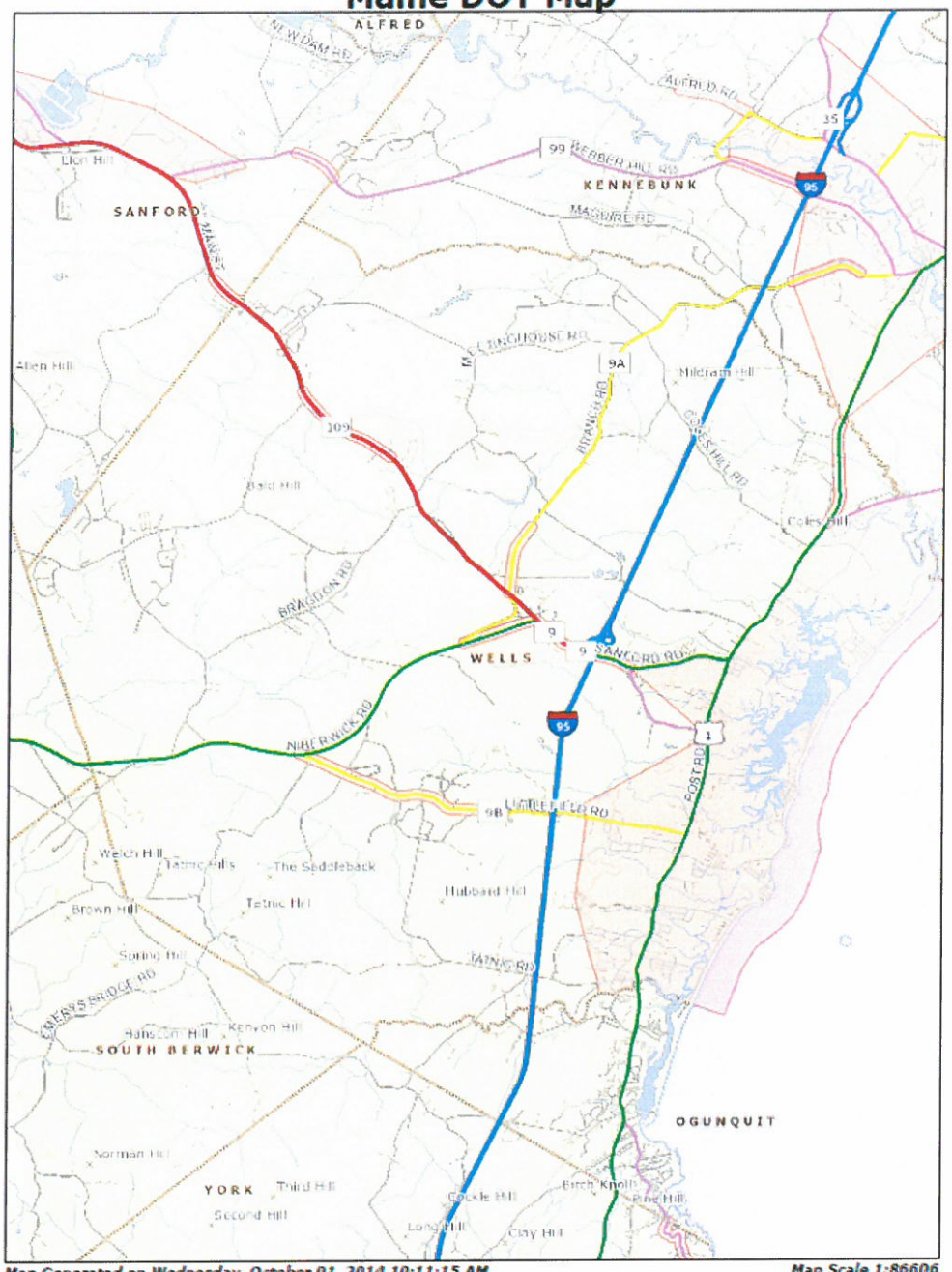
Estimated Funding: $80,000

Municipal Partnership Initiative (MPI) – The MPI is a new program to MaineDOT that began in 2011. The program is geared towards funding projects for state and state-aid highways that often get overlooked. Municipalities that would like to participate are required to contribute at least half of the project costs. The remainder of the project will be funding with state funds. It is expected that the municipality and not MaineDOT will manage the project. MaineDOT will reimburse entities once the work is complete to the satisfaction of MaineDOT. All MPI projects must be certified by a professional engineer and have a useful life span of at least ten years. Municipalities may propose shifting long-term maintenance responsibilities as part of their share.

Asset Management

MaineDOT Map Viewer – The MaineDOT Map Viewer is an online mapping program designed for municipalities to collect a variety of transportation data. There are many functions, but the most useful functions include mapping of federal functional road classifications, bridge and railroad data, MaineDOT transportation projects, and Highway Corridor Priories and Customer Service Levels. The Map Viewer can be found on the MaineDOT website. For more information, visit: http://www.maine.gov/mdot/mapviewer.

Maine DOT Map



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The Maine Department of Transportation provides this publication for information only. Reliance upon this information is at user risk. It is subject to revision and may be incomplete depending upon changing conditions. The Department assumes no liability if injuries or damages result from this information. This map is not intended to support emergency dispatch. Road names used on this map may not match official road names.

MaineDOT Highway Corridor Priorities – The MaineDOT Highway Corridor Priorities are based on a ranking system. The following chart outlines the priority system for the current roadway system. The Corridor Priories are based on federal functional classification system, regional economic significance, heavy haul truck use and relative regional traffic volumes.

- Priority 1 – Route 1, Route 4, , Route 109, and the Maine Turnpike
- Priority 2 – Route 9/North Berwick Road

- Priority 3 – None
- Priority 4 – Route 9/Portland Road
- Priority 5 – Route 9A, Route 9B

Priority	Definition
Priority 1 Roads	These roads include the Maine Turnpike, the interstate system and key principal arterials like Route 1 in Aroostook County, the Airline (Route 9), Route 2 west of Newport, and Route 302. The 1,400 miles of Priority 1 roads represent only 7 percent of the miles, but carry fully 40 percent of all vehicle miles traveled in Maine.
Priority 2 Roads	These roads total about 940 miles. They are non-interstate, high value arterials that represent about 4 percent of the total miles of road but carry 11 percent of overall traffic.
Priority 3 Roads	These roads generally are the remaining arterials and most significant major collector highways. These 2,050 miles represent only 9 percent of miles, but carry 19 percent of the traffic.
Priority 4 Roads	These roads generally are the remainder of the major collector highways, often also part of Maine's unique state aid system, in which road responsibilities are shared between the state and municipalities. These 1,900 miles represent about 8 percent of total miles, and carry 10 percent of the traffic.
Priority 5 Roads	These roads are 2,500 miles of minor collector highways, almost all on the state aid system. They represent 11 percent of miles, but carry only 7 percent of traffic.
Priority 6 Roads	These roads are local roads and streets, and are the year-round responsibility of our municipal partners. Though they carry just 13 percent of the statewide traffic, these 14,300 miles make up 61 percent of the total miles.

MaineDOT Customer Service Levels – Like the Highway Corridor Priorities, the Custer Service Level is prioritized on three criteria: safety, condition, and service. Each criterion has several factors that are included in the overall rating of each category. Roads and road segments are

given an A-F rating with A being the best and F being the worst. To get a better idea of the customer service levels for each road/node, visit the MaineDOT map viewer program.

- Safety – Most roads in Wells are classified in the B or C category. There is a small section of Route 9A near Route 109 that is classified as D due to crash history and pavement width and two small sections of Route 109 classified as an F due to crash history and pavement width.
- Condition – The majority of roads in Wells are classified in the A or B Category. There are no sections of road that classified as a D or F.
- Service – Almost all roads in Wells are classified in the A or B category. There are segments of Route 1 and Route 9 classified as a D and F due to congestion.

Customer Service Level	Category	Definition
Crash History	Safety	This measure includes the two types of motor vehicle crashes most likely related to the highway- head-on and run-off road crashes. The A-F scale compares these crash rates with the statewide average.
Paved Roadway Width	Safety	This measure compares total paved width (lane plus shoulder) with minimum acceptable widths by Highway Corridor Priority (not new design standards). If a highway segment fails this minimum, the Safety Customer Service Levels for that segment is decreased one letter grade.
Pavement Rutting	Safety	This measure looks at wheel path rutting, since excessive rutting holds water and contributes to hydroplaning and icing in winter. The A-F scale set points vary by Highway Corridor Priority, and are based on hydroplane tests.
Bridge Reliability	Safety	This measure is pass/fail. If a highway segment contains a bridge with a Condition Rating of 3 or less (excluding non-overpass decks), the Safety Customer Service Level is decreased one letter grade. These bridges are safe, but may require increased inspection or remedial work that could affect traffic flow.
Pavement Condition	Condition	This measure uses the Pavement Condition Rating (PCR), a 0-5 scale that is composed of International Roughness Index, rutting, and two basic types of cracking. The A-F scale varies by Highway Corridor

Customer Service Level	Category	Definition
		Priority.
Roadway Strength	Condition	This measure uses the results of the falling weight deflectometer, a device that estimates roadway strength. The A-F scale is uniform across Highway Corridor Priority, since even low-priority roads must support heavy loads in Maine's natural resource-based economy.
Bridge Condition	Condition	This measure converts the 0-9 national bridge inventory (NBI) condition ratings to pass or fail; it is uniform across Highway Corridor Priority.
Ride Quality	Condition	This measure uses the International Roughness Index (IRI), which is expressed in inches per mile of deviation. IRI is the nationally accepted standard for passenger comfort, and the A-F scale varies by Highway Corridor Priority.
Posted Road	Service	Each year, MaineDOT posts more than 2,000 miles of road during spring thaw to protect their longevity, but some posted roads directly affect Maine's economy. Road segments that are permanently posted get a D, those with seasonal postings get a C.
Posted Bridge	Service	This measure uses load weight restrictions to arrive at an A-F score that varies by Highway Corridor Priority.
Congestion	Service	This measure uses the ratio of peak traffic flows to highway capacity to arrive at an A-F score for travel delay. Peak summer months are specifically considered to capture impacts to Maine's tourism industry. This scale is uniform across Highway Corridor Priority, since tourist travel is system-wide and sitting in traffic affects customer service similarly on all roads.

Traffic Volumes – The Average Annual Daily Traffic (AADT) is the predominant type of traffic data that is collected for Maine roadways. In some ways, traffic volume trends are an excellent

way to collect the functionality of the road system. MaineDOT is responsible for conducting traffic counts for the Southern Maine Planning & Development Commission. Wells is part of the Zone 1 and traffic counts are conducted every 3 years.

Traffic Counts: 2007, 2010, 2013				2007-2013		2010-2013	
	2007	2010	2013	Change	Percent	Change	Percent
US 1/SR 9 NE/O Harbor Road	--	12,460	12,960	--	--	500	3.86%
US 1 N/O Mile Road	--	20,120	17,070	--	--	-3,050	-17.87%
US 1 S/O Mile Road	--	17,970	15,360	--	--	-2,610	-16.99%
US 1 S/O Tatnic Road at Bridge #2239 and Town Line	14910	--	13,370	-1,540	-12%	--	--
SR 9A (Branch Road) SW/O Meeting House Road	1920	1,920	2,140	220	10%	220	10.28%
SR 9B (Littlefield Road) SE/O SR 9 (North Berwick Road)	2600	2,540	3,090	490	16%	550	17.80%
SR 9/109 (Sanford Road) E/O Chapel Road	--	--	9,420	--	--	--	--
SR 9/109 (Sanford Road) W/O Chapel Road	--	--	14,970	--	--	--	--
SR 9 (North Berwick Road) E/O SR 9B (Littlefield Road)	6120	6,080	6,360	240	4%	280	4.40%
SR 9 (North Berwick Road) W/O SR 9B (Littlefield Road)	7980	7,800	8,460	480	6%	660	7.80%
SR 9 (North Berwick Road) SW/O SR 9/109 (Sanford Road)	6880	6,980	6,980	100	1%	0	0.00%
Quarry Road SW/O Bald Hill Road	740	890	820	80	10%	-70	-8.54%
SR 109 (Sanford Road) SE/O SR 9A (Branch Road)	9240	9,180	8,800	-440	-5%	-380	-4.32%
SR 109 (Sanford Road) NW/O SR 9A (Branch Road)	8190	7,770	8,490	300	4%	720	8.48%
SR 109 (Sanford Road) SE/O Wire Road	7140	7,930	7,630	490	6%	-300	-3.93%

Road Safety – The table below indicates that there were 1,666 crashes in Wells between 2008 and 2013. From 2008 to 2013, there has been a decrease in crashes by 61 (24.80 percent). 2008 had the most crashes with 307. 2010 had the least amount of crashes with 254.

Town	2008	2009	2010	2011	2012	2013	TOTAL
Wells	307	301	254	290	268	246	**1,666**

MaineDOT has a system that it uses to rate crash locations through out the state called the *High Crash Locations*. High Crash Locations are given greater attention for funding projects by MaineDOT for their safety programs. In order to qualify, High Crash Locations must be at locations that have had at least eight crashes in the same location for a three-year period. It also must exceed the Critical Rate Factor of crashes. A Critical Rate Factor is the average expected rate of crashes for a location (based on statewide data of similar crashes). In Wells, there were six high crash locations between 2011 and 2013. The number one high crash location in York County was located at the intersection of Chapel Road and US 1with 38 accidents. This intersection will be improved in 2015-2016 by the MaineDOT. Chapel Hill at then intersection of US 1 will be reconstructed to a 90 degree approach.

High Crash Locations in Wells: 2011-2013	**Total Accidents**	**Critical Rate Factor**	**Ranking County/State**
Intersection of Chapel Road and US 1	38	5.76	1/19
Intersection of Garden Street, North Berwick Road, and Sanford Road	12	2.24	22/136
Intersection of Chapel Road and Sanford Road	10	1.68	33/178
Intersection of Branch Road, Crediford Road, and Sanford Road	16	3.99	6/50
US 1 between Mile Road and Bayview Terrace	21	1.04	32/164
Intersection between US 1 and Mile Road	13	1.15	24/153

Access Management: For improved safety and speed preservation along the state's highways, the MaineDOT has developed a set of access management rules in response to legislation concerned with arterial capacity, poor drainage, and the high number of driveway-related crashes. Any new or changed driveway or entrance on state and state aid highways located outside of urban compact areas must meet specifications described in the rules in order to obtain a permit from MaineDOT. The rules regulate sight distance, corner clearance, spacing, width, setbacks, parking, drainage, and mitigation requirements.

The rules are organized into a four-tier system with regulation of driveways and entrances increasing for roads with higher mobility importance and poorer safety records. The following are the designations for the highway networks in Wells:

The rules define mobility corridors as those corridors that connect service centers and/or urban compact areas and carry at least 5,000 vehicles per day along at least 50% of the corridor's length. In Wells, the mobility corridors include the non-urban compact portions of the following roads:

- Basic safety standards apply to all sate and state-aid roads. In Wells, this includes the non-urban compact portions of Route 9, Route 9A, Route 9B, Route 109, and US 1.
- Major collector and Arterial standards prove more detailed design standards for entrances into major collector and arterial roads. Entrances are access that serves 50 or more trips per days. In Wells, this includes the non-compact portions of Route 9, Route 109, and US 1.
- Mobility corridors connect service centers and/or urban compact areas and carry at least 5,000 vehicles per day along at least 50 percent of the corridors length. In Wells, this includes the non-urban compact portions of Route 9 west of Route 109, Route 109 north of Route 9, and US 1.
- Retrograde arterials are mobility corridors where the number of crashes related to a driveway or entrance exceeds the statewide average for arterials with the same posted speed. In Wells, this includes the non-urban compact portions of Route 9 between Boyd Road and Route 109, Route 109 between Route 9 and El Velvel Circle, and a portion of US 1 just south of the Kennebunk town line.

Corridor/Transportation Studies

Wells Town Center Development Plan – In 2002, the town of Wells created an Advisory Committee to create the Central Area Development Plan. The goal of the plan was too look at ways to create a Town Center centered in the Wells Corner area and extending north along Route 1 and west along Route 109. Included in this area are the Town Hall, schools, and other local businesses that would help shape the direction of a new Town Center.

Route 109 Corridor Study – In 2004, the towns of Wells and Sanford completed a Route 109 Corridor Study with assistance from the Southern Maine Planning and Development Commission. The plan primarily focused on improving access management along the Route 109 Corridor in Wells and Sanford. The Route 109 Corridor Committee assisted the MaineDOT in designing the reconstruction of Route 109. That project was completed in 2013 and improved safety of Route 109 by widening the shoulders and improving horizontal and vertical alignments and sight distance.

HUD Center of Opportunity – In 2013, the town of Wells participated in the Sustain Southern Maine project as a Center of Opportunity. The project focused on the region of Wells near the Transportation Center to Route 1 and then Route 1 from the intersection of Mile Road to the intersection with Route 109. There are many discussions and recommendations from the Center

of Opportunity project that can be found on the Sustain Southern Maine website (www.sustainsouthernmaine.org).

Central York County Connections Study – Wells was a participant in the Central York County Connections Study. The study was completed through the Maine Department of Transportation and Maine Turnpike Authority. The purpose of the study was to identify, evaluate and recommend feasible transportation options for the Central York County region. More information can be found in the report.

1. Bridges, Sidewalks, and Bicycle Routes

Bridges: There are 43 bridges in the town of Wells, with 18 owned/maintained by MaineDOT, 10 owned/maintained by the town of Wells, 2 owned/maintained jointly by Wells and Ogunquit, 12 owned/maintained by the Maine Turnpike Authority, and 1 owned/maintained privately by the railroad. Information on these bridges is provided in the table below.

Bridge condition is monitored every two years and given a Federal Sufficiency Rating (SFR). Each FSR has a numeric indicator of the overall value of the sufficiency of the bridge. A rating will be from 0-100 (0 indicates the worse and 100 indicates the best). FSR is computed with a federally supplied formula using an array of condition and inventory data. The formula is used to indentify bridges eligible for federal funding. The FSR includes both structural deficiencies as well as functional obsolescence. This rating gives an overall value of the sufficiency of the bridge. Since functional obsolescence (too narrow or low weight capacity) may account for a large portion of the rating, one should not assume that a low sufficiency rating means the bridge could fail.

Bridge Name	Bridge Number	Owner/Maintenance	Sufficiency Rating
Dickens Hill	1252	MaineDOT	81.8
Donnell's	2239	MaineDOT	75.7
Tibbetts	1254	Wells/Ogunquit	23.3
Ogunquit River Bridge	1317	Wells/Ogunquit	77.1
Webhannet River	1320	Wells	77.5
B&M Railroad Overpass SB	1478	Wells	92.6
Branch Brook	1328	Maine Turnpike Authority	77.4
Cols Hill Road	1327	Maine Turnpike Authority	93.5
Merriland River Bridge	1326	Maine Turnpike Authority	76.8
Burnt Mill Road	1325	Maine Turnpike Authority	97.9
Wells Interchange NB	1324	Maine Turnpike Authority	94.3
Wells Sanford Road NB	1323	Maine Turnpike Authority	99.4

US Route 1 Over B&M Railroad	1102	MaineDOT	87.5
Webhannet Branch	1321	Maine Turnpike Authority	78.0
Buffam	2107	MaineDOT	65.0
Littlefield Road	1319	Maine Turnpike Authority	92.3
Tatnic Road	1318	Maine Turnpike Authority	95.7
Jeffred Branch	1267	MaineDOT	99.8
Camp	1259	Wells	88.8
Clarks	1255	Wells	85.9
Stover Mill	1253	Wells	79.9
B&M Railroad Overpass NB	1322	Maine Turnpike Authority	81.4
Bragdon Crossing	3200	MaineDOT	89.9
Hilton	6216	Wells	38.5
Sherburne	6122	MaineDOT	99.0
Merriland Ridge Bridge	5338	MaineDOT	55.6
B&M Railroad Overpass	5337	Railroad	-1.0
Lewis West	3916	Wells	48.1
Charles West	3915	Wells	73.3
Bert Wells	3844	MaineDOT	79.0
Skinner	3771	MaineDOT	84.0
Wells Sanford Road SB	1479	Maine Turnpike Authority	96.4
Drakes Island	3577	Wells	47.8
Wells Interchange SB	1480	Maine Turnpike Authority	94.5
High Pine Crossing	3199	MaineDOT	85.1
Island Ledge Road	3175	MaineDOT	80.1
Branch Brook	3091	MaineDOT	79.1
Pumping Station	2693	MaineDOT	64.9
Little River	2468	MaineDOT	85.8
Edward Hill	2263	MaineDOT	72.2
Capell	2126	MaineDOT	74.0
Merriland River	6492	Wells	86.9
Bourne Avenue	3765	MaineDOT	80.8

2. Pedestrian & Bicycle Infrastructure

The town of Wells has access to several options for pedestrian and bicycle infrastructure to encourage residents and visitors to walk and bike.

Trails: There are two significant organizations that have created on-road and off-road trails that travel through Wells. The Eastern Trail Alliance created the Eastern Trail network that connects Kittery to South Portland through a series of on-road and off-road trails. In Wells, the Eastern Trail is located on US 1. The Eastern Trail is part of the larger East Coast Greenway network

that will eventually connect Maine to Florida through a trail system. Another initiative is US Bike Route 1…

Pedestrian Network: Pedestrians are a part of every roadway environment, and attention should be paid to their presence. Sidewalks are the primary facility provided to meet their needs, and care must be taken when designing a pedestrian network to account for all users. This includes children, the elderly, parents with strollers, and pedestrians with physical disabilities and impairments that require the use of wheelchairs and other assistive devices. Future sidewalks will be included on Harbor Road and will b extended south along Route 1.

Bicycle Network: Bicyclists have the same mobility needs as any other road user. Increasingly land use and transportation planners are recognizing the bicycle as a viable transportation mode. While recreation is still the primary use of the bicycle, more people are beginning to cycle as a way to commute to work and run errands. Cyclists should be included in all phases of transportation planning including new road design, construction, and rehabilitation.

Any segment of roadway having a paved shoulder of at least four feet in width is generally considered appropriate for bicycle travel. A portion of Route 109/9 has a bicycle lane. Future bike lanes will be included on Harbor Road and Furbish Road. As highways are improved and upgraded, the town will encourage adequate shoulder widths in order to accommodate bicycle travel.

3. Parking

There are limited opportunities for parking in the town of Wells. There is limited parking for many of the more popular tourist attractions including Wells Beach, Moody Beach, Wells Harbor Park, Drake's Island Beach, the Wells Reserve/Laudholm Beach. Those locations and roads leading to them experience parking issues during the tourist months. There is parking available at businesses along US 1 and at the Wells Transportation Center, which provides parking for the Amtrak Downeaster and a park and ride lot for commuters. There is limited on-street parking on Ocean Avenue and Atlantic Avenue. There is need for additional off-street parking adjacent to US 1 that can be serviced by the trolley to shuttle visitors to the beaches.

4. Other Modes of Transportation

Wells' transportation system is in large part a reflection of the historical growth of the town. At the end of the 19th Century and beginning of the 20th Century, a light electrical rail service was available in Wells and other nearby coastal southern Maine Communities. The rail service connected the coastal southern Maine communities with Sanford and Springvale. Long distance railroads with two stations in Wells served the town. Similar to the pattern that evolved throughout the United States during the early to middle part of the 20th Century, the private automobile became the primary means of transportation in Wells.

While motorized vehicles including automobiles, heavy and light trucks, will continue to be the primary form of transportation in Wells, the Town has been effective in encouraging and planning for other forms of transportation. The most significant example of this planning is the addition of the Wells Transportation Center, which opened for business in December 2002. The Wells Transportation Center is located directly off of Exit 19 of the Maine Turnpike Authority on Route 109/9. It is an intermodal transportation facility serving Southern Maine by passenger rail service and commuter parking for 220 vehicles.

Public Transportation: The York County Communication Corporation (YCCAC) provides several forms of public transportation for the town of Wells.

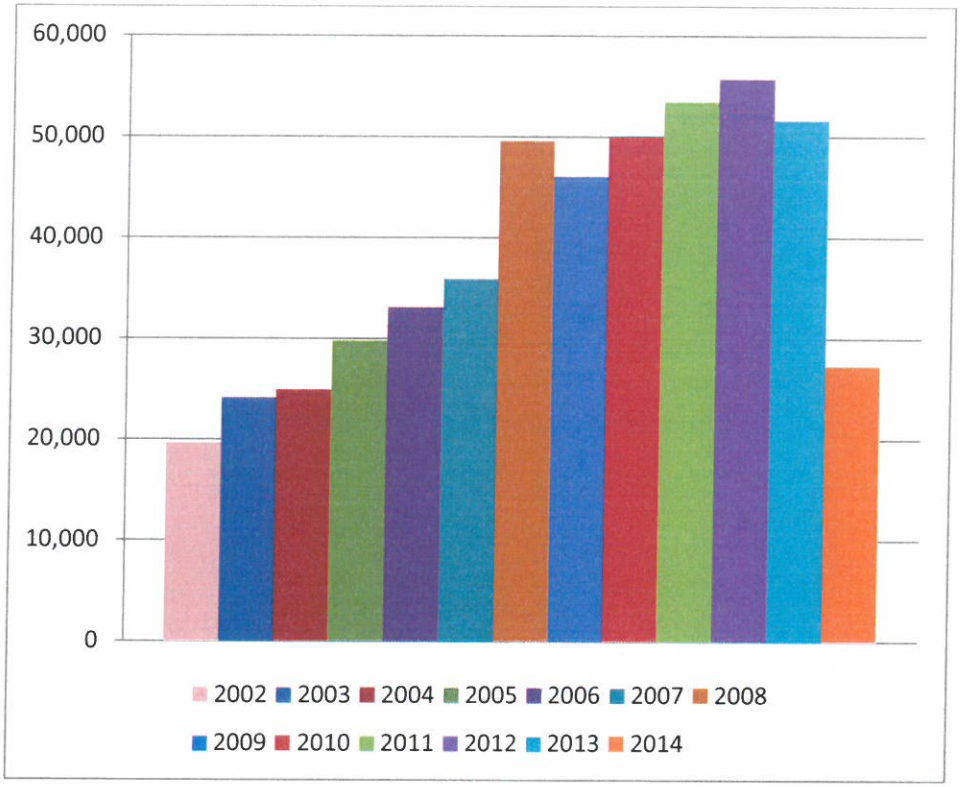
The WAVE transports riders to training and job sites, and their children to day care, with general public trips on a space-available basis. The blue and white vans and buses operate 7 days a week. Trips must be arranged in advance. The current service is for an area including Sanford - Springvale and parts of Wells and Wells, and parts of Lyman and Biddeford.

- The Shoreline Explorer provides seasonal trolley service to coastal communities in southern York County. There are four routes that provide seasonal transportation with two that provide services in the town of Wells (The Blue Line/Route 4 and the Orange Line/Route 5). The Blue Line/Route 4 serves Ogunquit, Wells, and Kennebunk. The Orange Line/Route 5 serves Wells and Sanford and provides full-year service.

Route	June		July		August		September	
	2013	**2014**	**2013**	**2014**	**2013**	**2014**	**2013**	**2014**
Blue Line	3,763	4,820	24,733	26,191	28,764	27,447	1,097	381
Orange Line	303	349	1,303	1,239	1,508	1,508	81	28
TOTAL	*4,066*	*5,169*	*26,036*	*27,430*	*30,272*	*28,995*	*1,178*	*409*

- The WAVE (Wheels to Access Vocation and Education) service provides riders with the opportunity to travel to jobs and to bring their children to daycare. If space is available, the service is open to the general public. The WAVE service is provided year round. In 2013, they YCCAC provided 34,182 one-way trips though the WAVE service.
- YCCAC also provides transportation services for medical/non-emergency and shopping purposes for communities in York County. They provide a weekly service for Wells that connects to the hospital and shopping locations in Biddeford.

Rail: Passenger Rail service is provided through the Amtrak Downeaster service at the Wells Transportation Center. With the exception of 2009 and 2013, ridership has increased each year since the service began in 2002. Note that 2014 only includes months from January to July 2014.

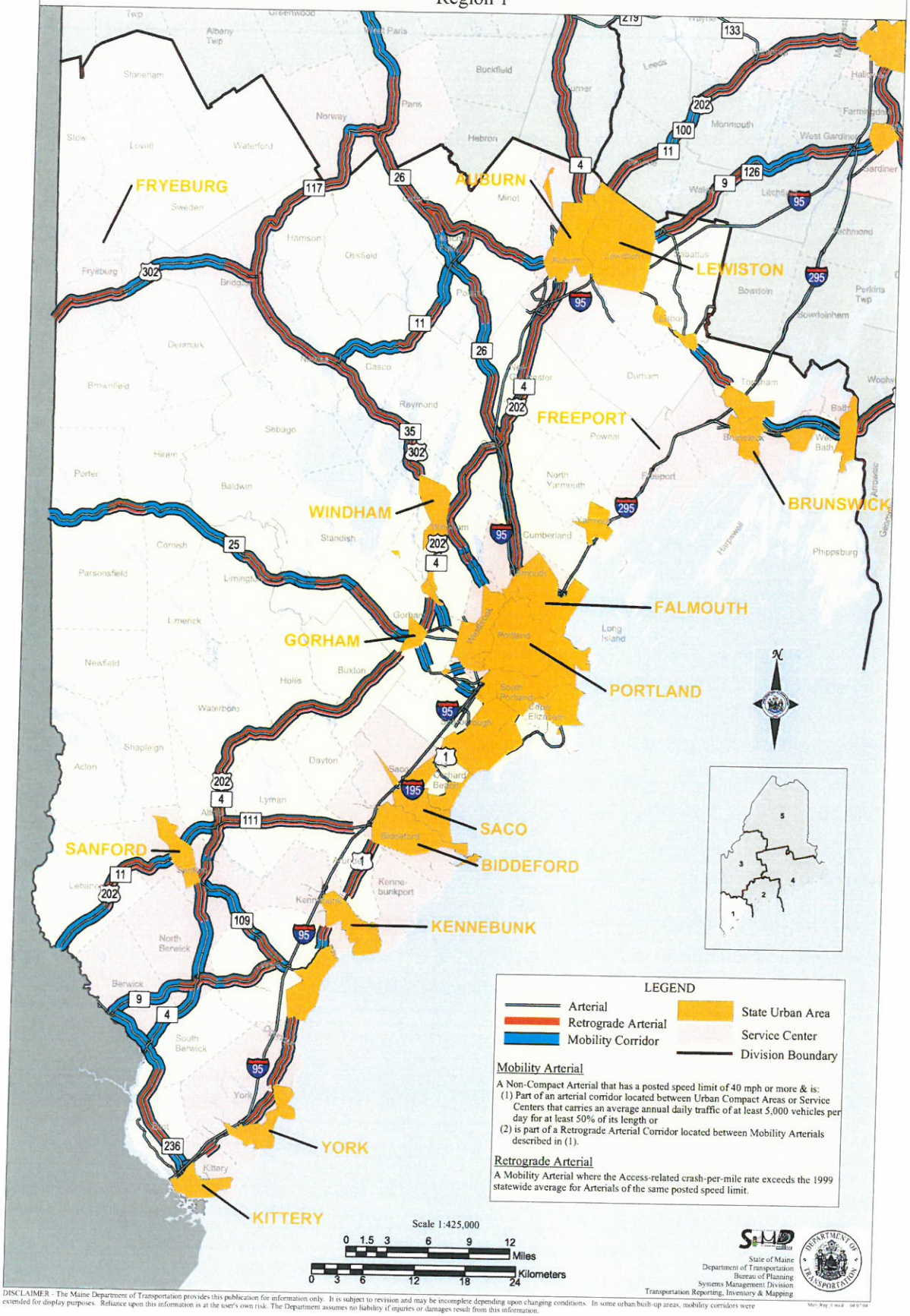


Air: Wells is approximately 30 minutes from the Portland International Jetport and the Pease International Tradeport in Portsmouth, New Hampshire. Airports in Manchester, New Hampshire or Boston are approximately 75 minutes from Wells. Shuttle service is available to Boston and Portland from private carriers.

MaineDOT Access Management Program

Mobility Corridors & Retrograde Arterials

Region 1



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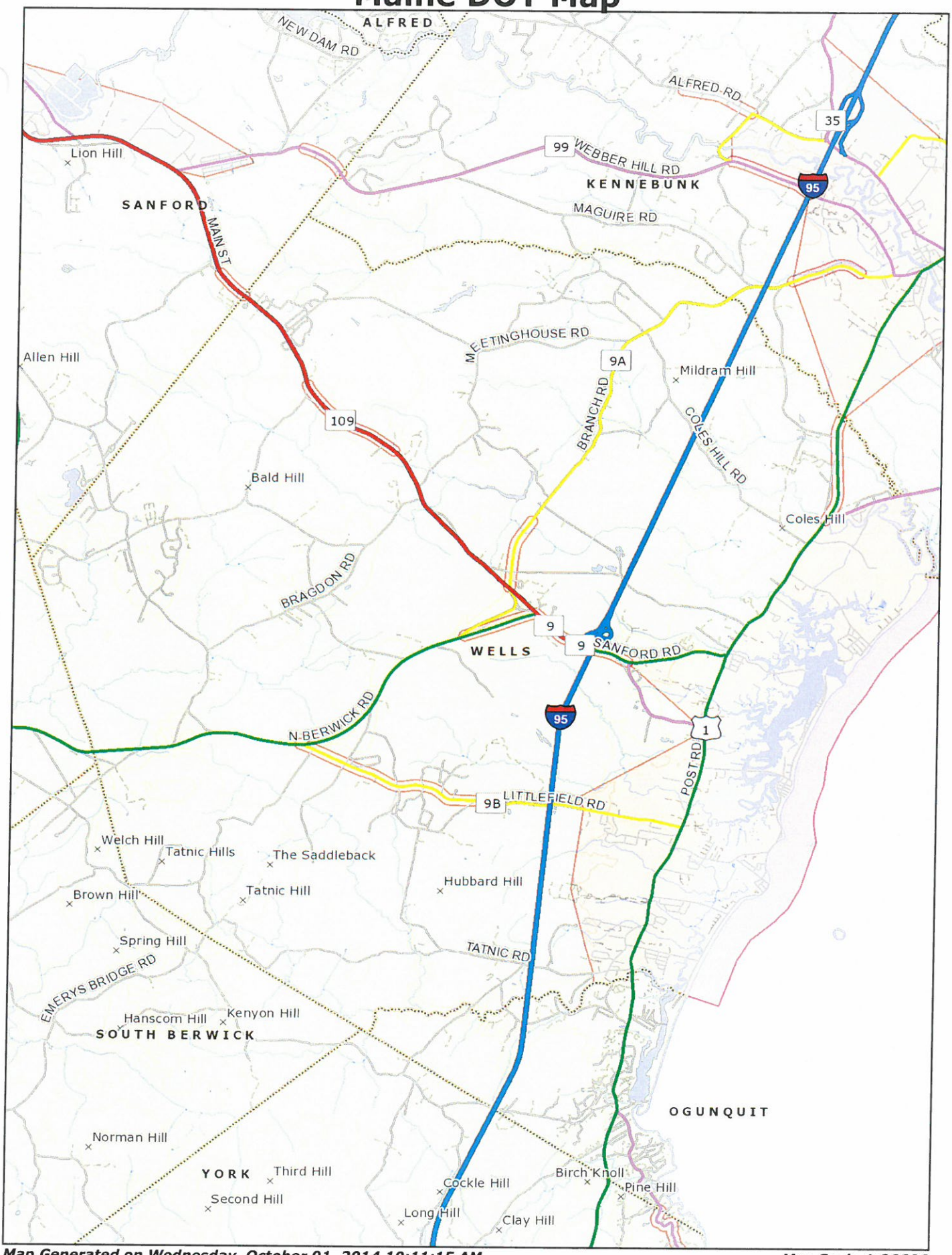
Bridge Name	Bridge Number	Owner/Maintenance	Sufficiency Rating	Last Inspection
Dickens Hill	1252	MaineDOT	81.8	10/30/1995
Donnell's	2239	MaineDOT	75.7	06/01/2011
Tibbetts	1254	Wells/Ogunquit	23.3	10/30/1995
Ogunquit River Bridge	1317	Wells/Ogunquit	77.1	05/12/2012
Webhannet River	1320	Wells	77.5	05/02/2012
B&M Railroad Overpass SB	1478	Wells	92.6	05/11/2012
Branch Brook	1328	Maine Turnpike Authority	77.4	05/02/2012
Cols Hill Road	1327	Maine Turnpike Authority	93.5	05/09/2012
Merriland River Bridge	1326	Maine Turnpike Authority	76.8	05/09/2012
Burnt Mill Road	1325	Maine Turnpike Authority	97.9	02/20/2013
Wells Interchange NB	1324	Maine Turnpike Authority	94.3	05/09/2012
Wells Sanford Road NB	1323	Maine Turnpike Authority	99.4	05/09/2012
US Route 1 Over B&M Railroad	1102	MaineDOT	87.5	11/01/2012
Webhannet Branch	1321	Maine Turnpike Authority	78.0	05/02/2012
Buffam	2107	MaineDOT	65.0	05/21/2012
Littlefield Road	1319	Maine Turnpike Authority	92.3	05/11/2012
Tatnic Road	1318	Maine Turnpike Authority	95.7	05/11/2012
Jeffred Branch	1267	MaineDOT	99.8	04/04/2013
Camp	1259	Wells	88.8	01/21/2014
Clarks	1255	Wells	85.9	01/30/2014
Stover Mill	1253	Wells	79.9	01/22/2014
B&M Railroad Overpass NB	1322	Maine Turnpike Authority	81.4	05/11/2012
Bragdon Crossing	3200	MaineDOT	89.9	04/04/2013
Hilton	6216	Wells	38.5	01/13/2014
Sherburne	6122	MaineDOT	99.0	09/10/2013
Merriland Ridge Bridge	5338	MaineDOT	55.6	01/07/2013
B&M Railroad Overpass	5337	Railroad	-1.0	10/17/2013
Lewis West	3916	Wells	48.1	01/22/2014
Charles West	3915	Wells	73.3	01/21/2014
Bert Wells	3844	MaineDOT	79.0	04/04/2013
Skinner	3771	MaineDOT	84.0	09/10/2013
Wells Sanford Road SB	1479	Maine Turnpike Authority	96.4	05/09/2012
Drakes Island	3577	Wells	47.8	01/13/2014
Wells Interchange SB	1480	Maine Turnpike Authority	94.5	05/09/2012
High Pine Crossing	3199	MaineDOT	85.1	01/07/2013
Island Ledge Road	3175	MaineDOT	80.1	01/28/2014
Branch Brook	3091	MaineDOT	79.1	01/31/2014
Pumping Station	2693	MaineDOT	64.9	01/22/2014
Little River	2468	MaineDOT	85.8	11/01/2012
Edward Hill	2263	MaineDOT	72.2	10/10/2012
Capell	2126	MaineDOT	74.0	10/17/2013
Merriland River	6492	Wells	86.9	01/22/2014
Bourne Avenue	3765	MaineDOT	80.8	12/09/2013

Maine DOT Map



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Federal Functional Classification

- *Principal Arterial Interstate*
- *Principal Arterial / Other Freeway*
- *Other Principal Arterial*
- *Minor Arterial*
- *Major/Urban Collector*
- *Minor Collector*
- *Local Road*

MaineDOT Regions

State Compact Area

Water Bodies

Wetlands

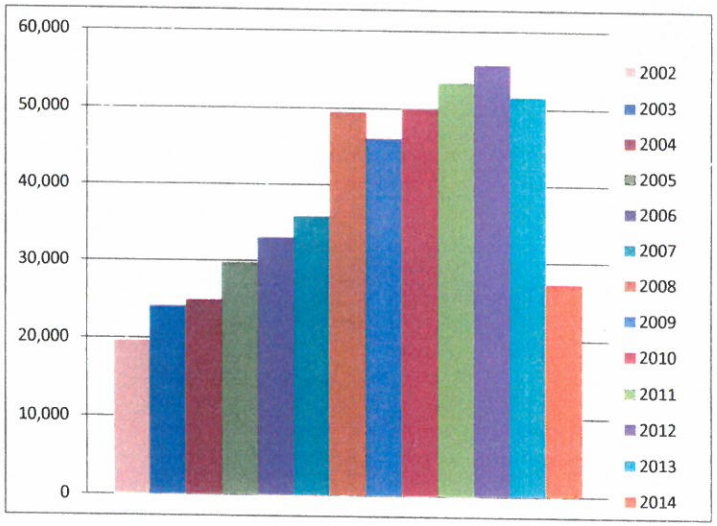
Traffic Counts: 2007, 2010, 2013				2007-2013		2010-2013	
	2007	2010	2013	Change	Percent	Change	Percent
US 1/SR 9 NE/O Harbor Road	--	12,460	12,960	--	--	500	3.86%
US 1 N/O Mile Road	--	20,120	17,070	--	--	-3,050	-17.87%
US 1 S/O Mile Road	--	17,970	15,360	--	--	-2,610	-16.99%
US 1 S/O Tatnic Road at Bridge #2239 and townline	14910	--	13,370	(1,540)	-12%	--	--
SR 9A (Branch Road) SW/O Meeting House Road	1920	1,920	2,140	220	10%	220	10.28%
SR 9B (Littlefield Road) SE/O SR 9 (North Berwick Road)	2600	2,540	3,090	490	16%	550	17.80%
SR 9/109 (Sanford Road) E/O Chapel Road	--	--	9,420	--	--	--	--
SR 9/109 (Sanford Road) W/O Chapel Road	--	--	14,970	--	--	--	--
SR 9 (North Berwick Road) E/O SR 9B (Littlefield Road)	6120	6,080	6,360	240	4%	280	4.40%
SR 9 (North Berwick Road) W/O SR 9B (Littlefield Road)	7980	7,800	8,460	480	6%	660	7.80%
SR 9 (North Berwick Road) SW/O SR 9/109 (Sanford Road)	6880	6,980	6,980	100	1%	0	0.00%
Quarry Road SW/O Bald Hill Road	740	890	820	80	10%	-70	-8.54%
SR 109 (Sanford Road) SE/O SR 9A (Branch Road)	9240	9,180	8,800	(440)	-5%	-380	-4.32%
SR 109 (Sanford Road) NW/O SR 9A (Branch Road)	8190	7,770	8,490	300	4%	720	8.48%
SR 109 (Sanford Road) SE/O Wire Road	7140	7,930	7,630	490	6%	-300	-3.93%

DOWNEASTER WELLS BOARDINGS & ALIGHTINGS

ONS	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Jan	0	608	769	777	947	1,072	1,330	1,348	1,369	1,510	1,742	1,721	1,529
Feb	0	512	925	892	1,004	979	1,431	1,541	1,490	1,411	1,854	1,389	1,433
Mar	0	592	861	898	1,060	1,046	1,610	1,485	1,669	1,798	1,881	1,665	1,663
Apr	1,814	900	1,024	987	1,145	1,053	1,792	1,700	1,732	1,928	1,959	1,712	1,822
May	1,483	953	850	1,122	1,180	1,275	1,869	1,503	1,746	2,098	1,999	2,051	1,767
Jun	1,478	1,065	1,083	1,279	1,487	1,486	2,346	2,027	2,265	2,407	2,337	2,274	2,241
Jul	1,627	1,421	1,162	1,927	1,961	2,209	3,364	3,078	3,070	3,385	3,623	3,295	2,926
Aug	0	1,462	1,693	1,948	2,198	2,388	3,461	3,131	3,341	3,284	3,493	3,460	0
Sep	0	1,045	1,213	1,561	1,561	1,819	2,375	2,086	2,586	2,525	2,439	2,427	0
Oct	784	983	955	1,312	1,202	1,588	1,849	1,833	1,903	2,235	2,021	1,875	0
Nov	736	817	1,058	1,184	1,405	1,486	1,748	1,731	1,855	1,878	2,443	1,804	0
Dec	758	830	971	1,115	1,236	1,448	1,391	1,460	2,033	2,050	1,954	1,747	0
Total	**8,680**	**11,188**	**12,564**	**15,002**	**16,386**	**17,849**	**24,566**	**22,923**	**25,059**	**26,509**	**27,745**	**25,420**	**13,381**
Daily Avg		31	34	41	45	49	67	63	69	73	76	70	63

OFFS	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Jan	0	782	765	704	888	1,005	1,312	1,295	1,316	1,444	1,694	1,680	1,473
Feb	0	660	941	811	1,031	939	1,444	1,402	1,475	1,456	1,828	1,445	1,453
Mar	0	741	838	868	1,059	1,086	1,588	1,455	1,587	1,766	1,883	1,787	1,745
Apr	2,294	990	1,039	1,001	1,140	1,007	1,859	1,812	1,718	2,054	2,009	1,659	1,844
May	1,808	986	904	1,109	1,212	1,361	1,884	1,635	1,856	2,243	2,140	2,180	1,908
Jun	1,847	1,323	1,128	1,332	1,704	1,631	2,424	2,117	2,148	2,474	2,604	2,426	2,407
Jul	2,009	1,592	938	1,943	1,981	2,302	3,433	3,141	3,134	3,608	3,670	3,311	3,043
Aug	0	1,882	1,659	1,808	2,216	2,454	3,622	3,146	3,445	3,305	3,720	3,712	0
Sep	0	1,133	1,171	1,584	1,523	1,769	2,292	2,188	2,534	2,516	2,409	2,265	0
Oct	1,087	1,039	1,024	1,304	1,159	1,539	1,972	1,771	1,935	2,229	2,149	1,966	0
Nov	937	902	969	1,158	1,497	1,488	1,775	1,735	1,843	1,928	1,943	2,087	0
Dec	929	891	924	1,143	1,281	1,467	1,352	1,462	1,946	1,898	1,900	1,692	0
Total	**10,911**	**12,921**	**12,300**	**14,765**	**16,691**	**18,048**	**24,957**	**23,159**	**24,937**	**26,921**	**27,949**	**26,210**	**13,873**
Daily Avg		35	34	40	46	49	68	63	68	74	76	72	65

OFFS	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Jan	0	1,390	1,534	1,481	1,835	2,077	2,642	2,643	2,685	2,954	3,436	3,401	3,002
Feb	0	1,172	1,866	1,703	2,035	1,918	2,875	2,943	2,965	2,867	3,682	2,834	2,886
Mar	0	1,333	1,699	1,766	2,119	2,132	3,198	2,940	3,256	3,564	3,764	3,452	3,408
Apr	4,108	1,890	2,063	1,988	2,285	2,060	3,651	3,512	3,450	3,982	3,968	3,371	3,666
May	3,291	1,939	1,754	2,231	2,392	2,636	3,753	3,138	3,602	4,341	4,139	4,231	3,675
Jun	3,325	2,388	2,211	2,611	3,191	3,117	4,770	4,144	4,413	4,881	4,941	4,700	4,648
Jul	3,636	3,013	2,100	3,870	3,942	4,511	6,797	6,219	6,204	6,993	7,293	6,606	5,969
Aug	0	3,344	3,352	3,756	4,414	4,842	7,083	6,277	6,786	6,589	7,213	7,172	0
Sep	0	2,178	2,384	3,145	3,084	3,588	4,667	4,274	5,120	5,041	4,848	4,692	0
Oct	1,871	2,022	1,979	2,616	2,361	3,127	3,821	3,604	3,838	4,464	4,170	3,841	0
Nov	1,673	1,719	2,027	2,342	2,902	2,974	3,523	3,466	3,698	3,806	4,386	3,891	0
Dec	1,687	1,721	1,895	2,258	2,517	2,915	2,743	2,922	3,979	3,948	3,854	3,439	0
Total	**19,591**	**24,109**	**24,864**	**29,767**	**33,077**	**35,897**	**49,523**	**46,082**	**49,996**	**53,430**	**55,694**	**51,630**	**27,254**
Daily Avg	**0**	**66**	**68**	**82**	**91**	**98**	**135**	**126**	**137**	**146**	**152**	**141**	**129**



VII. Critical Natural Resources by SMPDC

- Topography
- Soils
- Wetlands
- High Value Wildlife and Fisheries Habitat
- Scenic and Coastal Areas
- Floodplains
- Climate Change
- Marine Resources/ Harbor Facilities
- Open Space
- Watersheds

Critical Natural Resources

Topography

Wells is part of the coastal plain of the New England physiographic region, which is characterized by low relief, poorly developed drainage systems and a mantle of glacial materials in the form of till and large quantities of sand and gravel. The Town rises gently and gradually from east to west. Elevations rise from sea level to-approximately 140 feet. The Tatnic Hills near the South Berwick border are the highest elevation at approximately 360 feet.

Slope

Slope affects the capability of land for development. The slope or steepness of the land is defined by the change of elevation over horizontal distance. For example, a 10 foot rise within 100 feet is a 10% slope. Slopes in the 3% to 8% range are generally considered to present the fewest restrictions to development. Typically, development costs increase with slope although slopes of 0-3% may lead to drainage problems.

Slope is important to planning purposes for several reasons. The increase in slope corresponds to the potential increase for surface runoff and erosion. Soil depth tends to be thinner as slopes increase, thereby decreasing the capacity of the land to support leach fields for private septic in areas that lack public sewer services. The Maine State Plumbing Code does not allow installation of septic systems on slopes greater than 20%.Most of Wells' land area has no town sewer availability so private septic must serve.

In Wells, like many coastal communities in Southern Maine, slope is generally between 0% and 8% in most areas. The few areas with slopes steeper than 15% primarily occur along river and stream corridors or coastal waterfronts. There are approximately 1,046 acres of steep slopes or about 3% of Wells.

Although these steep slope areas present limitations, development is likely restricted anyway because of shoreland proximity. The lack of adequate slope to promote proper drainage is of more pressing concern to development in Wells.

Soils

The soils in Wells have developed over time from the interaction of climate, vegetation, topography and surficial materials. Since much of the surface materials of Wells are underlain by marine clays and glacial till, many of the soils tend to be moist and/or stony with areas of high water table, shallow ledge or ledge outcroppings. Where there is sand and gravel or stratified drift, the soils tend to be more sandy and gravelly and better drained. Hydric soils (also referred to as wetland soils) tend to be found in low spots associated with surface water features or in areas underlain by silt and clay deposits throughout the Town. Soil types are derived from the *Soil Survey of York County* produced by the U.S. Department of Agriculture (USDA) Soil Conservation Service (SCS) in 1982. The SCS identified over 36 soil series in Wells. In 1994, the SCS became the Natural Resources Conservation Service (NRCS) and still operates as an agency within the USDA.

There are six general soil associations in Wells. The general characteristics of each association are described below. It should be noted that the soil associations for Wells describe very broad geographic regions that have similar soil-landscape relationships and should only be used to gain a general idea of the nature of soils and landscapes within the Town. The smallest delineation is typically several hundred acres in size and has only minimal value for making land use decisions at the town wide level.

1. The Adams-Colton Association consists of deep, nearly level to steep, excessively drained soils. Located primarily south of Route 109, especially along sections of Route 9 and the western comer of Town near the Sanford/North Berwick borders.

2. The soils of the Naumberg-Croghan Association have a high water table in the spring and fall, and both have rapid or very rapid permeability. The high water table and rapid permeability make groundwater contamination a major concern. These soils are interspersed throughout Wells with concentrations along Route One , the railroad and the western section of Route 109.

3. The Hermon Lyman Association consists of shallow and deep, gently sloping to very steep, well, drained to somewhat excessively drained soils found in glacial till. These are scattered in areas west of the Turnpike just north and south of Route 109.

4. The Scantic-Raynham-Buxton Association consists of deep, nearly level to moderately steep and hilly, poorly drained to moderately well drained soils found in marine and lacustrine (ancient lake) sediments. These areas are mostly west of the Turnpike and associated with land adjacent to the Merriland River and a portion of Branch Brook.

5. Lyman-Rock Outcrop-Scantic Association includes Lyman soils composed of glacial till which are shallow, gently sloping to very steep, and somewhat excessively drained. Rock outcrop consists of areas with exposed bedrock. The Scantic soils are deep, nearly level and poorly drained. The shallow depth, steep slopes, bedrock exposures, and the poor drainage of this association limit its suitability for development with on site water supply and septic systems. This association tends to be located near the border with South Berwick in the Tatnic Hills area.

6. The Sulfihemists-Udipsamments Association consists of deep, level, very poorly drained Sufihemists soils formed in organic deposits associated with tidal marshes paired with deep, undulating to rolling, excessively drained to moderately well drained sandy soils that characterize stabilized dunes. Storm damage and flooding are hazards to development in areas of Upidsamments soils. This association is found east of Route One in a nearly unbroken formation from north to south.

Prime Farmland Soils

The U.S. Department of Agriculture defines prime farmland as the land that is best suited to producing food, feed, forage, fiber, and oilseed crops. It has the soil quality, growing season, and moisture supply needed to produce a sustained high yield of crops while using acceptable farming methods.
Prime farmland produces high crop yields with the least amount of external input. Prime farmland is a valuable, limited commodity not only in Wells, but in many southern Maine communities. Some of the characteristics that make these soils suitable for agriculture also make them suitable for development.

Soils rated as prime farmland soils by the NRCS in Wells include: Allagash very fine sandy loam, Becket fine sandy loam, Buxton silt loam, Colton gravelly loamy coarse sand, Elmwood fine sandy loam, Madawaska fine sandy loam, Marlow fine sandy loam, Ondawa fine sandy loam, Peru fine sandy loam, Podunk and Winooski soils and Skerry fine sandy loam.

The NRCS had also identified farmlands of statewide and local importance which have the special combination of soil quality, location, growing season, and moisture supply needed to economically produce sustained high-quality and/or high yields of a specific crop when treated and managed according to acceptable farming methods.

Prime farmland soils are found in small concentrations west of Route 9A in Wells Branch and along West Brook near Bragdon Road and Perkins Brook along Perry Oliver Road. There are also small patches between the Turnpike and Route 1 along Highway 109/9. Farmland soils of statewide importance occur much more frequently in Wells. These soils are found throughout the Town but are more heavily concentrated north and west of Routes 9 and 109, along the Branch Brook corridor and on both sides of Route 1. In general, farmland soils of statewide importance wrap Wells to the east, west and north.

Prime Forestry Soils

The NRCS defines prime forest land as having soils which are capable of growing wood at the economic productive growth rate for a given tree species. Soils with a productivity rating of medium, high, or very high are considered prime forestry soils. Management problems such as erosion hazard, equipment limitations, or seedling mortality are not factored in when calculating the productivity of a soil. Productivity is based on the total yield of wood per hectare (one hectare is the equivalent of approximately 2.47 acres) of mature trees.

All of the soils identified as prime farmland in Wells are also rated as prime forestry soils. The Scio soil group has the highest tree growth productivity rating of all York County soils. Much of the land in Wells consists of prime forestry soils. The exceptions include the peat and mucky soils (Biddeford mucky peat, Chocura peat, Scao mucky silt loam, Vassalboro peat and Waskish peat), beaches and very shallow soils.

Hydric Soils

Hydric soils have very similar characteristics to those wetlands as defined by the Army Corps of Engineers. These include all poorly and very poorly drained soils often associated with marine silts and clays including muck, peat, swamps and marshes. They include such soil types as the Biddeford mucky peat, Chocorua peat, Rumney loam, Scantic silt loam and Vassalboro peat. The water table is at or near the surface 5 to 9 months of the year. Wetland soils are associated with low lying areas in Wells, such as:

- the tidal marshes east of Route One;
- large portions of the area west of 9B running northerly to the railroad;
- a large portion of the area bounded by Route 9, Route 109 and Bragdon Road, including the Heath;
- the area west of the Central Maine Power's right-of-way south of Route 109 and running to the Sanford town line; and
- along watercourses such as the Little and Webhannet Rivers.

Hydric soils in Wells comprise a large portion of the Town-15,696 acres or 43% of Wells. This abundance of hydric soils is a major limiting factor for growth and development in Wells.

Soil Suitability for Development

While it is obvious that hydric and poorly drained soils are not well-suited for development, the characteristics of an individual soil type(s) located at an individual site are important in determining suitability for various types of uses. All of the information in this section was compiled through a countywide survey and presents a general overview of soil suitability. Therefore, this information should not be used for individual site planning purposes.

WETLANDS

Wetlands are found throughout Wells, and throughout Maine. Wetlands assist in managing stormwater, recycling nutrients, filtering pollutants, and recharging ground water. They provide open space and wildlife habitat and are some of Maine's most productive areas, providing food and habitat for a wide variety of fish, animal and bird species.

Wetlands are defined by the Environmental Protection Agency (EPA), Army Corps of Engineers (COE), and the State of Maine as:

> *Those areas that are inundated or saturated by surface groundwater at afrequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands usually include swamps, marshes, bogs, and similar areas. (EPA, 40CFR 230.3 and COE, 33 DFR 328.3).*

Most wetlands can be identified by three characteristics: the presence of: 1) hydrophitic plants, 2) hydric soils, and 3) a very high water table for at least part of the year. Wetlands also have water present at or near the surface for one week or more during the growing season. Wetlands perform valuable natural functions and are considered a severe constraint to development since they are protected under Wells' Shoreland Zoning ordinance and the State's Mandatory Shoreland Zoning Act.

Types of Wetlands

Although there are several wetland classification systems, the State has identified and mapped wetlands utilizing the National Wetland Inventory (NWI) throughout Maine. In Wells, there are large areas of freshwater wetlands and saltwater marshes. Under the NWI system the most common types of wetlands in Wells are:

Palustrine Forested

This category is by far the largest in Wells (and in York County). These are wooded swamps that generally occur along sluggish streams, on flat uplands, and in shallow lake basins or potholes. Tree species common in Southern Maine's wooded swamps include larch, hemlock, Atlantic white cedar, black spruce, balsam fir, red maple, yellow birch and black ash. Coniferous swamp herbaceous species include ferns, sedges and mosses. Deciduous swamps often support shrubs such as blueberry, elderberry and chokeberry together with jack-in-the pulpit, skunk cabbage, ferns and other herbaceous vegetation. These areas tend to be located south of Route 109 between the Maine Turnpike and the Sanford town line.

Palustrine Emergent

Palustrine wetlands are non-tidal marshes dominated by grass-like and/or herbaceous plants which are seasonally flooded and typically saturated at or near the surface when not flooded. Cattails, bulrushes, sedges, big-leafed arrowhead and pickerel weed are examples of this type of vegetation. Much smaller in area they tend to be adjacent to the palustrine forested wetlands.

Palustrine Scrub Shrub

This wetland type is usually characterized by woody plants less than 20 feet tall, such as winterberry, high bush blueberry, sweet gale, buttonbush, alder, willows, and silky dogwood. Shrub swamps occur primarily along sluggish streams, or as inclusions within forested wetlands. Alder and dogwood predominate in the drier areas; willow, buttonbush, and sweet gale characterize wetter sites. There is a large area comprised of this type of wetland within the Heath in Wells.

Estuarine Wetlands

This wetland type is periodically flooded by tides, dominated by salt marshes populated with grass and grass-like plants and can be very productive ecosystems. These wetlands are generally flat with often intricate drainage channels and creeks and can provide high quality habitat for many species of birds including migratory raptors, shorebirds, wading birds, gulls, terns and ducks. Estuarine wetlands are primarily located east of Route 1 in Wells.

In Maine wetlands and other natural resources are regulated under the Natural Resources Protection Act [38 MRSA, Sec. 480-A-S]. This act, which is administered by the Maine Department of Environmental Protection (MDEP), also regulates activities in or adjacent to surface water bodies, coastal sand dunes, significant wildlife habitat and fragile mountain areas. The level of regulation is based upon the amount of the resource area that may be impacted by any given activity- the more impact, the higher the level of regulatory review and scrutiny. The Town has identified various wetland areas under a Resource Protection District and defined them in the Land Use Ordinance for purpose of regulation. A more thorough documentation of wetland location, type and value would provide the basis for a more systematic approach to wetland management and protection.

Threats to Wetlands

In addition to their value for stormwater management, wildlife habitat and groundwater recharge, wetlands also filter pollutants and sediment from the environment and improve water quality. However, their filtering capacities can be exceeded when impervious surfaces increase run-off or dumping or filling of wetlands occur. Pollution and sediments discharged into productive wetlands or estuaries can have an adverse impact on wildlife habitat and shellfish beds. Since wetlands are often part of larger ecosystems, when their functional values are impacted, the effect will likely be felt in other parts of the ecosystem. In Wells, failing septic systems, storm water from impervious surfaces and non-point pollution from roads, parking lots, fertilized lawns and pet waste pose a significant threat to wetlands.

HIGH VALUE WILDLIFE AND FISHERIES HABITAT

The availability of high quality habitat for fish and wildlife is essential to maintaining an abundant and diverse population for both ecological and sporting purposes. Wells has a significant amount of land that offers quality habitat for a variety of species. The Maine Department of Inland Fisheries and Wildlife (MDIFW) is responsible for assessing the value of, and monitoring, wildlife habitats in Maine. MDIFW has identified areas of special concern because of their importance as wildlife, plant and fish habitat and publishes maps and data through the Beginning with Habitat program. Beginning with Habitat (BwH), a collaborative program of federal, state and local agencies and non-governmental organizations, is a habitat-based approach to conserving wildlife and plant habitat in Maine on a landscape scale. The BwH landscape approach to habitat conservation was initially developed by the University of Maine's Cooperative Fish and Wildlife Research Unit (CFWRU) under the direction of the MDIFW. Data on plants, natural communities, and wildlife habitats of national interest were later added by the Maine Natural Areas Program (MNAP) and the US Fish and Wildlife Service (USFWS).

Focus Areas of Statewide Ecological Importance

As defined by Maine's Beginning with Habitat (BwH) these Focus Areas are *"natural areas of statewide ecological significance that contain unusually rich concentrations of at-risk species and habitats. These areas, identified by biologists from the Maine Natural Areas Program (MNAP), Maine Department of Inland Fisheries and Wildlife (MDIFW), Maine Department of Marine Resources (DMR), U.S. Fish and Wildlife Service (USFWS), The Nature Conservancy (TNC), Maine Audubon, and Maine Coast Heritage Trust (MCHT), support rare plants, animals, and natural communities, high quality common natural communities; significant wildlife habitats; and their intersections with large blocks of undeveloped habitat. BwH Focus Area boundaries are drawn based on the species and natural communities that occur within them and the supporting landscape conditions that contribute to the long-term viability of the species, habitats, and community types."*

There are portions of three Focus Areas (out of total of 140 in Maine) within Wells. They are: the Wells-Ogunquit Marsh which stretches across the entire extreme eastern portion of Wells, the Kennebunk Plains – Well Barrens located in northwestern Wells and the Mount Agamenticus area in southern Wells.

Essential Wildlife Habitats

The State of Maine has two programs for the direct protection of wildlife habitat: Maine Endangered Species Act (MESA, 12 MSRA, Sec. 7751-7758) and the Natural Resources Protection Act (38 MRSA, Sec. 480-A-S). Wells has several shoreland areas that are categorized as Essential Wildlife Habitat under MESA and considered critical for the survival of two Endangered and/or Threatened species, the Piping Plover and the Least Tern. The Essential Wildlife Habitat areas include Stevens Brook, Ogunquit River, Ogunquit Beach, Laudholm Beach/Little River Area and Wells Beach/Drakes Island. These shoreland areas have been identified to provide:

- critical nesting habitat for the Least Tern
- nesting, feeding and brood-rearing habitat for the Piping Plover

MDIFW regulates all activity within Essential Wildlife Habitat areas and in the case of the species that are also covered under the U.S. Endangered and Threatened Species Act, federal oversight is also mandated. The shorebirds listed above are on both the Maine and the U.S. Endangered and Threatened Species lists.

Significant Wildlife Habitats

The Town also has Significant Wildlife Habitats, as defined by the Natural Resource Protection Act, including:

1. Candidate Deer Wintering Areas

   During the winter months deer herds tend to migrate to wintering yards that are typically composed of softwood forests. Candidate Deer Wintering Areas in Wells are located in the following areas:

   - northwest of Bald Hill at the Sanford town line;
   - along the Webhannet River between the railroad a'l .d Route 9B · west of the Turnpike;
   - The Heath bounded by Bragdon Road, Swamp John Road, Route 9, and Route 109; and
   - in the Coles Hill Road area parallel to the Turnpike.
   - Their locations and approximate sizes are shown in the attached map. IF&W has not rated the habitat value of these yards.

2. Inland waterfowl and wading bird habitats

   Waterfowl and wading bird habitat includes wetland complexes and the 250 feet of upland surrounding them. These areas are used for breeding, migration, and wintering. Nesting habitat includes dense, emergent, herbaceous or shrubby cover for seclusion, concealment, and protections from predation. Wells has four wetland areas categorized as significant inland waterfowl and wading bird habitat scattered throughout the portion of town west of I-95.

3. Tidal waterfowl/wading birds

   This designation includes breeding, migration/staging and wintering areas for coastal shorebirds or breeding, feeding, roosting, loafing and wintering areas for coastal wading birds. Habitat types include aquatic beds, eelgrass, emergent wetlands and mudflats. In Wells, these areas comprise large stretches of the shore and the salt marshes beyond.

4. Shorebird areas

   Shorebirds depend upon coastal habitats as feeding and staging areas to acquire fat reserves sufficient to fuel their transoceanic migrations to wintering areas. These shorebird areas can be feeding or roosting areas or both. In Wells, these areas comprise large stretches of the shore and portions of salt marsh.

5. Significant vernal pools

   These habitats are characterized by pool depressions used for breeding by amphibians and other indicator species and 250 feet of critical terrestrial terrain beyond the spring or fall high water mark. These vernal pools lack predatory fish and a permanently flowing inlet or outlet and are of natural origin. There are three significant vernal pools identified in Wells and mapped by the BwH program. One is off Route 109 near the rail line, one is near the Wells Barrens, and the third is near Hobbs Crossing.

The Maine Department of Environmental Protection (MDEP) is responsible for regulating activity in or adjacent to areas that contain significant wildlife habitat.

USFWS Priority Trust Species Habitats

These habitats have been identified by the U.S. Fish and Wildlife Services within the Gulf of Maine as potentially valuable for the 91 USFWS Priority Trust Species which include birds, mammals, plants, reptiles and fisheries. These species meet the following criteria:

- Federally endangered, threatened or candidate species
- Migratory birds, sea-run fish and marine fish that show significant and persistent declining population trends or have been identified as endangered or threatened by the states within the Gulf of Maine watershed
- Species of concern as identified in the U.S. Shorebird Conservation Plan, Colonial Waterbird Plan or Partners in Flight

This program ranks four types of habitat into three categories with the top 25% of the habitat being the most important to the species which live there. The four types are:

- Saltmarsh/saltwater
- Freshwater/wetlands
- Grasslands/shrub/bare ground
- Forested, including forested wetlands

In Wells, as might be expected, the entire shoreline and the salt marshes are ranked at the top as most

important to the species that frequent that type of habitat. Parts of the Heath, wetlands located on either side of the railway along the West and Bragdon Brooks, along the Merriland River and a few other scattered freshwater wetlands within Wells are ranked at the top as most important for the freshwater/wetlands habitat type.

The top grasslands/shrub/bare ground habitat for the appropriate priority species in Wells are scattered throughout the Town along roadways but heavily concentrated in the large area between Branch Brook and Wire Road known as the Wells Barrens which is permanently protected under the ownership of The Nature Conservancy. West of Route 1, beyond the development that lines that highway, Wells is mostly forested, Much of that area is ranked of moderate importance under the forested, including forested wetlands habitat type with scattered top ranked areas located along rivers and streams and larger patches located near the Heath, on the south side of Route 9 from the Heath and between Quarry Road and the Merriland River. Knowing where these habitat types exist in Wells, can assist the Town with planning and open space conservation.

Rare ,Threatened or Endangered Wildlife and Rare or Exemplary Plants and Natural Communities

The Rare, Threatened or Endangered Wildlife habitat areas noted by the BwH program are mapped based on the species occurrence and sightings data collected by the Maine Department of Inland Fisheries and Wildlife.

The Maine Natural Areas Program (MNAP), within the Maine Department of Agriculture, Conservation and Forestry, serves Maine's citizens as the most comprehensive source on the State's important natural features. With landowner permission, the Program inventories lands that support rare and endangered plants, rare natural communities and ecosystems, and outstanding examples of more common natural communities and ecosystems. MNAP also provides objective and comprehensive information to equip decision-makers with the necessary tools to make informed and responsible decisions. The Rare Plants habitat is mapped based on field observations carried out under the Maine Natural Areas Program (MNAP) while the Exemplary Plants and Natural Communities are classified and distinguished by MNAP based on field surveys and aerial photo interpretation. MNAP has ranked all of Maine's natural communities from 1 (rare) to (5) common.

Not surprisingly, the shoreland and the extensive salt marshes in Wells are top ranked with both the programs described above. The Wells Barren area is also top ranked for both, as is the Heath. A very large area along the Wells/South Berwick border is top ranked for Rare, Threatened or Endangered Wildlife. Scattered patches of top ranking habitat under both programs are also found in the southern half of Wells. Rare or exemplary natural communities found in Wells are the Sandplain Grassland and Red Maple Swamp communities of the Wells Barrens, the Salt-Hay Saltmarsh and Coastal Dune Marsh Ecosystem communities by the shoreland,

Rare, threatened or endangered bird, reptile and mammal species found in Wells include the New England Cottontail, the Northern Black Racer snake, and the Harlequin Duck, as well as the Piping Plover and the Least Tern. Rare, threatened or endangered plants include Northern Blazing Star, Slender Blue Flag, Smooth Winterberry Holly, Mountain Laurel, Spicebush, Sassafras, Beach Plum and Sweet Pepper Bush. MNAP ecologists encourage landowners considering development in areas identified as containing rare plants to check with MNAP for more specific site locations and information, or to conduct a field survey.

Other Habitats

The Maine Department of Marine Resources has mapped economically important shellfish resource areas which are represented in the BwH program. Wells has a narrow band of this shellfish habitat that runs off-shore from just south of Moody Point to the Ogunquit town line.

SCENIC AND COASTAL AREAS

Scenic and Coastal Areas are described in two other places in the Inventory:
- Section 4, Marine Resources
- Section 8, Land Use

FLOODPLAINS

Floodplains are the low, mostly flat areas adjacent to rivers, streams, ponds and the ocean that are periodically covered by rising water or waves during periods of rain, high winds or snowmelt. Coastal flooding is generally attributed to high wind and wave action caused by storm activity. The Federal Emergency Management Agency (FEMA) has produced maps of the 100-year floodplains in Wells. Shown on the maps is the area that has a 1% chance of being flooded during any given year. Also shown are 500-year floodplains and "V" or velocity zones that are subject to ocean flooding.

Improper use, filling, and development within floodplains create the potential for property damage, increased flooding, and downstream contamination so development within a floodplain is strictly regulated and greatly constrained. Although Wells' proximity to the ocean may reduce downstream impacts from flooding, that same proximity makes Wells highly vulnerable to storm surge and wave action along its shoreline and up its tidal rivers and streams. The likelihood of severe property damage from flooding in Wells is greatest in the floodplains of the rivers and larger streams and low-lying shoreland and salt marshes.

Following is a brief description of the location and size of the floodplains or flood hazard areas in Wells as delineated on the FEMA floodplains maps. The FEMA maps show boundaries of those flood hazard areas that have been identified by detailed study and/or field observation.

Most of the Town's 100-year floodplain is east of Route 1 associated with the harbor, the beaches and the extensive salt marshes. In addition, there are ribbons and patches of floodplain associated with various rivers and streams that discharge into the Atlantic such as the Webhannet, the Merriland and Branch Brook. There are also two larger floodplain designated areas associated with wetlands within the Heath and the headwaters of West Brook near Sanford. A narrow velocity zone runs the entire length of Wells along the Atlantic shoreline.

In 2003, the Town of Wells adopted a Flood Insurance Study and its accompanying Flood Insurance Rate Map which are referenced in the Town's Floodplain Ordinance. In addition, Wells, together with the other 28 York County communities adopted the York County Hazard Mitigation Plan, an all-hazards regional plan, in 2004. An update to the plan was done in 2010. Recommendations from this plan will be considered in the Goals, Policies and Strategies of this Comprehensive Plan.

CLIMATE CHANGE

No Comprehensive Plan or update should neglect to mention the impact that climate change will have on a community's natural resources. Wells is fortunate because it has an excellent report "*Summary Climate Change Risk Assessment*" done in March of 2014 by the Massachusetts Institute of Technology Science Impact Collaborative, the Census Building Institute and the Wells National Estuarine Reserve System to refer to. While the report's main focus is how climate change will impact the built environment and the related health effects on Wells' residents, there are maps showing sea level rise and some discussion of ecosystem changes. The changes include flooding events during increasingly severe storm events which will impair waterways, damaging riparian and estuarine habitat, erosion of beaches and shoreland, inundation of existing salt marshes by the end of this century and drought which will stress wetlands, wildlife and habitat. The report is included in the Appendices of this Comprehensive Plan.

Marine Resources

Major Marine Resource Areas

Wells has approximately seven miles of coastline. The shore is undoubtedly what draws most visitors to Wells and ocean access is one of the top reasons people want to live in Wells. Wells' coastal region can be viewed as eight distinct areas with differing characteristics.

1. Laudholm Beach

This area runs from the Little River south towards Drakes Island. The area consists of undeveloped sand beach owned by the State that is incorporated into the Wells National Estuarine Research Reserve.

2. Drakes Island

This area runs southerly from Laudholm Beach to the Webhannet River and is a barrier sand dune that has been extensively developed with single-family homes on small lots.

3. Wells Beach, including Crescent Beach

This area runs from the Webhannet River to Moody Point and is also a barrier sand dune. It has been extensively developed, with many single-family homes lining the beach. In the Casino Square area, there is substantial commercial use, including motels, restaurants, and retail stores.

4. Moody Point

A rocky headland, this point separates Wells Beach and Moody Beach. It is the only area of shorefront not characterized by sand beaches. Moody Point has been extensively developed as a residential neighborhood.

5. Moody Beach

Extending from Moody Point to the Ogunquit town line, this area is a barrier beach and dune that has been extensively developed, with many homes sited between the beach and the salt marsh.

6. Webhannet Estuary

This area is an expansive salt marsh which lies behind Drakes Island and Wells Beach. The area is undeveloped, and much of it is owned by the federal government as part of the Rachel Carson National Wildlife Refuge that is now incorporated into the Wells National Estuarine Research Reserve.

7. Wells Harbor

The harbor area has upland on the west side of the Webhannet River with an adjacent mooring basin, docks and dredged channel in the Webhannet to the outlet between Drakes Island and Wells Beach. A marina, restaurant, boat launch, parking areas, and related service and storage areas are located there as well as Wells Harbor Community Park. The park has playground equipment and a gazebo which doubles as a stage along with seating for outdoor entertainment in the summer.

8. Ogunquit River Estuary

This area consists of undeveloped salt marsh lying behind Moody Point and Moody Beach. Much of it is owned by the Rachel Carson National Wildlife Refuge and is incorporated into the Wells National Estuarine Research Reserve.

Water Dependent Uses

The major water dependent use in Wells is the marina, associated facilities and mooring area located at Wells Harbor. This is the only marine service facility in Wells and the only mooring area in Wells for both commercial and pleasure boats. The Town's wharf is equipped for sport and commercial fishing operations. In addition, there is a public boat launch for both motorized and non-motorized watercraft. Wells has a small fleet of commercial fishing boats that are used primarily for lobstering, as well as access to recreational fishing and clamming.

Harbor Facilities

Wells Harbor is the only harbor in Wells and the only area suitable for a harbor since it is protected by the barrier dunes to the east. The harbor is accessible from Harbor Road to the west and via Atlantic Avenue to the east. In 1961, the U.S. Army Corps of Engineers carried out a harbor improvement program, which consisted of constructing two jetties at the mouth of the Webhannet River and the dredging of the navigation channel and mooring basin. With these improvements came the development of the current marina facilities and expanded mooring capabilities. The harbor requires periodic dredging to maintain the channel and the mooring field. In 2011, the Coast Guard installed a white light for the "WH" entrance buoy to assist boat traffic entering the harbor.

According to Wright-Pierce's *2013 Wells Harbor Management Plan*, under ideal conditions, as when newly dredged, the harbor has the capacity for about 150 moorings including slips for boats under 24 feet and moorings for larger vessels. In 2012, only about 93 moorings were in use due to sedimentation in the harbor. Typically about 75% of the moorings are allocated to recreational users. There is a waiting list for moorings managed by the Harbormaster with 168 people on it, an indication of the continued strong demand for recreational boating in Wells. Transient moorings are available for $15 per night, 7 nights maximum.. Besides the pleasure boats, the harbor is home to 15 charter vessels, 9 full-time commercial lobster boats, and 5 part-time recreational lobster boats. The charter boats are emerging as an important part of Wells' harbor-based economy – bringing tourists to fish and sight-see where once back on land, they eat, shop and stay in Wells.

The harbor's facilities include two timber piers and various associated floating docks. The western pier is shared by recreational and commercial users and hosts dockage for dinghies. There is also a bait pier, a mechanical hoist for loading/unloading, scales and tote boards for the fishing tournaments that the harbor hosts. According to the *2013 Wells Harbor Management Plan*, there are about 205 parking spaces associated with the west pier and its facilities, about 60 of which are used for boat trailers. Adjacent to the west pier is a public boat launch. The eastern pier is restricted via a locking gate and offers no marine services to the public. The Harbormaster's office is located in a two-story building near the west pier and public restrooms (open seasonally) are in a separate building between the west pier and Harbor Park.

The Town owns the land that was created by the 1961 harbor creation dredge but leases portions of it to two businesses. Located on the north side of the western pier is Lord's Harborside Restaurant and on the southern side is Webhannet River Boatyard. The boatyard services include repair, supplies, fuel,

launching/haul-out for boats up to 50 feet and seasonal storage for boats. Kayak rentals are also offered by the boatyard. The boatyard can store up to 85 boats "on the hard".

Also located in the vicinity of the Harbormaster's office is a small structure that is used to raise clams for "seeding" the clam flats. About 300 recreational clamming licenses are issued each year with clammers harvesting from an area within the harbor and another area that extends to Drake's Island. Oyster aquaculture is being tried within the Webhannet River estuary on a limited basis through a lease approved by Maine Department of Marine Resources.

Recreation and Public Access

Public access to Laudholm Beach is available through the Wells Reserve and State-owned land. Visitors can park at Laudholm Farm, which serves as headquarters for the Wells Reserve and walk the trails to the beach. Access to Drakes Island Beach is unrestricted. There are a number of public rights-of-way to the beach and two parking lots on the island. Access to Wells Beach is also unrestricted. There is public access to the beach at Casino .Square and at a number of public rights-of-way along the road. Public parking is available in Casino Square, in a parking lot on Mile Road, and at a large lot at the northern end of Atlantic Avenue. Additional parking is available on Gold Ribbon Drive. Moody Beach is a private beach with access restrictions that limit the public to use of Town-owned rights-of-way only.

Harbor Park is located just west of Webhannet River Boatyard. Within the 3-acre park are the Hope-Hobbs Gazebo and its associated seating which is a venue for performances during the summer, and the Well Rotary Pavilion, a covered picnic area with cookout facilities. The park has walkways, benches, nature trails, and a playground and features natural landscaping with trees and shrubs.

Wells Harbor Management Plan

In 2013, Wright Pierce completed the *Wells Harbor Management Plan* for the Town as mentioned earlier. The Plan, developed with assistance from the Wells Harbor Committee, Town staff, and community outreach includes strategies to encourage sustainable, ecologically-oriented, tourist opportunities and an active harbor capable of accommodating commercial and recreation uses. The plan designates the following overarching goals:

- Balance additional development of the Harbor with its inherent constraints, both natural (marshes, habitat, sensitive plants and wildlife) and built (access roads, limited upland area) to minimize negative environmental impacts.

- Generate revenue from commercial and recreational use of the Harbor to offset the need for investments in support of the goals of the Harbor Plan. Seek federal and state as well as private and nonprofit/foundation funds to support implementation of the Plan.

- Treat Harbor planning as a continuous process.

Beneath the overarching goals, the plan's goals are designed to address the following elements:

- Natural Areas
- Harbor Economy and Sustainability
- Harbor Facilities and Infrastructure
- Commercial Fishing, Shellfish and Aquaculture
- Harbor Park

- Transportation and Access

The plan has two major sections: Goals and Recommendations which has four chapters including a chapter devoted to a marketing and investment plan for the harbor. Each goal listed above has actions associated with it. The second section, Findings, has nine chapters which assess and inventory different facets of the harbor.

No harbor management plan could fail to mention the impact that rising sea levels will have on shoreland and infrastructure located on shoreland. One of the recommendations of the plan is to work closely with the regional seal level rise working group (SLAWG) to increase understanding of those impacts, learn effective ways to mitigate those impacts on public and private property and to understand and mitigate the impacts the jetty has on beach erosion coupled with seal level rise.

Marsh Walk Feasibility Study and Harbor Pedestrian Bridge Study

The Town of Wells has long wanted public access, perhaps in the form of a boardwalk, over the Webhannet Marsh. In 1999, the Town hired a consultant to do a feasibility study which resulted in a list of impediments to building the boardwalk and made several recommendations of possible courses of action. In the intervening years, two of the impediments became less so and the Town centered its vision of the proposed marsh walk on Harbor Park. In 2013, with the *Harbor Management Plan* update on-going and a feasibility study of a possible pedestrian linkage across the harbor also underway, the Town engaged the services of Wright-Pierce to re-examine the possibility of the marsh walk. After careful examination, the feasibility study recommended that rather than build anything in the marshes, the Town build a sidewalk along Harbor Road which would connect to Harbor Park. Within Harbor Park, constructed marsh walk trails could link with the proposed pedestrian bridge that would span the harbor and provide access to Well Beach and the Atlantic Ocean. At the western end of Harbor Road, bike/pedestrian routes could link up to all three schools and on to the Wells Transportation Center. Two small plazas along the marsh walk within Harbor Park would provide seating, kiosks for information, trash receptacles and bike racks. Three over look platforms are suggested to provide bird and wildlife observation opportunities.

Open Space

Town-owned

The Town of Wells' Conservation Commission has taken an active role in conserving and protecting land in Wells through their desire to ensure that the Town's natural resources are conserved for future generations. More than twenty years ago, the Commission established a land bank through which the residents of Wells invest funds to purchase ecologically significant land or easements to preserve open space. The establishment and use of Town's conservation lands is codified in the Town Ordinance (#66) giving the Commission the ability to recommend the creation of Town conservation lands and act as stewards for those lands.

The Commission formally dedicated its first conservation parcel in 2001 and the Town has acquired many others since. Because the intent is to provide wildlife habitat that is shared with people, the Commission calls these properties "wildlife commons". These commons are undeveloped and open to the public for traditional outdoor recreation, wildlife habitat and environmental education. As adjoining, ecologically desirable parcels become available and/or funds are found, the Commission adds to the contiguous size of some of the properties. A list of the wildlife commons lands is below:

1. Perkinstown Commons - 288 acres, Thompson Street off Perry Oliver Road
2. Fenderson Wildlife Commons – over 600 acres, off Route 109 and Horace Mills Road
3. Tilton Homestead Commons - over 136 acres, off Route 109
4. Great Haith (or Great Heath) Commons - 346 acres, off 9A which is in the process of being established.

The Common areas are open to the public and have established trails. Trail maps are available to download from the Conservation Commission's website.

Other lands

In addition to the Town-owned conservation lands, Wells has many parcels that are held by the Kennebunk-Kennebunkport-Wells Water District (KKW), land trusts, the State and The Nature Conservancy. Among the notable conservation areas are:

- The Well Barren Preserve is 367 acres held by The Nature Conservancy
- The adjacent 175 acre parcel that includes Branch Brook headwaters area owned by KKW with a conservation easement held by The Nature Conservancy
- The Tatnic Hills Preserve is 171 acres held by The Nature Conservancy
- Great Works Regional Land Trust holds an easement on the 170-acre privately-owned Chicks Farm which currently hosts a CSA.
- Wells Reserve at Laudholm Farm is a National Estuarine Research Reserve protecting 2,250 acres of salt marsh, freshwater marsh, beach, dune and forest. The Laudholm Farm and its historic buildings serve as the Reserve's headquarters.

In the fall of 2014, Wells' residents voted to use funds from the CIP Land Bank Reserve to partially fund the purchase of an agricultural easement over the 130-acre Spiller Farm property.

Watersheds

Watersheds and the watercourses within them represent the natural drainage pattern that carries precipitation and ground water from land to the Atlantic Ocean. This natural drainage system can be affected adversely by the following:

- reduction in the ability to accommodate stormwater/runoff through filling, channelization or siltation;
- creating higher stormwater flows as the result of increased impervious surfaces;
- forcing streams underground through pipes.

In addition, watersheds can be threatened by degradation in water quality caused by both point and non-point pollution and runoff containing contaminants like fertilizers and animal waste.

Wells is divided into four major watersheds: Little River, Great Works, Webhannet, and the Ogunquit.

Little River Watershed

This watershed includes both the Branch Brook Basin and the Merriland River Basin, which drain the northern portion of Wells. Branch Brook serves as the main water supply for Kennebunk, Kennebunkport, Wells, Ogunquit, Arundel and small portions of Biddeford and York under the auspices of the Kennebunk Kennebunkport and Wells Water District. Over the past couple decades there has been residential development in this area. An 18-hole golf course and 174-unit residential development approved in the Branch Brook Basin has not been built but is still actively seeking investors. The Merriland Basin remains in low-density development, although there is continued pressure for additional residential development

Great Works Watershed

This watershed drains the west central portion of the Town, and includes Perkins Brook and West Brook, both of which are tributaries of the Great Works River in North Berwick. The Heath, a large forested wetland, and Ell Pond are part of this watershed as well as several gravel extraction sites and residential development.

Webhannet Watershed

Located entirely with Wells, this roughly fourteen square mile coastal watershed drains the east central portion of Wells through Depot Brook, Blacksmith Brook, Pope Brook and other smaller tributary watercourses. This watershed includes most of the Town's coastal marshes and is also the most intensively developed of the watersheds in Wells since it includes the Route 1, Route 109 and Route 9 Corridors. The Webhannet River originates near Bear's Den Road and continues about three miles to its estuary. A golf course and accompanying golf club community has been built that has frontage on both sides of the river.

Ogunquit Watershed

This watershed incorporates two sub-basins, the Ogunquit River and Stevens Brook and includes Green Brook and Bragdon Brook. It drains the southern portion of Wells. Much of the northerly divide is contiguous with Route9/9B. The eastern part of the watershed is intensively developed along the Route One Corridor, while the western portion remains relatively lightly developed with mostly residential uses.

Surface Waters

The streams and rivers identified in the watershed section comprise the major :freshwater surface waters in Wells. Hobbs Pond, an impoundment in the Merriland River, is the only sizeable pond solely within the Town. The Hobbs Pond dam is privately owned and the owner would legally be able to remove the dam, though there are no plans to do so. A second pond, Ell Pond, is smaller and straddles the Wells-Sanford town line.

The State of Maine has had a water quality classification system since the 1950s. Recently, in 2009 and 2011, significant changes were made to reclassify all the waters of the state. There are four freshwater river classes from Class AA (the highest water quality) to Class C (the lowest water quality). Marine and estuarine waters are classified within three categories: SA (the highest) to SC. Lakes and ponds have one class, GPA. Based upon this classification system, each designated water body is measured to see if it meets the standards for each category. Most standards support the same set of designated uses with some modest variation and all attain the minimum fishable-swimmable standards established in the federal Clean Water Act. The Maine Department of Environmental Protection (MDEP) and numerous other state agencies collect data on water quality throughout the state. Each even year, MDEP creates and posts its Integrated Water Quality Monitoring and Assessment Report to the MDEP website. The most recent report was completed in 2012.

Wells has no Class AA water bodies. The freshwater sections of the Branch Brook and Merriland River are classified as Class A, and are suitable for drinking water with proper treatment (Branch Brook is a major source of drinking water under the management of the Kennebunk-Kennebunkport-Well Water District). The remaining streams and rivers are classified as Class B including the Webhannet River, Depot and Blacksmith Brooks, Stevens and Bragdon Brooks, the Ogunquit River and its tributaries including Green Brook, Perkins Brook, West Brook and their tributaries. In the 2012 MDEP report, a section of Stevens Brook in Wells was designated as impaired based on evidence of certain pollutants. All of Wells' marine and estuarine waters are Class SB including the tidal portions of the Webhannet and Ogunquit Rivers and the Blacksmith, Depot, Stevens and Bragdon Brooks. In the 2012 report, the southern portion of the Ogunquit River and the Webhannet River are listed as impaired due to "elevated fecals"under Category 4A which means the rivers may have attained all uses for their standard but there is insufficient new data to confirm this. Many surrounding marine and estuarine waters outside of Wells are listed similarly.

To achieve the goals of the Clean Water Act, the EPA and each state have implemented a variety of programs to establish surface water quality standards, assess the condition of waters, control nonpoint source pollution, regulate point source discharges and, protect source waters, estuaries, oceans, and wetlands. The State of Maine DEP is responsible for administering the Nonpoint Source (NPS) Priority · Watersheds Program that was enacted into law in 1997 (5 MSRA 3331(7)) to develop a comprehensive watershed protection program. As part of this program, DEP conducted a Unified Watershed Assessment with the National Resources Conservation Service in 1998. This assessment grouped Maine's major

watersheds into four categories: Category 1-In Need of Restoration; Category II-Currently Meeting Water Quality Goals; Category III-Pristine/Sensitive Aquatic System Conditions administered by federal, state or tribal governments; or Category IV-Having Insufficient Data to Make an Assessment. The Piscataqua River Watershed, which includes the subwatersheds of Wells has been ranked as a Category 1 Watershed in part because rivers and coastal estuaries are not attaining water quality standards. The 1998 NPS priority watersheds list was updated in 2014 as part of development of the Maine NPS Management Plan. In the *Non-Point Source Management Program Plan 2015-2019* published in September of 2014 by the Maine DEP, Bureau of Land & Water Quality, Blacksmith Brook, Depot Stream, and an unnamed tributary to the Webhannet River near I-95 exit 19 in Wells are listed under DEP's Threatened Streams Priority List due to highway access and related development threats.

Based on US EPA funding, the Maine Healthy Beaches Program (MHB) was established to ensure that Maine's salt-water beaches remain safe and clean. The program brings together communities to perform standardized monitoring of beach water quality, notifying the public if health risks are detected, and educating both residents and visitors on what can be done to help keep Maine's beaches healthy. Maine has adopted the US EPA safety limit of 104 Enterococci per 100 milliliters of sample water. Enterococci, is a type of bacteria which indicates fecal contamination and the possible presence of disease-causing microorganisms. When bacteria levels exceed this limit, there's an increased probability of contracting illness from the water. Wells' beaches have their water quality posted regularly on the Maine Healthy Beaches website. Beyond routine beach monitoring, MHB has supported analysis of samples collected intermittently to assess bacteria levels in sand, seaweed and stormwater impacting Wells beaches. Each year a report is compiled and issued to the US EPA on the state of the Maine's beaches. From the *Healthy Beaches Report 2013*, enhanced monitoring in the Webhannet River in Wells was conducted, resulting in 37 samples collected in 8 locations during the beach season. Enterococci values from the samplings had a combined geometric mean of 55.7 per milliliter for all sites. MHB planned to continue support for additional monitoring in 2014.

Under MHB, Maine has established two "flagship" beaches, one of which is Wells Beach. In 2007, Wells Beach was divided into 3 separate management areas (Casino Square, Wells Beach and Wells Harbor), all of which continued to uphold all standards under policies and guidelines set forth by MHB. In 2013, Casino Square had 7 exceedances where Enterococci values rose above 104 (rate 19.4%; rainfall preceded 85.7%) Wells Beach had 6 exceedances (rate 10.2%; rainfall preceded 100%) and Wells Harbor had 10 exceedances (rate 47.6%, rainfall preceded 100%).

Groundwater Aquifers

These areas of deep sand and gravel are geologically referred to as stratified drift deposits that are capable of yielding significant quantities of water. The highest yielding aquifers identified in Wells can produce 10 to 50 gallons per minute, which are rated as moderate to good potential by the U.S. Geological Survey. There are approximately 4,977 acres of this category or almost 14% of the Town.

The most critical aquifer area in Wells is that associated with Branch Brook, the water source for the Kennebunk, Kennebunkport, and Wells Water District. The aquifer area extends from the Sanford town line almost to the Atlantic with an apparent break in the Meetinghouse Road/Route 9A area. This area has regulatory protection through the Aquifer Protection Overlay District in the Town Zoning Ordinance. It is likely that the aquifer is hydrologically connected to the brook and maintains its year-round flow. In addition to the surface water public water supply, there are also four gravel well sites and eight wells operated by the KKW Water District. Additional aquifer areas in Wells are along Route 9, in the area along Bragdon Road and near the Sanford line in the Quarry Road/Perry Oliver Road area.

VIII. Health, Wellness & Community Services by SMPDC

Health, Wellness & Community Services

There are a number of health and wellness related programs available in Wells and the region that people from all age groups and walks of life can obtain valuable assistance from. Many of these programs have brochures where the information can be found as well as on line. There are those who still do not have the ability for one reason or another to get online and the next best resource to let people know about program availability in the area would be the 211 statewide United Way of Maine Resource Center.

York County Community Action
York County Community Action provides services to residents of York County. Services include Legal Advocacy, Energy Assistance, Children's Services, Housing Assistance, Transportation Services (including Public Transportation from Wells to Sanford and summer trolley service along the coast), Weatherization and the Women, Infants, and Children (WIC) program

Sanford Housing Authority
Sanford Housing Authority serves Sanford, Springvale and the surrounding towns of Alfred, Kennebunk, Lebanon, North Berwick, Wells, Shapleigh and Acton. The SHA helps address the housing needs of over 800 families. Families must have incomes at or below 80% of the area median income in order to qualify for our housing programs.

Downeaster Rail Service
The Wells Transportation Center includes a rail station that serves the Amtrak Downeaster passenger rail service that runs between Brunswick, Maine and Boston, Massachusetts. The Downeaster includes special fares for seniors, children, those with disability and Medicare card holders

2-1-1 Maine
2-1-1 Maine is a comprehensive statewide directory of over 8,000 health and human services available in Maine. The toll free 2-1-1 hotline connects callers to trained call specialists who can help 24 hours a day, 7 days a week.

HomeHealth Visiting Nurses
HomeHealth Visiting Nurses provides care for people who are transitioning from hospital to home. Services include Nursing Care, Palliative Care, Home Health Aide Services, Rehabilitative Therapies, Counseling and Emotional, Community Health and Wellness and Diabetes Education and Support.

United Way of York County
United Way of York County seeks to bringing people and resources together to support programs within the categories of Education, Income and Health. The programs that they support are found throughout York County.

Cooperative Extension in York County
Cooperative Extension in York County gives local residents access to the resources and expertise of the University of Maine. Through educational programs, publications, and events, UMaine Extension delivers research-based information to York County citizens. Programs include 4-H, Nutrition Education, Food Preservation, Composting Education and Maine Harvest for Hunger.

Choose To Be Healthy Partnership
The Choose To Be Healthy Partnership (CTBH) is a comprehensive community health coalition that works to reduce the incidence of chronic diseases such as cardiovascular disease, diabetes, cancer, chronic lung disease and substance abuse. CTBH staff, members and partners work in the towns of Berwick, Eliot, Kittery, North Berwick, South Berwick, Wells, Ogunquit, Lebanon, and York.

The Wells/Ogunquit Senior Center at Moody
The Center's objective is to promote the well-being of Senior citizens in Wells and Ogunquit. The Center provides a variety of programming and services to both members and non-members.

Wells National Estuarine Research Reserve
The Wells National Estuarine Research Reserve works to expand knowledge about coasts and estuaries, engage people in environmental learning, and involve communities in conserving natural resources, all with a goal of protecting and restoring coastal ecosystems around the Gulf of Maine.

South Coast Senior College at York County Community College
South Coast Senior College is a casual learning environment open to everyone 50+ in York County and Seacoast NH for year-round and summer residents that offer non-credit courses taught and facilitated by volunteers. Most courses are held at York County Community College.

Food Pantries
There are three food pantries located in Wells. The hours for each pantry are varied.

Wells Pentecostal Church Food Pantry
131 Crediford Road
Wells, ME - 04090

St Mary's Ecumenical Food Pantry
236 Eldridge Rd
Wells, ME – 04040

Soup's On
U.S. Route 1
Wells, ME - 04090

AARP Tax-Aide
AARP Tax-Aide counselors are volunteers who are trained each year on state and federal tax regulations, and are certified by the IRS to provide free tax preparation services. This service is provided during tax season at the Wells Library.

Wells-Ogunquit Adult Community Education
Wells-Ogunquit Adult Community Education is a service of the Wells-Ogunquit CSD whose mission is to provide continuing education and cultural opportunities for all community members and their families. Most of the classes are held at the high school with the some Health and Wellness classes held at the Wells Activity Center and the Wells Elementary School.

Wells-Ogunquit Community School District Health and Wellness
The Wells-Ogunquit Community School District has initiated a Coordinated School Health Program (CSHP). A CSHP is a system designed to connect health with education. This coordinated approach to school health improves students' health and their capacity to learn through the support of families, communities, and schools working together.

Wells-Ogunquit Community School District
WOCSD School Nutrition Service provides fresh, nutritious meals, prepared on site daily throughout the school year. WOCSD participates in the National School Lunch Program. Free and Reduced Meal Applications are available by contacting the School Department.

Vital Links

- York County Community Action:
  - https://www.nassonhealthcare.org/
  - www.yccac.org/index.php/programs/transportation
  - https://www.yccac.org/index.php/programs/energy-assistance
  - https://www.yccac.org/index.php/programs/housing-assistance
  - https://www.yccac.org/index.php/programs/community-outreach
- Sanford Housing Authority – Section- http://www.sanfordhousing.org/section8.htm
- Downeaster Senior Fares
- 211- www.**211**maine.org/
- Visiting Nurses http://www.homehealth.org/
- United Way - http://www.buildcommunity.org/
- York County Cooperative Extension Service- http://umaine.edu/york/
- York County Activity Guide: http://issuu.com/activguide/docs/activity_guide_pdf4web

- Choose To Be Healthy Coalition –Sue Patterson York Hospital- https://www.facebook.com/choosetobehealthy
- Wells Ogunquit Senior Center - http://www.wocam.org/
- Wells Ogunquit CSD – Adult Ed - http://wells-ogunquit.maineadulted.org/
- Wells Recreation Program- https://www.wellsrec.org/info/activities/
- Wells Reserve at Laudholm: http://www.wellsreserve.org/about/ Programming
- YCCC: Programing for Seniors- YCCC: Programing for Seniors- http://www.yccc.edu/CECT/SoCoastSeniorCollegeAge50Plus
- Wells Food Pantry: http://www.foodpantries.org/ci/me-wells

- AARP Tax Preparation – Wells Library: http://www.aarp.org/money/taxes/info-02-2011/free_tax_preparation_me.html
- Wells Public Library Programming: http://www.wells.lib.me.us/wells/

IX. Public Facilities

- Town Hall
- Fire Department
- Police Department
- Wells EMS
- Public Works
- Transfer Station
- Library
- Education
- Cemeteries
- Harbor
- Wastewater Treatment System
- Water Service

PUBLIC FACILITIES

General Government

The majority of the Town's administrative functions located in the Town Hall building located at 208 Sanford Road between Route One and the Maine Turnpike. Town Hall provides offices for the following departments:

- Town Manger
- Town Clerk
- Assessing
- Planning and Development
- Code Enforcement
- Finance and Tax Collection

The Town Hall also contains meeting facilities on the first floor for selectmen's meetings and the meetings of other town boards and commissions.

Fire Department

The Wells Fire Department provides a host of services including Fire Response, Medical Rescues, Life Guard Services, Water Rescues and Emergency Management. The Department recently completed a survey of those who needed service. With a 48.7% response rate, over 90% responded were "very happy" with the service.

Facilities

The Town of Wells Fire Department has 3 stations located in the community:

The Corner Station

The Corner Station is located on Route 1 / Post Road at the intersection of Route 109 / Sanford Road. This is the department's main headquarters and the location of the administrative offices. It is the only station in town that is staffed 24 hours per day and 7 days per week by career firefighters.

Highpine Station

The Highpine Station is located on Highpine Loop Road, just off Route 109 / Sanford Road and includes a meeting room and kitchen on the 2nd floor. The Town has committed to replacing this station with a new fire station that will also include a community meeting room.

Branch Station

The Branch Station is a former schoolhouse and is located on Route 9A / Branch Road at the intersection of Clark Road and Cole's Hill Road. There is also a small meeting room upstairs and a kitchen downstairs.

Hydrants

The department works closely with the Kennebunk, Kennebunkport and Wells (KKW) Water District for installation of hydrants within the KKW district. Areas outside of the District is served by dry hydrants.

Vehicles and Equipment

Vehicles and equipment used by the Fire Department need to replaced on an ongoing basis and are typically planned for within the Capital Improvements Planning Process.

Personnel

The Department has 11 fulltime employees including the Fire Chief, Administrative Assistant to the fire Chief, three Captains and 6 fire fighters.

Career Personnel

The career personnel operate three shifts. Each shift has one captain and two career firefighters assigned. The shift members work a 48/96 schedule. This means that they work 48 hour shift followed by 96 hours off. This rotates continuously throughout the year.

Call Firefighters/Personnel

Wells Fire Department has approximately 20 active call members who respond to emergencies, maintain their training or attend other necessary requirements set by the department during the time away from their jobs and families. Each member is assigned to 1 of 2 sub-stations. Each sub-station is assigned a call officer.

Incident Summary -2003 & 2012

Incident Category	Count 2003	Count - 2012
Fire	72	65
Overpressure Rupture, Explosion, Overheat (no fire)	5	2
Rescue & Emergency Medical Service Incident	222	401
Hazardous Condition (no fire)	101	64
Service Call	113	117
Good Intent Call	74	74
False Alarm & False Call	78	128
Severe Weather & Natural Disaster	0	1
Special Incident Type	14	1
Total	679	853

Source: Town of Wells

Police Department

The Wells Police Department is located on Route 1 / Post Road at the intersection of Route 109 / Sanford Road. The Department consists of a Patrol Division (which also includes 1 animal control officer and 2 K-9 units), a Criminal Investigation Division (CID) and a Communications Division (Dispatch). The Wells Police Department employs 23 sworn police officers, 5 dispatchers, and 1 animal control officer.

The Police Department is the primary provider of law enforcement and related community service throughout the Town, The Department responds to over 20,000 calls for service yearly and makes thousands of traffic stops. The Police Department makes over 200 criminal arrests a year, ranging from simple assault to armed robbery.

The Communications Division dispatches for Police, Fire, EMS, Lifeguard and Highway and handles approximately 60,000 incoming telephone calls yearly, which include both routine business calls and emergency (generally 9-1-1) calls.

Vehicles and equipment used by the Police Department need to replaced on an ongoing basis and are typically planned for within the Capital Improvements Planning Process.

Wells Emergency Medical Services

Wells Emergency Medical Services (EMS) is a non-profit corporation, owned by the Town of Wells, operated by a Board of Directors who are appointed by the Board of Selectmen. Wells EMS Provides ambulance services to the Wells community and its' guests 24 hours a day I 7 days a week, with three fully equipped ambulances with state of the art equipment, staffed with 40 part-time EMS licensed professional employees and a full-time Director. Wells EMS operates 3 Type III ambulances and 3 12- Lead EKG monitors purchased through CIP with town funds.

The Service responds to more than 1,500 ambulance calls annually (many of the calls involve more than one ambulance and/or more than one patient). The number of calls has steadily risen since 2000, increasing

from 1,038 in that year to 1,534 in 2003 2013. Through August 2014, there were already 1,090 calls for service. Of all calls to WEMS, 72% are medical related and 28% are trauma related. Most hospital transfers by WEMS (66%) are to York Hospital, with 25% going to Biddeford Medical Center, 7% going to Sanford Medical Center and 2% to other hospitals.

During the period from Memorial Day to Labor Day there are four full time personnel on duty 24/7. The remainder of the year there will be three personnel on duty and two on at night 24/7. Additional assistance is received when needed from Wells Fire Department, who are paid for their services, and the Wells Police Department

Wells EMS operates from a leased space in the Wells Regional Medical Facility, located on Sanford Road. The approximately 3,900 square foot space includes: three ambulance bays, Director's offices, EMT office with three work stations, a medical supply room, kitchen I break room, four bedrooms, and two bathrooms/shower. The EMS moved into this facility in October 2000 from the Wells Comer Fire Station, which was not designed for another full time service.

Vehicles and equipment used by the EMS Department needs to replaced on an ongoing basis and are typically planned for within the Capital Improvements Planning Process.

Public Works

The Public Works Department is located at 577 N. Berwick Road in the recently completed (2013) highway garage. The Public Works Department is made up of 3 divisions: Beach Services, Street Maintenance and the Transfer Station.

Street Maintenance Division

This division consists of 10 employees, including the Assistant Road Commissioner. They are responsible for maintaining over 200 miles of roads in Wells. The crew is supplemented in winter by independent contractors for snow plowing.

Beach Services Division

Beach Services operates from March to late October and includes a number of seasonal employees and volunteers for Beach Cleaning, Parking Lot Attendants, Piping Plover Monitoring and Restroom Cleaning.

Transfer Station

The Town operated transfer station and recycling facility is located at 386 Willie Hill Road off Route 9. In 2011, the town switched to a Pay As You Throw (PAYT) program with bags that can be purchased at various locations throughout the town.

The transfer station charges a fee for the following items: Electronics, Lights & Fixtures, Metal, Miscellaneous Items, Shingles, Tires and Rims, Appliances, Tress and Brush, Construction/Demo, Furniture & Bulky Items. There is no charge for Cardboard, Paper, Bottles and Cans, Plastic, Oil, Grass & Leaves and Good Wood Pallets. There are a number of items that are not accepted including, but not limited to, Gasoline, Pesticides, Animal Waste, Bio-Hazard Materials and Expired Prescription.

Vehicles and Equipment

Vehicles and equipment for the Street Maintenance Division, Beach Services Division and Transfer Station need to replaced on an ongoing basis and are typically planned for within the Capital Improvements Planning Process.

Facilities and Equipment

Facilities and equipment need to replaced on an ongoing basis and are typically planned for within the Capital Improvements Planning Process.

Library

The Wells Public Library is housed in a building on Route One that is part of the school complex described in the Education Section of this chapter. The use of the library has grown steadily over the past seven years.

The collection consists of over 53,000 materials, which include adult and children's books, reference resources, audio books, movies, magazines, eBooks, digital audio books, video games, and large print adult books. In 2014 the library added a total of 2,378 items. Circulation in 2014 was 83,936 down slightly from 2013.. The number of adults attending programs has risen significantly, up 30% between FY 12 and FY 14.. We attribute this to a shift in the public's expectation of what services a library can and should provide.

In 2014 the Library Trustees completed a long-range Strategic Plan that provides a set of goals, objectives and tasks to be undertaken by the library and Trustees through 2019. This plan prioritizes customer service and access for all.

At present the library is over capacity and the conditions are very crowded for programming and materials. Along with the need for additional office space, other possibilities include a community room, a makerspace, a designated teen room, quiet study rooms, a larger children's room, and a computer center.

The Wells Public Library Foundation is working on a capital campaign to raise part of the funds for an expansion and renovation, and will ask the community for a bond to support the difference.

Education

Public education in Wells is provided by the Wells-Ogunquit Community School District which serves students residing in both Wells and Ogunquit.. The District office is located at 1460 Post Road.

Enrollment

The District had a total enrollment of 1,330 students during the 13/14 school year and is projected to have approximately the same number in 14/15. This is down from a total of 1,507 Wells and Ogunquit students enrolled in 2003.

Schools

Wells High School

The Wells High School is located at 200 Wells Road and provides education for grades 9-12. The High School is undergoing a major renovation that will be completed in 2015. The project includes modernizing the classrooms, adding a separate 18,000 square foot building for STEM (Science, Technology, Engineering and Mathematics) studies, a new cafeteria, new performing arts auditorium, a new practice gymnasium, new heating plant and a walkway form the High School to the Junior High School.

Wells Junior High

The Wells Junior High is located at 1470 Post Road and provides education for grades 5-8

Wells Elementary School

The Wells Elementary School is located at 276 Sanford Road and provides education for grades K-4.

Cemeteries

The Ocean View Cemetery Association owns and operates the Ocean View Cemetery on Route One. This Association is a private organization, although the Town provides financial support for burial of paupers and the maintenance of veterans' graves. There are available gravesites and an undeveloped area within the cemetery.

Harbor Facilities

See Marine Resources and the Wells Harbor Management Plan. The Wells Harbor Management Plan provides an analysis of the Harbor Facilities and Infrastructure.

Wastewater Treatment System

Public sewer service in Wells is provided by the Wells Sanitary District. The district is an independent entity with its own elected trustees.

The District operates a sewer system with approximately 45 miles of sewers, including 10 pump stations. The sewage treatment plant can treat up to 2 million gallons per day (mgd). The service area includes most of the beach areas, Route One corridor and adjacent areas. There are some unsewered developed areas within the general service area, primarily along the west of Route One. The district's master plan proposes providing service in these areas.

During 2013, the District treated 261.4 million gallons of sewage with a peak summer flow of approximately 1.4 million gallons a day. In that year, 1,169 cubic yards of biosolids were generated, processed and disposed at a licensed facility in Plymouth Maine. The District presently has enough reserve capacity to meet the town's needs for many years.

Presently, the District does not provide service beyond the Maine Turnpike. Over the past few years, the town, developers and the Trustees have discussed the possibility of extending service beyond the Maine Turnpike. To that end, in 2013, the District purchased a lot of land in the vicinity of the MTA entrance on the Sanford Road This purchase will provide a footprint for the location of a pump station. In the event the community decides to continue sewer service west of the Maine Turnpike entrance on Sanford Road.

The district's policy is to provide sewer service and to expand the system as necessary to accommodate new users. To date it has been the policy of the district to require that new users pay the costs for enlargements and/or extensions of the system.

Althoughthe Wells Sanitary District is a separate entity, its policies and actions play a major role in the growth and development of the Town. The availability of public sewerage is key development factor and is necessary for certain types of nonresidential development and for moderate or higher density residential development.

Water Service

Public water service in Wells is provided by the Kennebunk, Kennebunkport and Wells Water District (KKW). KKW was established in 1921 by an act of the Maine State Legislature as public quasi-municipal water utility. The District services portions of Wells, Kennebunk, Kennebunkport, Ogunquit, Arundel, Biddeford and York. In Wells, the service area consists primarily of the beaches, the Route One corridor and adjacent areas. The District publishes a newsletter twice a year which is available from their website.

The District's primary source of supply is Branch Brook, a Class A surface water that has been used continually as a public drinking water supply by KKW since 1895. Protection of this valuable resource remains a top priority to the District. The District estimates that Branch Brook has an average flow rate in excess of 10 MGD and a safe yield during extreme drought conditions of 3 MGD. The Branch Brook supply accounts for 60-70% of the District's supply needs and is used on a year round basis. In addition to Branch Brook, the District owns and maintains four naturally developed gravel wellsites (groundwater) sources. These sources include the Branch Brook or Plant Wells, Harriseckett Road and Merriland River supplies. These supplies are typically operated at high flow capacities to meet summer peak demand but have limited yields on an annual basis. As a protective measure, the District has entered into an interconnection agreement with the BSWC and a mutual aid supply agreement with the YWD to meet short-term supply deficits and for emergency purposes. The District's policy is to meet the needs of future growth and development. This would include both supply and distribution. The district presently passes the cost of system expansion on to new users either in the form of construction costs or system development charges.

In 2010, the District completed a 3,100-foot pipe replacement project along Route 1 in Wells and completed a Forest Management Plan for its nearly 2,000 acres of watershed land, which updated the original plan developed in 1982. The plan contains an inventory of tree types and maturity status and outlines a schedule for timber harvests, tree plantings, and land management priorities. These efforts will help to ensure the continued high quality of Branch Brook as a drinking water supply source by maintaining diverse and healthy forests and minimizing the harmful effects from erosion throughout the watershed. A new fish ladder was opened on Branch Brook in May of 2013 to allow passage of fish like herring, alewife and elvers as well as trout. Also in 2013, the District saw both a 1.5% growth in customers and a 4.5% increase in water production over the previous year.

Utility Rights-of-Way

Wells is crossed by four utility rights-of-way, all of which run in a north-south direction. Verizon (formerly New England Telephone) has two of these and Central Maine Power has the other two.

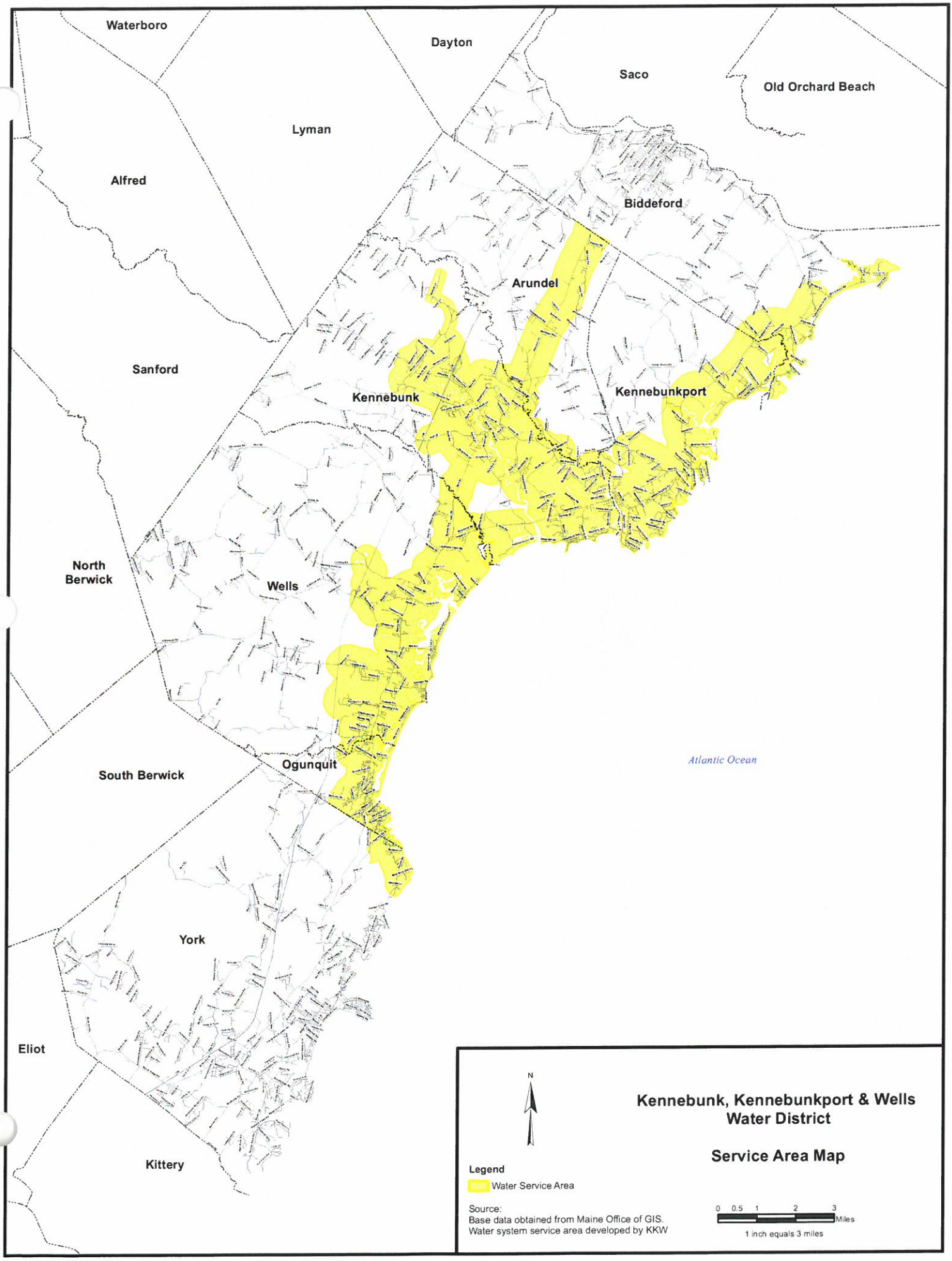
Verizon has a right-of-way (ROW) that runs through the marshes between Route One and the beaches. Bell Atlantic had removed the lines and has no need for this ROW. Some adjacent property owners have been able to obtain portions of the right of way from the phone company. Verizon also has a ROW that runs along the Sanford-Wells town line.

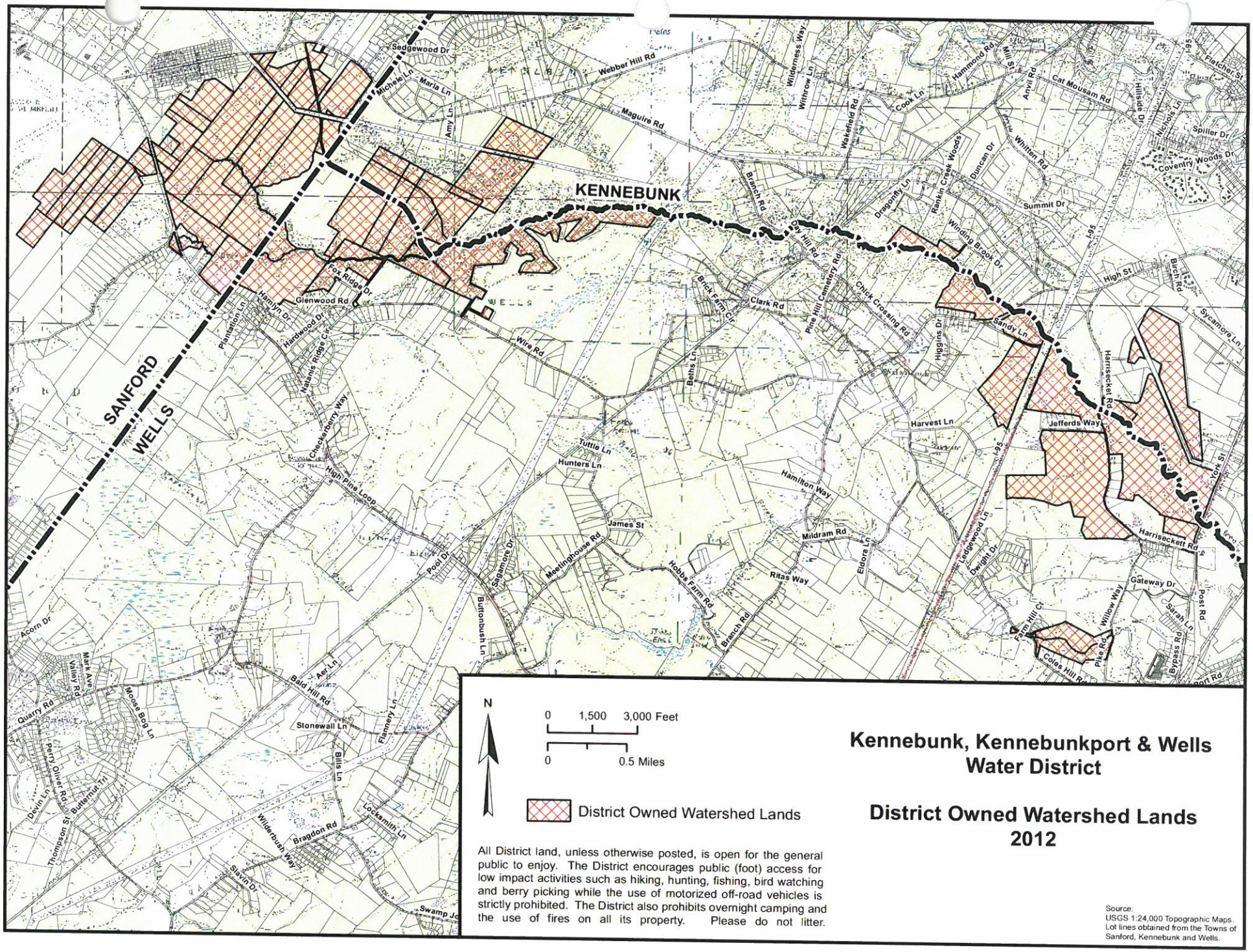
Central Maine Power (CMP) has two rights-of-way through the town. One, lies between the Maine Turnpike and Route One. This ROW has not yet been developed and is in reserve for future expansion of transmission capacity. Given the pressure for residential development in this section of Wells, the potential is great for future land use conflicts around this ROW corridor, as property buyers may not be aware of this area's status. CMP also has a ROW in the western part of Wells running from the North Berwick town line near Route 9 to Branch Brook west of Chicks Crossing Road. In addition to the existing transmission lines, there is now a natural gas transmission pipe located within this right of way.

The fourth right way is the old Eastern Line, the ordinal right of way of the Boston and Maine Railroad. Rail Service was discontinued when the rail was relocated to the east. In the 1960s, the right of way was purchased is now used for an interstate natural gas transmission pipe. This right of way is under investigation for use a non-motorized trail. See the discussion in the Transportation Section.

X. Maps by SMPDC, 2012-2014

- KKWWD Service Area Map
- KKWWD District Owned Watershed Lands
- Water Distribution and Wastewater Collection Systems
- National Wetlands Inventory
- NRCS Soils
- Watershed Drainage Divides
- FEMA FIRM
- Lodging Properties
- Conserved Lands (aerial)
- Conserved Lands
- Wildlife Habitats


Waterboro
Dayton
Saco
Old Orchard Beach
Lyman
Alfred
Biddeford
Arundel
Sanford
Kennebunk
Kennebunkport
North Berwick
Wells
Atlantic Ocean
Ogunquit
South Berwick
York
Eliot
Kittery
N
Kennebunk, Kennebunkport & Wells Water District
Service Area Map
Legend
Water Service Area
Source:
Base data obtained from Maine Office of GIS.
Water system service area developed by KKW
0 0.5 1 2 3 Miles
1 inch equals 3 miles



All District land, unless otherwise posted, is open for the general public to enjoy. The District encourages public (foot) access for low impact activities such as hiking, hunting, fishing, bird watching and berry picking while the use of motorized off-road vehicles is strictly prohibited. The District also prohibits overnight camping and the use of fires on all its property. Please do not litter.

Kennebunk, Kennebunkport & Wells Water District

District Owned Watershed Lands 2012

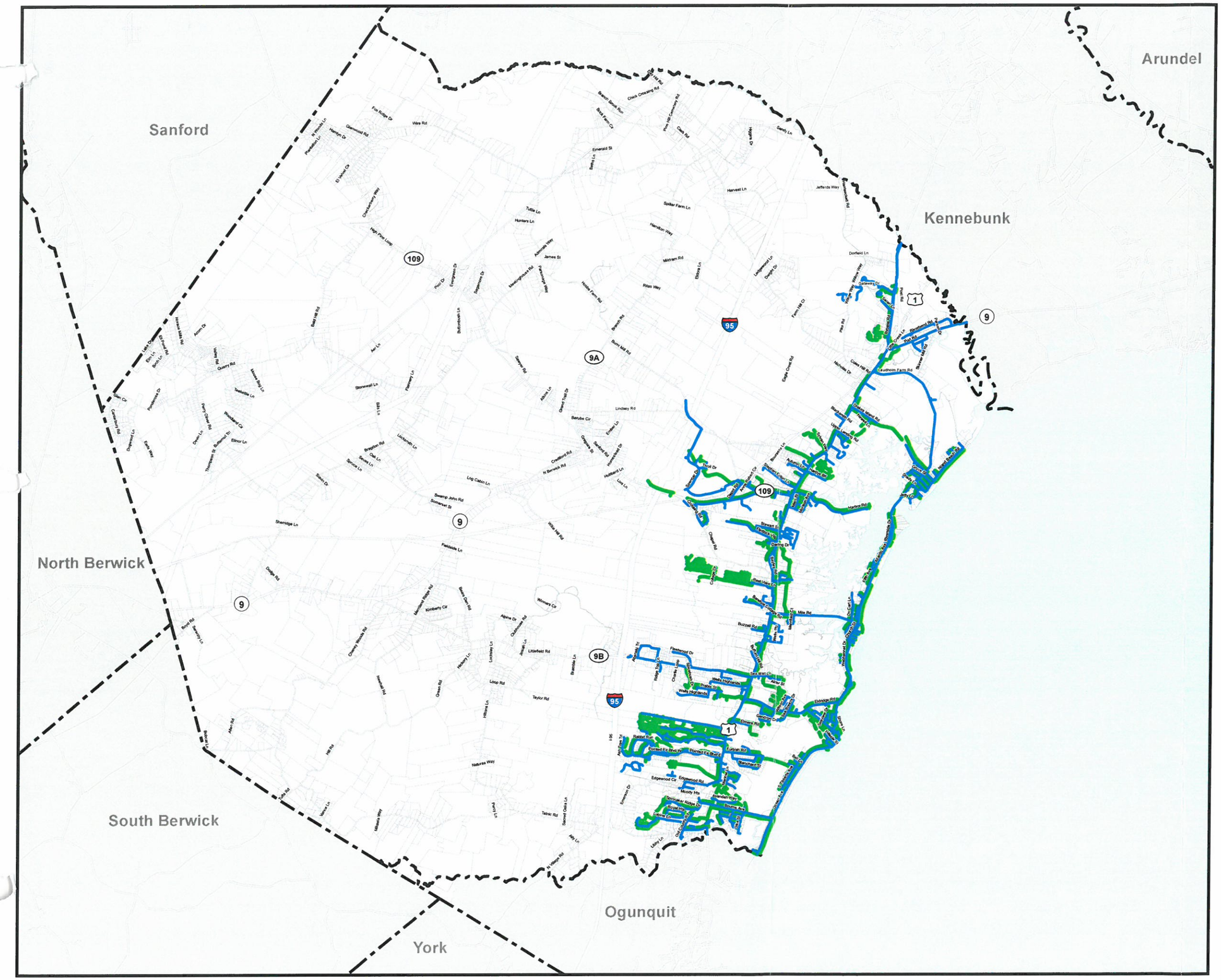
Source:
USGS 1:24,000 Topographic Maps.
Lot lines obtained from the Towns of Sanford, Kennebunk and Wells.

Town of Wells Comprehensive Plan

Map 2

Existing Water Distribution and Wastewater Collection Systems

As of April 1 2014



Data provided by the Town of Wells, The Kennebunk, Kennebunkport & Wells Water District and the Wells Sanitary District.

Notes: Water distribution systems and wastewater collection systems may change yearly. This map is intented to provide a basic understanding of where water and wastewater is served in the Town of Wells. For more detailed information please contact the Kennebunk, Kennebunkport & Wells Water District or the Wells Sanitary District.

N
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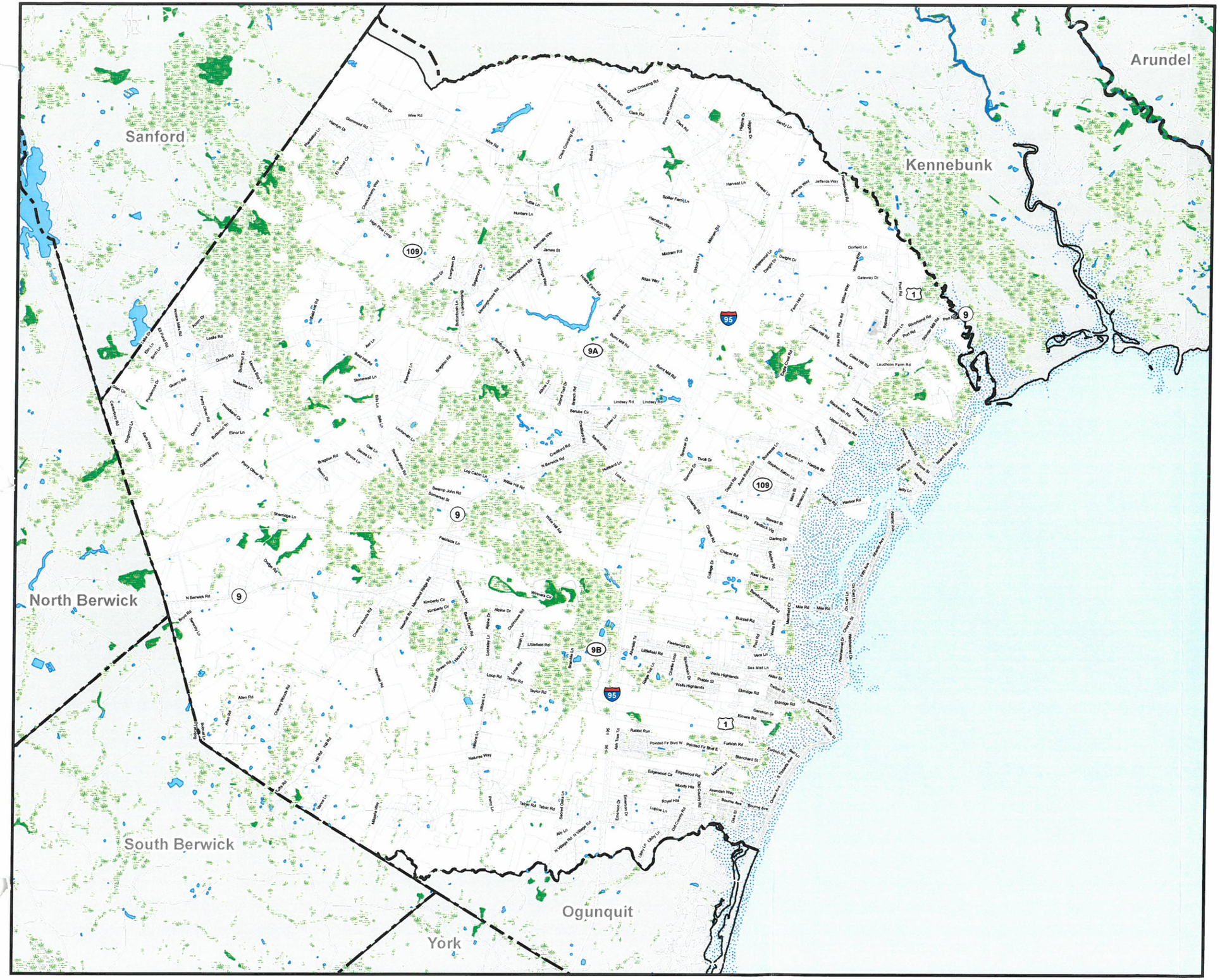
Town of Wells Comprehensive Plan

Map 2

National Wetlands Inventory



NWI Wetlands

- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond or Lake
- Other
- Riverine

National Wetlands Inventory data was created and provided by the U.S. Fish & Wildlife Service. Notes: The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

N W E S

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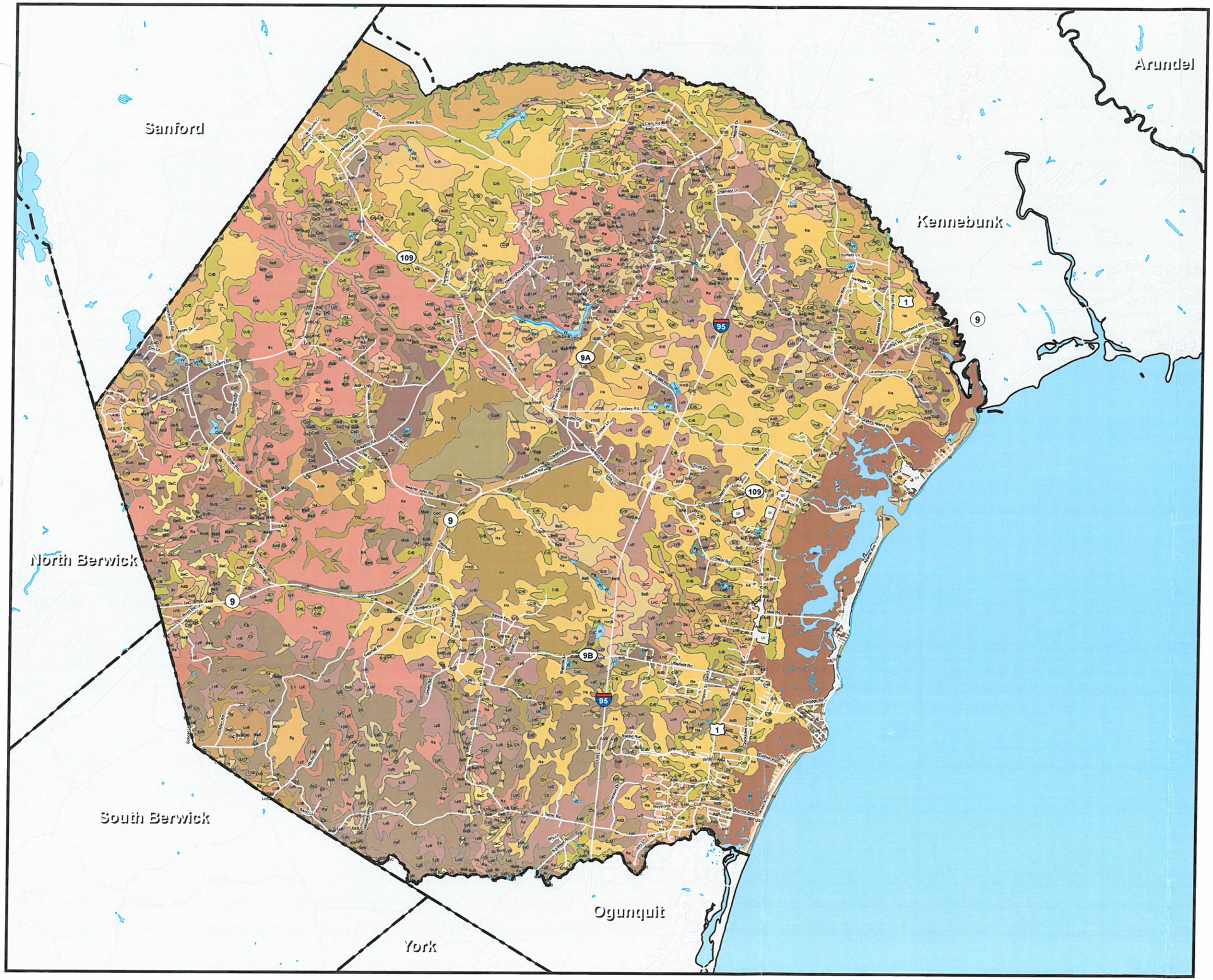
Town of Wells Comprehensive Plan

Map 2

NRCS Soils



- wqponds
- AdB: Adams loamy sand, 0 to 8 percent slopes
- AdC: Adams loamy sand, 8 to 15 percent slopes
- AdD: Adams loamy sand, 15 to 40 percent slopes
- AgB: Adams-Urban land complex, 0 to 8 percent slopes
- AlB: Allagash very fine sandy loam, 3 to 8 percent slopes
- AlC: Allagash very fine sandy loam, 8 to 15 percent slopes
- Ba: Beaches
- BeB: Becket very stony fine sandy loam, 3 to 8 percent slope s
- Bm: Biddeford mucky peat
- BrB: Brayton and Westbury fine sandy loams, 0 to 8 percent slopes
- BsB: Brayton and Westbury very stony fine sandy loams, 0 to 8 percent slopes
- BuB: Buxton silt loam, 3 to 8 percent slopes
- BuC: Buxton silt loam, 8 to 15 percent slopes
- BuD: Buxton silt loam, 15 to 25 percent slopes
- Ch: Chocorua peat
- CoB: Colton gravelly loamy coarse sand, 0 to 8 percent slope s
- CoC: Colton gravelly loamy coarse sand, 8 to 15 percent slopes
- CoD: Colton gravelly loamy coarse sand, 15 to 25 percent slopes
- CoE: Colton gravelly loamy coarse sand, 25 to 45 percent slopes
- CrB: Croghan loamy sand, 0 to 8 percent slopes
- CuB: Croghan-Urban land complex, 0 to 8 percent slopes
- Dm: Dumps
- EmB: Elmwood fine sandy loam, 0 to 8 percent slopes
- EmC: Elmwood fine sandy loam, 8 to 15 percent slopes
- HeB: Hermon fine sandy loam, 3 to 8 percent slopes
- HeC: Hermon fine sandy loam, 8 to 15 percent slopes
- HmB: Hermon very stony fine sandy loam, 3 to 8 percent slope s
- HmC: Hermon very stony fine sandy loam, 8 to 15 percent slopes
- HmD: Hermon very stony fine sandy loam, 15 to 25 percent slo pes
- LnB: Lyman fine sandy loam, 3 to 8 percent slopes
- LnC: Lyman fine sandy loam, 8 to 15 percent slopes
- LnD: Lyman fine sandy loam, 15 to 25 percent slopes
- LyB: Lyman-Rock outcrop complex, 3 to 8 percent slopes
- LyC: Lyman-Rock outcrop complex, 8 to 15 percent slopes
- LyE: Lyman-Rock outcrop complex, 15 to 80 percent slopes
- MaB: Madawaska fine sandy loam, 0 to 8 percent slopes
- Na: Naumburg sand
- Pg: Pits, gravel
- Po: Podunk and Winooski soils
- Ra: Raynham silt loam
- RoC: Rock outcrop-Lyman complex, 8 to 15 percent slopes
- Ru: Rumney loam
- Sa: Saco mucky silt loam
- Sc: Scantic silt loam
- SeB: Scio silt loam, 3 to 8 percent slopes
- SeC: Scio silt loam, 8 to 15 percent slopes
- SeD: Scio silt loam, 15 to 25 percent slopes
- Sg: Sebago peat
- SkB: Skerry fine sandy loam, 0 to 8 percent slopes
- SrB: Skerry very stony fine sandy loam, 0 to 8 percent slope s
- SrC: Skerry very stony fine sandy loam, 8 to 15 percent slopes
- Su: Sulfihemists, frequently flooded
- Ud: Udipsamments-Dune land complex
- Ur: Urban land
- Va: Vassalboro peat
- Vp: Vassalboro peat, ponded
- W: Water bodies

Data created and provided by U.S. Department of Agriculture, Natural Resources Conservation Service
Notes:This data set is a digital soil survey and generally is the most detailed level of soil geographic data developed by the National Cooperative Soil Survey. The information was prepared by digitizing maps, by compiling information onto a planimetric correct base and digitizing, or by revising digitized maps using remotely sensed and other information.

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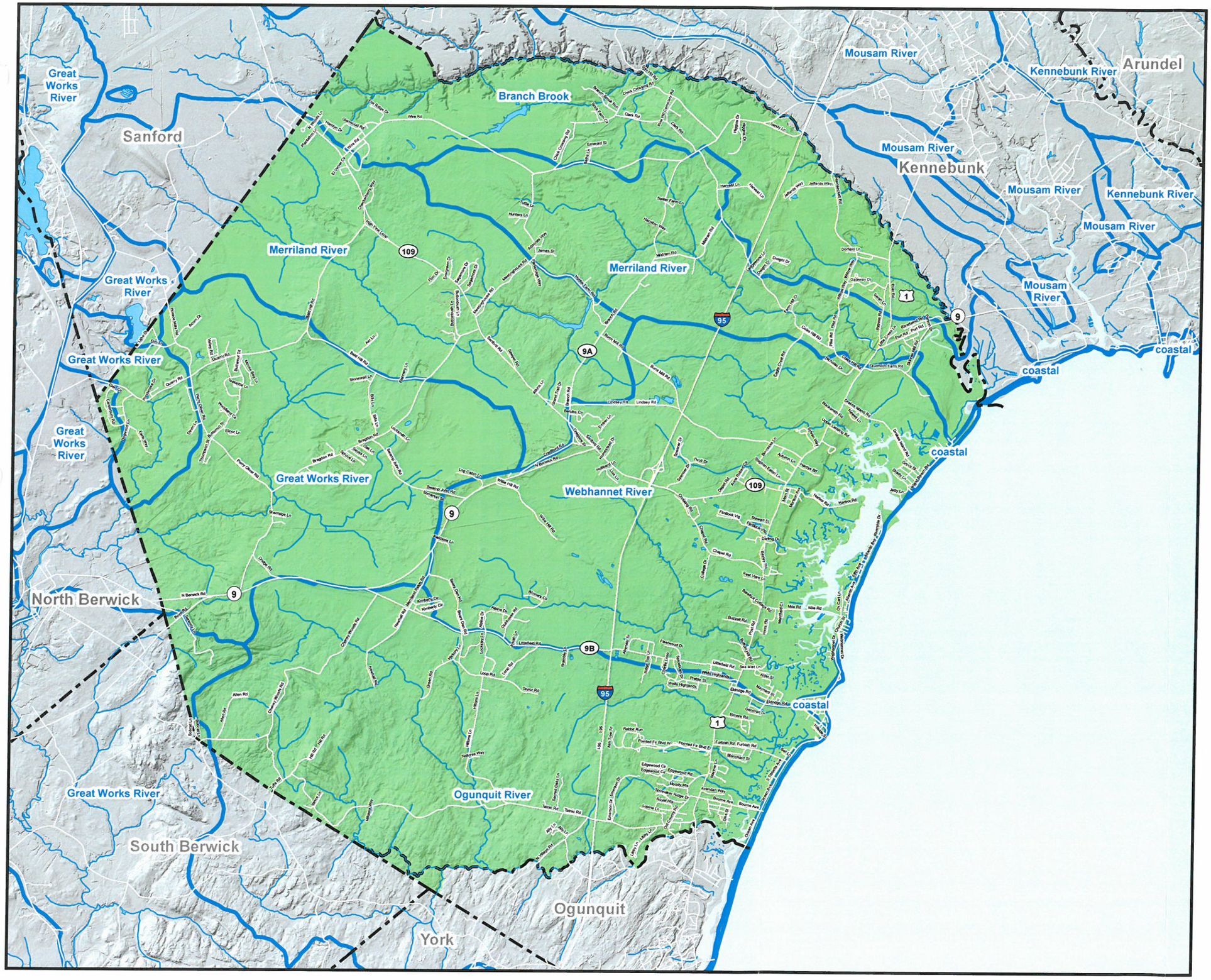
Town of Wells Comprehensive Plan

Map 2

Watershed Drainage Divides



Streams

Waterbody

Watersheds

Watershed Name

Watershed boundary data provided by the Maine Office of GIS. Notes: Contains watershed boundaries for most ponds and rivers in Maine, based on USGS 1:24,000 scale topography. Drainage boundaries were determined using the 1:24,000 scale contours and were delineated on mylar copies of these maps by USGS staff in Augusta, ME in 1989. The mylars were digitized by Maine Geological Survey (MGS) in 1990 for the Maine Low-Level Radioactive Waste Authority. In 1993 MEGIS staff added the 1:24,000 coastline to this cover to close the coastal drainage.

N W E S

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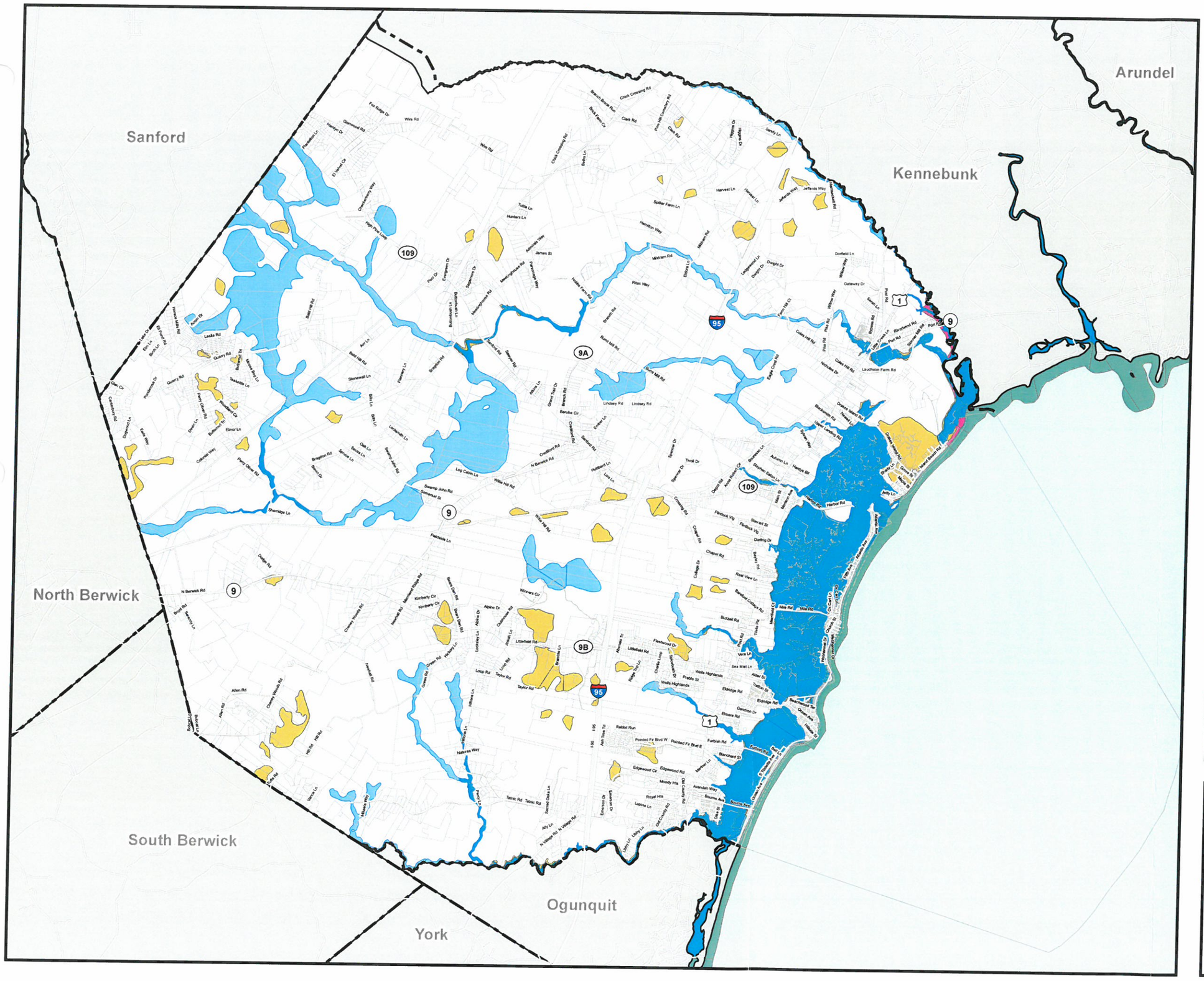
TOWN OF WELLS
FOUNDED 1653 · INCORPORATED 1820

Town of Wells Comprehensive Plan

Map 2

FEMA FIRM



SPECIAL FLOOD HAZARD AREAS INUNDATED BY 100-YEAR FLOOD

A
No base flood elevations determined

AE
Base flood elevations determined

AO
Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.

VE
Coastal flood with velocity hazard (wave action); base flood elevations determined.

X
Areas determined to be outside 500-year floodplain.

X500
Areas of 500-year flood; areas of 100-year flood with average depths less than 1 foot Of with drainage areas less than 1 square mile; and areas protected by levees from 100-year flood.

FEMA FIRM data was created and provided by the Federal Emergency Management Agency.

Notes: FIRM is Q3 Flood Data derived from the Flood Insurance Rate Maps (FIRMs) published by the Federal Emergency Management Agency (FEMA) mapped at 1:24000 scale. This data is for use in administering the National Flood Insurance Program; it does not necissarily identify all areas subject to flooding, particularly from local drainage sources of small sice or all planimetric features outside Special Flood Hazard Areas.

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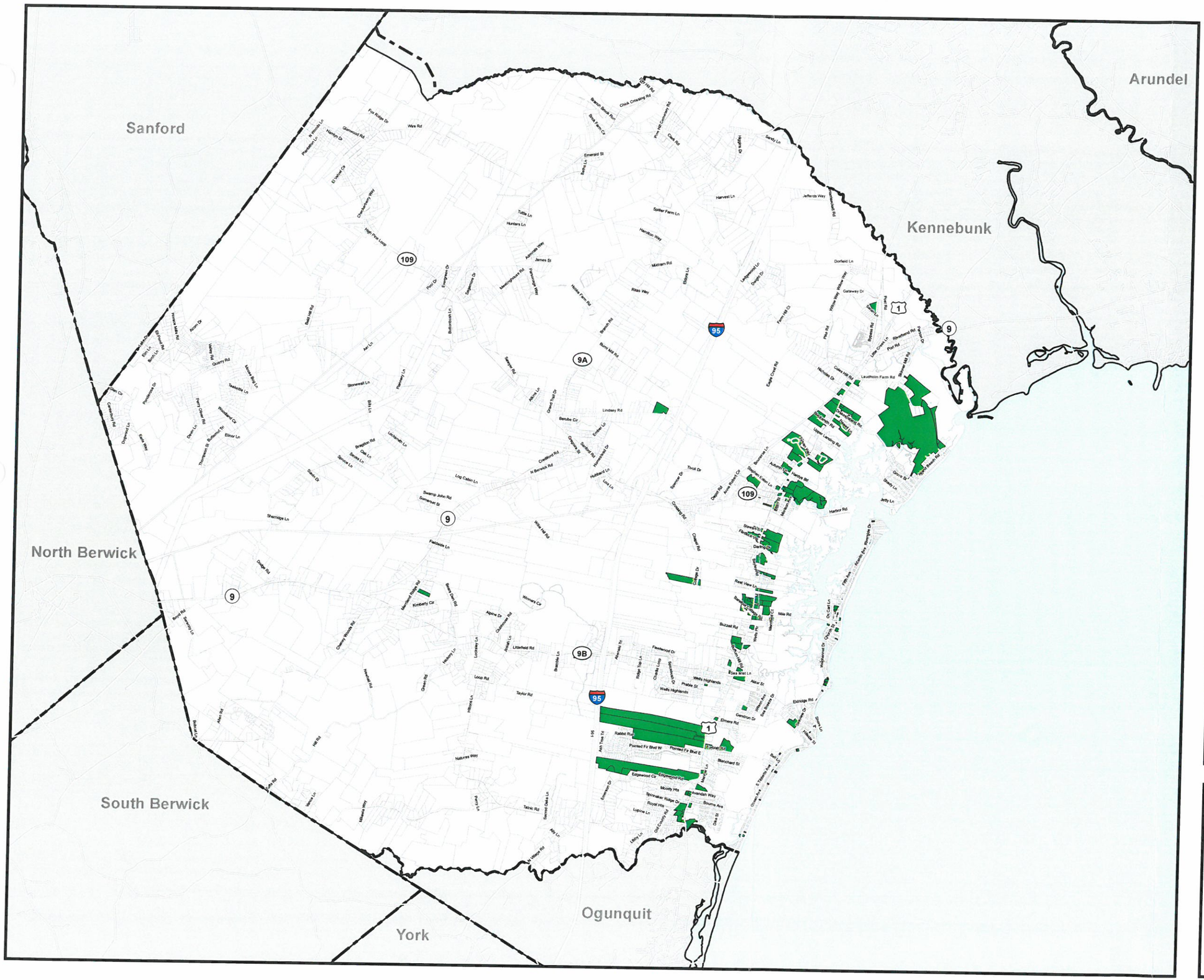
Town of Wells Comprehensive Plan

Map 2

Lodging Properties



Lodging Properties

Data provided by the Town of Wells
Notes: Entire parcels are colored according to information on file with the Wells Tax Assessor, even if only a portion of the parcel is used for lodging. Data obtained from the Assessing Database has not been field checked.

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Town of Wells Comprehensive Plan

Map 2

Conserved lands

Conserved Lands

Conserved Lands

Conservation Lands data was created and provided by the Maine Dept. of Agriculture, Conservation and Forestry.

Notes: Conserved Lands was created to provide GIS coverage for the conservation lands database. The ownership lines do not represent legal boundaries nor are the ownership lines a survey. The data contained in Conserved Lands is an inventory only. Users must assume responsibility in determining the usability of this data for their purposes. Data at this scale is suitable for local and regional planning.

N W E S

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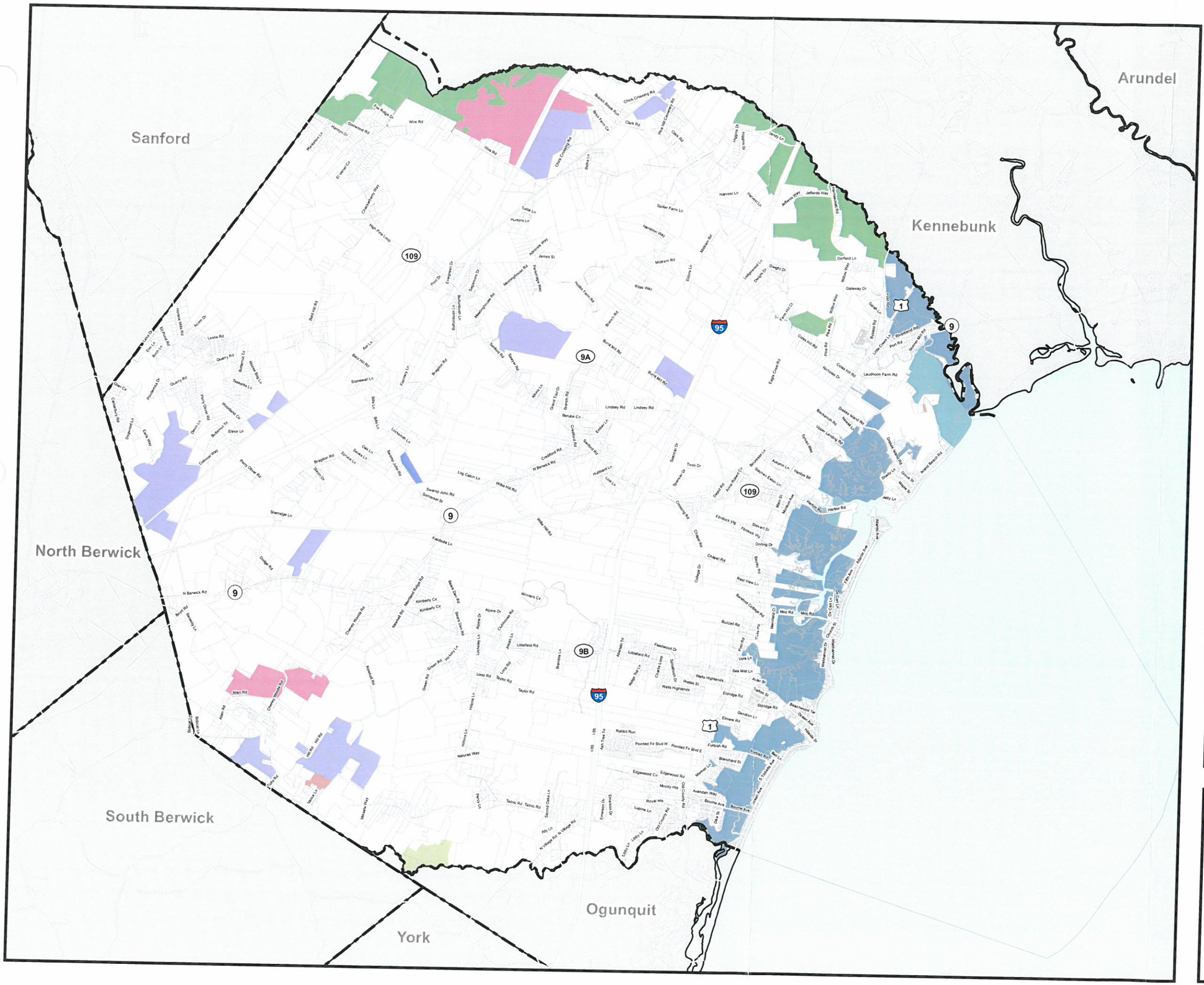
Town of Wells Comprehensive Plan

Map 2

Conserved lands



Conserved Lands

- Great Works Regional Land Trust
- Kennebunk, Kennebunkport and Wells Water Districts
- Laudholm Trust & Wells National Estuarine Research Reserve
- Maine Bureau of Parks and Lands
- Maine Department of Inland Fisheries and Wildlife
- Maine Minor Civil Division
- The Nature Conservancy
- US Fish and Wildlife Service
- York Land Trust, Inc.

Conservation Lands data was created and provided by the Maine Dept. of Agriculture, Conservation and Forestry.

Notes: Conserved Lands was created to provide GIS coverage for the conservation lands database. The ownership lines do not represent legal boundaries nor are the ownership lines a survey. The data contained in Conserved Lands is an inventory only. Users must assume responsibility in determining the usability of this data for their purposes. Data at this scale is suitable for local and regional planning.

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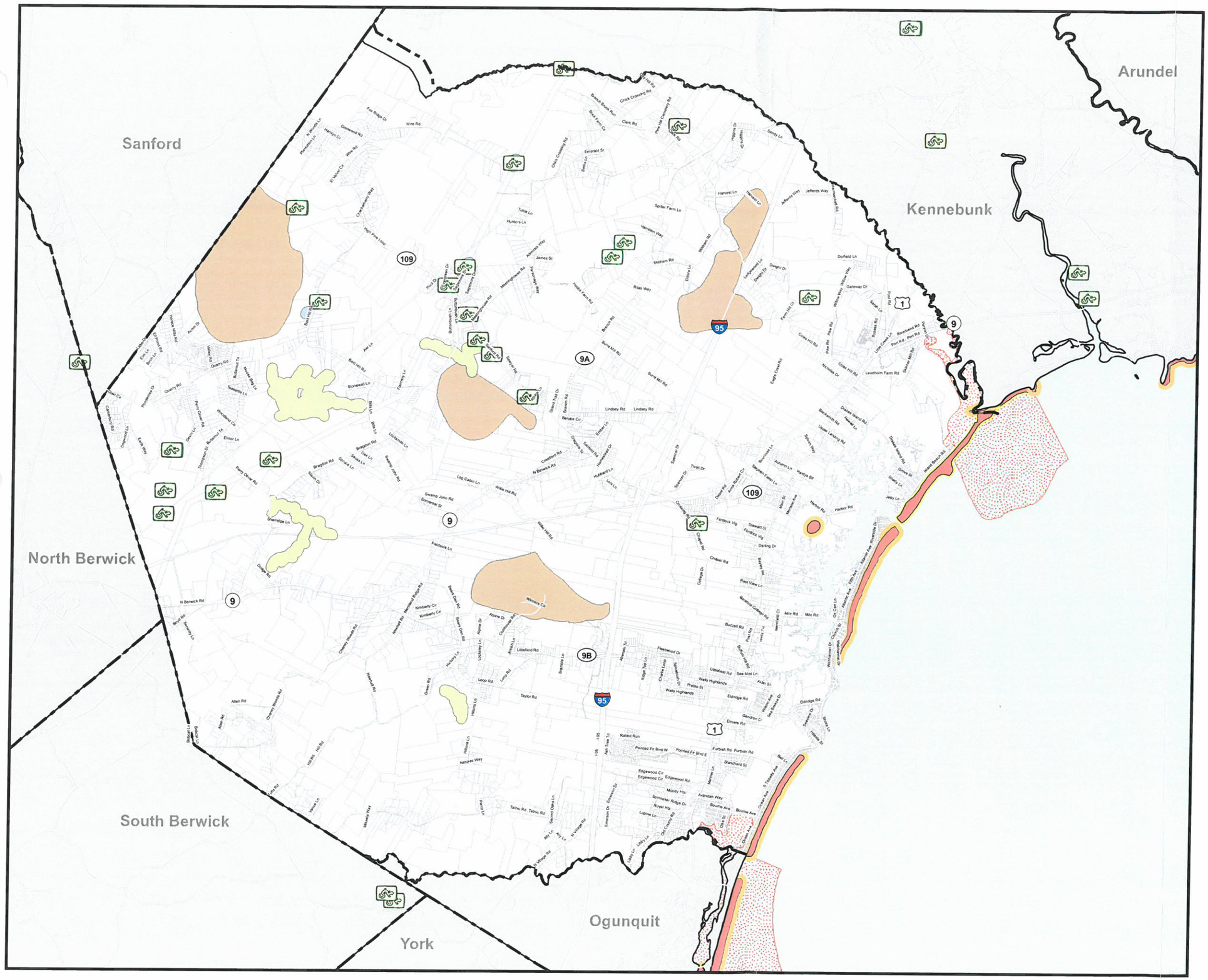
Town of Wells Comprehensive Plan

Map 2

Wildlife Habitiats



- Vernal Pool
- Inland Waterfowl/Wader Habitat - shoreland zoning
- Inland Waterfowl/Wader Habitat - NRPA
- Piping Plover/Least Tern Essential Habitat
- Deer Wintering Areas

Shorebird Habitat

- 100 ft buffer
- 250 ft buffer
- Habitat

Data provided by the Maine Office of GIS
Notes: Entire parcels are colored according to existing land use code on file with the Wells Tax Assessor, even if only a portion of the parcel is used for that purpose. Please note that this will be slightly different then the land use code as used by the Town Zonning code. Esixting Land Use coding was obtained fromt he Assessing Database and has not been field checked.

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TOWN OF WELLS
FOUNDED 1653 · INCORPORATED 1653

XI. Comprehensive Plan Survey and Results

- 2014 Survey and Results
- 2016 Survey and Results

Town of Wells, Maine

Greetings Parents:

The Town of Wells is embarking on the development of a new Comprehensive plan for the community; the last plan was completed in 2005. The Community is seeking citizen input on the plan by asking citizens to take park in a survey questionnaire to help determine the Town's direction.

Public input opportunities will also be available through a paper survey and by visiting the town's website for the online survey link at: www.wellstown.org or directly at: https://www.surveymonkey.com/r/WellsCompPlan

If you do not have access to a computer, computer access is available at the Wells Public Library. You may also contact the Town of Wells Code Enforcement Office and we will be happy to mail you a paper copy at request by calling 207-646-5187. Paper copies will also be available at the Code Enforcement Office located at 208 Sanford Road and the Wells Public Library located at 1434 Post Road. After you have completed the survey you may return it to the Town of Wells Code Enforcement Office. If you have any further questions, please contact Jonathan Carter, Town Manager @ Wells Town Hall 207-646-5113

The Town will also be taking a unique approach to further gather information and will be asking the Wells Graduating 2015-2016 Classes to take part in the survey to get a prospective from the next generation of residents. The Wells Ogunquit Consolidated School District will be sending out further information to students to take part in the same survey.

The Board of Selectmen, Jon Carter, Town Manager and Staff have clearly heard concerns that many of you have had about the future your children have in this community and so we are asking them the same questions we are asking you. Their answers are as valid as your answers in the survey.

If you have children graduation in 2015 and/or 2016 please encourage them to take the time to participate in the questionnaire.

Town of Wells, Maine

Attention Graduating Class of 2015 and 2016

The Town of Wells Board of Selectmen would like your opinion to help achieve the long term vision for the Town of Wells by participation in an on-line survey questionnaire.

What are the questions about: Every 10 years the Town of Wells has to update a document called the "Comprehensive Plan". The purpose of the document is the Town's commitment to achieve a vision that reflects a long-range view (e.g., ten year) view of the future issues and opportunities. Issues are identified, projected and options selected to set a course of action. The decisions are the basis for polices and implementations of programs and local ordinances.

The adopted Plan is used by citizens, elected officials, Town Committees, business investors and others. They use it to help make daily decisions about the issues and opportunities that shape the Town's physical and economic development. It is used to establish the legal foundation for several implementation programs and activities including, but not limited to the Town's land use regulations. While the Comprehensive Plan is not a zoning ordinance, land use regulations must be consistent with the Plan

Why would the Town care what we think? The Board of Selectmen, Jon Carter, Town Manager and Town Staff know by hearing from many of your parents and extended family members that they have concerns for you, the next generations of Wells on issues such as; what the community will visually look like? Will the next generation be able to afford land and build a home in Town? Will they be able to start a business in the community? Would the next generation want a downtown center? Is preserving conservation land important to future generations?

Will our survey answers be taken seriously? Absolutely! This questionnaire was not designed for any particular age group or to target any particular subject matter. It is to help shape the future of Wells and the Class of 2015-2016 is the future of Wells.

Here is the link: https://www.surveymonkey.com/r/WellsCompPlan You may also follow the link on the Town of Wells home page at www.wellstown.org

YOUR OPINION WILL HELP SHAPE THE VISION

Town of Wells, Maine

TOWN OF WELLS
COMPREHENSIVE PLAN SURVEY

Q-1. Please indicate which one of the following best describes your residency in Wells:

- ☐ 1. Year-round resident (more than 6 months/year)
- ☐ 2. Seasonal resident (less than 6 months/year)
- ☐ 3. Non-resident property owner
- ☐ 4. Non-resident business owner/manager
- ☐ 5. Student

Q-2. Please indicate which of the following apply to you:

a. Registered voter in Wells?	☐ 1. Yes	☐ 2. No
b. Owner of a residential home/unit in Wells?	☐ 1. Yes	☐ 2. No
c. Renter of a residential home/unit in Wells?	☐ 1. Yes	☐ 2. No
d. Owner of vacant land in Wells?	☐ 1. Yes	☐ 2. No
e. Owner of commercial property in Wells?	☐ 1. Yes	☐ 2. No
f. Owner of a business in Wells?	☐ 1. Yes	☐ 2. No

Q-3. Please indicate your level of agreement with the following statements by circling the number that best represents your view where five means that you <u>strongly agree</u> and one means that you <u>strongly disagree</u> with the statement. <u>No opinion</u> means you do not feel the statement needs to be addressed by the community.

	Strongly Agree	Agree	Somewhat Agree	Disagree	Strongly Disagree	No Opinion
a. Limit commercial development west of the Turnpike to preserve the ruralness of Wells.	5	4	3	2	1	0
b. Continue to exclude "big box stores."	5	4	3	2	1	0
c. Consider permitting "big box stores" within certain Zoning Districts such as the Light Industrial or Transportation Center Districts.	5	4	3	2	1	0
d. Pursue sewer extensions in areas west	5	4	3	2	1	0

	Strongly Agree	Agree	Somewhat Agree	Disagree	Strongly Disagree	No Opinion
of the Turnpike currently not served by public sewer.						
e. Encourage sewer plant expansion for capacity to accommodate growth.	5	4	3	2	1	0
f. Consider more commercial development along the Route 9 (North Berwick Road) corridor.	5	4	3	2	1	0
g. Consider more development and increased commercial uses west of the Turnpike along the Route 109 (Sanford Road) corridor.	5	4	3	2	1	0
h. Encourage more year round business in Wells.	5	4	3	2	1	0
i. Encourage more seasonal business in Wells.	5	4	3	2	1	0
j. The town is meeting the housing needs of current and future residents.	5	4	3	2	1	0
k. Become more pro-active when it comes to economic development.	5	4	3	2	1	0
l. Support Town acquiring more conservation land.	5	4	3	2	1	0
m. Establish fees for doing new development that places demands on the Town for new services and expanded or improved facilities.	5	4	3	2	1	0
n. Encourage more protection of the Towns natural resources.	5	4	3	2	1	0
o. Expand upon the Wells Public Library hours of operation and off-premise services.	5	4	3	2	1	0
p. Consider creating a "Downtown Overlay District" along Route 109 (Sanford Road) from the Turnpike to Route One to enhance community development of a downtown.	5	4	3	2	1	0
q. Establish more Municipal Recreational Facilities east of the Turnpike.	5	4	3	2	1	0

	Strongly Agree	Agree	Somewhat Agree	Disagree	Strongly Disagree	No Opinion
r. Encourage development within the Transportation Center District (area at turnpike Exit 19).	5	4	3	2	1	0
s. Consider creating a new use that would permit existing cottage units to expand their season from 6 months to 9 months.	5	4	3	2	1	0
t. Encourage emphasis to be placed on historic events that have happened in Town.	5	4	3	2	1	0
u. Develop a greater local community pride of historic events and places.	5	4	3	2	1	0
v. Encourage greater tourist promotion of historic events and places.	5	4	3	2	1	0
w. Encourage the development of historic educational programs and activities.	5	4	3	2	1	0

Q-4. Please indicate your level of agreement with the following statements regarding transportation, traffic, and pedestrian needs by circling the number that best represents your view where five 5 means that you <u>strongly agree</u> and 1 means that you <u>strongly disagree</u>. <u>No opinion</u> means you do not feel the statement needs to be addressed by the community.

	Strongly Agree	Agree	Somewhat Agree	Disagree	Strongly Disagree	No Opinion
a. Encourage more sidewalk development.	5	4	3	2	1	0
b. Encourage development and connections with the Eastern Trail, and bike and pedestrian paths.	5	4	3	2	1	0
c. Develop a Route One by-pass road.	5	4	3	2	1	0
d. Work with the Maine Turnpike Authority for the creation of a new turnpike exit between Wells and Ogunquit.	5	4	3	2	1	0
e. Encourage improvements to the existing Maine Turnpike exit in Wells.	5	4	3	2	1	0

	Strongly Agree	Agree	Somewhat Agree	Disagree	Strongly Disagree	No Opinion
f. Improve upon existing public beach access points such as stairs, ramps, and	5	4	3	2	1	0

boardwalks.

g. Expand upon public transportation available in Wells year round.	5	4	3	2	1	0
h. Expand upon seasonal transportation available in Wells.	5	4	3	2	1	0
i. Construct sidewalks along Route One.	5	4	3	2	1	0
j. Construct sidewalks along beach access roads.	5	4	3	2	1	0

Q-5. Please indicate your level of agreement with the following statements regarding Harbor Park activities and services by circling the number that best represents your view where five 5 means that you <u>strongly agree</u> and 1 means that you <u>strongly disagree</u>. <u>No opinion</u> means you do not feel the statement needs to be addressed by the community.

	Strongly Agree	Agree	Somewhat Agree	Disagree	Strongly Disagree	No Opinion
a. Develop areas for more activities such as volleyball courts, shuffle board, play areas, etc. within the Harbor Park.	5	4	3	2	1	0
b. Encourage more fairs, events, concerts and community gatherings within the Harbor Park.	5	4	3	2	1	0
c. Construct improvements to Harbor Park parking areas, pedestrian areas and viewing platforms.	5	4	3	2	1	0

Q-6. Please indicate your level of agreement with the following statements regarding Municipal Park and Recreation Facility improvements by circling the number that best represents your view where five 5 means that you <u>strongly agree</u> and 1 means that you <u>strongly disagree</u>. <u>No opinion</u> means you do not feel the statement needs to be addressed by the community.

	Strongly Agree	Agree	Somewhat Agree	Disagree	Strongly Disagree	No Opinion
a. Construct more athletic fields for programs.	5	4	3	2	1	0
b. Establish additional programs for youth.	5	4	3	2	1	0
c. Establish additional programs for adults.	5	4	3	2	1	0
d. Construct more basketball courts.	5	4	3	2	1	0

	Strongly Agree	Agree	Somewhat Agree	Disagree	Strongly Disagree	No Opinion
e. Construct more public playgrounds.	5	4	3	2	1	0
f. Establish more cultural, artistic, and entertainment programs.	5	4	3	2	1	0

Q-7. Please indicate your level of agreement with the following statements regarding architectural standards in Wells by circling the number that best represents your view where five 5 means that you strongly agree and 1 means that you strongly disagree. No opinion means you do not feel the statement needs to be addressed by the community.

	Strongly Agree	Agree	Somewhat Agree	Disagree	Strongly Disagree	No Opinion
a. Establish architectural and landscaping standards for new commercial developments.	5	4	3	2	1	0
b. Establish architectural and landscaping standards for new residential developments.	5	4	3	2	1	0
c. Establish a preservation policy for historic buildings and sites.	5	4	3	2	1	0
d. Require architectural standards along Route One.	5	4	3	2	1	0
e. Require architectural standards along Route 109 (Sanford Road).	5	4	3	2	1	0
f. Require architectural standards along Route 9 (North Berwick Road).	5	4	3	2	1	0

Q-8. What do you think are the three most important issues facing Wells? (Except for Route 1 traffic, which is already known to be a priority). In the spaces below, please write your thoughts:

1. _____
2. _____
3. _____

Q-9. Do you feel the current 'Vision for Wells' statement below is accurate?

"THE VISION FOR WELLS

Wells is a terrific community with great people and a great environment. The vision for Wells is to preserve and promote Wells' small-town historic traditional rural New England seacoast community character, appearance and values for a better quality of life.

If quality is conformance to a standard, then continually improving quality means continually setting and achieving higher standards for excellence in planning, design, development, service, and operations. Citizens drive standards: their aspirations, expectations, their goals and policies.

Setting standards will enable Wells to:

- Retain and improve the quality of life.
- Promote economic opportunity.
- Promote health and safety.
- Promote educational opportunity.
- Promote environmental protection. "

Strongly Agree	Agree	Somewhat Agree	Disagree	Strongly Disagree	No Opinion
5	4	3	2	1	0

Demographic and Household Information

The following information will be useful to us in developing a profile of the residents who respond to this survey.

Q-10. What is your identifying gender? ☐ 1. Male ☐ 2. Female

Q-11. How long have you lived in Wells?

☐ 1. Two years or less ☐ 3. Six to ten years ☐ 5. More than twenty years

☐ 2. Three to five years ☐ 4. Eleven to twenty years ☐ 6. Do not live in Wells

Q-12. How old are you?

☐ 1. 15 - 18 ☐ 2. 19-24 ☐ 3. 25-34

☐ 4. 35-44 ☐ 5. 45-54 ☐ 6. 55-64

☐ 7. 65 or older

Q-13. Please indicate if children live in your household for most of the year

a. preschool aged children ☐ 1. Yes ☐ 2. No

b. school aged children ☐ 1. Yes ☐ 2. No

c. children over 18 ☐ 1. Yes ☐ 2. No

Q-14. What was the highest grade or year in school that you have completed?

☐ 1. Less than high school
☐ 2. High school graduate
☐ 3. Some college (Including two and three year college and technical programs)
☐ 4. Four year college
☐ 5. Some graduate school
☐ 6. Graduate degree

Q-15. Are you employed?

☐ 1. No (skip to Q-18) ☐ 2. Yes, full time ☐ 3. Yes, part time

Q-16. In what community is your job located?

☐ 1. Wells
☐ 2. Ogunquit
☐ 3. Yorks
☐ 4. Berwicks
☐ 5. Kittery
☐ 6. Kennebunk-Kennebunkport area
☐ 7. Biddeford-Saco area
☐ 8. Sanford-Springvale area
☐ 9. Greater Portland area
☐ 10. Other York County
☐ 11. Other Maine
☐ 12. Portsmouth-Dover-Rochester area
☐ 13. Other New Hampshire
☐ 14. Massachusetts
☐ 15. Other:_____

Q-17. What is your occupation?

☐ 1. Executive, Manager, Administrator
☐ 2. Professional
☐ 3. Technician
☐ 11. Farming, fishing, or forestry
☐ 12. Precision production, crafts, or repairs
☐ 13. Machine operator, assembler, inspector

☐ 4. Retail, Sales

☐ 5. Administration support including Clerical

☐ 6. Programmer, Computers

☐ 7. Service

☐ 8. Medical

☐ 9. Military, Government, Law Enforcement

☐ 10. Educator, Professor

☐ 14. Transportation

☐ 15. Helper, cleaner, laborer, caregiver

☐ 16. Student

☐ 17. Hospitality

☐ 18. Arts, Film, Photography, Radio

☐ 19. Engineer

☐ 20. Other: _____

Q-18. Please check the box corresponding with your household's total annual income (before taxes).

☐ 1. Less than $25,000 ☐ 2. $25,001 - $49,999 ☐ 3. $50,000 - $74,999

☐ 4. $75,000 - $99,999 ☐ 5. $100,000 - $149,999 ☐ 6. Over $150,000

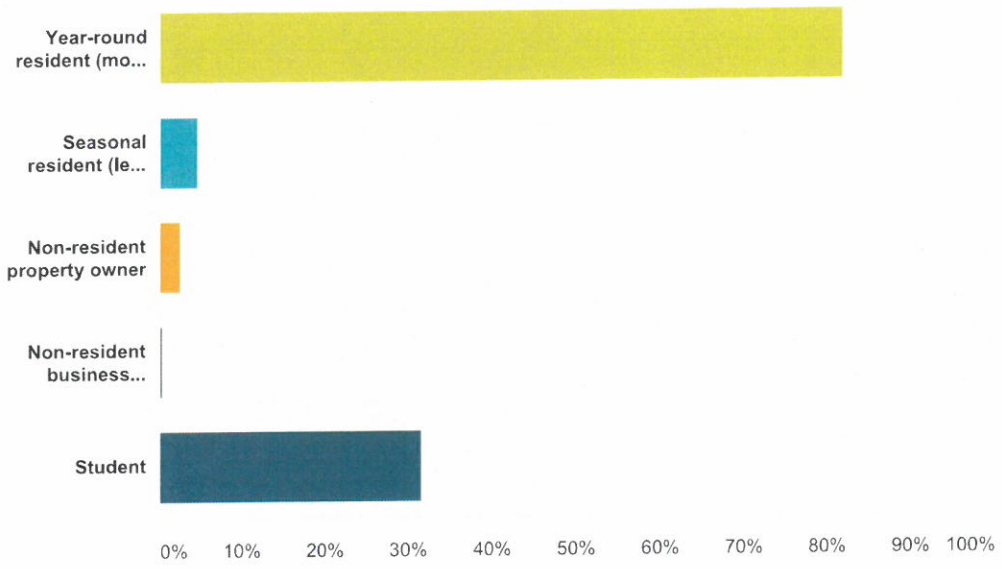
Q-19. Please tell us if, in the last five years, you have been an active volunteer within the Town of Wells.

☐ 1. Yes ☐ 2. No

Thank you for completing the survey.

Q1 Please indicate which one of the following best describes your residency in Wells:

Answered: 498 Skipped: 0



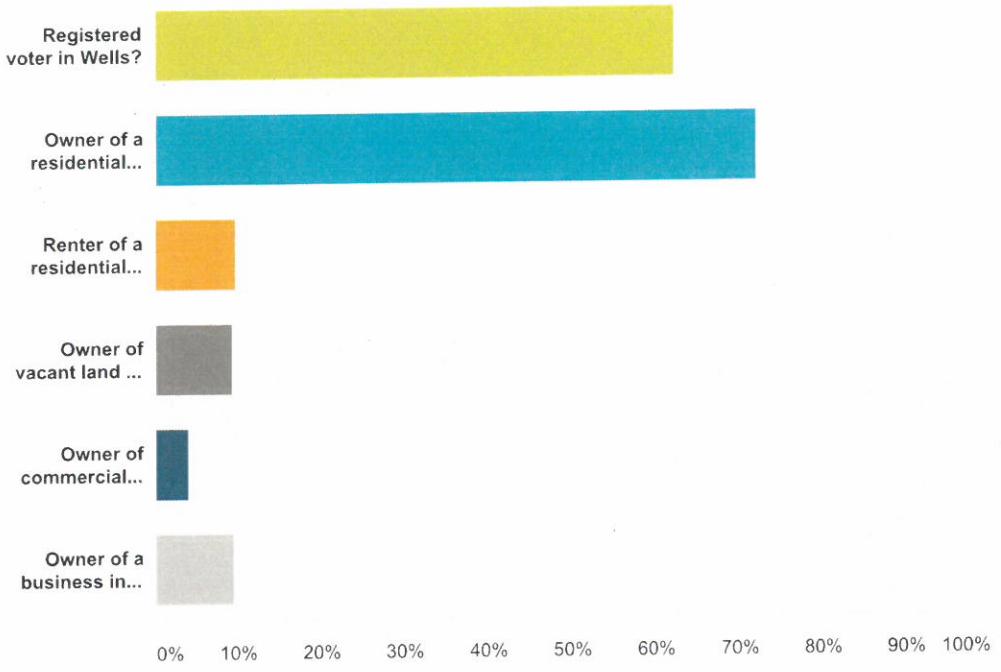
Answer Choices	Responses	
Year-round resident (more than 6 months/year) (1)	82.13%	409
Seasonal resident (less than 6 months/year) (2)	4.62%	23
Non-resident property owner (3)	2.41%	12
Non-resident business owner/manager (4)	0.40%	2
Student (5)	31.53%	157
Total Respondents: 498		

Basic Statistics

Minimum	Maximum	Median	Mean	Standard Deviation
1.00	5.00	1.00	2.13	1.74

Q2 Please indicate which of the following apply to you:

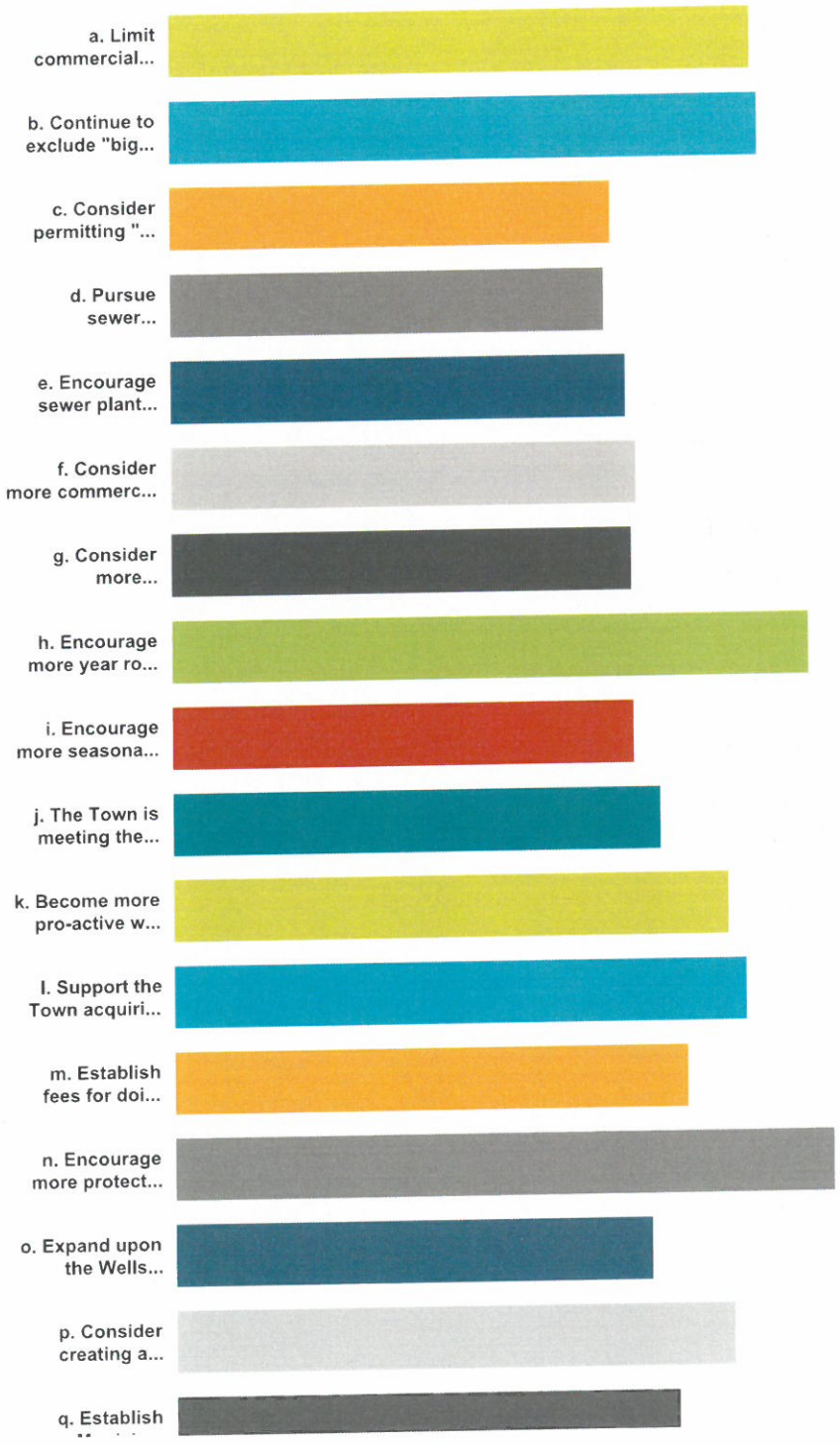
Answered: 418 Skipped: 80

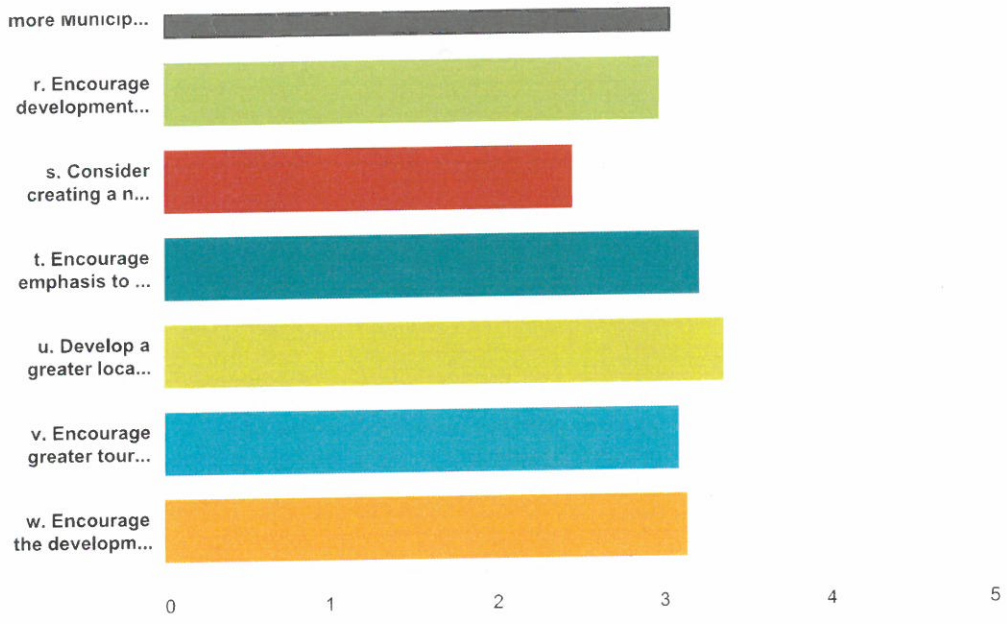


Answer Choices	Responses	
Registered voter in Wells?	62.20%	260
Owner of a residential home/unit in Wells?	72.01%	301
Renter of a residential home/unit in Wells?	9.57%	40
Owner of vacant land in Wells?	9.09%	38
Owner of commercial property in Wells?	4.07%	17
Owner of a business in Wells?	9.33%	39
Total Respondents: 418		

Q3 Please indicate your level of agreement with the following statements by selecting the rating that best represents your view. No opinion means you do not feel the statement needs to be addressed by the community.

Answered: 427 Skipped: 71



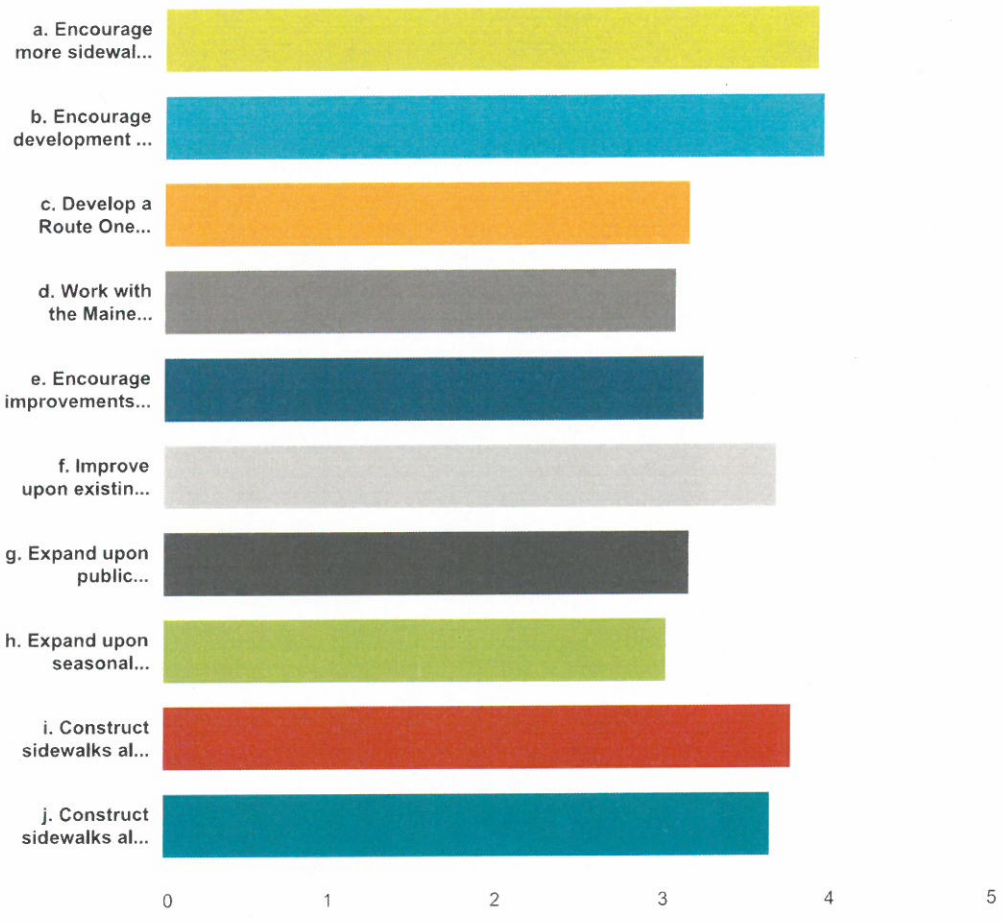


	Strongly Agree	Agree	Somewhat Agree	Disagree	Strongly Disagree	No Opinion	Total	Weighted Average
a. Limit commercial development west of the Turnpike to preserve the ruralness of Wells.	31.62% 135	27.40% 117	18.03% 77	12.88% 55	4.22% 18	5.85% 25	427	3.52
b. Continue to exclude "big box stores."	38.64% 165	17.56% 75	18.27% 78	14.99% 64	8.20% 35	2.34% 10	427	3.56
c. Consider permitting "big box stores" within certain Zoning Districts such as the Light Industrial or Transportation Center Districts.	10.77% 46	23.19% 99	20.84% 89	16.39% 70	24.59% 105	4.22% 18	427	2.67
d. Pursue sewer extensions in areas west of the Turnpike currently not served by public sewer.	11.71% 50	24.82% 106	22.48% 96	14.29% 61	8.90% 38	17.80% 76	427	2.63
e. Encourage sewer plant expansion for capacity to accommodate growth.	12.41% 53	28.57% 122	21.55% 92	13.58% 58	7.49% 32	16.39% 70	427	2.76
f. Consider more commercial development along the Route 9 (North Berwick Road) corridor.	10.77% 46	29.04% 124	21.78% 93	15.46% 66	15.93% 68	7.03% 30	427	2.82
g. Consider more development and increased commercial uses west of the Turnpike along the Route 109 (Sanford Road) corridor.	10.54% 45	28.57% 122	21.55% 92	14.75% 63	17.56% 75	7.03% 30	427	2.79
h. Encourage more year round business in Wells.	34.66% 148	39.81% 170	13.58% 58	4.68% 20	2.34% 10	4.92% 21	427	3.85
i. Encourage more seasonal business in Wells.	12.88% 55	21.08% 90	27.63% 118	17.33% 74	13.35% 57	7.73% 33	427	2.80
j. The Town is meeting the housing needs of current and future residents.	11.94% 51	33.02% 141	26.46% 113	9.60% 41	4.92% 21	14.05% 60	427	2.95
k. Become more pro-active when it comes to economic development.	20.84% 89	34.66% 148	26.93% 115	4.45% 19	3.51% 15	9.60% 41	427	3.36
l. Support the Town acquiring more conservation land.	29.98% 128	30.68% 131	19.20% 82	5.85% 25	4.92% 21	9.37% 40	427	3.47
m. Establish fees for doing new development that places demands on the Town for new services and expanded or improved facilities.	28.10% 120	23.19% 99	18.27% 78	8.43% 36	6.09% 26	15.93% 68	427	3.11

n. Encourage more protection of the Towns natural resources.	44.03% 188	31.62% 135	14.05% 60	3.98% 17	1.87% 8	4.45% 19	427	3.99
o. Expand upon the Wells Public Library hours of operation and off-premise services.	18.97% 81	22.25% 95	24.36% 104	13.11% 56	5.85% 25	15.46% 66	427	2.89
p. Consider creating a "Downtown Overlay District" along Route 109 (Sanford Road) from the Turnpike to Route One to enhance community development of a downtown.	29.74% 127	28.34% 121	17.56% 75	8.90% 38	5.39% 23	10.07% 43	427	3.38
q. Establish more Municipal Recreational Facilities east of the Turnpike.	17.80% 76	27.40% 117	26.70% 114	9.84% 42	6.56% 28	11.71% 50	427	3.05
r. Encourage development within the Transportation Center District (area at turnpike exit 19).	15.46% 66	26.70% 114	26.93% 115	11.24% 48	9.37% 40	10.30% 44	427	2.97
s. Consider creating a new use that would permit existing cottage units to expand their season from 6 months to 9 months.	11.48% 49	20.84% 89	21.08% 90	10.07% 43	21.31% 91	15.22% 65	427	2.45
t. Encourage emphasis to be placed on historic events that have happened in Town.	21.55% 92	28.10% 120	26.70% 114	8.20% 35	3.98% 17	11.48% 49	427	3.21
u. Develop a greater local community pride of historic events and places.	23.65% 101	31.38% 134	25.53% 109	6.32% 27	3.04% 13	10.07% 43	427	3.36
v. Encourage greater tourist promotion of historic events and places.	17.33% 74	28.10% 120	27.63% 118	9.84% 42	7.03% 30	10.07% 43	427	3.09
w. Encourage the development of historic educational programs and activities.	19.44% 83	26.23% 112	30.21% 129	8.43% 36	4.45% 19	11.24% 48	427	3.14

Q4 Please indicate your level of agreement with the following statements regarding transportation, traffic, and pedestrian needs by selection the option that best represents your view. No opinion means you do not feel the statement needs to be addressed by the community.

Answered: 422 Skipped: 76

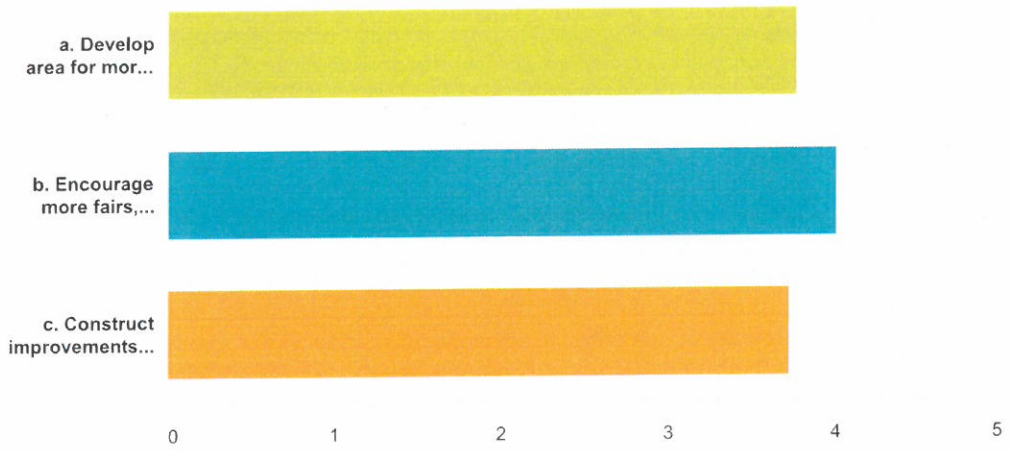


	Strongly Agree	Agree	Somewhat Agree	Disagree	Strongly Disagree	No Opinion	Total	Weighted Average
a. Encourage more sidewalk development.	37.20% 157	35.55% 150	17.54% 74	4.03% 17	3.55% 15	2.13% 9	422	3.92
b. Encourage development and connections with the Eastern Trail, and bike and pedestrian paths.	41.00% 173	35.55% 150	13.27% 56	3.55% 15	1.90% 8	4.74% 20	422	3.96
c. Develop a Route One by-pass road.	31.04% 131	18.01% 76	16.11% 68	12.80% 54	13.51% 57	8.53% 36	422	3.15

d. Work with the Maine Turnpike Authority for the creation of a new turnpike exit between Wells and Ogunquit.	**26.78%** 113	**19.91%** 84	**16.35%** 69	**14.45%** 61	**15.88%** 67	**6.64%** 28	422	3.07
e. Encourage improvements to the existing Maine Turnpike exit in Wells.	**20.14%** 85	**29.38%** 124	**25.59%** 108	**12.09%** 51	**4.74%** 20	**8.06%** 34	422	3.24
f. Improve upon existing public beach access points such as stairs, ramps and sidewalks.	**32.70%** 138	**31.75%** 134	**20.62%** 87	**4.98%** 21	**4.27%** 18	**5.69%** 24	422	3.67
g. Expand upon public transportation available in Wells year round.	**20.38%** 86	**28.44%** 120	**24.17%** 102	**10.66%** 45	**5.69%** 24	**10.66%** 45	422	3.15
h. Expand upon seasonal transportation available in Wells.	**18.48%** 78	**27.73%** 117	**23.70%** 100	**10.43%** 44	**6.64%** 28	**13.03%** 55	422	3.02
i. Construct sidewalks along Route One.	**38.86%** 164	**28.67%** 121	**17.77%** 75	**4.50%** 19	**5.92%** 25	**4.27%** 18	422	3.77
j. Construct sidewalks along beach access roads.	**36.73%** 155	**27.96%** 118	**15.64%** 66	**8.06%** 34	**5.92%** 25	**5.69%** 24	422	3.64

Q5 Please indicate your level of agreement with the following statements regarding Harbor Park activities and services by the option that best represents your view. No opinion means you do not feel the statement needs to be addressed by the community.

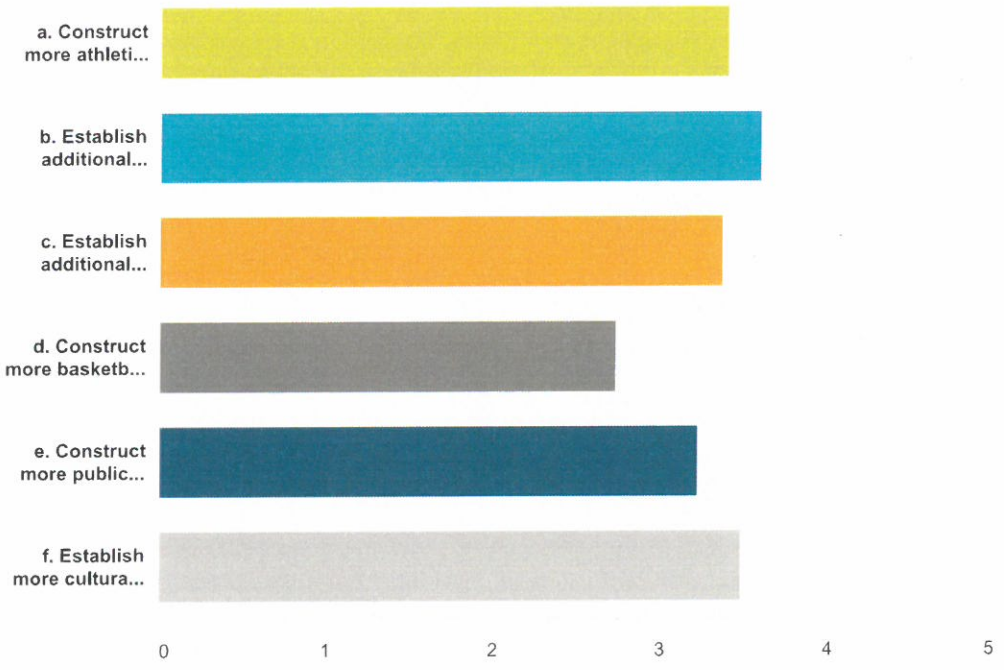
Answered: 419 Skipped: 79



	Strongly Agree	Agree	Somewhat Agree	Disagree	Strongly Disagree	No Opinion	Total	Weighted Average
a. Develop area for more activities such as volleyball courts, shuffle board, play areas, etc. within the Harbor Park.	36.28% 152	30.55% 128	19.57% 82	5.49% 23	3.82% 16	4.30% 18	419	3.77
b. Encourage more fairs, events, concerts, and community gatherings within the Harbor Park.	43.20% 181	32.70% 137	15.51% 65	2.63% 11	2.15% 9	3.82% 16	419	4.01
c. Construct improvements to Harbor Park parking areas, pedestrian areas and viewing platforms.	33.41% 140	33.41% 140	18.62% 78	6.44% 27	3.10% 13	5.01% 21	419	3.73

Q6 Please indicate your level of agreement with the following statements regarding Municipal Parks and Recreation Facility improvements by selecting the option that best represents your view. No opinion means you do not feel the statement needs to be addressed by the community.

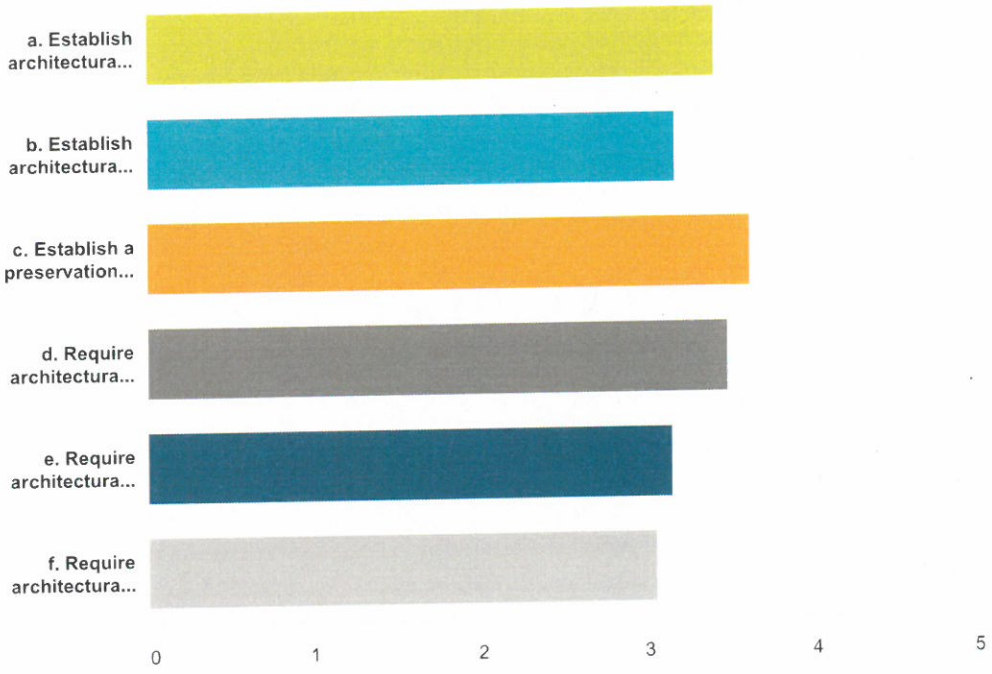
Answered: 416 Skipped: 82



	Strongly Agree	Agree	Somewhat Agree	Disagree	Strongly Disagree	No Opinion	Total	Weighted Average
a. Construct more athletic fields for programs.	26.92% 112	26.92% 112	23.56% 98	11.54% 48	4.33% 18	6.73% 28	416	3.40
b. Establish additional programs for youth.	26.92% 112	38.22% 159	18.27% 76	7.45% 31	2.40% 10	6.73% 28	416	3.60
c. Establish additional programs for adults.	20.19% 84	36.30% 151	24.04% 100	7.93% 33	2.64% 11	8.89% 37	416	3.37
d. Construct more basketball courts.	15.14% 63	20.19% 84	23.32% 97	19.71% 82	7.93% 33	13.70% 57	416	2.74
e. Construct more public playgrounds.	21.63% 90	27.64% 115	24.04% 100	13.70% 57	4.81% 20	8.17% 34	416	3.23
f. Establish more cultural, artistic, and entertainment programs.	30.29% 126	29.81% 124	19.71% 82	7.93% 33	2.88% 12	9.38% 39	416	3.49

Q7 Please indicate your level of agreement with the following statements regarding architectural standards in Wells by selecting the option that best represents your view. No opinion means you do not feel the statement needs to be addressed by the community.

Answered: 414 Skipped: 84



	Strongly Agree	Agree	Somewhat Agree	Disagree	Strongly Disagree	No Opinion	Total	Weighted Average
a. Establish architectural and landscaping standards for new commercial businesses.	29.23% 121	29.23% 121	19.81% 82	6.28% 26	4.59% 19	10.87% 45	414	3.40
b. Establish architectural and landscaping standards for new residential developments.	23.43% 97	27.54% 114	20.29% 84	9.90% 41	7.97% 33	10.87% 45	414	3.16
c. Establish a preservation policy for historic buildings and sites.	31.88% 132	31.40% 130	21.01% 87	4.35% 18	3.86% 16	7.49% 31	414	3.61
d. Require architectural standards along Route One.	33.09% 137	26.57% 110	19.32% 80	6.76% 28	4.59% 19	9.66% 40	414	3.48
e. Require architectural standards along Route 109 (Sanford Road).	24.64% 102	23.19% 96	23.67% 98	11.35% 47	4.83% 20	12.32% 51	414	3.14
f. Require architectural standards along Route 9 (North Berwick Road).	22.71% 94	21.74% 90	24.15% 100	13.04% 54	5.80% 24	12.56% 52	414	3.05

Q8 What do you think are the three most important issues facing Wells? (Except for Route 1 traffic, which is already known to be a priority). In the spaces below, please write your thoughts:

Answered: 394 Skipped: 104

Answer Choices	Responses	
1.	100.00%	394
2.	100.00%	394
3.	100.00%	394

#	1.	Date
1	Develop a well defined downtown with some public park space	1/4/2015 7:27 PM
2	More use of harbor rd for walking paths through preserved areas	1/3/2015 5:45 PM
3	no more condos on rte 1	12/28/2014 5:22 PM
4	Development of more year round business and jobs	12/28/2014 12:51 PM
5	Free parking at the beaches	12/26/2014 10:32 AM
6	Preserving lands from future developement	12/18/2014 9:46 AM
7	too much tourism	12/16/2014 2:08 PM
8	Route one is in really sad shape wells you drive thru Kennebunk and ogunquit and there gorgeous. Route one is not	12/12/2014 9:22 PM
9	not enough year round rentals for residents	11/30/2014 11:46 AM
10	creating a downtown	11/25/2014 2:00 PM
11	careful review and monitoring of residential new construction	11/24/2014 7:43 AM
12	downtown area for community building and activities on rte 109	11/21/2014 5:26 PM
13	beach access	11/21/2014 2:04 PM
14	Traffic back-ups at the intersection of Rt. 9 and 109 in the morning	11/21/2014 2:04 PM
15	erosion of the beach and filling of the harbor. this is why people come to wells. without them - the tourists will find another destination	11/20/2014 9:54 AM
16	Lack of affordable housing	11/19/2014 10:51 AM
17	lack of a town center; a solid and OBVIOUS town center, as in Kennebunk and York (even Sanford), create an "anchor" for people - to gather, celebrate our community's deep history, have community events, fairs, etc...	11/18/2014 9:13 PM
18	Limit the number of new houses being built each year.	11/18/2014 7:36 AM
19	Lack of a strong recreation programs competing with surrounding communities	11/17/2014 8:24 PM
20	Over building of summer cottages	11/14/2014 3:25 PM
21	Balancing development with maintaining the town's rural character - there is a lot of development going on right now, which is forever changing the "feel" of the town.	11/14/2014 12:48 PM
22	Acquire more lands dedicated to conservation	11/14/2014 7:16 AM
23	recognizing the limits of beach usage and accepting same	11/13/2014 7:52 PM

24	BUILD SIDEWALKS ON WELLS BRANCH ROAD	11/13/2014 7:15 PM
25	Growth	11/12/2014 10:01 PM
26	New Police Station - old one is a dump	11/12/2014 10:31 AM
27	bike lanes along roads and more bike trails	11/11/2014 12:42 PM
28	More sidewalks on wells branch road please	11/10/2014 2:04 PM
29	Growth of seasonal development	11/9/2014 8:17 PM
30	Low taxes!	11/9/2014 1:06 PM
31	Beach access	11/7/2014 8:50 PM
32	Nicer plyagrounds and facilities for kids/families... not necessarily more of them.	11/7/2014 2:23 PM
33	Stop building all these cottages	11/7/2014 1:40 PM
34	Apparent lack of control over the expansion of seasonal "cottages"	11/7/2014 11:20 AM
35	More recreational/sports programs/camps for kids. Our surrounding communities have so much to offer, but Wells is limited!	11/6/2014 7:20 PM
36	activities for preteens	11/6/2014 1:04 PM
37	No center of town	11/5/2014 8:21 PM
38	Utilize vacant buildings and areas along Route 1	11/5/2014 4:04 PM
39	Fitness Programs for Families	11/5/2014 2:48 PM
40	Programs for our Youth	11/5/2014 11:13 AM
41	Development that ruins the small town historic New England seacoast feel of the town. Don't want to look like Route One in Saugus. MA	11/5/2014 9:40 AM
42	Continued School Improvements	11/5/2014 8:51 AM
43	Stopping the unfair huge tax increases and that is plural at the beach..rest of town needs to step up	11/4/2014 11:17 PM
44	We need more of a down town area	11/4/2014 9:54 PM
45	Needs to be more sidewalks and bikeways	11/4/2014 3:46 PM
46	Commercial growth	11/4/2014 10:42 AM
47	massive residential developments at Burnt Mill and river run	11/4/2014 8:39 AM
48	Why is it more expensive to go north on 95 in Wells?	11/4/2014 8:14 AM
49	We are the weak link compared to our neighbors. We need to establish higher standards for ourselves and town.	11/4/2014 7:07 AM
50	Lack of downtown center	11/3/2014 10:38 PM
51	Encourage development of year round businesses	11/3/2014 9:01 PM
52	when hosting events at the harbor there needs to be better dedicated parking for trailered boats (i was blocked in once and it was horrible)	11/3/2014 7:07 PM
53	Development of Harbor Park	11/3/2014 5:39 PM
54	Anything that inhibits economoc development. Make Wells a more attractive place to want to do business.	11/3/2014 4:29 PM
55	Up grade public buildings	11/3/2014 12:51 PM
56	historical	11/3/2014 12:17 PM
57	Need to improve communication - hard to get information on town events, elections and issues	11/3/2014 8:16 AM
58	STOP new cottage developments	11/3/2014 7:39 AM
59	Charge more often for beach parking	11/2/2014 9:56 PM

60	More sidewalks are needed	11/2/2014 6:41 PM
61	Higher standards for seasonal units to avoid eye sore units like those next to Rite Aid. Our town should have more pride in how these units look - looks like inner city triple deckers now. What a shame.	11/1/2014 9:48 PM
62	Create a sense of community for year round residents during the off season.	11/1/2014 8:14 PM
63	Lack of reasonably priced condos or apartments for elderly full-time residentsretirees.	11/1/2014 5:27 PM
64	Year round jobs	11/1/2014 4:04 PM
65	sidewalks & trail access	10/31/2014 10:54 PM
66	Inforce laws on the books about junkyards and large disgusting areas within the town that are presently being ignored	10/31/2014 8:26 PM
67	Expand Harbor Projects.	10/31/2014 6:02 PM
68	Creation of a downtown, a more New England hometown environment.	10/31/2014 4:13 PM
69	n/a	10/31/2014 2:53 PM
70	Lack of community support for new residents.	10/31/2014 2:11 PM
71	no downtown	10/31/2014 12:20 PM
72	Signage that occludes the driver's view of cross traffic when exiting parking areas. Enforce a 20 foot buffer retroactively!	10/31/2014 9:00 AM
73	Creating more of a downtown community/area	10/30/2014 8:15 PM
74	Downtown	10/30/2014 6:30 PM
75	taxes	10/30/2014 4:31 PM
76	Wells needs a route 1 bypass	10/30/2014 3:43 PM
77	Architectual Standards along major routes	10/30/2014 3:12 PM
78	Management of Current Budgets -- existing facilities not particularly well cared for (ie. Mile Road Playground ect), road surfaces, life guards more focused on hanging out with each other... Need to do a better job delivering results thru accounatability.	10/30/2014 1:09 PM
79	Unnecessary seasonal apartment development	10/30/2014 12:32 PM
80	Need more sidewalks	10/30/2014 12:32 PM
81	The light up signs should not be allowed.	10/30/2014 12:31 PM
82	No more light up signs	10/30/2014 12:28 PM
83	The turnpike situation.	10/30/2014 12:25 PM
84	Maintaining "small town" feel -- don't over construct/commercialize things	10/30/2014 12:22 PM
85	turnpike traffic and exist problems	10/30/2014 12:21 PM
86	preserving history and tradition	10/30/2014 12:17 PM
87	Repave the back roads	10/30/2014 12:13 PM
88	traffic	10/30/2014 12:11 PM
89	There is not anything to do for the youth to do in the winter.	10/30/2014 12:11 PM
90	THE STUPID TOWN CLOCK	10/30/2014 11:18 AM
91	stupid town clock	10/30/2014 11:17 AM
92	The town clock	10/30/2014 11:15 AM
93	Lack of Sidewalks	10/30/2014 11:15 AM
94	Fire Department Funding	10/30/2014 11:14 AM

95	109 traffic if the amusement park goes in in Sanford.	10/30/2014 11:14 AM
96	Town clock	10/30/2014 11:13 AM
97	The Town Clock	10/30/2014 11:12 AM
98	Preservation of natural sites and resources (there is too much development)	10/30/2014 11:07 AM
99	N/A	10/30/2014 11:06 AM
100	the influx of far to many not so attractive seasonal cottages	10/30/2014 10:50 AM
101	No real down town, kennebunk is so nice, we need that	10/30/2014 10:19 AM
102	Do more to ATTRACT YOUNG FAMILIES to the town (continued school improvements!!) to offset high number of retirees and bring more revenue into town	10/30/2014 9:55 AM
103	Need a moratorium on seasonal units development, dense housing units, beach and public facilities , infrastructure d. oes not support these now. Tourists are starting to go elsewhere because of full parking lots by 10 am ,substandard restrooms	10/30/2014 9:21 AM
104	Stable Economy	10/30/2014 7:51 AM
105	Creating a "downtown" wells will create a hot spot for tourism, but draws business for the rest of the town.	10/30/2014 7:51 AM
106	obama	10/30/2014 7:49 AM
107	We need to make our beach area more exciting like York.	10/30/2014 7:49 AM
108	Need more sidewalks.	10/30/2014 7:46 AM
109	Not as many places for teenagers to hang out and have fun (like rollerskating, or better restaurants)	10/30/2014 7:46 AM
110	bullying	10/30/2014 7:43 AM
111	no chick-fil-a	10/30/2014 7:42 AM
112	no chick fila	10/30/2014 7:42 AM
113	No Chipotle	10/30/2014 7:40 AM
114	more public parking at the Wells' beaches	10/29/2014 7:16 PM
115	inconsistent zoning	10/29/2014 3:23 PM
116	High taxes	10/29/2014 1:25 PM
117	The roads need to be repaved	10/29/2014 12:48 PM
118	need a wendys	10/29/2014 12:36 PM
119	There's no KFC/Taco Bell	10/29/2014 12:31 PM
120	The 35mph zone near the fire house on the way to Sanford should be 50mph zone	10/29/2014 12:25 PM
121	Animal Kingdom	10/29/2014 12:23 PM
122	Speed limit is too slow	10/29/2014 12:23 PM
123	Speed Limits are too slow.	10/29/2014 12:22 PM
124	Rid the streets of officer shaw	10/29/2014 12:22 PM
125	more businesses	10/29/2014 12:21 PM
126	Need more stores	10/29/2014 12:17 PM
127	No Downtown	10/29/2014 12:16 PM
128	Trailer houses are allowed outside of trailer parks and make some roads look shitty.	10/29/2014 12:13 PM
129	It's too boring for the active generation. Have more festivals, fairs, and concerts.	10/29/2014 12:13 PM
130	We have no center	10/29/2014 12:10 PM

131	Not exactly and issue, but I think it would be fantastic to have a public park with grass, paths, benches and maybe even a duck pond.	10/29/2014 11:48 AM
132	I think we should establish a community concert hall, where events, plays(dramatic theater), etc., can be held. We currently have no location where such events can happen.	10/29/2014 11:46 AM
133	Wells needs to pay more attention to student's needs, although that is not just the towns responsibility, the schools as a whole need to know what is going on. Not just with students drug use, but also eating disorders, self harm, suicidal thoughts,etc.	10/29/2014 11:45 AM
134	.	10/29/2014 11:44 AM
135	Developing a closer sense of community, possibly by improving the downtown area	10/29/2014 11:44 AM
136	Wells should stay a small coastal town and should not turn into a city with these new developments.	10/29/2014 11:44 AM
137	Public safety	10/29/2014 11:43 AM
138	New construction of residential areas	10/29/2014 11:43 AM
139	Pedestrian space and safety along areas such as Atlantic Ave.	10/29/2014 11:43 AM
140	Small crimes	10/29/2014 11:42 AM
141	The history in wells should be preserved and promoted	10/29/2014 11:40 AM
142	Better sidewalks for pedestrians and bikers along Route One	10/29/2014 11:40 AM
143	The Route One area could certainly benefit from crosswalks	10/29/2014 11:39 AM
144	Disorganization of the town itself	10/29/2014 11:38 AM
145	More funding for the schools	10/29/2014 11:38 AM
146	Rising drug and alcohol use (due to there being very few things for youth to do in Wells)	10/29/2014 11:38 AM
147	,	10/29/2014 11:38 AM
148	youth activities...I am favor of expanded library hours, but not for free babysitting of kids. parents needs to something for them to do besides loitering at the library or cumberland farms.	10/29/2014 10:39 AM
149	need an ice skating rink	10/29/2014 9:06 AM
150	I fucking hate canadian tourists	10/29/2014 9:00 AM
151	NO MORE SEASONAL COTTAGES	10/29/2014 8:57 AM
152	No chipotle	10/29/2014 8:56 AM
153	All of the Condos being built behind Rite Aid and Mikes Clam Shack will hurt the motels' business in Wells	10/29/2014 8:55 AM
154	There could be more sidewalks.	10/29/2014 8:54 AM
155	More weed smoking spots xD	10/29/2014 8:53 AM
156	stop building more houses	10/29/2014 8:53 AM
157	Indoor gym for year round use to promote healthy alternatives to drugs and alcohol for youth	10/29/2014 8:52 AM
158	More sidewalks along major roads	10/29/2014 8:52 AM
159	not enough housing for tourists	10/29/2014 8:52 AM
160	Lack of a downtown area	10/29/2014 8:51 AM
161	the money we wasted on the clock	10/29/2014 8:50 AM
162	n/a	10/29/2014 8:48 AM
163	put an exit between wells and sanford	10/29/2014 8:47 AM
164	Lack of winter revenue	10/29/2014 8:46 AM
165	it's dangerous to walk on the side of the road so there needs to be more sidewalks	10/29/2014 8:46 AM

166	I don't know	10/29/2014 8:44 AM
167	Not having enough well-known restaurants	10/29/2014 8:44 AM
168	no comment	10/29/2014 8:43 AM
169	need an ice skating rink	10/29/2014 8:39 AM
170	pave lindsey road	10/29/2014 8:06 AM
171	More town activities where families can partake in.	10/29/2014 7:59 AM
172	more shopping areas	10/29/2014 7:59 AM
173	need less tourists	10/29/2014 7:59 AM
174	Walking safety for pedestrians in busy areas of town	10/29/2014 7:58 AM
175	There should be more areas where families can go for some down time, like parks or fields.	10/29/2014 7:57 AM
176	The intersection of route 1 and Chapel Road should have a street light.	10/29/2014 7:57 AM
177	More sidewalks around town	10/29/2014 7:56 AM
178	There should be a Gamestop store somewhere in town to help the town's local gamer's in the distance they need to travel to acquire their gaming needs.	10/29/2014 7:55 AM
179	too many ugly three seasons condominiums in ridiculous placeses	10/29/2014 7:55 AM
180	I feel we don't need to keep building so many random houses when there are so many others for sale	10/29/2014 7:55 AM
181	traffic on the maine turnpike	10/29/2014 7:54 AM
182	Pave roads that are bad.	10/29/2014 7:53 AM
183	Not enough community events.	10/29/2014 7:52 AM
184	The beach	10/29/2014 7:51 AM
185	N/A	10/29/2014 7:51 AM
186	rain is too wet	10/29/2014 7:50 AM
187	Need a downtown	10/28/2014 4:15 PM
188	Extension of Old County Rd. to Rte 9B or Chapel Rd to provide alternate route for residents to circumvent Rte 1 traffic.	10/28/2014 2:25 PM
189	maintaining tourist visits	10/28/2014 2:20 PM
190	preserve the harbor getting the public out of the boating traffic	10/28/2014 12:37 PM
191	disruption of wildlife	10/28/2014 12:12 PM
192	football	10/28/2014 12:08 PM
193	Sidewalks	10/28/2014 12:07 PM
194	Rochies Fatness clogs route one	10/28/2014 12:06 PM
195	Create new year-round business opportunities	10/28/2014 10:40 AM
196	stop wasting money	10/28/2014 10:32 AM
197	We need bigger businesses and more year round income sources	10/28/2014 8:54 AM
198	lindsay road, off of sanford road and 9a needs to be repaved	10/28/2014 8:48 AM
199	no skateparks	10/28/2014 8:48 AM
200	programs for teenagers who don't fit into after school activities	10/28/2014 8:47 AM
201	cx.kvjhdaf;khj;kdfhj	10/28/2014 8:42 AM
202	wendys	10/28/2014 8:37 AM

203	asjkl;	10/28/2014 8:37 AM
204	The trash company, Not being able to have regular trash pick ups.	10/28/2014 8:36 AM
205	Create a downtown area along Harbor Rd not Sanford Road	10/28/2014 8:14 AM
206	Too many multi unit condos	10/28/2014 5:53 AM
207	Education	10/27/2014 7:24 PM
208	Help local businesss by improving tourism	10/27/2014 7:18 PM
209	Monitor the spread of business in residential neighborhoods.	10/27/2014 6:40 PM
210	Too much growth of the wrong sort (big business, box stores, etc) and it's risk of increasing crime by attracting too many year round "non-locals"	10/27/2014 5:08 PM
211	Stop seasonal residence construction. Where do you think the traffic is coming from?	10/27/2014 2:32 PM
212	Merging lanes at the highway intersection.	10/27/2014 1:19 PM
213	the lack of small businesses	10/27/2014 1:18 PM
214	less cops	10/27/2014 1:15 PM
215	We dont need so many cops	10/27/2014 1:15 PM
216	WE need better food	10/27/2014 1:12 PM
217	Some of the roads needs paving. To many pot holes.	10/27/2014 1:12 PM
218	too many houses for sale and not for rent!	10/27/2014 1:11 PM
219	The bragdon boys	10/27/2014 1:11 PM
220	shopping mall	10/27/2014 1:09 PM
221	Construction	10/27/2014 1:09 PM
222	not having public parks for people to go to	10/27/2014 1:09 PM
223	shopping malls	10/27/2014 1:09 PM
224	we need more sidewalks and pedestrian friendly ways of transportation.	10/27/2014 1:08 PM
225	people	10/27/2014 1:07 PM
226	more sidewalks	10/27/2014 1:04 PM
227	We are slowly becoming a city not a town	10/27/2014 1:04 PM
228	traffic	10/27/2014 1:02 PM
229	add a round about at the mile road where it connects to route one--bad traffic management. Augusta residents move a great deal of traffice thru their two traffic circles and it works just fine.	10/27/2014 12:23 PM
230	The road conditions on the back roads of wells like bald hill are very bad.	10/27/2014 10:51 AM
231	More business needed	10/27/2014 10:50 AM
232	We need more sports fields, too many teams are using one field so there is no practice space.	10/27/2014 10:50 AM
233	No skate park	10/27/2014 10:49 AM
234	Road Decay	10/27/2014 10:48 AM
235	Too many tourists, pushes residents away.	10/27/2014 10:48 AM
236	Wells could use a downtown area	10/27/2014 10:48 AM
237	Wells needs a downtown area.	10/27/2014 10:47 AM
238	not sure	10/27/2014 10:47 AM
239	Lack of sidewalks	10/27/2014 10:46 AM

240	not enough big corporations	10/27/2014 10:46 AM
241	lack of sidewalks	10/27/2014 10:46 AM
242	Some of the back roads need to be redone	10/27/2014 10:45 AM
243	nothing	10/27/2014 10:45 AM
244	teen/kid activities year round and seasonal	10/27/2014 10:44 AM
245	Don't know	10/27/2014 10:44 AM
246	Better High school	10/27/2014 10:43 AM
247	Better High School	10/27/2014 10:43 AM
248	Events for Military/ Vets	10/27/2014 10:42 AM
249	five guys	10/27/2014 9:53 AM
250	Maine Indoor Carting next to Hannahford	10/27/2014 9:51 AM
251	WE NEED A WENDYS!!!!!!	10/27/2014 9:51 AM
252	WENDYS!!!!!!!	10/27/2014 9:50 AM
253	More dog parks	10/27/2014 9:49 AM
254	We need a "Five Guys"	10/27/2014 9:49 AM
255	more things to do in winter	10/27/2014 9:48 AM
256	No five guys in wells	10/27/2014 9:48 AM
257	Traffic	10/27/2014 9:47 AM
258	WE NEED A WENDY'S AND OTHER FOOD RESTAURANTS	10/27/2014 9:47 AM
259	More community events	10/27/2014 9:47 AM
260	Not enough things/places to do for teens or kids. Eating seems to be only thing to do.	10/27/2014 9:47 AM
261	Traffic on route 1	10/27/2014 9:47 AM
262	We need more activities that appeal to teenagers that last year round.	10/27/2014 9:44 AM
263	=	10/27/2014 9:42 AM
264	More activities are needed	10/27/2014 9:42 AM
265	route 1 is too packed in the summer	10/27/2014 9:41 AM
266	Design standards are needed for commercial buildings along Rts 1 and 109	10/27/2014 9:28 AM
267	Baseball field is invaded by "football players"	10/27/2014 8:50 AM
268	too much construction of new seasonal buildings	10/27/2014 8:50 AM
269	Parking at WHS	10/27/2014 8:45 AM
270	Chapel Road traffic on each end	10/27/2014 8:45 AM
271	the amount of condos and cottages put up in the town along route one makes the town look very trashy.	10/27/2014 8:43 AM
272	How summer is the only part of the year where most business make most of their money.	10/27/2014 8:42 AM
273	stores closing in winter	10/27/2014 8:41 AM
274	Road maintenance	10/27/2014 8:40 AM
275	Beach Traffic	10/27/2014 8:39 AM
276	resturants	10/27/2014 8:36 AM
277	Handling the seasonal influx of tourists more effectively, and encouraging them to spend their money here.	10/27/2014 7:51 AM

278	Beach parking could be bigger in some areas of town	10/27/2014 7:51 AM
279	We need more Athletic Fields	10/27/2014 7:51 AM
280	Side Walks on Route one	10/27/2014 7:49 AM
281	Too many mexicans (cartel).	10/27/2014 7:47 AM
282	Route one traffic	10/27/2014 7:47 AM
283	Bigger Harbor Capacity	10/27/2014 7:42 AM
284	N/A	10/27/2014 7:42 AM
285	Make a starbucks	10/27/2014 7:42 AM
286	Build an airport. With a chipotle inside.	10/27/2014 7:41 AM
287	too many cottages located right on route 1, adds to traffic.	10/27/2014 7:41 AM
288	over building	10/26/2014 10:46 PM
289	Open up Condos and Townhouses to year round residence (with exception to those as hotel.motel units)	10/26/2014 12:27 PM
290	Superfluous development and subsequent destruction of natural resources and beauty	10/26/2014 11:07 AM
291	Seasonal concerns put over those of us who live here! Sidewalks are not for those who live here. Beach passes should be for those who live here FIRST and then to those who come for the summer. The beach area has become hony tonk.	10/26/2014 9:40 AM
292	fix the sidewalks on Atlantic Avenue	10/26/2014 7:45 AM
293	lack of a "downtown"	10/25/2014 2:04 PM
294	Development of the transportation center	10/25/2014 10:19 AM
295	not sure	10/25/2014 7:56 AM
296	Entrance to center of Wells at Routes 109 & 1 is the least visually pleasing town entrance in all of Maine. Two pizza joints, junk cars around Brown's garage, and sitting at the light facing an old Cumberland Farms gas store implies "no zoning" here!	10/24/2014 7:50 PM
297	Taxes	10/24/2014 2:32 PM
298	Year-round residents as a priority-- the focus of our town government (especially as regards land development and use) should not be to attract tourists. They will come to our beautiful town anyway!	10/24/2014 2:26 PM
299	Successful completion of the WHS expansion and renovation project	10/24/2014 2:14 PM
300	More quality programs for children	10/24/2014 1:38 PM
301	More public parking lots for the beach, possibly along Atlantic Ave?	10/24/2014 1:36 PM
302	Town identity. I'd like to see more events that bring the town together. Festivals, fairs, fireworks, citizens often go elsewhere for these. I moved from Portsmouth, NH to Wells. The sense of community could be so much stronger in Wells.	10/24/2014 1:02 PM
303	Lack of affordable rental properties for single income people/families	10/24/2014 12:32 PM
304	conservation of land resources- limiting development-	10/24/2014 8:56 AM
305	Extend the season for seasonal owners from April 1 to November 1.	10/24/2014 8:07 AM
306	Downtown	10/24/2014 1:04 AM
307	Further developing the town's cultural offerings	10/23/2014 2:58 PM
308	transition to renewable energy for all public buildings and activities	10/23/2014 1:23 PM
309	Limiting seasonal condo permits and residential permits	10/22/2014 8:07 PM
310	Losing precious property to out of staters - need a moratorium on building;	10/22/2014 2:27 PM
311	no more housing developments!	10/22/2014 2:19 PM

312	Growth	10/22/2014 5:09 AM
313	Too many seasonal houses	10/21/2014 10:58 PM
314	Turnpike intersection (specifically on and off ramp into tolls)	10/21/2014 9:03 PM
315	Repairing Furbish Rd	10/21/2014 7:21 PM
316	downtown development that doesn't impede traffic	10/21/2014 4:11 PM
317	Need access to more energy options, such as natural gas	10/21/2014 2:39 PM
318	I do not think wells needs anymore seasonal cottages or condominiums. There should have been a moratorium on them 10 years ago. Seasonal should mean 6mos. The town is saturated and the most currently built ones detract from the beauty of Wells.	10/21/2014 11:04 AM
319	Turnpike on/off ramp congestion	10/20/2014 9:58 PM
320	architectural and landscaping standards along Route 1 that promote small-town, "Main Street" character	10/20/2014 9:17 PM
321	There is no downtown	10/20/2014 8:15 PM
322	Sidewalks	10/20/2014 6:33 PM
323	Density of cottage/condominium homes that continue to cause traffic problems on route 1.	10/20/2014 5:55 PM
324	Sidewalks, sidewalks, sidewalks! The walking pedestrian should be a level above the traffic; making them more visible to drivers.	10/20/2014 5:53 PM
325	Lack of ordinances for signage for businesses. Neon signs are unsightly and look like city living.	10/20/2014 5:12 PM
326	Junky areas along major roads that make us look like boonie-ville	10/20/2014 3:02 PM
327	Our town does not look like the surrounding towns. We allow too much commercialized signage, we do not have routine landscape maintenance or pretty landscape for that matter. Recent landscape to the "Gateway" was embarrassing.	10/20/2014 2:47 PM
328	Year-round housing	10/20/2014 2:12 PM
329	More fields for all the sports.	10/20/2014 1:48 PM
330	Develop a more integrated use of our extensive natural resources that are the draw for tourists to allow for easy and multiple points of access (i.e. pedestrian bridges and bike paths from the harbor to the beaches)	10/20/2014 12:49 PM
331	Community center / downtown for community strengthening of town feel, which may promote resident loyalty	10/20/2014 12:46 PM
332	No new fire equipment	10/20/2014 12:30 PM
333	Aquiring and sustaining new businesses	10/20/2014 11:58 AM
334	Expanding more local business	10/20/2014 11:49 AM
335	Overabundance of seasonal "cottages"	10/20/2014 11:36 AM
336	More support for Year Round Residents	10/20/2014 11:09 AM
337	Downtown area	10/20/2014 11:04 AM
338	Develop the commercial areas and expand the commercial zoning near Rt 1 and 109	10/20/2014 10:57 AM
339	We don't have a downtown	10/20/2014 10:54 AM
340	threat of over commercialization	10/20/2014 10:50 AM
341	no downtown	10/20/2014 10:41 AM
342	not sure	10/20/2014 10:29 AM
343	Quality of education	10/20/2014 10:07 AM
344	We need to encourage young families to move to town. To do this, we need more and better recreational facilities and programs.	10/20/2014 9:44 AM
345	Lack of a true downtown area like Ogunquit or York Beach	10/20/2014 9:44 AM

346	More of a downtown area feeling	10/20/2014 9:26 AM
347	Step up strict zoning on the way our buildings and businesses present themselves along the major roads. I work in Kennebunk on rt 1. It is much nicer and they are very strict.	10/20/2014 9:17 AM
348	More commercial businesses.	10/20/2014 9:16 AM
349	Sanford road and route 1 turn by Alfredo's, Cumberland farms, and the police department.	10/20/2014 9:14 AM
350	Safety issues in bicycling and walking due to current traffic speeds and lack of bicycle and walking lanes.	10/20/2014 8:36 AM
351	no more 3 season units, they are being squeezed in. If they look unatractive brand new, just think how they will look in 5-10 years as they weather.	10/19/2014 8:48 PM
352	Do not add another turnpike exit in Wells! The exit should be placed in Ogunquit!	10/19/2014 7:29 PM
353	More beach parking	10/19/2014 3:59 PM
354	Follow Ogunquit and Kennebunk(s) zoning for commercial signs. Get rid of electric signs, excessive signs (those blue ones that are everywhere), excessively large signs, etc. We have created a competition for bigger and bigger signs. We resemble Saugus!	10/19/2014 12:30 PM
355	STOP BUILDING CONDOS ON ROUTE 1	10/19/2014 11:56 AM
356	Anti views against non resident real estate owners	10/19/2014 10:14 AM
357	Blinking light crosswalks across route one to junior high	10/19/2014 9:09 AM
358	Get school budget under control. Don't allow new school to last only 35 years like existing one. Should last 75 years plus	10/19/2014 8:23 AM
359	We need more police presence on the quieter roads, to prevent speeding drivers from possibly endangering families while walking.	10/18/2014 9:58 PM
360	Seasonal residents using our resources	10/18/2014 2:07 PM
361	Encourage the development of a town square the Rt1 & 109 interection that fosters the center as an area for entertainment and nightlife.	10/18/2014 12:04 PM
362	Sidewalks along route one with flashing crosswalk lights	10/18/2014 10:58 AM
363	finding a balance between small town pride and local government telling me everything thing I can do or not do to my home and business	10/18/2014 10:29 AM
364	Addition access to route 95 between Wells & Ogunquit	10/17/2014 7:09 PM
365	no more seasonal cottages	10/17/2014 4:59 PM
366	Encouragement of commercial tax producing industries	10/17/2014 4:58 PM
367	lack of town center	10/17/2014 4:47 PM
368	lack of central "downtown" or village area	10/17/2014 4:18 PM
369	Lack of initiative to develop alternative energy resources for our community.	10/17/2014 3:58 PM
370	I believe that the town has to develope a center that is visible to tourists. We are the ugly duckling between Ogunquit and Kennebunk/port	10/17/2014 3:08 PM
371	Maintain and plow in the winter ALL sidewalks and shovel out all places where there are lights for people to PUSH to cross route 1	10/17/2014 1:04 PM
372	Cars,people, and bikes sharing Webhannet and Atlantic during the summer season.	10/17/2014 1:03 PM
373	the need to keep taxes from increasing to pay for nonessential town improvements and added expensses.	10/17/2014 12:41 PM
374	cost of school system	10/17/2014 8:36 AM
375	Prevent more seasonal high density condo development	10/17/2014 7:14 AM
376	No center of town- no "Down Town"	10/16/2014 11:34 PM
377	Conservation of land	10/16/2014 8:52 PM

378	Maintain rural feel	10/16/2014 8:51 PM
379	Need to build road from Chapel Road to route one	10/16/2014 8:28 PM
380	development of some sort of "community center" (like Kennebunk and Ogunquit) that is pedestrian-friendly	10/16/2014 7:53 PM
381	establishing sidewalks on route 1	10/16/2014 7:51 PM
382	Establish a moritorium for architectural standards along Rt. 1 to stay consistant with early New England architectural appearance for any new construction or renovations.	10/16/2014 5:54 PM
383	Develop a downtown area with walking access connection to train station	10/16/2014 4:36 PM
384	get the public out of the harbor boat traffic	10/16/2014 4:13 PM
385	Need to complete the rail trail	10/16/2014 4:11 PM
386	Safer walking access to our beaches	10/16/2014 3:49 PM
387	The number of seasonal cottages and size of cottage communities should be limited.	10/16/2014 3:29 PM
388	the need for a town center	10/16/2014 3:12 PM
389	Stop the building of these seasonal cottage communities. It is taking away from the family atmosphere of the town. We are becoming a playground for the wealthy.	10/16/2014 2:00 PM
390	limit number of condo complexes	10/16/2014 2:00 PM
391	we are a Beach community and we have to make our town attractive to visitors that will want to come back year after year	10/16/2014 1:38 PM
392	Municipal and beach facilities	10/16/2014 12:02 PM
393	no answer	10/8/2014 3:48 PM
394	Keep taxes low	10/8/2014 3:32 PM

#	2.	Date
1	Clean up mich mash of styles along route one	1/4/2015 7:27 PM
2	Walking/biking bridge to wells beach jetty from harbor rd	1/3/2015 5:45 PM
3	no more condos on rte 1	12/28/2014 5:22 PM
4	Cap seasonal hotel rooms	12/28/2014 12:51 PM
5	More bike paths away from cars/traffic	12/26/2014 10:32 AM
6	Preserving the historical, visual character of Wells by regulating the architecture of new and renovated structures	12/18/2014 9:46 AM
7	no housing for elderly	12/16/2014 2:08 PM
8	Need to create and enforce landscaping and building upkeep along route 1	12/12/2014 9:22 PM
9	a	11/30/2014 11:46 AM
10	sidewalks along Rte. 1 and "downtown"	11/25/2014 2:00 PM
11	building sidewalks near commerical and campsite locations due to additional foot and car traffic	11/24/2014 7:43 AM
12	additional recreational opportunities / courts at recreation facility	11/21/2014 5:26 PM
13	parking	11/21/2014 2:04 PM
14	Chapel Road traffic	11/21/2014 2:04 PM
15	working wiht the waterfront landowners; if the frontal homes and dunes are breached - the rest will soon follow -	11/20/2014 9:54 AM
16	Social Services could be increased to better meet those in need	11/19/2014 10:51 AM
17	sidewalks + architectural lighting along route one - from where it ends now all the way through to Ogunquit, where it's met again. More well-lit sidewalks encourages "community", health/wellness and would/could decrease vehicle omissions - there must be a federal grant for that!	11/18/2014 9:13 PM

18	Conserve more land.	11/18/2014 7:36 AM
19	Lack of indoor recreation facilities for youth	11/17/2014 8:24 PM
20	Route 1 development and how trashy it makes the town look	11/14/2014 3:25 PM
21	Resource protection, especially our rivers - setbacks must be increased to that water quality and wildlife protection are top priorities. The prevalence of 100-year (and 25-year) storms is increasing due to climate change; the town's regulations are outdated.	11/14/2014 12:48 PM
22	Curb residential development.through building permits moritoriums	11/14/2014 7:16 AM
23	Creating and maintaining a greater sense of year round community values in a seasonal resort town	11/13/2014 7:52 PM
24	TRAFFIC LIGHTS BY THE STEAKE HOUSE	11/13/2014 7:15 PM
25	Conservation	11/12/2014 10:01 PM
26	Plan for a downtown	11/12/2014 10:31 AM
27	stop the irresponsible over development and seasonal cottage sprawl and protect the remaining natural areas	11/11/2014 12:42 PM
28	More new ways	11/10/2014 2:04 PM
29	Needed road improvement	11/9/2014 8:17 PM
30	More business (stores)	11/9/2014 1:06 PM
31	Sustainability, green building, and protecting natural resources and habitats	11/7/2014 8:50 PM
32	A quaint "downtown" area would be nice but where would one fit?	11/7/2014 2:23 PM
33	Make improvments to the Parks and Rec Area	11/7/2014 1:40 PM
34	Increasing build of "condos" along route one, but not beneficial businesses	11/7/2014 11:20 AM
35	Develop a downtown/village area as Kennebunk and York have	11/6/2014 7:20 PM
36	more year round businesses	11/6/2014 1:04 PM
37	Attracting young families	11/5/2014 8:21 PM
38	Better access to bay by the Atlantic Ave parking lot - ramp or stairs should be installed	11/5/2014 4:04 PM
39	More Avail.for Fair Rents	11/5/2014 2:48 PM
40	Economic Development	11/5/2014 11:13 AM
41	Lack of green space and vistas along Route One.	11/5/2014 9:40 AM
42	Upgrading our Harbor Area	11/5/2014 8:51 AM
43	and pay their share which has not happened. And I can show you this is true.	11/4/2014 11:17 PM
44	Sidewalks	11/4/2014 9:54 PM
45	getting more culture and year round activities	11/4/2014 3:46 PM
46	youth programs	11/4/2014 10:42 AM
47	sprawl development that degrades wildlife habitat and views	11/4/2014 8:39 AM
48	Why does it cost $3.00 to go one exit south on 95? This is ridiculous!!	11/4/2014 8:14 AM
49	Create a beautiful and attracting town center. Work on cleaning up Route 1! It's pieced together so poorly and is an eyesore for a coastal resort town.	11/4/2014 7:07 AM
50	Inability of emergency services to keep up with growing population	11/3/2014 10:38 PM
51	Balance housing needs: seniors, singles, affordable, etc.	11/3/2014 9:01 PM
52	fewer trailers and more residential homes	11/3/2014 7:07 PM
53	More Access and parking for Wells Beaches	11/3/2014 5:39 PM

54	More pedestrian friendly retail options in Wells. A more inviting "downtown" district is needed.	11/3/2014 4:29 PM
55	Cut back building and rebuilding at the beach	11/3/2014 12:51 PM
56	cultural	11/3/2014 12:17 PM
57	Need to separate commercial and residential locations to improve the look and therefore tourist visits	11/3/2014 8:16 AM
58	Lack of affordable housing for middle income families	11/3/2014 7:39 AM
59	Ddddd	11/2/2014 9:56 PM
60	more businesses are need for year round employment, not just seasonal	11/2/2014 6:41 PM
61	Cultural awareness - understanding the history of our Town, its settlement and the unique friendship forged with the American Indian residents.	11/1/2014 9:48 PM
62	Stop rte one housing development. All the new condos make us look over developed and desperate.	11/1/2014 8:14 PM
63	year-'round rentals reasonably priced	11/1/2014 5:27 PM
64	Year round housing	11/1/2014 4:04 PM
65	encourage year-round businesses	10/31/2014 10:54 PM
66	maintain open space and keep rural character of area west of route 1	10/31/2014 8:26 PM
67	Safety, sidewalks and more street lights	10/31/2014 6:02 PM
68	Clean up unsafe buildings throughout town, they are an eyesore and dangerous.	10/31/2014 4:13 PM
69	n/a	10/31/2014 2:53 PM
70	The need for natural gas to help with high energy costs	10/31/2014 2:11 PM
71	ugly structures along route 1	10/31/2014 12:20 PM
72	Littering, especially abandoned post election placards.	10/31/2014 9:00 AM
73	Year round higher paying jobs in town	10/30/2014 8:15 PM
74	increase business revenue	10/30/2014 6:30 PM
75	too many tourists	10/30/2014 4:31 PM
76	Wells needs a more traditional new england downtown area!	10/30/2014 3:43 PM
77	Sidewalks	10/30/2014 3:12 PM
78	Balance of commercial development with Maine beach town character. Route 1 incresingly looks like OOB... which is not good! Freeport is good model of commercial but quaint by design.	10/30/2014 1:09 PM
79	Light-up signs	10/30/2014 12:32 PM
80	Light up signs	10/30/2014 12:32 PM
81	No more house developments.	10/30/2014 12:31 PM
82	Too many condominiums	10/30/2014 12:28 PM
83	Lack of diversity.	10/30/2014 12:25 PM
84	Downtown wells is a good idea	10/30/2014 12:22 PM
85	the building of the apartments along route one that look terrible	10/30/2014 12:21 PM
86	conserving land	10/30/2014 12:17 PM
87	More walking/bike trails	10/30/2014 12:13 PM
88	traffic	10/30/2014 12:11 PM
89	It feels every year, tourism increases, more parking lots and sidewalks would be nice to reduce traffic.	10/30/2014 12:11 PM
90	sidewalks	10/30/2014 11:18 AM

91	locals paying to go to their own beach	10/30/2014 11:17 AM
92	We need a bakery!!!	10/30/2014 11:15 AM
93	Town Clock in a bad spot and A WASTE OF MONEY	10/30/2014 11:15 AM
94	Make the clock more visible	10/30/2014 11:14 AM
95	Humiliation from the town clock.	10/30/2014 11:14 AM
96	Funding for fire department	10/30/2014 11:13 AM
97	Route 109 and 9 traffic	10/30/2014 11:12 AM
98	maintenance of roads	10/30/2014 11:07 AM
99	N/A	10/30/2014 11:06 AM
100	the possible increase of taxes to wells residences due to the construction of the new high school	10/30/2014 10:50 AM
101	encourage more development on route 109 and 9 for more year round business	10/30/2014 10:19 AM
102	Continue to MAKE TOWN MORE PHYSICALLY ATTRACTIVE (like Kbunk, Kport and Ogt). Create quaint, walkable downtown/shopping/restaurant area at Wells Corner; consider other areas as well, such as land in front of Hannaford/former 7/11 site - parks?	10/30/2014 9:55 AM
103	Signage along route one is over done ,ugly and distracting from the beauty of Wells, traffic indicators hanging over route need to be removed	10/30/2014 9:21 AM
104	Road Quality (Specifically in Winter)	10/30/2014 7:51 AM
105	More street lights in lower traffic spots.	10/30/2014 7:51 AM
106	ebola	10/30/2014 7:49 AM
107	We need to conserve the woods areas.	10/30/2014 7:49 AM
108	Maybe more scenery along Route One.	10/30/2014 7:46 AM
109	Sidewalks and bike-ways	10/30/2014 7:46 AM
110	kids smoking pot	10/30/2014 7:43 AM
111	no chick-fil-a	10/30/2014 7:42 AM
112	no chick fila	10/30/2014 7:42 AM
113	No Chipotle	10/30/2014 7:40 AM
114	clean the beaches on a regular (daily?) basis	10/29/2014 7:16 PM
115	a	10/29/2014 3:23 PM
116	No more seasonal cottages	10/29/2014 1:25 PM
117	Route 1 traffic	10/29/2014 12:48 PM
118	need a game stop	10/29/2014 12:36 PM
119	There's no Wendy's	10/29/2014 12:31 PM
120	Look into fixing the quality of the roads. Many back roads have huge potholes and ice heaves	10/29/2014 12:25 PM
121	More central Downtown area	10/29/2014 12:23 PM
122	roads are bad	10/29/2014 12:23 PM
123	The town doesn't look good overall, there needs to be a downtown area in Wells to draw more attraction to the town.	10/29/2014 12:22 PM
124	I want an Animal Kingdom	10/29/2014 12:22 PM
125	zoo	10/29/2014 12:21 PM
126	.	10/29/2014 12:17 PM

127	Higher Standards for the buildings that are built in Wells	10/29/2014 12:16 PM
128	Trailer houses are allowed outside of trailer parks and make some roads look shitty.	10/29/2014 12:13 PM
129	Things aren't open late enough. Grocery stores should be open 24/7.	10/29/2014 12:13 PM
130	We don't have a lot of traspertation	10/29/2014 12:10 PM
131	It would be nice to have a little cafe near the high school where kids and go to hang out an study.	10/29/2014 11:48 AM
132	We ought to preserve beach land and marshland for the environment and for viewing. Route 1 could have a scenic view of the ocean but for housing developments.	10/29/2014 11:46 AM
133	Wells should get a public park with trees and benches, not a playground, but just a nice place to relax and spend time as a community.	10/29/2014 11:45 AM
134	Reducing dependence on high energy costs	10/29/2014 11:44 AM
135	Focusing on environmental concerns and adapting to eco-friendly alternatives	10/29/2014 11:44 AM
136	Preserving forests, beaches and nature is important.	10/29/2014 11:44 AM
137	small crimes	10/29/2014 11:43 AM
138	Lack of a downtown area like Ogunquit or York Beach	10/29/2014 11:43 AM
139	Maximizing Beach Parking and attendant efficiency.	10/29/2014 11:43 AM
140	Safety of residents	10/29/2014 11:42 AM
141	The land near the beach should be preserved for viewing and the protection of the animals in the marshal areas	10/29/2014 11:40 AM
142	More programs for the youth as well as athletic fields and recreational facilities.	10/29/2014 11:40 AM
143	KEEP ENVIRONMENT IN MIND! Be an environmentally sound community, and acknowledge the importance of the ocean and keeping it clean	10/29/2014 11:39 AM
144	Concentration of tourist activities during the summer but little to nothing during off-season	10/29/2014 11:38 AM
145	More public opinion on problems that surround all of the towns residents	10/29/2014 11:38 AM
146	There being very few activities for youth to do in Wells	10/29/2014 11:38 AM
147	,	10/29/2014 11:38 AM
148	preserve the community tax payers fund. STOP the SSM and low income project housing as a bribe to get a town center. We've heard it and sent a resounding NO already.	10/29/2014 10:39 AM
149	absolutely need a taco bell	10/29/2014 9:06 AM
150	We need year round Ice Cream	10/29/2014 9:00 AM
151	slow down on the development of the remaining woods left in wells	10/29/2014 8:57 AM
152	No chipotle	10/29/2014 8:56 AM
153	Need improved sidewalks on Route 1	10/29/2014 8:55 AM
154	Trying to add pointless things such as electronic signs.	10/29/2014 8:54 AM
155	We gotta stop them hoodlums!!!!	10/29/2014 8:53 AM
156	roads need to be fixed	10/29/2014 8:53 AM
157	We need to cut down on the shenanigans and rif raf	10/29/2014 8:52 AM
158	More public parks/playgrounds	10/29/2014 8:52 AM
159	not enough sight seeing. Which is why most tourists are drawn to ogunquit	10/29/2014 8:52 AM
160	an increase multiple season use units being developed	10/29/2014 8:51 AM
161	nothing else	10/29/2014 8:50 AM
162	n/a	10/29/2014 8:48 AM

163	more public entertainment areas	10/29/2014 8:47 AM
164	Terrible road conditions in half of town, side roads not considered	10/29/2014 8:46 AM
165	i dont know	10/29/2014 8:46 AM
166	I don't know	10/29/2014 8:44 AM
167	Traffic in summer	10/29/2014 8:44 AM
168	no comment	10/29/2014 8:43 AM
169	absolutely need a taco bell	10/29/2014 8:39 AM
170	put a dunkin donuts in the transportation center	10/29/2014 8:06 AM
171	Better beach maintenance.	10/29/2014 7:59 AM
172	better beach access	10/29/2014 7:59 AM
173	need more night life	10/29/2014 7:59 AM
174	Town cleanup and preservation of historic buildings and cemeteries	10/29/2014 7:58 AM
175	There are too many businesses, the town feels a bit cluttered.	10/29/2014 7:57 AM
176	The 4 way intersection of Branch Rd, 109, and Crediford Rd should just need stoplights instead of caution lights due to uncertainty sometimes.	10/29/2014 7:57 AM
177	Pot holes in the roads	10/29/2014 7:56 AM
178	The broken down building by Chase's Corner Store gas station needs to be either removed or fixed up.	10/29/2014 7:55 AM
179	back roads not wide enough for average cars	10/29/2014 7:55 AM
180	Trained dogs should be allows on beach year round as long as they are on a leash and you pick up after them	10/29/2014 7:55 AM
181	In front of hannafords it should be two lanes until stop light by irving	10/29/2014 7:54 AM
182	More year round businesses	10/29/2014 7:53 AM
183	Need more stores, food (not restaurants) and clothing stores.	10/29/2014 7:52 AM
184	Paved Roads	10/29/2014 7:51 AM
185	N/A	10/29/2014 7:51 AM
186	sun is too dry	10/29/2014 7:50 AM
187	Improved parking and sidewalks for the beaches	10/28/2014 4:15 PM
188	Provid more effective or frequent means of public transportation between Amtrac stationand surrounding areas.	10/28/2014 2:25 PM
189	maintaining tourist development	10/28/2014 2:20 PM
190	encourage more use of the gazebo, again getting the public away from the docks and ramps	10/28/2014 12:37 PM
191	student learning	10/28/2014 12:12 PM
192	football	10/28/2014 12:08 PM
193	Lack of stuff to do	10/28/2014 12:07 PM
194	Add a third drive thru order taker at mcdonalds for Rochie	10/28/2014 12:06 PM
195	Preserve land	10/28/2014 10:40 AM
196	*	10/28/2014 10:32 AM
197	Bull Moose	10/28/2014 8:54 AM
198	we need more dirt roads for drifting	10/28/2014 8:48 AM
199	rallycar track	10/28/2014 8:48 AM

200	making a teen center	10/28/2014 8:47 AM
201	kdfjhv;kdjfvkjb	10/28/2014 8:42 AM
202	bestbuy	10/28/2014 8:37 AM
203	asdfghjkl	10/28/2014 8:37 AM
204	More fast food places	10/28/2014 8:36 AM
205	Allow resident one beach parking sticker to be used on any vehicle registered to property owner	10/28/2014 8:14 AM
206	Not enough open space along beaches to appreciate views	10/28/2014 5:53 AM
207	Senior Citizens	10/27/2014 7:24 PM
208	Expand cultural and recreational facilties for town youth	10/27/2014 7:18 PM
209	Monitor compliance with the 3 vehicles per property ordinance.	10/27/2014 6:40 PM
210	Keeping the small town integrity by preserving historical houses/buildings	10/27/2014 5:08 PM
211	STOP RAISING TAXES FOR EXISTING BEACH AREA HOMES! Very hard for retirees to keep up!	10/27/2014 2:32 PM
212	police brutality	10/27/2014 1:19 PM
213	the lack of historic education of wells maine	10/27/2014 1:18 PM
214	bragdon boys are a problem	10/27/2014 1:15 PM
215	roads need to be paved	10/27/2014 1:15 PM
216	roads need to be repaved	10/27/2014 1:12 PM
217	Black cop cars.	10/27/2014 1:12 PM
218	destruction of maine woods	10/27/2014 1:11 PM
219	speed limits are to slow	10/27/2014 1:11 PM
220	Walmart	10/27/2014 1:09 PM
221	some roads should be paved	10/27/2014 1:09 PM
222	having more side walks though out the though out the town of wells	10/27/2014 1:09 PM
223	walmart	10/27/2014 1:09 PM
224	There needs to be more attractions and forms of entertainment. There is almost nothing to do in this town.	10/27/2014 1:08 PM
225	people	10/27/2014 1:07 PM
226	more restaurants	10/27/2014 1:04 PM
227	/	10/27/2014 1:04 PM
228	sidewalks	10/27/2014 1:02 PM
229	too many people worrying about too many things--slow down	10/27/2014 12:23 PM
230	Better coaching for youth programs.	10/27/2014 10:51 AM
231	none	10/27/2014 10:50 AM
232	More houses or business along North Berwick road because it is so empty	10/27/2014 10:50 AM
233	Roads are terrible	10/27/2014 10:49 AM
234	none	10/27/2014 10:48 AM
235	Don't emphasize on fitness	10/27/2014 10:48 AM
236	More sidewalks	10/27/2014 10:48 AM
237	Wells needs more sidewalks.	10/27/2014 10:47 AM

238	not sure	10/27/2014 10:47 AM
239	Too many seasonal businesses	10/27/2014 10:46 AM
240	Very few job opportunities	10/27/2014 10:46 AM
241	too many seasonal buisnesses	10/27/2014 10:46 AM
242	Hiltons Lane is one of the worst roads in wells, needs to be redone	10/27/2014 10:45 AM
243	nothing	10/27/2014 10:45 AM
244	need more site seeing options	10/27/2014 10:44 AM
245	don't know	10/27/2014 10:44 AM
246	Better high school	10/27/2014 10:43 AM
247	Traffic in the summer	10/27/2014 10:43 AM
248	Town Pride	10/27/2014 10:42 AM
249	wendys	10/27/2014 9:53 AM
250	No Five Guys	10/27/2014 9:51 AM
251	More fun things to do and go	10/27/2014 9:51 AM
252	Concerts geared towards teenagers/high schoolers	10/27/2014 9:50 AM
253	equality	10/27/2014 9:49 AM
254	We need a Sports Complex	10/27/2014 9:49 AM
255	more things to do in summer	10/27/2014 9:48 AM
256	Need seperate fields for sports	10/27/2014 9:48 AM
257	No good places to go out to eat	10/27/2014 9:47 AM
258	stores like best buy, target, tjmaxx etc...	10/27/2014 9:47 AM
259	Bragdon boys	10/27/2014 9:47 AM
260	The traffic next to autoland builds up quickly.	10/27/2014 9:47 AM
261	There isnt an Sports building in Wells	10/27/2014 9:47 AM
262	We need more chain restaraunts.	10/27/2014 9:44 AM
263	=	10/27/2014 9:42 AM
264	The police force is too large.	10/27/2014 9:42 AM
265	Faster travel to the other side of wells	10/27/2014 9:41 AM
266	Absolute (no voilation) setbacks of 200 ft along Merriland and Webhannet rivers	10/27/2014 9:28 AM
267	no opinion	10/27/2014 8:50 AM
268	need to take preservation of natural land more seriously	10/27/2014 8:50 AM
269	Not enough stoplights	10/27/2014 8:45 AM
270	Side Walks	10/27/2014 8:45 AM
271	we should save as much woods as we can and make sure no one can build on them.	10/27/2014 8:43 AM
272	More Sidewalks along the beach, so people can feel safer.	10/27/2014 8:42 AM
273	back roads are bad	10/27/2014 8:41 AM
274	lack of development	10/27/2014 8:40 AM
275	Ruralness	10/27/2014 8:39 AM

276	stores	10/27/2014 8:36 AM
277	Developing and maintaining public spaces, not only to make it more appealing to tourists, but to enhance local pride for the town of Wells. (A good example of this would be the recent work on Wells Corner.)	10/27/2014 7:51 AM
278	Respect and opinions towards fall sports besides football (see field hockey, soccer, and cross country)	10/27/2014 7:51 AM
279	Need more parks and fields	10/27/2014 7:51 AM
280	Athletic Fields	10/27/2014 7:49 AM
281	Too many arabs (terrorists).	10/27/2014 7:47 AM
282	Router one traffic	10/27/2014 7:47 AM
283	New Public Restrooms at the beach	10/27/2014 7:42 AM
284	N/A	10/27/2014 7:42 AM
285	Make a panera	10/27/2014 7:42 AM
286	Build a starbucks	10/27/2014 7:41 AM
287	Beaches aren't up kept like they should be, stairs/railings need to be redone.	10/27/2014 7:41 AM
288	building more year round homes	10/26/2014 10:46 PM
289	More focus on education and helping schools meet the needs of each and every child in the school system	10/26/2014 12:27 PM
290	Poor maintenance of roads	10/26/2014 11:07 AM
291	Too much reliance on tourism and the ruining of the Route 1 corrider because of greedy developers (who don't live here and spend thier profits elsewhere!).	10/26/2014 9:40 AM
292	do not change 6 to 9 months on cottages	10/26/2014 7:45 AM
293	Wells does not have as nice of an appearance or the "heart" of a downtown as it's N & S neighbors - Kennebunk & Ogunquit	10/25/2014 2:04 PM
294	Getting more industry besides vacation facilities	10/25/2014 10:19 AM
295	not sure	10/25/2014 7:56 AM
296	The cottage communities have destroyed any community or historic character of the town. Ogt. & Kennebunk have controlled development while Wells ran amuck.	10/24/2014 7:50 PM
297	Schools	10/24/2014 2:32 PM
298	Loss of farmland, open space, and forest	10/24/2014 2:26 PM
299	Keeping property taxes down for year round residents	10/24/2014 2:14 PM
300	we have amazing schools and I would love to see our teachers treated even better in terms of compensation to keep them!	10/24/2014 1:38 PM
301	The creation of Eastern Trails pedestrian walkway in Wells	10/24/2014 1:36 PM
302	It's important to keep the Town of Wells, the "Town" of Wells. I would hate to see big business come in. I live in Wells because it is not Biddeford.	10/24/2014 1:02 PM
303	I	10/24/2014 12:32 PM
304	Maintain excellent schools and services for children and youth	10/24/2014 8:56 AM
305	Allow Wells owners the use of Ogunquit Beach with their Wells Beach Passes.	10/24/2014 8:07 AM
306	Sidewalks	10/24/2014 1:04 AM
307	Creating jobs that are environmentally friendly and not just seasonal	10/23/2014 2:58 PM
308	planning for increasing sea levels	10/23/2014 1:23 PM
309	Keeping out big box stores and limiting light industrial	10/22/2014 8:07 PM

310	Protect historical buildings in town, such as the Moulton store; and	10/22/2014 2:27 PM
311	no more seasonal condos	10/22/2014 2:19 PM
312	Housing	10/22/2014 5:09 AM
313	Too many new year round houses being built	10/21/2014 10:58 PM
314	Road quality west of Rt 1	10/21/2014 9:03 PM
315	The Center of Town should be more attactive. Where 109 meets Rte 1	10/21/2014 7:21 PM
316	comprehensive beach traffic policy	10/21/2014 4:11 PM
317	Ability of residents to use beach parking lots (especially on weekends)	10/21/2014 2:39 PM
318	While I understand the importance of tourism for the town, I think it is equally important that the town focus on making its year round community more of a priority by creating a downtown area and preserving the natural areas that we have left.	10/21/2014 11:04 AM
319	Potential for over-development	10/20/2014 9:58 PM
320	development of year-round business conference center with amenities and accessible for community events	10/20/2014 9:17 PM
321	Nothing to draw vacationers to Wells during the winter and early spring seasons.	10/20/2014 8:15 PM
322	Speed/traffic enforcement	10/20/2014 6:33 PM
323	Priority parking and access for residents over tourists to beaches as well as restricting height of homes and design of homes on beaches.	10/20/2014 5:55 PM
324	Residential codes. Houses in the beach area with 3 levels plus a garage on a tiny lot is ridiculous .	10/20/2014 5:53 PM
325	Lack of a town center and common space.	10/20/2014 5:12 PM
326	The roads are getting HIDEOUS. They're falling apart!!	10/20/2014 3:02 PM
327	Our town is not quaint. We do not have a downtown area as do the surrounding towns and I feel Wells has so much potential. It's as if no one cares. Surrounding towns put much effort into making their well traveled areas look presentable.	10/20/2014 2:47 PM
328	Transportation	10/20/2014 2:12 PM
329	Give pay raises to the Rec Department Personnel, they do alot of work for this town and if everyone else gets a raise, so should they.	10/20/2014 1:48 PM
330	Outline and define a real town center that integrates architectural standards, ease of access and promotes walking instead of our current need to drive from plaza to plaza to shop, etc.	10/20/2014 12:49 PM
331	No comment	10/20/2014 12:46 PM
332	Build public safety facility and town hall in one space	10/20/2014 12:30 PM
333	Controling growth of "3 Season Housing"	10/20/2014 11:58 AM
334	More athletic fields to include more football fields	10/20/2014 11:49 AM
335	Attractiveness to new year round businesses	10/20/2014 11:36 AM
336	Development of "Downtown"	10/20/2014 11:09 AM
337	creating a community feeling	10/20/2014 11:04 AM
338	Keep the rural character of the West of RT 1 farm land, fishing, biking etc..	10/20/2014 10:57 AM
339	We need a sports complex in town	10/20/2014 10:54 AM
340	threat over overpopulation	10/20/2014 10:50 AM
341	clean up old buildings/closed or abandoned	10/20/2014 10:41 AM
342	not sure	10/20/2014 10:29 AM
343	Proper treatment of employees. Including fairness for all companies.	10/20/2014 10:07 AM

344	As a town, we need to have more athletic fields for our schools and for community members. We need to purchase land in appropriate amounts and in appropriate location to facilitate this growth.	10/20/2014 9:44 AM
345	Residential areas that are being constructed or have recently been constructed.	10/20/2014 9:44 AM
346	.	10/20/2014 9:26 AM
347	We need sidewalks all along rt 1 all the way to Ogunquit. Put out flowers like Kennebunk.	10/20/2014 9:17 AM
348	A better, more noticeable downtown area	10/20/2014 9:16 AM
349	Evacuation center is too small/inaccessible	10/20/2014 9:14 AM
350	Enforcement of leash laws and restrictions of times dogs allowed on beach especially in public beach areas.	10/20/2014 8:36 AM
351	Less signs on Rte 1, visually unappealing.	10/19/2014 8:48 PM
352	Limit development!	10/19/2014 7:29 PM
353	Promoting beach access	10/19/2014 3:59 PM
354	Keep whatever charm and beauty Wells has left. Destroying our old downtown and trying to move a new one to 109/9 was a mistake. Tourists won't come to an ugly big store/big sign area. Keep what little is left of Rt.1 beauty and history.	10/19/2014 12:30 PM
355	STOP BUILDING CONDOS ON ROUTE 1	10/19/2014 11:56 AM
356	Not treating non resident real estate owners as important members of the community	10/19/2014 10:14 AM
357	Dog park	10/19/2014 9:09 AM
358	Sign ordinance tightened. Too much neon.	10/19/2014 8:23 AM
359	Ensure that trash and litter aren't on the side of our roads; it makes the town of Wells look bad when there are beer cans, cigarette butts, etc. all over the side of the road	10/18/2014 9:58 PM
360	Development of seasonal housing, needs to stop	10/18/2014 2:07 PM
361	Find a way to enable tourists to access the beachs from the harbor	10/18/2014 12:04 PM
362	limiting seasonal properties/development	10/18/2014 10:58 AM
363	holiday/town pride towns on both sides have fall winter etc town wide celebrations that bring tourist in during off seasons	10/18/2014 10:29 AM
364	Better back road access to by pass route 1 in summer	10/17/2014 7:09 PM
365	lower beach area taxes	10/17/2014 4:59 PM
366	improve beach access areas	10/17/2014 4:58 PM
367	moribund businesses (antiques shops, rental cottages, tacky amusements, poor restaurants)	10/17/2014 4:47 PM
368	lack of reliable year round public transportation	10/17/2014 4:18 PM
369	Lack of initiative to provide water, sewage and utilities in general to all of its citizens (while taxing them for providing their own).	10/17/2014 3:58 PM
370	we have allowed rt 1 to become an eyesore and need to fix it	10/17/2014 3:08 PM
371	All Properties sold on RT 1, that request permits to improve site MUST add a sidewalk at their cost (but town will maintain once done to spec	10/17/2014 1:04 PM
372	Connect Harbor Park and the Beach in a financially responsible way	10/17/2014 1:03 PM
373	Retain the rural - small town atmosphere of the town. Neon signs on Rt. 1 are an eyesore!	10/17/2014 12:41 PM
374	too many new housing developments	10/17/2014 8:36 AM
375	Sidewalks Rt 1, Drakes Island Rd, Harbor Rd	10/17/2014 7:14 AM
376	Too many seasonal cottages and trial parks	10/16/2014 11:34 PM
377	Too many housing developments	10/16/2014 8:52 PM

378	Manage town taxes	10/16/2014 8:51 PM
379	Return speed limit on 109 East from 30 MPH back to 35 MPH	10/16/2014 8:28 PM
380	more activities and parking on/near the harbor	10/16/2014 7:53 PM
381	keeping out big box stores	10/16/2014 7:51 PM
382	Work with the Maine Turnpike Authority and Ogunquit to establish a new Exit from Rt. 95 to Rt. 1 south of Exit 19.	10/16/2014 5:54 PM
383	Development standards - the year-round condos are hideous and with three flights of steps outside I doubt they will be year-round occupied	10/16/2014 4:36 PM
384	make the gazebo entertainment more active, change seats and road	10/16/2014 4:13 PM
385	need more playgrounds	10/16/2014 4:11 PM
386	Ban metal buildings on Wells portion of route one	10/16/2014 3:49 PM
387	The "look" of rte 1 is changing from a nice quiet coastal town to a very busy and "messy" "hampton beach" looking area.	10/16/2014 3:29 PM
388	we need some trees and flowers on route 1	10/16/2014 3:12 PM
389	How about more housing for the elderly? Both assisted and independent living.	10/16/2014 2:00 PM
390	open moody beach to public	10/16/2014 2:00 PM
391	We should play up our History as an attraction,with parking for those who want to stop and view our attractions thus getting some off the rt#1	10/16/2014 1:38 PM
392	Development and landscaping norms for old and new businesses in wells	10/16/2014 12:02 PM
393	no answer	10/8/2014 3:48 PM
394	Senior housing and services	10/8/2014 3:32 PM

#	3.	Date
1	Route one by pass and extend road through YCCC campus to connect to Route one and bech	1/4/2015 7:27 PM
2	Outside showers at the beaches would be awesome to rinse off sand etc	1/3/2015 5:45 PM
3	no more condos on rte 1	12/28/2014 5:22 PM
4	Manage the seasonal aspects of the town in a manner that enhances enjoyment not body count	12/28/2014 12:51 PM
5	More parking spaces for the center and free parking there	12/26/2014 10:32 AM
6	a	12/18/2014 9:46 AM
7	need emphasis on good paying year round jobs not seasonal	12/16/2014 2:08 PM
8	More community events that draw tourists into town	12/12/2014 9:22 PM
9	a	11/30/2014 11:46 AM
10	creating more youth programming: art/dance/theater	11/25/2014 2:00 PM
11	protection of residences during off-season	11/24/2014 7:43 AM
12	opportunity for additional housing units on north berwick rd	11/21/2014 5:26 PM
13	schools	11/21/2014 2:04 PM
14	Excessive speed and noise on Rt. 9- Berwick Rd.	11/21/2014 2:04 PM
15	the cottages have noticably impacted the local hotel/motel business and brought in many more people that do not respect the beach or the private property of residents.	11/20/2014 9:54 AM
16	None	11/19/2014 10:51 AM

17	It is an absolute travesty the amount of "condos" and "cottages" that have plagued Route One. I am not referring to the private, "tucked away" communities... In the heart of this towns heart, lives the old historical homes and property of original New England shipbuilders...to see those same grounds turned into what it has is just so sad. Preserve culture, preserve history -- allow future generations to have a glimpse into the magical town Wells once was. Create standards - implement them - as aesthetics will help attract more year round families.	11/18/2014 9:13 PM
18	Protect our Town's rual, diversified personality/nature.	11/18/2014 7:36 AM
19	Lack of a downtown	11/17/2014 8:24 PM
20	Year around residents having access to all the beaches and not have to pay outrages parking fees	11/14/2014 3:25 PM
21	It is time for Wells to impose some regulations on builders regarding the use of materials/appearance of new homes. The condos near Rite-Aid and down by the Tatnic-Rt. 1 intersection are absolute eyesores. Likewise, the new homes at the intersection of 9A and Lindsey Rd. leave a lot to be desired. These locations were lovely: water views (the first two) and a field (9A) have been replaced by ugliness.	11/14/2014 12:48 PM
22	Limit terms for planning board members	11/14/2014 7:16 AM
23	Being environmentally responsible within a business climate that relies on an ever increasing use of the natural environment	11/13/2014 7:52 PM
24	MORE NEW RESTAURANTS LIKE FRINDLYS AND PIZZA HUT	11/13/2014 7:15 PM
25	Activities for children within wells	11/12/2014 10:01 PM
26	Capacity building (invest in current assets)	11/12/2014 10:31 AM
27	Seriously, stop the irresponsible over development and seasonal cottage sprawl and protect the remaining natural areas	11/11/2014 12:42 PM
28	Traffic lights	11/10/2014 2:04 PM
29	Drug usage within town limits	11/9/2014 8:17 PM
30	More community events	11/9/2014 1:06 PM
31	Maintaining excellence in schools	11/7/2014 8:50 PM
32	More culture. More focus on Wells historic significance.	11/7/2014 2:23 PM
33	Make the area more year round then seasonal	11/7/2014 1:40 PM
34	code limitations on the building of small residential properties, preventing easy building access for families	11/7/2014 11:20 AM
35	Has anyone considered an ice arena or multi-use facility? There are many hockey families in this area traveling good distances to get ice for their players. Not to mention our high school program practices in Rochester, NH! Between youth hockey, esp tournaments, and adult leagues, it would bring a lot of hotel and restaurant business to our town in the winter. The ice could be melted during summer months and indoor soccer/lax could take over the space. Have spoken with many Wells residents interested in this!	11/6/2014 7:20 PM
36	more parks and recreation areas	11/6/2014 1:04 PM
37	Over saturated the town with seasonal cottages	11/5/2014 8:21 PM
38	Traffic lane on route 1 and 109 going south by harbor road is extremely dangerous	11/5/2014 4:04 PM
39	n/a	11/5/2014 2:48 PM
40	Maintaining Town Charm	11/5/2014 11:13 AM
41	Lack of year round rentals in town for our young people.	11/5/2014 9:40 AM
42	Improve the Recreation Programs	11/5/2014 8:51 AM
43	To stop this crazy spend, spend and I want now attitude..live within the town's means..reign you in now	11/4/2014 11:17 PM
44	Rt 1 needs a makeover	11/4/2014 9:54 PM
45	creating a town park & rec service with a recreation center that is year round.	11/4/2014 3:46 PM
46	developing sense of community	11/4/2014 10:42 AM

47	lack of a town center	11/4/2014 8:39 AM
48	Education.	11/4/2014 8:14 AM
49	Create more of a year-round town with community improvement programs similar to Kennebunk. They have nailed it. We shouldn't have all our resources just on tourism and the beach. We need more year-round development that improves the town for the future. Not this short-sighted, bandaid, fixes.	11/4/2014 7:07 AM
50	Lack of architectural standards along major roads and too much tourist building rather than year round residences	11/3/2014 10:38 PM
51	Preserve land, open space, wildlife habitats	11/3/2014 9:01 PM
52	a downtown that encourages a park then walk environment	11/3/2014 7:07 PM
53	Increased development of programs of the well recreation department and expanded seasons for sports teams	11/3/2014 5:39 PM
54	Lack of adequate recreation facilities, especially for athletics. We have great recreation programs, but poor recreation management. We don't need more, just better leadership in the recreation department.	11/3/2014 4:29 PM
55	Rebuild Furbish rd.	11/3/2014 12:51 PM
56	playgrounds	11/3/2014 12:17 PM
57	Preserve open space	11/3/2014 8:16 AM
58	The town not purchasing appropriate parcels of land to bring together the "vision" of a town center	11/3/2014 7:39 AM
59	Ffffff	11/2/2014 9:56 PM
60	People that live in Wells should get a break on beach parking fees!!	11/2/2014 6:41 PM
61	Maintaining public access to all the waterways - estuaries and beaches. These public lands and beautiful natural habitats should belong to all citizens, not just those with the most money to buy the waterfront properties.	11/1/2014 9:48 PM
62	Use our recreation center and the harbor for events in the summer for teen, young adult events so the have more to do.	11/1/2014 8:14 PM
63	rentals	11/1/2014 5:27 PM
64	Increase seasonal cottage season==leads to increase year around business and jobs	11/1/2014 4:04 PM
65	encourage affordable housing with water and sewer	10/31/2014 10:54 PM
66	We dont need more laws to make Wells look better, we just need to inforce regulations already on the books	10/31/2014 8:26 PM
67	Keep the town center the way it used to be! Move the police and fire dept to 109	10/31/2014 6:02 PM
68	A Veterans park or Memorial park that captures the history of the town and beautifully landscaped.	10/31/2014 4:13 PM
69	review answers	10/31/2014 2:53 PM
70	The need for a traffic light at the cross section of 9 and 109	10/31/2014 2:11 PM
71	lack of sense of community	10/31/2014 12:20 PM
72	Commercial development impact on town resources and infrastructure.	10/31/2014 9:00 AM
73	Stricter building codes for villages/condos/town houses	10/30/2014 8:15 PM
74	preserve small town feel	10/30/2014 6:30 PM
75	not enough buisness in the winter	10/30/2014 4:31 PM
76	Wells needs indoor recreational facility (pool, exercise equip., indoor basketball, etc.)	10/30/2014 3:43 PM
77	cultural/historical events	10/30/2014 3:12 PM
78	Too much of infrastructure burden and upgrade costs falling to residents versus developers of "cottage" communities.	10/30/2014 1:09 PM
79	Unnecessary seasonal housing development	10/30/2014 12:32 PM
80	Not enough places for people to hang out	10/30/2014 12:32 PM

81	Way too many seasonal condos.	10/30/2014 12:31 PM
82	Not enough sidewalks	10/30/2014 12:28 PM
83	The need for recreational use of Marijuana.	10/30/2014 12:25 PM
84	Sidewalks	10/30/2014 12:22 PM
85	a more downtown area in wells	10/30/2014 12:21 PM
86	no idea	10/30/2014 12:17 PM
87	No BWW	10/30/2014 12:13 PM
88	traffic	10/30/2014 12:11 PM
89	More social events to get the community involved with one another.	10/30/2014 12:11 PM
90	lack of downtown	10/30/2014 11:18 AM
91	fire department funding	10/30/2014 11:17 AM
92	With cake pls	10/30/2014 11:15 AM
93	Can only pay in credit cards for beach parking now,	10/30/2014 11:15 AM
94	Fix the exit/enter ramp for the turnpike	10/30/2014 11:14 AM
95	Lack of sidewalks.	10/30/2014 11:14 AM
96	More sidewalks	10/30/2014 11:13 AM
97	None	10/30/2014 11:12 AM
98	lack of arts programs	10/30/2014 11:07 AM
99	N/A	10/30/2014 11:06 AM
100	the excessive growth to our small town community	10/30/2014 10:50 AM
101	get rid of the awful trailers and junk yard homes that are on 109 and other more visible roads, when you build a new home there are so many permit requirements to meet yet you have to drive by dumps to get to your neighborhood.	10/30/2014 10:19 AM
102	Continue to PRESERVE/PROTECT NATURAL, UNDEVELOPED AREAS - !!!PLEASE!!! protect the town from out-of-state and other developers who have been allowed to RUIN the look/feel of town/run away with $$$$, leaving locals with poor quality construction/eyesores.	10/30/2014 9:55 AM
103	Building codes need to be changed , stop building on microscopic lots and limit height of units on these small lots. Lose the ugliness of wells	10/30/2014 9:21 AM
104	Support for Small Businesses	10/30/2014 7:51 AM
105	Keeping tourists here	10/30/2014 7:51 AM
106	terrorism	10/30/2014 7:49 AM
107	Fix roads.	10/30/2014 7:49 AM
108	More playgrounds and parks would be nice.	10/30/2014 7:46 AM
109	Not as many year-round restaurants	10/30/2014 7:46 AM
110	kids selling drugs	10/30/2014 7:43 AM
111	no chick-fil-a	10/30/2014 7:42 AM
112	no chick fila	10/30/2014 7:42 AM
113	No Chipotle	10/30/2014 7:40 AM
114	ease lot coverage restrictions in seasonal developments	10/29/2014 7:16 PM
115	b	10/29/2014 3:23 PM

116	No more " condotels"	10/29/2014 1:25 PM
117	n/a	10/29/2014 12:48 PM
118	smoke shop	10/29/2014 12:36 PM
119	There's no Gamestop	10/29/2014 12:31 PM
120	iofewhofpa	10/29/2014 12:25 PM
121	Roads kept in better condition	10/29/2014 12:23 PM
122	nothing	10/29/2014 12:23 PM
123	The roads are in poor condition.	10/29/2014 12:22 PM
124	Drone Program	10/29/2014 12:22 PM
125	more shops	10/29/2014 12:21 PM
126	.	10/29/2014 12:17 PM
127	More year round businesses	10/29/2014 12:16 PM
128	Trailer houses are allowed outside of trailer parks and make some roads look shitty.	10/29/2014 12:13 PM
129	We should get a Wegmans!!!!!!! PLEASE!!!!!!!!	10/29/2014 12:13 PM
130	I don't know	10/29/2014 12:10 PM
131	Just a note, no houses in Wells are selling	10/29/2014 11:48 AM
132	We should really have a downtown location in Wells.	10/29/2014 11:46 AM
133	Residential development is a huge addition, but it is taking away from the houseowners privacy	10/29/2014 11:45 AM
134	Making more eco-friendly decisions	10/29/2014 11:44 AM
135	Preservation of history	10/29/2014 11:44 AM
136	Keeping town history alive is also important.	10/29/2014 11:44 AM
137	taxes	10/29/2014 11:43 AM
138	Morning commute traffic	10/29/2014 11:43 AM
139	Road maintenance.	10/29/2014 11:43 AM
140	Income of local businesses	10/29/2014 11:42 AM
141	Wells does not have enough events, unlike kennebunk and lafayette park, we need a concert hall or some sort of area to have fun as a community, the activity center does not suffice. This should be for the locals and not the seasonal residents	10/29/2014 11:40 AM
142	expansion of the public library	10/29/2014 11:40 AM
143	No mainstream box stores, or major corporations... keep Wells a small town!	10/29/2014 11:39 AM
144	Safety of pedestrians on major roads	10/29/2014 11:38 AM
145	More funding for town departments	10/29/2014 11:38 AM
146	Global warming and the safety of beach front residences as well as the tourism based economy	10/29/2014 11:38 AM
147	,	10/29/2014 11:38 AM
148	Establish full-time Wells resident parking spots at beaches, we pay for the parking passes and for the taxes here!	10/29/2014 10:39 AM
149	definetly a wendys	10/29/2014 9:06 AM
150	HIGHER MINIMUM WADGE	10/29/2014 9:00 AM
151	more small business	10/29/2014 8:57 AM
152	No chipotle	10/29/2014 8:56 AM

153	No Taco Bell	10/29/2014 8:55 AM
154	The spread of industries to rural areas.	10/29/2014 8:54 AM
155	year round bike cops	10/29/2014 8:53 AM
156	need more places for tourists to stay	10/29/2014 8:53 AM
157	promote local business not chain stores	10/29/2014 8:52 AM
158	N/A	10/29/2014 8:52 AM
159	more restaurants needed	10/29/2014 8:52 AM
160	neon business signs, not a great "friendly little town" image	10/29/2014 8:51 AM
161	just traffic	10/29/2014 8:50 AM
162	n/a	10/29/2014 8:48 AM
163	Panera or Wendys in Wells	10/29/2014 8:47 AM
164	Lack of sidewalks	10/29/2014 8:46 AM
165	i dont care	10/29/2014 8:46 AM
166	I don't know	10/29/2014 8:44 AM
167	None	10/29/2014 8:44 AM
168	no comment	10/29/2014 8:43 AM
169	definetly a wendys	10/29/2014 8:39 AM
170	increase the speed limit on lindsey road	10/29/2014 8:06 AM
171	More diverse job opportunities.	10/29/2014 7:59 AM
172	more beach parking	10/29/2014 7:59 AM
173	more interesting jobs/job opportunities other than restraunts and grocery stores	10/29/2014 7:59 AM
174	conservation of our environment	10/29/2014 7:58 AM
175	More town activities would be nice, the town should be closer in a sense.	10/29/2014 7:57 AM
176	Some of the Western part of Wells needs more Street lights because there are some random area's of darkness	10/29/2014 7:57 AM
177	Town clean up	10/29/2014 7:56 AM
178	There should be more Box Stores such as Michaels Craft Store for the town's more creative citizens.	10/29/2014 7:55 AM
179	tourist ares being too spread out, not being in one local tourist area away from the locals	10/29/2014 7:55 AM
180	More side walks on main roads	10/29/2014 7:55 AM
181	sdf	10/29/2014 7:54 AM
182	More community activities and development	10/29/2014 7:53 AM
183	Sidewalks on all of the beach roads.	10/29/2014 7:52 AM
184	Traffic	10/29/2014 7:51 AM
185	N/A	10/29/2014 7:51 AM
186	i hate canadians	10/29/2014 7:50 AM
187	a community building and outdoor ice rick like the one that was built in dowtown Kennebunk	10/28/2014 4:15 PM
188	Development of aa attractive functional "village" section, on the idea of Ogunquit, but off but easily accessible ingress and egress to Rte 1.	10/28/2014 2:25 PM
189	youth programs and school	10/28/2014 2:20 PM

190	stop the three season construction	10/28/2014 12:37 PM
191	student happiness levels	10/28/2014 12:12 PM
2	football	10/28/2014 12:08 PM
193	need more year round business	10/28/2014 12:07 PM
194	Take the peanutbutter away from Shaw	10/28/2014 12:06 PM
195	Keep our tax base low	10/28/2014 10:40 AM
196	*	10/28/2014 10:32 AM
197	Keep the woods in tact but expand in everyting else	10/28/2014 8:54 AM
198	people driving slow	10/28/2014 8:48 AM
199	marijuana prohibition	10/28/2014 8:48 AM
200	more recourses for counsling	10/28/2014 8:47 AM
201	dkfjvk;dfjbv	10/28/2014 8:42 AM
202	none	10/28/2014 8:37 AM
203	asdfghjkl;	10/28/2014 8:37 AM
204	more attractions	10/28/2014 8:36 AM
205	Sea wall along roads repaired and strengthen	10/28/2014 8:14 AM
206	Leave rt 9 alone~morning traffic excessive already	10/28/2014 5:53 AM
207	Support Local Business by encouraging patronage whenever possible	10/27/2014 7:24 PM
208	Continue to make public schools a priority	10/27/2014 7:18 PM
9	Let us hire a couple more police officers, to catch speeders.	10/27/2014 6:40 PM
210	Getting business into the existing empty stores rather than building up our town.Please prevent us from becoming more like a city.Wells is a beautiful,small town that has always felt safe,and a great place to raise children. Let's aim to keep it that way	10/27/2014 5:08 PM
211	Wells is big enough. It doesn't need to be bigger. Limit new residence construction.	10/27/2014 2:32 PM
212	gang violence	10/27/2014 1:19 PM
213	the attitude of the people. Be happy.	10/27/2014 1:18 PM
214	there is nothing to do in this town	10/27/2014 1:15 PM
215	We need taco bell	10/27/2014 1:15 PM
216	less cops	10/27/2014 1:12 PM
217	Have a skate park.	10/27/2014 1:12 PM
218	need more sidewalks	10/27/2014 1:11 PM
219	the cops are dicks	10/27/2014 1:11 PM
220	More fast food restaurants	10/27/2014 1:09 PM
221	speed limits	10/27/2014 1:09 PM
222	having better plowing for back roads	10/27/2014 1:09 PM
223	more fast food resturants	10/27/2014 1:09 PM
224	We need more commercial businesses and more cafes or bakeries.	10/27/2014 1:08 PM
225	people	10/27/2014 1:07 PM
226	fix some roads	10/27/2014 1:04 PM

227	/	10/27/2014 1:04 PM
228	people	10/27/2014 1:02 PM
29	develop the harbor area--it is dark and lonely down there	10/27/2014 12:23 PM
230	construction of a down town area would be nice.	10/27/2014 10:51 AM
231	none	10/27/2014 10:50 AM
232	We need some more nice restaurants in Wells	10/27/2014 10:50 AM
233	We need an Olive garden and Buffalo Wild Wings	10/27/2014 10:49 AM
234	none	10/27/2014 10:48 AM
235	Slowly taking away from hunting areas and land	10/27/2014 10:48 AM
236	Could maybe use a big box store	10/27/2014 10:48 AM
237	Wells needs more year round businesses.	10/27/2014 10:47 AM
238	not sure	10/27/2014 10:47 AM
239	More parking at beaches	10/27/2014 10:46 AM
240	more help for small businesses	10/27/2014 10:46 AM
241	more parking spaces along beaches	10/27/2014 10:46 AM
242	More side walks	10/27/2014 10:45 AM
243	nothing	10/27/2014 10:45 AM
244	make Chapel light seasonal or non existent	10/27/2014 10:44 AM
245	don't know	10/27/2014 10:44 AM
246	better high school	10/27/2014 10:43 AM
247	McDonalds	10/27/2014 10:43 AM
248	Town image	10/27/2014 10:42 AM
249	sports fields	10/27/2014 9:53 AM
250	Highway exiting	10/27/2014 9:51 AM
251	Fast past for traffic, (extra lane for local residents only)	10/27/2014 9:51 AM
252	More things for highschoolers!! Its so boring here!!	10/27/2014 9:50 AM
253	gang violence	10/27/2014 9:49 AM
254	Its all Oger!!!	10/27/2014 9:49 AM
255	more parks	10/27/2014 9:48 AM
256	Not enough places to go in wells	10/27/2014 9:48 AM
257	Better stores	10/27/2014 9:47 AM
258	make a racetrack	10/27/2014 9:47 AM
259	Speed limit on coles hill road	10/27/2014 9:47 AM
260	Possible Five guys	10/27/2014 9:47 AM
261	There should be no fast food restaurants in wells	10/27/2014 9:47 AM
262	Good bands playing at the harbor	10/27/2014 9:44 AM
263	=	10/27/2014 9:42 AM
264	We shouldn't spend money on town clocks no one even acknowledges	10/27/2014 9:42 AM

265	Need more fields for school sports	10/27/2014 9:41 AM
266	Workfare requirements for welfare recipients, such as picking up cigg buts and trash along beaches	10/27/2014 9:28 AM
267	no opinion	10/27/2014 8:50 AM
268	do not need mcdonalds	10/27/2014 8:50 AM
269	More sidewalk access	10/27/2014 8:45 AM
270	Quality of roads west of turnpike	10/27/2014 8:45 AM
271	we sould pave some of the smaller neighborhoods like wells highlands and preble street.	10/27/2014 8:43 AM
272	Allowing box stores into Wells.	10/27/2014 8:42 AM
273	no 5 guys	10/27/2014 8:41 AM
274	lack of a downtown commercial area	10/27/2014 8:40 AM
275	Tourism	10/27/2014 8:39 AM
276	housing	10/27/2014 8:36 AM
277	The regulation of businesses and restaurants such that they will be capable of meeting safety and quality standards.	10/27/2014 7:51 AM
278	Kentucky Fried Chicken restaurants should be in town!!!!!	10/27/2014 7:51 AM
279	sidewalks	10/27/2014 7:51 AM
280	More Parks and Fields	10/27/2014 7:49 AM
281	Too many blacks (murderers).	10/27/2014 7:47 AM
282	Canadians	10/27/2014 7:47 AM
283	Beach Clean Up	10/27/2014 7:42 AM
284	N/A	10/27/2014 7:42 AM
285	Bring polo to wells	10/27/2014 7:42 AM
286	Build a Nike store.	10/27/2014 7:41 AM
287	N/A	10/27/2014 7:41 AM
288	preserving some of the quaintness of our town	10/26/2014 10:46 PM
289	n/o	10/26/2014 12:27 PM
290	Too few arts, cultural, entertainment, etc. programs	10/26/2014 11:07 AM
291	Finding people who are not from 'away' to serve on the town council, commitees, etc. We are a town who has survived. We should not be 'selling' it to the highest bidder.	10/26/2014 9:40 AM
292	less development on 109 East of Turnpike	10/26/2014 7:45 AM
293	Having better beach facilities - wash house closer to the beach with showers, a boardwalk with shops & restaurants, etc. - like OGT	10/25/2014 2:04 PM
294	Employment of full time residents	10/25/2014 10:19 AM
295	not sure	10/25/2014 7:56 AM
296	Low income families and contractors cannot afford to live near where they work in Wells, and must travel far from their inland homes.	10/24/2014 7:50 PM
297	Public Water and Public Sewer for residents of Littlefield Road	10/24/2014 2:32 PM
298	Tacky development along route one--with the neon signs, eventually we will look like Saugus	10/24/2014 2:26 PM
299	Attracting tourism and economic growth	10/24/2014 2:14 PM
300	More play spaces for children	10/24/2014 1:38 PM

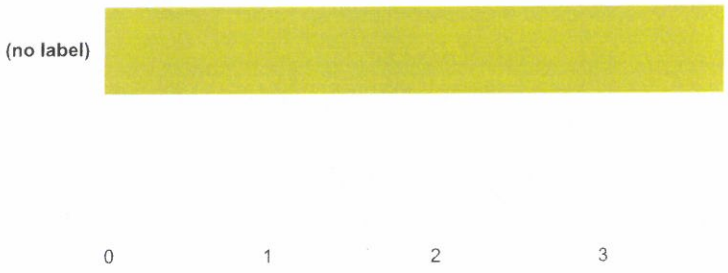
301	More festivals/fairs throughout the year	10/24/2014 1:36 PM
302	N/A	10/24/2014 1:02 PM
303	I	10/24/2014 12:32 PM
304	economic development	10/24/2014 8:56 AM
305	Explore revenue opportunities by creating a Municipal Golf Course, YMCA, small shopping plaza's and a Market Basket Supermarket.	10/24/2014 8:07 AM
306	Beaches	10/24/2014 1:04 AM
307	Continuing to provide varying modes of transport, that are connected, timely and relieve the need for more cars	10/23/2014 2:58 PM
308	controllng development	10/23/2014 1:23 PM
309	Creating a town center	10/22/2014 8:07 PM
310	Too much "commercial" on routes 109 and 9; need to keep the residential integrity of the area(s).	10/22/2014 2:27 PM
311	improve services for us permanent / longtime residents, I'm feeling squeezed out by tourists	10/22/2014 2:19 PM
312	Jobs	10/22/2014 5:09 AM
313	No public transportation for year round residents especially the elderly and the teenagers	10/21/2014 10:58 PM
314	Improved public transport between wells and ogunquit during peak season	10/21/2014 9:03 PM
315	The police station is difficult to enter and should be totally updated.	10/21/2014 7:21 PM
316	limiting commercial development	10/21/2014 4:11 PM
317	A development of more of a "downtown"to encourage locals to have more of a part in the town.	10/21/2014 2:39 PM
318	The state of our roads.	10/21/2014 11:04 AM
319	Underutilization/under appreciation of historical sites	10/20/2014 9:58 PM
320	preserve our small-town character	10/20/2014 9:17 PM
321	Declining school population and still spending a disproportionate amount of money on expanding the high school.	10/20/2014 8:15 PM
322	Development standards	10/20/2014 6:33 PM
323	Encouraging more economic development to keep taxes down.	10/20/2014 5:55 PM
324	We need a downtown area.	10/20/2014 5:53 PM
325	Way to many seasonal cottages bring built everywhere with very tall buildings and vinyl siding. UGLY!!!!	10/20/2014 5:12 PM
326	I'm afraid the schools won't keep up with the increases in population....especially with new subdivisions, if they happen.	10/20/2014 3:02 PM
327	No more seasonal cottages please!!!!!! We have enough and again, seems like no one cares how our town looks. They just keep allowing them to go up. Is it all about money? If that's the case, why then do we not use the money for aesthetic improvement!!	10/20/2014 2:47 PM
328	Cultural activities	10/20/2014 2:12 PM
329	Those residents that live in Wells yr round should receive a beach pass for free, but I'll be reasonable and say $5.00. I live here yr round can't I have a benefit from that.	10/20/2014 1:48 PM
330	Create a college zone to promote and manage growth around that resource and also create pedestrian access between all our school campuses	10/20/2014 12:49 PM
331	No comment	10/20/2014 12:46 PM
332	Fire the school super	10/20/2014 12:30 PM
333	Set higher standards for residential neighborhoods. existing and new.	10/20/2014 11:58 AM
334	Preservation of the land west of I95	10/20/2014 11:49 AM

335	Lack of a "town center"	10/20/2014 11:36 AM
336	Additional Interstate access between Wells and Ogunquit would be great.	10/20/2014 11:09 AM
337	controlled expansion	10/20/2014 11:04 AM
338	Develop the harbor area and encourage small businesses and walking community in the commercial zones	10/20/2014 10:57 AM
339	Too many mobile homes-need more neighborhoods	10/20/2014 10:54 AM
340	Beach erosion	10/20/2014 10:50 AM
341	more actitives for children	10/20/2014 10:41 AM
342	not sure	10/20/2014 10:29 AM
343	More meeting for public on where money will be spent.	10/20/2014 10:07 AM
344	Buy land for the town and schools that can be used as public spaces to attract more visitors and young families to move to our town. Purchase foreclosed property or property that behind in taxes (extended years behind).	10/20/2014 9:44 AM
345	Road maintenance	10/20/2014 9:44 AM
346	.	10/20/2014 9:26 AM
347	Zoning to force all existing and new businesses to abide by new zoning by 2020. We need to have more control on the types of buildings, the color, etc.	10/20/2014 9:17 AM
348	More community events not tied to school functions.	10/20/2014 9:16 AM
349	High school construction	10/20/2014 9:14 AM
350	Stronger enforcement of posted speed limits.	10/20/2014 8:36 AM
351	More green space on Rte 1, maintained nicely	10/19/2014 8:48 PM
352	Leave "The Way Life Should Be" as it should be!	10/19/2014 7:29 PM
353	More bathroom facilities for beaches	10/19/2014 3:59 PM
354	Keep special interests from changing public law for private profit. (All those ugly seasonal units recently built by Rite Aid, for example.)	10/19/2014 12:30 PM
355	I KNOW THERE IS A MORATORIUM--BUT HOW MANY OF THESE PROJECTS WERE GRANDFATHERED AND ARE GOING TO KEEP COMING UP? STOP BUILDING THESE CONDOS!	10/19/2014 11:56 AM
356	Expansion of non resident real estate owners rights of which there are none	10/19/2014 10:14 AM
357	Tennis courts, especially for high school	10/19/2014 9:09 AM
358	limit or manage amount of new construction	10/19/2014 8:23 AM
359	Those two issues are the only issues I have at this time	10/18/2014 9:58 PM
360	No more construction on rte. 1. & no shoddy construction	10/18/2014 2:07 PM
361	Bring more tourists to Wells on the shoulder seasons	10/18/2014 12:04 PM
362	dog park.....more athletic fields.....more of a down town	10/18/2014 10:58 AM
363	d	10/18/2014 10:29 AM
364	Architectural standards so Wells maintains the New England architectural look.	10/17/2014 7:09 PM
365	garbage collection	10/17/2014 4:59 PM
366	support/encourage an exit from 95 between Wells and Ogunquit	10/17/2014 4:58 PM
367	no discernible identity	10/17/2014 4:47 PM
368	lack of architectural standards especially for commercial buildings on main town roads, such as Route 1 and route 109	10/17/2014 4:18 PM

369	Inability to proved real jobs for our children in this area to warrent the ever "improvements" we continue to splurge on our educational facilites....	10/17/2014 3:58 PM
370	N/A	10/17/2014 3:08 PM
371	add more street lights as improvements are made on rt 1, to encourage people to walk and leave the cars at home	10/17/2014 1:04 PM
372	Create SAFE sidewalks on both sides of Mile Road	10/17/2014 1:03 PM
373	Beaches need to remain accessable to the public year round, why do you think visitors come to town and spend their money?	10/17/2014 12:41 PM
374	the idea that we can create a town center. We lost that 40 years ago!	10/17/2014 8:36 AM
375	Beach access	10/17/2014 7:14 AM
376	Harbor should be focal point and center for activities	10/16/2014 11:34 PM
377	...	10/16/2014 8:52 PM
378	Avoid selling out to chain businesses	10/16/2014 8:51 PM
379	Stop wasting money dredging Wells harbor	10/16/2014 8:28 PM
380	attract more artisans/artists	10/16/2014 7:53 PM
381	creation of better landscaping and beitification from Maine Turnpike exit east on 109 to route 1...should be more welcoming for visitors and residents	10/16/2014 7:51 PM
382	Establish new traffic lights for both ends of Chapel Rd. help with traffic flow.	10/16/2014 5:54 PM
383	A light industry/micro business/artisan district linking train station and YCCC and Rt 1	10/16/2014 4:36 PM
384	quit grants for the harbor	10/16/2014 4:13 PM
385	need more trails for hiking	10/16/2014 4:11 PM
386	Position the "only" overhead signs so that they warn motorists well before the turn point	10/16/2014 3:49 PM
387	The lack of availability for year round residents to be able to easily use the beach during the summer due to summer visitors/residents taking all parking spaces and the amount of traffice on rte 1.	10/16/2014 3:29 PM
388	year round residents should get a free or discounted beach pass	10/16/2014 3:12 PM
389	Expand access to city water and not city sewer.	10/16/2014 2:00 PM
390	more historic events	10/16/2014 2:00 PM
391	Make public transportation a thought to cut down use of personal cars on public roads during peak season if not full time.	10/16/2014 1:38 PM
392	Signage (no neon or flashing lights, please) for existing and new businesses	10/16/2014 12:02 PM
393	no inpact fees for new development	10/8/2014 3:48 PM
394	Expand tourist season	10/8/2014 3:32 PM

Q9 Do you feel the current 'Vision for Wells' statement below is accurate? "THE VISION FOR WELLSWells is a terrific community with great people and a great environment. The vision for Wells is to preserve and promote Wells' small-town historic traditional rural New England seacoast community character, appearance and values for a better quality of life.If quality is conformance to a standard, then continually improving quality means continually setting and achieving higher standards for excellence in planning, design, development, service, and operations. Citizens drive standards: their aspirations, expectations, their goals and policies.Setting standards will enable Wells to:• Retain and improve the quality of life.• Promote economic opportunity.• Promote health and safety.• Promote educational opportunity.• Promote environmental protection."

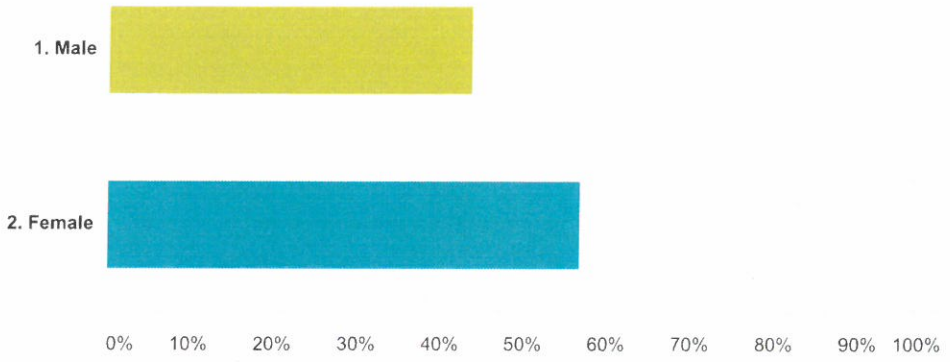
Answered: 394 Skipped: 104



	Strongly Agree	Agree	Somewhat Agree	Disagree	Strongly Disagree	No Opinion	Total	Weighted Average
(no label)	27.66%	40.61%	20.56%	4.06%	2.79%	4.31%		
	109	160	81	16	11	17	394	3.73

Q10 What is your identifying gender?

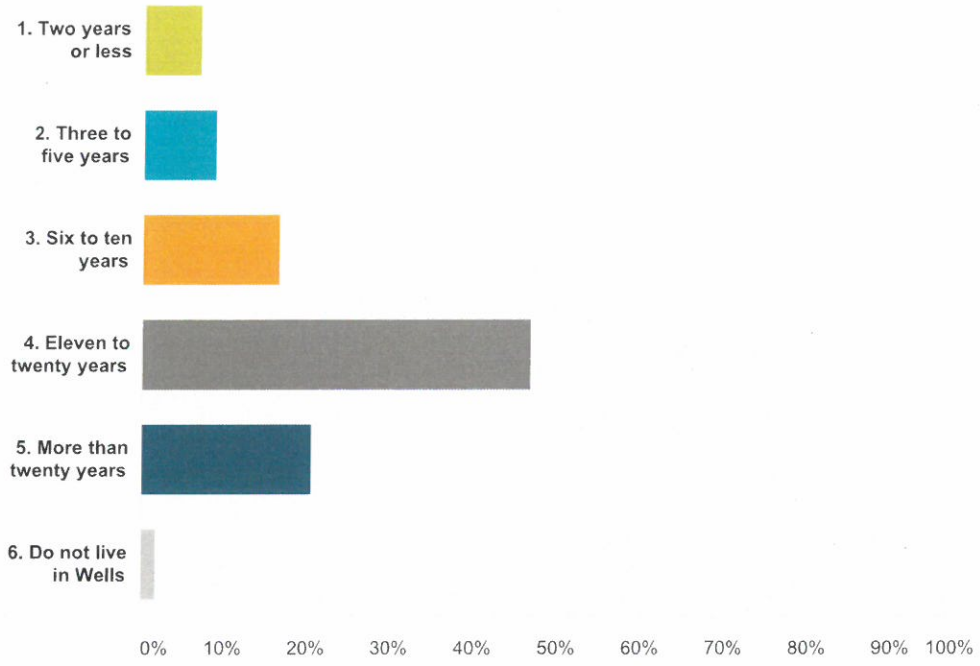
Answered: 392 Skipped: 106



Answer Choices	Responses	
1. Male	43.62%	171
2. Female	56.89%	223
Total Respondents: 392		

Q11 How long have you lived in Wells?

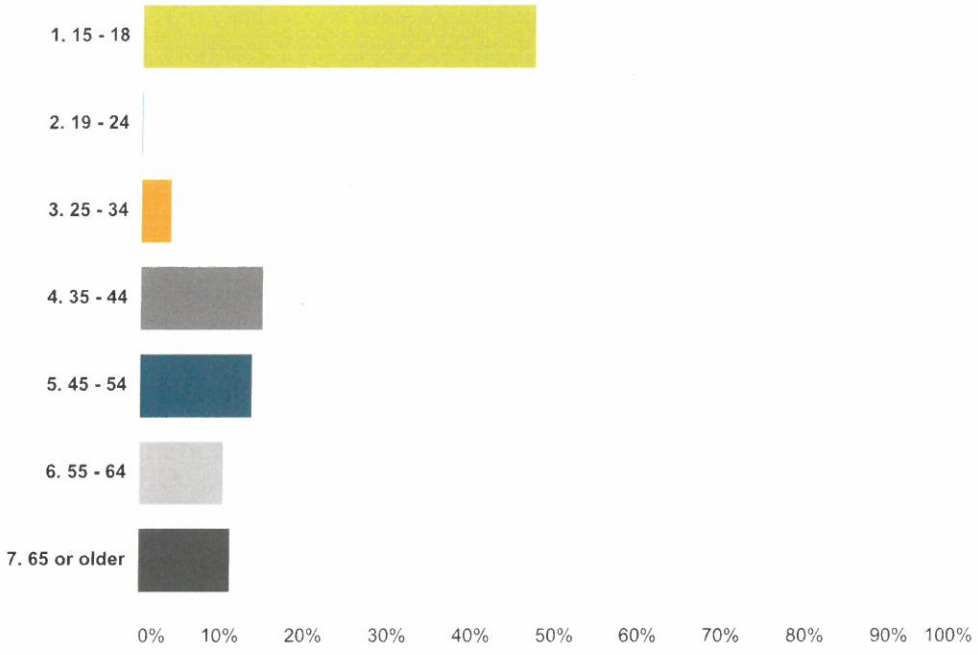
Answered: 392 Skipped: 106



swer Choices	Responses	
1. Two years or less	6.89%	27
2. Three to five years	8.67%	34
3. Six to ten years	16.58%	65
4. Eleven to twenty years	46.68%	183
5. More than twenty years	20.41%	80
6. Do not live in Wells	1.79%	7
Total Respondents: 392		

Q12 How old are you?

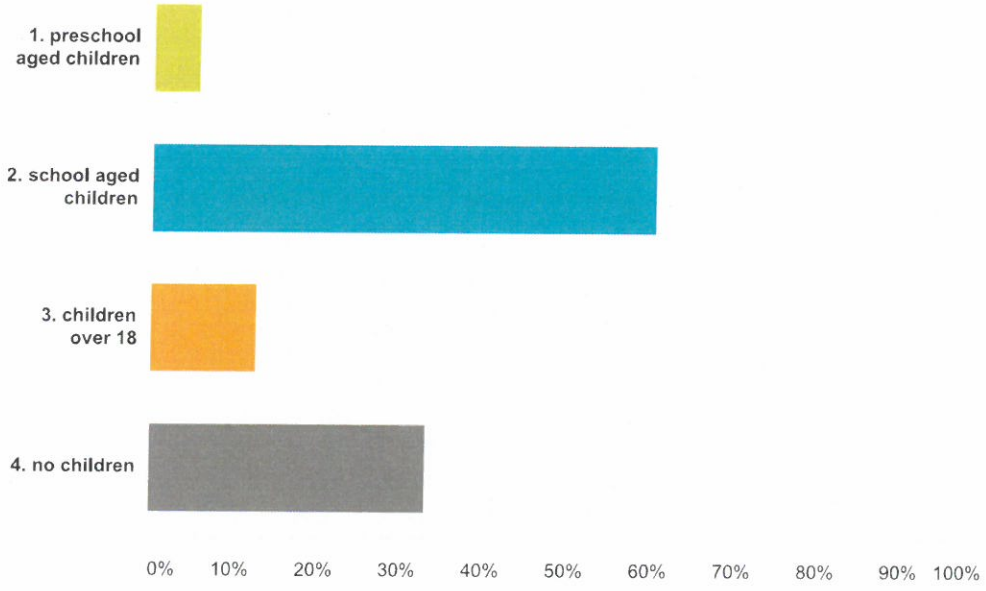
Answered: 392 Skipped: 106



Answer Choices	Responses	
1. 15 - 18	47.19%	185
2. 19 - 24	0.26%	1
3. 25 - 34	3.83%	15
4. 35 - 44	14.80%	58
5. 45 - 54	13.52%	53
6. 55 - 64	10.20%	40
7. 65 or older	10.97%	43
Total Respondents: 392		

Q13 Please indicate if children live in your household for most of the year:

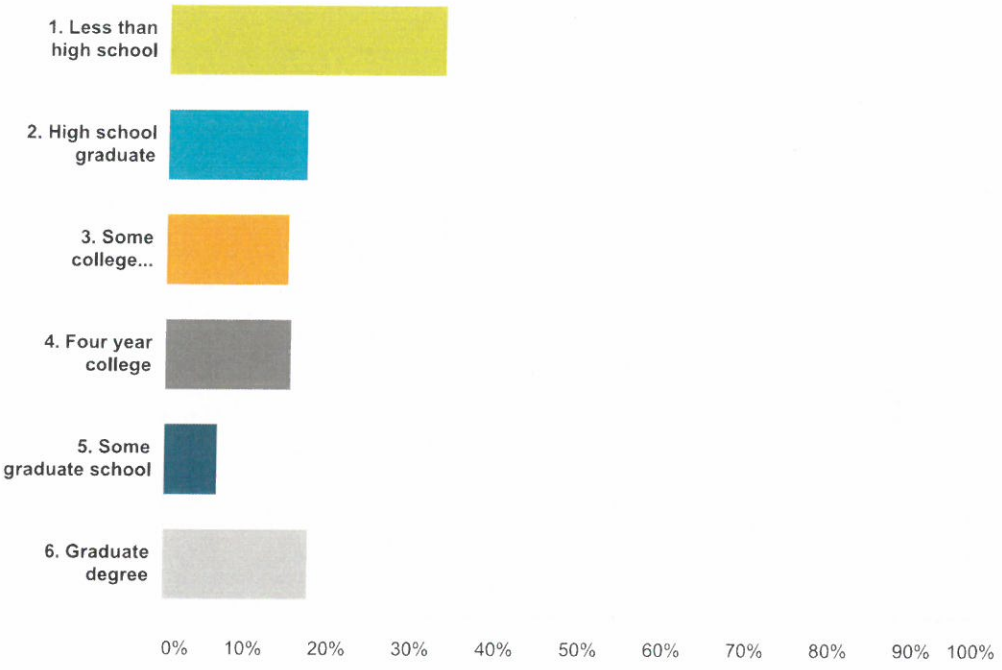
Answered: 392 Skipped: 106



Answer Choices	Responses	
1. preschool aged children	5.61%	22
2. school aged children	60.46%	237
3. children over 18	12.76%	50
4. no children	33.16%	130
Total Respondents: 392		

Q14 What was the highest grade or year in school that you have completed?

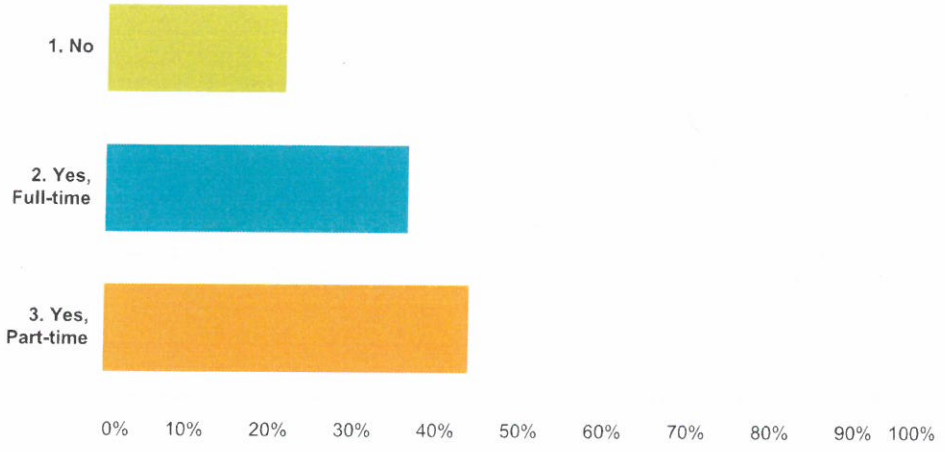
Answered: 392 Skipped: 106



Answer Choices	Responses	
1. Less than high school	33.42%	131
2. High school graduate	16.84%	66
3. Some college (including 3 and 3 year college and technical programs)	14.80%	58
4. Four year college	15.31%	60
5. Some graduate school	6.38%	25
6. Graduate degree	17.60%	69
Total Respondents: 392		

Q15 Are you employed?

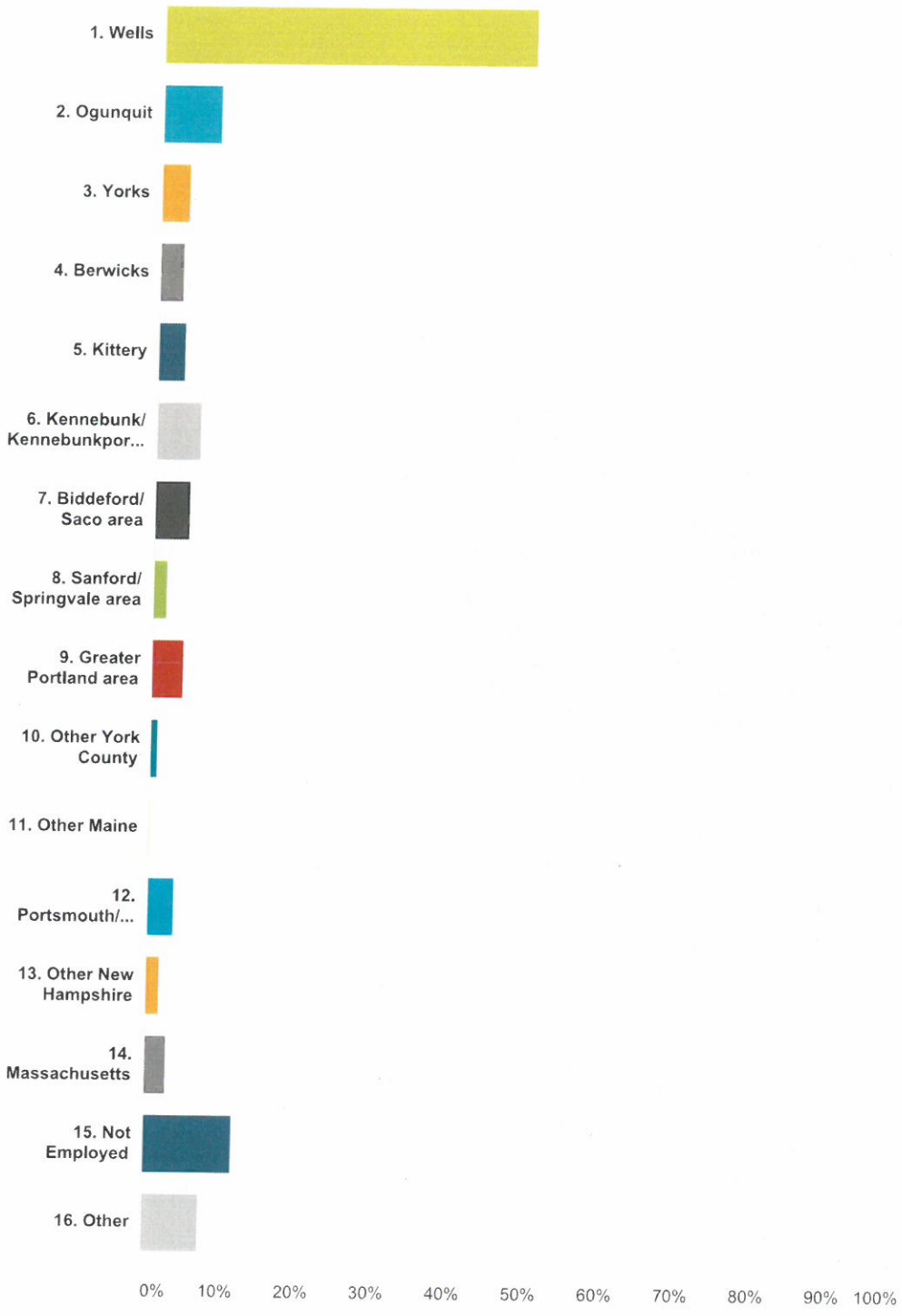
Answered: 392 Skipped: 106



Answer Choices	Responses	
1. No	21.43%	84
2. Yes, Full-time	36.22%	142
3. Yes, Part-time	43.88%	172
Total Respondents: 392		

Q16 In what community is your job located?

Answered: 390 Skipped: 108



Answer Choices	Responses	
1. Wells	49.23%	192

2. Ogunquit	7.69%	30
3. Yorks	3.85%	15
4. Berwicks	3.08%	12
5. Kittery	3.59%	14
6. Kennebunk/ Kennebunkport area	5.90%	23
7. Biddeford/ Saco area	4.62%	18
8. Sanford/ Springvale area	1.79%	7
9. Greater Portland area	4.10%	16
10. Other York County	1.03%	4
11. Other Maine	0.26%	1
12. Portsmouth/ Dover/ Rochester area	3.59%	14
13. Other New Hampshire	1.79%	7
14. Massachusetts	2.82%	11
15. Not Employed	11.79%	46
16. Other	7.44%	29

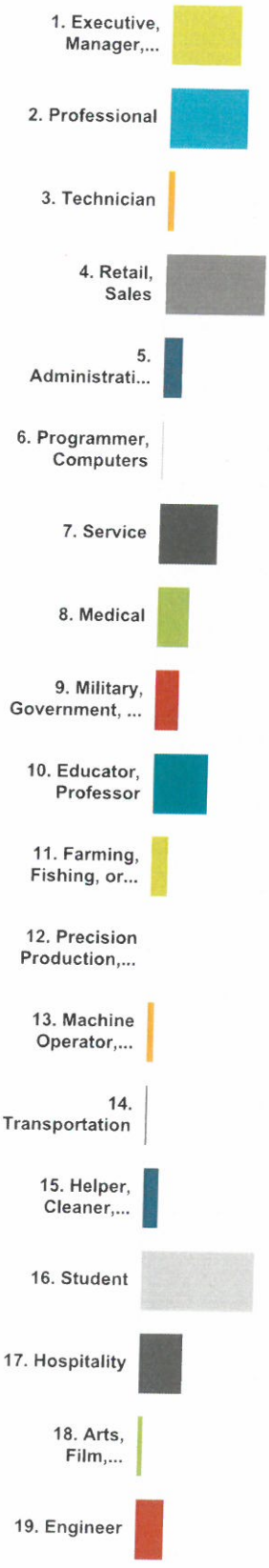
Total Respondents: 390

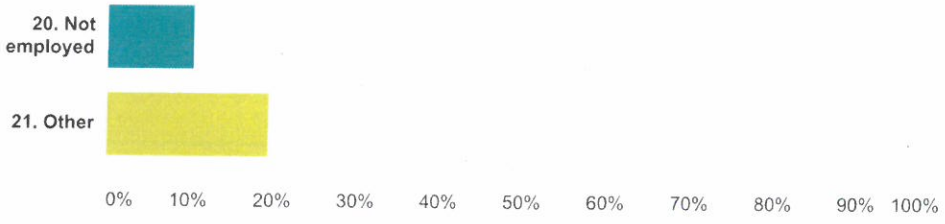
#	Other (please specify)	Date
1	Eliot	12/16/2014 2:11 PM
2	Biddeford - now that's revitalization!	11/18/2014 9:15 PM
3	Eliot	11/14/2014 12:51 PM
4	husband works from home for an out of state company	11/7/2014 2:28 PM
5	retired	11/4/2014 11:19 PM
6	but I travel around York and Cumberland County	11/4/2014 8:15 AM
7	Work remotely from home	11/3/2014 7:42 AM
8	Eliot	11/1/2014 8:17 PM
9	retired - live in Wells	11/1/2014 5:29 PM
10	Telecomuter	10/31/2014 9:08 AM
11	Dover	10/30/2014 11:17 AM
12	Eliot	10/29/2014 11:40 AM
13	New england	10/29/2014 8:56 AM
14	family bisness not located in maine	10/27/2014 1:07 PM
15	Wells Beach Resort RV and Campground	10/27/2014 7:55 AM
16	Moody	10/27/2014 7:54 AM
17	The Lord of the Flies	10/27/2014 7:51 AM
18	Retired	10/25/2014 10:22 AM

19	consulting in ME, NH, VT, MA, NY	10/24/2014 7:55 PM
20	Retired	10/24/2014 8:10 AM
	Retired	10/23/2014 3:01 PM
22	retired	10/23/2014 1:27 PM
23	Retired	10/22/2014 2:38 PM
24	retired	10/20/2014 5:58 PM
25	Various locations throughout the seacoast	10/20/2014 5:16 PM
26	I work in Wells, York, and Sanford	10/20/2014 10:55 AM
27	Company HQ in St. Louis. Work out of home	10/20/2014 9:47 AM
28	retired	10/19/2014 4:01 PM
29	across the country	10/19/2014 10:16 AM
30	Portland	10/18/2014 2:34 PM
31	retired	10/17/2014 5:02 PM
32	N/A	10/17/2014 1:07 PM
33	Salisbury Mass	10/17/2014 1:06 PM
34	retired	10/17/2014 8:39 AM
35	Chebeague Island	10/16/2014 7:57 PM
36	Retired	10/16/2014 6:20 PM
37	york to yarmouth	10/16/2014 4:15 PM

Q17 What is your occupation?

Answered: 390 Skipped: 108





Answer Choices	Responses	
1. Executive, Manager, Administrator	8.97%	35
2. Professional	10.00%	39
3. Technician	1.03%	4
4. Retail, Sales	12.82%	50
5. Administration Support including Clerical	2.56%	10
6. Programmer, Computers	0.51%	2
7. Service	7.44%	29
8. Medical	4.10%	16
9. Military, Government, Law Enforcement	3.08%	12
10. Educator, Professor	7.18%	28
11. Farming, Fishing, or Forestry	2.31%	9
12. Precision Production, Crafts or Repairs	0.00%	0
13. Machine Operator, Assembler, Inspector	1.03%	4
14. Transportation	0.51%	2
15. Helper, Cleaner, Laborer, Caregiver	2.05%	8
16. Student	14.36%	56
17. Hospitality	5.64%	22
18. Arts, Film, Photography, Radio	0.77%	3
19. Engineer	3.85%	15
20. Not employed	10.51%	41
21. Other	19.49%	76

Total Respondents: 390

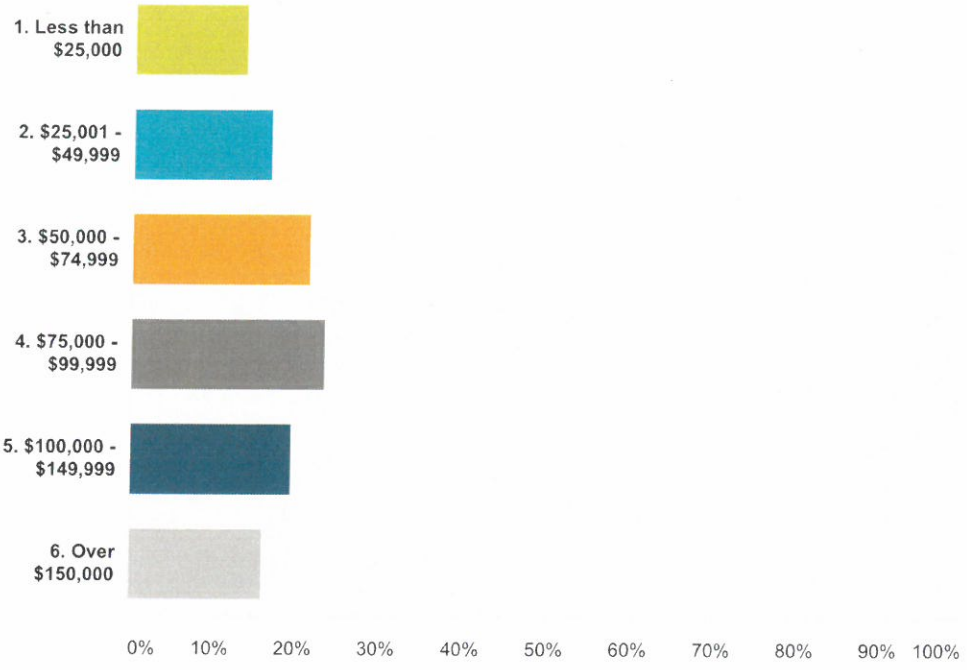
#	Other (please specify)	Date
1	freelance graphic designer	11/25/2014 2:03 PM
2	Builder	11/14/2014 7:19 AM
3	husband is a consultant for large corporations	11/7/2014 2:28 PM

4	At home Mom	11/5/2014 9:43 AM
5	Vet tech	11/4/2014 9:57 PM
	social services	11/4/2014 8:15 AM
7	Banking policies/procedures	11/3/2014 7:42 AM
8	Sales	11/2/2014 9:59 PM
9	retired teacher	11/1/2014 5:29 PM
10	Dairy Queen	10/30/2014 12:25 PM
11	PCC and Old Marsh	10/30/2014 12:15 PM
12	Movie Theatre	10/30/2014 11:09 AM
13	Floral design and event planning	10/30/2014 10:21 AM
14	Dishboy	10/30/2014 7:56 AM
15	Professional Strongman	10/30/2014 7:52 AM
16	Landscaping	10/29/2014 12:27 PM
17	Resturant	10/29/2014 12:21 PM
18	Old Marsh Country Club	10/29/2014 12:15 PM
19	Food service	10/29/2014 11:48 AM
20	Movie theater	10/29/2014 11:47 AM
21	student	10/29/2014 11:46 AM
22	Graphic Design	10/29/2014 11:45 AM
23	Work at scoopdeack	10/29/2014 11:43 AM
24	Lobster wholesaler	10/29/2014 11:40 AM
25	Las Olas (FOH - Front of House)	10/29/2014 9:06 AM
26	Editor	10/29/2014 9:02 AM
27	marine painting	10/29/2014 8:56 AM
28	culinary	10/29/2014 8:56 AM
29	Cook	10/29/2014 8:49 AM
30	Lifeguard	10/29/2014 8:04 AM
31	Resraurant	10/29/2014 8:01 AM
32	Hostess	10/29/2014 7:56 AM
33	landscaper	10/29/2014 7:56 AM
34	Owner of a Country Store & Deli	10/28/2014 4:19 PM
35	construction	10/28/2014 12:39 PM
36	Service Clerck	10/28/2014 8:55 AM
37	dishwasher	10/28/2014 8:52 AM
38	Burrito chef	10/28/2014 8:52 AM
39	stay at home mother. Husband works	10/27/2014 5:11 PM
40	bus boy	10/27/2014 1:14 PM
41	Landscaper	10/27/2014 1:07 PM

42	Prep Cook	10/27/2014 10:54 AM
43	wells rec counselor	10/27/2014 10:53 AM
4	Golf Course Grounds Maintenance	10/27/2014 10:52 AM
45	Whale watch mate	10/27/2014 10:52 AM
46	Food Prep/Line Cook	10/27/2014 10:51 AM
47	2 part time summer jobs in the restaurant business	10/27/2014 10:48 AM
48	Wells Hannaford	10/27/2014 10:48 AM
49	golf course grounds and cash register	10/27/2014 9:53 AM
50	restaurant	10/27/2014 9:50 AM
51	Lobster Pound Worker	10/27/2014 9:45 AM
52	Hotel	10/27/2014 8:47 AM
53	Accountant	10/27/2014 8:46 AM
54	busboy	10/27/2014 8:46 AM
55	Volunteer gastroenterologist	10/27/2014 7:55 AM
56	Prostitute.	10/27/2014 7:51 AM
57	Lobster picker	10/27/2014 7:45 AM
58	Homemaker (so nearly all of the above)	10/24/2014 2:30 PM
59	Auditor	10/24/2014 1:37 PM
60	Husband is retired Fire Department Lt.	10/24/2014 8:10 AM
61	Retired educator	10/23/2014 3:01 PM
62	retired	10/23/2014 1:27 PM
63	Retired	10/22/2014 2:38 PM
64	retired	10/22/2014 2:22 PM
65	Transportation	10/22/2014 5:11 AM
66	retired	10/20/2014 5:58 PM
67	Self employed	10/20/2014 5:16 PM
68	Materials Technician	10/20/2014 11:38 AM
69	Loss Prevention	10/20/2014 10:55 AM
70	Cleaning services	10/20/2014 9:16 AM
71	retired	10/19/2014 4:01 PM
72	RETIRED	10/19/2014 11:59 AM
73	Retired	10/17/2014 1:07 PM
74	Oper Super, ABF Freight Systems	10/17/2014 1:06 PM
75	manufacturing	10/17/2014 12:44 PM
76	Clergy	10/16/2014 7:57 PM
77	Retired Industrial Training Specialist	10/16/2014 6:20 PM
78	Stay-at-home mom	10/16/2014 3:30 PM

Q18 Please indicate your household's total annual income (before taxes):

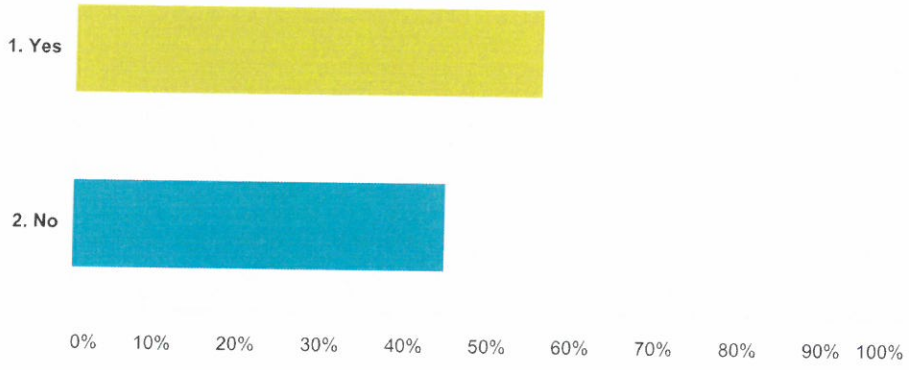
Answered: 390 Skipped: 108



Answer Choices	Responses	
1. Less than $25,000	13.59%	53
2. $25,001 - $49,999	16.67%	65
3. $50,000 - $74,999	21.54%	84
4. $75,000 - $99,999	23.33%	91
5. $100,000 - $149,999	19.49%	76
6. Over $150,000	16.15%	63
Total Respondents: 390		

Q19 Please tell us if, in the last 5 years, you have been an active volunteer within the Town of Wells.

Answered: 390 Skipped: 108



Answer Choices	Responses	
1. Yes	56.15%	219
2. No	44.62%	174
Total Respondents: 390		

March 15, 2016

Greetings Taxpayers:

The Town of Wells Comprehensive Planning Committee is working with Town Staff to update the 2005 Comprehensive Plan.

The Strategic/Comprehensive Plan is a document with many components that aid Town Staff in updating its Land Use Ordinance to meet the future needs of the community for the next 10 years. The Comprehensive Plan is considered a blueprint to map the future and your opinion is critical as the Committee works to revitalize the document to meet the unique vision of our Town's core values, future possibilities, direction and needs.

The Committee has worked with Staff to create a survey that touches on many different elements that could be of concern in the future and many things the Town currently does that we want to make sure the citizens support moving forward.

The Committee also wanted it to be clear that some of the unique features and future planning may come at a cost and those survey questions clearly indicate if funds could be required move forward with a particular project. Please keep in mind that you are not voting at this time to appropriate funds of any kind. This is only a survey and future projects would be presented at the Annual Town Meeting in June or during elections each November.

To participate in the survey you may go to the Town website at www.wellstown.org and complete the survey electronically. For those who did not receive a direct mailing, you may pick up, complete and submit a paper version at the locations listed below. You may also request a paper copy to be mailed to you by calling 207-646-5187. The survey may be either mailed back to Town Hall (208 Sanford Road, Wells, ME 04090) or you may drop the survey off at the following locations: The Wells Town Hall, Managers Office; The Wells Library; or The Wells-Ogunquit Senior Center. The survey deadline is May 15, 2016.

The draft Comprehensive Plan is available on the Town website at www.wellstown.org under the heading of "Community" on the homepage.

The Committee is looking forward to your opinion!

Sincerely,

Jonathan Carter, Town Manager

Town of Wells, Maine

Please take this

SURVEY for the

Wells Comprehensive Plan Re-Write.

We appreciate your input!

THANK YOU.

If you don't have time today to take it, please:

- Visit www.wellstown.org to take the survey online,
- Find us on **Facebook** and click the Survey link, or
- Take it at home and drop it back off on your next visit!

Surveys are DUE by MAY 15, 2016

Town of Wells, Maine

Strategic/Comprehensive Plan Survey – March 2016

Our Town of Wells is in the process of updating our 2005 Comprehensive Plan in order to revitalize its blueprint for the future and we need your help and cooperation to do this, please.

Your input will aid us, the Comprehensive Planning Committee, in completing our mission by providing us with your unique vision as to our Town's core values, possibilities, needs and direction.

We would greatly appreciate your participating in this survey in order to benefit the Committee and Town. Please fill out and submit this survey to our Town Hall Manager's Office, the Library or Senior Center by May 15, 2016. Thank you. ***(Also can be completed and submitted electronically on the Town website: www.wellstown.org)***

Please indicate your level of agreement with the following Goals /Actions by checking the box that best represents your view.

	Goal /Action	Strongly Agree	Agree	Somewhat Agree	Disagree	Strongly Disagree	No Opinion
1.	Work actively to retain the rural character of Wells as defined, in large measure, by its open land, marshes, fields, farms and woodlands.						
2.	Improve Wells' economic climate by promoting investment, revenue generation, and year-round, good quality job opportunities by encouraging the development of diverse small businesses and industries that are consistent with the community's small town character.						
3.	Continue to support education facilities and programs kinder garden through grade 12. ***Involves spending Town funds.***						
4.	Continue to promote and encourage neighborhood conservation areas and parks throughout the Town such as Fenderson Wildlife Commons to protect public access for traditional outdoor recreation and to protect critical wildlife habitat. ***May reduce the property tax base.***						
5.	Assist and encourage water and sewer utility extensions to and west of the Exit 19 area. ***May involve spending Town funds.***						
6.	Manage the rate of residential and non-residential growth in a manner that maintains the Town's rural, small-town character and is consistent with the Town's ability to accommodate it. ***May involve re-establishing a growth permit cap and/or establishing impact fees to mitigate the cost of services.***						
7.	Work to encourage that new commercial development is of a scale and intensity that is compatible with the existing character of Wells.						
8.	Continue to encourage suitable areas for low-impact businesses that have access to major transportation resources such as the Maine Turnpike, Routes 9 and 109.						
9.	Encourage tourist-related activities and development consistent with the character and scale of the community and the image of Wells as a family resort area, especially in the Route 1 Corridor/Beach Business Area.						
10.	Restrict the development of commercial tourist "attractions" designed to appeal primarily to the transient tourist or "non-family" travelers, such as nightclubs, bars, amusement parks, and outdoor water slides.						
11.	Continue to encourage the development of a Town Center/Village that can serve as an economic engine for the entire community. ***May involve spending Town funds.***						
12.	Support the Town's programs and ordinances for protecting sensitive, natural resources. ***May involve spending Town funds.***						
13.	Support programs for acquiring key land areas of environmental concern to provide for the protection of these resources, while compensating the property owner. ***Involves spending Town funds.***						
14.	Continue to protect the Branch Brook aquifer from potential sources of contamination by controlling land use in this area and maintaining the availability and quality of other existing and potential water supplies.						
15.	Continue to encourage, manage and support natural resource based enterprises such as agriculture, forestry and mineral extraction.						
16.	Continue to preserve public access to the beaches and Harbor in Wells while managing and maintaining these resources in the best interests of the community and adjacent landowners. ***May involve spending Town funds.***						
17.	Ensure the Wells Harbor remains a viable resource since the Harbor plays an important role as both an economic and recreational resource for the Town. ***May involve expending Town funds.***						
18.	Continue to protect recreational fishing and shell fishing in the Town's coastal waters and estuaries.						
19.	Identify specific land use policies, projects and programs that will mitigate and reduce future flood related damages. ***May involve spending Town funds.***						
20.	Continue to support the Town acquiring conservation land for public uses such as hiking, fishing, and picnicking. ***May involve spending Town funds.***						
21.	Investigate and promote alternative energy sources in the community.						

Town of Wells Strategic/ Comprehensive Plan Survey

Town of Wells
Town Office
208 Sanford Road
Wells, Maine 04090

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Portland, ME
Permit No. 477

Town of Wells, Maine

Strategic/Comprehensive Plan Survey – March 2016

	Goal /Action	Strongly Agree	Agree	Somewhat Agree	Disagree	Strongly Disagree	No Opinion
22.	Continue to encourage and support the expansion of the York County Community College in our community.						
23.	Continue to preserve, protect and maintain the quality of Wells' historical, cultural and archaeological resources.						
24.	Educate Town citizens and visitors about Wells' historic and archaeological resources, not just as individual buildings or sites, but as resources in a geographic, social and economic context.						

Please indicate which one of the following best describes your residency in Wells:

☐ 1. Year-round resident (more than 6 months/year)
☐ 2. Seasonal resident (less than 6 months/year)
☐ 3. Non-resident property owner
☐ 4. Non-resident business owner/manager
☐ 5. Student

How long have you lived in Wells?

☐ 1. Two years or less ☐ 2. Three to five years
☐ 3. Six to ten years ☐ 4. Eleven to twenty years
☐ 5. More than twenty years ☐ 6. Do not live in Wells

Please indicate if children live in your household for most of the year:

a. Preschool aged children ☐ 1. Yes ☐ 2. No
b. School aged children ☐ 1. Yes ☐ 2. No
c. Children over 18 ☐ 1. Yes ☐ 2. No

Please indicate which of the following apply to you:

a. Registered voter in Wells? ☐ 1. Yes ☐ 2. No
b. Owner of a residential home/unit in Wells? ☐ 1. Yes ☐ 2. No
c. Renter of a residential home/unit in Wells? ☐ 1. Yes ☐ 2. No
d. Owner of vacant land in Wells? ☐ 1. Yes ☐ 2. No
e. Owner of commercial property in Wells? ☐ 1. Yes ☐ 2. No
f. Owner of a business in Wells? ☐ 1. Yes ☐ 2. No

How old are you?

☐ 1. 15 - 18 ☐ 2. 19-24 ☐ 3. 25-34
☐ 4. 35-44 ☐ 5. 45-54 ☐ 6. 55-64
☐ 7. 65 or older

What do you think are the three most important issues facing Wells? *(Except for Route 1 traffic, which is already known to be a priority).* In the spaces below, please write your thoughts:

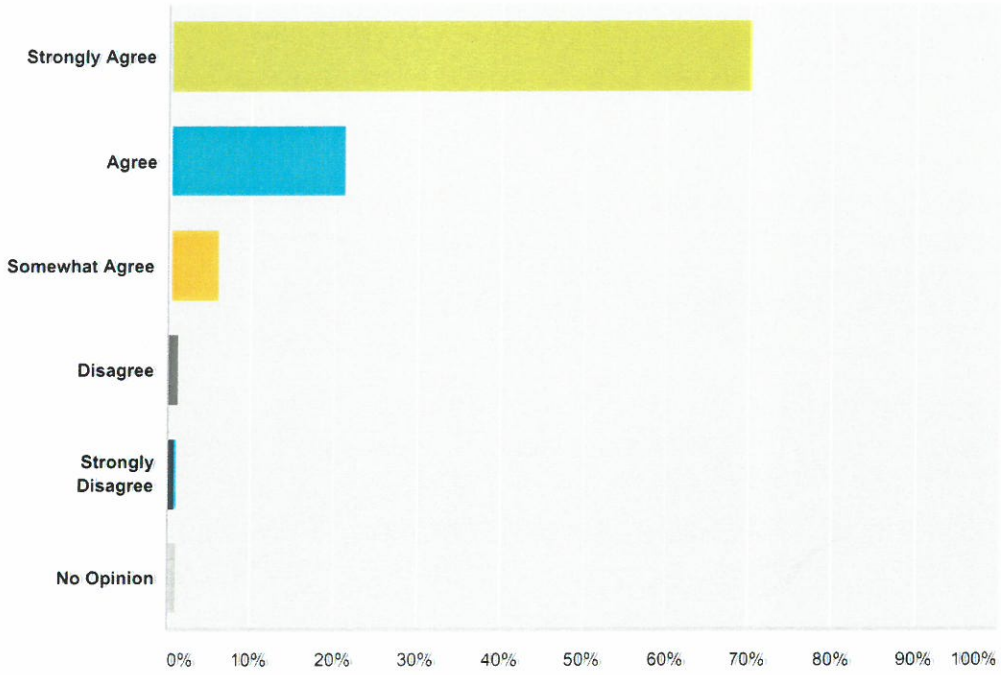
1. _____
2. _____
3. _____

THANK YOU VERY MUCH FOR PARTICIPATING.

Information on the Comprehensive Plan Committee materials, meetings and the draft Plan is available at the Town website *www.wellstown.org* under the header "Community."

Q1 Work actively to retain the rural character of Wells as defined, in large measure, by its open land, marshes, fields, farms and woodlands.

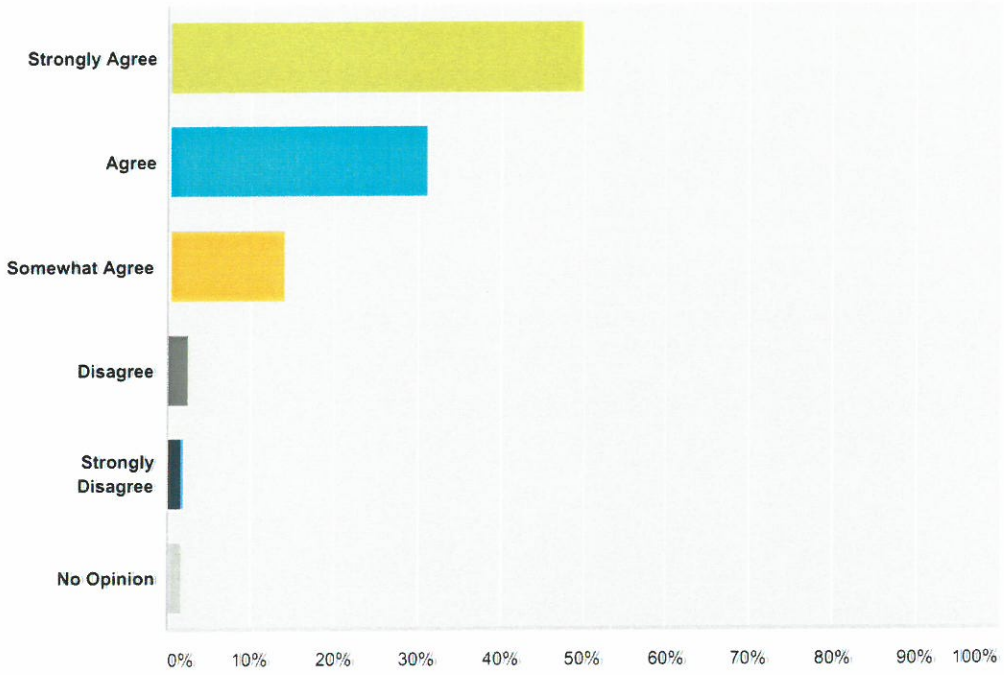
Answered: 893 Skipped: 0



Answer Choices	Responses	
Strongly Agree	69.99%	625
Agree	21.05%	188
Somewhat Agree	5.82%	52
Disagree	1.34%	12
Strongly Disagree	0.78%	7
No Opinion	1.01%	9
Total		893

Q2 Improve Wells' economic climate by promoting investment, revenue generation, and year-round, good quality job opportunities by encouraging the development of diverse small businesses and industries that are consistent with the community's small town character.

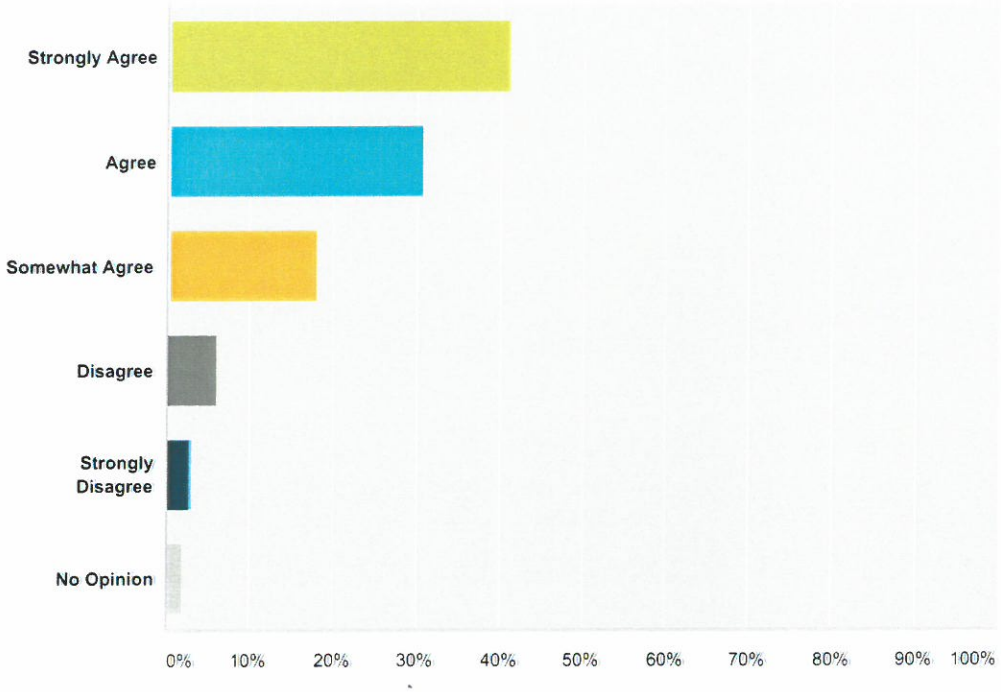
Answered: 893 Skipped: 0



Answer Choices	Responses	
Strongly Agree	49.72%	444
Agree	30.80%	275
Somewhat Agree	13.77%	123
Disagree	2.58%	23
Strongly Disagree	1.57%	14
No Opinion	1.57%	14
Total		893

Q3 Continue to support education facilities and programs kinder garden through grade 12. Involves spending Town funds.

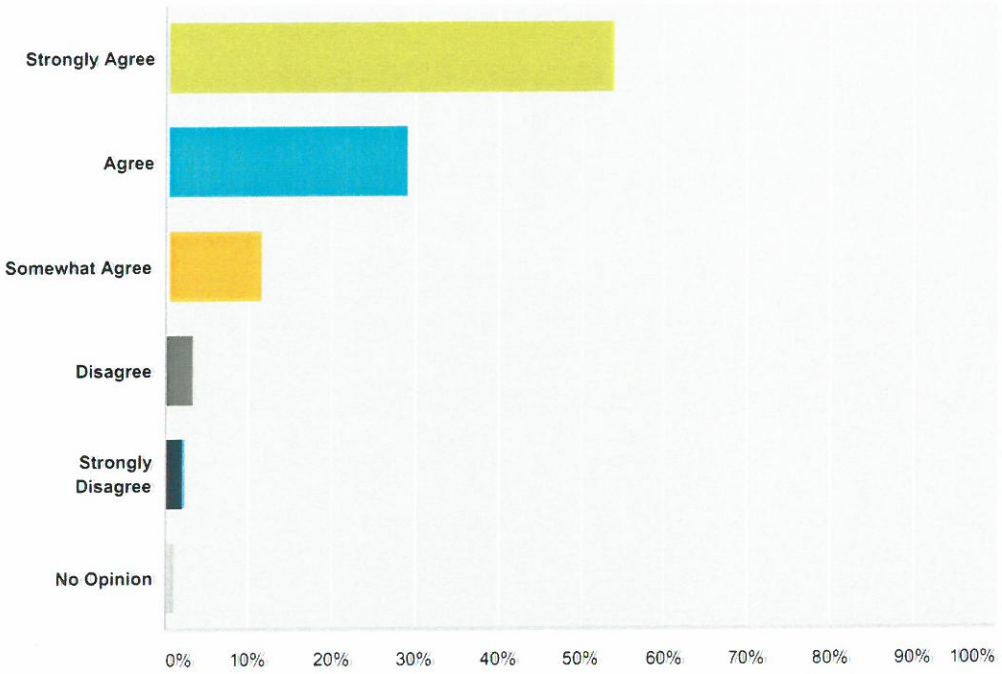
Answered: 893 Skipped: 0



Answer Choices	Responses	
Strongly Agree	40.99%	366
Agree	30.46%	272
Somewhat Agree	17.81%	159
Disagree	6.05%	54
Strongly Disagree	2.80%	25
No Opinion	1.90%	17
Total		893

Q4 Continue to promote and encourage neighborhood conservation areas and parks throughout the Town such as Fenderson Wildlife Commons to protect public access for traditional outdoor recreation and to protect critical wildlife habitat. May reduce the property tax base.

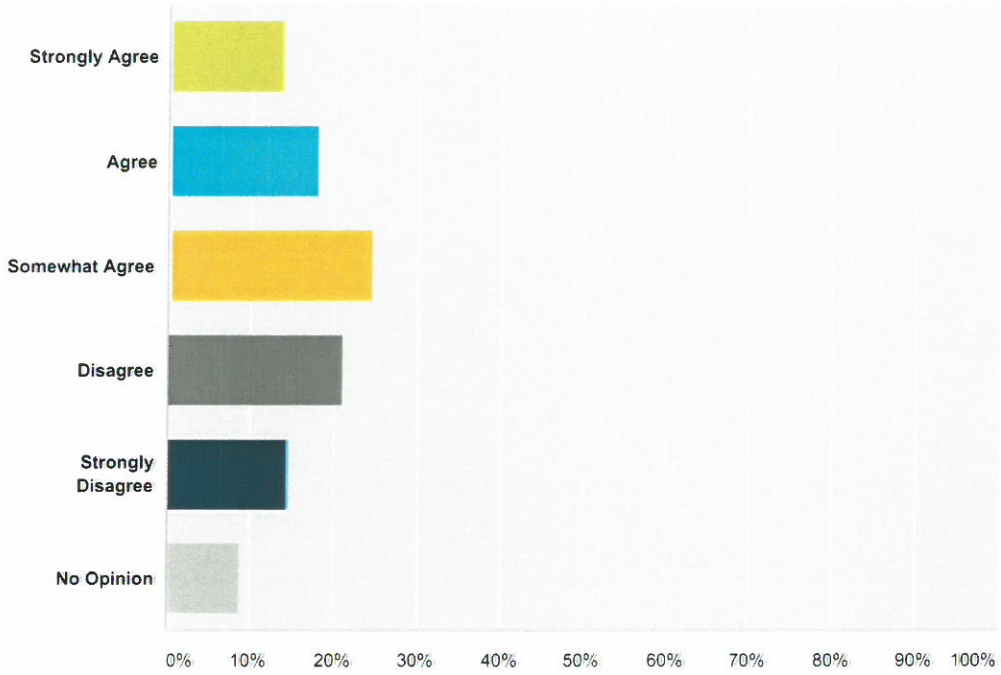
Answered: 893 Skipped: 0



Answer Choices	Responses	
Strongly Agree	53.75%	480
Agree	28.78%	257
Somewhat Agree	11.20%	100
Disagree	3.25%	29
Strongly Disagree	2.02%	18
No Opinion	1.01%	9
Total		893

Q5 Assist and encourage water and sewer utility extensions to and west of the Exit 19 area. May involve spending Town funds.

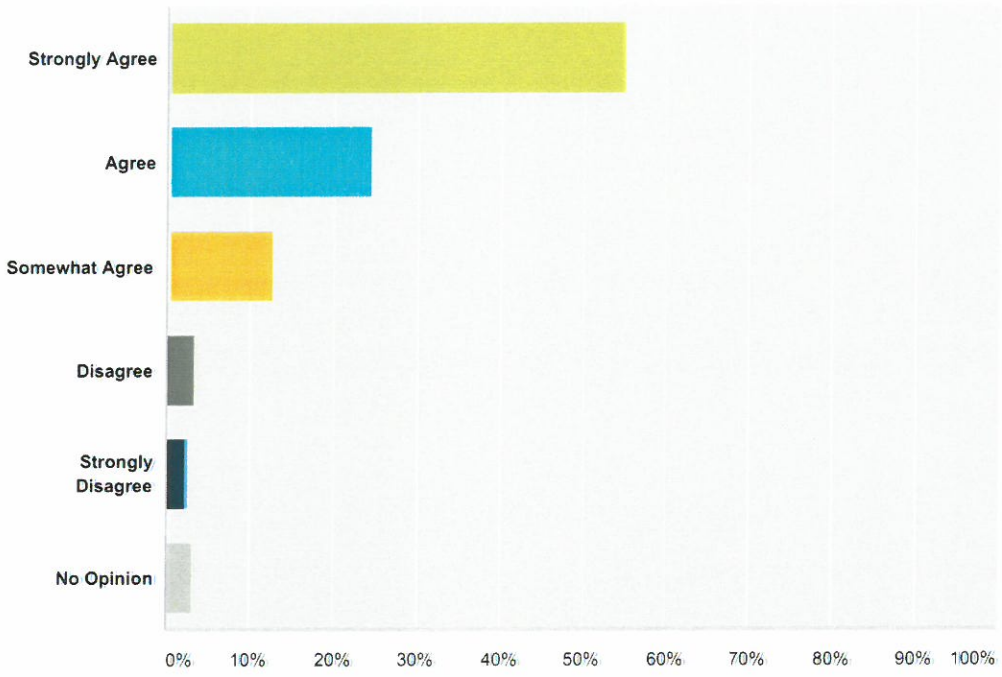
Answered: 893 Skipped: 0



Answer Choices	Responses	
Strongly Agree	13.66%	122
Agree	17.81%	159
Somewhat Agree	24.19%	216
Disagree	21.05%	188
Strongly Disagree	14.45%	129
No Opinion	8.85%	79
Total		893

Q6 Manage the rate of residential and non-residential growth in a manner that maintains the Town's rural, small-town character and is consistent with the Town's ability to accommodate it. May involve re-establishing a growth permit cap and/or establishing impact fees to mitigate the cost of services.

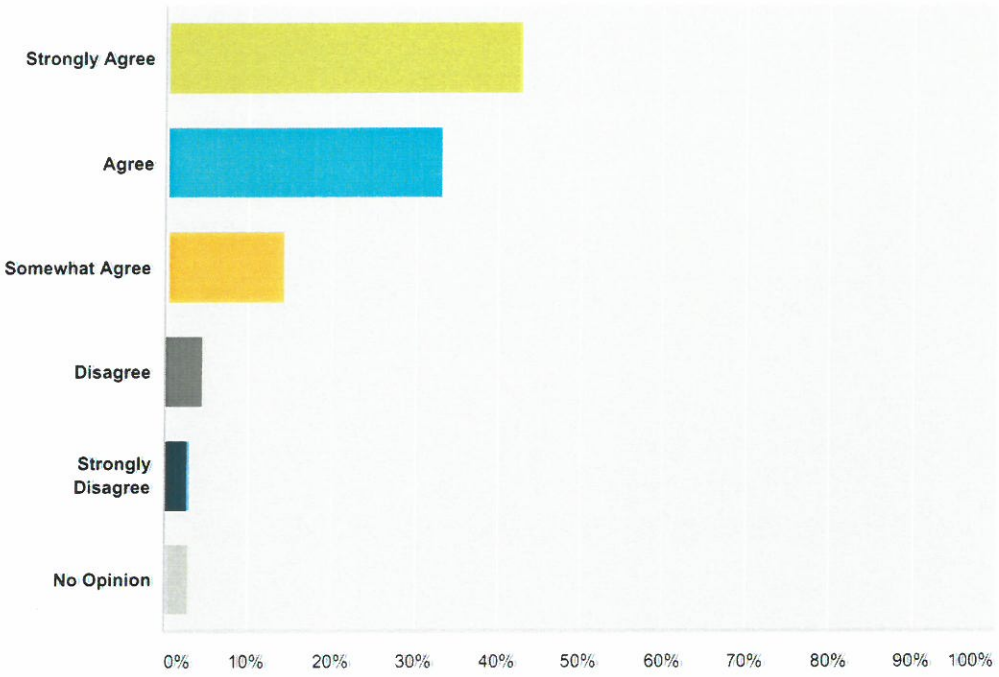
Answered: 889 Skipped: 4



Answer Choices	Responses	
Strongly Agree	54.78%	487
Agree	24.18%	215
Somewhat Agree	12.37%	110
Disagree	3.37%	30
Strongly Disagree	2.25%	20
No Opinion	3.04%	27
Total		889

Q7 Work to encourage that new commercial development is of a scale and intensity that is compatible with the existing character of Wells.

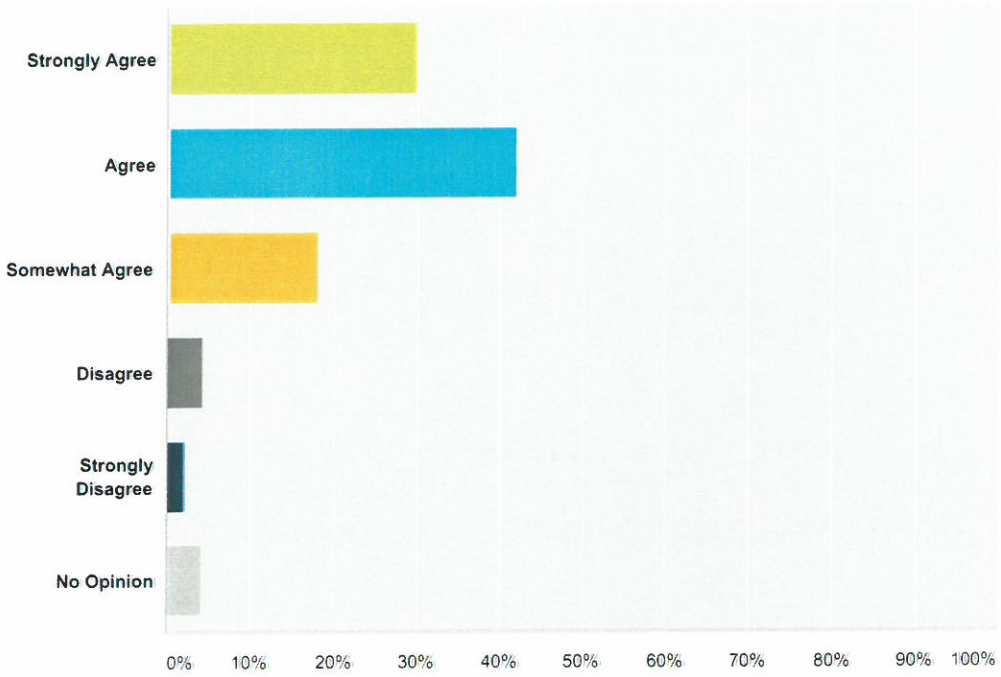
Answered: 889 Skipped: 4



Answer Choices	Responses	
Strongly Agree	42.63%	379
Agree	32.96%	293
Somewhat Agree	14.06%	125
Disagree	4.61%	41
Strongly Disagree	2.81%	25
No Opinion	2.92%	26
Total		889

Q8 Continue to encourage suitable areas for low-impact businesses that have access to major transportation resources such as the Maine Turnpike, Routes 9 and 109.

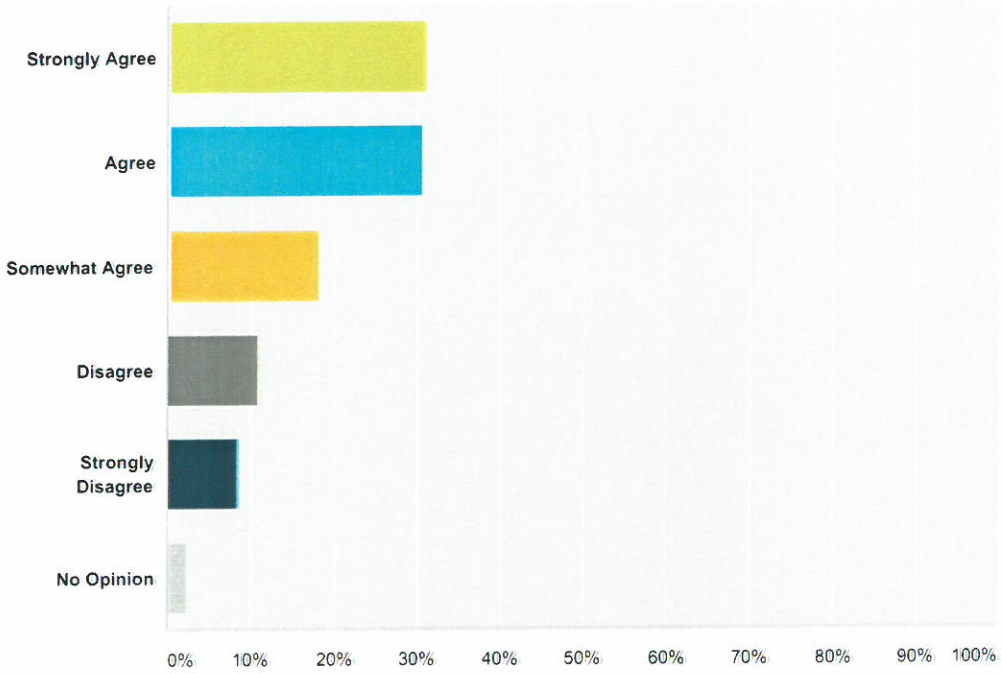
Answered: 889 Skipped: 4



Answer Choices	Responses	
Strongly Agree	29.70%	264
Agree	41.73%	371
Somewhat Agree	17.77%	158
Disagree	4.39%	39
Strongly Disagree	2.14%	19
No Opinion	4.27%	38
Total		889

Q9 Encourage tourist-related activities and development consistent with the character and scale of the community and the image of Wells as a family resort area, especially in the Route 1 Corridor/Beach Business Area.

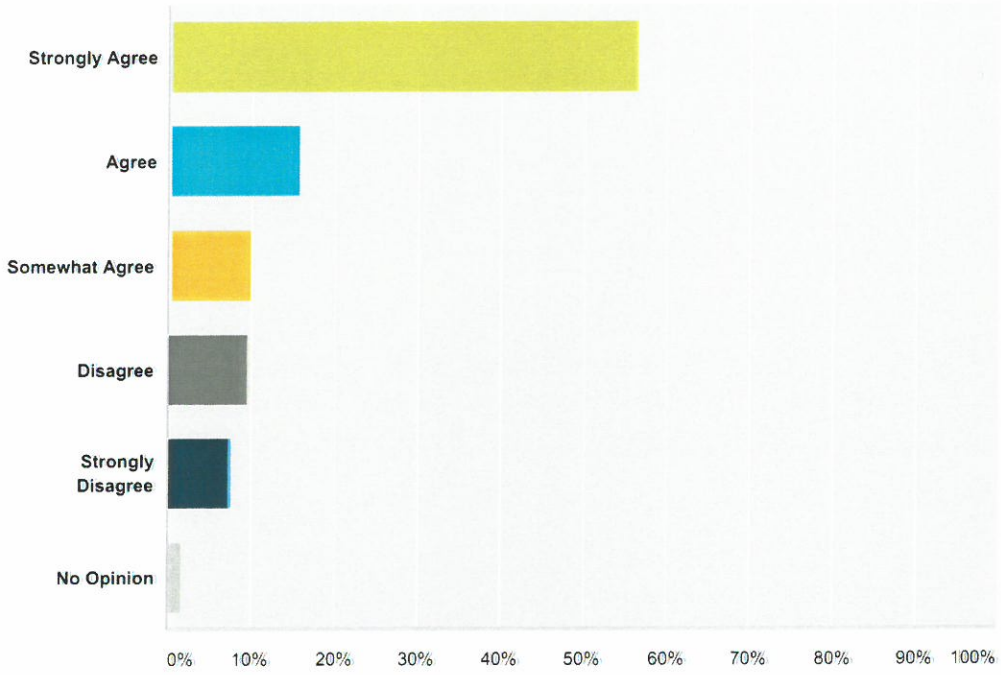
Answered: 889 Skipped: 4



Answer Choices	Responses	
Strongly Agree	30.60%	272
Agree	30.26%	269
Somewhat Agree	17.66%	157
Disagree	10.80%	96
Strongly Disagree	8.44%	75
No Opinion	2.25%	20
Total		889

Q10 Restrict the development of commercial tourist "attractions" designed to appeal primarily to the transient tourist or "non-family" travelers, such as nightclubs, bars, amusement parks, and outdoor water slides.

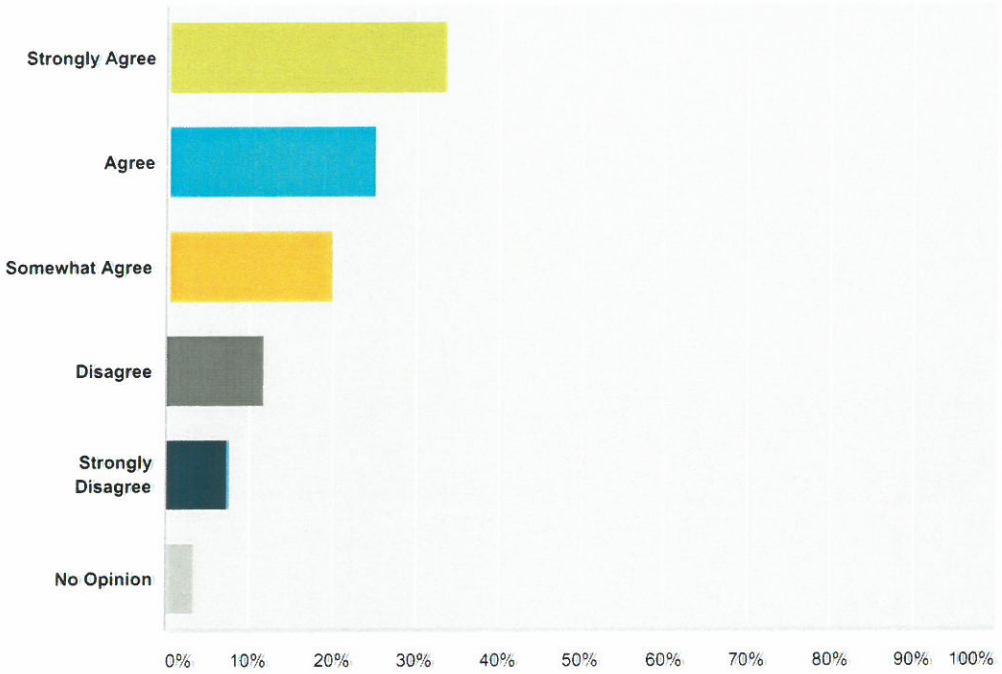
Answered: 889 Skipped: 4



Answer Choices	Responses	
Strongly Agree	56.24%	500
Agree	15.41%	137
Somewhat Agree	9.67%	86
Disagree	9.67%	86
Strongly Disagree	7.31%	65
No Opinion	1.69%	15
Total		889

Q11 Continue to encourage the development of a Town Center/Village that can serve as an economic engine for the entire community. May involve spending Town funds.

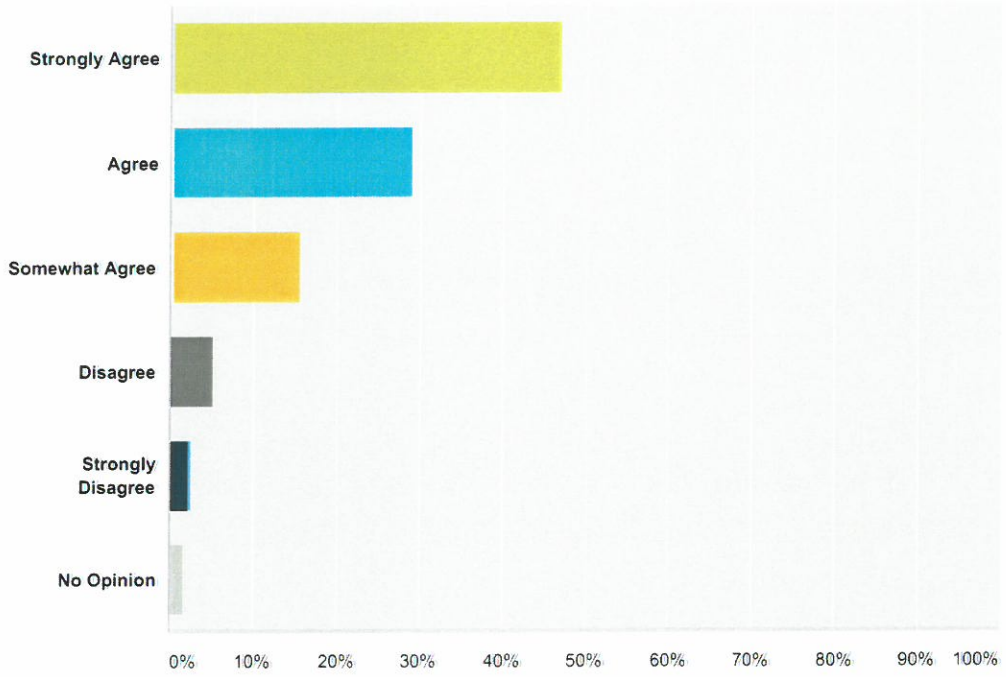
Answered: 887 Skipped: 6



Answer Choices	Responses	
Strongly Agree	33.37%	296
Agree	24.80%	220
Somewhat Agree	19.62%	174
Disagree	11.61%	103
Strongly Disagree	7.22%	64
No Opinion	3.38%	30
Total		887

Q12 Support the Town's programs and ordinances for protecting sensitive, natural resources. May involve spending Town funds.

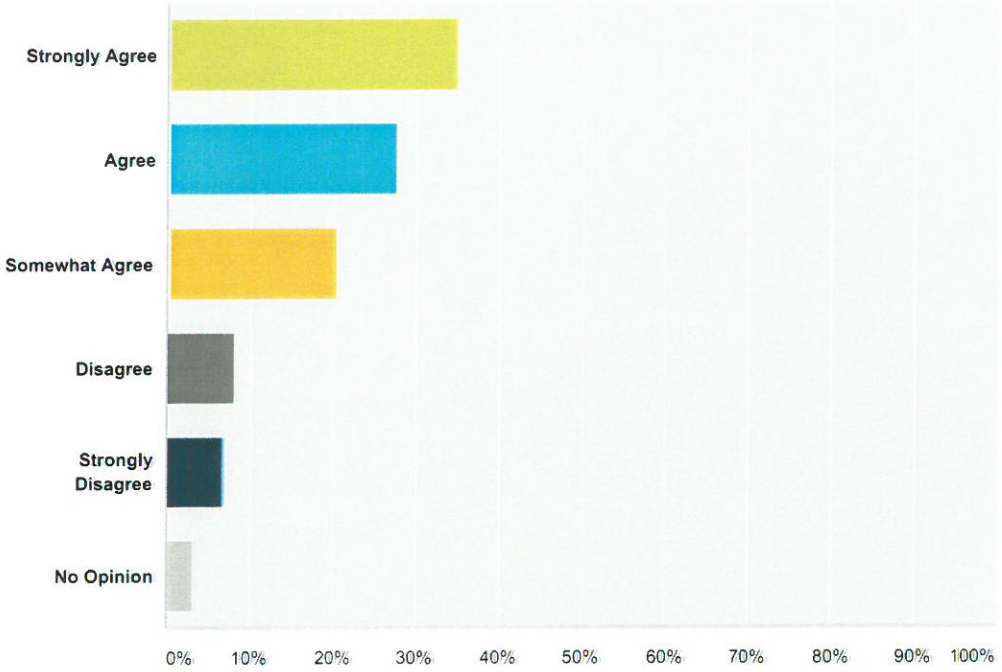
Answered: 887 Skipped: 6



Answer Choices	Responses	
Strongly Agree	46.67%	414
Agree	28.86%	256
Somewhat Agree	15.22%	135
Disagree	5.30%	47
Strongly Disagree	2.25%	20
No Opinion	1.69%	15
Total		887

Q13 Support programs for acquiring key land areas of environmental concern to provide for the protection of these resources, while compensating the property owner. Involves spending Town funds.

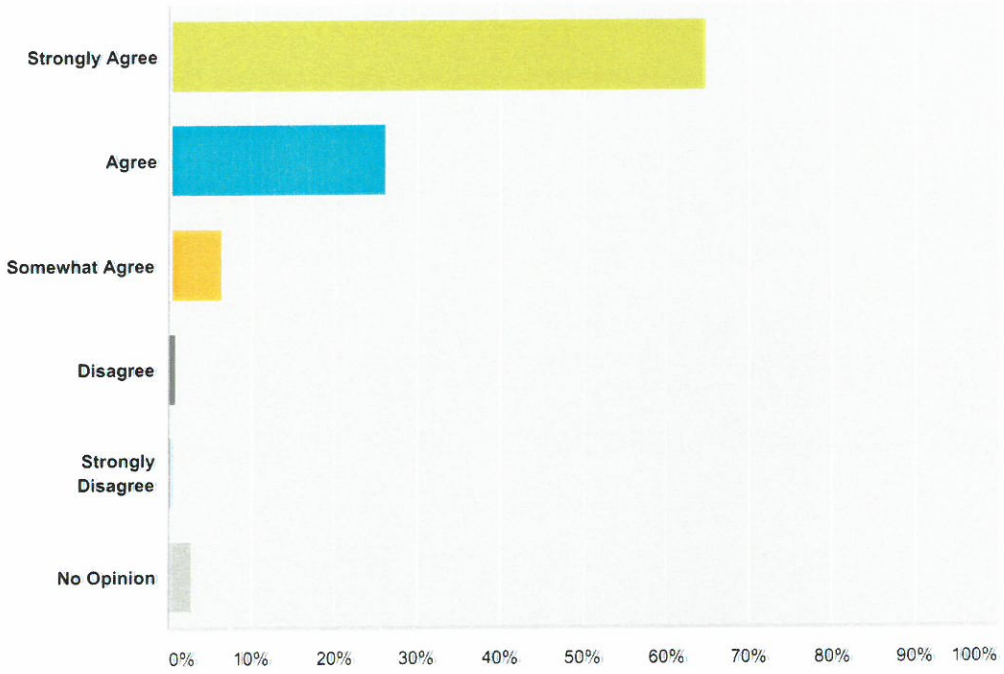
Answered: 887 Skipped: 6



Answer Choices	Responses	
Strongly Agree	34.61%	307
Agree	27.40%	243
Somewhat Agree	20.07%	178
Disagree	8.12%	72
Strongly Disagree	6.65%	59
No Opinion	3.16%	28
Total		887

Q14 Continue to protect the Branch Brook aquifer from potential sources of contamination by controlling land use in this area and maintaining the availability and quality of other existing and potential water supplies.

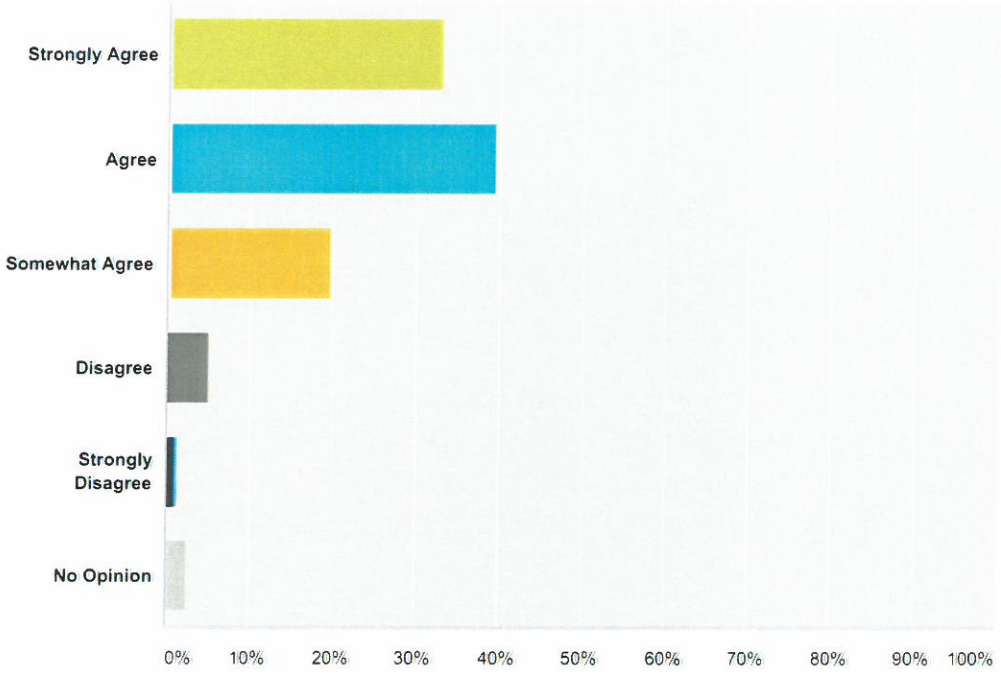
Answered: 887 Skipped: 6



Answer Choices	Responses	
Strongly Agree	64.26%	570
Agree	25.93%	230
Somewhat Agree	6.09%	54
Disagree	0.79%	7
Strongly Disagree	0.23%	2
No Opinion	2.71%	24
Total		887

Q15 Continue to encourage, manage and support natural resource based enterprises such as agriculture, forestry and mineral extraction.

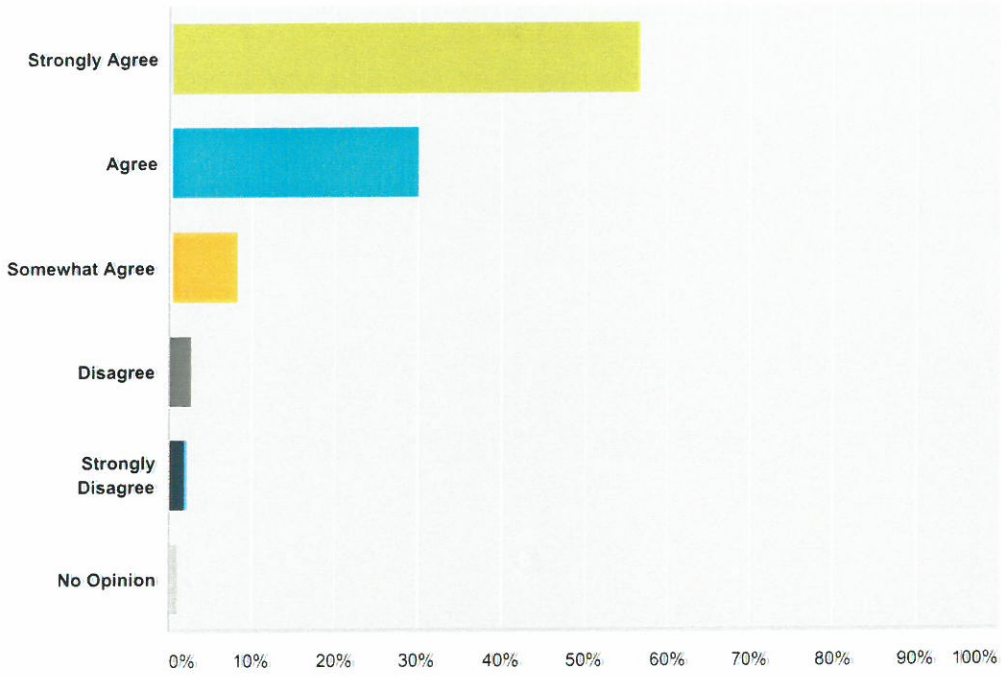
Answered: 887 Skipped: 6



Answer Choices	Responses	
Strongly Agree	32.69%	290
Agree	39.35%	349
Somewhat Agree	19.39%	172
Disagree	4.96%	44
Strongly Disagree	1.13%	10
No Opinion	2.48%	22
Total		887

Q16 Continue to preserve public access to the beaches and Harbor in Wells while managing and maintaining these resources in the best interests of the community and adjacent landowners. May involve spending Town funds.

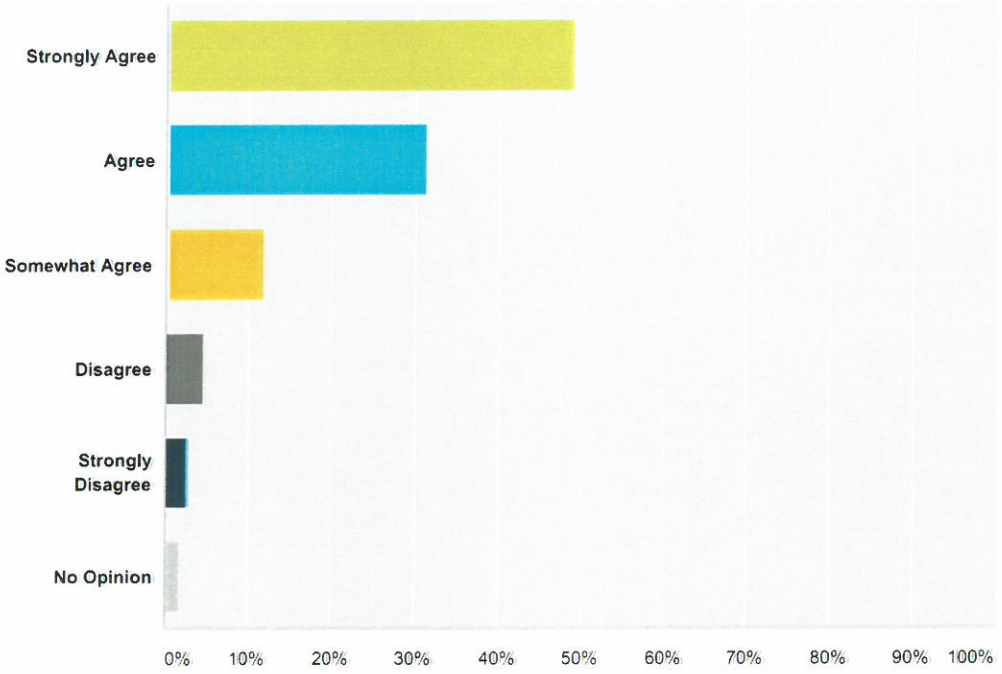
Answered: 885 Skipped: 8



Answer Choices	Responses	
Strongly Agree	56.38%	499
Agree	29.94%	265
Somewhat Agree	8.02%	71
Disagree	2.71%	24
Strongly Disagree	1.92%	17
No Opinion	1.02%	9
Total		885

Q17 Ensure the Wells Harbor remains a viable resource since the Harbor plays an important role as both an economic and recreational resource for the Town. May involve expending Town funds.

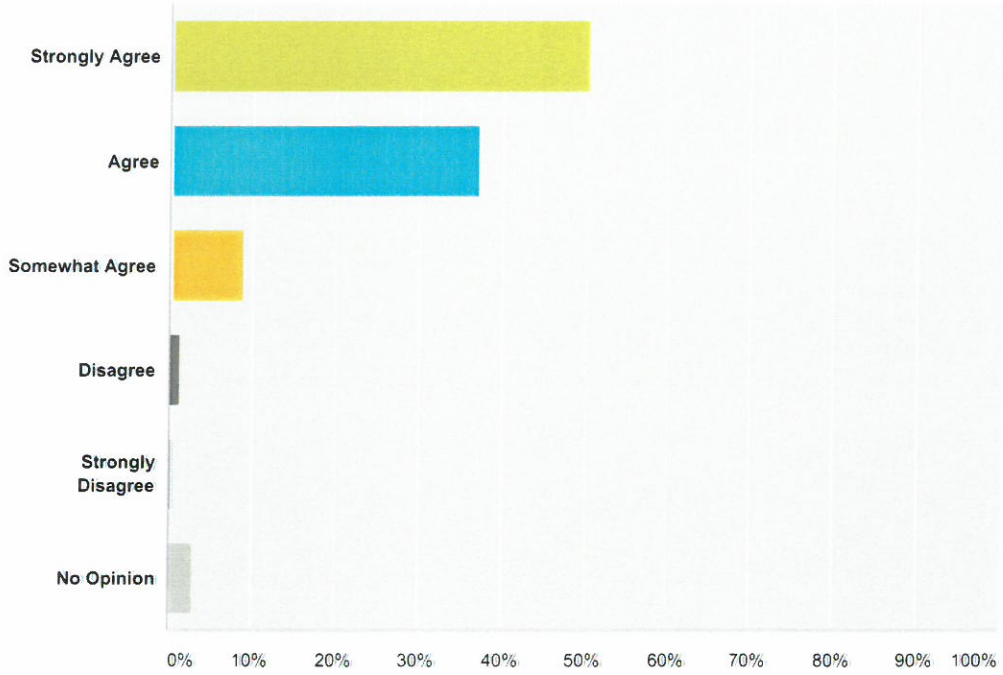
Answered: 885 Skipped: 8



Answer Choices	Responses	
Strongly Agree	48.70%	431
Agree	31.07%	275
Somewhat Agree	11.53%	102
Disagree	4.52%	40
Strongly Disagree	2.60%	23
No Opinion	1.58%	14
Total		885

Q18 Continue to protect recreational fishing and shell fishing in the Town's coastal waters and estuaries.

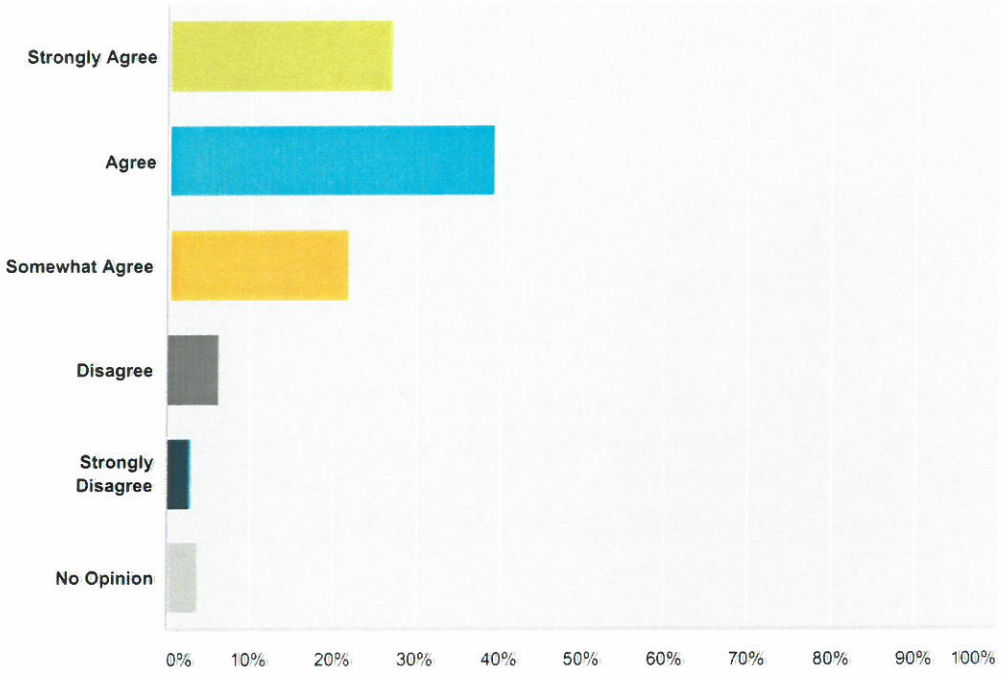
Answered: 885 Skipped: 8



Answer Choices	Responses	
Strongly Agree	50.17%	444
Agree	36.95%	327
Somewhat Agree	8.47%	75
Disagree	1.36%	12
Strongly Disagree	0.23%	2
No Opinion	2.82%	25
Total		885

Q19 Identify specific land use policies, projects and programs that will mitigate and reduce future flood related damages. May involve spending Town funds.

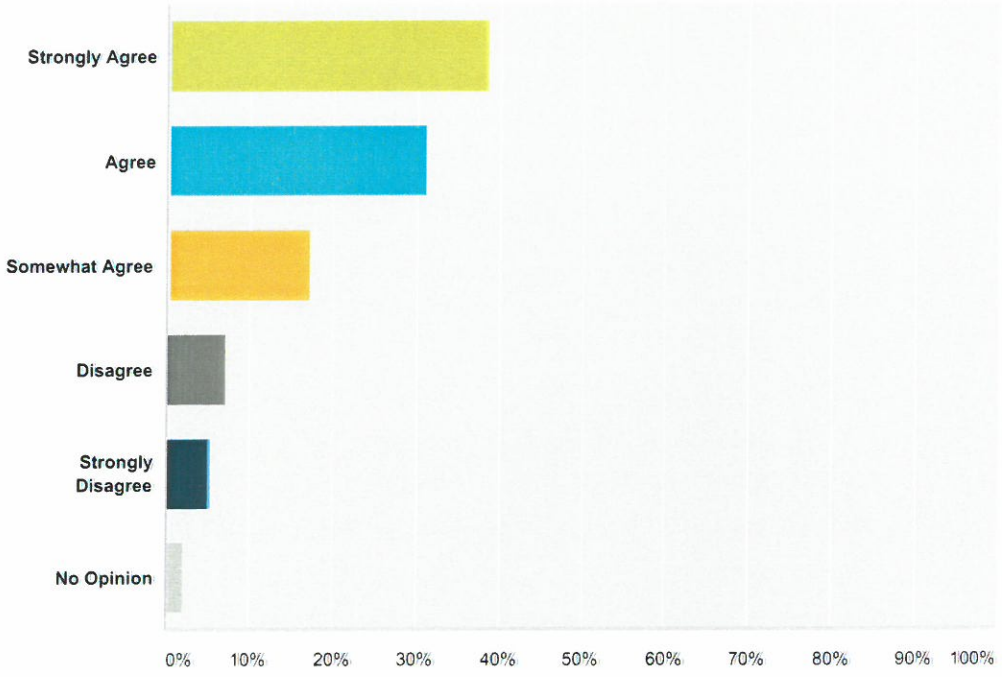
Answered: 885 Skipped: 8



Answer Choices	Responses	
Strongly Agree	26.78%	237
Agree	39.10%	346
Somewhat Agree	21.47%	190
Disagree	6.21%	55
Strongly Disagree	2.71%	24
No Opinion	3.73%	33
Total		885

Q20 Continue to support the Town acquiring conservation land for public uses such as hiking, fishing, and picnicking. May involve spending Town funds.

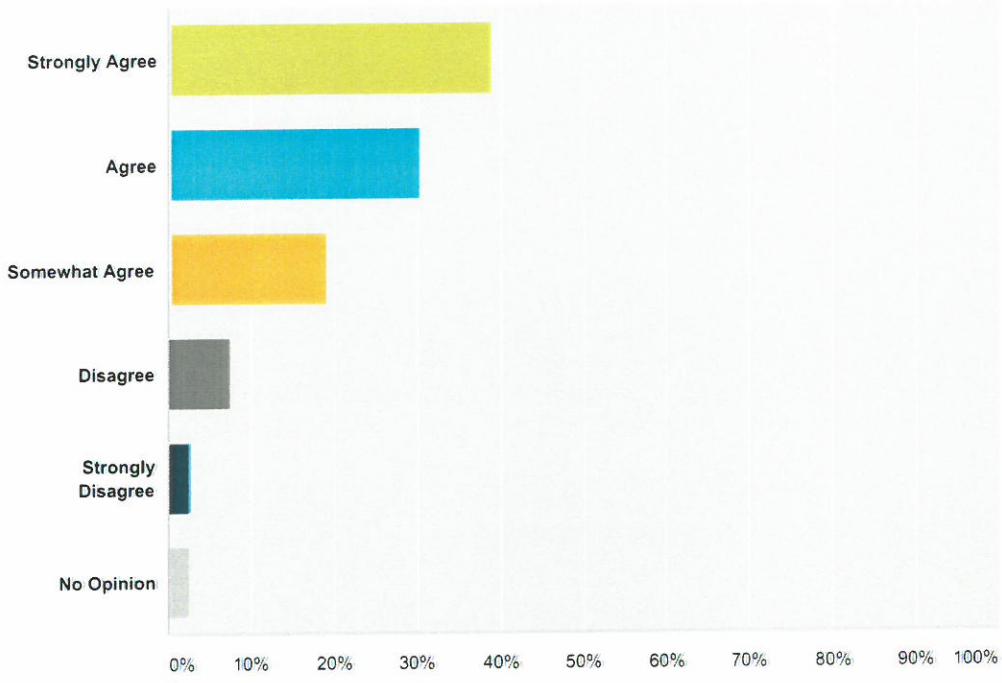
Answered: 885 Skipped: 8



Answer Choices	Responses	
Strongly Agree	38.19%	338
Agree	30.85%	273
Somewhat Agree	16.95%	150
Disagree	7.01%	62
Strongly Disagree	4.97%	44
No Opinion	2.03%	18
Total		885

Q21 Investigate and promote alternative energy sources in the community.

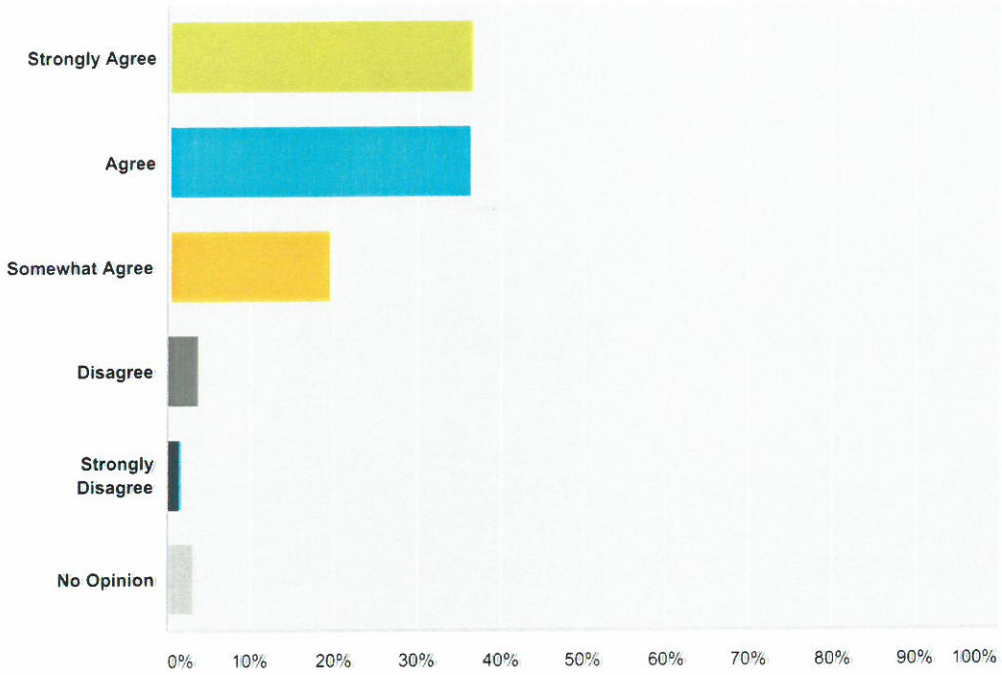
Answered: 884 Skipped: 9



Answer Choices	Responses	
Strongly Agree	38.57%	341
Agree	29.98%	265
Somewhat Agree	18.78%	166
Disagree	7.58%	67
Strongly Disagree	2.60%	23
No Opinion	2.49%	22
Total		884

Q22 Continue to encourage and support the expansion of the York County Community College in our community.

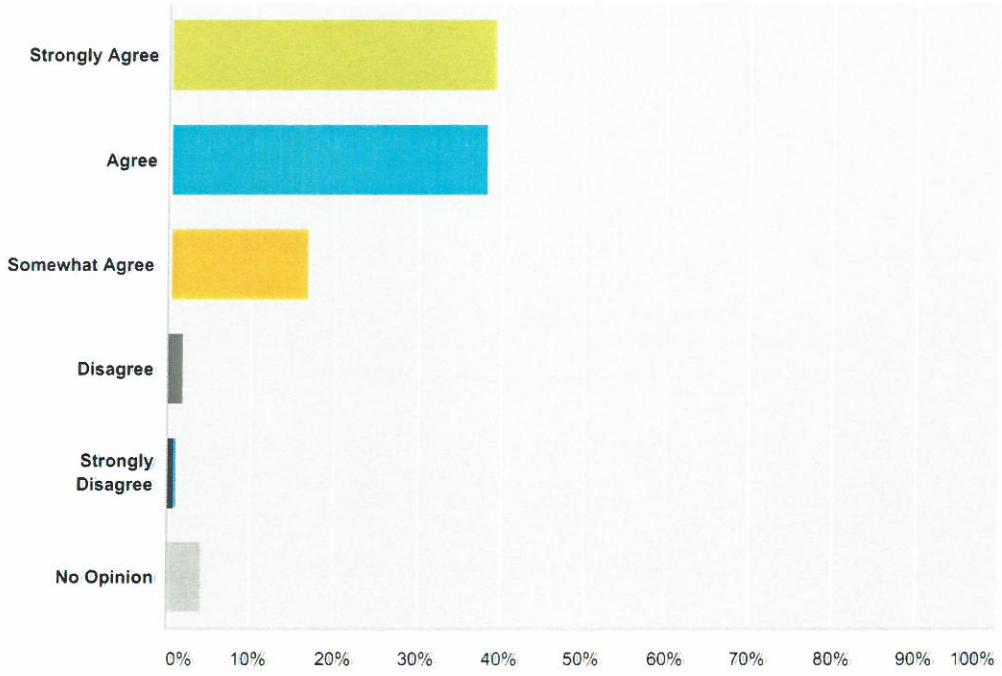
Answered: 884 Skipped: 9



Answer Choices	Responses	
Strongly Agree	36.31%	321
Agree	36.20%	320
Somewhat Agree	19.12%	169
Disagree	3.73%	33
Strongly Disagree	1.47%	13
No Opinion	3.17%	28
Total		884

Q23 Continue to preserve, protect and maintain the quality of Wells' historical, cultural and archaeological resources.

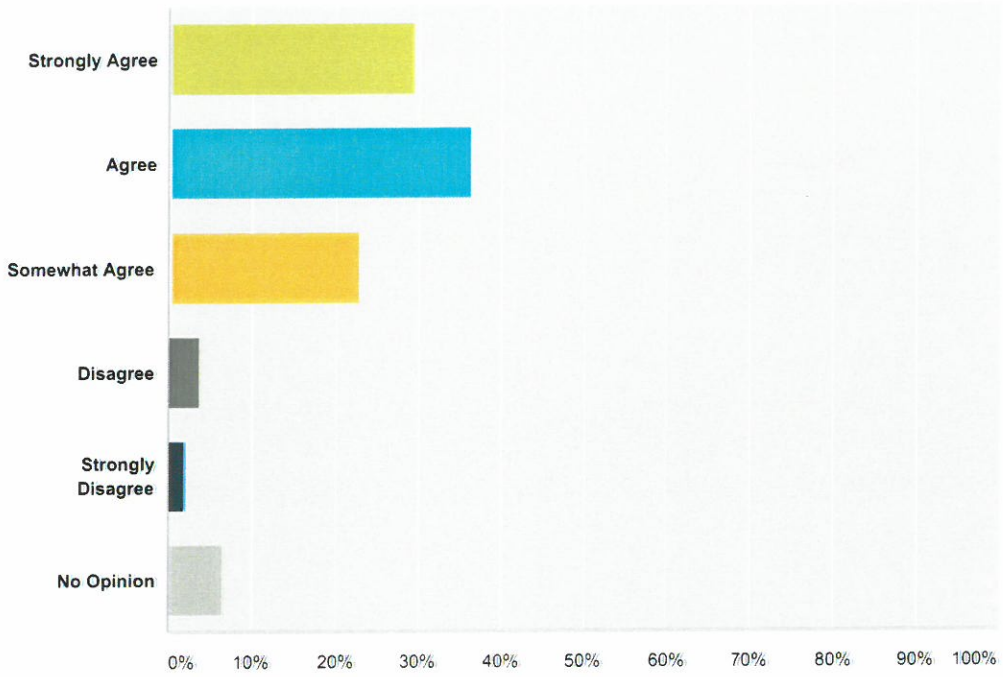
Answered: 884 Skipped: 9



Answer Choices	Responses	
Strongly Agree	39.03%	345
Agree	37.90%	335
Somewhat Agree	16.40%	145
Disagree	1.81%	16
Strongly Disagree	0.79%	7
No Opinion	4.07%	36
Total		884

Q24 Educate Town citizens and visitors about Wells' historic and archaeological resources, not just as individual buildings or sites, but as resources in a geographic, social and economic context.

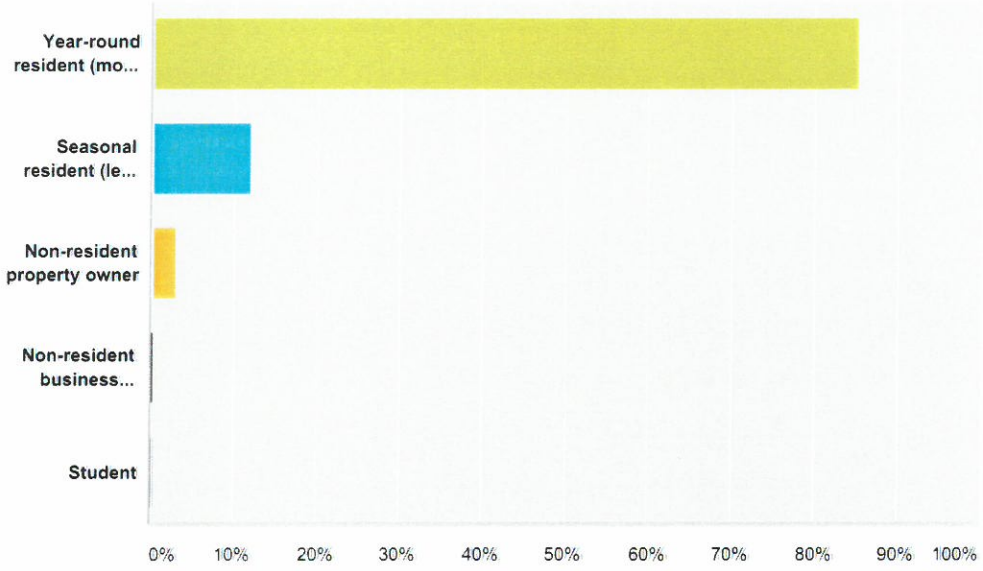
Answered: 884 Skipped: 9



Answer Choices	Responses	
Strongly Agree	29.19%	258
Agree	36.09%	319
Somewhat Agree	22.51%	199
Disagree	3.85%	34
Strongly Disagree	1.81%	16
No Opinion	6.56%	58
Total		884

Q25 Please indicate which one of the following best describes your residency in Wells:

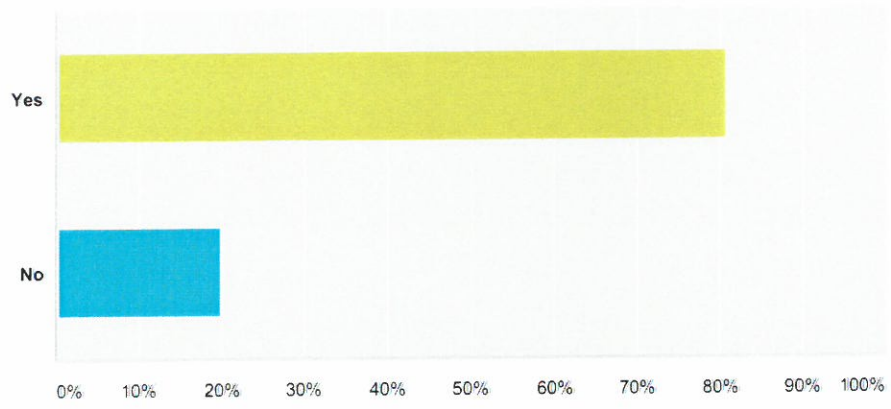
Answered: 878 Skipped: 15



Answer Choices	Responses	
Year-round resident (more than 6 months/year)	84.97%	746
Seasonal resident (less than 6 months/year)	11.73%	103
Non-resident property owner	2.73%	24
Non-resident business owner/manager	0.46%	4
Student	0.11%	1
Total		878

Q26 Are you a registered voter in Wells?

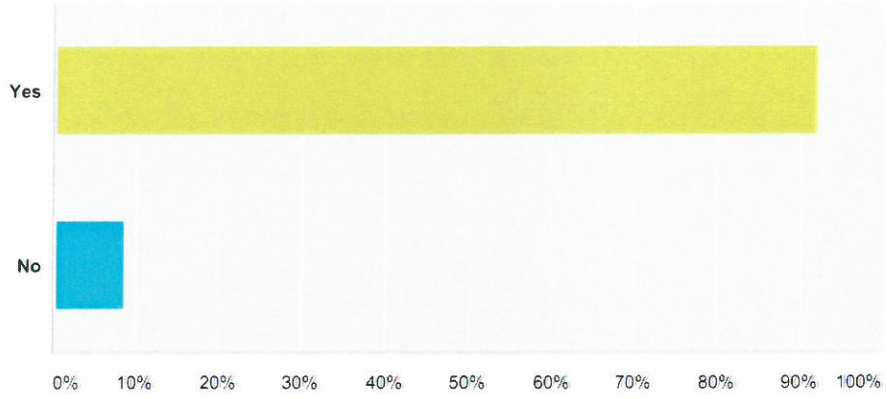
Answered: 878 Skipped: 15



Answer Choices	Responses	
Yes	80.30%	705
No	19.70%	173
Total		878

Q27 Are you the owner of a residential home/unit in Wells?

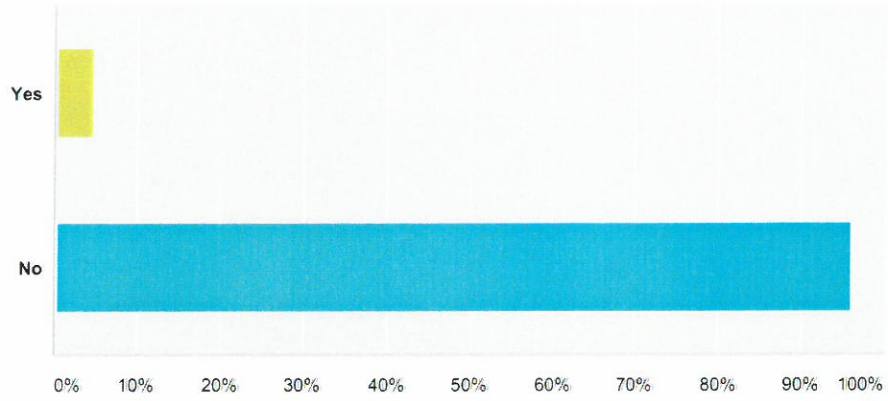
Answered: 878 Skipped: 15



Answer Choices	Responses	
Yes	**91.57%**	804
No	**8.43%**	74
Total		**878**

Q28 Are you the renter of a residential unit/home in Wells?

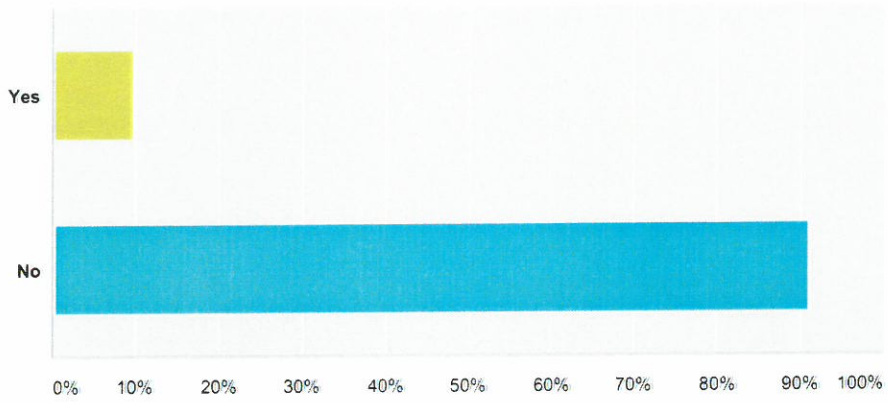
Answered: 878 Skipped: 15



Answer Choices	Responses	
Yes	4.33%	38
No	95.67%	840
Total		878

Q29 Are you the owner of vacant land in Wells?

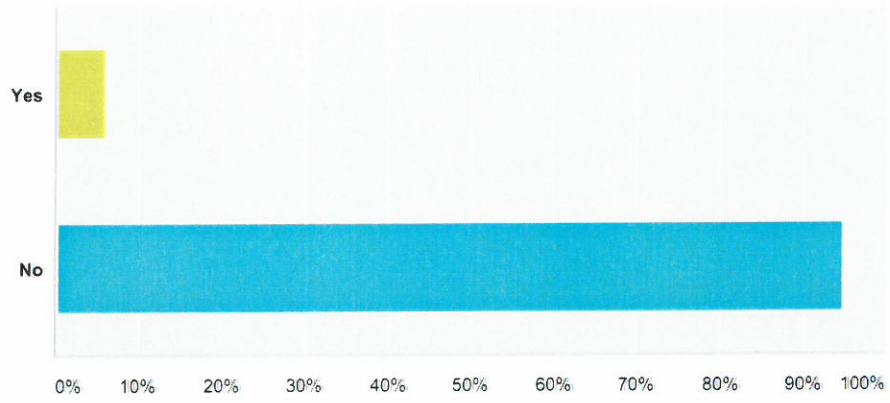
Answered: 878 Skipped: 15



Answer Choices	Responses	
Yes	9.34%	82
No	90.66%	796
Total		878

Q30 Are you the owner of commercial property in Wells?

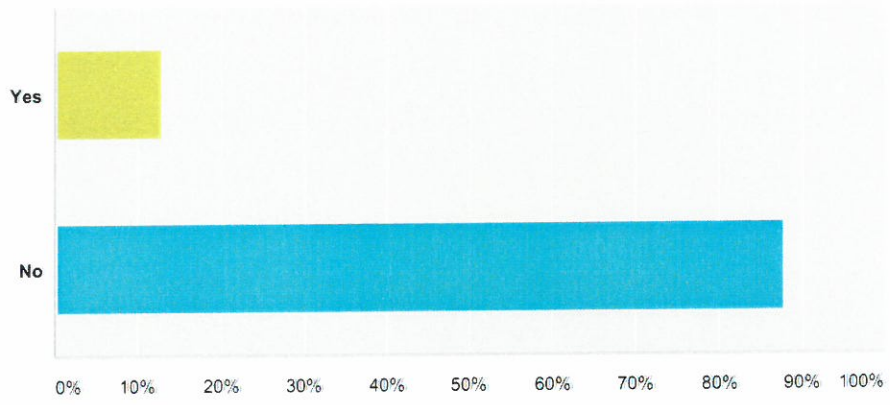
Answered: 878 Skipped: 15



Answer Choices	Responses	
Yes	5.69%	50
No	94.31%	828
Total		878

Q31 Are you the owner of a business in Wells?

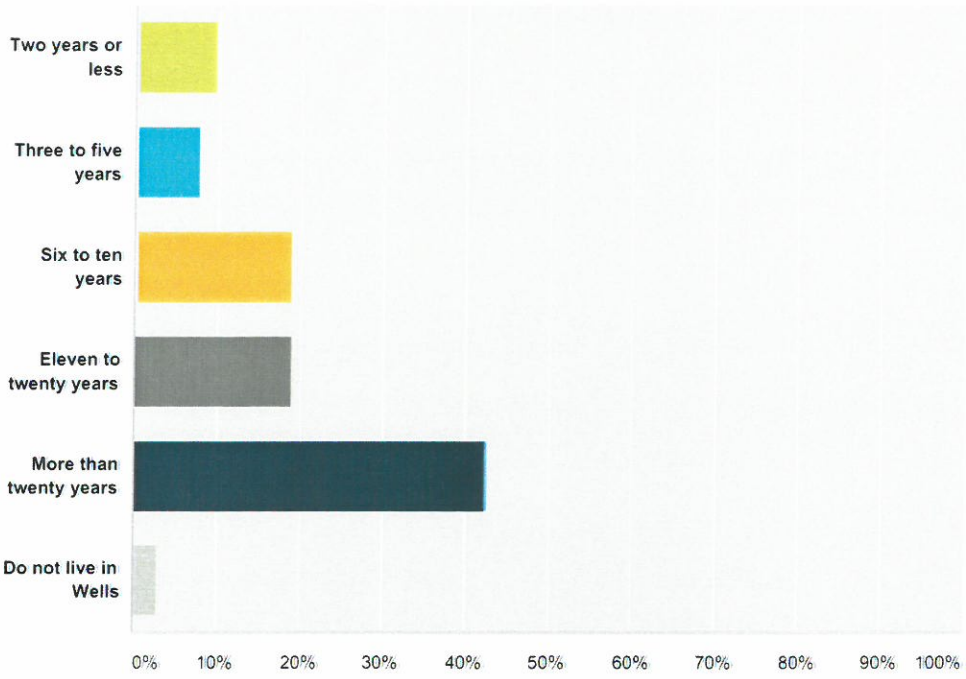
Answered: 878 Skipped: 15



Answer Choices	Responses	
Yes	12.53%	110
No	87.47%	768
Total		878

Q32 How long have you lived in Wells?

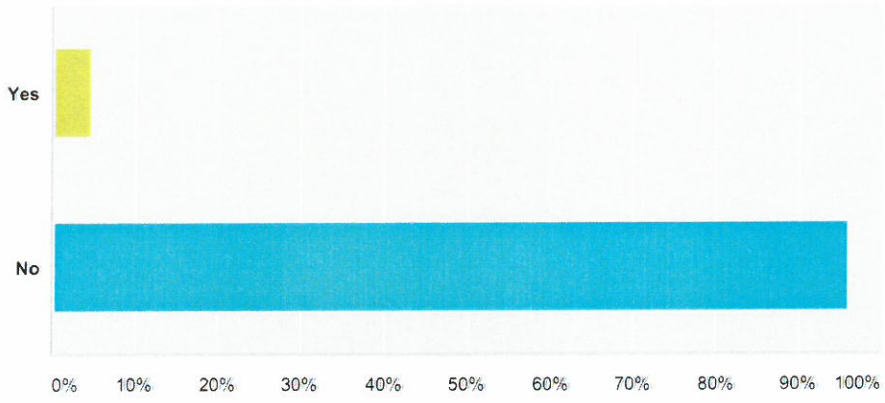
Answered: 878 Skipped: 15



Answer Choices	Responses	
Two years or less	9.45%	83
Three to five years	7.52%	66
Six to ten years	18.68%	164
Eleven to twenty years	19.02%	167
More than twenty years	42.48%	373
Do not live in Wells	2.85%	25
Total		878

Q33 Do any preschool aged children live in your household for most of the year?

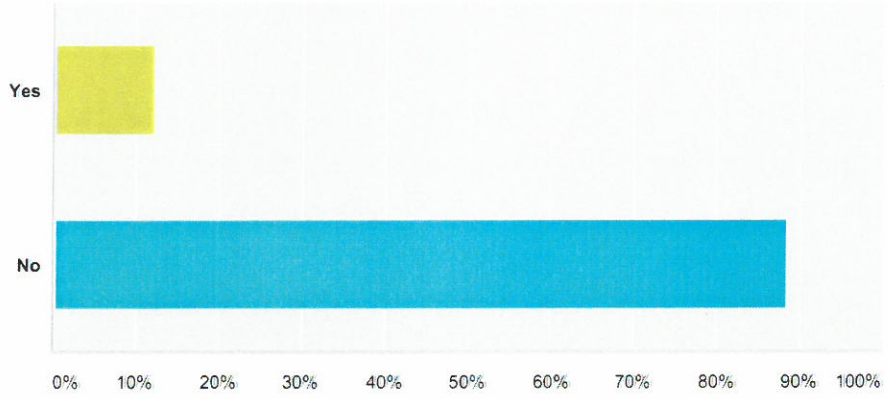
Answered: 878 Skipped: 15



Answer Choices	Responses	
Yes	4.44%	39
No	95.56%	839
Total		878

Q34 Do any school aged children live in your household for most of the year?

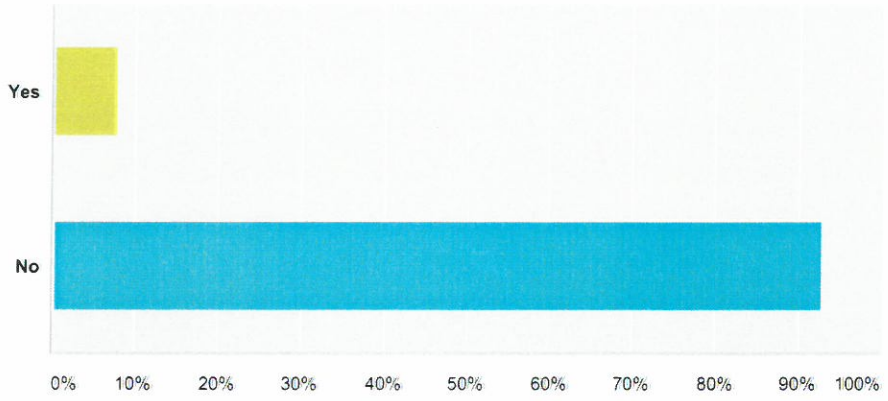
Answered: 878 Skipped: 15



Answer Choices	Responses	
Yes	11.96%	105
No	88.04%	773
Total		878

Q35 Do any children over the age of 18 live in your household for most of the year?

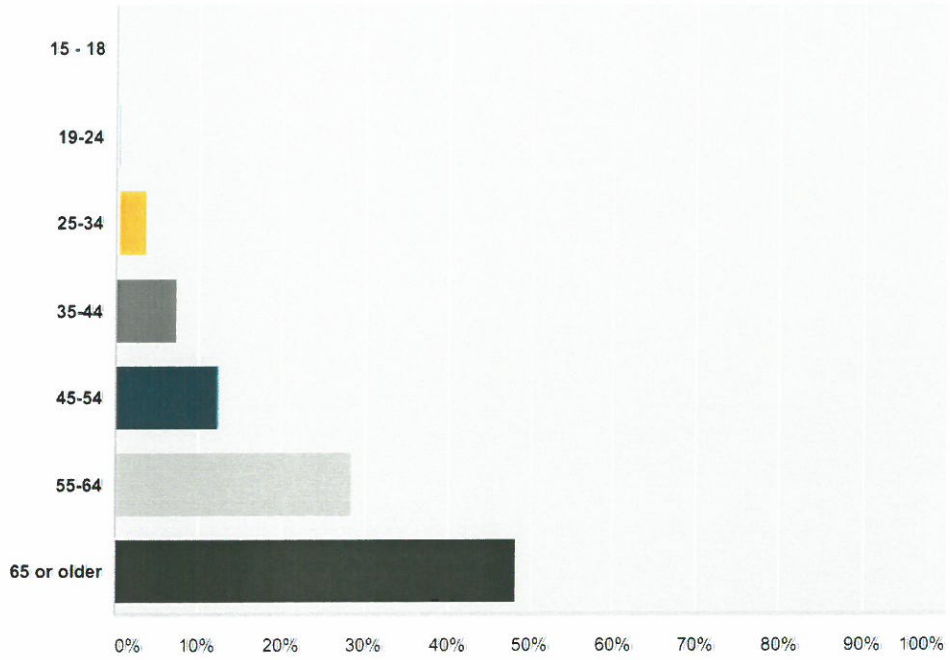
Answered: 878 Skipped: 15



Answer Choices	Responses	
Yes	7.52%	66
No	92.48%	812
Total		878

Q36 How old are you?

Answered: 878 Skipped: 15



Answer Choices	Responses	
15 - 18	0.00%	0
19-24	0.11%	1
25-34	3.30%	29
35-44	7.40%	65
45-54	12.41%	109
55-64	28.47%	250
65 or older	48.29%	424
Total		878

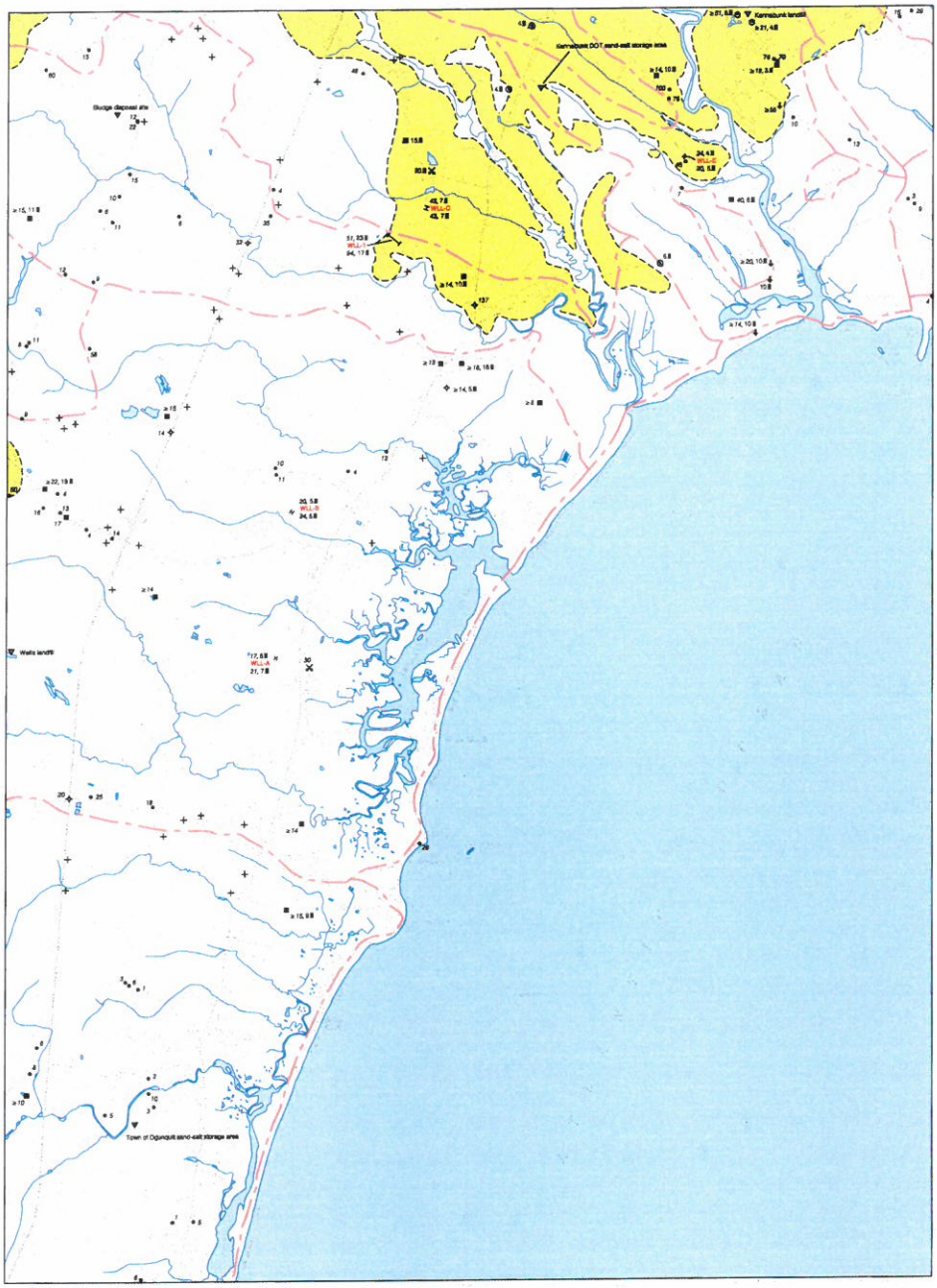
Q37 What do you think are the three most important issues facing Wells? (Except for Route 1 traffic, which is already known to be a priority). In the spaces below, please write your thoughts:

Answered: 856 Skipped: 37

Answer Choices	Responses	
1.	100.00%	856
2.	100.00%	856
3.	100.00%	856

XII. Significant Sand and Gravel Aquifers Map

Significant Sand and Gravel Aquifers



Aquifer boundaries modified from: Lambert, E. M. and Tolman, A. L., 1985, Hydrogeologic data for significant sand and gravel aquifers in part of York County, Maine: Map 2, Maine Geological Survey, Open-File Map 85-91, scale 1:50,000.

Well-yield data from U.S. Geological Survey Basic Data Reports and additional data collected by Maine Geological Survey field assistants during the 1978, 1984, and 1995 field seasons.

Drainage basin boundaries compiled by U.S. Geological Survey, Water Resources Division, Augusta, Maine, with funding from the Municipal Level Radioactive Waste Authority.

Quadrangle Location

SCALE 1 : 24,000

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

0 1 KILOMETER

CONTOUR INTERVAL 20 FEET

TRUE NORTH

Topographic base from U.S. Geological Survey Wells quadrangle, scale 1:24,000 (originally drafted U.S. Geological Survey topographic map methods).

The use of industry, state, or local governmental names in this map is for location purposes only and does not imply approval, responsibility for any present or potential effects on the natural resources.

SIGNIFICANT SAND AND GRAVEL AQUIFERS
(yields greater than 10 gallons per minute)

Approximate boundary of surficial deposits with significant saturated thickness where potential ground-water yield is moderate to excellent

Surficial deposits with good to excellent potential ground-water yield; yields generally greater than 50 gallons per minute to a properly constructed well. Deposits consist primarily of glacial sand and gravel, but can include areas of sandy till and alluvium; yield zones are based on subsurface data where available and may vary from mapped extent in areas where data are unavailable.

Surficial deposits with moderate to good potential ground-water yield; yields generally greater than 10 gallons per minute to a properly constructed well. Deposits consist primarily of glacial sand and gravel, but can include areas of sandy till and alluvium; yields may exceed 50 gallons per minute in deposits hydraulically connected with surface-water bodies, or in extensive deposits where subsurface data are available

SURFICIAL DEPOSITS WITH LESS FAVORABLE AQUIFER CHARACTERISTICS
(yields less than 10 gallons per minute)

Areas with moderate to low or no potential ground-water yield; includes areas underlain by till, marine deposits, silicon deposits, alluvium, swamp, fine glacial sand and gravel deposits, or bedrock; yields in surficial deposits generally less than 10 gallons per minute to a properly constructed well.

SEISMIC-LINE INFORMATION

Profiles for selected 12-channel seismic lines are shown on Plate 2 of Open-File Report 83-1 (Tolman and others, 1983). Length of 12-channel and single-channel seismic lines as shown on the map is in scale.

63 — Depth to bedrock, in feet below land surface

≥ 83 — Depth to bedrock exceeds depth shown (based on calculations)

12 — Depth to water level, in feet below land surface

MAP-7 131, 23 — Twelve-channel seismic line, with depth to bedrock and depth to water shown at the midpoint of the line, in feet below land surface

MAP-E 69, 12 / 72, 12 — Single-channel seismic line, with depth to bedrock and depth to water shown at each end of the line, in feet below land surface. Unless otherwise indicated, data shown above the line identifier box refers to the northern end of the seismic line.

The 3-letter identifier for a line is an abbreviation for the topographic quadrangle. If the 3-letter identifier for the line is followed by a number (ex. MAP - 7, MAP - 4), the line is a 12-channel line. If the identifier is followed by a letter (ex. MAP - E, MAP-P), the line is a single-channel line. Seismic interpretation by C. D. Neil and D. H. Tepper.

GEOLOGIC AND WELL INFORMATION

50 — Depth to bedrock, in feet below land surface

≥ 13 — Penetration depth of boring. A (+) symbol refers to minimum depth to bedrock based on boring depth or refusal

8 — Depth to water level, in feet below land surface (observed in well, spring, test boring, pit, or seismic line)

× — Gravel pit (overburden thickness noted in feet, e.g. 5-12')

× — Quarry

4 GPM — Yield (flow) of well or spring in gallons per minute (GPM)

Spring, with general direction of flow

Drilled overburden well

Dug well

Observation well (project well if labeled; nonproject well if unlabeled)

Test boring (project boring if labeled; nonproject boring if unlabeled)

Driven point

Test pit

Drilled bedrock well

Potential point source of ground-water contamination

Bedrock outcrop

Surface-water drainage-basin boundary; surface-water divides generally correspond to ground-water divides. Horizontal direction of ground-water flow generally is away from divides and toward surface-water bodies.

OTHER SOURCES OF INFORMATION

1. Tolman, A. L., Tepper, D. H., Prescott, G. C., and Grossman, S. O., 1998, Hydrogeology of significant sand and gravel aquifers, northern York and southern Cumberland Counties, Maine: Maine Geological Survey, Open-File Report 83-1, 4 plates.
2. Smith, G. W., 1998, Surficial materials of the Wells quadrangle, Maine: Maine Geological Survey, Open-File Map 98-184.
3. Smith, G. W., 1979, Surficial geology of the Wells quadrangle, Maine: Maine Geological Survey, Open-File Map 93-104.
4. Caswell, W. B., 1987, Ground water handbook for the state of Maine: Second Edition: Maine Geological Survey, Bulletin 39, 135 p.
5. Thompson, W. B., 1979, Surficial geology handbook for coastal Maine: Maine Geological Survey, 68 p. (out of print)
6. Thompson, W. B., and Borns, H. W., Jr., 1985, Surficial geologic map of Maine: Maine Geological Survey, scale 1:500,000.

Wells Quadrangle, Maine

Compiled by
Craig D. Neil

Preliminary aquifer boundaries mapped by:
Geoffrey W. Smith

Digital cartography by:
Robert A. Johnston

Robert G. Marvinney
State Geologist

Cartographic design and editing by:
Robert D. Tucker
Bennett J. Wilson, Jr.

Funding for the preparation of this map was provided in part by the Maine Department of Environmental Protection.

Maine Geological Survey
Address: 22 State House Station, Augusta, Maine 04333
Telephone: 207-287-2801 **E-mail:** mgs@maine.gov
Home page: http://www.maine.gov/doc/nrimc/mgs/mgs.htm

Open-File No. 98-130
1998

WHAT IS AN AQUIFER?

Ground water, as the name implies, is water found below the land surface in the pore spaces between sand grains and in fractures in the bedrock (see diagrams below). An *aquifer* is a water-bearing geologic formation capable of yielding a usable amount of ground water to a well. In Maine there are two types of aquifers, loose soil materials (such as sand, gravel, and other sediments) and fractured bedrock. A sand and gravel deposit is considered a *significant aquifer* when a well in that deposit is capable of being continuously pumped at a rate of 10 gallons per minute (gpm) or more. To sustain a yield of 10 gpm or more, a deposit must be permeable enough for water to flow readily into the well as it is pumped (see section on *porosity and permeability* below), and there must be a sufficient depth of water in the well so that it will not be pumped dry.

The diagram below shows a schematic cross section of a sand and gravel aquifer in Maine. The symbols above the diagram correspond to the well symbols shown on the map at left. Information typically shown for these wells includes type of well, depth to bedrock, depth to water, and well yield. The blue line on the diagram is the *water table*. The area below the water table is called the *saturated zone*, where all pore spaces below this level (the sediment particles are filled with water. In order to yield water, a well must extend below the water table into the saturated zone. Notice that the water table corresponds to the water level in most wells and in the streams.

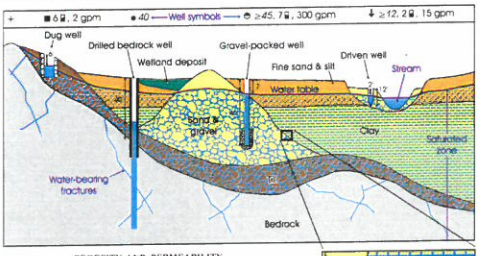
Several types of wells, common in Maine, are shown in the diagram. A *dug well* is a large diameter hole (often used by hand or backhoe. The hole is kept from caving in by installing a lining that may be stone, tile or cement blocks. The hole must be deep enough to extend below the water table. The shallow dug well in the diagram has a yield of 2 gpm. Although the yield is often low, dug wells generally supply enough ground water for a household because of the large amount of water stored in the well.

A *gravel-packed* well is usually installed into coarse-grained sediment and is drilled with a much larger diameter than the final casing and screen diameter. To increase the yield and pumping efficiency of the well, the space around the well screen is filled with selected grain sizes that increases the permeability in the immediate vicinity of the well. The gravel-packed well in the diagram has a high yield of 100 gpm. Such highly yielding gravel-packed wells are commonly drilled for municipal or industrial water systems.

A *driven well* or *well point* can be installed into sand and gravel where the water table is within about 20 feet of the ground surface. A 2 to 3 inch diameter pipe, equipped with a well screen at its lower end, is driven into the deposit until the screen is below the water table. This then acts as a casing and water is pumped directly from the aquifer. The driven well in the diagram has a significant yield of 15 gpm. Although the yield is relatively high, driven wells generally only supply a single household because very little water is stored in the well casing.

Wells of any type constructed in the other sediment shown in the diagram (clay or fine sand and silt) would yield some water, but yields would be lower than for wells in coarser-grained sand and gravel deposits.

Another type of well common in Maine is the *drilled bedrock well*. This well is drilled into the underlying rock with steel casing to isolate the well from potential surface-water contamination. In that type of well, water is found where the well hole intersects water-bearing fractures in the bedrock. Notice how the water level in this well is not the same level as the water table. The well casing isolates the bedrock well from the overlying sediments. The water level is controlled by water pressure in the fractures in the bedrock and is not related to the water table in the overlying materials.

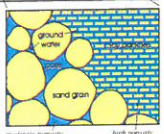


POROSITY AND PERMEABILITY

The diagram at right is an enlarged view of a section of the diagram above. Note that the section shown is below the water table and that ground water completely fills the pore spaces between the sediment grains. In an aquifer, the more pore space there is, the more water the aquifer can hold. This is called the *porosity* of a deposit. *Permeability* refers to the ability of a surficial deposit to transmit water. Permeability depends on the size of the spaces between the sediment grains.

Permeability is related to porosity, but is not the same. Porosity determines the capacity of the material to hold water. Permeability determines its ability to yield water. For example, clay is made of tiny particles with a large amount of pore space between them. However, the pore spaces are so small that they create a resistance to flow which reduces ground-water permeability. Sand and gravel may not be as porous as clay, but the pore spaces are larger and better connected and the materials are much more permeable.

Permeability is an important characteristic since it determines whether ground water can actually be drawn into a pumping well.



moderate porosity, high permeability — *high porosity, low permeability*

HOW ARE AQUIFERS MAPPED?



Operating a twelve-channel seismograph, Pleasants County, Maine.

When mapping sand and gravel aquifers, geologists visit gravel pits, stream banks, road cuts, and other surface exposures to describe materials and identify deposits. This surficial geology mapping is supplemented with seismic-refraction studies and the installation of observation wells and test borings. In addition, much information about an aquifer may already be available from water-company exploration, large construction projects, town well inventories, and other sources. This information, along with aerial photographs and previously published maps, allows the geologist to define the boundaries of favorable surficial deposits and estimate how well the deposits will yield water to a well.

The boundaries of favorable surficial deposits do not necessarily coincide with the aquifer boundaries. In some areas, a thin cover of favorable coarse-grained material may overlie fine-grained sediments, till, or bedrock. A well in that material would not be able to sustain a yield of 10 gpm, so the area would not be mapped as an aquifer. In other areas, fine-grained sediments or till may overlie favorable coarse-grained sediments and the subsurface deposit may not be recognized as an aquifer.

Single- and 12-channel seismic-refraction studies are conducted to determine the saturated thickness of a deposit by establishing the depth to water table and bedrock surface. The 12-channel seismic survey has the additional advantage of providing the topography of the buried bedrock surface at a site.

Installing monitoring wells and drilling test borings provide direct information about the aquifer characteristics of a deposit. This work provides information on the depth to water table and bedrock surface, water quality, and how easily the sediment transmits water.

GROUND-WATER FLOW AND CONTAMINATION

Ground water is replenished or *recharged* by rainwater and melting snow that soak into the soil. This water percolates downward until it eventually reaches the water table. When recharge is high during spring snowmelt and fall rains, the amount of ground water increases and the water table rises. When recharge is low during the late summer or when the ground is frozen during the winter, the water table becomes lower.

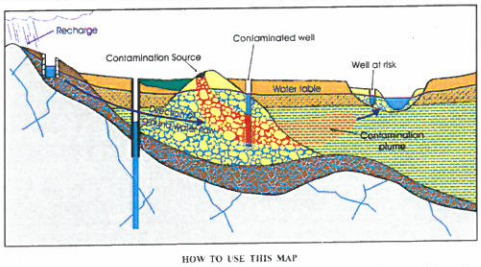
Notice in the diagram below that ground water is not static; it flows. This concept is very important, especially when ground water becomes contaminated. Once in the ground water is some contaminants usually travel along the path followed by ground water and are sometimes able to migrate considerable distances overtime.

In the diagram below, a plume of contamination originates at the source in the sand and gravel deposit. This source could be a landfill, a leaking fuel storage tank, or an accidental spill. As the contaminant seeps into the subsurface it stores and enters the aquifer, where it flows with the ground water. In the diagram, the plume contaminated the gravel-packed well as it passed by. The driven well near the stream is not contaminated, but it is at risk since the plume is flowing in that direction. The dug well on the hillside however, is not affected because it is upgradient of the source, hence the contaminated ground water flows away from this well.

Once ground water is contaminated, it is very difficult and expensive to correct. To design a clean-up plan, monitoring wells are installed under the direction of a hydrologist or other specialist. These wells define the three-dimensional extent of the affected area. Sometimes it is possible to pump contaminants to the surface using remediation wells within the plume. Often the only solution for a homeowner is to install filtering devices or to abandon the well and find an alternative water supply.



Installing a monitoring well, Washington County, Maine.



HOW TO USE THIS MAP

Types of Information Shown on this Map: The yellow and red-colored areas on the map indicate significant aquifers, areas where ground-water yield is estimated to be 10 gpm or greater. The boundaries of the aquifers are drawn by a geologist based, in part, on the well data shown on the map. Areas not mapped as aquifer may be thin or unsaturated sand and gravel deposits, surficial deposits other than sand and gravel, or bedrock.

The well data on the map provide information about the type of well, depth to water table, depth to bedrock, and yield of the wells in the area. This information is useful when making decisions about water supply, a drainage plan, or the need for blasting.

Information from seismic refraction studies also is shown on the map. Seismic studies give detailed information about depth to water table and depth to and shape of the bedrock surface. Geologic cross sections generated from seismic information are shown in associated reports listed in the references below the map at left.

Surface-water *drainage-basin boundaries* are also shown on the map. Horizontal direction of ground-water flow generally is away from drainage divides and toward surface-water bodies.

Uses of this Map: Sand and gravel aquifer maps are useful in two major categories of decision-making: ground-water supply and ground-water protection. For ground-water supply, these maps are useful in locating areas favorable for developing water supplies for municipal, industrial, or residential use. Information on the map, such as depth to bedrock and well yield, indicate the potential for ground-water production.

Ground-water protection is another important function of these maps. Knowledge of the location and extent of sand and gravel aquifers is critical when siting potential contamination sites such as landfills and salt storage facilities. When used in conjunction with other geologic information, this map can help planners and municipal officials make much more informed decisions to guide industrial growth or residential development.

If ground-water contamination occurs, the general trend of the plume migration can be deduced from these maps by analyzing the drainage basin boundaries and the local surface-water bodies.

For further assistance in interpreting this map, contact a geologist at the Maine Geological Survey.

XIII. Beginning with Habitat

- Kennebunk Plains and Wells Barren Habitat Information
- Mount Agamenticus Habitat Information
- Wells and Ogunquit Marsh Habitat Information
- Beginning with Habitat Maps

Beginning *with* HABITAT

Focus Areas of Statewide Ecological Significance

Kennebunk Plains and Wells Barrens

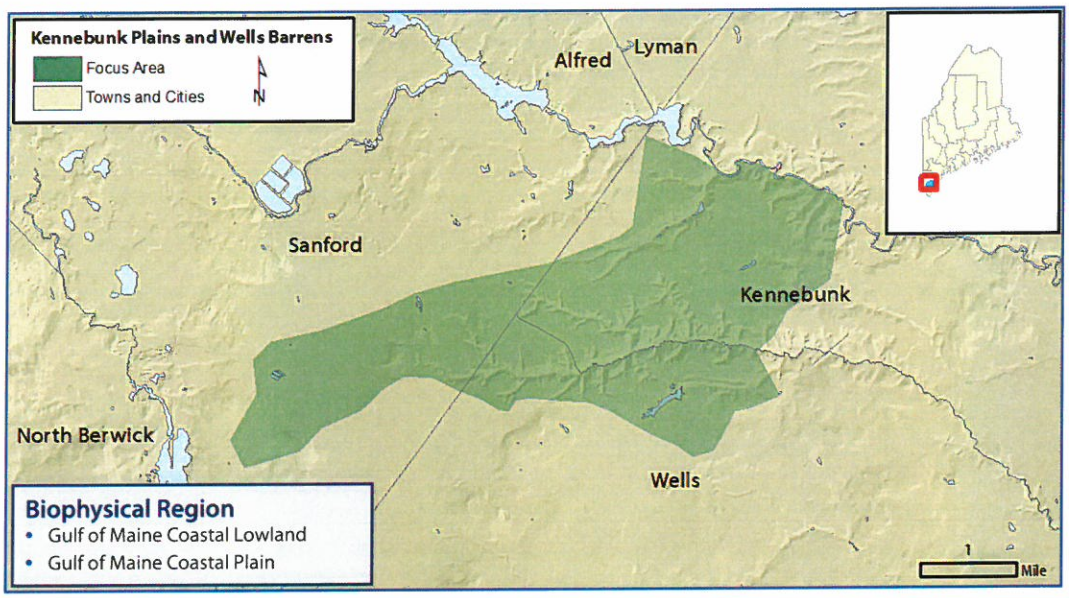












WHY IS THIS AREA SIGNIFICANT?

Formed by the melting of glaciers about 14,000 years ago, this unique barrens complex is one of the top-priority areas for conservation in Maine. The Focus Area supports high-quality examples of four natural community types: sandplain grassland, pitch pine-scrub oak barrens, pitch pine-heath barrens, and red maple alluvial swamp forest. These natural communities support a large number of rare birds, reptiles, insects, and plants. Kennebunk Plains is notable for its grasslands, which are among the rarest natural communities in New England.

OPPORTUNITIES FOR CONSERVATION

» Work with willing landowners to permanently protect remaining undeveloped areas.
» Encourage town planners to improve approaches to development that may impact Focus Area functions.
» Use prescribed burns and careful mowing techniques to maintain populations of rare plants and animals.
» Educate recreational users about the ecological and economic benefits provided by the Focus Area.

For more conservation opportunities, visit the Beginning with Habitat Online Toolbox: www.beginningwithhabitat.org/toolbox/about_toolbox.html.

Photo credits, top to bottom: The Nature Conservancy, The Nature Conservancy, The Nature Conservancy, Margaret Pizer, Jonathan Mays

Rare Animals
Grasshopper Sparrow
Upland Sandpiper
Wood Turtle
Spotted Turtle
Northern Black Racer
Ribbon Snake

Rare Plants
Small Reed-grass
Upright Bindweed
Northern Blazing Star
Pale Green Orchis
White-topped Aster

Rare and Exemplary Natural Communities
Pitch Pine–Heath Barren
Pitch Pine–Scrub Oak Barrens
Red Maple–Sensitive Fern Swamp
Little Bluestem–Blueberry Sandplain Grassland

Significant Wildlife Habitats
Inland Wading Bird & Waterfowl Habitat
Significant Vernal Pools

Public Access Opportunity
» Kennebunk Plains Wildlife Management Area, MDIFW
» Kennebunk Plains Preserve and Wells Barrens Preserve, TNC



The Kennebunk Plains and Wells Barrens Focus Area provides habitat for rare species such as Blanding's Turtle (below left) and Pale Green Orchis (below right), and recreational opportunities for people (above). *The Nature Conservancy (above and below right), Jonathan Mays (below left)*

FOCUS AREA OVERVIEW

Kennebunk Plains and Wells Barrens together comprise one of the top-priority conservation areas in the state of Maine. This unique barrens complex was formed by the melting of glaciers about 14,000 years ago. Meltwater streams formed outwash plains of well-sorted sand and gravel. As a result, the soils have little capacity to hold water and nutrients, and the vegetation is subject to recurring drought and fire. The natural communities include plant and animal species adapted to these conditions. The Focus Area supports high-quality examples of four natural community types: sandplain grassland, pitch pine-scrub oak barrens, pitch pine-heath barrens, and red maple alluvial swamp forest. These natural communities support a large number of rare birds, reptiles, insects, and plants.

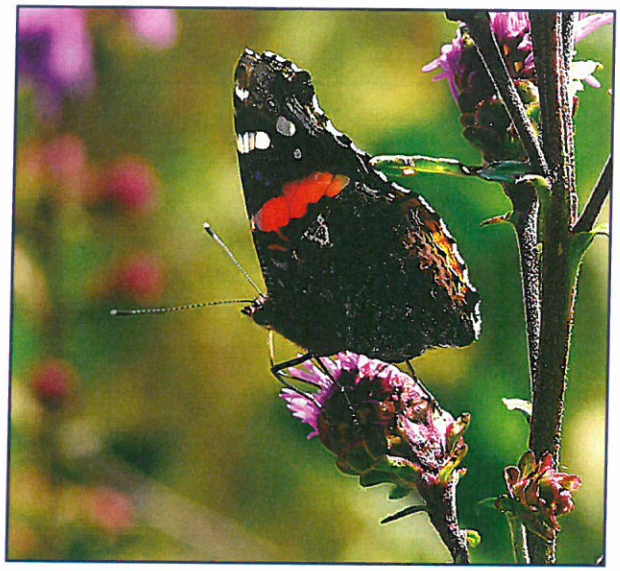
The topography of Kennebunk Plains and Wells Barrens is flat to gently rolling, dropping off steeply in the drainages of Branch Brook, which separates the two sites, and Cold Water Stream. The larger of the two sites, Kennebunk Plains is notable for its grasslands, which are considered to be one of the rarest and most threatened natural communities in New England. The grasslands have changed over time due to natural and anthropogenic causes. Historical human activities at the site have included Native American camps, logging, blueberry production, and limited agriculture, which have helped maintain the plains in an early successional stage.



Aerial view of Kennebunk Plains Pond. *The Nature Conservancy*

CHARACTERISTIC SPECIES

The complex of Kennebunk Plains and Wells Barrens supports populations of 14 rare plant and animal species. The grasslands harbor the state's only viable populations of northern blazing star. With more than one million stems, it is probably the world's largest population of this plant. Other rare plants include toothed white-topped aster (only 1 documented site in the state) and upright bindweed (only 4 documented sites in the state). The grasslands, together with the Sanford Airport, support the best mainland nesting population of grasshopper sparrows and provide nesting habitat for upland sandpipers. Other grassland-nesting species of note include the vesper sparrow and eastern meadowlark. The site is also only one of few known locations for the black racer snake in Maine. Two reptiles listed by the state as species of special concern—ribbon snake and wood turtle—also occur here. Two rare moth species have been observed on the Plains: the broad sallow and trembling sallow. Studies in the Focus Area found eight insect species never recorded elsewhere in the state.



A Red Admiral butterfly on Northern Blazing Star. *Margaret Pizer*



Grasshopper Sparrow. *Jonathan Mays*



Northern Blazing Star. *Jonathan Mays*



Spotted Turtle. *Jonathan Mays*



Red Maple–Sensitive Fern Swamp. *Jonathan Mays*

RARE AND EXEMPLARY NATURAL COMMUNITIES

Sandplain grassland occurs on sandy glaciofluvial deposits and is characterized by native bunch grasses mixed with ericaceous shrubs. It is an early successional stage of a pitch pine-scrub oak barrens. Characteristic plant species include northern blazing-star, little bluestem, poverty grass, woodland sedge, sand jointweed, stiff aster, lowbush blueberry, sweetfern, and bearberry. The flora of this community is fire adapted.

Pitch pine-heath barrens are open-canopy woodlands in which pitch pine dominates, without an extensive tall shrub layer. Scrub oak, if present, is at low cover. The extensive herb layer features lowbush blueberry and woodland sedge, with scattered bracken fern and forbs. Bryoids are virtually absent. The absence of tall shrubs gives these barrens a park-like appearance. This type occurs on well-drained to excessively drained soils on outwash plains. The flora of this community is also fire adapted.

Pitch pine-scrub oak barrens occur in patches around the margin of the grassland. Characteristic species include pitch pine, scrub oak, blueberry, and huckleberry. Like sandplain grasslands and pitch pine-heath barrens, the flora of this community is fire adapted and without periodic fire, it will eventually become a pine-oak forest.

Ecological Services of the Focus Area

- Protects a large underlying sand and gravel aquifer
- Provides a buffer to several headwater streams
- Significantly contributes to regional biodiversity

Economic Contributions of the Focus Area

- Destination for ecotourists
- Scenery of undeveloped plains raises local property values
- Recreational open space attracts walkers, blueberry pickers, and hunters

Red maple alluvial swamp occurs on the slopes adjacent to the plains, where laterally flowing groundwater emerges from layers of outwash soil in broad seeps. Characteristic species include red maple, cinnamon fern, skunk cabbage, and sedges.



Listed by the State of Maine as a species of special concern, the Eastern Ribbon Snake is among the rare animals found in the Focus Area.
Jonathan Mays

CONSERVATION CONSIDERATIONS

» Both the grasslands and the pitch pine-scrub oak barrens require periodic management to prevent succession to the more common oak-pine forest type. The Nature Conservancy currently conducts prescribed burns on the grasslands. Burning is supplemented with mowing in an effort to provide nesting habitat for grassland birds, to encourage reproduction of rare plants, and to reduce encroaching shrub cover. Burning is essential to the maintenance of the sandplain grassland community, as it reduces litter depth, increases the amount of bare ground available for seed germination, and provides a flush of nutrients to the normally depauperate soil. Although The Nature Conservancy has been able to use prescribed burning as a management tool on the grassland, they have yet to burn within the pitch pine-scrub oak barrens. Currently, this is due to the high priority placed on management of the grassland and nesting bird habitat. Future management may need to focus on the pitch pine-scrub oak barrens. Smoke management from prescribed burning may eventually become an issue. At present, the size of the site allows relatively good smoke dispersal. However, as additional homes are built in the vicinity of the site, this may become more of an issue.

» Known grasshopper sparrow nesting areas should be placed in long-term habitat protection, maintained as grasslands, and not converted to other land uses.

» Avoid mowing areas with nesting grasshopper sparrows between May 1 and August 5, especially since the sparrows may have a second brood in late summer. If mowing is essential prior to this date, mark nest sites or locations of young birds and leave patches of unmowed grass.

» Several additional smaller patches of pitch pine–heath barren and sandplain grassland community types exist in surrounding private lands. Further impacts to these natural communities should be minimized through local project review, and conservation of these areas should be encouraged.

» Pitch pine–heath barrens are quickly invaded by white pine, which can out-compete pitch pine in absence of fire. Landowners should be encouraged to manage for persistence of pitch pine through selective harvesting when possible.

» Mining is a potential threat because of deep sand and gravel deposits underlying both the Kennebunk Plains and Wells Barrens.

» The Kennebunk Plains and surrounding areas, including Cold Water Farms to the west of the Plains, have been rapidly developed for residential use in recent years. The largest impacts of development are likely to be increased recre-

ational use of the Plains, an increase in domestic dogs and cats within the grassland and associated impacts on ground-nesting birds, loss of barrens habitat, and increased concerns about smoke management during prescribed burns.

» Many of the sand roads throughout the sandplain are heavily traveled by ATVs and other vehicles. Most use is limited to the existing roads, but some areas, such as the slope leading into the Branch Brook drainage, are heavily eroded from vehicular use. In some instances, vehicles travel across the grassland, leaving deep ruts during spring and fall when soils may be excessively wet. In addition to damaging the vegetation, vehicle use during bird nesting season can have a detrimental impact on the productivity of grassland-nesting birds. Vehicles are prohibited from the roads at Kennebunk Plains from May 1 to September 1 due to nesting birds. Vehicle use of Wells Barrens Preserve is prohibited.

» Dumping is an ongoing problem on the Plains, particularly construction debris and appliances. The most heavily used area is the slope leading to the east-west arm of the CMP powerline. Personnel from the Kennebunk, Kennebunkport, and Wells Water District remove materials that they consider to be hazardous to the aquifer. The Kennebunk Conservation Commission and the Kennebunk Fish and Game Club sponsor an annual cleanup of the Plains. "No Dumping" signs have been posted at all road entrances.

» Dogs are allowed at Kennebunk Plains, but they must be leashed between May 1 and September 1. Many locals bring their dogs to the plains for exercise, training for hunting, or dogsled training. Cats from neighboring houses could potentially impact the bird population. Horses are allowed, but they must stay on existing roads and are prohibited between May 1 and September 1. These issues should be brought to the public's attention during outreach events. Pets and horses are prohibited at Wells Barrens Preserve.



Wild blueberries in bloom. *Jonathan Mays*



Visitors enjoy a field of Northern Blazing Star in the Focus Area. *Margaret Pizer*

RARE SPECIES AND EXEMPLARY NATURAL COMMUNITIES OF THE FOCUS AREA

	Common Name	Scientific Name	State Status*	State Rarity Rank	Global Rarity Rank
Animals	Grasshopper Sparrow	*Ammodramus savannarum*	E	S1	G5
	Upland Sandpiper	*Bartramia longicauda*	T	S3	G5
	Wood Turtle	*Clemmys insculpta*	SC	S4	G4
	Spotted Turtle	*Clemmys guttata*	T	S3	G5
	Northern Black Racer	*Coluber constrictor*	E	S2	G5
	Ribbon Snake	*Thamnophis sauritus*	SC	S3	G5
Plants	Small Reed-grass	*Calamagrostis cinnoides*	SC	S3	G5
	Upright Bindweed	*Calystegia spithamaea*	T	S2	G4
	Northern Blazing Star	*Liatris scariosa*	T	S1	G5
	Pale Green Orchis	*Platanthera flava*	SC	S2	G4
	White-topped Aster	*Seriocarpus asteroides*	E	S1	G5
Natural Communities	Pitch Pine–Heath Barren	Pitch Pine–Heath Barren		S1	G3G5
	Pitch Pine–Scrub Oak Barrens	Pitch Pine–Scrub Oak Barrens		S1	G2
	Little Bluestem–Blueberry Sandplain Grassland	Sandplain Grassland		S1	n/a
	Red Maple–Sensitive Fern Swamp	Red Maple Swamp		S4	G3G5

State Status*

- E — Endangered: Rare and in danger of being lost from the state in the foreseeable future, or federally listed as Endangered.
- T — Threatened: Rare and, with further decline, could become endangered; or federally listed as Threatened.
- SC — Special Concern: Rare in Maine, based on available information, but not sufficiently rare to be Threatened or Endangered.

**State status rankings are not assigned to natural communities.*

State Rarity Rank

- S1 — Critically imperiled in Maine because of extreme rarity (5 or fewer occurrences or very few remaining individuals or acres).
- S2 — Imperiled in Maine because of rarity (6–20 occurrences or few remaining individuals or acres) or because of other factors making it vulnerable to further decline.
- S3 — Rare in Maine (on the order of 20–100 occurrences).
- S4 — Apparently secure in Maine.
- S5 — Demonstrably secure in Maine.

Global Rarity Rank

- G1 — Critically imperiled globally because of extreme rarity (5 or fewer occurrences or very few remaining individuals or acres) or because some aspect of its biology makes it especially vulnerable to extirpation.
- G2 — Globally imperiled because of rarity (6–20 occurrences or few remaining individuals or acres) or because of other factors making it vulnerable to further decline.
- G3 — Globally rare (on the order of 20–100 occurrences).
- G4 — Apparently secure globally.
- G5 — Demonstrably secure globally.

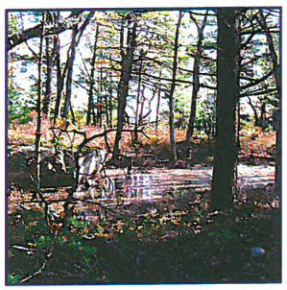
Beginning with HABITAT

Focus Areas of Statewide Ecological Significance

Mt. Agamenticus

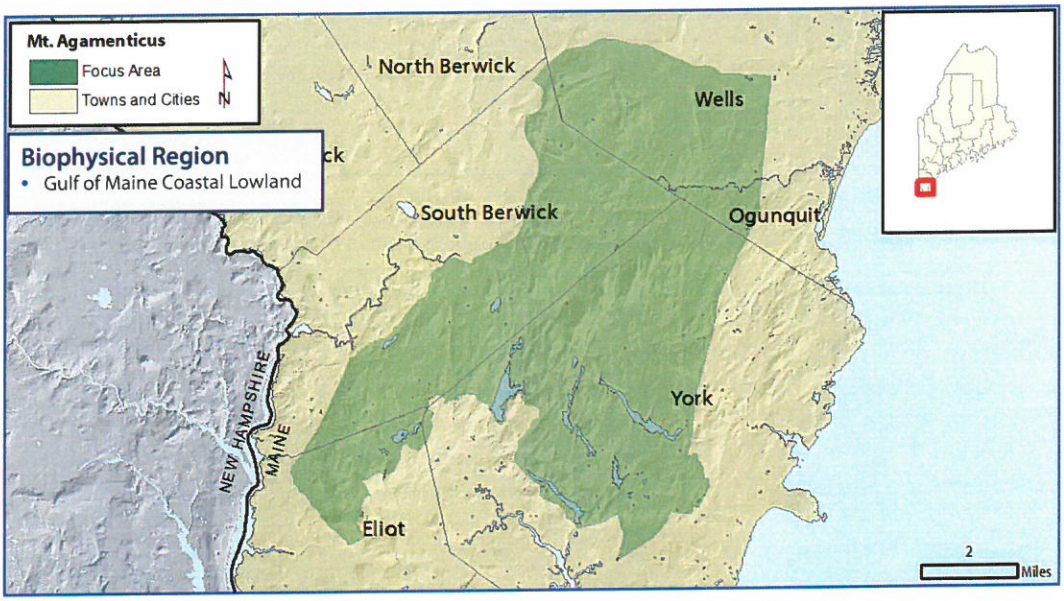












WHY IS THIS AREA SIGNIFICANT?

The Mt. Agamenticus Focus Area comprises and is one of the largest remaining expanses of undeveloped forests in coastal New England. The uplands and wetlands around Mt. Agamenticus are inhabited by 12 animal species and 21 plant species that are considered rare in Maine. Many of these rare species are at the northern limit of their distribution range and are more abundant south of the Maine border. Similarly, some natural communities that occur in the Focus Area are restricted primarily to southern New England. The forest that extends northward from Mt. Agamenticus features Maine's only chestnut-oak woodland.

OPPORTUNITIES FOR CONSERVATION

» Minimize fragmentation of habitat with development designs that optimize open space.
» Continue using signs along roads to warn people about turtle crossings.
» Use strategic open-space planning to maintain functional connections for wildlife among habitats.
» Work with willing landowners to permanently protect remaining undeveloped areas.
» Use forest management methods and design developments that protect vernal pools and the amphibians that depend on them.
» Monitor for and remove invasive species.

For more conservation opportunities, visit the Beginning with Habitat Online Toolbox: www.beginningwithhabitat.org/toolbox/about_toolbox.html.

Photo credits, top to bottom: The Nature Conservancy, The Nature Conservancy, Margaret Pizer, The Nature Conservancy, J. Albright

Rare Animals
Spotted Turtle
Wood Turtle
Blanding's Turtle
Brown Snake
Ribbon Snake
Northern Black Racer
Spring Salamander
New England Cottontail
New England Bluet
Ringed Boghaunter Dragonfly
Swamp Darter
Scarlet Bluet

Rare Plants
Wild Leek
Slender Blue Flag
Mountain Laurel
Spicebush
Broadbeech Fern
Pale Green Orchis
Chestnut Oak
Tall Beak-rush
Sassafras
Swamp Saxifrage
Featherfoil
White Wood Aster
Upright Bindweed
Atlantic White-cedar
Spotted Wintergreen
Sweet Pepperbush
Flowering Dogwood
Eastern Joe-pye Weed
Columbia Water-meal
Alga-like Pondweed
Smooth Winterberry Holly

Rare and Exemplary Natural Communities
Atlantic White Cedar Swamp
Chestnut Oak Woodland
Pocket Swamp
Leatherleaf Bog
Grassy Shrub Marsh
Sandy Lake Bottom
Pitch Pine Bog
Red Maple Swamp
White Oak–Red Oak Forest

Significant Wildlife Habitats
Inland Wading Bird & Waterfowl Habitat
Deer Wintering Area
Significant Vernal Pools



The forests and wetlands of Mt. Agamenticus are home to numerous rare animals and plants. *The Nature Conservancy*

FOCUS AREA OVERVIEW

The Mt. Agamenticus Focus Area extends from York Pond in Eliot northeast through the Tatnic Hills area in Wells. The Focus Area includes rugged terrain, several lakes and ponds, and numerous small wetlands that together comprise the largest contiguous block of lightly developed land in southern York County and one of the largest remaining areas of undeveloped forest in coastal New England. Mt. Agamenticus is the most outstanding feature in the area, both topographically and ecologically. Other prominent physical features are Horse Hill, Second and Third Hills, Chick's Brook watershed, Chase's Pond, Folly Pond, Middle Pond, Bell Marsh, Warren Pond, Welch's Pond, Round Pond, and York Pond.

The area's numerous upland and wetland areas are ecologically significant because they host plant and animal species that are living at the northernmost limit of their geographic ranges. In Maine, for example, at least three animal and 20 plant species occur only in this extreme southern portion of the state. Many additional species found in the Focus Area occur only sparingly farther northward. Natural communities reflect this pattern as well. For example, the Atlantic white cedar swamp, hemlock-hardwood pocket swamp, and pitch-pine bog that occur in this area are all restricted to southern Maine. The only remaining intact chestnut-oak woodland community in the entire state extends north from Mt. Agamenticus through Third Hill.

Public Access Opportunities

» Mt. Agamenticus Wildlife Management Area

» York Pond Lot

The Focus Area has one of the richest concentrations of vernal pool habitat in the state, supporting state-listed Blanding's and spotted turtles in concentrations rarely encountered elsewhere.

Of the 21 rare plant species known to occur in the Mt. Agamenticus area, 14 are considered rare in Maine because the state represents the northeastern limit of their range. They are much more common to the south and west. The Mt. Agamenticus area, in particular, is the northern limit for a few of these species, such as large beak-rush (*Rhynchospora macrostachya*) and flowering dogwood (*Cornus florida*).

Two rare plant species found in the Focus Area—wild leek (*Allium tricoccum*) and alga-like pondweed (*Potamogeton confervoides*)—do not reach the edge of their geographic range in Maine. However, wild leek is uncommon in Maine because it lives only in nutrient-enriched hardwood forests, while alga-like pondweed occurs only in shallow, soft-water ponds.



The Nature Conservancy

The largely undeveloped expanse of forests in the Mt. Agamenticus region is important for maintaining water quality. York and Kittery Water Districts have been acquiring lands to ensure and protect drinking water supplies for the residents of York and Kittery. Over the past century, the Districts have acquired 4,445 acres of land in the area of Mt. Agamenticus.

Ecological Services of the Focus Area

- Protection of water quality in numerous streams, ponds, and aquifers
- Source habitat for many wildlife species in rapidly developing landscape

Economic Contributions of the Focus Area

- Acreage for timber management
- Public open space for surrounding communities with benefits to land values
- Tourism and recreation (hiking, biking, and wildlife watching)

CONSERVATION CONSIDERATIONS

» Minimize fragmentation of habitat through development designs that optimize open space.

» Continue using signs along roads to warn people about turtle crossings.

» Use strategic open-space planning to maintain functional connections for wildlife among habitats.

» Work with willing landowners to permanently protect remaining undeveloped areas.

» Close adherence to Best Management Practices for forestry (see Forestry Endangered and Threatened Species Guide) and development activities near vernal pools will ensure the protection of these wetlands and the amphibians that depend on them.

» The integrity of wetland habitats depends on proper maintenance of hydrology and water quality. Intensive logging, clearing, soil disturbance, new roads, and development on buffering uplands can result in greater runoff, sedimentation, and other non-point sources of pollution that harm wetlands and aquatic systems.

» Preserving natural communities and other sensitive features can be achieved best by maintaining the integrity of the larger natural systems in which these features occur. Conserving the larger systems helps ensure both common and rare natural features will persist in this part of the state.

» Conservation planning for the uplands should include set-

ting aside some areas from timber harvests.

» It is important for off-road vehicles to stay on existing authorized trails and remain out of all wetlands.

» With expected changes in climate over the next century, plant and wildlife species will shift their ranges. Maintaining landscape connections between undeveloped habitats will provide an imporant safety net for biodiversity as species adjust their ranges to future climate conditions.

» Invasive plants and aquatic organisms have become an increasing problem in Maine and a threat to the state's natural communities. Disturbances to soils and natural vegetation and introductions of non-native species to terrestrial and aquatic habitats can create opportunities for colonization. Landowners and local conservation groups are encouraged to become aware of the potential threat of invasives, of methods to limit establishment, and/or of appropriate techniques for removal. For more information on invasive plants visit: http://www.maine.gov/doc/nrimc/mnap/features/invasives.htm.



Spotted Turtle, Jonathan Mays

RARE SPECIES AND EXEMPLARY NATURAL COMMUNITIES OF THE FOCUS AREA

	Common Name	Scientific Name	State Status*	State Rarity Rank	Global Rarity Rank
Animals	Spotted Turtle	*Clemmys guttata*	T	S3	G5
	Wood Turtle	*Clemmys insculpta*	SC	S4	G4
	Blanding's Turtle	*Emydoidea blandingii*	E	S2	G4
	Northern Black Racer	*Coluber constrictor*	E	S2	G5
	Ribbon Snake	*Thamnophis sauritus*	SC	S3	G5
	Swamp Darter	*Etheostoma fusiforme*	SC	S1	G5
	Brown Snake	*Storeria dekayi*	SC	S3	G5
	New England Cottontail	*Sylvilagus transitionalis*	SC	S2	G4
	Spring Salamander	*Gyrinophilus porphyriticus*	SC	S3	G5
	Scarlet Bluet	*Enallagma pictum*	n/a	n/a	G3
	New England Bluet	*Enallagma laterale*	SC	S1	G3
	Ringed Boghaunter Dragonfly	*Williamsonia lintneri*	E	S1	G2
Plants	Wild Leek	*Allium tricoccum*	SC	S2	G5
	White Wood Aster	*Aster divaricatus*	T	S2	G5
	Upright Bindweed	*Calystegia spithamaea*	T	S1	G4G5
	Atlantic White-cedar	*Chamaecyparis thyoides*	SC	S2	G4
	Spotted Wintergreen	*Chimaphila maculata*	E	S1	G5
	Sweet Pepperbush	*Clethra alnifolia*	SC	S2	G5
	Flowering Dogwood	*Cornus florida*	E	S1	G5
	Eastern Joe-pye Weed	*Eupatorium dubium*	T	S1	G5
	Featherfoil	*Hottonia inflata*	T	S1	G4
	Smooth Winterberry Holly	*Ilex laevigata*	SC	S2	G5
	Slender Blue Flag	*Iris prismatica*	T	S2	G4G5
	Mountain Laurel	*Kalmia latifolia*	SC	S3	G5
	Spicebush	*Lindera benzoin*	SC	S3	G5
	Broadbeech Fern	*Phegopteris hexagonoptera*	SC	S2	G5
	Pale Green Orchis	*Platanthera flava*	SC	S2	G4
	Alga-like Pondweed	*Potamogeton confervoides*	SC	S3	G3G4
	Chestnut Oak	*Quercus montana*	T	S1	G5
	Tall Beak-rush	*Rhynchospora macrostachya*	E	S1	G4
	Sassafras	*Sassafras albidum*	SC	S2	G5
	Swamp Saxifrage	*Saxifraga pensylvanica*	T	S2	G5
	Columbia Water-meal	*Wolffia columbiana*	T	S2	G5
Natural Communities	Atlantic White Cedar Swamp	Atlantic White Cedar Swamp		S2	G3
	Chestnut Oak Woodland	Chestnut Oak Woodland		S1	n/a
	Pocket Swamp	Hemlock–Hardwood Pocket Swamp		S2	n/a
	Leatherleaf Bog	Leatherleaf Boggy Fen		S4	n/a
	Grassy Shrub Marsh	Mixed Graminoid–Shrub Marsh		S5	n/a
	Sandy Lake Bottom	Pipewort–Water Lobelia Aquatic-Bed		S5	n/a
	Pitch Pine Bog	Pitch Pine Bog		S1S2	n/a
	Red Maple Swamp	Red Maple–Sensitive Fern Swamp		S4	n/a
	White Oak–Red Oak Forest	White Oak–Red Oak Forest		S3	G5

State Status*

- E — Endangered: Rare and in danger of being lost from the state in the foreseeable future, or federally listed as Endangered.
- T — Threatened: Rare and, with further decline, could become endangered; or federally listed as Threatened.
- SC — Special Concern: Rare in Maine, based on available information, but not sufficiently rare to be Threatened or Endangered.

**State status rankings are not assigned to natural communities.*

State Rarity Rank

- S1 — Critically imperiled in Maine because of extreme rarity (5 or fewer occurrences or very few remaining individuals or acres).
- S2 — Imperiled in Maine because of rarity (6–20 occurrences or few remaining individuals or acres) or because of other factors making it vulnerable to further decline.
- S3 — Rare in Maine (on the order of 20–100 occurrences).
- S4 — Apparently secure in Maine.
- S5 — Demonstrably secure in Maine.

Global Rarity Rank

- G1 — Critically imperiled globally because of extreme rarity (5 or fewer occurrences or very few remaining individuals or acres) or because some aspect of its biology makes it especially vulnerable to extirpation.
- G2 — Globally imperiled because of rarity (6–20 occurrences or few remaining individuals or acres) or because of other factors making it vulnerable to further decline.
- G3 — Globally rare (on the order of 20–100 occurrences).
- G4 — Apparently secure globally.
- G5 — Demonstrably secure globally.

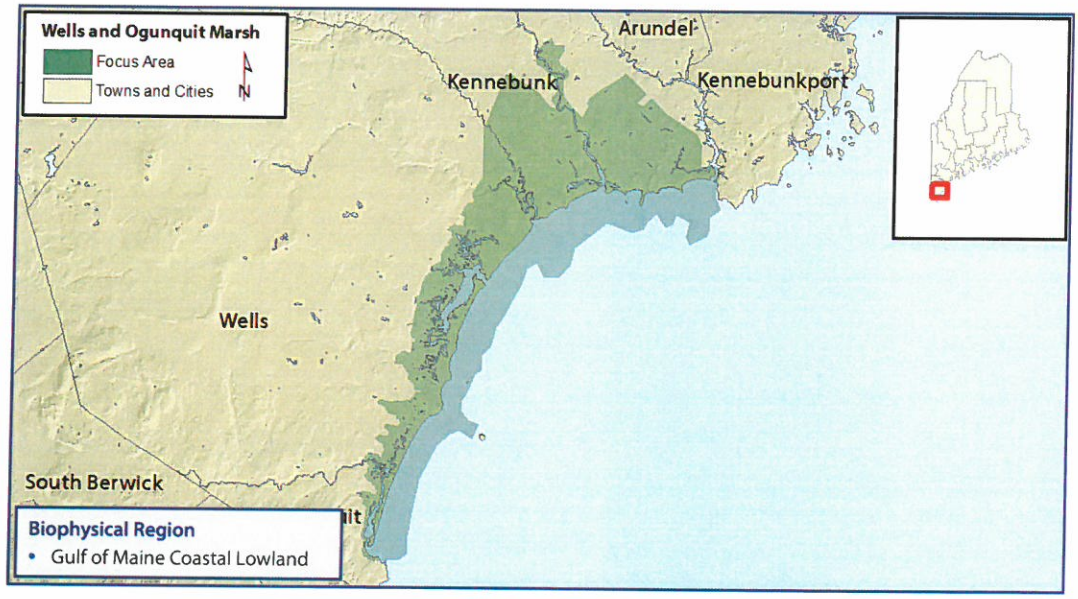
Beginning with HABITAT

Focus Areas of Statewide Ecological Significance

Wells and Ogunquit Marsh













WHY IS THIS AREA SIGNIFICANT?

The Wells and Ogunquit Marsh are the second largest salt marsh complex in Maine. They include extensive areas of undisturbed habitat and support several rare and exemplary natural communities and ecosystems along with a number of rare, threatened and endangered species. Much of the coastline within the Focus Area has been identified as important Tidal Waterfowl and Wading Bird Habitat and as Shorebird Area.

OPPORTUNITIES FOR CONSERVATION

» Work with willing landowners to permanently protect remaining undeveloped areas.
» Conserve upland natural communities as part of the greater marsh ecosystem.
» Monitor and remove invasive plant populations.
» Maintain the sites natural hydrology and identify and restore tidal restrictions and undersized culverts.

For more conservation opportunities, visit the Beginning with Habitat Online Toolbox: www.beginningwithhabitat.org/toolbox/about_toolbox.html.

Rare Animals
Piping plover
Least tern
Saltmarsh Sharp-tailed Sparrow
Spot-winged Glider
Citrine Forktail

Rare Plants
Saltmarsh false-foxglove
Beach wormwood
Saltmarsh bulrush
Pygmyweed
Spongy arrow-head
Pale green orchis
Beach plum
American sea-blite
Sassafras
Dwarf glasswort
Slender blue flag

Rare and Exemplary Natural Communities
Brackish tidal marsh
Freshwater tidal marsh
Pitch pine bog
Coastal dune-marsh ecosystem
Tidal marsh estuary ecosystem
Dune grassland
Spartina saltmarsh

Essential Wildlife Habitats
PipingPlover/Least Tern

Significant Wildlife Habitats
Tidal Wading Bird and Waterfowl Habitat
Inland Wading Bird and Waterfowl Habitat
Shorebird Area
Deer Wintering Area

Photo credits, top to bottom: Maine Natural Areas Program (Top 2 photos), Maine Department of Inland Fisheries and Wildlife, Maine Natural Areas Program, Wells National Estuarine Research Reserve



Dune Grassland, Ogunquit Beach, Maine Natural Areas Program

FOCUS AREA OVERVIEW

The Wells and Ogunquit Marsh are the second largest salt marsh complex in the state. They support extensive areas of relatively undisturbed habitat and a wide array of wildlife including a large number of rare plants and animals. The Focus Area extends from the south end of Ogunquit Beach north to just beyond the mouth of the Mousam River. It includes all tidal marshes east of Route 1 along with upland buffers where available. The Focus Area also includes a large fresh water wetland complex and adjacent forests roughly bounded by the Little River, the Mousam River, and Route 1. The Focus Area is not intended to include the various highly developed areas along this segment of the coast, rather it is intended to include wetlands and uplands where there is an opportunity for practical conservation. The boundary line is a guide showing the area within which additional conservation projects could help sustain the long term health of these habitats.

RARE AND EXEMPLARY NATURAL COMMUNITIES

The Focus Area includes high quality examples of two types of ecosystems and five types of natural communities. An ecosystem is a group of natural communities and their environment, occurring together over a particular portion of the landscape, and held together by some common physical or biotic feature.

The two ecosystems in the Focus Area, Coastal Dune-Marsh Ecosystem and Tidal Marsh Ecosystem, are both comprised of suites of natural communities that are influenced by tides and marine geomorphology.

Spartina Saltmarsh: The most abundant community type is Spartina saltmarsh, or salt hay saltmarsh. Spartina salt marshes occur along the Ogunquit, Webhannet, Little, and Mousam Rivers. These large areas are dominated by expanses of saltmeadow cordgrass, smooth cordgrass, and black-grass. Shrubs are generally absent from the majority of the marsh and are more often found along the upland edge or on small raised islands within the marsh. Saltmeadow cordgrass gives a low meadow-like appearance throughout these marsh systems. On slightly higher elevations in the marsh black-grass is dominant, and along creeks or at slightly lower elevations smooth cordgrass is dominant. Salt pannes are abundant and often support widgeon grass. The peat substrate of the marsh is likely several meters thick.

Brackish Tidal Marsh: These marshes are found near the upper end of tidal influence along coastal rivers. They support both freshwater and brackish water species, often in bands corresponding to tidal exposure. Tall rushes and bulrushes

often predominate over extensive mid-elevation flats; at the lower elevations, rosette-forming herbs, such as lilaeopsis and tidal arrowhead, may be common on the mudflats. Near the high tide line, there may be a fairly narrow zone of muddy gravel or rock shore sparsely vegetated with low herbs, including some rare species such as Long's bitter-cress or water-pimpernel. Sweetgale and poison-ivy are often present at the upper fringes of the marsh, at or above the tidal reach.

Freshwater Tidal Marsh: These marshes are also found near the upper end of tidal influence along coastal rivers. They differ from brackish marshes in that they are above the intrusion of salinity. These marshes are dominated by patchy stout herbs, typically a mixture of wild rice, softstem bulrush, pickerelweed, and sometimes cat-tails. Mixed in with the tall herbs are lower forbs including several rare species. Some marshes may have mudflats dominated by forbs and low vegetation in patches among the graminoids; many have a very narrow band of low forbs near the high-tide-upland interface. Species found in brackish marshes, such as chair-maker's rush, may be in these marshes as well; but at least some obligate freshwater plants will also be present: pickerelweed, common arrowhead, sweet flag, and northern water-plantain, for example.

Dune Grasslands: These communities typically occur on dune formations in coastal areas. They are dominated almost exclusively by dune grass with very few other thinly scattered species. Dune grass is the anchor that helps keep the highly exposed sand dune formation in place. Dune grass needs actively accreting sand to survive and will die off if not stimulated to grow by shifting sand. Generally, the very front and back areas of the dunes are transition areas that support a small number of other characteristic plant species. Much of the original dune grassland occurring along this section of the coast is now heavily developed. Dunes and fore dune areas are essential habitat for the Federally Threatened piping plover and the State Endangered least tern. All the remaining viable areas of dune grassland should be preserved and managed as sensitive natural areas.

Pitch Pine Bog: A Pitch pine bog natural community is also included within the Focus Area. This type of bog is a sparsely forested peatland in which the dominant tree species are pitch pine and red maple. This community type is restricted to extreme southern Maine and usually occurs in relatively small patches of 20 to 40 acres. The shrub layer indicates the more southerly affinities of the pitch pine bog community type, with maleberry, nannyberry, and highbush blueberry being common. Cinnamon fern is the most abundant plant in the herb layer. Peat or sphagnum mosses cover the ground and form the substrate. The pitch pine bog at this site is located adjacent to the upland on the east side of the Little River in the vicinity of Crescent Surf Beach.

Ecological Services of the Focus Area

- Nutrient export to marine food webs
- Major migratory stopover for myriad bird species
- Cleans water running off land prior to discharge into ocean
- Nursery for juvenile fish and shellfish

Economic Contributions of the Focus Area

- Attracts tourism for wildlife observation, paddling, hunting, and angling
- Acts as protective buffer for storm surge
- Supports local marine resource industries
- Provides scenic vistas that raise property values
- Valuable open space for local residents

RARE SPECIES

Several rare animal species are known from the area, including **piping plover** (*Charadrius melodus*) and **least tern** (*Sterna antillarum*). Both of these bird species are dependent on undisturbed dunes and fore dune areas for nesting and consequently for survival. Wide spread development of coastal areas throughout New England has limited habitat for these species. Over two thirds of Maine's 30 miles of beaches have been lost as nesting habitat for piping plovers and least terns because of construction of jetties, seawalls, and high-density housing. Least terns were listed as Maine's first Endangered species in 1982 and piping plovers, also listed as Federally Threatened, were listed as state Endangered in 1986. All areas that currently support nesting or brood raising activities for these species should be managed to insure their long-term survival.

The saltmarshes prevalent throughout the Focus Area provide breeding habitat for a number of migratory bird species including the rare **saltmarsh sharp-tailed sparrow** (*Ammodramus caudacutus*). The saltmarsh sharp-tailed sparrow is a secretive species with very narrow habitat requirements found only in coastal saltmarshes of the eastern United States. This sparrow makes its nest on or near to the ground in shrubs and marsh grass and it forages in the saltmarsh vegetation. Suitable habitat for the saltmarsh sharp-tailed sparrow is declining throughout its range.

Eelgrass beds forms extensive underwater meadows in shallow bays and coves, tidal creeks, and estuaries of the Focus Area. Eelgrass is a flowering plant that reproduces by seed and by vegetative growth. Eelgrass beds are among the most productive plant communities in the world. They serve as a nursery habitat, and feeding area for many fish, waterfowl, wading birds, invertebrates, and other wildlife, including commercially valuable fish and shellfish. Eelgrass reduces water pollution by absorbing nutrients, and it dampens wave energy and slows currents, which helps stabilize sediments and buffer shorelines. Because of its important ecological functions, loss of eelgrass beds can result in reduced fish and wildlife populations, degraded water quality, and increased shoreline erosion.

Suitable wintering habitat for harlequin ducks is located in the near shore areas. **Harlequin ducks** *(Histrionicus histrionicus)* are small diving sea ducks with striking blue, white, black, and chestnut plumage. About 1000 birds from southeastern Canada winter in Maine, mostly in small flocks on rough coastal waters and exposed rocky shores. They forage by diving into foaming surf to glean marine invertebrates. Harlequins have an extremely low reproductive potential compared to other waterfowl. Harlequin ducks were listed as State Threatened in 1997.

Important shorebird roosting and feeding areas are located along several of the Focus Areas beaches and marshes. **Shorebird Areas** are important stopover sites for migratory shorebirds that use the beaches and intertidal mudflats as staging areas, feeding on the high concentrations of intertidal invertebrates and resting on the sandy beaches and gravel bars above the high tide line before embarking on their long (sometimes 2,000 or more miles) migrations to their wintering areas. Nearly all of the shoreline has been mapped as **Tidal Wadingbird and Waterfowl Habitat** and provides important feeding, nesting habitat to a variety of species.

Other significant features within the Focus Area include 12 rare plant species (see table for list). The majority of the rare plants are species with ranges that extend from the south barely extending into Maine. Some of them such as **salt-marsh false-foxglove** *(Agalinis maritima)* and **dwarf glasswort** *(Salicornia bigelovii)* are restricted to tidal salt marshes and may have a relative high level of protection due to the large area of salt marsh already in conservation ownership within the focus area. However, others are freshwater wetland species and many specific sites for them are not in conservation ownership. Rare plants dependent on coastal freshwater wetlands include **slender blue flag** *(Iris prismatica)*, **smooth winterberry** *(Ilex laevigata)*, and **pale green orchis** *(Platanthera flava var.herbiola)*. These populations are vulnerable to wetland alterations that could occur with encroaching development. The state Endangered **beach plum** *(Prunus maritima)* has been documented within the Focus Area. This species occurs in the dry thickets behind sand dunes and has been lost from most of the sites where it has been previously documented due to development. This species is on the verge of being extirpated from the state.



Webhannet Marsh, Maine Natural Areas Program

Public Access Opportunities

» Rachel Carson National Wildlife Refuge, USFWS

» Laudholm Farm, MBPL

CONSERVATION CONSIDERATIONS

» Nearly all areas mapped as exemplary natural communities are contained within existing conservation lands. Many of the areas supporting rare plant species are not contained within conservation lands.

» Natural communities still occurring on the uplands adjacent to the salt marshes in the Focus Area including upland forests, pine barrens, shrub swamps, forested swamps, and sand dunes should be conserved as part of the greater ecosystem of the marsh. Long-term preservation of the biodiversity of a high value natural area such as this will be best achieved by retaining as much of the surrounding natural landscape as possible.

» Whenever possible a vegetative buffer should be established and protected around the perimeter of all salt marsh community types. The tidal marshes and the life they support are not independent of the landscape in which they occur. A buffer of 250 feet or more will serve to limit impacts from adjacent development, help prevent erosion, provide habitat needed by numerous species that depend on the

marsh, limit opportunities for colonization of invasive species, and prevent reckless impacts from off road vehicle use.

» The integrity of the tidal marshes and the processes and life forms they support are dependent on the maintenance of the tidal hydrology in as much a natural condition as possible. The hydrology of the tidal marshes, and subsequently sedimentation patterns, have been and are currently being impacted by culverts which restrict tidal flow on several creeks and by past ditching. Partial tidal restriction from culverts causes increased fresh water influence (reduced salinity) in the upper marsh and a subsequent increase of oxygen. Increased oxygen leads to deterioration of the upper marsh through decreases in peat elevation and shifts in plant species. Water crossing structure repair, maintenance and installation projects should follow guidelines for aquatic species passage in order to avoid further fragmentation of aquatic and riparian habitats and unintended tidal restriction.

» Marshes and swamps in the Focus Area have been disturbed by numerous road and railroad crossings. Disturbances to soils and natural vegetation in or adjacent to the marshes can create opportunities for colonization by invasive plant species. Local groups with an interest in the marshes should be made aware of the potential threat of invasive plants and keep an eye out for them before they become well established.

» Eelgrass is sensitive to losses due to disease, storms, pollution, nutrient enrichment, dredging, shellfishing, ice damage, propeller damage, sediments, and runoff. Because of its important ecological functions, loss of eelgrass beds can result in reduced fish and wildlife populations, degraded water quality, and increased shoreline erosion.

» Widespread loss, degradation, and fragmentation of coastal saltmarshes along the eastern seaboard are the biggest threats to the saltmarsh sharp-tailed sparrow. Habitat preservation and restoration are the most important factors for conserving this species.

» Shoreline development and subsequent habitat degradation are potential threats to Maine small populations of Horseshoe Crab. Though generally overlooked as a resource, Horseshoe Crabs in Maine are very vulnerable to depletion from any harvesting activities. In 2003, taking and possession of Horseshoe Crabs became prohibited in Maine.

» All areas of sand dunes should be posted with signs indicating their fragile nature and regular crossing areas should be well defined and managed to prevent erosion of the dunes.

» Care should be taken to insure that boating in the channels and mouths of the various marshes does not cause erosion to the exposed soils along the marsh edge, and that excessive noise from boats and people do not disrupt normal patterns of wildlife behavior.

» No dredge spoils or other fill materials should be placed in any of the marshes.

» Consult with MDIFW and USFWS on any projects requiring a municipal or state permit in areas designated as Essential Habitat for the Endangered piping plover and least tern and the area covered by the Wells Beach Agreement (Wells and Drakes Island Beaches).

» Avoid or minimize any further development of beach and dune habitats.

» This area includes Significant Wildlife Habitat for waterfowl and wading birds, shorebirds, and wintering deer. Land managers should follow best management practices in and around Significant Wildlife Habitat. Contact MDIFW for more information.

» Current projections suggest sea level will rise at least 2 feet in the next century due to changing climate and warming temperatures. As sea levels rise, coastal habitats will begin to migrate inland. In areas where this inland migration is blocked by development these habitats will be lost. Conservation of low-lying, undeveloped uplands where coastal marshes, beaches, and other intertidal natural communities can migrate inland with sea level rise should be promoted.



Little River Marsh, Wells National Estuarine Research Reserve

RARE SPECIES AND EXEMPLARY NATURAL COMMUNITIES OF THE FOCUS AREA

	Common Name	Scientific Name	State Status*	State Rarity Rank	Global Rarity Rank
Animals	Piping plover	*Charadrius melodus*	E	S2B	G3
	Least tern	*Sterna antillarum*	E	S1B	G4
	Saltmarsh Sharp-tailed Sparrow	*Ammodramus caudacutus*	SC	S3B	G4
	Spot-winged Glider	*Pantala hymenaea*	SC	S2	G5
	Citrine Forktail	*Ischnura hastata*	SC	S1S2	G5
Plants	Saltmarsh false-foxglove	*Agalinis maritima*	SC	S3	G5
	Beach wormwood	*Artemisia campestris ssp. caudata*	SC	S1S2	G5T5
	Saltmarsh bulrush	*Bolboschoerus robustus*	SC	S2	G5
	Pygmyweed	*Crassula aquatica*	SC	S2S3	G5
	Smooth winterberry holly	*Ilex laevigata*	SC	S2	G5
	Slender blue flag	*Iris prismatica*	T	S2	G4G5
	Pale green orchis	*Platanthera flava var.herbiola*	SC	S2	G4T4Q
	Beach plum	*Prunus maritima*	E	S1	G4
	Spongy arrow-head	*Sagittaria calycina var. spongiosa*	SC	S3	G5T4
	Dwarf glasswort	*Salicornia bigelovii*	SC	S1	G5
	Sassafras	*Sassafras albidum*	SC	S2	G5
	American sea-blite	*Suaeda calceoliformis*	T	S2	G5
	Brackish tidal marsh	Brackish tidal marsh		S3	GNR
	Coastal dune-marsh ecosystem	Coastal dune-marsh ecosystem		S3	GNR
	Dune grassland	Dune grassland		S2	G4?
	Freshwater tidal marsh	Freshwater tidal marsh		S2	G4?
	Pitch pine bog	Pitch pine bog		S2	G3G5
	Spartina saltmarsh	Spartina saltmarsh		S3	G5
	Tidal marsh estuary ecosystem	Tidal marsh estuary ecosystem		S3	GNR

State Status*

E Endangered: Rare and in danger of being lost from the state in the foreseeable future, or federally listed as Endangered.

T Threatened: Rare and, with further decline, could become endangered; or federally listed as Threatened.

SC Special Concern: Rare in Maine, based on available information, but not sufficiently rare to be Threatened or Endangered.

**State status rankings are not assigned to natural communities.*

State Rarity Rank

S1 Critically imperiled in Maine because of extreme rarity (5 or fewer occurrences or very few remaining individuals or acres).

S2 Imperiled in Maine because of rarity (6–20 occurrences or few remaining individuals or acres) or because of other factors making it vulnerable to further decline.

S3 Rare in Maine (on the order of 20–100 occurrences).

S4 Apparently secure in Maine.

S5 Demonstrably secure in Maine.

Global Rarity Rank

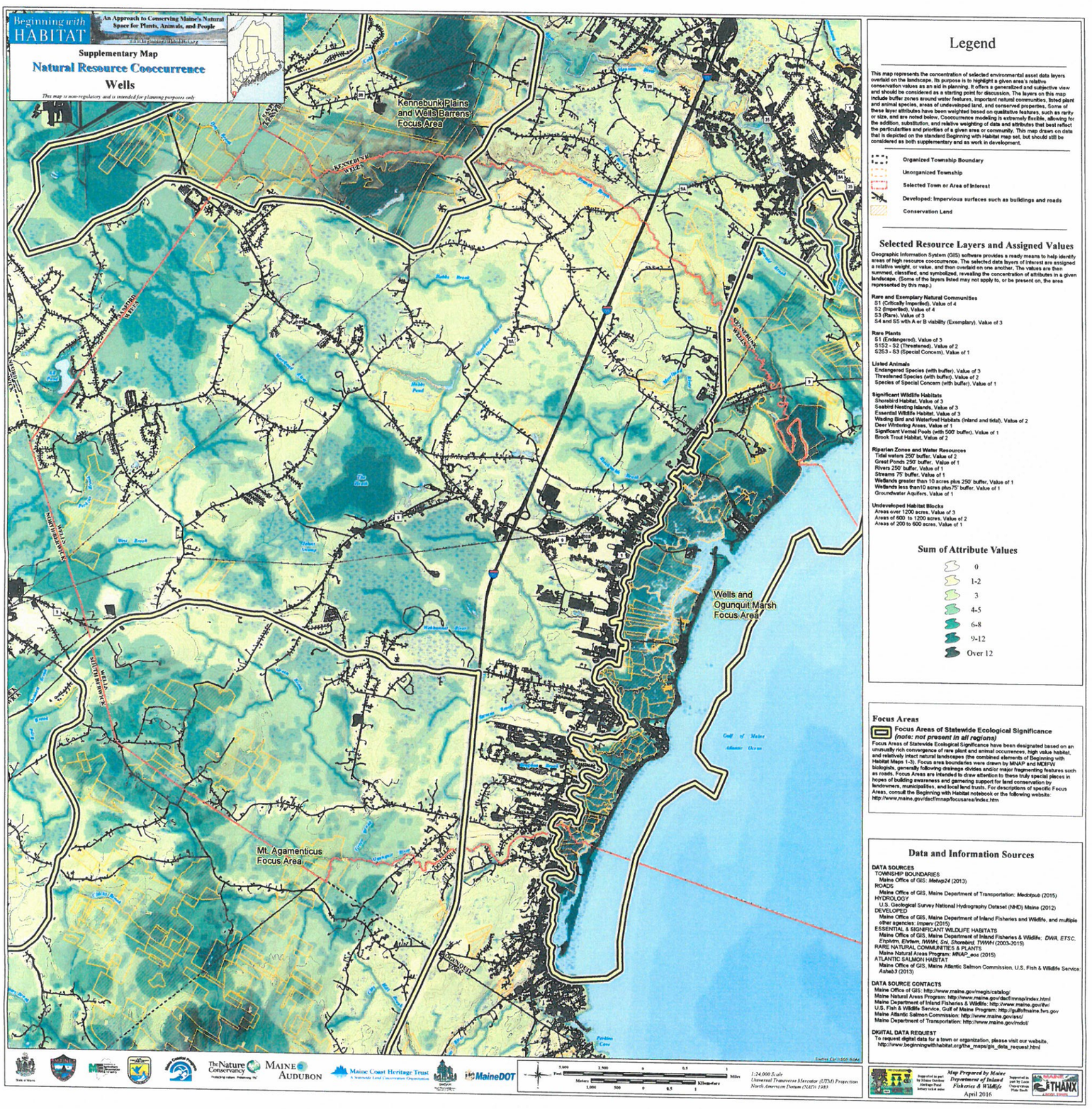
G1 Critically imperiled globally because of extreme rarity (5 or fewer occurrences or very few remaining individuals or acres) or because some aspect of its biology makes it especially vulnerable to extirpation.

G2 Globally imperiled because of rarity (6–20 occurrences or few remaining individuals or acres) or because of other factors making it vulnerable to further decline.

G3 Globally rare (on the order of 20–100 occurrences).

G4 Apparently secure globally.

G5 Demonstrably secure globally.


Beginning with HABITAT
An Approach to Conserving Maine's Natural Space for Plants, Animals, and People
www.beginningwithhabitat.org
Supplementary Map
Natural Resource Cooccurrence
Wells
This map is non-regulatory and is intended for planning purposes only.
Kennebunk Plains and Wells Barrens Focus Area
Wells and Ogunquit Marsh Focus Area
Mt. Agamenticus Focus Area
Legend
This map represents the concentration of selected environmental asset data layers overlaid on the landscape. Its purpose is to highlight a given area's relative conservation values as an aid in planning. It offers a generalized and subjective view and should be considered as a starting point for discussion. The layers on this map include buffer zones around water features, important natural communities, listed plant and animal species, areas of undeveloped land, and conserved properties. Some of these layer attributes have been weighted based on qualitative features, such as rarity or size, and are noted below. Cooccurrence modeling is extremely flexible, allowing for the addition, substitution, and relative weighting of data and attributes that best reflect the particularities and priorities of a given area or community. This map draws on data that is depicted on the standard Beginning with Habitat map set, but should still be considered as both supplementary and as work in development.
Organized Township Boundary
Unorganized Township
Selected Town or Area of Interest
Developed: Impervious surfaces such as buildings and roads
Conservation Land
Selected Resource Layers and Assigned Values
Geographic Information System (GIS) software provides a ready means to help identify areas of high resource cooccurrence. The selected data layers of interest are assigned a relative weight, or value, and then overlaid on one another. The values are then summed, classified, and symbolized, revealing the concentration of attributes in a given landscape. (Some of the layers listed may not apply to, or be present on, the area represented by this map.)
Rare and Exemplary Natural Communities
S1 (Critically Imperiled), Value of 4
S2 (Imperiled), Value of 4
S3 (Rare), Value of 3
S4 and S5 with A or B viability (Exemplary), Value of 3
Rare Plants
S1 (Endangered), Value of 3
S1S2 - S2 (Threatened), Value of 2
S2S3 - S3 (Special Concern), Value of 1
Listed Animals
Endangered Species (with buffer), Value of 3
Threatened Species (with buffer), Value of 2
Species of Special Concern (with buffer), Value of 1
Significant Wildlife Habitats
Shorebird Habitat, Value of 3
Seabird Nesting Islands, Value of 3
Essential Wildlife Habitat, Value of 3
Wading Bird and Waterfowl Habitats (inland and tidal), Value of 2
Deer Wintering Areas, Value of 1
Significant Vernal Pools (with 500' buffer), Value of 1
Brook Trout Habitat, Value of 2
Riparian Zones and Water Resources
Tidal waters 250' buffer, Value of 2
Great Ponds 250' buffer, Value of 1
Rivers 250' buffer, Value of 1
Streams 75' buffer, Value of 1
Wetlands greater than 10 acres plus 250' buffer, Value of 1
Wetlands less than 10 acres plus 75' buffer, Value of 1
Groundwater Aquifers, Value of 1
Undeveloped Habitat Blocks
Areas over 1200 acres, Value of 3
Areas of 600 to 1200 acres, Value of 2
Areas of 200 to 600 acres, Value of 1
Sum of Attribute Values
0
1-2
3
4-5
6-8
9-12
Over 12
Focus Areas
Focus Areas of Statewide Ecological Significance
(note: not present in all regions)
Focus Areas of Statewide Ecological Significance have been designated based on an unusually rich convergence of rare plant and animal occurrences, high value habitat, and relatively intact natural landscapes (the combined elements of Beginning with Habitat Maps 1-3). Focus area boundaries were drawn by MNAP and MDIFW biologists, generally following drainage divides and/or major fragmenting features such as roads. Focus Areas are intended to draw attention to these truly special places in hopes of building awareness and garnering support for land conservation by landowners, municipalities, and local land trusts. For descriptions of specific Focus Areas, consult the Beginning with Habitat notebook or the following website: http://www.maine.gov/dacf/mnap/focusarea/index.htm
Data and Information Sources
DATA SOURCES
TOWNSHIP BOUNDARIES
Maine Office of GIS: Metwp24 (2013)
ROADS
Maine Office of GIS, Maine Department of Transportation: Medotpub (2015)
HYDROLOGY
U.S. Geological Survey National Hydrography Dataset (NHD) Maine (2012)
DEVELOPED
Maine Office of GIS, Maine Department of Inland Fisheries and Wildlife, and multiple other agencies: Impery (2015)
ESSENTIAL & SIGNIFICANT WILDLIFE HABITATS
Maine Office of GIS, Maine Department of Inland Fisheries & Wildlife: DWA, ETSC, Ephstrm, Ephlem, IWWH, Sht, Shorebird, TWWH (2003-2015)
RARE NATURAL COMMUNITIES & PLANTS
Maine Natural Areas Program: MNAP_eoc (2015)
ATLANTIC SALMON HABITAT
Maine Office of GIS, Maine Atlantic Salmon Commission, U.S. Fish & Wildlife Service: Ashab3 (2013)
DATA SOURCE CONTACTS
Maine Office of GIS: http://www.maine.gov/megis/catalog/
Maine Natural Areas Program: http://www.maine.gov/dacf/mnap/index.html
Maine Department of Inland Fisheries & Wildlife: http://www.maine.gov/ifw/
U.S. Fish & Wildlife Service, Gulf of Maine Program: http://gulfofmaine.fws.gov
Maine Atlantic Salmon Commission: http://www.maine.gov/asc/
Maine Department of Transportation: http://www.maine.gov/mdot/
DIGITAL DATA REQUEST
To request digital data for a town or organization, please visit our website, http://www.beginningwithhabitat.org/the_maps/gis_data_request.html
The Nature Conservancy
Maine Audubon
Maine Coast Heritage Trust
MaineDOT
1:24,000 Scale
Universal Transverse Mercator (UTM) Projection
North American Datum (NAD) 1983
Map Prepared by Maine Department of Inland Fisheries & Wildlife
April 2016
THANX

Beginning with HABITAT

An Approach to Conserving Maine's Natural Space for Plants, Animals, and People

maine.gov/beginningwithhabitat

Primary Map 1

Water Resources & Riparian Habitats

Wells

This map is non-regulatory and is intended for planning purposes only.

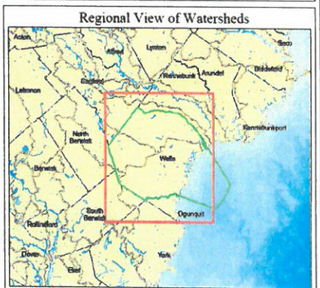


LEGEND

This map depicts riparian areas associated with major surface water features and important public water resources. This map does not depict all streams or wetlands known to occur on the landscape and should not be used as a substitute for on the ground surveys. This map should be used as a planning reference only and is intended to illustrate the natural hydrologic connections between surface water features. Protecting riparian habitats protects water quality, maintains habitat connections, and safeguards important economic resources including recreational and commercial fisheries.

- **Selected Town or Area**
- **Organized Township Boundary**
- **Unorganized Township**
- **Developed** - Impervious surfaces including buildings and roads
- **Drainage divides** - These are the smallest hydrologic units mapped in Maine. They contain watershed boundaries for most ponds and rivers in Maine.
- **NWI Wetlands** - National Wetlands Inventory (NWI) uses aerial photographs to approximate wetland locations. NWI data is not a comprehensive mapping of wetland resources and typically under represents the presence of wetlands on the landscape. The presence of wetlands needs to be determined in the field prior to conducting activities that could result in wetland disturbance.
- **Riparian Habitat** - depicted using common regulatory zones including a 250-foot-wide strip around Great Ponds (ponds ≥10 acres), rivers, coastline, and wetlands ≥10 acres and a 75-foot-wide strip around streams. Riparian areas depicted on this map may actually be affected by existing land uses.
- **Shellfish Growing Areas** - The Maine Department of Marine Resources maps growing areas for economically important shellfish resources. This map depicts softshell and hard clam resources in order to illustrate the relation of these resources to streams and shoreline areas vital to their conservation.
- **Brook Trout Habitat** - Streams and ponds, buffered to 100 feet, where wild Brook Trout populations have been documented, or managed to enhance local fisheries.
- **Public Water Supply Wells**
- **Source protection area** - Buffers that represent source water protection areas for wells and surface water intakes that serve the public water supply. These size is proportional to population served and/or by the type of water supply system. These buffers range from 300 to 2,500 feet in radius.
- **Aquifers** - flow of at least 10 gallons per minute

Regional View of Watersheds

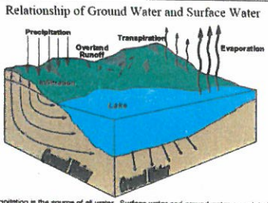


A watershed includes all of the land that drains to a common waterbody. The areas within the watersheds are linked ecologically by the water, sediment, nutrients, and pollutants that flow through them. For the purpose of mapping "hydrological units," watersheds are often grouped into larger drainages or divided into smaller ones depending on the map's scale. Drainage divides (shown on main map as yellow lines), are the smallest hydrological units and generally drain into small ponds, wetlands, or streams. These units are grouped into subwatersheds (HU12's) and are represented on the inset map above by the yellow-brown outlines.

- Main Map Extent
- Selected Town or Area
- Subwatersheds

1 inch = 4 miles

Relationship of Ground Water and Surface Water



Precipitation is the source of all water. Surface water and ground water are related. Drinking water can come from either source. Ground contaminants can affect both. The relationship between ground water and surface water is part of the *hydrologic cycle*. *Precipitation* that falls from the atmosphere as rain or snow reaches the land surface and recharges rivers, lakes, wetlands, and other surface bodies of water directly through *overland runoff*. Surface water also seeps into the ground through *infiltration* and eventually reaches the ground water, or through *evaporation*, returns to the atmosphere. Water evaporates from leaves and stems of plants through *transpiration*.

Shoreland Zoning

Maine's Mandatory Shoreland Zoning Act is intended to protect water quality, conserve wildlife habitat, and preserve the natural beauty of Maine's shoreline areas. Successful implementation requires local awareness of and appreciation for surface water resources and effective enforcement of setback and buffer requirements.

At a minimum, Maine's shoreland zones include all land within:

- 250 feet of the high-water line of any pond over 10 acres, any river that drains at least 25 square miles, and all tidal waters and saltwater marshes;
- 250 feet of a freshwater wetland over 10 acres (except "forested" wetlands); and
- 75 feet of a stream that is either an outlet stream of a great pond, or located below the confluence of two perennial streams as depicted on a USGS topographic map.

Shoreland zoning encourages towns to provide greater protection to their local water resources by applying shoreland zone protections to additional resource types such as smaller streams and wetlands, and rare terrestrial features. For specific guidance regarding Maine's Mandatory Shoreland Zoning Act contact the Dept. of Environmental Protection Shoreland Zoning Unit: 207-287-3901 (Augusta), 207-822-6300 (Portland), 207-941-4118 (Bangor). www.maine.gov/dep/blwq/docshorezone/zpage.htm

Data Sources

DATA SOURCE INFORMATION

TOWNSHIP BOUNDARIES
Maine Office of GIS (2013). *mebnd24*

ROADS
Maine Office of GIS, Maine Department of Transportation (2015). *mainroad*

HYDROLOGY
USGS National Hydrography Dataset (NHD) Maine (2013)

DEVELOPED
Maine Office of GIS, Maine Department of Inland Fisheries and Wildlife (2015). *developed_shellfish_2013*

NATIONAL WETLANDS INVENTORY
U.S. Fish & Wildlife Service (2015). *fcwn*

SHELLFISH
Maine Department of Marine Resources *softshell_clams_here, dams*

RIPARIAN BUFFERS
Maine Office of GIS, Maine Natural Areas Program (2011).

WELLS, WELL BUFFERS
Maine Office of GIS, Maine Department of Human Services Drinking Water Program (2011). *wells, wellbuf*

AQUIFERS
Maine Office of GIS, Maine Geological Survey (2011). *aquifer_polygons*

DRAINAGE DIVIDES
Maine Office of GIS (1994). *mainbnd*

BROOK TROUT HABITAT
Maine Department of Inland Fisheries & Wildlife (2011)

DATA SOURCE CONTACT INFORMATION

Maine Office of GIS: http://www.maine.gov/megis/
Maine Natural Areas Program: http://www.maine.gov/doc/nrimc/mnap/index.htm
Maine Department of Marine Resources: http://www.maine.gov/dmr/
Maine Department of Transportation: http://www.maine.gov/mdot/
Maine Geological Survey: http://www.maine.gov/dacf/mgs/hazgeo/index.htm
Maine Department of Inland Fisheries & Wildlife: http://www.maine.gov/ifw/wildlife/BWIndex.html

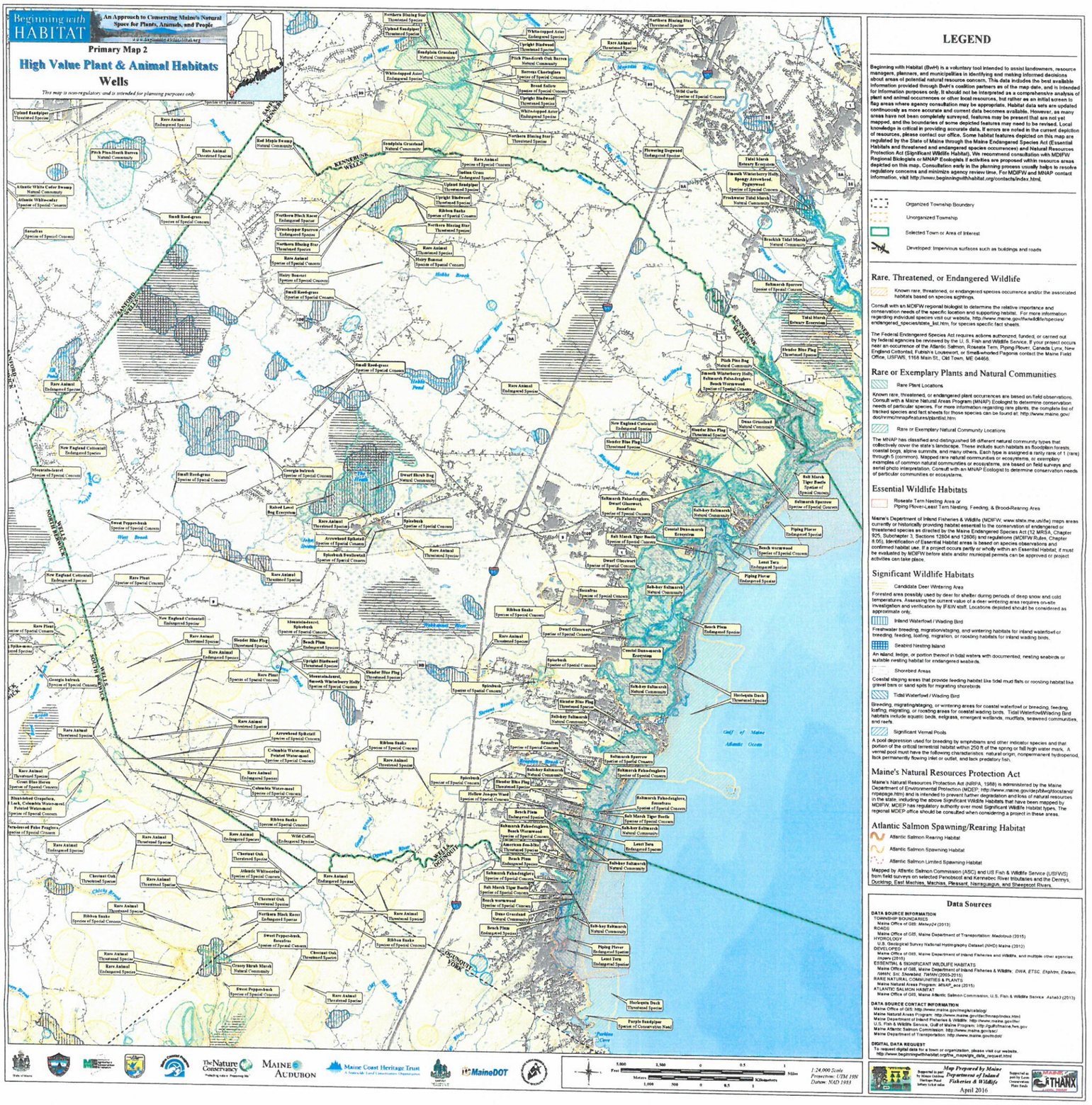
DIGITAL DATA REQUEST

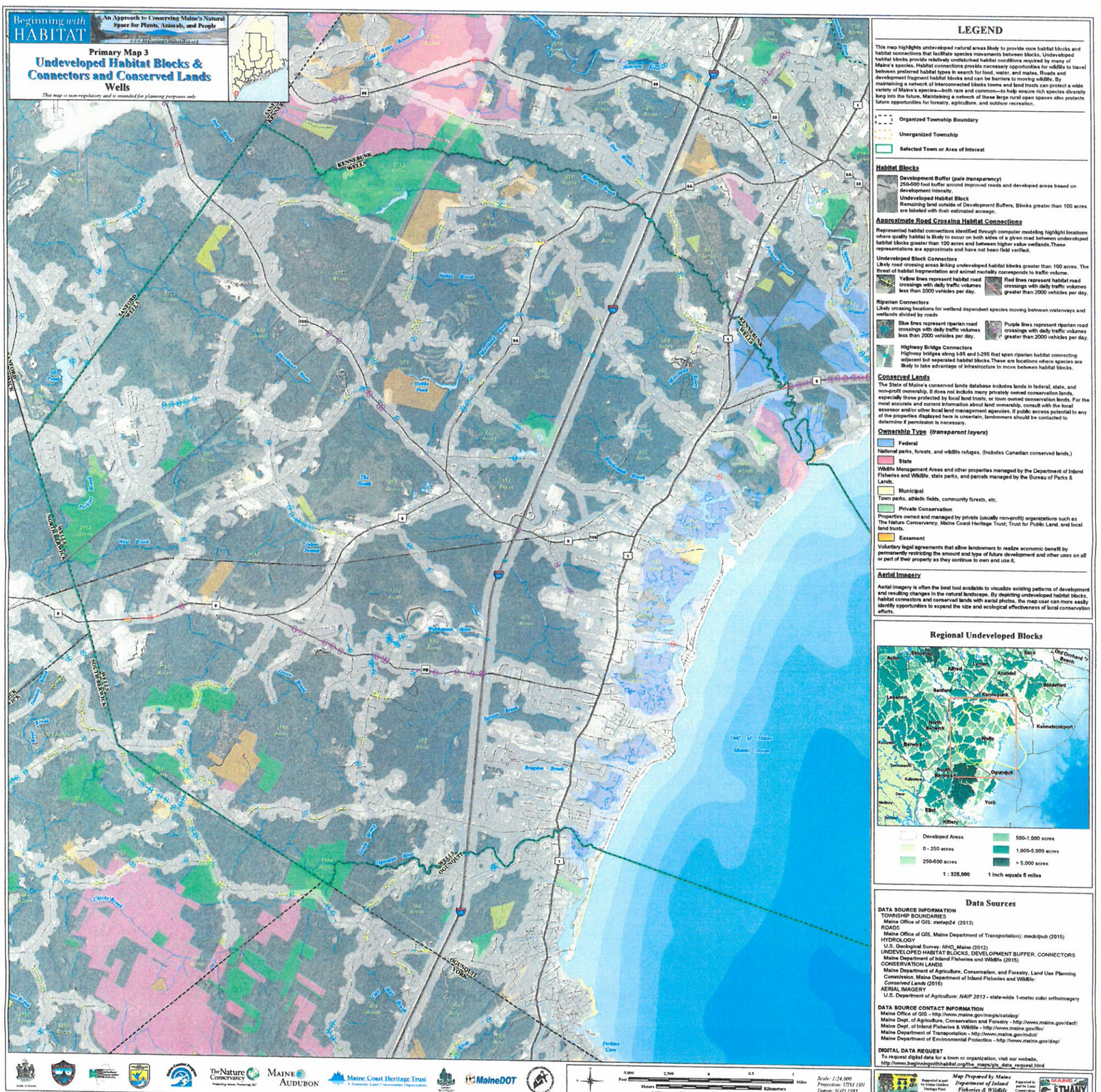
To request digital data for a town or organization, please visit our website: http://www.beginningwithhabitat.org/the_mapping_data_request.html

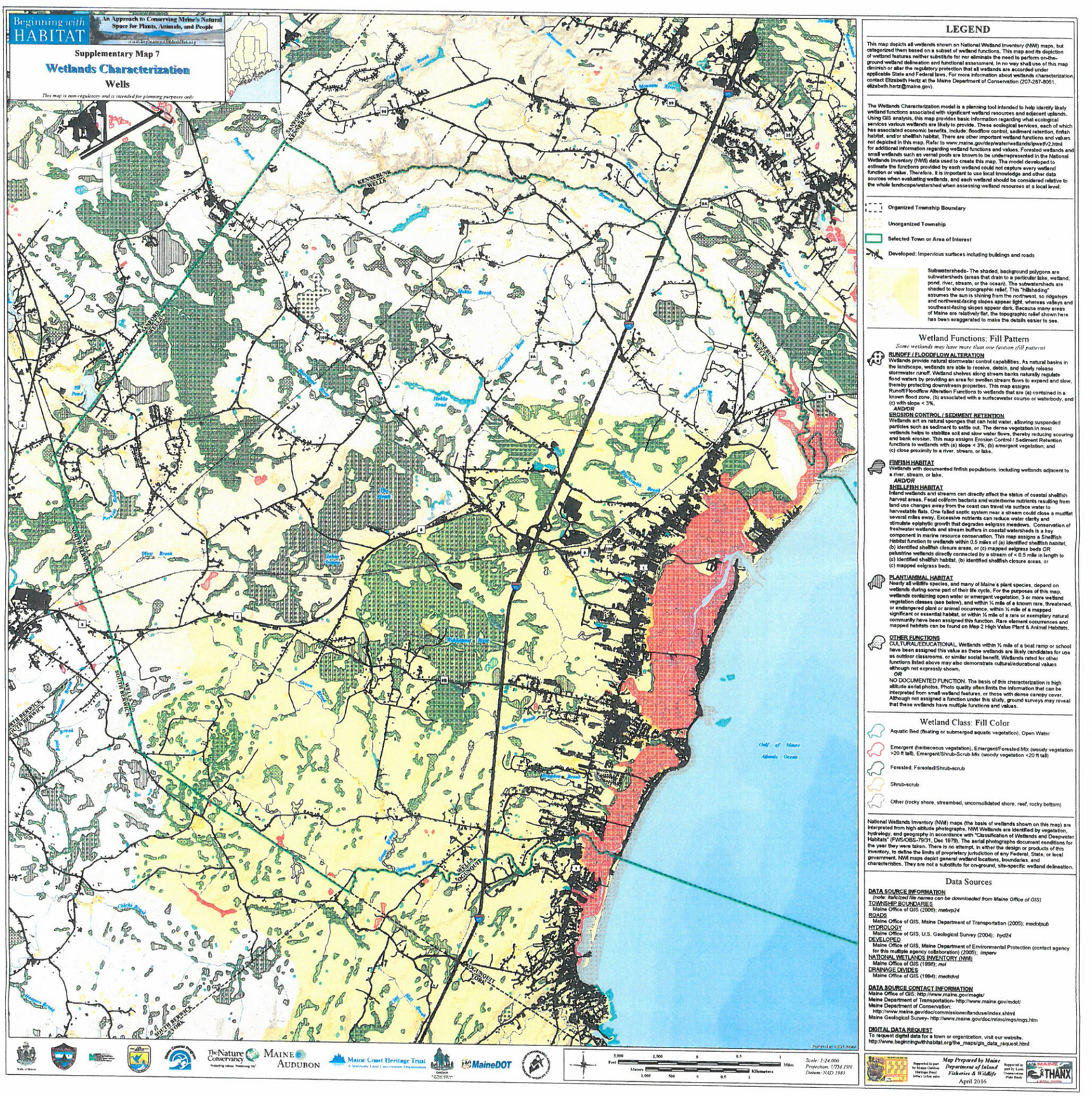
Map Prepared by Molee
Department of Inland Fisheries & Wildlife
April 2016

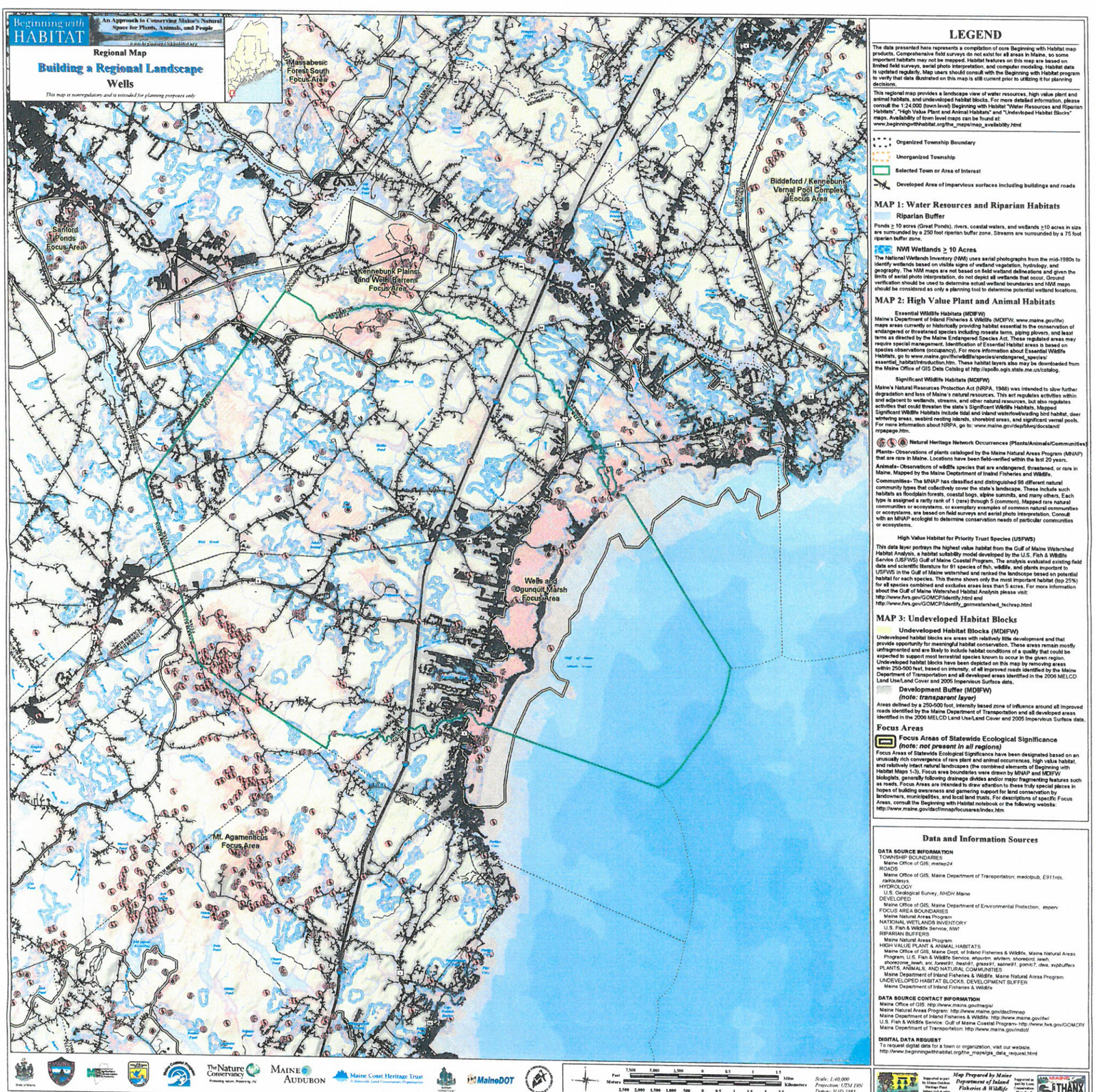
Supported in part by Maine Outdoor Heritage Fund through a grant administered by the Land for Maine's Future Program

Supported in part by Land Conservation, Plum Creek


Beginning with HABITAT
An Approach to Conserving Maine's Natural Space for Plants, Animals, and People
www.beginningwithhabitat.org
Primary Map 2
High Value Plant & Animal Habitats
Wells
This map is non-regulatory and is intended for planning purposes only.
LEGEND
Beginning with Habitat (BwH) is a voluntary tool intended to assist landowners, resource managers, planners, and municipalities in identifying and making informed decisions about areas of potential natural resource concern. This data includes the best available information provided through BwH's coalition partners as of the map date, and is intended for information purposes only. It should not be interpreted as a comprehensive analysis of plant and animal occurrences or other local resources, but rather as an initial screen to flag areas where agency consultation may be appropriate. Habitat data sets are updated continuously as more accurate and current data becomes available. However, as many areas have not been completely surveyed, features may be present that are not yet mapped, and the boundaries of some depicted features may need to be revised. Local knowledge is critical in providing accurate data. If errors are noted in the current depiction of resources, please contact our office. Some habitat features depicted on this map are regulated by the State of Maine through the Maine Endangered Species Act (Essential Habitats and threatened and endangered species occurrences) and Natural Resources Protection Act (Significant Wildlife Habitat). We recommend consultation with MDIFW Regional Biologists or MNAP Ecologists if activities are proposed within resource areas depicted on this map. Consultation early in the planning process usually helps to resolve regulatory concerns and minimize agency review time. For MDIFW and MNAP contact information, visit http://www.beginningwithhabitat.org/contacts/index.html.
Organized Township Boundary
Unorganized Township
Selected Town or Area of Interest
Developed: Impervious surfaces such as buildings and roads
Rare, Threatened, or Endangered Wildlife
Known rare, threatened, or endangered species occurrence and/or the associated habitats based on species sightings.
Consult with an MDIFW regional biologist to determine the relative importance and conservation needs of the specific location and supporting habitat. For more information regarding individual species visit our website, http://www.maine.gov/ifw/wildlife/species/endangered_species/state_list.htm, for species specific fact sheets.
The Federal Endangered Species Act requires actions authorized, funded, or carried out by federal agencies be reviewed by the U. S. Fish and Wildlife Service. If your project occurs near an occurrence of the Atlantic Salmon, Roseate Tern, Piping Plover, Canada Lynx, New England Cottontail, Furbish's Lousewort, or Small-whorled Pagonia contact the Maine Field Office, USFWS, 1168 Main St., Old Town, ME 04468.
Rare or Exemplary Plants and Natural Communities
Rare Plant Locations
Known rare, threatened, or endangered plant occurrences are based on field observations. Consult with a Maine Natural Areas Program (MNAP) Ecologist to determine conservation needs of particular species. For more information regarding rare plants, the complete list of tracked species and fact sheets for those species can be found at: http://www.maine.gov/doc/mnap/features/plantlist.htm
Rare or Exemplary Natural Community Locations
The MNAP has classified and distinguished 98 different natural community types that collectively cover the state's landscape. These include such habitats as floodplain forests, coastal bogs, alpine summits, and many others. Each type is assigned a rarity rank of 1 (rare) through 5 (common). Mapped rare natural communities or ecosystems, or exemplary examples of common natural communities or ecosystems, are based on field surveys and aerial photo interpretation. Consult with an MNAP Ecologist to determine conservation needs of particular communities or ecosystems.
Essential Wildlife Habitats
Roseate Tern Nesting Area or Piping Plover-Least Tern Nesting, Feeding, & Brood-Rearing Area
Maine's Department of Inland Fisheries & Wildlife (MDIFW; www.state.me.us/ifw) maps areas currently or historically providing habitat essential to the conservation of endangered or threatened species as directed by the Maine Endangered Species Act (12 MRSA, Chapter 925, Subchapter 3, Sections 12804 and 12808) and regulations (MDIFW Rules, Chapter 8.05). Identification of Essential Habitat areas is based on species observations and confirmed habitat use. If a project occurs partly or wholly within an Essential Habitat, it must be evaluated by MDIFW before state and/or municipal permits can be approved or project activities can take place.
Significant Wildlife Habitats
Candidate Deer Wintering Area
Forested area possibly used by deer for shelter during periods of deep snow and cold temperatures. Assessing the current value of a deer wintering area requires on-site investigation and verification by IF&W staff. Locations depicted should be considered as approximate only.
Inland Waterfowl / Wading Bird
Freshwater breeding, migration/staging, and wintering habitats for inland waterfowl or breeding, feeding, loafing, migration, or roosting habitats for inland wading birds.
Seabird Nesting Island
An island, ledge, or portion thereof in tidal waters with documented, nesting seabirds or suitable nesting habitat for endangered seabirds.
Shorebird Areas
Coastal staging areas that provide feeding habitat like tidal mud flats or roosting habitat like gravel bars or sand spits for migrating shorebirds
Tidal Waterfowl / Wading Bird
Breeding, migrating/staging, or wintering areas for coastal waterfowl or breeding, feeding, loafing, migrating, or roosting areas for coastal wading birds. Tidal Waterfowl/Wading Bird habitats include aquatic beds, eelgrass, emergent wetlands, mudflats, seaweed communities, and reefs.
Significant Vernal Pools
A pool depression used for breeding by amphibians and other indicator species and that portion of the critical terrestrial habitat within 250 ft of the spring or fall high water mark. A vernal pool must have the following characteristics: natural origin, nonpermanent hydroperiod, lack permanently flowing inlet or outlet, and lack predatory fish.
Maine's Natural Resources Protection Act
Maine's Natural Resources Protection Act (NRPA, 1988) is administered by the Maine Department of Environmental Protection (MDEP; http://www.maine.gov/dep/blwq/docstore/nrpapage.htm) and is intended to prevent further degradation and loss of natural resources in the state, including the above Significant Wildlife Habitats that have been mapped by MDIFW. MDEP has regulatory authority over most Significant Wildlife Habitat types. The regional MDEP office should be consulted when considering a project in these areas.
Atlantic Salmon Spawning/Rearing Habitat
Atlantic Salmon Rearing Habitat
Atlantic Salmon Spawning Habitat
Atlantic Salmon Limited Spawning Habitat
Mapped by Atlantic Salmon Commission (ASC) and US Fish & Wildlife Service (USFWS) from field surveys on selected Penobscot and Kennebec River tributaries and the Dennys, Ducktrap, East Machias, Machias, Pleasant, Narraguagus, and Sheepscot Rivers.
Data Sources
DATA SOURCE INFORMATION
TOWNSHIP BOUNDARIES
Maine Office of GIS; Melwp24 (2013)
ROADS
Maine Office of GIS; Maine Department of Transportation; Medotsub (2015)
HYDROLOGY
U.S. Geological Survey National Hydrography Dataset (NHD) Maine (2012)
DEVELOPED
Maine Office of GIS; Maine Department of Inland Fisheries and Wildlife, and multiple other agencies; Imperv (2015)
ESSENTIAL & SIGNIFICANT WILDLIFE HABITATS
Maine Office of GIS; Maine Department of Inland Fisheries & Wildlife; DWA, ETSC, Eighdrv, Elvtrem, IWWH, SW, Shorebird, TWWH (2003-2015)
RARE NATURAL COMMUNITIES & PLANTS
Maine Natural Areas Program; MNAP_eos (2015)
ATLANTIC SALMON HABITAT
Maine Office of GIS; Maine Atlantic Salmon Commission, U.S. Fish & Wildlife Service; Asfw03 (2013)
DATA SOURCE CONTACT INFORMATION
Maine Office of GIS; http://www.maine.gov/megis/catalog/
Maine Natural Areas Program; http://www.maine.gov/doc/mnap/index.html
Maine Department of Inland Fisheries & Wildlife; http://www.maine.gov/ifw/
U.S. Fish & Wildlife Service, Gulf of Maine Program; http://gulfofmaine.fws.gov
Maine Atlantic Salmon Commission; http://www.maine.gov/asc/
Maine Department of Transportation; http://www.maine.gov/mdot/
DIGITAL DATA REQUEST
To request digital data for a town or organization, please visit our website, http://www.beginningwithhabitat.org/the_mapping_data_request.html
1,500 0 1,500 3 Miles
1,000 500 0 1 Kilometers
1:24,000 Scale
Projection: UTM 19N
Datum: NAD 1983
Map Prepared by Maine Department of Inland Fisheries & Wildlife
April 2016
Supported in part by Maine Outdoor Heritage Fund (effort total dollar)
Supported in part by Lyme Conservation Plan Fund
THANK YOU
Maine Coast Heritage Trust
MaineDOT
The Nature Conservancy
Maine Audubon


Beginning with HABITAT
An Approach to Conserving Maine's Natural Space for Plants, Animals, and People
Primary Map 3
Undeveloped Habitat Blocks & Connectors and Conserved Lands
Wells
This map is non-regulatory and is intended for planning purposes only.
LEGEND
This map highlights undeveloped natural areas likely to provide core habitat blocks and habitat connections that facilitate species movements between blocks. Undeveloped habitat blocks provide relatively undisturbed habitat conditions required by many of Maine's species. Habitat connections provide necessary opportunities for wildlife to travel between preferred habitat types in search for food, water, and mates. Roads and development fragment habitat blocks and can be barriers to moving wildlife. By maintaining a network of interconnected blocks towns and land trusts can protect a wide variety of Maine's species—both rare and common—to help ensure rich species diversity long into the future. Maintaining a network of these large rural open spaces also protects future opportunities for forestry, agriculture, and outdoor recreation.
Organized Township Boundary
Unorganized Township
Selected Town or Area of Interest
Habitat Blocks
Development Buffer (pale transparency)
250-500 foot buffer around improved roads and developed areas based on development intensity.
Undeveloped Habitat Block
Remaining land outside of Development Buffers. Blocks greater than 100 acres are labeled with their estimated acreage.
Approximate Road Crossing Habitat Connections
Represented habitat connections identified through computer modeling highlight locations where quality habitat is likely to occur on both sides of a given road between undeveloped habitat blocks greater than 100 acres and between higher value wetlands.These representations are approximate and have not been field verified.
Undeveloped Block Connectors
Likely road crossing areas linking undeveloped habitat blocks greater than 100 acres. The threat of habitat fragmentation and animal mortality corresponds to traffic volume.
Yellow lines represent habitat road crossings with daily traffic volumes less than 2000 vehicles per day.
Red lines represent habitat road crossings with daily traffic volumes greater than 2000 vehicles per day.
Riparian Connectors
Likely crossing locations for wetland dependent species moving between waterways and wetlands divided by roads
Blue lines represent riparian road crossings with daily traffic volumes less than 2000 vehicles per day.
Purple lines represent riparian road crossings with daily traffic volumes greater than 2000 vehicles per day.
Highway Bridge Connectors
Highway bridges along I-95 and I-295 that span riparian habitat connecting adjacent but separated habitat blocks.These are locations where species are likely to take advantage of infrastructure to move between habitat blocks.
Conserved Lands
The State of Maine's conserved lands database includes lands in federal, state, and non-profit ownership. It does not include many privately owned conservation lands, especially those protected by local land trusts, or town owned conservation lands. For the most accurate and current information about land ownership, consult with the local assessor and/or other local land management agencies. If public access potential to any of the properties displayed here is uncertain, landowners should be contacted to determine if permission is necessary.
Ownership Type (transparent layers)
Federal
National parks, forests, and wildlife refuges. (Includes Canadian conserved lands.)
State
Wildlife Management Areas and other properties managed by the Department of Inland Fisheries and Wildlife, state parks, and parcels managed by the Bureau of Parks & Lands.
Municipal
Town parks, athletic fields, community forests, etc.
Private Conservation
Properties owned and managed by private (usually non-profit) organizations such as The Nature Conservancy, Maine Coast Heritage Trust, Trust for Public Land, and local land trusts.
Easement
Voluntary legal agreements that allow landowners to realize economic benefit by permanently restricting the amount and type of future development and other uses on all or part of their property as they continue to own and use it.
Aerial Imagery
Aerial imagery is often the best tool available to visualize existing patterns of development and resulting changes in the natural landscape. By depicting undeveloped habitat blocks, habitat connectors and conserved lands with aerial photos, the map user can more easily identify opportunities to expand the size and ecological effectiveness of local conservation efforts.
Regional Undeveloped Blocks
Developed Areas
0 - 250 acres
250-500 acres
500-1,000 acres
1,000-5,000 acres
> 5,000 acres
1 : 326,000
1 inch equals 5 miles
Data Sources
DATA SOURCE INFORMATION
TOWNSHIP BOUNDARIES
Maine Office of GIS; meheps24 (2013)
ROADS
Maine Office of GIS, Maine Department of Transportation); medcilpub (2015)
HYDROLOGY
U.S. Geological Survey; NHD_Maine (2012)
UNDEVELOPED HABITAT BLOCKS, DEVELOPMENT BUFFER, CONNECTORS
Maine Department of Inland Fisheries and Wildlife (2015)
CONSERVATION LANDS
Maine Department of Agriculture, Conservation, and Forestry, Land Use Planning Commission, Maine Department of Inland Fisheries and Wildlife:
Conserved Lands (2015)
AERIAL IMAGERY
U.S. Department of Agriculture; NAIP 2013 - state-wide 1-meter color orthoimagery
DATA SOURCE CONTACT INFORMATION
Maine Office of GIS - http://www.maine.gov/megis/catalog/
Maine Dept. of Agriculture, Conservation and Forestry - http://www.maine.gov/dacf/
Maine Dept. of Inland Fisheries & Wildlife - http://www.maine.gov/ifw/
Maine Department of Transportation - http://www.maine.gov/mdot/
Maine Department of Environmental Protection - http://www.maine.gov/dep/
DIGITAL DATA REQUEST
To request digital data for a town or organization, visit our website.
http://www.beginningwithhabitat.org/the_maps/gis_data_request.html
Map Prepared by Maine Department of Inland Fisheries & Wildlife
April 2016
Scale: 1:24,000
Projection: UTM 19N
Datum: NAD 1983
Wells
Kennebunk
Kennebunkport
Arundel
Biddeford
Saco
Old Orchard Beach
Acton
Alfred
Lyman
Sanford
Lebanon
North Berwick
Berwick
South Berwick
Eliot
York
Kittery
Ogunquit
Cape Neddick
Gulf of Maine
Atlantic Ocean
The Nature Conservancy
Maine Audubon
Maine Coast Heritage Trust
MaineDOT
MAINE ATHANX


Beginning with HABITAT
An Approach to Conserving Maine's Natural Space for Plants, Animals, and People
Supplementary Map 7
Wetlands Characterization
Wells
This map is non-regulatory and is intended for planning purposes only.
LEGEND
This map depicts all wetlands shown on National Wetland Inventory (NWI) maps, but categorized them based on a subset of wetland functions. This map and its depiction of wetland features neither substitute for nor eliminate the need to perform on-the-ground wetland delineation and functional assessment. In no way shall use of this map diminish or alter the regulatory protection that all wetlands are accorded under applicable State and Federal laws. For more information about wetlands characterization, contact Elizabeth Hertz at the Maine Department of Conservation (207-287-8061, elizabeth.hertz@maine.gov).
The Wetlands Characterization model is a planning tool intended to help identify likely wetland functions associated with significant wetland resources and adjacent uplands. Using GIS analysis, this map provides basic information regarding what ecological services various wetlands are likely to provide. These ecological services, each of which has associated economic benefits, include: floodflow control, sediment retention, finfish habitat, and/or shellfish habitat. There are other important wetland functions and values not depicted in this map. Refer to www.maine.gov/dep/water/wetlands/ipwet9/v2.html for additional information regarding wetland functions and values. Forested wetlands and small wetlands such as vernal pools are known to be underrepresented in the National Wetlands Inventory (NWI) data used to create this map. The model developed to estimate the functions provided by each wetland could not capture every wetland function or value. Therefore, it is important to use local knowledge and other data sources when evaluating wetlands, and each wetland should be considered relative to the whole landscape/watershed when assessing wetland resources at a local level.
Organized Township Boundary
Unorganized Township
Selected Town or Area of Interest
Developed: Impervious surfaces including buildings and roads
Subwatersheds- The shaded, background polygons are subwatersheds (areas that drain to a particular lake, wetland, pond, river, stream, or the ocean). The subwatersheds are shaded to show topographic relief. This "hillshading" assumes the sun is shining from the northwest, so ridgetops and northwest-facing slopes appear light, whereas valleys and southeast-facing slopes appear dark. Because many areas of Maine are relatively flat, the topographic relief shown here has been exaggerated to make the details easier to see.
Wetland Functions: Fill Pattern
Some wetlands may have more than one funtion (fill pattern)
RUNOFF / FLOODFLOW ALTERATION
Wetlands provide natural stormwater control capabilities. As natural basins in the landscape, wetlands are able to receive, detain, and slowly release stormwater runoff. Wetland shelves along stream banks naturally regulate flood waters by providing an area for swollen stream flows to expand and slow, thereby protecting downstream properties. This map assigns Runoff/Floodflow Alteration Functions to wetlands that are (a) contained in a known flood zone, (b) associated with a surfacewater course or waterbody, and (c) with slope < 3%.
AND/OR
EROSION CONTROL / SEDIMENT RETENTION
Wetlands act as natural sponges that can hold water, allowing suspended particles such as sediment to settle out. The dense vegetation in most wetlands helps to stabilize soil and slow water flows, thereby reducing scouring and bank erosion. This map assigns Erosion Control / Sediment Retention functions to wetlands with (a) slope < 3%, (b) emergent vegetation; and (c) close proximity to a river, stream, or lake.
FINFISH HABITAT
Wetlands with documented finfish populations, including wetlands adjacent to a river, stream, or lake.
AND/OR
SHELLFISH HABITAT
Inland wetlands and streams can directly affect the status of coastal shellfish harvest areas. Fecal coliform bacteria and waterborne nutrients resulting from land use changes away from the coast can travel via surface water to harvestable flats. One failed septic system near a stream could close a mudflat several miles away. Excessive nutrients can reduce water clarity and stimulate epiphytic growth that degrades eelgrass meadows. Conservation of freshwater wetlands and stream buffers in coastal watersheds is a key component in marine resource conservation. This map assigns a Shellfish Habitat function to wetlands within 0.5 miles of (a) identified shellfish habitat, (b) identified shellfish closure areas, or (c) mapped eelgrass beds OR palustrine wetlands directly connected by a stream of < 0.5 mile in length to (a) identified shellfish habitat, (b) identified shellfish closure areas, or (c) mapped eelgrass beds.
PLANT/ANIMAL HABITAT
Nearly all wildlife species, and many of Maine's plant species, depend on wetlands during some part of their life cycle. For the purposes of this map, wetlands containing open water or emergent vegetation, 3 or more wetland vegetation classes (see below), and within ¼ mile of a known rare, threatened, or endangered plant or animal occurrence, within ¼ mile of a mapped significant or essential habitat, or within ¼ mile of a rare or exemplary natural community have been assigned this function. Rare element occurrences and mapped habitats can be found on Map 2 High Value Plant & Animal Habitats.
OTHER FUNCTIONS
CULTURAL/EDUCATIONAL. Wetlands within ¼ mile of a boat ramp or school have been assigned this value as these wetlands are likely candidates for use as outdoor classrooms, or similar social benefit. Wetlands rated for other functions listed above may also demonstrate cultural/educational values although not expressly shown.
OR
NO DOCUMENTED FUNCTION. The basis of this characterization is high altitude aerial photos. Photo quality often limits the information that can be interpreted from small wetland features, or those with dense canopy cover. Although not assigned a function under this study, ground surveys may reveal that these wetlands have multiple functions and values.
Wetland Class: Fill Color
Aquatic Bed (floating or submerged aquatic vegetation), Open Water
Emergent (herbaceous vegetation), Emergent/Forested Mix (woody vegetation >20 ft tall), Emergent/Shrub-Scrub Mix (woody vegetation <20 ft tall)
Forested, Forested/Shrub-scrub
Shrub-scrub
Other (rocky shore, streambed, unconsolidated shore, reef, rocky bottom)
National Wetlands Inventory (NWI) maps (the basis of wetlands shown on this map) are interpreted from high altitude photographs. NWI Wetlands are identified by vegetation, hydrology, and geography in accordance with "Classification of Wetlands and Deepwater Habitats" (FWS/OBS-79/31, Dec 1979). The aerial photographs document conditions for the year they were taken. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, State, or local government. NWI maps depict only wetland locations, boundaries, and characteristics. They are not a substitute for on-ground, site-specific wetland delineation.
Data Sources
DATA SOURCE INFORMATION
(note: italicized file names can be downloaded from Maine Office of GIS)
TOWNSHIP BOUNDARIES
Maine Office of GIS (2006): metwn24
ROADS
Maine Office of GIS, Maine Department of Transportation (2005): medotroute
HYDROLOGY
Maine Office of GIS, U.S. Geological Survey (2004): hyd24
DEVELOPED
Maine Office of GIS, Maine Department of Environmental Protection (contact agency for this multiple agency collaboration) (2005): imperv
NATIONAL WETLANDS INVENTORY (NWI)
Maine Office of GIS (1998): nwi
DRAINAGE DIVIDES
Maine Office of GIS (1984): medrdvd
DATA SOURCE CONTACT INFORMATION
Maine Office of GIS: http://www.maine.gov/megis/
Maine Department of Transportation- http://www.maine.gov/mdot/
Maine Department of Conservation:
http://www.maine.gov/doc/commissioner/landuse/index.shtml
Maine Geological Survey- http://www.maine.gov/doc/nrimc/mgs/mgs.htm
DIGITAL DATA REQUEST
To request digital data for a town or organization, visit our website.
http://www.beginningwithhabitat.org/the_maps/gis_data_request.html
The Nature Conservancy
Maine Audubon
Maine Coast Heritage Trust
MaineDOT
5,000 2,500 0 0.5 1 Miles
1,000 500 0 0.5 1 Kilometers
Scale: 1:24,000
Projection: UTM 19N
Datum: NAD 1983
Map Prepared by Maine Department of Inland Fisheries & Wildlife
April 2016
THANK


Beginning with HABITAT
An Approach to Conserving Maine's Natural Space for Plants, Animals, and People
www.beginningwithhabitat.org
Regional Map
Building a Regional Landscape
Wells
This map is nonregulatory and is intended for planning purposes only
Mousabesic Forest South Focus Area
Biddeford / Kennebunk Vernal Pool Complex Focus Area
Sanford Ponds Focus Area
Kennebunk Plains and Wells Barrens Focus Area
Wells and Ogunquit Marsh Focus Area
Mt. Agamenticus Focus Area
LEGEND
The data presented here represents a compilation of core Beginning with Habitat map products. Comprehensive field surveys do not exist for all areas in Maine, so some important habitats may not be mapped. Habitat features on this map are based on limited field surveys, aerial photo interpretation, and computer modeling. Habitat data is updated regularly. Map users should consult with the Beginning with Habitat program to verify that data illustrated on this map is still current prior to utilizing it for planning decisions.
This regional map provides a landscape view of water resources, high value plant and animal habitats, and undeveloped habitat blocks. For more detailed information, please consult the 1:24,000 (town level) Beginning with Habitat "Water Resources and Riparian Habitats", "High Value Plant and Animal Habitats" and "Undeveloped Habitat Blocks" maps. Availability of town level maps can be found at: www.beginningwithhabitat.org/the_maps/map_availability.html
Organized Township Boundary
Unorganized Township
Selected Town or Area of Interest
Developed Area of impervious surfaces including buildings and roads
MAP 1: Water Resources and Riparian Habitats
Riparian Buffer
Ponds ≥ 10 acres (Great Ponds), rivers, coastal waters, and wetlands ≥10 acres in size are surrounded by a 250 foot riparian buffer zone. Streams are surrounded by a 75 foot riparian buffer zone.
NWI Wetlands ≥ 10 Acres
The National Wetlands Inventory (NWI) uses aerial photographs from the mid-1980s to identify wetlands based on visible signs of wetland vegetation, hydrology, and geography. The NWI maps are not based on field wetland delineations and given the limits of aerial photo interpretation, do not depict all wetlands that occur. Ground verification should be used to determine actual wetland boundaries and NWI maps should be considered as only a planning tool to determine potential wetland locations.
MAP 2: High Value Plant and Animal Habitats
Essential Wildlife Habitats (MDIFW)
Maine's Department of Inland Fisheries & Wildlife (MDIFW, www.maine.gov/ifw) maps areas currently or historically providing habitat essential to the conservation of endangered or threatened species including roseate tern, piping plovers, and least terns as directed by the Maine Endangered Species Act. These regulated areas may require special management. Identification of Essential Habitat areas is based on species observations (occupancy). For more information about Essential Wildlife Habitats, go to www.maine.gov/ifw/wildlife/species/endangered_species/essential_habitat/introduction.htm. These habitat layers also may be downloaded from the Maine Office of GIS Data Catalog at http://apollo.ogis.state.me.us/catalog.
Significant Wildlife Habitats (MDIFW)
Maine's Natural Resources Protection Act (NRPA, 1988) was intended to slow further degradation and loss of Maine's natural resources. This act regulates activities within and adjacent to wetlands, streams, and other natural resources, but also regulates activities that could threaten the state's Significant Wildlife Habitats. Mapped Significant Wildlife Habitats include tidal and inland waterfowl/wading bird habitat, deer wintering areas, seabird nesting islands, shorebird areas, and significant vernal pools. For more information about NRPA, go to: www.maine.gov/dep/blwq/docstand/nrpapage.htm.
Natural Heritage Network Occurrences (Plants/Animals/Communities)
Plants- Observations of plants catalogued by the Maine Natural Areas Program (MNAP) that are rare in Maine. Locations have been field-verified within the last 20 years.
Animals- Observations of wildlife species that are endangered, threatened, or rare in Maine. Mapped by the Maine Department of Inalnd Fisheries and Wildlife.
Communities- The MNAP has classified and distinguished 98 different natural community types that collectively cover the state's landscape. These include such habitats as floodplain forests, coastal bogs, alpine summits, and many others. Each type is assigned a rarity rank of 1 (rare) through 5 (common). Mapped rare natural communities or ecosystems, or exemplary examples of common natural communities or ecosystems, are based on field surveys and aerial photo interpretation. Consult with an MNAP ecologist to determine conservation needs of particular communities or ecosystems.
High Value Habitat for Priority Trust Species (USFWS)
This data layer displays the highest value habitat from the Gulf of Maine Watershed Habitat Analysis, a habitat suitability model developed by the U.S. Fish & Wildlife Service (USFWS) Gulf of Maine Coastal Program. The analysis evaluated existing field data and scientific literature for 91 species of fish, wildlife, and plants important to USFWS in the Gulf of Maine watershed and ranked the landscape based on potential habitat for each species. This theme shows only the most important habitat (top 25%) for all species combined and excludes areas less than 5 acres. For more information about the Gulf of Maine Watershed Habitat Analysis please visit: http://www.fws.gov/GOMCP/identify.html and http://www.fws.gov/GOMCP/identify_gomwatershed_techrep.html
MAP 3: Undeveloped Habitat Blocks
Undeveloped Habitat Blocks (MDIFW)
Undeveloped habitat blocks are areas with relatively little development and that provide opportunity for meaningful habitat conservation. These areas remain mostly unfragmented and are likely to include habitat conditions of a quality that could be expected to support most terrestrial species known to occur in the given region. Undeveloped habitat blocks have been depicted on this map by removing areas within 250-500 feet, based on intensity, of all improved roads identified by the Maine Department of Transportation and all developed areas identified in the 2006 MELCD Land Use/Land Cover and 2005 Impervious Surface data.
Development Buffer (MDIFW)
(note: transparent layer)
Areas defined by a 250-500 foot, intensity based zone of influence around all improved roads identified by the Maine Department of Transportation and all developed areas identified in the 2006 MELCD Land Use/Land Cover and 2005 Impervious Surface data.
Focus Areas
Focus Areas of Statewide Ecological Significance
(note: not present in all regions)
Focus Areas of Statewide Ecological Significance have been designated based on an unusually rich convergence of rare plant and animal occurrences, high value habitat, and relatively intact natural landscapes (the combined elements of Beginning with Habitat Maps 1-3). Focus area boundaries were drawn by MNAP and MDIFW biologists, generally following drainage divides and/or major fragmenting features such as roads. Focus Areas are intended to draw attention to these truly special places in hopes of building awareness and garnering support for land conservation by landowners, municipalities, and local land trusts. For descriptions of specific Focus Areas, consult the Beginning with Habitat notebook or the following website: http://www.maine.gov/dacf/mnap/focusareas/index.htm
Data and Information Sources
DATA SOURCE INFORMATION
TOWNSHIP BOUNDARIES
Maine Office of GIS; metwp24
ROADS
Maine Office of GIS, Maine Department of Transportation; medotpub, E911rds, railroadlines
HYDROLOGY
U.S. Geological Survey, NHDH Maine
DEVELOPED
Maine Office of GIS, Maine Department of Environmental Protection; meperv
FOCUS AREA BOUNDARIES
Maine Natural Areas Program
NATIONAL WETLANDS INVENTORY
U.S. Fish & Wildlife Service; NWI
RIPARIAN BUFFERS
Maine Natural Areas Program
HIGH VALUE PLANT & ANIMAL HABITATS
Maine Office of GIS, Maine Dept. of Inland Fisheries & Wildlife, Maine Natural Areas Program, U.S. Fish & Wildlife Service; mbvpvtm, mbvtem, shoreb(n), iseah, shorezone_iseah, anc, forest91, fresh91, grass91, saline91, gcmic7, dwa, ivpbuffers
PLANTS, ANIMALS, AND NATURAL COMMUNITIES
Maine Department of Inland Fisheries & Wildlife, Maine Natural Areas Program
UNDEVELOPED HABITAT BLOCKS, DEVELOPMENT BUFFER
Maine Department of Inland Fisheries & Wildlife
DATA SOURCE CONTACT INFORMATION
Maine Office of GIS: http://www.maine.gov/megis/
Maine Natural Areas Program: http://www.maine.gov/doc/mnap
Maine Department of Inland Fisheries & Wildlife: http://www.maine.gov/ifw/
U.S. Fish & Wildlife Service: Gulf of Maine Coastal Program- http://www.fws.gov/GOMCP/
Maine Department of Transportation: http://www.maine.gov/mdot/
DIGITAL DATA REQUEST
To request digital data for a town or organization, visit our website, http://www.beginningwithhabitat.org/the_maps/gis_data_request.html
The Nature Conservancy
Maine Audubon
Maine Coast Heritage Trust
MaineDOT
Feet 7,500 5,000 2,500 0 0.5 1 1.5 Miles
Meters 2,500 2,000 1,500 1,000 500 0 0.5 1 1.5 2 2.5 Kilometers
Scale: 1:40,000
Projection: UTM 19N
Datum: NAD 1983
Map Prepared by Maine Department of Inland Fisheries & Wildlife
March 2016
Supported in part by Maine Outdoor Heritage Fund lottery ticket sales
Supported in part by Land Conservation Plate funds
THANX

XIV. Public Poll Overview on Climate Change, NECAP

Overview of NECAP Public Polls on Climate Change Adaptation in Wells

Background

Prior to running New England Climate Adaptation Project (NECAP) role-play simulation workshops, project staff commissioned an independent firm to randomly poll 100 Wells residents via landline. This poll (Poll 1), conducted in May 2013, established baseline opinions about climate change risk and adaptation in the town. Following the NECAP workshops, a second public poll (Poll 2) was conducted in May 2014 to see what, if anything, had shifted in residents' opinions about their town's climate risks, level of preparedness, and capacity to address potential impacts.[1] This report summarizes key findings from the two polls for local officials and other interested stakeholders in Wells. These key findings are discussed individually in the sections that follow and a brief summary of all findings is provided in the conclusion.

Demographics

The age and gender breakdown for both Poll 1 and Poll 2 was similar. However, since the distribution for age and gender in Poll 1 and Poll 2 were slightly different than the population of Wells at large, the poll data were weighted for age and gender to reflect a more demographically representative sample.

There were a few demographic differences between Polls 1 and 2. Respondents in Poll 2 had more formal education, less membership in environmental organization, more self-identified liberals, as compared to the Poll 1 respondents. Gender, age, and length of residence were very similar between the two polls. Neither poll well captured the perspectives of part-time or seasonal residents in Wells, likely because the polls were conducted via landline. Only three percent of Poll 2 respondents stated that they attended a NECAP workshop over the past year, indicating a very minor overlap between the Poll 2 population and the NECAP workshop population for Wells.

High Levels of Climate Change Concern

Both Poll 1 and Poll 2 found high levels of concern about the possible impacts of climate change on the Town of Wells, with about two-thirds of respondents in both polls saying they are somewhat to very concerned about local climate change impacts (Figure 1).

[1] It will be indicated in this write-up where findings from the polls were statistically significant. If no indication is given, the finding from the poll was not statistically significant.

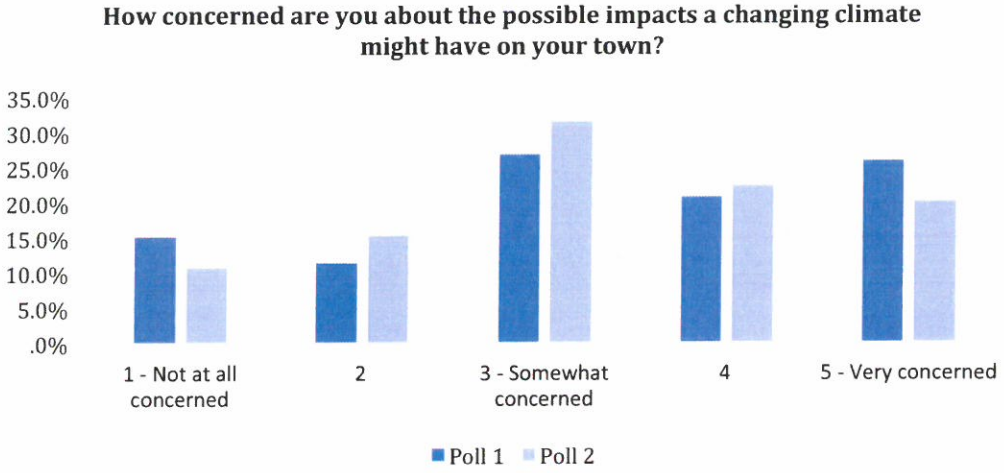


Figure 1: Comparison of Poll 1 and Poll 2 respondents' concern about local climate change risks

Moreover, when asked in Poll 2 if their concern about local climate change impacts had shifted, nearly 30 percent of respondents indicated their concern had increased during the past year. Moreover, 70 percent of respondents indicated no change in their concern, and less than one percent said their concern had decreased in the last year. These respondents' top reasons for the increase in their concern, out of the options provided, are listed in Table 1.

Natural weather event	29 %
The National Climate Assessment or another scientific report	14 %
News story	13 %
State or national government action	8 %
Personal or professional interaction	4 %
Local government action	3 %
Educational workshop or presentation	0 %
School	0%
Other reason	29 %

Table 1: Reasons for increased concern about local climate change impacts

Despite this increase in levels of concern, the number of Poll 2 respondents who said they thought about how climate change would affect their community "often" was 42 percent, versus 54 percent in Poll 1. Conversely, the number of respondents who said "every once in a while" went up from 19 percent in Poll 1 to 32 percent in Poll 2. This trend may reflect that Wells did not experienced a severe storm between the two polls, whereas Hurricane Sandy had occurred much closer to the time of the first public poll. While not statistically significant, these results mean there is a trend towards thinking about climate change "every once in a while" rather than "often" between Poll 1 and Poll 2.

Overall, these results suggest that the level of public concern about future climate change impacts is higher than many public officials and stakeholders in Wells may think. Natural weather events,

scientific reports, and news stories were the most cited reasons for increased levels of concern over the past year. This suggests that public officials seeking to increase support for climate change adaptation efforts might consider capitalizing on future events in these categories, such as the release of major scientific reports or news stories related to climate change risks, to focus on increasing people's level of concern about climate change impacts in Wells. The "other reasons" for an increase in climate change concern are unknown, as the polling process did not record open-ended responses.

Takeaway: Overall levels of concern about local climate change risks were consistently high among Poll 1 and Poll 2 respondents in Wells, with about 30 percent of Poll 2 respondents indicating an increase in concern and the remainder indicating no change. Wells respondents, however, tend to think about climate change risks with only moderate frequency and Poll 2 respondents reported thinking about climate change risks less frequently than Poll 1 respondents.

Sea level rise, flooding, and severe storms seen as the most significant impacts of concern

When asked, "What do you think the most significant impacts of a change in climate might be in your community?" the most common top three responses from Poll 2 respondents were sea level rise (33 percent), increased flooding (24 percent), and more severe storms (16 percent) (Table 2). Ten percent of respondents felt there would be no significant impact on Wells from climate change. Poll 1 respondents gave similar responses. However, Poll 1 only collected one response, as opposed to three, from each respondent so the results are not directly comparable.

Sea level rise	33%
Increased flooding	24%
More severe storms	16%
Ecosystem impacts	11%
No significant impact	10%
More heat waves	3%
Drought	2%
Infrastructure impacts	1%

Table 2: Poll 2 respondents' perceptions of the most significant local climate change risks

Takeaway: Poll 2 respondents identified sea level rise, flooding, and severe storms as the most significant possible impacts of climate change in Wells.

Support for making climate change preparedness a priority

Nearly two-thirds of Wells Poll 2 respondents expressed support for their town prioritizing preparing for climate change over the next decade (Figure 2). When asked whether they agree with the statement "Preparing for climate change risks should be a priority for my town over the next decade" 36 percent said they strongly agree and 27 percent said they somewhat agree, indicating relatively strong local support for local climate change adaptation. Respondents

political affiliations correlated with answers to this question. Of note, those identifying as liberal or independent were more likely to see climate change risks as a priority for their town than were those identifying as political conservatives.

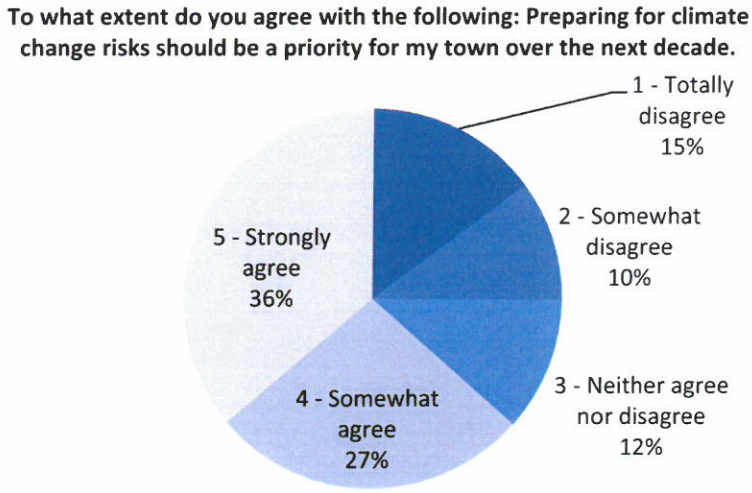


Figure 2: Poll 2 respondents' perspectives about whether preparing for climate change should be a priority for their town in the near future

Moreover, the majority of Wells respondents in both polls think addressing climate change risk should be an important part of local planning in the next decade, with 80 percent in Poll 1 and 89 percent in Poll 2 saying it should be somewhat to very significant – a noticeable but not statistically significant increase (Figure 3).

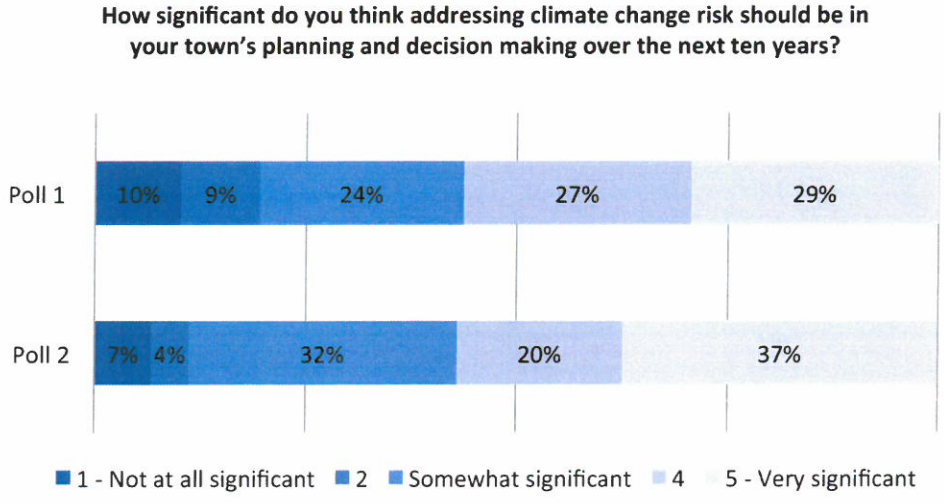


Figure 3: Comparison of Poll 1 and Poll 2 respondents' beliefs regarding the importance of local efforts to address climate change risks

Takeaway: The majority of Wells respondents in Poll 1 and Poll 2 think that preparing for climate change risk should be both a priority and a significant part of town planning and decision-making – indicating that Wells respondents believe that climate change adaptation should be an important issue in relation to other issues facing the town.

Confidence gap between how significant climate change adaptation *should be* and *actually will be* in town planning

Both polls show a confidence gap between the number of poll respondents who think that addressing climate change risk *should be* significant in their town's planning decisions over the next ten years, and those who think it actually *will be* significant. As discussed above, the large majority of Wells respondents think addressing climate change risk should be an important part of local planning in the next decade. However, when asked if they think it will actually be important, this number dropped to 45 percent for Poll 1 and 54 percent for Poll 2, with very few people thinking it will be very significant (Figure 4 and Figure 5).

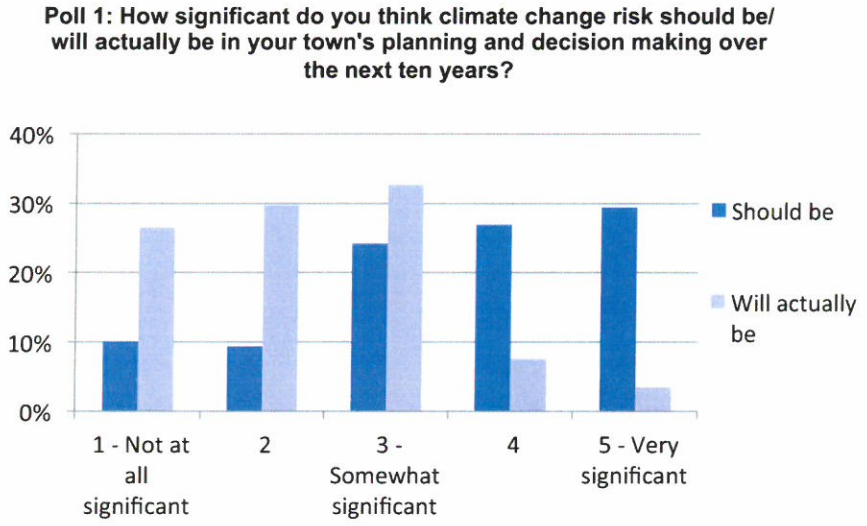


Figure 4: Confidence gap among Wells Poll 1 respondents

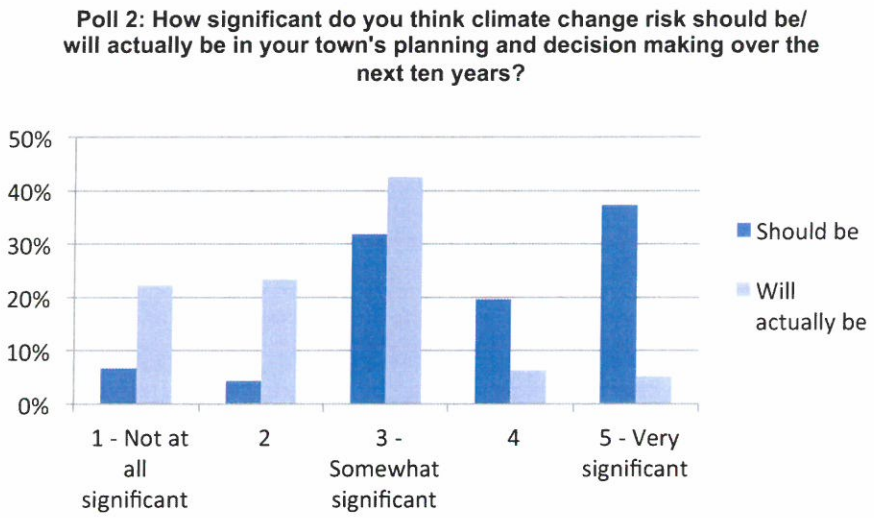


Figure 5: Confidence gap among Wells Poll 2 respondents

It is important to note that, while this confidence gap was still present in the more recent poll, there was an increase in both the percentage of respondents who think that addressing climate change risk *should be* significant in their town's planning decisions over the next ten years (Figure 3, above) and those who think it *will be* significant from Poll 1 to Poll 2. Figure 6 shows that there is a shift in Poll 2 towards a modestly higher level of confidence that climate change *will actually be* significant in future local decision-making; however, this shift was not statistically significant. This suggests an increase in both the belief that the town should take climate preparedness action in the near future as well as in confidence that the town will actually do so.

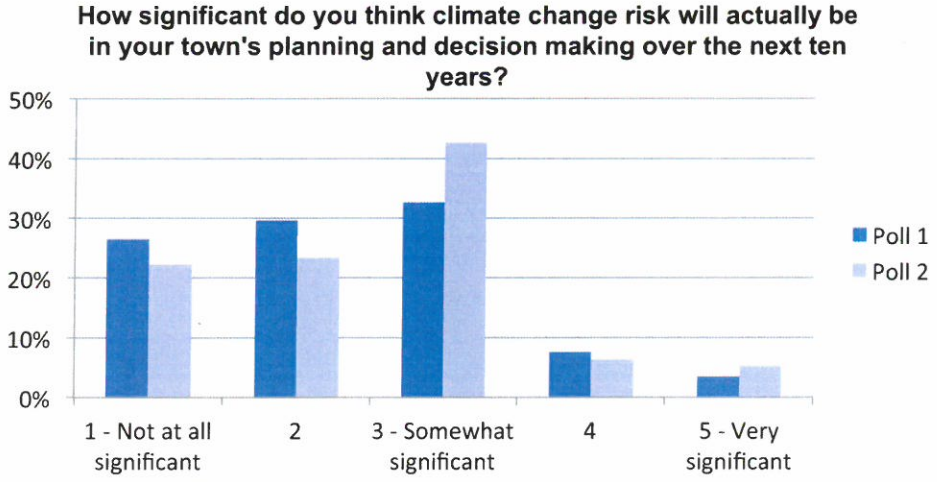


Figure 6: Comparison of Poll 1 and Poll 2 respondents' beliefs regarding the significance of climate change adaptation in actual town planning and decision-making

The observed confidence gap was reinforced by the finding that when asked, "How confident are you that your government will be able to effectively respond to climate-related risks despite

uncertainty?" 58% of Poll 1 respondents and 59% of Poll 2 respondents said they were somewhat to very confident. This means that respondents' confidence in their town's ability to respond to climate-related risks roughly aligns with how significant they believe climate change adaptation will actually be in town planning over the next 10 years.

Our data do not explain the exact reasons for this confidence gap, nor do they explain why confidence increased between Poll 1 and Poll 2. However, survey and interview data from NECAP workshops show that participation in the role-play workshops helped close the confidence gap regarding local action among Wells participants. For example, in response to the workshop survey question "How confident are you that your town will be able to respond to climate risk?" there was a statistically significant shift in the after-workshop survey toward more confidence in town government. In this light, the public polls results reinforce that residents want to see Wells take action on preparing for climate change impacts. Our workshop data suggest that role-play simulation workshops provide one avenue for increasing public confidence in the town's ability to do so.

Takeaway: Many people think that climate change should be important in Wells' planning over the next ten years. However, they generally lack confidence that the town will take action to prepare. While there was a small increase in confidence in Wells' ability and willingness to address climate change between Poll 1 and Poll 2, a noticeable confidence gap remains.

Main perceived barriers include uncertainty about the future, lack of funding, and lack of political will

Poll 2 respondents were asked what barriers they think will prevent their community from taking action on climate change adaptation. They were given the options presented in Table 3. As indicated in the table, the most commonly chosen first option was uncertainty about the future (29 percent), followed by lack of funding (20 percent) and lack of political will (13 percent). Importantly, only 7 percent of respondents in Poll 2 answered that Wells was already prepared for climate change.

Uncertainty about the future	29%
Lack of funding	20%
Lack of political will	13%
Lack of agreement about what to do	10%
Lack of scientific information	8%
Lack of public support	8%
Nothing, my community is prepared	7%
Lack of technical know-how or capacity	5%

Table 3: Barriers to climate change adaptation perceived by Poll 2 respondents

These Poll 2 findings about perceived barriers are similar to results from Poll 1, the NECAP Stakeholder Assessment for Wells, and the NECAP workshop data. Given this consistency across data sources, local leaders may want to be mindful of and address these concerns in their efforts to prepare for climate change.

Takeaway: Poll 2 respondents identified uncertainty about the future, lack of funding, and lack of political as the top three barriers to climate adaptation action in Wells.

A majority of Wells residents support taking science into account in decision-making

In both Poll 1 and Poll 2, a majority of Wells respondents said they agree or strongly agree that town decision-makers should take scientific projections about the climate into account when making decisions today (Figure 7). Unlike in the other three NECAP towns, however, there was a general trend toward less agreement with this statement in Poll 2 than in Poll 1. Unfortunately, the poll did not provide enough information to know the reasons for this shift.

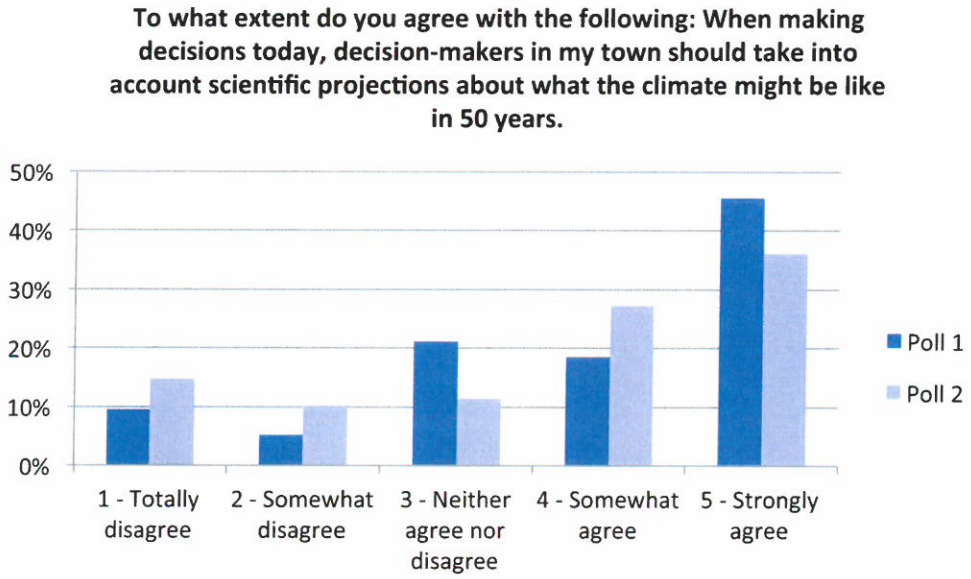


Figure 7: Comparison of Poll 1 and Poll 2 respondents' beliefs regarding the integration of scientific climate projections into current decision-making

Takeaway: The majority of Wells respondents believe that scientific climate projections should be integrated into today's town decision-making. However, this belief dissipated somewhat among Poll 2 respondents, as compared to Poll 1 respondents.

Some willingness to pay for adaptation among Wells residents

Poll 2 included a question about people's willingness to pay slightly higher taxes so that Wells can prepare for climate change risks. Two-thirds of respondents indicated that they were somewhat to very willing to pay slightly higher taxes for climate change preparation (Figure 8).

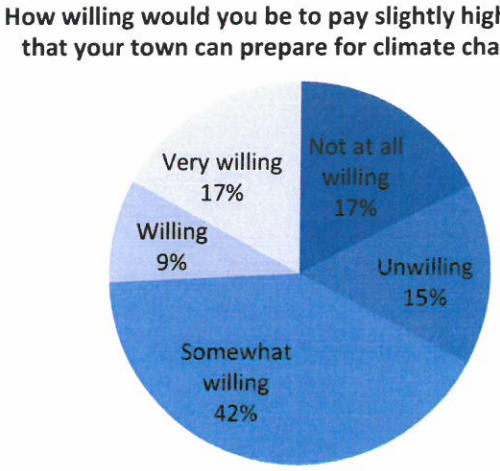


Figure 8: Poll 2 respondents' willingness to pay higher taxes to fund town climate change adaptation

Higher levels of concern about climate change risk were correlated at a statistically significant level with a willingness to pay for adaptation. Similarly, those respondents who assigned a higher level of priority to local-level climate change adaptation were also willing to pay slightly more in taxes for preparation, a correlation that was statistically significant.

When asked what would increase willingness to pay more in taxes, top responses from Poll 2 respondents included: an increased confidence in the town's ability to effectively manage climate change risks (24%), starting to see the impacts of climate change (21%), and the integration of climate change preparations in everyday decision-making (10%) (Table 4). Of note, 11% of respondents said they were already willing to pay more in taxes for climate change adaptation and 23% said that no changes would make them more willing to pay more in taxes for this purpose. Overall, these responses indicate that, while people see finances as a barrier to adaptation, many are also currently or potentially willing to pay slightly more in taxes for adaptation purposes. Willingness to pay, however, seems to be tied for some to a need for more confidence that local government can plan and prepare for climate change impacts.

If I was more confident in my town's ability to effectively manage climate change risks	24 %
I do not want to pay more taxes for this purpose	23%
If I started seeing the impacts of climate change	21%
I am already willing to pay slightly higher taxes for this purpose	11%
If my town decision-makers included climate change preparation in everyday planning decisions	10%
If my town got hit by another storm or a major disaster	8%
If my voice was represented in my town's decision-making about how to prepare	2%
Other	3%

Table 4: Changes or reasons that would increase Poll 2 respondents' willingness to pay more in taxes for local climate change adaptation

Takeaway: The majority of Wells residents are willing to pay more in taxes to support climate adaptation efforts, but they are not entirely ready to do so, and the reasons for this apparent lack of readiness are mixed.

Individuals, then government seen as being most responsible for adaptation

When asked who should be responsible for preparing for the impacts of a changing climate, the largest number of respondents in both Poll 1 and Poll 2 chose individuals as their first response (27 percent in Poll 1 and 37 percent in Poll 2)(Figure 9). In Poll 2, there was a shift toward more people selecting individuals and businesses as their first response, and fewer choosing any level of government. In both polls, more people selected national government as their first response than selected local government. The shifts between Poll 1 and Poll 2 were statistically significant. Worth note, upwards of 20 percent of respondents from each poll chose "other" for this question.

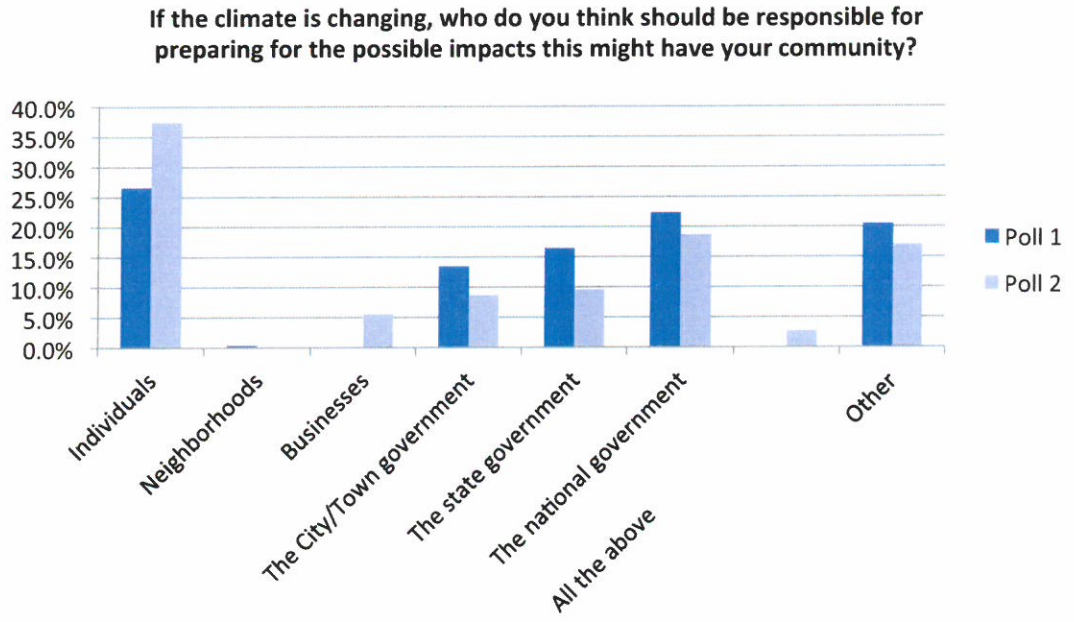


Figure 9: Comparison of Poll 1 and Poll 2 respondents' beliefs regarding who should be responsible for local climate change adaptation

While our data do not explain the reason behind the focus on individual responsibility, it is possible that this is a sign of Maine's strong culture of personal responsibility. It may also an indication that many people in Wells, more so than other towns, see climate change preparedness primarily as the concern and responsibility of at-risk individual home and business owners, which may reflect the fact that the most vulnerable homes and businesses are right on the coast, whereas the majority of full-time residents live inland. Given the important role local government needs to play in collective adaptation efforts, town leaders may need to focus on making residents more aware of the collective nature of climate change risks and the critical role that local government will likely plan in preparing or climate change risks.

Takeaway: Many people see preparing for climate change as primarily an individual, national, or state government concern. This is not entirely surprising—not only does Maine have a strong culture of personal responsibility; poll data from some of the other NECAP towns suggest similar trends. Yet this finding is problematic in light of the fact that adaptation will primarily occur at the local planning level.

Conclusion

The findings of these two public polls in Wells provide valuable information on Wells residents' opinions about climate change risks and adaptation. The changes between Poll 1 and Poll 2 also give a sense of what sentiments may have shifted between May 2013 and May 2014.

The findings from both polls show a high level of public concern about climate change risks to Wells, with two-thirds of respondents in both polls indicating they were concerned. Additionally, Poll 2 found that around 30 percent of respondents experienced an increase in concern over the past year, and natural weather events, scientific reports, and news stories were the most cited reasons for this increased levels of concern. Notably, 70 percent reported no change in concern and less than one percent of respondents said their concern had decreased over the past year.

Sea level rise, increased flooding, and more severe storms are their top concerns about local level climate impacts. In Poll 2, nearly two-thirds of poll respondents expressed that Wells should make climate change preparation a priority over the next decade. Only 10 percent of respondents in Poll 2 felt there would be no significant impact on Wells from climate change.

Both polls, however, show a confidence gap between those who think that local adaptation planning should be significant in the coming decade as compared to those who believe it actually will be significant. Poll 2 respondents cited uncertainty about the future, lack of funding, and lack of political will as the predominant barriers to local adaptation. Data from NECAP work in Wells indicate that the climate adaptation workshops and role play simulations are one educational tool the local government can use to build confidence in local government action.

While Wells residents see finances as a barrier to adaptation, they are willing or potentially willing to pay slightly more in taxes for adaptation purposes. Willingness to pay, however, seems to be tied for some to a need for more confidence that local government can plan and prepare for climate change impacts. Again, NECAP work in Wells indicates that climate adaptation workshops may help overcome this barrier. Lack of scientific information was not identified as a significant barrier and the majority of Wells respondents agreed that scientific climate projections should be integrated into today's decision-making.

Finally, the public poll data for Wells suggest that individuals, followed by federal and state government are seen as having the most responsibility for climate change preparation. Given the important role local government will need to play in preparing for and managing climate change risks, these responses and the confidence gap present in both public polls suggest that more effort should be put into raising public awareness of the completed and future work of the Wells Town government on climate adaptation.

XV. Maine Healthy Beaches 2013 Report to US EPA

Maine Healthy Beaches
2013 Report to US EPA
April 1 2014

I. Program Accomplishments

There are more than 29 miles of public access beaches stretching along Maine's coast. Maine Healthy Beaches (MHB) is managed by the Maine Department of Environmental Protection (DEP) and coordinated by the University of Maine Cooperative Extension (UMaine Extension). This team worked with 28 local management entities to conduct routine monitoring, assessment and public notification of water quality conditions for 55 beach management areas spanning Kittery to Mount Desert Island.

MHB accomplished the following in 2013:

- Processed over 2156 Enterococci samples at 148 routine and enhanced monitoring locations.
- Delivered 36 technical trainings (field, database, laboratory) for 159 local staff and volunteers.
- Investigated Enterococci's relationship to local precipitation levels at targeted beaches; worked with local beach managers to implement precautionary rainfall advisories at 6 beaches impacted by non-point source pollution.
- In an effort to target human-sourced fecal contamination, nearly 455 samples were analyzed for optical brightener levels at over 58 enhanced monitoring locations.
- Supported enhanced monitoring and source-tracking efforts for: the Lincolnville Beach storm drainage network, Rockport Harbor watershed, Willard Beach storm drainage network, Spurwink River watershed, Goosefare Brook watershed, Ogunquit River watershed, and Wells Harbor (Webhannet River).
- In an effort to share resources and solve problems, staff planned and facilitated 38 meetings with partners (171 participants).
- Collaborated with local and state agency partners to conduct sanitary survey work in the Spurwink River Watershed including property surveys to determine the status of subsurface wastewater disposal (septic) systems.
- MHB data and support augmented local efforts to address pollution issues including protective ordinances, 319-Watershed Management, Comprehensive and Water Resource Protection Plans, etc.

II. Program Deliverables/Appendices

Appendix A *MHB 2013 Budget Summary*
Appendix B *MHB 2013 Beach Mgt. Area Classification/Tiered Monitoring Plan*
Appendix C *MHB 2013 Notification Activity*
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Appendix G *Summary Report of Enhanced Monitoring and Pollution Source Tracking Efforts in the Spurwink River, Maine, 2010-2013.*
Appendix H *Spurwink River Sanitary Survey: Maps of Priority Parcels, 2013.*
Appendix I *Summary Report of Enhanced Monitoring and Pollution Source Tracking Efforts in the Willard Beach Watershed, Maine, 2012-2013*

III. Budget Information[1]

Program Activities
The US EPA sponsored, MHB 2013 budget supported all monitoring, assessment and notification, education/outreach, enhanced monitoring and source-tracking efforts including:

- UMaine Extension staff salaries and a portion of the DEP staff's salaries. This team of personnel provides extensive support to 28 local management entities (towns, state parks, national park, and private beach associations) including program coordination, quality-assured protocols and structure, field/lab trainings, technical assistance, volunteer recruitment, education/outreach, etc.
- Partial support for a DEP data specialist to provide data management services, transfer MHB data to DEP's Environmental and Geographic Analysis Database (EGAD) system, manage the submission of MHB data into the US EPA databases (STORET and PRAWN), and fulfill data requests as needed.
- Pre-season regional beach manager meetings to: communicate program updates, revise Communication Plans, sign the MHB Agreement Form, address participants' needs, distribute materials, schedule field trainings, modify monitoring site locations, regional collaboration, etc.
- Field monitoring supplies, equipment, volunteer training packets, and quality-assurance including annual field, database, and observational trainings for over 180 citizen volunteers and local level staff.
- Laboratory equipment, supplies, labor, sample transport (courier), training, and QA/QC support for five Enterococci laboratories processing samples for 55 beach management areas spanning a large geographic area (approximately 200 mi.).

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[1] See *MHB 2013 Budget Summary*, **Appendix A.**
[2] See **Section VII**.
[3] See *MHB 2013 Beach Mgt. Area Classification/Tiered Monitoring Plan*, **Appendix B.**
[4] Monitoring may be extended for targeted areas.
[5] For areas experiencing frequent bacterial pollution, the list of parameters is often increased as part of the pollution

- Enhanced monitoring and pollution identification efforts, as well as numerous planning and problem-solving meetings with diverse partners.[2]
- Education and outreach efforts including delivering presentations to local, regional and national audiences, development and distribution of numerous publications, etc.
- A contract with Relyon Media to host the MHB database and public interface, as well as consultant services.
- Direct and indirect expenses including travel, telephone, computer services, postage, office support and supplies, photocopying, etc.

Volunteer Contribution
MHB participation is voluntary and towns/parks designate local beach managers and field monitors. Beach managers are typically town administrators, health nurses, fire chiefs, state park managers, etc. MHB tasks are an add-on to an already full schedule. The time devoted to these tasks varies and is difficult to quantify.

Towns and state parks utilize citizen volunteers or devote paid staff time to sample collection, transport and data entry. Each of the over 180 local staff/volunteer monitors attended 2 hr. pre-season field training, and on average, contributed 3 hours weekly during the monitoring season. A conservative estimate of the total volunteer monitor contribution was approximately 7,964 hours ($20/hour) for a total of $159,280 in 2013.

IV. Performance Criteria

Beach Management Area Classification/Tiered Monitoring Plan[3]
MHB is a voluntary program and monitoring coastal water quality for swimming and other water contact usage is the responsibility of local jurisdictions and is not mandated by state law. US EPA funding supports monitoring of moderate to high use beaches with adequate public access. Maine law allows public use of private beaches for "fishing, fowling and navigation" only.

Participating beaches must have a management entity capable of meeting objectives outlined in MHB protocols, the MHB Quality Assurance Project Plan (QAPP) and MHB Town/State Park Agreement. This includes a feasible plan for monitoring, assessment and timely public notification of water quality conditions. New beaches will be recruited over time as resources and funding allow and/or circumstances change eligibility for program participation.

MHB successfully worked with 28 diverse local management entities to conduct routine monitoring for 55 beach management areas. In 2013, 52 were classified as "Tier-1" and 3 classified as "Tier-2" with a reduced monitoring effort. "Tier-3" beaches did not participate in the program in 2013.

Beach Monitoring, Assessment, Notification, Education and Outreach
MHB provided a unified structure and quality-assured tools to implement an adaptive monitoring regime, assess the risk of pollution at each beach management area and notify the public of water quality conditions on Maine's coastal beaches.

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[2] See **Section VII**.
[3] See *MHB 2013 Beach Mgt. Area Classification/Tiered Monitoring Plan*, **Appendix B.**

Monitoring

The monitoring season lasted approximately three months, extending from Memorial Day through Labor Day.[4] In partnership with MHB staff, local management entities selected monitoring sites for each beach based on where people swim, at freshwater inputs (rivers, streams, storm drains), and near other high-risk features including sewage treatment plant outfalls, wildlife areas, etc. Samples were collected in 2-3 feet of water at 6-8 inches below the surface. For areas experiencing chronic bacterial pollution, additional monitoring sites were added throughout the watershed and/or wet weather monitoring was conducted to help determine pollution sources.

Parameters[5] monitored include: Enterococci bacteria, air and water temperature, salinity, tidal stage, rainfall, and additional weather/field conditions that may affect beach water quality. Based on US EPA Guidance Criteria and adopted by ME DEP, the safety threshold is 104 Enterococci per 100 ml of sample water.

Approximately 2156 samples were collected at 148 routine and enhanced monitoring locations spanning Kittery to MDI. Samples are transported to the laboratory (3 regional, 1 local) for analysis within 6 hours of collection. The majority of samples are processed by Nelson Analytical Laboratory and transported via a courier service. Samples are analyzed using the IDEXX Enterolert ® Most Probable Number enumeration method. Beach sites are resampled as soon as possible following an exceedance. All samples and parameters are collected and analyzed according to US EPA-approved quality-assured protocols outlined in the MHB QAPP.

Assessment

Beyond routine beach monitoring, MHB evaluated the risk of pollution and potential/actual sources via a Risk Assessment Matrix, and in some cases, through GIS mapping and analysis, enhanced monitoring, sanitary surveys and other pollution source-tracking efforts.[6]

MHB routinely assists local beach managers in completing or updating Risk Assessment Matrices, preliminary assessments of shoreline characteristics, activities (on and offshore) and water quality. MHB used this risk-based ranking system to inform the classification and monitoring regime for each beach management area, as well as to determine the need for an in-depth sanitary survey of the shoreline, freshwater inputs, and the surrounding watershed areas.

In an effort to assess water quality and pollution sources, MHB supported enhanced monitoring and source-tracking efforts for: the Lincolnville Beach storm drainage network, Rockport Harbor watershed, Willard Beach storm drainage network, Spurwink River watershed, Goosefare Brook watershed, Ogunquit River watershed, and Wells Harbor (Webhannet River) in 2013.

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[4] Monitoring may be extended for targeted areas.

[5] For areas experiencing frequent bacterial pollution, the list of parameters is often increased as part of the pollution source-tracking toolbox.

[6] This includes but is not limited to sanitary surveys of properties with subsurface wastewater disposal (septic, cesspool) systems and Illicit Discharge Detection and Elimination studies of sewer and stormwater infrastructure, See **Section VII**.

Notification

Once available, all beach monitoring results and beach postings were recorded in the MHB internal database that automatically updated the public interface viewable at www.MaineHealthyBeaches.org. An automatic email alert was generated for results ≥104 MPN per 100 ml of sample water and sent to local beach managers, MHB staff, and state agency partners.

The decision to post an advisory[7] was made by local beach managers and based on the results of neighboring beach sites, the magnitude of bacteria results, similarity of environmental conditions between sample collection day and results, historical water quality, risk of pollution, known pollution events, etc. MHB provided recommendations and each decision to post the beach was made on a case-by-case basis. In addition to the website, beach status was posted at major beach access points. A few towns supported and maintained local signage, links from their individual websites, Facebook pages and hotlines. MHB co-developed local level signage to alert the public about potential high-risk areas such as stagnant tide pools and fresh water inputs with impaired water quality.

Monitoring sites were resampled as soon as possible following an exceedances and the monitoring frequency increased until results were within acceptable limits. However, resampling was contingent on the time of results and availability of monitors and laboratories, resampling did not always occur the same day results were available. This lag-time increased the duration of beach action days.

In some cases, beach managers waited for resample results before posting an advisory for areas with historically good water quality and a low risk of pollution. For areas with a history of poor water quality and a high risk of pollution, beaches were typically posted immediately upon receiving results. In 2013, 6 beaches issued "precautionary rainfall advisories[8]" based on local precipitation levels. In some cases, beach managers kept the advisory in place until the next routine monitoring day indicated acceptable Enterococci levels.

In 2013, an extensive Communication Plan of local beach managers and field monitors was updated for re-sampling efforts and beach status notification. MHB staff brought new beach managers up to speed with the program and notification protocols as needed. Following each exceedance, MHB staff contacted local jurisdictions to ensure that MHB protocols were followed in a timely manner according to the MHB QAPP. On a daily basis, MHB staff quality-checked the database for accurate entry of field, laboratory and notification data. MHB also provided ongoing database technical support.

All beaches attributes, monitoring, and notification data was transferred to DEP's EGAD system for final submission into US EPA's STORET and PRAWN databases. MHB continued to make

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[7] Closures are rare and occur only when beaches experience chronic high bacteria levels or known safety or public health threats, and in municipalities where closing ordinances are in place.

[8] In most cases, precautionary advisories were triggered by > 1 inch of rainfall within 24 hours and typically lifted 24 hours after the rainfall ceased (or two full tide cycles).

local beach information (site locations, monitoring and notification data, contact information, etc.) more easily accessible to the public via a Google Earth Project launched in 2010. MHB responded to numerous data and information requests from NRDC, program participants, state agency partners, non-profits, etc. MHB routine and enhanced monitoring data was used by partners to inform ongoing efforts to address impaired water quality including funding proposals to support pollution source identification and elimination projects, as well as watershed management, stormwater management, comprehensive and water resource protection plans.

Education and Outreach[9]

Bacterial pollution on beaches and shellfish growing areas threatens public health, the environment, and local economies. In response, MHB developed the *Municipal Guide to Clean Water: Conducting Sanitary Surveys to Improve Coastal Water Quality*[10] to assist communities, resource managers, non-profits, etc. in addressing bacterial pollution issues. Since 2010, it has been distributed to over 50 Maine communities, 8 state/federal agency partners, and 14 states (AL, CA, CT, FL, MA, MD, NH, NY, OH, RI, SC, VA, VT and WA). This resource was also available to download on the following websites: Maine Healthy Beaches, Maine Sea Grant, Great Lakes Working Research Group, Surfrider's Research Page and Blue Water Task Force Blog, and the Maine State Codes Enforcement Officers Resource page. Focused on addressing an important coastal issue, the Resource Guide was recognized as an outstanding outreach achievement by the Northeast Sea Grant Consortium in 2013.

MHB delivered 9 presentations to local and regional audiences (approximately 250 people), and MHB staff participated in newspaper, television, and radio interviews reaching diverse audiences nationwide. Staff also served on the steering committee, chaired a session and presented at the 2013 Maine Beaches Conference. MHB resources including training materials, program information, public reports, and other materials promoting best practices at the beach and throughout the watershed were also distributed statewide in 2013.

V. Flagship Beach Status

The two "flagship" beaches, Ferry Beach State Park and Wells Beach, continued to uphold all policies and guidelines set forth by MHB. In 2013, Ferry Beach had 2 exceedances (rate 11.8%) with 100% of those exceedances preceded by rainfall in the last 48hrs. In 2007, Wells Beach was divided into 3 separate management areas (Casino Square, Wells Beach and Wells Harbor). In 2013, Casino Square had 7 exceedances (rate 19.4%; rainfall preceded 85.7%) Wells Beach had 6 exceedances (rate 10.2%; rainfall preceded 100%) and Wells Harbor had 10 exceedances (rate 47.6%, rainfall preceded 100%).

VI. Data Summaries

[9] See **Section VII**

[10] http://www.seagrant.umaine.edu/extension/municipal-guide-to-clean-water

- 2156[11] Enterococci samples were processed at 87 routine beach monitoring sites as well as 61 sites that included routine sites located in close proximity to managed beach areas and enhanced monitoring locations to help pinpoint pollution sources.
- 100% of Tier 1 beaches were monitored.
- 13.1% of routine beach samples exceeded the safety threshold of 104 MPN/100mls of sample water. Of those exceedances, 84.7 % were preceded by rainfall.
- 275 beach action days were reported including 83 actions at 27 beach management areas. 18 actions totaling 61 days of the reported days were "precautionary rainfall advisories," based on local precipitation levels rather than recorded bacteria levels.[12]
- 95.2 % of total beach days[13] were free of beach advisories or closures.

Table 1. The percent of samples that exceeded the safety limit of 104 MPN Enterococci per 100ml of sample water for each year spanning 2005-2013. Numbers do not reflect enhanced monitoring and field/lab duplicate data.

Year	# Samples	# Exceedances	% Exceedances
2005	1584	196	12.4%
2006	1339	124	9.3%
2007	1359	103	7.6%
2008	1276	79	6.2%
2009	1466	159	10.8%
2010	1486	166	11.2%
2011	1310	115	8.8%
2012	1472	156	10.6%
2013	1340	176	13.1%
Total	12632	1274	10.1%

Inter-annual variability of the percent exceedances may be due to multiple factors including but not limited to: precipitation levels, beach and watershed characteristics (e.g. impervious surfaces, pollution sources), the number of monitoring sites and beach management areas, etc. Moreover, the Gulf of Maine is becoming wetter, fresher and warmer on average.[14] Freshwater runoff entering coastal beaches via rivers, streams and stormdrains transfers pollutants from upland areas to the surf zone. Nearly 85 % of recorded exceedances were preceded by rainfall in 2013.

Based on the US EPA PRAWN calculation of a beach action day (any part of 24 hours which affects public use of the beach is counted as an entire action day), the number of beach action days in 2013 (275) was greater than the number of days reported in 2012 (194) and 2011 (112). The number of BMAs with action days was less in 2013 (27) compared to 2012 (42).

The amount of rainfall observed (22.34 inches on average) during the 2013-monitoring season closely mirrored levels recorded during the 2012 (21.96 inches) and was nearly double the levels

[11] This number includes 20% field and laboratory duplicates
[12] See *MHB 2013 Notification Summary*, **Appendix C.**
[13] Defined as beach season length x beach management areas; (104 days x 55 BMAs) = 5720 total beach days
[14] Balch *et.al.* 2012.

for the 2011 (13.45 inches) season. Four beach management areas (Goodies, OOB Ocean Park, East End, and Goose Rocks) accounted for 40.7% of the reported beach action days in 2013. Non-point source pollution is likely contributing to bacteria load at these locations. Contributing factors include but are not limited to a high % impervious cover, adjacent urbanized areas, and freshwater inputs (storm drains, streams, rivers) that empty directly onto the beach. Of the beach actions occurring at these four locations, 64.7% had >0.25 inches antecedent (48 hrs.) precipitation.

In addition to record rainfall levels, the increase in beach action days in 2013 is likely linked to "precautionary rainfall advisories," the lag-time in obtaining bacteria results and the way beach action days are defined. Precautionary advisories accounted for 61 beach action days and 22.2 % of the total recorded action days. For the 2013 beach season, these areas were plagued with "running" advisories where precautionary measures blended with advisories based on bacteria results and vice versa. Additionally, depending on the time of results and the availability of monitors and laboratories, resampling did not always occur the same day that results were available. In some cases, beach managers kept an advisory in place until the next routine monitoring day indicated acceptable Enterococci levels. Moreover, any part of one day is considered an action day and this does not account for beaches that were re-opened earlier in the day. These and other factors increased the number of total advisory days in 2014.

In 2013, MHB investigated Enterococci's relationship to local precipitation levels at all routinely monitored beaches.[15] This work supports informed beach management decisions including precautionary rainfall advisories at "high-risk" beaches impacted by rivers, streams and storm drains. However, the information provided by this study is limited, as it was not designed specifically to target first flush conditions, the typical worst-case scenario for water quality. Plus, it did not track events over time to determine if and how quickly the events flush out of the system, and how long it takes for rainfall within the larger drainage basin to impact beach water quality.[16] For example, the routine beach sample could have been taken at any point in the wet weather event. Additionally, the reporting of local rainfall levels may have also impacted the results of this study.

VII. Collaborative Efforts to Address Bacterial Pollution[17]

Unsafe fecal bacteria levels degrade ecosystems, threatening public health and local economies largely dependent on tourism. Tourist spending is York County alone is anticipated to be over 500 million annually.[18] The majority of Maine's beaches are impacted by freshwater inputs (rivers, streams, storm drains) that transport pollutants from upland areas. Sources are typically difficult to find, often requiring intensive investigations beyond the immediate shoreline.

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[15] See *Case Study: A preliminary examination of the effects of local precipitation on coastal beach water quality at targeted beaches in Maine,* **Appendix D.**

[16] Maine Geological Study studies have determined that local circulation patterns may not allow the system to flush out quickly. It's also possible for bacteria levels leaving a source (river mouth) to be transported offshore during an ebbing tide, reside offshore in refrigerated state, and then travel back to the beach on the next flood tide. Moreover, it can take up to several days for rainfall within the larger watershed area to impact beaches downstream.

[17] Contact MHB for more information, technical reports, etc.

[18] Levert, Michael and David Douglas 2009. "Valuing Maine Beaches" Maine State Planning Office Presentation at the Maine Beaches Conference. In general, Maine is lacking reliable economic and beach usage data.

Once sources are verified, solutions are often complex and expensive. Subsurface wastewater disposal systems located in historically tidal wetland areas have a great potential to impact nearby water bodies. For many areas, wastewater disposal options are limited. Pollution sources are removed, yet new ones emerge. Sewer lines degrade over time and cross-connections to the storm water systems are far too common. Overall, there's a need for constant monitoring, maintenance, and expansion of sewer infrastructure. Most of Maine's population is located within coastal watersheds and over-development and impervious surfaces compound the issues. The Gulf of Maine is also changing with demonstrated increases in precipitation and river discharges lending to decreased salinity, increased water temperature, and an influx of dissolved nutrients.[19]

Addressing bacterial pollution requires collaboration at all levels. MHB has brought together local, state and federal partners in a collaborative process focused on sharing resources and solving problems. Since 2003, MHB has provided extensive support to communities experiencing chronic issues. Some examples of this support include:

- Circulation studies to determine the fate and transport of pollutants
- In-depth data analysis to explore Enterococci's relationship to multiple parameters
- Enhanced Enterococci and Optical Brightener monitoring
- Microbial Source Tracking
- Monitoring of pharmaceuticals and personal care products
- Assessing Enterococci levels in beach sand and seaweed wracks
- Geographical Information Systems Watershed Risk Analysis
- Facilitation of logistical and problem-solving meetings
- Stakeholder workshops and presentations to share data and strategies to improve water quality
- Property surveys to determine the status of subsurface wastewater disposal systems
- Identification of priority areas needing Illicit Discharge Detection and Elimination Studies of sewer and stormwater infrastructure
- Technical support and expertise from program staff, academic and agency partners
- Obtaining supplemental funding: supporting local initiates to acquire extramural funds
- Education and outreach campaigns promoting best practices

This work has led to important local actions to identify, remove, and prevent pollution sources. Some examples include efforts to:

- Implement precautionary rainfall advisories
- Survey properties to identify malfunctioning subsurface wastewater disposal systems
- Obtain funding for underserved populations needing septic system repairs or replacement
- Detect faulty sewer lines and illicit cross-connections
- Upgrade sewer and stormwater infrastructure

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[19] Balch, W.M. et al. 2012. "Step-changes in the physical, chemical and biological characteristics of the Gulf of Maine, as documented by the GNATS time series." *Marine Ecology Progress Series*.

- Install boat sewage pump stations
- Establish local water quality protection ordinances
- Improve municipal records pertaining to wastewater disposal and stormwater
- Develop 319-funding proposals and Watershed Management Plans
- Inform Stormwater Management, Comprehensive and Water Resource Protection Plans and other efforts to restore ecosystem function
- Implement local water quality outreach campaigns
- Apply innovative source tracking tools (e.g. canine detection services)
- Create, fund or retain jobs (shoreland resource officers, environmental consultants)
- Train and educate local codes enforcement officers, resource managers, and students

Pollution Source Tracking Toolbox[20]

Since 2003, MHB has supported enhanced monitoring of multiple parameters (toolbox approach) targeting human sourced fecal contamination. Typically, as the number of parameters that exceed a threshold (or detectable) limit increases, so does the confidence that human sources are impacting water quality. The focus areas have changed over time with the primary targets being freshwater inputs to the shoreline. Although intensified monitoring has discontinued in some areas, the historical data has informed continuing efforts to address impaired water quality (e.g. watershed management plans, sanitary surveys, etc.). MHB data and support has raised awareness about water quality issues and has helped make addressing them a priority.

Enhanced Enterococci Monitoring

Beyond routine beach monitoring, 548 samples were analyzed at 61enhanced monitoring locations in 2013. Samples were collected upland in freshwater inputs to the beach on designated dates throughout the season to capture the impact of ebbing tidal conditions. Other sites were located in "high-risk" areas such as the mouths of rivers and streams, storm drains, stagnant tide pools, etc. and were collected on a weekly basis alongside routine beach sites. MHB also supported assessment of intermittent, suspected sources such as seepages and runoff typically associated with heavy rainfall.

Optical Brighteners

Optical brighteners are commonly used in commercial/retail products such as clothing detergents, dishwashing agents, and personal care products to brighten the whiteness of materials. These products are typically flushed down the drain and therefore, when optical brightener concentrations are coupled with elevated fecal bacteria levels, this can be indicative of human-sourced fecal contamination.

In 2013, MHB analyzed nearly 455 samples for optical brightener levels at 58 enhanced monitoring locations. MHB also analyzed samples for local and state partners to support their continuing efforts to identify sources of bacterial pollution. Typically, levels above 100 µg/l are considered a "red-flag" for human impacts.[21] However, humic substances (tannins and other dissolved organic compounds) can cause interference and result in elevated readings. Therefore, results were compared to the average reading for all sites at that particular location. Assessing

[20] Only Rockport received US EPA support for pharmaceutical and personal care product analysis in 2013.
[21] This level relates to the calibration of the MHB Turner Designs 10AU Fluorometer.

how results deviate from the overall mean can help tease out a meaningful signal from the background "noise."

A robust sample size is also valuable when determining the relationship between Enterococci and optical brightener levels, and often multiple seasons' worth of data is needed to understand the relationship. It is also important to collect samples at locations as close to the source as possible as distance and dilution (due to tides and mixing) can lead to lower concentrations. Moreover, pollution sources (e.g. malfunctioning septic systems) contributing to impaired surf zone water quality are often sourced from upland areas and are not typically located directly on the beach.

Kittery

MHB has supported enhanced monitoring, assessment of bacteria levels in sand and seaweed and other local initiatives to improve water quality.[22] Kittery's commitment to clean water extends beyond coastal beaches. It is a designated "MS4"community and has successfully partnered with local groups to address the health of Kittery's water resources. The town hired a Shoreland and Environmental Resource Officer in 2011 and has hired engineers and consultants to assist with their efforts to improve water quality in priority areas. This includes acquiring 319 watershed management funds from the Maine (DEP), surveying properties for malfunctioning septic systems, Illicit Discharge Detection and Elimination (IDDE) studies of sewer and stormwater infrastructure, stormwater mapping projects, implementing Low Impact Development and Best Management Practices, stormwater education events, etc. This work has led to the removal of dozens of grey and black water discharges over the past two years.

In 2012, algal growth was surfacing on beach face in the western cove of Fort Foster's Horn Point and this was the initial tell tale that an abandoned outhouse and leach field was impacting[23] the upland marsh area and associated beach seepage. With the help of local volunteers and the shoreland resource officer, MHB conducted intensified monitoring of the surf-zone, beach seepage and sand, and the marsh area behind the beach. MHB co-developed local signage with the town to alert the public to the possible risk of sand contact[24] for this section of beach. The shoreland resource officer also completed an upland survey to rule out other sources and held public events at Fort Foster to raise awareness of local water pollution issues. Additionally, Kittery hired Canine Detection Services to "sniff out" and verify the suspected human contribution at Horn Point and eventually removed the contaminants from the marsh.

In 2013, the town installed a "beaver deceiver" and upgraded the culvert in an effort to improve tidal flushing of the marsh. Kittery brought back the canines to verify the contamination was removed in 2012. Kittery also continued sanitary surveys and IDDE work throughout the town including smoke testing approximately 6,000 feet of sewer lines. Kittery plans to establish a local septic pump-out ordinance, requiring pump-out of priority properties every 5 years. The town will continue outreach events, pollution source tracking efforts, and make incremental improvements to storm and sewer infrastructure.

Town are required to develop and implement a stormwater management program

[23] Wildlife such and beavers and waterfowl were also likely contributing to bacterial water quality of the marsh..

[24] An additional site (K-6, western cove) was added to the routine beach monitoring efforts the in 2012 and since then results have been consistently acceptable except for a 8-21-12 reading of 120 MPN/100mls.

York
Since 2007, MHB has supported multi-year enhanced monitoring studies, Microbial Source Tracking, GIS Watershed Risk Analysis, Stakeholder Workshops and more to augment York's actions to address impaired water quality. In 2008, York hired a Shoreland Resource Officer that partnered with MHB and local volunteers to continue enhanced monitoring and source tracking efforts in the Cape Neddick River (CNR) Watershed. This work has expanded beyond the CNR as York was designated as an "MS4" community in 2012. The town also contracted with engineers and consultants to address stormwater issues including submitting a 319-watershed management proposal for the CNR. The town has also created a protective local ordinance requiring routine pump out of septic systems in priority areas and has adopted water resource protection measures into its Comprehensive Plan. In 2013, the town inspected and dye tested 7 properties within the CNR watershed and continued working on the 319-proposal. The town plans to continue its source tracking and watershed management efforts as well as hiring a consultant to conduct an intensified rainfall study of York's beaches in 2014.

Ogunquit River Watershed (Ogunquit, Wells)
Since 2005, MHB has supported multi-year enhanced monitoring and pollution source identification efforts including monitoring of multiple parameters, in-depth data analysis, a circulation study, sanitary surveys, GIS Watershed Risk Analysis, Stakeholder Workshops and more to support improving water quality in the Ogunquit River.

With the assistance of the Ogunquit Conservation Commission (OCC), Ogunquit has amended the Zoning Ordinance to expand the "Shore Land Zone" to include additional water bodies, a 75-ft. setback requirement along each new stream, and additional Resource Protection District areas within the town. Another amendment mandates that residential septic systems within the "Shore Land Zone" be pumped out every 3 years and systems outside of this area, every 5 years. The OCC was also awarded a $10,000 grant from the Maine Coastal Program to conduct a storm water mapping and drainage study. Additionally, Ogunquit installed a Bio Skirt /Snout in a storm drain designed to capture solids before they reach the river/ocean and installed 3 waterless urinals at public restrooms that have shown a significant reduction in the use of water.

All of the above actions helped Ogunquit secure a $30,000 grant from the Gulf of Maine Council to study the effects of sea level on the town's short and long term planning as well as their waste treatment facility. The Ogunquit Sewer District has also conducted IDDE studies and the town has made improvements to sewer and stormwater infrastructure. The conservation commission has launched education/outreach campaigns promoting best practices. Additionally, 56+ acres of green space and wetlands was donated to the Great Works Regional Land Trust to help protect the Ogunquit River Watershed and Ogunquit Beach. The town also hired consultants to continue enhanced monitoring and source tracking efforts including Canine Detection services to "sniff-out" human sources in 2012.

In 2013, Ogunquit contracted with consultants to repeat the canine detection strategy, develop a Watershed Committee, conduct further drainage mapping and source tracking in priority sub-

watershed areas, and develop a 319-watershed management proposal. The town was awarded the funds and MHB plans to continue supporting Ogunquit and partners as they continue to address water quality issues in the Ogunquit River watershed. Ogunquit will reintroduce a referendum banning the use of pesticides on all Ogunquit properties as well as a protective amendment to upgrade segments of the Leavitt Stream not currently protected for stream setbacks, and plans to hire a local beach coordinator in 2014.

Wells

Beyond routine beach monitoring, MHB has supported analysis of samples collected intermittently to assess bacteria levels in sand, seaweed and stormwater impacting Wells beaches. In 2013, MHB supported enhanced monitoring in the Webhanett River impacting water quality on Wells Harbor Beach. As part of this effort, 37 samples were collected at 8 locations during the beach season. Enterococci values ranged from 5 MPN to 6867 MPN/100mls with a combined geometric mean of 55.7 MPN for all sites. MHB plans to continue support for additional monitoring in 2014.

Kennebunk River (Kennebunk, Kennebunkport, Arundel, Lyman)

Since 2005, MHB has supported multi-year enhanced monitoring and pollution source identification efforts including monitoring of multiple parameters, in-depth data analysis, a circulation study, sanitary surveys, GIS Watershed Risk Analysis, Stakeholder Workshops and more to support improving water quality in the Kennebunk River.[25] As a result, Kennebunk conducted additional sanitary surveys and eliminated 3 illicit discharges along the Kennebunk River including a "straight-pipe" and a system that services multiple units. Kennebunk also routinely cleaned stormwater catch basins and has implemented a seaweed management plan to help improve water quality of Gooch's Beach. Additionally, the towns within the watershed have been active in the Kennebunk River Action Committee that has worked diligently to improve water quality and promote best practices including developing septic socials, Boater's Education Campaigns, and installing a boat pump out station in the river.

Kennebunkport

Beyond the work in the Kennebunk River, MHB has supported multi-year enhanced monitoring studies, circulation studies, in-depth data analysis, sanitary survey work, Stakeholder Workshops, education/outreach efforts, and more to support improved water quality on Goose Rocks Beach. The town contracted with Environmental consultants for source-tracking efforts and has taken extra steps to provide public access to local water quality conditions via the town's website, telephone announcements, supplemental signage, more frequent beach monitoring, precautionary rainfall advisories, etc.

Biddeford

In 2005 and 2006, MHB supported enhanced monitoring, sanitary survey work to identify malfunctioning septic systems, and compiled a sanitary shoreline/watershed report for all of Biddeford's beaches. This work led to the identification and removal of illicit discharges on Basket Island and improved water quality on neighboring Hills Beach.

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[25] The Kennebunk River significantly impacts water quality on Kennebunk's Gooch's Beach and less so on Kennebunkport's Colony Beach.

Goosefare Brook Watershed (Saco and Old Orchard Beach)[26]

The Goosefare Brook forms the border between the towns of Saco to the south and Old Orchard Beach (OOB) to the north and both are designated "MS4" communities. Since 2010, MHB has supported enhanced monitoring and pollution source tracking efforts, held Stakeholder Workshops, and more to address impaired water quality in the Saco and Old Orchard Beach tributaries feeding the brook. In 2011 and 2012, US EPA expanded the pollution source tracking toolbox to include analysis of pharmaceutical and personal care products. The town also contracted with Canine Detection services to "sniff out" human sources in 2012. Over the past two years, MHB efforts have focused primarily on Old Orchard's New Salt Rd. Tributary (NRST) while 2012 DEP efforts focused on the tributaries feeding the SACO branch.

In 2013, MHB supported 170 Enterococci and 140 optical brightener samples at 17 sites stratified throughout the NSRT watershed. Enterococci values ranged from 5 MPN to 9999 MPN/100mls with a combined geometric mean of 157 MPN for all sites, and the optical brightener values ranged from 0 to 155 µg/l with a combined mean of 89 µg/l for all sites in the NSRT. Results were analyzed to determine how each site deviated from the NSRT-wide Enterococci geometric mean and the mean optical brightener value. Nine sites located primarily within the GFB-01 and GFB-05 series exhibited positive deviations from the Enterococci geometric mean and 7 sites (largely within the GFB-05 series only) demonstrated positive deviations from the optical brightener mean. The pollution source-tracking tools applied in the NRST were combined into a risk factor matrix, highlighting priority areas needing further investigation.[27]

Saco and Old Orchard have conducted property surveys to identify malfunctioning septic systems as well as IDDE studies of sewer and stormwater infrastructure. This has led to removal of numerous grey and black water discharges throughout the watershed as well as upgrades and expansion of sewer and stormwater infrastructure. Both towns posted supplemental signage at the mouth of the brook alerting the public of the potential risk of water contact in the mouth. Additionally, Saco and Old Orchard Beach worked together to submit a 319-watershed management proposal in 2013. The funding was awarded, a steering committee will be formed, information will be compiled on the condition of the watershed, stormwater retrofitting projects and watershed restoration planning will be launched, a suite of watershed health characteristics will be monitored and public outreach and involvement will be emphasized in 2014. MHB will continue to support these and other important actions to address the health of Goosefare Brook.

Spurwink River Watershed (Scarborough, Cape Elizabeth, South Portland)[28]

Since 2010,[29] MHB has supported enhanced Enterococci and optical brightener monitoring in the Spurwink River impacting Higgins Beach water quality. MHB also brought together diverse

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[26] See *Summary Report of Enhanced Monitoring and Pollution Source Tracking Efforts in Goosefare Brook, Maine, 2012-2013*, **Appendix E**.

[27] See *Risk Assessment Tables and Maps Depicting NRST Focus Areas, 2012 and 2013*, **Appendix F.**

[28] See, *Summary Report of Enhanced Monitoring and Pollution Source Tracking Efforts in the Spurwink River, Maine, 2010-2013*, **Appendix G** .

[29] MHB continued to support monitoring in the mouth of the river on a weekly basis, but did not conduct enhanced monitoring in upland areas in 2011.

partners to share data and remediation strategies in 2012. In 2013, MHB partnered with Sprague Corporation to gain access to additional monitoring sites that included a windshield survey and site walk of potential monitoring locations on the western bank of the river.

MHB analyzed 122 Enterococci samples and 123 optical brightener samples at 14 sites throughout the watershed in 2013. Enterococci values ranged from 10 MPN to >24,196 MPN/100mls of sample water and optical brightener levels ranged from 6.62 to 220 µg/l. Due to the small sample size, data was combined for all sites and a Pearson's Product Moment analysis indicated a significant but very weak between Enterococci and optical brighteners (R^2=0.1750, p<0.0000). Results were analyzed to determine how each site deviated from the NSRT-wide Enterococci geometric mean and the mean optical brightener value. Six sites demonstrated a positive deviation from the Enterococci geometric mean and six sites exhibited a positive deviation from the optical brightener mean. Although there was no strong significant relationship between Enterococci and optical brightener levels, 3 primary areas in the Spurwink exhibited elevated mean concentrations of both parameters and those exhibiting positive deviations from both Enterococci and optical brightener means are of particular concern for potential human-sourced fecal contamination.

MHB also developed a sanitary survey work plan[30] and worked with agency partners to update records and conduct a sanitary survey of priority properties with subsurface wastewater disposal (septic) systems. This work highlighted on malfunctioning septic system in a location potentially impacting the river. This malfunction was followed up by the town of Scarborough and remediated. Due to impaired water quality in the Spurwink River and its impact on Higgins Beach, the local beach manager continued to implement precautionary rainfall advisories in 2013.

Willard Beach, South Portland[31]

Since South Portland joined the program in 2003, MHB has supported efforts to address water quality on Willard Beach. This includes multi-year enhanced monitoring of the storm drainage network, a shoreline/watershed survey, stakeholder meetings, etc. Of particular concern are the 6 stormwater drainage pipes discharging directly to the beach, draining stormwater from ~ 1 km^2 of residential and commercially developed areas. As a part of this effort, 29 Enterococci samples and 28 optical brightener samples were analyzed at 7 sites located within the stormwater system in 2013

In 2012 and 2013, MHB partnered with South Portland Water Resource Protection to monitoring Enterococci and optical brightener levels at sites within the storm drainage network. Monitoring in 2012 targeted wet weather events throughout September and October to ensure presence of adequate water, and samples for 2013 were collected bi-monthly from June through early September. In 2013, Enterococci mean[32] results ranged from 42-4344 MPN/100ml and from 6-98 µg/l for optical brighteners. A Pearson's Product Moment correlation combining data from all

[30] See *Spurwink River Sanitary Survey: Maps of Priority Parcels, 2013,* **Appendix H**

[31] See *Summary Report of Enhanced Monitoring and Pollution Source Tracking Efforts in the Willard Beach Watershed, Maine, 2012-2013,* **Appendix I**

[32] The sample size was insufficient to calculate a geometric mean

sites from 2012-2013 revealed a significant but weak relationship (R^2=0.3684, p< 0.0000) between Enterococci and optical brightener concentrations.

While comparison of Enterococci and optical brightener mean values suggests that non-point sources (wildlife, pets) associated with stormwater are likely the principal contributor to bacterial pollution at 7 of the 8 sites monitored (2012 & 2013), point sources cannot be ruled out due to the significant (yet weak) correlation between Enterococci and optical brighteners. A more robust data set is needed to better understand the source(s) of bacteria impacting water quality on Willard Beach. In 2014, MHB will partner with South Portland Water Resource Protection to conduct additional monitoring and to launch a pet waste and water quality campaign within the watershed.

Portland
Since 2002, MHB has supported a sanitary/watershed survey, optical brightener analysis, enhanced rainfall monitoring, and Boater's Education materials for East End Beach. In 2013, the local beach manager continued to post precautionary rainfall advisories when local precipitation levels were > 1 inch within 24hrs.

Popham Beach State Park
MHB has supported ongoing efforts to assess water quality in the Morse river mouth as well as stagnant tide pools that form on the beach on a weekly basis during the beach season.

Rockport
Since 2010, MHB has supported Rockport in its efforts to address pollution issues on Goodies Beach, throughout the adjacent Harbor, associated tributaries, and the Pasqual Ave. storm drainage network. In 2013, MHB focused on the stormwater discharge that empties adjacent to the public swimming beach. As a part of this effort, Enterococci and optical brightener levels were analyzed for 11 samples at 2 monitoring sites that receive water from the upland Pascal Ave. storm drainage network. Enterococci results at PA-01[33] ranged from 10 MPN to 1850 MPN/100mls of sample water with a geometric mean of 194 MPN. Optical brightener results ranged from 92.7-154 µg/l and with a mean of 125 µg/l. A Pearson's Product Moment analysis combining data from 2010-2013 indicated no significant relationship between Enterococci and optical brighteners (R^2=0.0187, p=0.7061). However, results should be interpreted with caution due to the small sample size and high variability of the data.

Enterococci results for site PA-02[34] ranged from 20 MPN to 24,190 MPN per 100 ml of sample water with a geometric mean value of 630 MPN and optical brightener results ranged from 38 - 182 with a mean of 121 µg/l. Elevated levels of Enterococci and optical brightener levels at PA-02 suggests the likelihood of human-sourced fecal contamination impacting water quality; however, a Pearson's Product Moment analysis indicated no significant relationship between the two parameters at this location (R^2=0.1273, p=0.1917), however the high variability of Enterococci values may have confounded this relationship. Additionally, US EPA supported analysis of 7 Pharmaceutical and Personal Care Products (PPCPs) at 2 locations in 2012 and at

[33] The site captures stormwater leaving a pipe emptying to the shoreline in the edge of Goodies Beach
[34] This site is located upland of PA-01 before the water enters the pipe beneath the boat house

11 sites in 2013. Bacteria, optical brightener and PPCPs results from 2012 and 2013 indicate the likelihood of human-sourced fecal contamination in the Pascal Ave. drainage network.

Since 2010, Rockport has investigated the integrity of sewer and stormwater infrastructure, surveyed 54 residences in the Goodies beach drainage basin, hired seasonal staff to collect samples, installed a boat sewage pump-out station, implemented precautionary rainfall advisories, and completed a Water Resource Survey. Rockport plans to continue enhanced monitoring and pollution source tracking efforts, develop a Watershed Export Model, increase the number of dog waste stations, stencil storm drains and other efforts to promote best practices at the beach, in the harbor, and upland drainage areas in 2014. MHB will continue to support efforts to better understand the sources of fecal contamination contributing to water quality at Goodies Beach.

Camden

Since 2008, MHB has supported local efforts to improve water quality at improve water quality on Laite Beach, in the adjacent harbor, associated tributaries and storm drainage network. In 2010, MHB obtained supplemental funding from US EPA to develop a Boater's Education Campaign and conduct enhanced monitoring throughout the harbor and watershed areas. MHB facilitated inter-department and inter-agency cooperation in support of expanded monitoring, sanitary surveys and IDDE studies of priority areas. In 2012, MHB partnered with Camden to obtain supplemental funding from the Maine Coastal Program to continue this work as well as follow through on key recommendations from prior studies. Since 2010, 3 cross connections and one broken sewer line have been remediated and Rock Brook was removed from the state's list of impaired waters. The town has also contracted with consultants to delineate watershed characteristics as well as to update the town's GIS database regarding sewer and stormwater infrastructure, and septic system parcels.

Lincolnville

Since 2004, MHB has supported Lincolnville in its efforts to address pollution issues at Lincolnville Beach and the Ducktrap River Recreation Area. This work has included enhanced monitoring, sanitary surveys, beach clean-ups, and more to improve water quality. As a result, the town has worked with property owners to remediate 10 sources and has conducted feasibility studies, enacted legislation, and continues to hire contractors to pursue funding sources to improve and expand wastewater infrastructure.

In 2013, MHB focused on two storm drainage pipes emptying into Frohock Brook, ocean-side of the US Rt. 1. Bridge. As a part of this effort, 11 samples were analyzed for Enterococci and optical brightener concentrations at 2 monitoring sites (SDN and SDS) and Enterococci results ranged from 10 MPN to 5794 MPN/100 ml while optical brightener results ranged from 26-181 µg/l. Combining 2010-2013 data, the enterococci geometric mean value for site SDN (receives water from the storm drainage network along US Rt. 1 north of the bridge) was 1496 MPN/100ml [35] and the optical brightener mean 139 µg/l. Site SDS (receives water from the south) had an Enterococci geometric mean of 331 and an optical brightener mean of 78 µg/l. The coupled elevated levels of both parameters at site SDN may be indicative of human-sourced fecal

[35] The US EPA recommended geometric mean value for at least 5 samples collected within a 30-day period is 35 MPN for marine water and 33 MPN for freshwater.

pollution; however, the samples size at both locations was insufficient to draw robust conclusions. Potential sources impacting these sites are malfunctioning septic systems, wildlife, and illicit connections to the storm drainage network along US Rt. 1 and Rt. 173.

The Ducktrap River Recreation Area is a valued resource by the community and is accessed for a wide range of recreational activities.[36] MHB analyzed 15 samples for Enterococci levels over the course of the 2013 monitoring season. Results ranged from 10 MPN to 3076 MPN/100mls of sample water with a geometric mean of 169 MPN/100 ml. Potential sources include malfunctioning septic systems, wildlife and domestic animal waste.

Mount Desert and Bar Harbor

Since 2003, MHB has supported local water quality initiatives on Mount Desert Island including enhanced monitoring, surveys, special projects, Stakeholder Workshops, and more. This included enhanced Enterococci monitoring (2003-2005) of Stanley Brook (impacting Seal Harbor Beach) as well as monitoring of a suite of watershed parameters and a watershed survey of the watershed in 2005. In 2009, MHB supported a study of bacteria levels and UV light penetration on Seal Harbor Beach as well as a study of cruise ship impacts on Bar Harbor's town beach and adjacent harbor water quality in 2011. The towns have made improvements to sewer infrastructure, and Bar Harbor included a water resource protection chapter in its Open Space Plan. Bar Harbor will also hire consultants to further investigate the impact commercial cruise ships on harbor water quality. MHB will support this study and other local initiatives to improve water quality in 2014.

Applied Research Partnerships

MHB has partnered on studies pertaining to acoustic doppler profiling (circulation), microbial source tracking, assessment of microbial communities in sand and sediment, sustainability science, etc. In 2013, MHB provided guidance to the project: "Strengthening the scientific basis for decision-making: Advancing sustainability science and knowledge-action capacities in coupled coastal systems" focused on coastal beaches and shellfish growing areas in Maine and New Hampshire. MHB also partnered with the Marine Extension Team, a collaboration of Maine Sea Grant and UMaine Cooperative Extension, providing educational and applied research programs in coastal community development, ecosystem health, fisheries, aquaculture, and tourism. Researchers have been instrumental in relaying important details to local partners in support of informed beach management decisions and remediation efforts at MHB Stakeholder Workshops, Maine Beaches Conferences, Maine Water Conferences and beyond. MHB will continue its collaborative approach to addressing impaired water quality in 2014.

[36] Due to chronic bacteria issues and the lack of swimming, services, parking, lifeguards, etc., this recreation area located at the mouth of the river was re-classified as a Tier 3 beach in 2010. Lincolnville does not promote the area for swimming area and a permanent advisory sign is posted at this location.

XVI. Wells National Estuarine Survey & Results

- Choices for Our Land and Water Survey2014
- Choices for Our Land and Water Survey Results by Clark University, 2014
- Sustaining Coastal Landscapes and Community Benefits – Final Report, 2015

CHOICES FOR OUR LAND AND WATER



A Survey of Kennebunk, Sanford and Wells Residents

Sponsored by the Wells National Estuarine Research Reserve and Clark University

LAND AND WATER IN SOUTHERN MAINE

What happens on land in Maine affects its rivers and streams. **The area where land meets the water is called riparian land.** Riparian land within **300 feet** of the water is considered most important by scientists.



Natural Riparian Land



Partially Cleared Riparian Land

Natural riparian land in southern Maine is forested, with trees and low-level plants. This land provides a number of services. For example, riparian land:

- **Filters out pollutants** before they reach the water
- **Prevents erosion** and collapse of river banks
- **Prevents flooding** of homes and property by absorbing flood waters
- **Improves habitat** for fish, birds and other wildlife
- **Provides natural scenery** for residents and visitors.

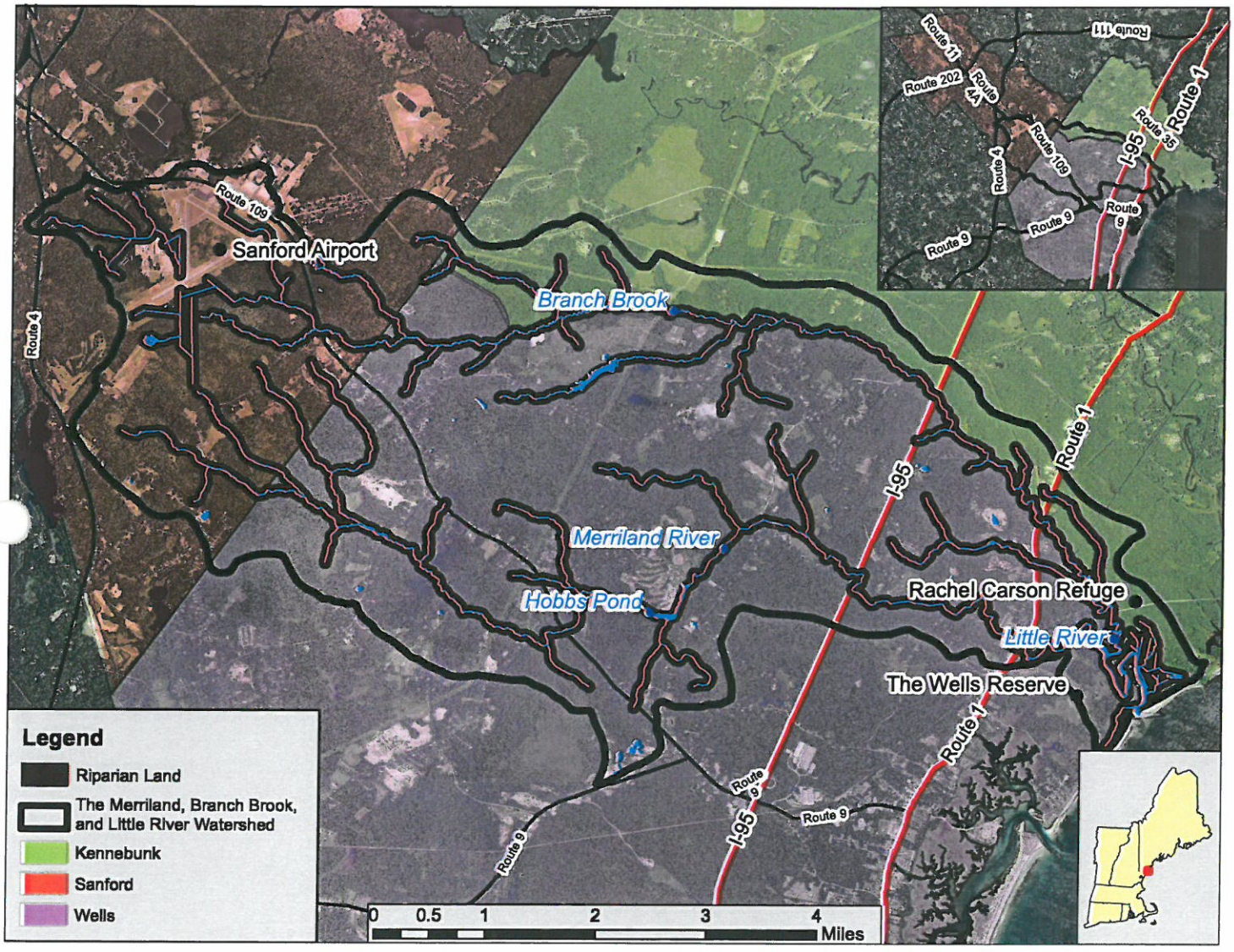
When this land is cleared or developed, many of these services decline.

This survey asks for your opinions about how riparian land is managed in areas surrounding the Merriland, Branch Brook, and Little Rivers in your area.

Your answers will help public officials and nonprofit organizations decide how to manage this land.

RIPARIAN LAND IN KENNEBUNK, SANFORD AND WELLS

The map below shows the area addressed by this survey. This includes all land that drains into the **Merriland, Branch Brook**, and **Little Rivers** within Kennebunk, Sanford and Wells.

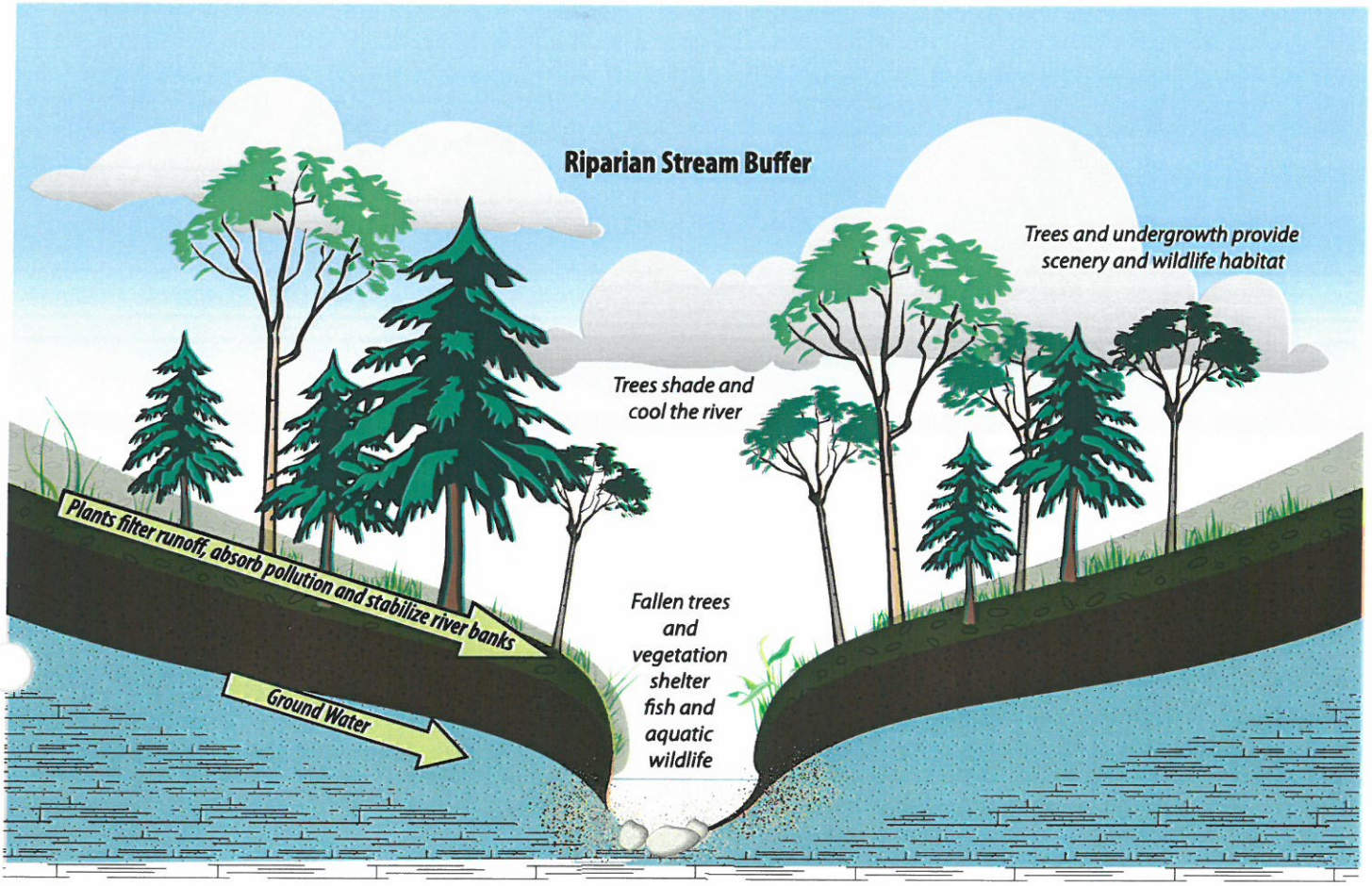


The Merriland, Branch Brook, and Little River (MBLR) Watershed

Across this area there are about **4,700 acres** of land within 300 feet of a river or stream. This area is shown as Riparian Land on the map. **4,300 acres** of this riparian land are covered by trees and natural vegetation. The remaining 400 acres have been developed or cleared.

WHAT RIPARIAN LAND DOES

The figure below illustrates some of the main natural services provided by riparian land, such as absorbing pollution, improving wildlife habitat and providing natural scenery.



Natural Services of Riparian Land

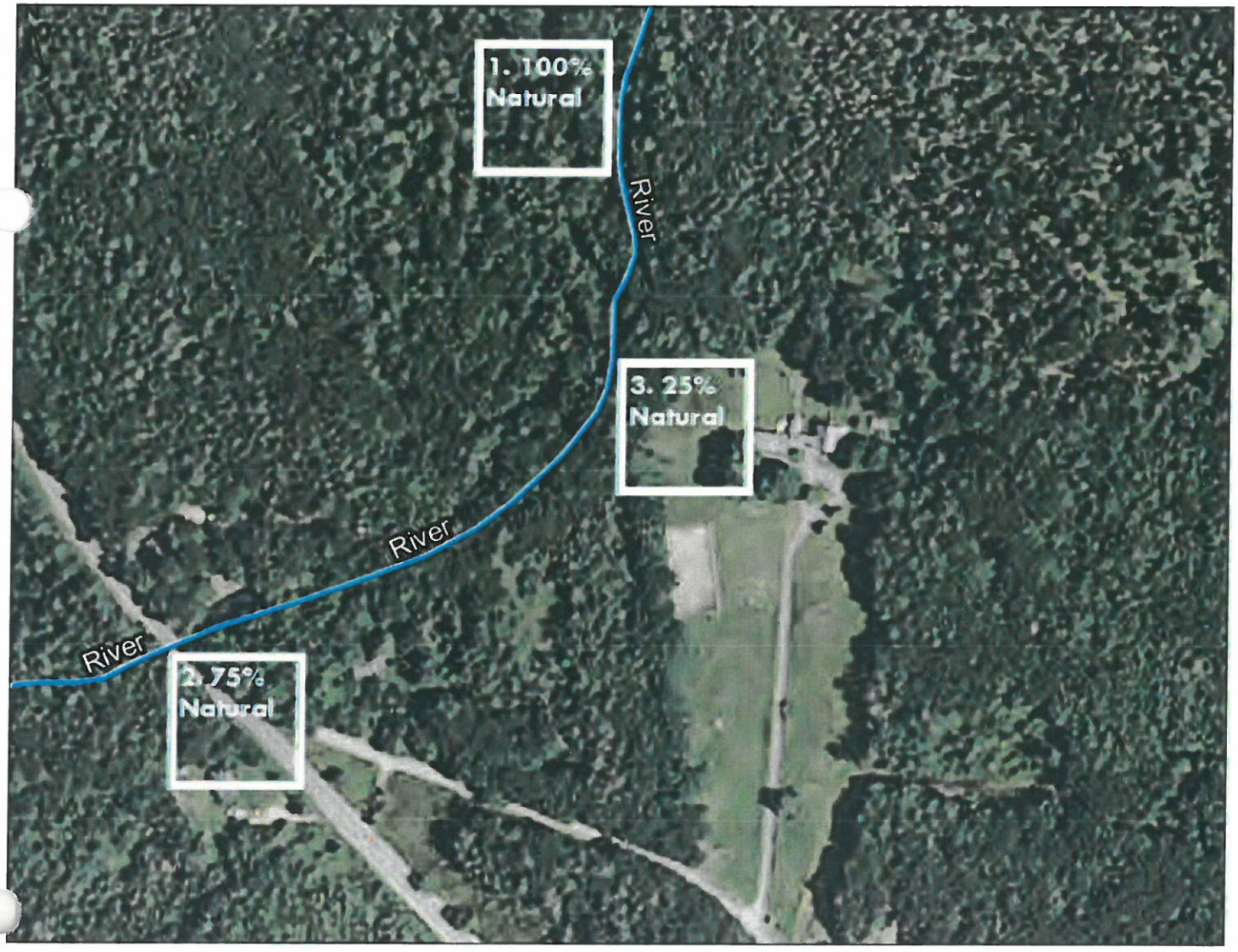
Development in Kennebunk, Sanford, and Wells is removing trees and vegetation on more riparian land each year. This is affecting scenery, river ecosystems, fish, and water quality. Because of this, some people have called for additional restrictions on clearing and development of this land. At the same time, other people do not want the development rights of private landowners to be further restricted.

HOW DEVELOPMENT IS AFFECTING RIPARIAN LAND

Development and clearing is already restricted on riparian land in Maine, but some occurs anyway. Development and clearing often happens when people want to expand lawns, improve their view of the river, or add a dock.

Riparian land development is occurring at a rate of about **5%** every **10 years**. Already, nearly 10% of riparian land has been developed.

The image below shows the difference between natural and developed riparian land. In square 1, **100%** of riparian land is covered by natural vegetation. In squares 2 and 3, approximately **75%** and **25%** of the land, respectively, is covered by natural vegetation. The rest has been developed or cleared.



PROTECTION RIPARIAN LAND

ublic and private agencies in Maine are considering options to protect natural riparian land in Kennebunk, Sanford and Wells. These include:

- **Purchase and protection** of undeveloped riparian land by land trusts, environmental organizations or government agencies.
- **Restoration** of riparian land that has already been developed or cleared. These activities are supported by public and private organizations.
- **Increased restrictions on development** near rivers. Development and clearing is now restricted within a minimum distance of 100 feet from rivers and 25 feet from streams. The size of this restricted area could be increased.
- **Increased enforcement of existing restrictions.** Sometimes development on riparian land occurs in ways that violate state and local regulations. Enforcement of existing regulations could be enhanced, for example by allowing more inspections.

All of the options to protect natural riparian land require tradeoffs. For example, some options are costly, and others can restrict how people use private land.

Question 1. When considering options to protect natural riparian land, how important to you is each of the following? Check one box for each.

	Not at All Important		Moderately Important		Very Important
a. Government respects the right of private landowners to use and develop their land	☐ 1.	☐ 2.	☐ 3.	☐ 4.	☐ 5.
b. Water quality is protected in lakes, rivers and streams	☐ 1.	☐ 2.	☐ 3.	☐ 4.	☐ 5.
c. The local environment is protected	☐ 1.	☐ 2.	☐ 3.	☐ 4.	☐ 5.
d. Taxes and fees paid by my household do not increase	☐ 1.	☐ 2.	☐ 3.	☐ 4.	☐ 5.
e. Existing regulations are enforced fairly and effectively	☐ 1.	☐ 2.	☐ 3.	☐ 4.	☐ 5.
f. Existing uses of private land are grandfathered, so that they are not subject to new restrictions	☐ 1.	☐ 2.	☐ 3.	☐ 4.	☐ 5.

TRADEOFFS PROTECTING RIPARIAN LAND

The following pages will allow you to vote for or against different options that might be used to protect natural riparian land in Kennebunk, Sanford and Wells. Your answers will help public officials and nonprofit organizations understand the tradeoffs that are most acceptable to you.

Each question will ask you to compare different future scenarios, each with different effects on:


Natural Riparian Land (how much of it remains in natural condition)


River Ecology (the ecological condition of local rivers)


Recreational Fish (the number of recreational fish living in area rivers)


Safe Swimming (the percentage of days that area beaches are safe to swim)


Development Setback (the width of riparian area in which development is restricted)


Enforcement (whether existing enforcement and land inspections are increased)

$ Cost to your household each year (taxes and fees to pay for new programs)

Without any action, natural conditions will decline. If sufficient actions are taken to protect the natural condition of riparian land, these conditions will stay the same or improve.

Question 2. In general, do you support greater use of development setbacks and land inspections to limit future development on riparian land?

☐ 1. **Yes** ☐ 2. **No** ☐ 3. **I'm not sure**

Question 3. In general, do you support voluntary partnerships between government and private landowners to restore natural riparian land?

☐ 1. **Yes** ☐ 2. **No** ☐ 3. **I'm not sure**

COMPARING PROTECTION OPTIONS

The upcoming questions will ask you to compare different ways of protecting riparian land in Kennebunk, Sanford and Wells, and vote for the ones you prefer. You may also vote to reject the proposed programs and retain the status quo. **Effects of each option will be described by the following effects, as estimated by scientists:**

Effect	What it Means
 **Natural Riparian Land**	The amount of riparian land covered by natural vegetation. Currently about 91% of the land is in natural condition. With no action **85%** of riparian land in the area (4000 acres) will remain in natural condition in 5-10 years.
 **River Ecology**	Average ecological condition of area rivers, measured by the diversity of small organisms (dragonflies, mayflies, etc.) that live there. A score of 100% is the best possible condition in the area. A score of 0% means nothing lives in the water. With no action, the ecological condition in area rivers will be **55%** in 5-10 years. The score today is about 60%.
 **Recreational Fish**	The number of recreational fish in area rivers, measured by scientific sampling of brook trout. A score of 100% would mean that area rivers contain the maximum number of trout possible (30 trout per 1000 sq. feet). Today there are about 19 trout per 1000 sq. feet. With no action, scientists predict there will be an average of 17 trout per 1000 sq. feet (**55%** of the most possible) in 5-10 years.
 **Safe Swimming**	The percentage of days in which government tests show that area beaches (Laudholm, Drakes Island, Crescent Surf, and Parson) are safe for swimming. 100% means that all tests show water safe for swimming. With no action, scientists predict **85%** of tests will show water safe for swimming in 5-10 years.
 **Development Setback**	The minimum width of the riparian area where development is restricted. Currently development and clearing is restricted within a minimum distance of **100 feet from rivers** and **25 feet from streams**. This distance is larger in some areas and for some types of development. Existing (legal) development would be grandfathered if setbacks change.
 **Enforcement**	Whether enforcement is increased to prevent illegal development or clearing on riparian land. This could include inspections on private land if violations are suspected. Currently, inspections can only occur when a violation has been reported or as part of permitting.
$ **Cost to your Household per Year**	How much the policy will cost your household in unavoidable annual taxes and fees. These are guaranteed to only be spent on the protection option that is indicated.

YOU WILL BE ASKED TO VOTE

After considering the current situation and possible protection effects and methods, which do you prefer? You will be given choices and asked to vote for the option you prefer by checking the appropriate box. **Questions will look similar to the sample below.**

SAMPLE QUESTION:

Method or Effect of Protection	In 5-10 years under the Current Situation	In 5-10 years under Option A	In 5-10 years under Option B
 **Riparian Land Condition**	**85%** 4000 out of 4700 riparian acres covered by natural vegetation	**87%** 4100 out of 4700 riparian acres covered by natural vegetation	**95%** 4500 out of 4700 riparian acres covered by natural vegetation
 **River Ecology**	**55%** of best possible (100%) ecological condition	**85%** of best possible (100%) ecological condition	**85%** of best possible (100%) ecological condition
 **Recreational Fish**	**55%** 17 out of 30 possible fish per 1000 sq. feet	**75%** 23 out of 30 possible fish per 1000 sq. feet	**55%** 17 out of 30 possible fish per 1000 sq. feet
 **Safe Swimming**	**85%** of beach tests meet safe swimming guidelines	**95%** of beach tests meet safe swimming guidelines	**85%** of beach tests meet safe swimming guidelines
 **Development Setback**	**100 feet** required between development and rivers; 25 feet for streams	**150 feet** required between development and rivers; 75 feet for streams	**100 feet** required between development and rivers; 25 feet for streams
 **Enforcement**	**No Change** in enforcement and inspections	**No Change** in enforcement and inspections	**Increased** enforcement and inspections
$ **Cost to your Household per Year**	**$0** Increase in Annual Taxes or Fees	**$45** Increase in Annual Taxes or Fees	**$5** Increase in Annual Taxes or Fees
HOW WOULD YOU VOTE? (CHOOSE ONLY ONE) **I vote for**	[X] **NO NEW PROTECTION**	[X] I vote for **OPTION A**	[X] I vote for **OPTION B**

If you prefer **No New Action** Check Here

If you prefer **Option A** Check Here

If you prefer **Option B** Check Here

AS YOU VOTE, REMEMBER THESE IMPORTANT DETAILS

- There are 3 voting questions, each on a different page. Do not add up or compare options from different pages. Only choose among options on that page.
- There are different ways to protect and restore the condition of riparian land. Costs and effects depend on many factors. Policies that affect a larger area will not always have larger effects or cost more.
- Review each question carefully. The results of this survey will be given to town planners in Kennebunk, Sanford, and Wells to help determine future actions.
- Costs to your household would range from $0 to $60 per year, depending on the option. Assume that all funds are legally guaranteed to be used for the described programs.
- The "Current Situation" shows future condition in 5-10 years with no change in current policies.
- The map on page 2 has an area marked "Riparian Land" where most changes would occur.
- When voting, assume that the option receiving the most votes will be enacted.
- All plans include a combination of activities such as restoration and additional protection of riparian land.

QUESTION 4

OPTION A and **OPTION B** are possible protection options for the area surrounding the Merriland, Branch Brook, and Little River. The current situation is the status quo with **NO NEW PROTECTION**.

Given a choice between the three, how would you vote?

Method or Effect of Protection	In 5-10 years under the Current Situation	In 5-10 years under Option A	In 5-10 years under Option B
 **Riparian Land Condition**	**85%** 4000 out of 4700 riparian acres covered by natural vegetation	**87%** 4100 out of 4700 riparian acres covered by natural vegetation	**95%** 4500 out of 4700 riparian acres covered by natural vegetation
 **River Ecology**	**55%** of best possible (100%) ecological condition	**85%** of best possible (100%) ecological condition	**85%** of best possible (100%) ecological condition
 **Recreational Fish**	**55%** 17 out of 30 possible fish per 1000 sq. feet	**75%** 23 out of 30 possible fish per 1000 sq. feet	**55%** 17 out of 30 possible fish per 1000 sq. feet
 **Safe Swimming**	**85%** of beach tests meet safe swimming guidelines	**95%** of beach tests meet safe swimming guidelines	**85%** of beach tests meet safe swimming guidelines
 **Development Setback**	**100 feet** required between development and rivers; 25 feet for streams	**150 feet** required between development and rivers; 75 feet for streams	**100 feet** required between development and rivers; 25 feet for streams
 **Enforcement**	**No Change** in enforcement and inspections	**No Change** in enforcement and inspections	**Increased** enforcement and inspections
$ **Cost to your Household per Year**	**$0** Increase in Annual Taxes or Fees	**$45** Increase in Annual Taxes or Fees	**$5** Increase in Annual Taxes or Fees
HOW WOULD YOU VOTE? (CHOOSE ONLY ONE) I vote for	☐ **NO NEW PROTECTION**	☐ I vote for **OPTION A**	☐ I vote for **OPTION B**

As you consider the following question please remember

Questions 5 and 6 each present a new set of options for the Merriland, Branch Brook, and Little River Watersheds.

- These options use different methods or affect different areas.
- Each question is a separate vote. Questions 5 and 6 cannot be directly compared to each other or to Question 4.
- Do not add up protection effects, methods or costs across different questions.
- Costs and effects depend on many factors. Protecting a larger area does not necessarily mean that all effects will improve or that costs will be higher.



QUESTION 5

OPTION A and **OPTION B** are possible protection options for the area surrounding the Merriland, Branch Brook, and Little River. The current situation is the status quo with **NO NEW PROTECTION.**

Given a choice between the three, how would you vote?

Method or Effect of Protection	In 5-10 years under the Current Situation	In 5-10 years under Option A	In 5-10 years under Option B
 **Riparian Land Condition**	**85%** 4000 out of 4700 riparian acres covered by natural vegetation	**87%** 4100 out of 4700 riparian acres covered by natural vegetation	**90%** 4200 out of 4700 riparian acres covered by natural vegetation
 **River Ecology**	**55%** of best possible (100%) ecological condition	**75%** of best possible (100%) ecological condition	**75%** of best possible (100%) ecological condition
 **Recreational Fish**	**55%** 17 out of 30 possible fish per 1000 sq. feet	**65%** 20 out of 30 possible fish per 1000 sq. feet	**65%** 20 out of 30 possible fish per 1000 sq. feet
 **Safe Swimming**	**85%** of beach tests meet safe swimming guidelines	**90%** of beach tests meet safe swimming guidelines	**90%** of beach tests meet safe swimming guidelines
 **Development Setback**	**100 feet** required between development and rivers; 25 feet for streams	**100 feet** required between development and rivers; 25 feet for streams	**200 feet** required between development and rivers; 125 feet for streams
 **Enforcement**	**No Change** in enforcement and inspections	**No Change** in enforcement and inspections	**No Change** in enforcement and inspections
$ **Cost to your Household per Year**	**$0** Increase in Annual Taxes or Fees	**$45** Increase in Annual Taxes or Fees	**$30** Increase in Annual Taxes or Fees
HOW WOULD YOU VOTE? (CHOOSE ONLY ONE) I vote for	☐ **NO NEW PROTECTION**	☐ I vote for **OPTION A**	☐ I vote for **OPTION B**

QUESTION 6

OPTION A and **OPTION B** are possible protection options for the area surrounding the Merriland, Branch Brook, and Little River. The current situation is the status quo with **NO NEW PROTECTION.**

Given a choice between the three, how would you vote?

Method or Effect of Protection	In 5-10 years under the Current Situation	In 5-10 years under Option A	In 5-10 years under Option B
 **Riparian Land Condition**	**85%** 4000 out of 4700 riparian acres covered by natural vegetation	**87%** 4100 out of 4700 riparian acres covered by natural vegetation	**87%** 4100 out of 4700 riparian acres covered by natural vegetation
 **River Ecology**	**55%** of best possible (100%) ecological condition	**85%** of best possible (100%) ecological condition	**55%** of best possible (100%) ecological condition
 **Recreational Fish**	**55%** 17 out of 30 possible fish per 1000 sq. feet	**65%** 20 out of 30 possible fish per 1000 sq. feet	**55%** 17 out of 30 possible fish per 1000 sq. feet
 **Safe Swimming**	**85%** of beach tests meet safe swimming guidelines	**90%** of beach tests meet safe swimming guidelines	**95%** of beach tests meet safe swimming guidelines
 **Development Setback**	**100 feet** required between development and rivers; 25 feet for streams	**150 feet** required between development and rivers; 75 feet for streams	**200 feet** required between development and rivers; 125 feet for streams
 **Enforcement**	**No Change** in enforcement and inspections	**No Change** in enforcement and inspections	**No Change** in enforcement and inspections
$ **Cost to your Household per Year**	**$0** Increase in Annual Taxes or Fees	**$30** Increase in Annual Taxes or Fees	**$30** Increase in Annual Taxes or Fees
HOW WOULD YOU VOTE? (CHOOSE ONLY ONE) I vote for	☐ **NO NEW PROTECTION**	☐ I vote for **OPTION A**	☐ I vote for **OPTION B**

Question 7. Indicate how strongly you agree or disagree with the following statements. Check one box for each.

	Strongly Disagree		Neutral		Strongly Agree
a. This survey provided enough information for me to make informed choices.	☐ 1.	☐ 2.	☐ 3.	☐ 4.	☐ 5.
b. I feel confident about my answers.	☐ 1.	☐ 2.	☐ 3.	☐ 4.	☐ 5.
c. Information in the survey was easy to understand.	☐ 1.	☐ 2.	☐ 3.	☐ 4.	☐ 5.
d. Information in the survey was fair and balanced.	☐ 1.	☐ 2.	☐ 3.	☐ 4.	☐ 5.
e. Questions were easy to answer.	☐ 1.	☐ 2.	☐ 3.	☐ 4.	☐ 5.
f. I would vote in the same way on a public vote or referendum.	☐ 1.	☐ 2.	☐ 3.	☐ 4.	☐ 5.
g. I believe that there are too many government restrictions on the use and development of private land.	☐ 1.	☐ 2.	☐ 3.	☐ 4.	☐ 5.
h. I believe that there are too few government restrictions on the use and development of private land.	☐ 1.	☐ 2.	☐ 3.	☐ 4.	☐ 5.
i. Scientific predictions of future conditions are always highly uncertain.	☐ 1.	☐ 2.	☐ 3.	☐ 4.	☐ 5.

Question 8. How many times did you participate in the following during the last year? Please include activities ONLY IN MAINE. For trips longer than one day, count each day separately. Check one box for each.

	The number of times you did the activity in the past year				
	0	1-5	6-10	11-15	16+
a. Recreational Fishing	☐ 1.	☐ 2.	☐ 3.	☐ 4.	☐ 5.
b. Boating, canoeing, or kayaking	☐ 1.	☐ 2.	☐ 3.	☐ 4.	☐ 5.
c. Watching/photographing wildlife	☐ 1.	☐ 2.	☐ 3.	☐ 4.	☐ 5.
d. Swimming or sunbathing	☐ 1.	☐ 2.	☐ 3.	☐ 4.	☐ 5.
e. Picnicking	☐ 1.	☐ 2.	☐ 3.	☐ 4.	☐ 5.
f. Hiking or bicycling	☐ 1.	☐ 2.	☐ 3.	☐ 4.	☐ 5.

Question 9. Do you own land on a river or stream that might be affected by changes in development setbacks or inspections?

☐ 1. **Yes** ☐ 2. **No** ☐ 3. **I'm not sure**

Question 10. How do you feel about the protection of river ecology in your area? Check the box that most closely reflects your values.

☐ 1. Protection of river ecology is important to me **mostly for its own sake**, not because of other environmental effects that might result.

☐ 2. Protection of river ecology is important to me **both for its own sake, and because of other environmental effects** that might result.

☐ 3. Protection of river ecology is important to me **mostly because of other environmental effects** that might result. I do not care about river ecology for its own sake.

☐ 4. **Protection of river ecology is not important** to me for any reason.

☐ 5. Other (please explain):

Question 11. Indicate how strongly you agree or disagree with the following statements. Check one box for each.

	Strongly Disagree		Neutral		Strongly Agree
a. To maintain a high quality of life in Maine, it is important to balance development with preservation and conservation.	☐ 1.	☐ 2.	☐ 3.	☐ 4.	☐ 5.
b. I have heard of the Shoreland Protection Act.	☐ 1.	☐ 2.	☐ 3.	☐ 4.	☐ 5.
c. I understand the goals of the Shoreland Protection Act.	☐ 1.	☐ 2.	☐ 3.	☐ 4.	☐ 5.
d. There is sound scientific research that supports current zoning regulations on riparian land.	☐ 1.	☐ 2.	☐ 3.	☐ 4.	☐ 5.
e. I consider myself a custodian of the land.	☐ 1.	☐ 2.	☐ 3.	☐ 4.	☐ 5.
f. Regulations are needed to protect shoreland and clean water in York County.	☐ 1.	☐ 2.	☐ 3.	☐ 4.	☐ 5.
g. It is equally important to protect private property rights and clean water.	☐ 1.	☐ 2.	☐ 3.	☐ 4.	☐ 5.
h. The long-term protection of the environment is more important than the right of an individual property owner to develop his/her property.	☐ 1.	☐ 2.	☐ 3.	☐ 4.	☐ 5.

The following questions ensure that all groups are fairly represented.

All answers are confidential.

12. What is your gender? ☐ 1. Male ☐ 2. Female

13. What is your age? _____ years

14. What is the highest level of education you completed?

☐ 1. Less than High School
☐ 2. High School/GED
☐ 3. Some college
☐ 4. 2-year college degree
☐ 5. 4-year college degree
☐ 6. Graduate degree (MS, PhD, etc.)

15. Do you live in the Merriland, Big Branch and Little River Watershed (see map on page 2)?

☐ 1. Yes ☐ 2. No ☐ 3. Not Sure

16. How long have you been a Maine resident? _____ years

17. Are you currently employed? ☐ 1. Yes ☐ 2. No

18. What category best describes your total household annual income?

☐ 1. Less than $10,000
☐ 2. $10,000 to $19,999
☐ 3. $20,000 to $39,999
☐ 4. $40,000 to $59,999
☐ 5. $60,000 to $79,999
☐ 6. $80,000 to $99,999
☐ 7. $100,000 to $249,999
☐ 8. $250,000 or more

19. Do you or anyone in your immediate household belong to any of the following? (Check all that apply)

☐ 1. Environmental organizations (Laudholm Trust, World Wildlife Fund, etc.)
☐ 2. Outdoor sporting or recreational fishing associations (Ducks Unlimited, Recreational Fishing Alliance, etc.)
☐ 3. Business-related organizations (chambers of commerce, etc.)

20. What is your zip code? _____

21. How many people live in your household? _____

COMMENTS

Please use the space below for any additional comments.

Thank you for participating in this important survey!
Please mail it back to us in the postage-paid envelope.

If you have questions about this project, please contact **Dr. Robert J. Johnston** at Clark University (wells_survey@clarku.edu or (508) 751-4609).



Choices for Our Land and Water

What do 1,000 + residents of Sanford, Wells and Kennebunk think about buffers and what choices are they willing to make to protect them?

Robert J. Johnston
Clark University

The 5th Annual Solstice Summit at the Wells National Estuarine Research Reserve
Wells, MA. June 21, 2014

CLARK

Robert Solow – Nobel Prize Economist

- "...in the long run, the economics of natural resources and the environment is as important to our well-being as the economics of money and banking. Our national economic future depends on the way we use our energy sources, renewable and non-renewable; on the way we use our subsurface minerals, our forest our soil resources, our ocean fisheries; on the quality and quantity of water we can make available for household use; and on the quality of the air and what we do with toxic wastes."

Economic Tradeoffs and Environmental Policy

- All environmental policy requires tradeoffs.
  - Different benefits and costs to different groups.
- Analysis of these tradeoffs is required because
  - We can't Do It All
  - We can't Do It All At Once
  - Some Things Conflict
  - Some Actions Are Not Worth It – But Which Ones?
- Preconceived notions about benefits and costs are often wrong.

How Economics Informs Policy

- Some of the Things Economists Provide
  - Model Economic Behavior
    - Cause and Effect
    - Prediction
    - Design Policies To Achieve Desired Outcomes
      - e.g., command and control vs. market-based policy
  - Welfare Economics
    - Comparing States of the World
      - Under what conditions is society better off?
      - What policies provide the most net benefit and to whom?

Market and Non-Market Values

- When evaluating policies, an economic benefit or value is something that makes at least one person better off.
- Values can be provided by market goods and by non-market environmental (or ecosystem) services.
  - Examples: The benefit I receive from catching a fish in a local river or benefit of clean water at a public beach.
- Money transactions are not required for economic values.
- A large proportion of the benefit from environmental policy is (often) in the form of non-market value.
  - But non-market values are more difficult to measure.

Project Goals (Economics)

- Evaluate tradeoffs that Kennebunk, Sanford and Wells residents are willing to make with regard to the protection of riparian buffers.
  - Which outcomes are most valued?
  - What are the economic benefits?
  - How do benefits differ across groups?
  - What other tradeoffs (e.g., development restrictions) do residents support?
  - What types of policies are most supported?

Project Methods

- Project coordinates ecological data (what outcomes are possible) with economic data (what outcomes are most valued).
- Data from large sample questionnaire: *Choices for Our Land and Water: A Survey of Kennebunk, Sanford and Wells Residents*
- Multiple types of questions used to analyze policy support and public values.

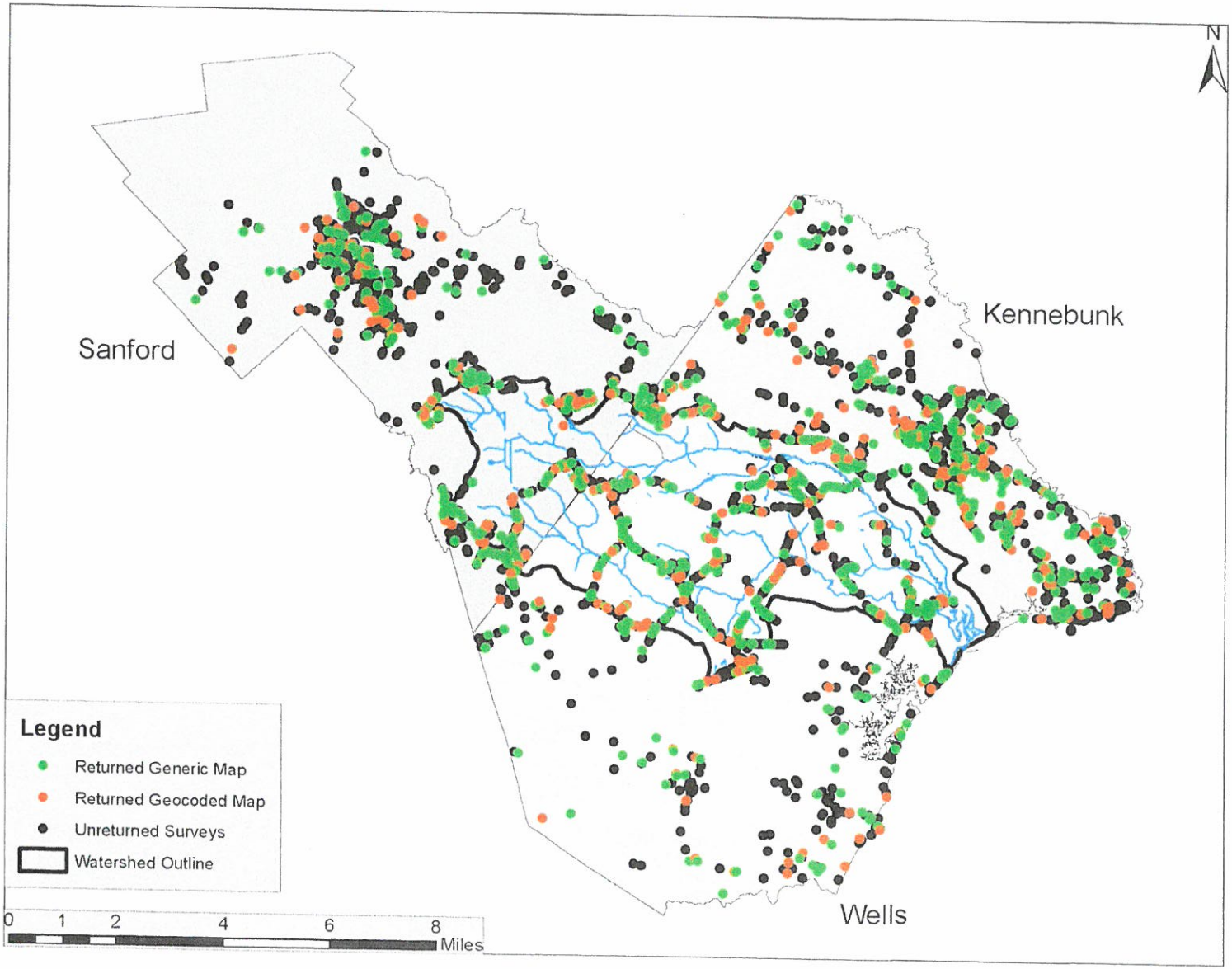
The Survey

- Survey developed over 3 years in an intensive process with project partners.
- 9 focus groups with residents used to develop and pretest the questionnaire.
- Input from scientists and stakeholders throughout the process.
- Survey implemented December 2013 – January 2014.
- Follow-up mailings and incentives to increase response rates.

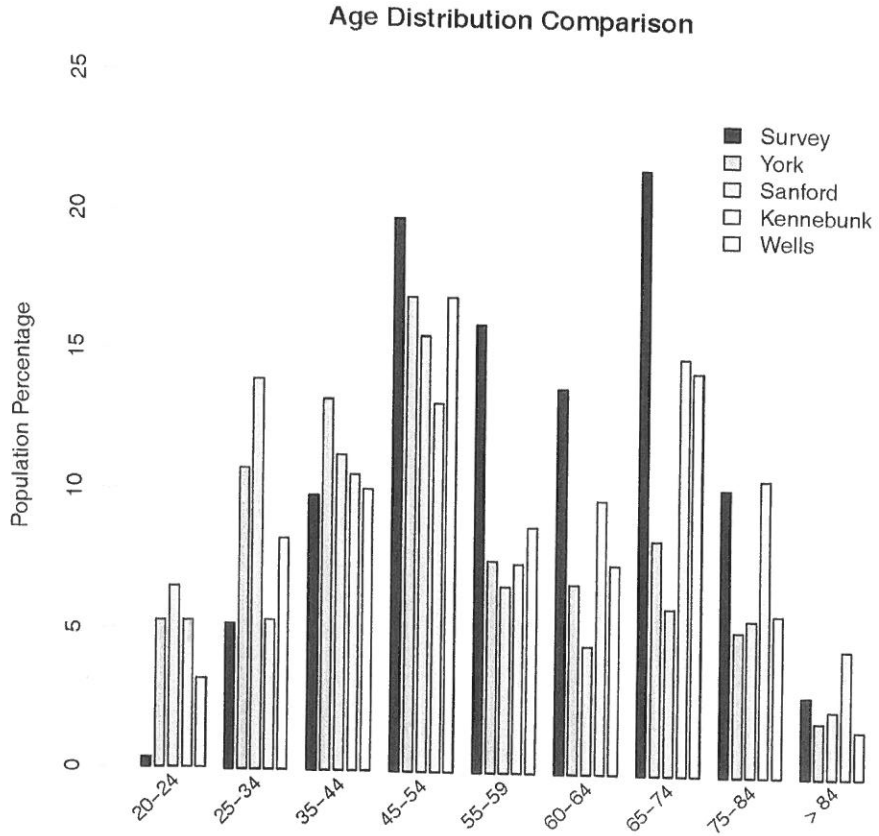
The Survey

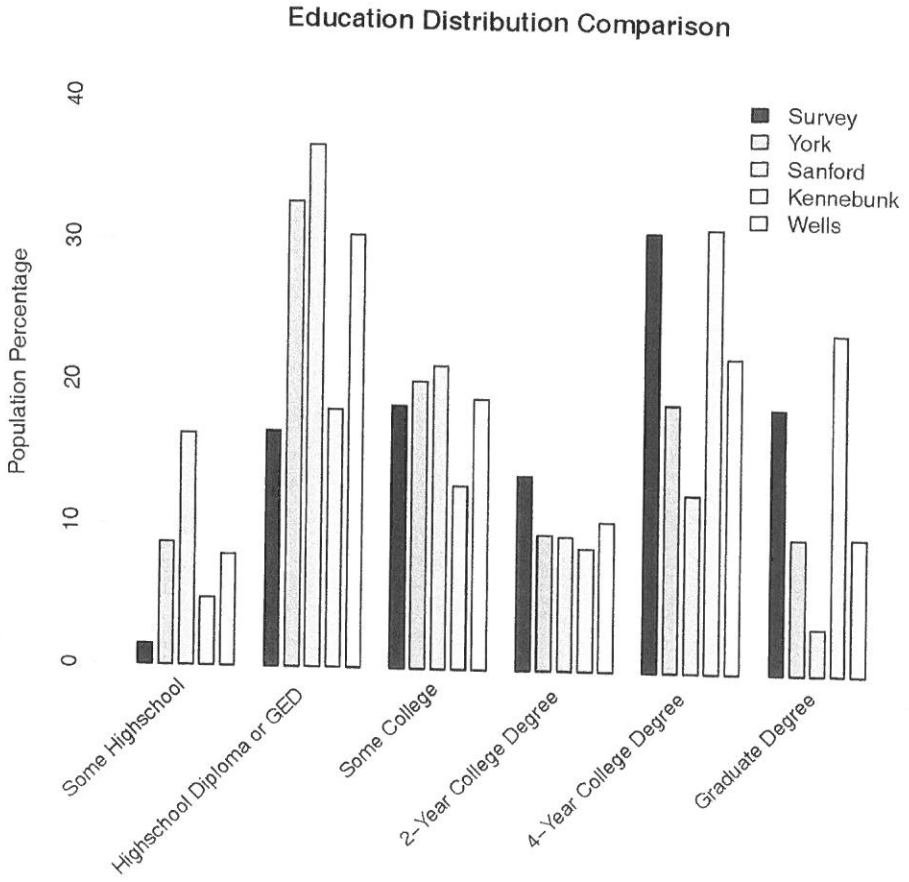
- 3816 surveys mailed to randomly selected residents of Kennebunk, Sanford and Wells.
  - Sampled all residents of Merriland, Branch Brook and Little River Watershed.
- Out of 3472 deliverable surveys, 1126 were returned for a response rate of 32.4%.
- Town response rates ranged from 27.2% (Sanford) to 35.1% (Wells).

Location of Responses



Who Responded?





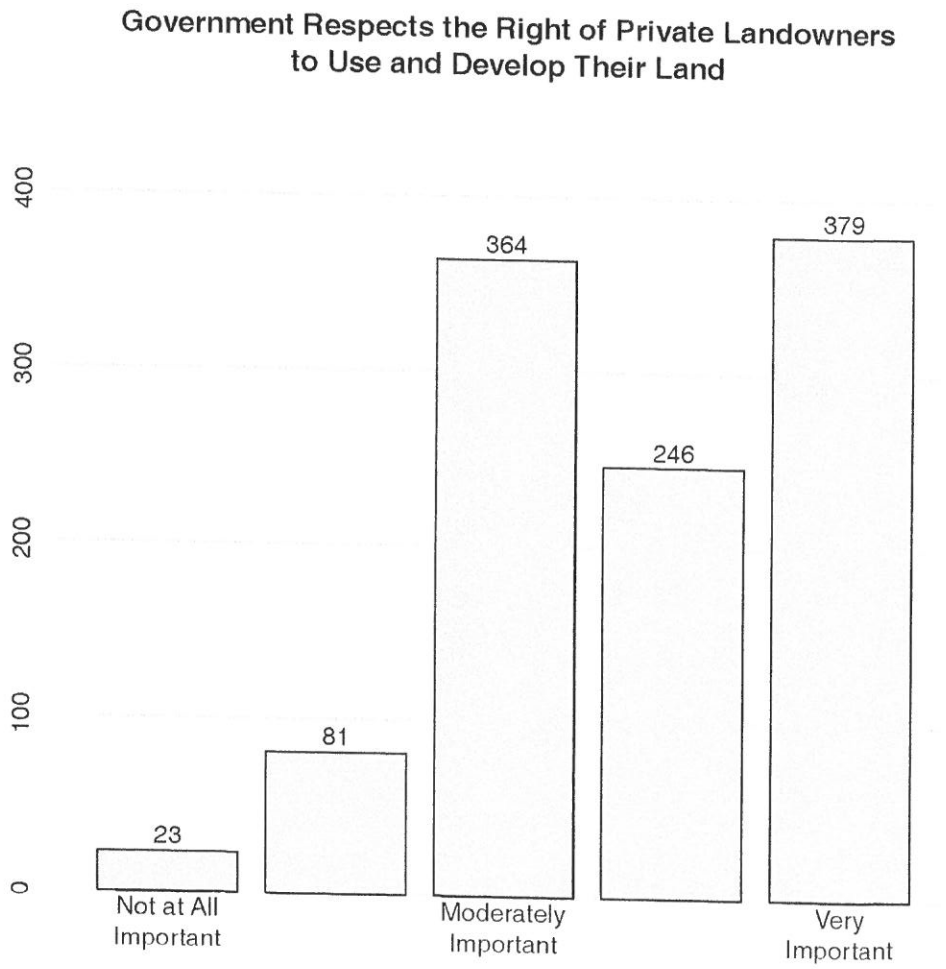
What Is Important?

All of the options to protect natural riparian land require tradeoffs. For example, some options are costly, and others can restrict how people use private land.

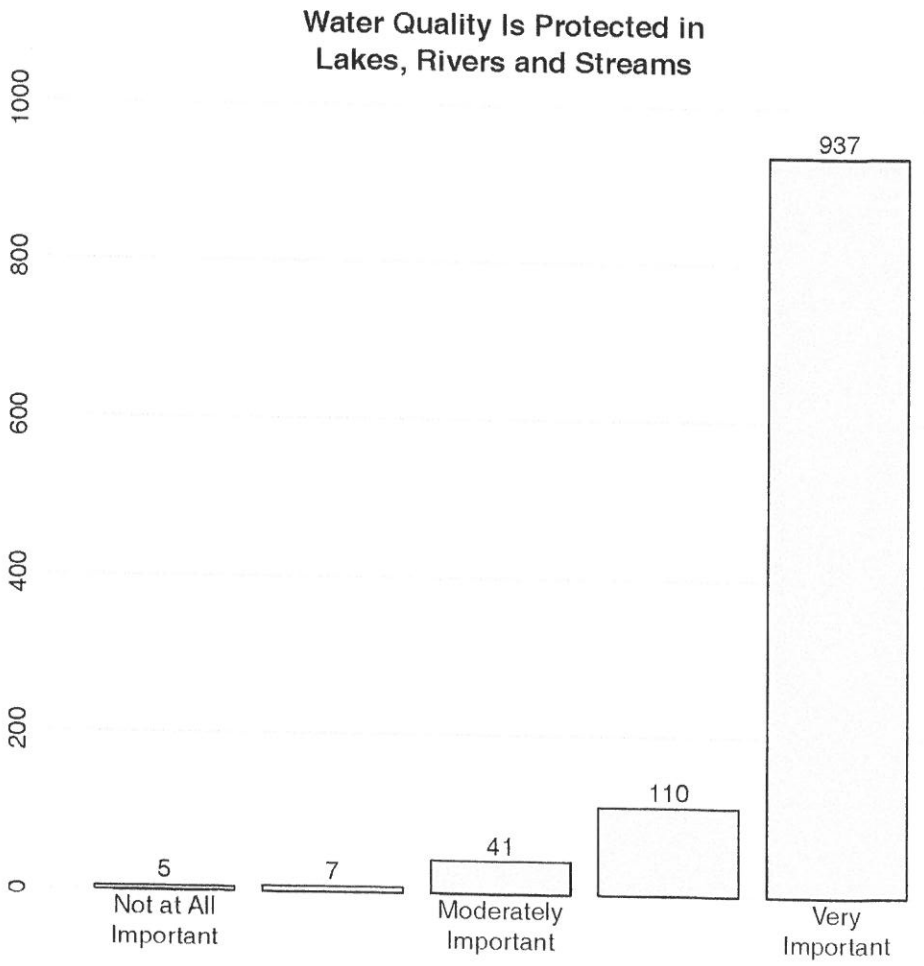
Question 1. When considering options to protect natural riparian land, how important to you is each of the following? Check one box for each.

	Not at All Important		Moderately Important		Very Important
a. Government respects the right of private landowners to use and develop their land	☐ 1.	☐ 2.	☐ 3.	☐ 4.	☐ 5.
b. Water quality is protected in lakes, rivers and streams	☐ 1.	☐ 2.	☐ 3.	☐ 4.	☐ 5.
c. The local environment is protected	☐ 1.	☐ 2.	☐ 3.	☐ 4.	☐ 5.
d. Taxes and fees paid by my household do not increase	☐ 1.	☐ 2.	☐ 3.	☐ 4.	☐ 5.
e. Existing regulations are enforced fairly and effectively	☐ 1.	☐ 2.	☐ 3.	☐ 4.	☐ 5.
f. Existing uses of private land are grandfathered, so that they are not subject to new restrictions	☐ 1.	☐ 2.	☐ 3.	☐ 4.	☐ 5.

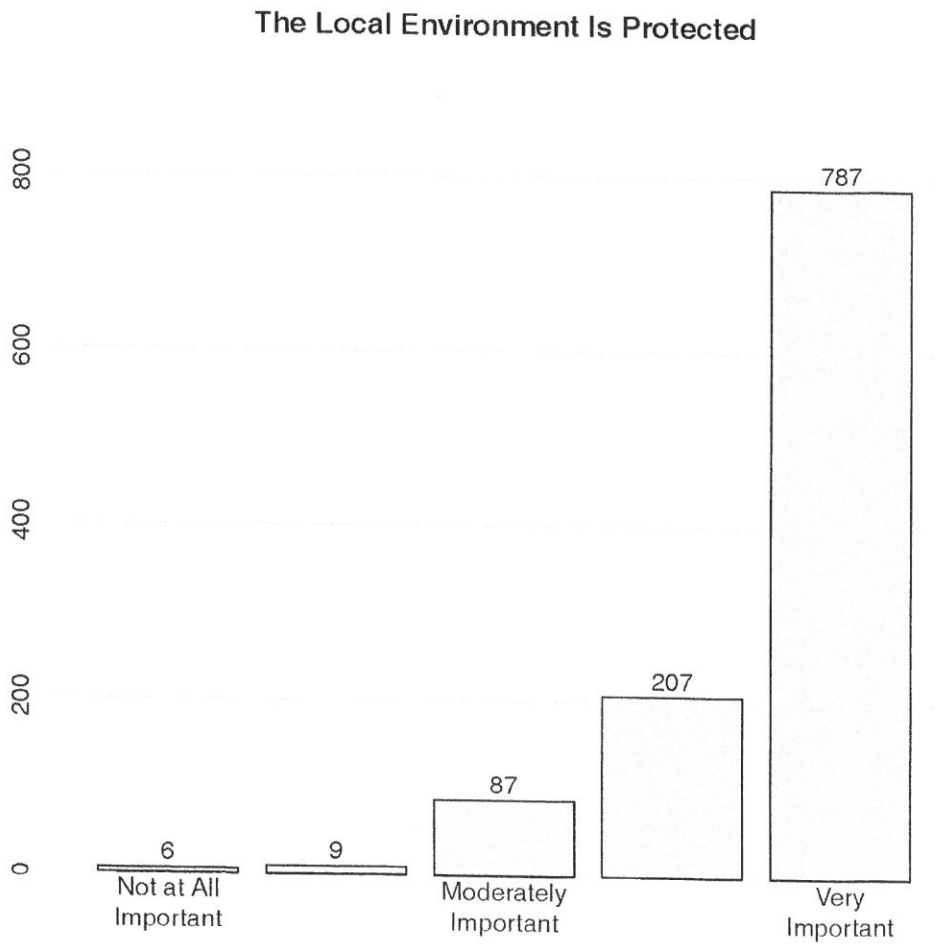
What is Important?



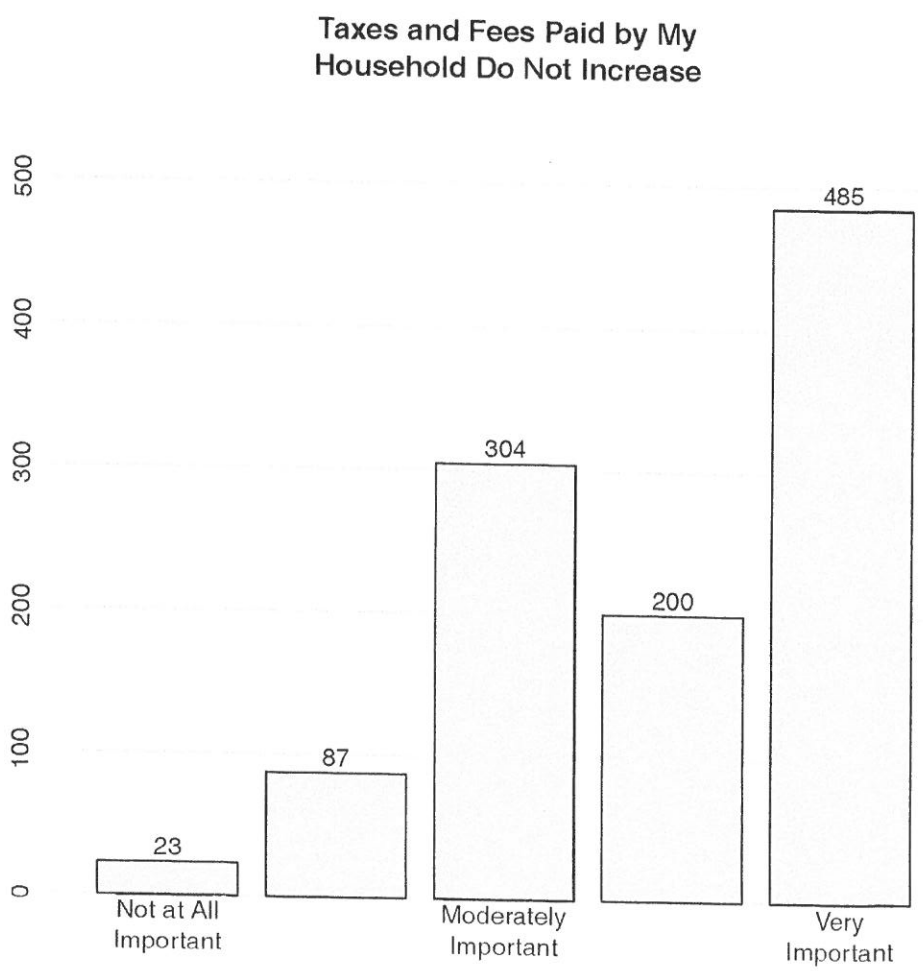
What Is Important?



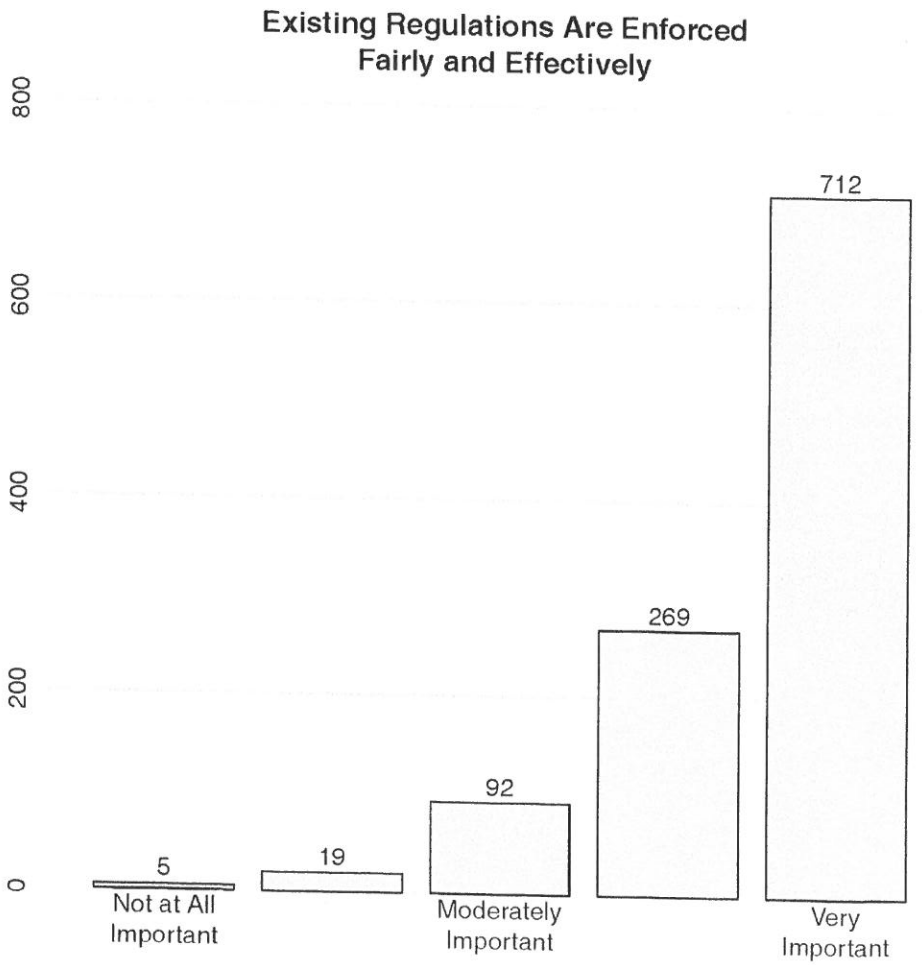
What Is Important?



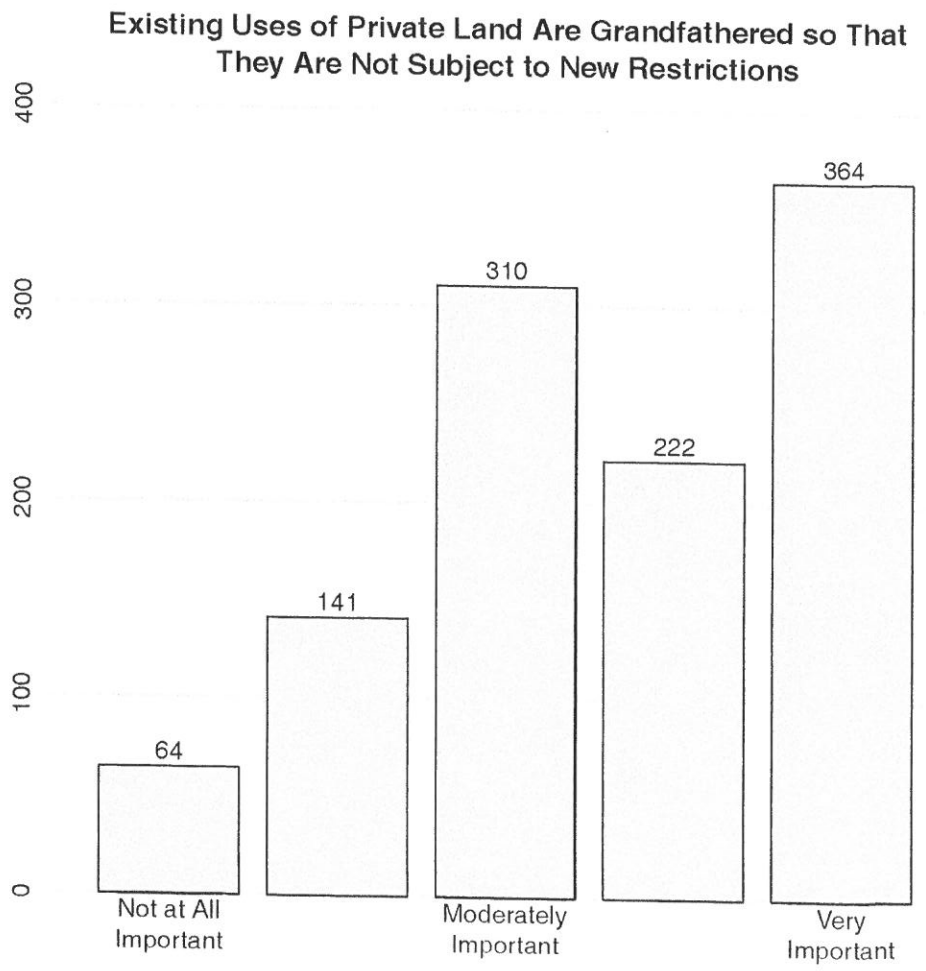
What Is Important?



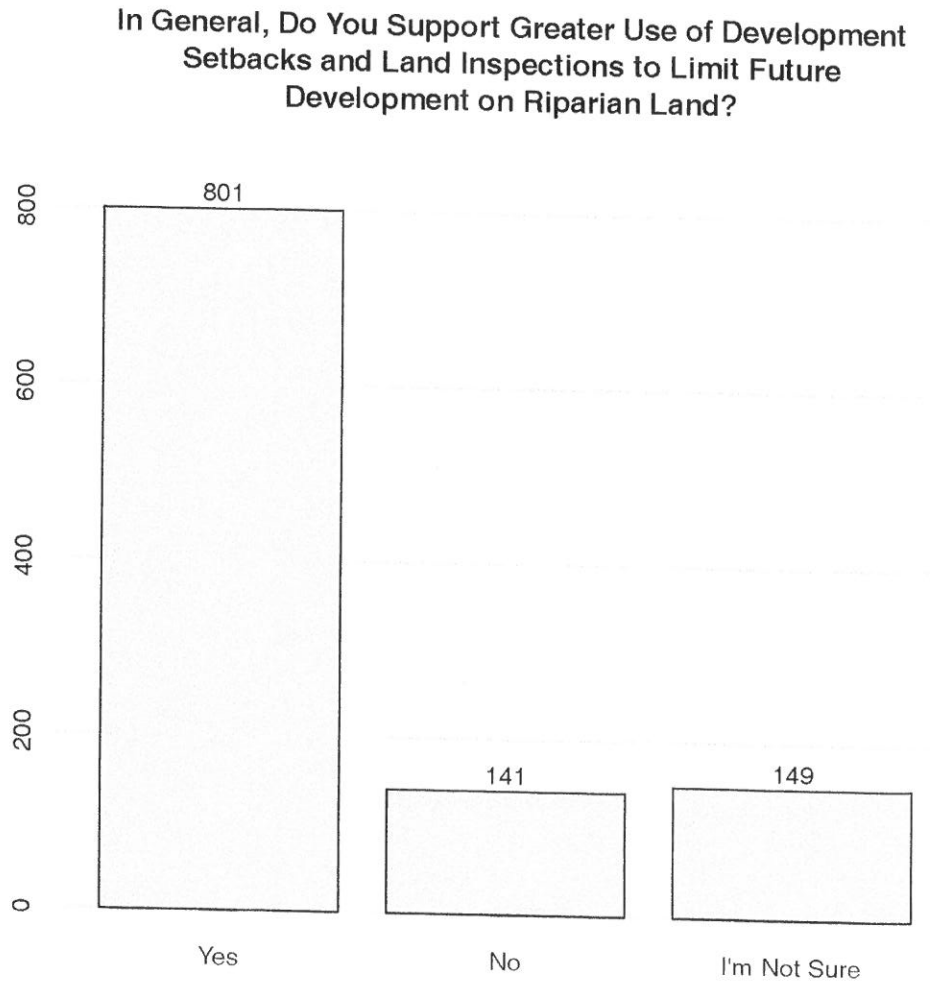
What Is Important?



What Is Important?



Support for Restrictions



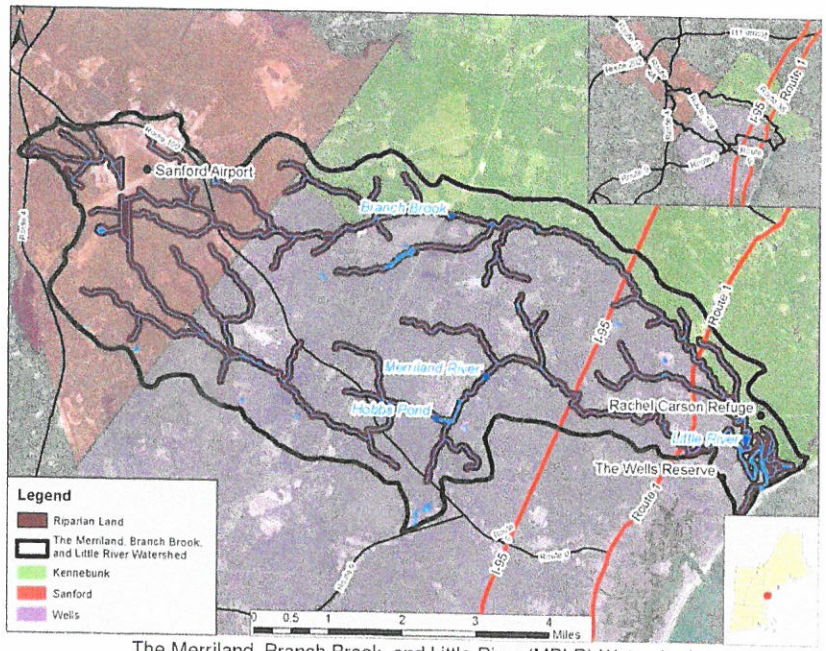
Policy Choice Models

- To evaluate residents' values and tradeoffs we use policy choice models.
  - Survey-based methods that estimate values from respondents' votes over different policy options.
- Respondents choose among policies with different effects and costs, as in a referendum.
- By evaluating votes over many different alternatives, we calculate tradeoffs that reveal residents' values.
- Results also reveal what types of riparian protection policies are most supported.

Describing the Situation

RIPARIAN LAND IN KENNEBUNK, SANFORD AND WELLS

The map below shows the area addressed by this survey. This includes all land that drains into the **Merriland, Branch Brook**, and **Little Rivers** within Kennebunk, Sanford and Wells.

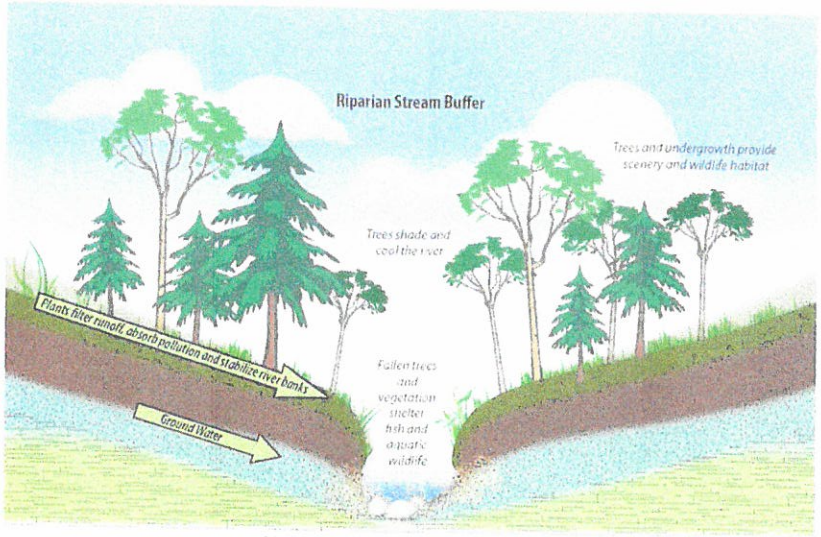


The Merriland, Branch Brook, and Little River (MBLR) Watershed

Across this area there are about **4,700 acres** of land within 300 feet of a river or stream. This area is shown as Riparian Land on the map. **4,300 acres** of this riparian land are covered by trees and natural vegetation. The remaining 400 acres have been developed or cleared.

WHAT RIPARIAN LAND DOES

The figure below illustrates some of the main natural services provided by riparian land, such as absorbing pollution, improving wildlife habitat and providing natural scenery.



Natural Services of Riparian Land

Development in Kennebunk, Sanford, and Wells is removing trees and vegetation on more riparian land each year. This is affecting scenery, river ecosystems, fish, and water quality. Because of this, some people have called for additional restrictions on clearing and development of this land. At the same time, other people do not want the development rights of private landowners to be further restricted.

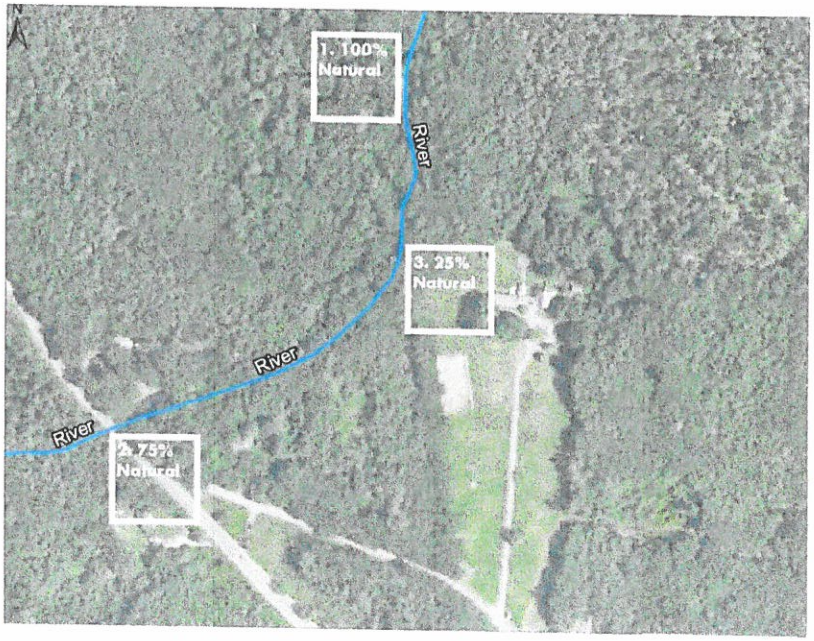
Describing the Situation

HOW DEVELOPMENT IS AFFECTING RIPARIAN LAND

Development and clearing is already restricted on riparian land in Maine, but some occurs anyway. Development and clearing often happens when people want to expand lawns, improve their view of the river, or add a dock.

Riparian land development is occurring at a rate of about **5%** every **10 years**. Already, nearly 10% of riparian land has been developed.

The image below shows the difference between natural and developed riparian land. In square 1, **100%** of riparian land is covered by natural vegetation. In squares 2 and 3, approximately **75%** and **25%** of the land, respectively, is covered by natural vegetation. The rest has been developed or cleared.



COMPARING PROTECTION OPTIONS

The upcoming questions will ask you to compare different ways of protecting riparian land in Kennebunk, Sanford and Wells, and vote for the ones you prefer. You may also vote to reject the proposed programs and retain the status quo. **Effects of each option will be described by the following effects, as estimated by scientists:**

Effect	What it Means
Natural Riparian Land	The amount of riparian land covered by natural vegetation. Currently about 91% of the land is in natural condition. With no action **85%** of riparian land in the area (4000 acres) will remain in natural condition in 5-10 years.
River Ecology	Average ecological condition of area rivers, measured by the diversity of small organisms (dragonflies, mayflies, etc.) that live there. A score of 100% is the best possible condition in the area. A score of 0% means nothing lives in the water. With no action, the ecological condition in area rivers will be **55%** in 5-10 years. The score today is about 60%.
Recreational Fish	The number of recreational fish in area rivers, measured by scientific sampling of brook trout. A score of 100% would mean that area rivers contain the maximum number of trout possible (30 trout per 1000 sq. feet). Today there are about 19 trout per 1000 sq. feet. With no action, scientists predict there will be an average of 17 trout per 1000 sq. feet (**55%** of the most possible) in 5-10 years.
Safe Swimming	The percentage of days in which government tests show that area beaches (Laudholm, Drakes Island, Crescent Surf, and Parson) are safe for swimming. 100% means that all tests show water safe for swimming. With no action, scientists predict **85%** of tests will show water safe for swimming in 5-10 years.
Development Setback	The minimum width of the riparian area where development is restricted. Currently development and clearing is restricted within a minimum distance of **100 feet from rivers** and **25 feet from streams**. This distance is larger in some areas and for some types of development. Existing (legal) development would be grandfathered if setbacks change.
Enforcement	Whether enforcement is increased to prevent illegal development or clearing on riparian land. This could include inspections on private land if violations are suspected. Currently, inspections can only occur when a violation has been reported or as part of permitting.
$ Cost to your Household per Year	How much the policy will cost your household in unavoidable annual taxes and fees. These are guaranteed to only be spent on the protection option that is indicated.

Example Choice Question

YOU WILL BE ASKED TO VOTE

After considering the current situation and possible protection effects and methods, which do you prefer? You will be given choices and asked to vote for the option you prefer by checking the appropriate box. **Questions will look similar to the sample below.**

SAMPLE QUESTION:

Method or Effect of Protection	In 5-10 years under the Current Situation	In 5-10 years under Option A	In 5-10 years under Option B
Riparian Land Condition	**85%** 4000 out of 4700 riparian acres covered by natural vegetation	**87%** 4100 out of 4700 riparian acres covered by natural vegetation	**95%** 4500 out of 4700 riparian acres covered by natural vegetation
River Ecology	**55%** of best possible (100%) ecological condition	**85%** of best possible (100%) ecological condition	**85%** of best possible (100%) ecological condition
Recreational Fish	**55%** 17 out of 30 possible fish per 1000 sq. feet	**75%** 23 out of 30 possible fish per 1000 sq. feet	**55%** 17 out of 30 possible fish per 1000 sq. feet
Safe Swimming	**85%** of beach tests meet safe swimming guidelines	**95%** of beach tests meet safe swimming guidelines	**85%** of beach tests meet safe swimming guidelines
Development Setback	**100 feet** required between development and rivers; 25 feet for streams	**150 feet** required between development and rivers; 75 feet for streams	**100 feet** required between development and rivers; 25 feet for streams
Enforcement	**No Change** in enforcement and inspections	**No Change** in enforcement and inspections	**Increased** enforcement and inspections
Cost to your Household per Year	**$0** Increase in Annual Taxes or Fees	**$45** Increase in Annual Taxes or Fees	**$5** Increase in Annual Taxes or Fees
HOW WOULD YOU VOTE? (CHOOSE ONLY ONE) I vote for	X NO NEW PROTECTION	X I vote for OPTION A	X I vote for OPTION B

If you prefer **No New Action** Check Here

If you prefer **Option A** Check Here

If you prefer **Option B** Check Here

QUESTION 5

OPTION A and **OPTION B** are possible protection options for the area surrounding the Merriland, Branch Brook, and Little River. The current situation is the status quo with **NO NEW PROTECTION**.

Given a choice between the three, how would you vote?

Method or Effect of Protection	In 5-10 years under the Current Situation	In 5-10 years under Option A	In 5-10 years under Option B
Riparian Land Condition	**85%** 4000 out of 4700 riparian acres covered by natural vegetation	**87%** 4100 out of 4700 riparian acres covered by natural vegetation	**90%** 4200 out of 4700 riparian acres covered by natural vegetation
River Ecology	**55%** of best possible (100%) ecological condition	**75%** of best possible (100%) ecological condition	**75%** of best possible (100%) ecological condition
Recreational Fish	**55%** 17 out of 30 possible fish per 1000 sq. feet	**65%** 20 out of 30 possible fish per 1000 sq. feet	**65%** 20 out of 30 possible fish per 1000 sq. feet
Safe Swimming	**85%** of beach tests meet safe swimming guidelines	**90%** of beach tests meet safe swimming guidelines	**90%** of beach tests meet safe swimming guidelines
Development Setback	**100 feet** required between development and rivers; 25 feet for streams	**100 feet** required between development and rivers; 25 feet for streams	**200 feet** required between development and rivers; 125 feet for streams
Enforcement	**No Change** in enforcement and inspections	**No Change** in enforcement and inspections	**No Change** in enforcement and inspections
Cost to your Household per Year	**$0** Increase in Annual Taxes or Fees	**$45** Increase in Annual Taxes or Fees	**$30** Increase in Annual Taxes or Fees
HOW WOULD YOU VOTE? (CHOOSE ONLY ONE) I vote for	☐ NO NEW PROTECTION	☐ I vote for OPTION A	☐ I vote for OPTION B

Economic Values (Willingness to Pay)

Attribute	Description	Value (per unit, per household, per year)
Land Condition	Δ in natural land cover (% of riparian land in natural condition)	$2.05
River Condition	Δ in aquatic ecological condition (% on 100 point condition index).	$1.28
Recreational Fish	Δ in recreational fish abundance (% of reference condition for watershed)	$1.15
Swim Safety	Δ in beach tests passing water quality safety guidelines (% of tests).	$2.02
Setbacks	Δ in required setback between development and rivers (feet).	$0.14
Enforcement	Increases in enforcement and inspections (0-1)	$17.31

Values Across Towns

Attribute	Value (Kennebunk)	Value (Sanford)	Value (Wells)
Land Condition	$1.53	$2.27	$2.70
River Condition	$1.77	$0.95	$1.17
Recreational Fish	$0.97	$0.97	$1.61
Swim Safety	$2.18	$1.09	$2.74
Setbacks	$0.16	$0.07	$0.24
Enforcement	$22.30	$8.46	$22.09

Effect of Watershed Residence

Attribute	Value (Watershed Residents)	Value (Watershed Non-Residents)
Land Condition	$2.55	$1.99
River Condition	$0.91	$1.41
Recreational Fish	$1.73	$1.03
Swim Safety	$1.74	$2.14
Setbacks	$0.23	$0.11
Enforcement	$15.86	$18.03

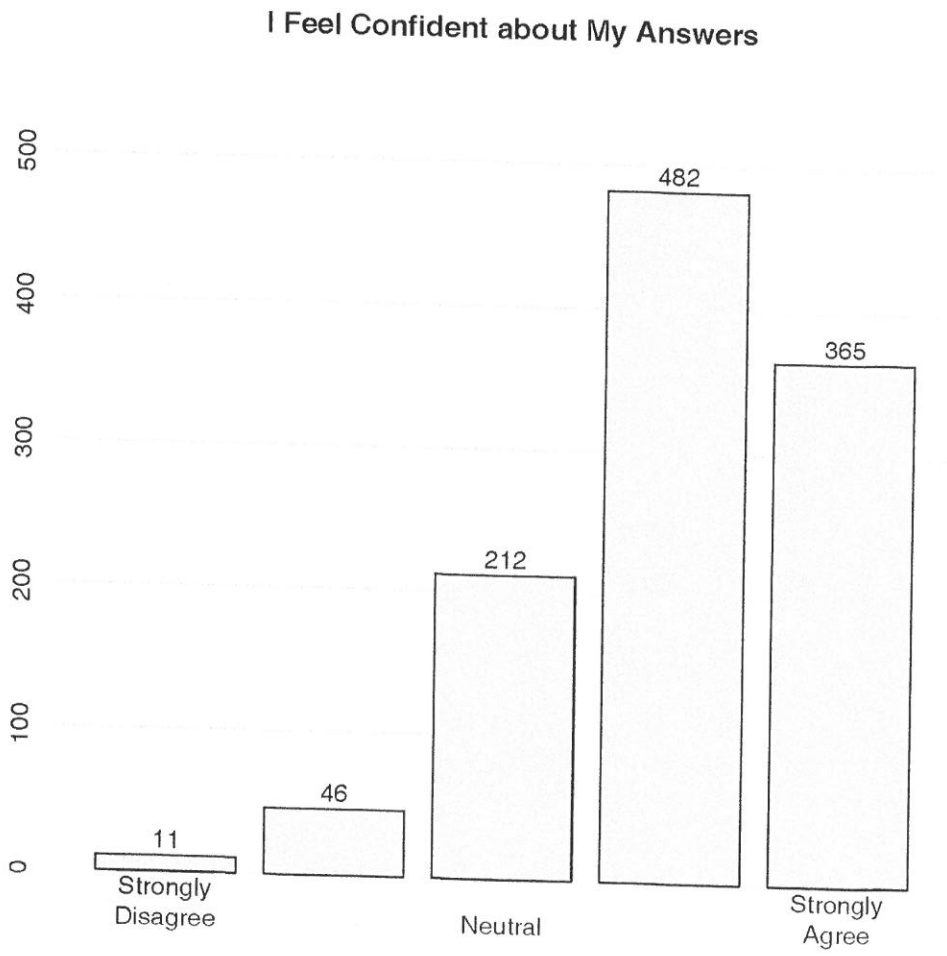
Illustrative Scenarios (An Example)

Attribute	No Change	Option A 	Option B
Land Condition	85%	90%	95%
River Condition	55%	60%	65%
Recreational Fish	55%	65%	65%
Swim Safety	85%	85%	88%
Setbacks	100	150	100
Enforcement	No Change	Increased	Increased
Cost per Year	$0	$25	$45
Predicted Vote	22%	48%	30%

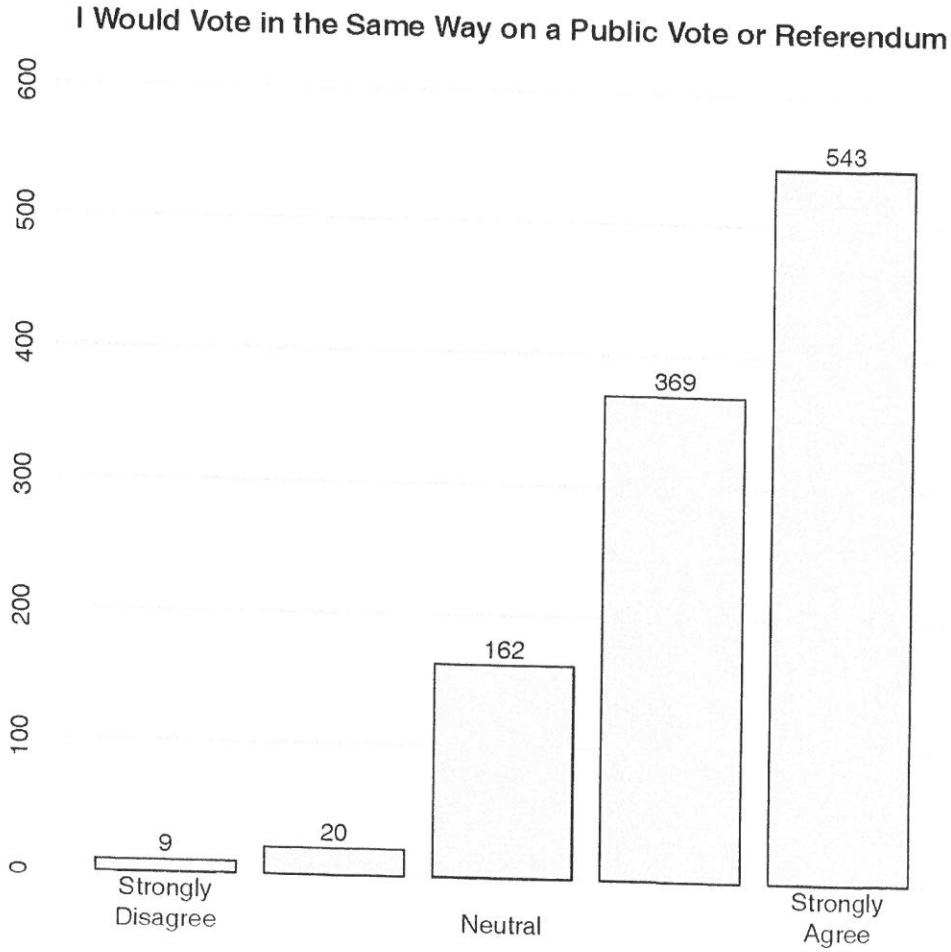
Linking Economic and Ecological Results

- Results of scenario (what if?) illustrations such as this can be combined with ecological results that project the changes that might occur as a result of a policy action.
- Resulting forecasts can be used to predict votes and values for specific policy options.
- Even though there are positive values for many types of outcomes (e.g., changes in *swimming safety*), it may be difficult for natural scientists to predict these outcomes based on available data.

Follow-Up Questions



Follow-Up Questions



Summary and Conclusions

- There is considerable support and value for restoration and protection of riparian buffers.
- Most residents support greater development restrictions and more enforcement to obtain improvements in land and water.
- Residents are willing to pay for programs to achieve these improvements, but outcomes matter.
- Specific results differ across towns, but the same general findings apply.
- Results can be used to predict the types of programs that residents would support most strongly.
- Findings challenge common preconceptions about residents values and policy support.

Sustaining Coastal Landscapes and Community Benefits: Developing an Interdisciplinary Model for Enhancing the Impact of NERRS Science

A Final Report Submitted to the

National Estuarine Research Reserve System Science Collaborative
07/30/2015

Project Start Date: October 1, 2010
Project Completion Date: July 31, 2015

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Headwaters of the Merriland River, Branch Brook and Little River Watershed
Photo Credit C. Feurt

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Sustaining Coastal Landscapes and Community Benefits: Developing an Interdisciplinary Model for Enhancing the Impact of NERRS Science

Abstract

Riparian buffers and wetlands are a nexus for complex land use challenges where tradeoffs for ecosystem services must be evaluated. Coveted by developers and home owners, people and property in these areas are vulnerable to flooding, shoreline erosion and sea level rise. Natural buffers have water quality value for their ability to effectively filter nonpoint source pollution and are the last line of defense for stormwater runoff to estuaries. Ecologists recognize and value riparian habitats and fringing marshes for their complex roles in nutrient cycling and biodiversity. Thus far, however, this recognition and associated ecological data in the NERR system have been inadequately linked to social science approaches required to characterize and quantify tradeoffs in ecosystem service benefits, and methods to translate these results for effective policy guidance. This project developed an innovative model for interdisciplinary research to build capacity within the NERR system. The aim being to enhance the impact of NERRS science by applying an ecosystem based management approach to address complex land use challenges and facilitate dialogue and policy deliberation about ecosystem service tradeoffs.

Integrating ecosystem service tradeoffs into policy design can overcome barriers to effective management. Evaluation of ecosystem service tradeoffs requires rigorous coordination of social and ecological science to quantify changes in ecosystem services and assess how these changes affect society's well-being (Weinstein et al. 2007; Weinstein 2005, 2007; US EPA 2009). Ecosystem structure and function can be modeled using ecological methods, while economic methods are required to define and value associated ecosystem services. Although the sensitivity of ecosystem services to changes in riparian land use is unquestioned, the quantification of associated spatially-explicit human benefits and tradeoffs, as well as the use of resulting information to guide policy, is often hindered by methodological gaps between economic approaches though which ecosystem services are defined and valued and ecological paradigms through which ecosystem processes are modeled (Boyd and Banzhaf 2006; Johnston et al. 2010b; Wainger et al. 2010). Within this context, the National Estuarine Research Reserve System (NERRS) is uniquely positioned to test, implement and evaluate the application of EBM frameworks that integrate quantitative information on ecosystem service values and tradeoffs at a scale appropriate to improve decision-making. Over three decades of ecological research and monitoring, strong linkages to community education, a diverse and evolving suite of land stewardship practices and stakeholder engagement and training have generated rich collaborative networks anchored by the NERRS. Within these networks, coordinated social and natural science research methodologies can be rapidly and effectively deployed and linked to existing robust ecological frameworks and data. Rich ecological data like the System Wide Monitoring Program (SWMP) and related reserve-specific ecological data have yet to be broadly applied by the scientific, management and education communities to promote effective protection and conservation of estuarine habitats and ecosystem services. This project addressed gaps in the application and integration of socio-economic approaches to improve the impact of NERRS science on decision-making for riparian and wetland area management, including policy processes and decisions influencing land use, habitat and nonpoint source pollution.

Coastal Management Context and Decision-Making Arena

Ongoing land use changes in watersheds in and around the Wells NERR[1] exemplify common stressors to sustainable coastal ecosystems (Wells NERR 2006; Weinstein et al. 2007, Weinstein 2008, 2009; Coles et al. 2004).[2] Processes provided by these threatened systems support myriad ecosystem services, defined as the outputs of natural systems that provide benefits to society (Millennium Assessment 2005; US EPA 2009; Wainger et al. 2010). Many of these depend critically on the integrity and properties of riparian areas (Johnston et al. 2002a,b, 2005; Opaluch et al. 1999),[3] including aesthetic and cultural services related to scenery, wildlife, or other valued characteristics (Johnston et al. 2002a, 2005; Lupi et al. 2002; Zedler and Kercher 2005).

As the variety and intensity of development-related impacts on coastal New England's riparian areas grow, there have been numerous recommendations to move toward a more comprehensive, spatial, ecosystem-based approach to management that (1) accounts for multiple stressors, (2) considers the health of functioning ecosystems, and (3) accounts for spatially-explicit tradeoffs related to different ecosystem uses, users, and values (Holland et al. 2010). Ecosystem-based management (EBM) offers an interdisciplinary organizing framework for riparian area management that can better account for tradeoffs in ecosystem services and human benefits. Despite its promise, however, EBM presents numerous challenges (Feurt 2007; DeLauer 2009; Holland et al. 2010). Among the most critical are those related to the quantification and communication of tradeoffs between the services provided by natural ecosystems and otherwise beneficial human activities that degrade ecosystem structure and function, and integration of this information within stakeholder processes to guide policy (Feurt 2007; DeLauer 2009; Wainger et al. 2010).

In the absence of informed management able to promote sustainable tradeoffs, human actions typically trend towards a degradation of ecosystems that ultimately diminishes human welfare (Ehrlich and Ehrlich 2008; Turner and Daily 2008). Entities engaged in activities that degrade riparian ecosystem functions are often distinct from those who bear associated costs of degraded ecosystems, and may be unaware of their impacts. This manifestation of the "externality" problem in economics may be due to a lack of information on the presence or value of affected services, heterogeneous preferences among groups, differences between the locations at which impacts occur, and the fact that many ecosystem service values are not realized through markets (Bockstael et al. 2000; Freeman 2003; Johnston et al. 2005b; Robbins 2007; Troy and Grove 2008).

As a result of these and other impediments, residents, managers and stakeholder groups often engage in riparian and other land use decisions that are not in the long-term best interest of

[1] These include the Webhannet and Merriland River, Ranch Brook and Little River (MBLR).

[2] In the Wells NERR, housing growth over the past 25 years has been more than double the growth in population, with a 10-year growth rate of nearly 50% (Smith 2006), mirroring similar changes in other Estuarine Reserves nationwide.

[3] These include services related to (1) groundwater filtering and biogeochemical processing; (2) habitat provision; (3) prevention of flooding and erosion; (4) retention of toxics and pathogens; (5) production and primary export in aquatic food chains; (6) carbon sequestration (Howe 1987; Engelhardt and Ritchie 2001; Mitsch and Gosselink 1993; Wharton et al. 1982; Novitzki et al. 2001; Weller 1994; Sather and Smith 1994; Zedler and Kercher 2005).

the public, because they do not have the information required to accurately consider tradeoffs between the benefits/costs of development and associated losses of ecosystem services (Holland et al. 2010; Wainger et al. 2010). This lack of information persists despite the rich ecological data available within NERRS and elsewhere, because these data have been thus far poorly linked to (1) social science models required to characterize and quantify tradeoffs in ecosystem service benefits (Wainger et al. 2010; Johnston et al. 2010), and (2) methods to translate results for effective policy guidance (DeLauer 2009; McGuigan et al 2009; DeLauer et al 2010). The outcomes of this project provide information on ecosystem service tradeoffs and values in a concrete, useful format, available for use by Wells NERR in coordination with the Wells NERR stakeholder network to promote sustainable management of riparian land use and habitat (Adamowicz et al. 1998; Bateman et al. 2002; Bennett and Blamey 2001; Louviere et al. 2000; Johnston et al. 1999; 2001; 2002a,b,c,d; 2003a,c,d; 2005a,b; 2010a). Coordinated ecological/economic models and associated communication activities are built on data that include:

(1) spatially-explicit land use data for the Merriland River, Branch Brook, and Little River Watershed (MBLR),

(2) data on biogeophysical processes, water quality and habitat from Wells NERR monitoring and research,

(3) survey data on area households' characteristics, attitudes, knowledge and resource uses/activities,

(4) results from survey-based choice experiments characterizing households' preferences and values for specific ecosystem services and related tradeoffs, revealed through choices over multiattribute policy alternatives and

(5) descriptions of the mental models used by stakeholders to understand and evaluate the values of riparian buffers and their choices to manage them.

Results can be used to Integrate Ecosystem Service Tradeoffs into Policy Design to Overcome Management Barriers

Evaluation of ecosystem service tradeoffs requires rigorous coordination of social and ecological science to quantify changes in ecosystem services and assess how these changes affect society's well-being (Weinstein et al. 2007; Weinstein 2005, 2007; US EPA 2009). Ecosystem structure and function can be modeled using ecological methods, while economic methods are required to define and value associated ecosystem services. Although the sensitivity of ecosystem services to changes in riparian land use is unquestioned, the quantification of associated spatially-explicit human benefits and tradeoffs, as well as the use of resulting information to guide policy, is often hindered by methodological gaps between economic approaches though which ecosystem services are defined and valued and ecological paradigms through which ecosystem processes are modeled (Boyd and Banzhaf 2006; Johnston et al. 2010b; Wainger et al. 2010). Despite widespread recognition of ecosystem services, only rarely does management integrate quantitative, systematic information on these services and their economic value. Strategies and frameworks for improving linkages among disciplines and among researchers, managers and policy makers exist but are infrequently applied at the local scale where land use policy is crafted and decisions made (ORRAP Task Force 2007; Roux et al. 2006; Daniels & Walker 2001; Karl et al. 2007; NRC 2009; Brody 2003; Cash et al. 2002). This project provides a model for

overcoming these interdisciplinary barriers using an integrated approach applied at a local scale where land use decision making is most relevant.

Within this context, the National Estuarine Research Reserve System (NERRS) is uniquely positioned to test, implement and evaluate the application of EBM frameworks that integrate quantitative information on ecosystem service values and tradeoffs at a scale appropriate to improve decision-making. Over three decades of ecological research and monitoring, strong linkages to community education, a diverse and evolving suite of land stewardship practices and stakeholder engagement and training have generated rich collaborative networks anchored by the NERRS. Within these networks, coordinated social and natural science research methodologies can be rapidly and effectively deployed and linked to existing robust ecological frameworks and data. This includes rich ecological data from the System Wide Monitoring Program (SWMP) and related reserve-specific ecological data collection efforts that have yet to be broadly applied by the scientific, management and education communities to promote effective protection and conservation of estuarine habitats and ecosystem services. This project drew from these strengths to begin to address gaps in the application and integration of socio-economic approaches to improve the impact of NERRS science on decision-making for riparian and wetland area management, including policy processes, communication strategies and decisions influencing land use, habitat and nonpoint source pollution.

Results provide concrete, practical information on ecosystem service values and tradeoffs associated with management of riparian land use and habitat. This can give policymakers and stakeholders understanding that can be applied to develop policies that are supported and accepted. Quantification of ecosystem service values associated with specific policy changes can be used by NERRS and its stakeholders with information crucial for appropriate policy design and for identifying often overlooked social and economic benefits of policies to enhance ecosystem services. Project results, for example, can be used to forecast the types of management that well-informed local residents are most likely to support, based on tradeoffs involving regulations, human uses, monetary costs, and effects on riparian ecosystem services. Results may also be used to estimate public support for different management alternatives based on outcomes, households' willingness to pay for particular ecosystem services, and the information needed by residents to consider tradeoffs. Results also characterize heterogeneity in benefits and costs of riparian area management, both spatially and across groups (Campbell et al. 2009; Johnston et al. 2002d, 2005b). This will allow those engaged in policy deliberations to consider not only total ecosystem service benefits and tradeoffs, but also who is affected and where.

The project results emphasize ecosystem service benefits to residents that (1) are likely to be most significant, based on qualitative research and information from prior research, and; (2) show a high degree of sensitivity to policy decisions, based on available ecological information. Preliminary interactions with Wells NERR stakeholders and area residents suggested these services as most important: (1) aesthetics and recreational use; (2) habitat and wildlife; (3) groundwater filtering, biogeochemical processing and water quality; (4) land preservation and development; and (5) flooding prevention. Research results provided validation and quantification of these preliminary ideas.

Results Connect to Priorities of the Wells NERR Stakeholder Network

The Wells NERR has a unique role and responsibility in ensuring that research, data, and science translation and synthesis to non-scientists is communicated in such a way that stakeholders and decision-makers are motivated and able to make informed decisions regarding riparian management. The NERR is strongly linked to a rich Gulf of Maine-wide stakeholder network of municipal, state and federal agencies, NGOs, academic institutions, policy makers and community groups (hereafter referred to as Wells NERR stakeholders).[4] The need for economic information on the consequences of riparian land use decisions, restoration priorities and conservation planning has been identified as a top priority among Wells NERR stakeholders.[5] Municipal decisions about land use, land trust decisions about conservation priorities, and state/federal prioritization of restoration funding require economic information to inform tradeoffs and clarify consequences, particularly related to ecosystem service tradeoffs and implications for sustainable human benefits. Moreover, the state of Maine, Gulf of Maine Region, and NERRS have all identified the need for increased use of social science to achieve EBM objectives, particularly when coordinated with natural science data and methods (Brookings 2006; GOMC 2006; NERRS 2009).

This project tested interdisciplinary methods (described in the following sections) of using NERRS ecological data and science expertise to evaluate social and economic tradeoffs associated with coastal resource management, specifically emphasizing ecosystem service tradeoffs and values associated with the management of riparian land use and habitat. These methods, specifically the design of the choice experiment, the communication audit and mental models research integrated and tested social science-based tools within stakeholder and policymaker networks. The decision-making context focused on coastal management problems related to land use change, habitat change and restoration and nonpoint source pollution. The challenges associated with integration of biophysical and social science research methods were of interest to the NERRS. Project outcomes dealing with these challenges were shared through meetings, workshops and trainings targeted to NERRS/NOAA audiences.

Results were a direct result of the composition and structure of the research team and the stakeholder network engaged in the project

Three interconnected spheres of stakeholders were engaged and contributed to the outcomes produced by this project. The sphere of the Wells NERR Science Collaborative

[4] These include land trusts and conservation organizations from southern Maine; regional and municipal stakeholders from surrounding communities; state, federal and regional land use outreach and planning organizations; and other organizations including the Maine Geological Survey, Maine Association of Conservation Commissions, Maine Coastal Program, Maine NEMO, Maine Sea Grant, Maine Drinking Water Program, Maine Department of Inland Fisheries and Wildlife, Southern Maine Regional Planning Commission, Mt A to the Sea Conservation Initiative Partners, Rachel Carson National Wildlife Refuge, University of New England Center for Sustainable Communities, Laudholm Trust, Maine DEP. Piscataqua Region Estuaries Partnership.

[5] Looking Back, Moving Forward Workshop, 2008: 60 land trusts and conservation organizations from southern Maine; The Sanford Conservation Plan Process, 2008-2009: 20 regional and municipal stakeholders; The Summit at the Summit Working Group, 2009: 16 state, federal and regional land use outreach and planning organizations. Source Water Collaborative, 2009-2010: 20 ME & NH municipal, state and federal water managers. NERRS/NERRA Annual Conferences, 2008 7 2009: social science working group.

Team included all sectors of the Reserve – research, SWMP, GIS, education, stewardship, Coastal Training and the Wells NERR nonprofit partner, Laudholm Trust.

The second sphere was the Interdisciplinary Research Team representing researchers from the Wells NERR, Clark University and NOAA's Office for Coastal Management. This team included quantitative and qualitative researchers drawing from their expertise within the disciplines of ecology, geology, economics, communication and policy.

The third sphere of the Wells NERR Stakeholder Network included federal, state and municipal government officials, land trusts, NGOs, citizen groups and academic researchers from outside the project team. This group also included the participants in focus groups, stakeholder interviews and the over 1,000 residents of the watershed who completed the choice experiment and subsequently became members of Laudholm Trust for one year.[6]

Participants in each sphere of the project are identified below:

Wells NERR Science Collaborative Team
Dr. Christine Feurt (Science Integrator/Collaborative Lead), Dr. Kristin Wilson, Dr. Michele Dionne, Tin Smith, Suzanne Kahn, Jeremy Miller, Jake Aman, Sue Bickford, Annie Cox, Mike Mahoney, Chris Peter

Titles: Coastal Training Program (CTP) Coordinator, Research Director (2013-2015), Research Director (2009 –2012) Stewardship Coordinator, Education Director, Research Associate, Research Associate, GIS Specialist, CTP Associate, CTP Associate, Research Consultant (UNH)

Interdisciplinary Research Team
This interdisciplinary team designed and conducted economics, ecological, policy and communication research in collaboration with stakeholders.

Co-Principal Investigator Dr. Christine Feurt, CTP Coordinator, Wells NERR & Director Center for Sustainable Communities University of New England
Co-Principal Investigator: Dr. Robert Johnston, Director, George Perkins Marsh Institute and Professor, Department of Economics Clark University
Dr. Verna DeLauer, Research Scientist, George Perkins Marsh Institute, Clark University & Franklin Pierce University
Dr. Michelle Dionne, Research Director, Wells NERR
Mr. Ben Holland, PhD student, George Perkins Marsh Institute, Clark University
Mr. Peter Wiley, Economist, NOAA Office for Coastal Management
Dr. Kristin Wilson, Research Director, Wells NERR

[6] As an incentive to complete the 20 page *Choices for Our Land and Water Survey* participants were offered a one year free membership ($20 value) in Laudholm Trust, the non-profit partner of the Wells NERR. This group received all member benefits and invitations to special events at the Reserve during the year following the survey.

Wells NERR Stakeholder Network

Many of these organizations participated in the development of the initial proposal and stayed engaged throughout the project. The original group of 18 organizations expanded to 24 organizations during the course of the project. Representative members of the network interacted with the Wells NERR or Interdisciplinary Research Team to provide feedback on research design, progress, interpretation of results and incorporation of results in conservation, management and planning.

1. Maine Association of Conservation Commissions
2. Maine Geological Survey
3. Maine Coastal Program
4. Maine Nonpoint Education for Municipal Officials (NEMO)
5. Maine Sea Grant
6. Maine Drinking Water Program
7. Maine Department of Inland Fisheries and Wildlife, Beginning with Habitat
8. Maine Department of Environmental Protection
9. Maine Department of Marine Resources
10. Southern Maine Regional Planning Commission
11. Mt A to the Sea Conservation Initiative
12. Rachel Carson National Wildlife Refuge
13. University of New England
14. Laudholm Trust
15. Piscataqua Region Estuaries Partnership
16. Town of Wells, Planning Department
17. Town of Sanford, Planning Department
18. Town of Kennebunk, Conservation and Open Space Planning Committee & Planning Department
19. Kennebunk, Kennebunkport and Wells Water District
20. U Maine Sustainability Solutions Initiative
21. New England Sustainability Consortium (NEST) UNE, U Maine and UNH, EPSCoR
22. Maine Aquatic Resources Management Strategy (ARMS) Group
23. Mousam Kennebunk Rivers Alliance
24. U Maine & UNE EPSCoR, Sustainable Ecological Aquaculture Network (SEANET)

Sustaining Coastal Landscapes and Community Benefits
Interdisciplinary Research Summary

Interdisciplinary research and stakeholder engagement during the development of the research proposal and throughout the five years of the project were guided by the four objectives below. The summary of research findings in this section includes an overview of methods, results and outcomes for each aspect of the research. Ecological, economic, communication and policy aspects are summarized in this section.

Overall Project Objectives (excerpt from project proposal May 2009)

I. Develop a user-inspired, transdisciplinary model to guide sustainable riparian management in the Wells NERR and surrounding watersheds, grounded in geo-spatially explicit quantification of ecological/economic tradeoffs in ecosystem services and values.
II. Coordinate social science and cognitive theory, principles of effective communication, local motivations for stewardship/conservation, and approaches for social learning to:
    a. Identify specific stakeholders most influential in affecting decisions, management and policy change affecting Wells NERR riparian areas addressed in Objective I.
    b. Evaluate Wells NERR communication approaches to these identified stakeholders/stakeholder groups to assess the degree to which messages are in alignment with values and priorities identified in Objective I;
    c. Develop high impact, science-based communication strategies and decision support tools—based on the ecological/economic results of Objective I—to inform integrated management of riparian area land use, habitat and nonpoint source pollution in watersheds draining into the Wells NERR region.
III. Engage Wells NERR stakeholders, the Science Collaborative Team and the Project Research Team within a collaborative learning process to build long-term institutional and regional capacity for improved riparian management through a community of practice. Collaborative learning will be grounded in coordinated science, communication and decision support outputs of Objectives I and II.
IV. Based on results of prior objectives, develop transferable templates for application of developed methods to guide policy development and stakeholder interactions in other Estuarine Reserves. Integrate with NERRS/NOAA to assist in broader adoption.

Ecological Assessment of Riparian Buffers in the Little River Watershed

Prepared by Kristin Wilson, Ph.D.
Research Director, Wells National Estuarine Research Reserve
August 2014

Introduction

The goal of the ecological component of this study was to assess the health, or biotic integrity, of riparian areas of the Merriland River, Branch Brook, and Little River (MBLR) watershed. Biotic integrity can be defined as "the ability to support and maintain a balanced, integrated, and adaptive community of organisms having a species composition, diversity, and functional organization comparable to those of natural habitats within a region" (Karr and Dudley, 1981). Biological integrity is critical because it in turn determines the kinds and quality of ecosystem services that riparian waters and upland buffers provide for people living in the surrounding watershed (Brauman et al., 2007). Some of those ecosystem services include: clean drinking water, fish to catch for food or sport, safe and clean spots to swim, recreate or forage for wild edibles, erosion control, flood protection, and groundwater recharge, among others. Human activities, like changing land use, can alter the biological integrity of a system, shifting it along a gradient toward a threshold, over which the system slips from healthy to unhealthy (Fig 1; Karr, 1999). Vegetated, riparian buffers enhance stream biodiversity and water quality by regulating inputs of light, organic matter, sediment and nutrients (Sweeney et al., 2004). The delivery of these ecosystem services is spatially explicit, however (Sweeney et al., 2004) and may affect their associated societal value (Brauman et al., 2007). To assess biological integrity, the Wells Reserve measured a suite of biophysical and ecological attributes of riparian habitats of the MBLR watershed over the 3-year period from 2011-2013. This approach recognizes that multi-metric approaches are needed to fully understand the biological integrity of a system and contributions to ecosystem services provisioning (Karr, 1999; Luck et al., 2009).

Methods

MBLR Watershed

The MBLR watershed drains 30.4 mi^2 across the southern Maine towns of Sanford, Kennebunk, and Wells (Dionne et al., 2006). The headwaters of Branch Brook and the Merriland River begin in sandy glacial outwash near the Sanford Municipal Airport, and flow southeast, eventually coming together to form the Little River, which passes through the United States Fish & Wildlife Services Rachel Carson National Wildlife Refuge, the Wells National Estuarine Research Reserve, and a large back-barrier salt marsh before emptying into the Gulf of Maine at

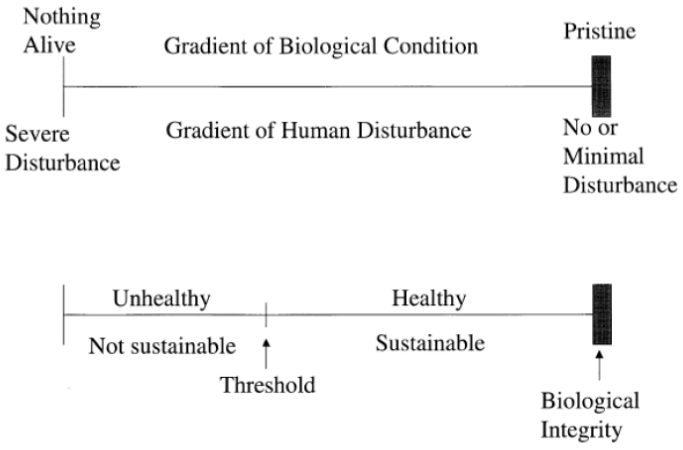


Fig. 1 At one end of a continuum of human influence on biological condition, severe disturbance eliminates all life; at the other end of the gradient are pristine, or minimally disturbed, living systems (top). A parallel gradient (bottom), from integrity towards nothing alive, passes through healthy, or sustainable, condition or activities. Below a threshold defined by specific criteria (see text), the conditions or activities are no longer healthy or sustainable in terms of supporting living systems.

Figure 1. From Karr (1999).

two popular swimming beaches, Laudholm Beach and Crescent Surf Beach (Fig 2). Branch Brook is underlain by 15-30 m thick sand and gravel deposits which overtop the Presumpscot Formation, a glacial marine clay deposited during the last deglaciation, around 15,000 BP (Kelley et al., 2010). Baseflow is primarily groundwater driven (D'Amore, 1983). The Merriland River is underlain by glacial till, stratified sand and gravel, and the Presumpscot Formation (Kuo, 1999). The MBLR watershed is more than 84% forested with less than 6% characterized as developed land (remaining 10% is 2% water, and 8% hay, pasture, and mowed land; Fig 2; Holden, 1997). Large portions of the watershed are protected as undeveloped forestland, either through the State or conservation easements on private lands. Significant portions of the Branch Brook watershed are protected because it serves as an important drinking water source for the Kennebunk, Kennebunkport, and Wells Water District which serves those three towns as well as Arundel, Biddeford, and York (Dionne et al., 2006).

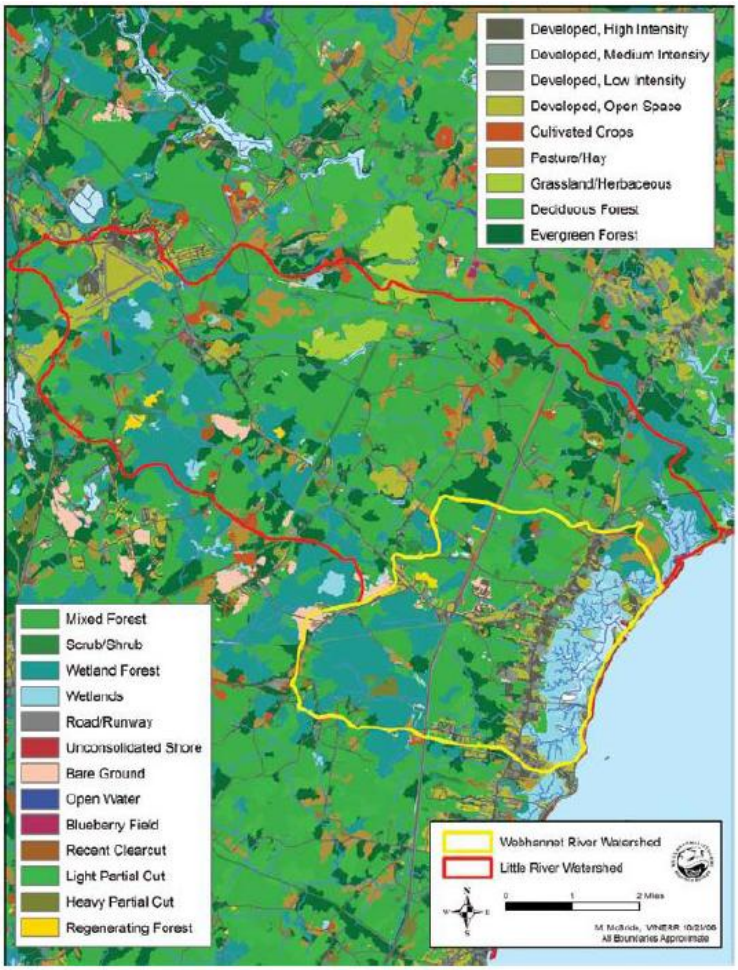


Fig 2. Land cover map of watersheds entering the Wells National Estuarine Research Reserve, with the Merriland River-Branch-Brook-Little River watershed outlined in red. Map is based on Landsat imagery from 1999-2001 (data from the Maine Office of GIS and the Maine Land Cover Database). Figure 5-1 in Dionne et al. 2006.

Site Selection and Access

We used Google Earth then ground-truthed sites to select 10 stream reaches, 5 each, along the Merriland River and Branch Brook (Fig 3). Reaches met the following criteria: (1) both main stem and tributaries were represented, (2) paired sites could be identified within the same reach that had both forested and open riparian buffers and were separated by at least 76 m, and (3) land-owner permission was granted for site access. In total, 17 different private landowners in the towns of Sanford, Kennebunk and Wells granted access to their lands over the three-year study. Forested buffers were defined as those that were nearly 100% vegetated by forest or other natural vegetation within a 100 m

circular buffer of the study site, while open sites were those that had some development within the 100 m buffer and were cleared, at least in part, up to the stream edge (Fig 4a).

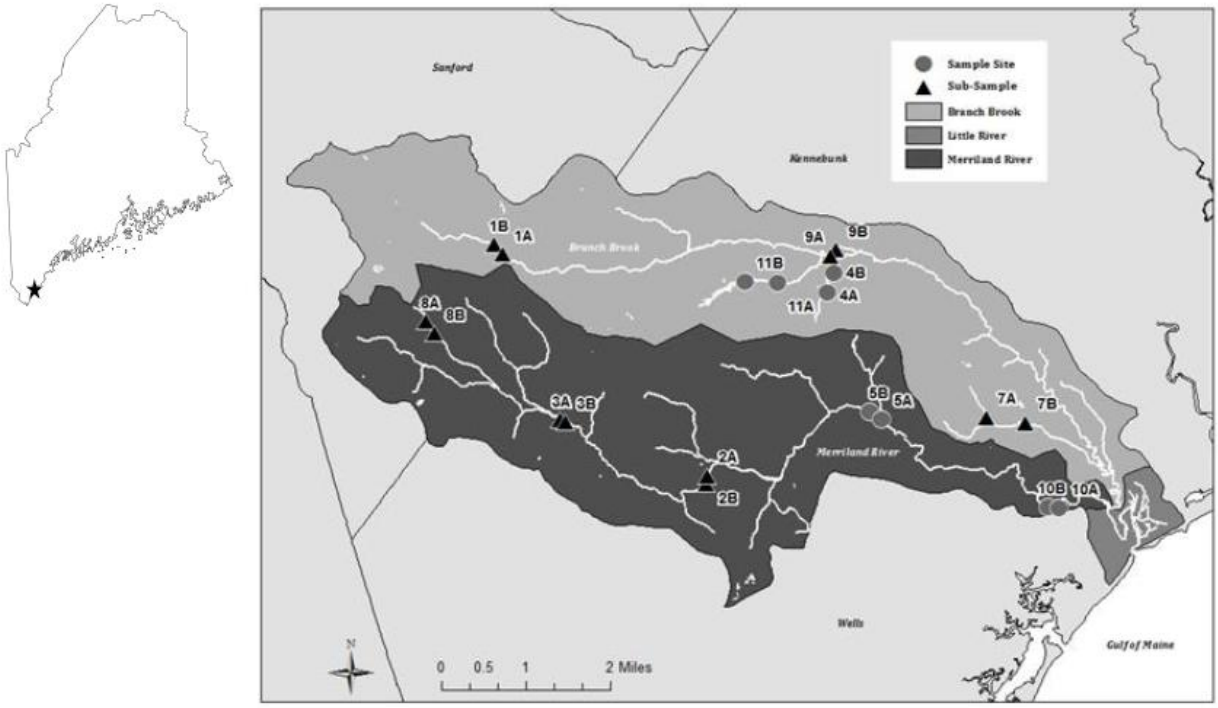


Figure 3. Map of the study area showing the Merriland River, Branch Brook, and Little River watersheds and study locations. A =forested sites and B = open sites.

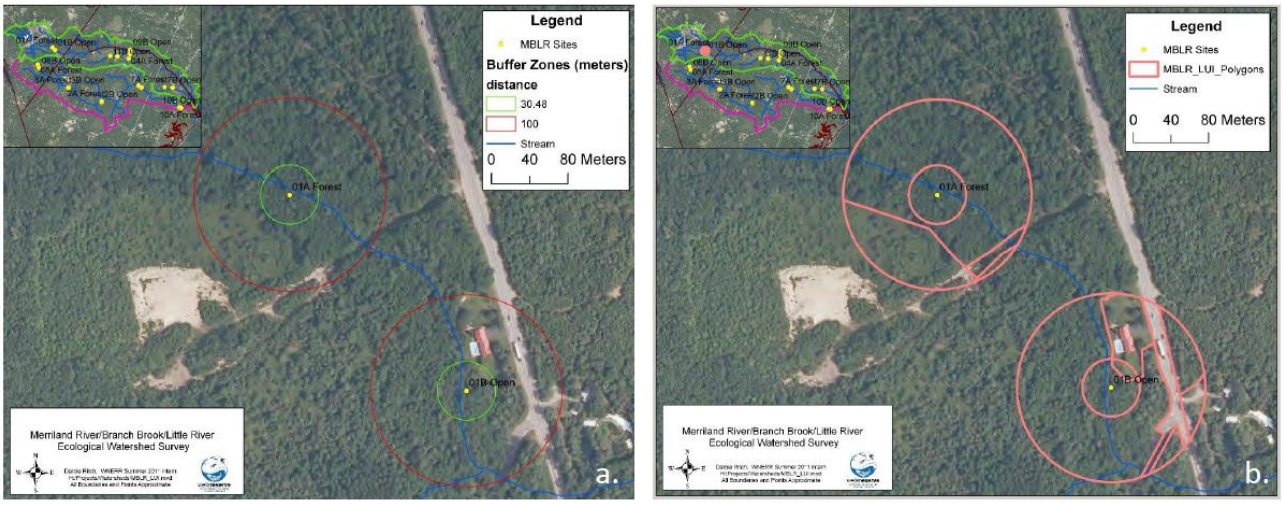


Figure 4. (a) Comparison of forested and open buffers with the 100 m buffer shown in red. (b) Example of how the land-use index was calculated using screen-digitized polygons and averaged scores of land-use classes within the 35 m and 100 m buffers.

Biophysical and Ecological Methods

To assess physical stream conditions at each site, in 2011, 2012, and 2013 we recorded water quality parameters (water temperature, pH, specific conductance, dissolved oxygen, and turbidity) at 15-minute intervals using YSI 6600 data sondes adapted for horizontal deployment for shallow water depths. We also quantified percent aquatic vegetative cover, stream bed percent cover, substrates, stream width and depth, stream gradient, velocity, discharge, in-stream large woody debris, bank condition, spawning gravel areas and the locations of pools/riffles/runs and pool quality using United States Department of Agriculture, Forest Service stream sampling protocols. To quantify buffer quality, we recorded stream bank percent vegetated cover, air temperature, canopy cover, and soil nutrients (NO^{3-} and NH^{4+} using buried, streamside resin bags). To supplement field observations, we calculated a land use index (LUI) for each site using aerial photographs to screen digitize polygons which were assigned land cover classes that were averaged for 35 m and 100 m buffers to further characterize riparian habitat (after Carlisle, 2002; Fig 4b, Appendix A). To characterize biotic communities in stream reaches, we measured epibenthic algae using unglazed ceramic tiles (after Barbour et al., 1999), identified macroinvertebrates to family using rock collection bags (after Davies and Tsomides, 2002; Fig 5a, b), and electroshocked fish to determine composition, abundance, and biomass (Fig 5c). We used the RBP II Index of Biotic Integrity (IBI) to analyze macroinvertebrate data (an analysis commonly used for New England streams; Shelton, 2004) and two different indices to assess fish community structure: the modified index of well-being (Ohio Environmental Protection Agency, 1987) and the cold water index of biotic integrity (Langdon, 2001). Biotic indices, univariate and multivariate tests including PRIMER, were used to compare biophysical conditions and ecological communities between buffer types and streams across years.



Figure 5. (a) Field deployment of a rock bag used to sample macroinvertebrates. (b) Macroinvertebrates found included dragonflies, water beetles, and dobsonflies. (c) Interns and staff of the Wells National Estuarine Research Reserve, electroshocking for fish.

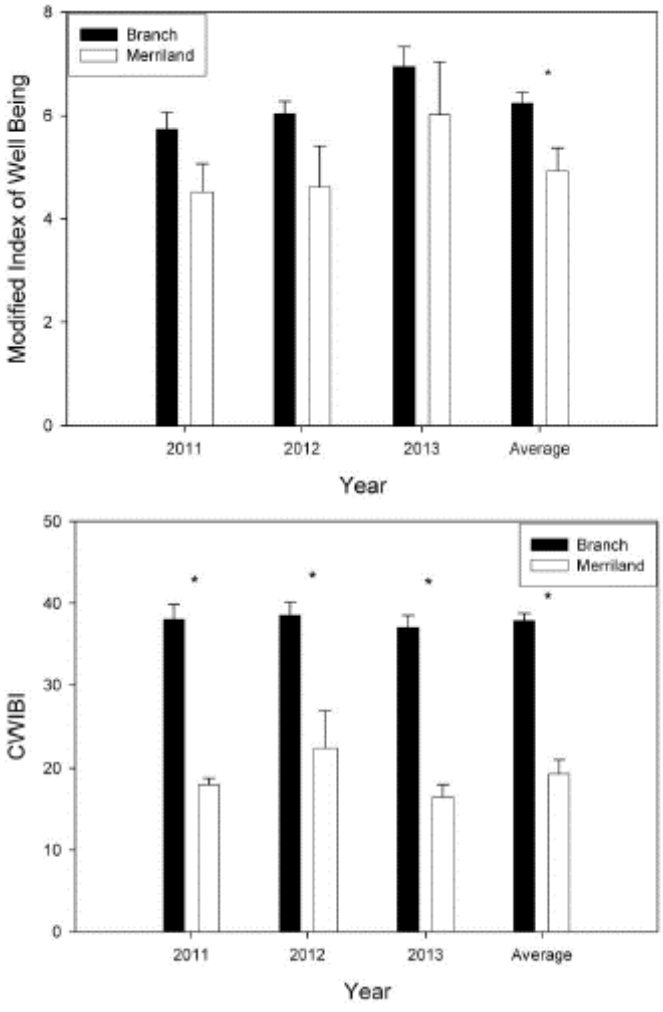
Preliminary results from the ecological data in year one were used to inform focus group meetings and survey development to link measureable (and realistic) ecological outcomes

to ecosystem services that were valued by area residents. Specifically, the ecological parameters included in the economic model included: (1) condition of the riparian landscape measured using the land use index, (2) impacts of nutrient loading (using nutrient data) on the ecological condition of proximate water bodies, and (3) fish assemblage and abundance effects.

Results & Discussion

Comparison of River Systems

Both Branch Brook and the Merriland River provide high quality stream habitat. Waters provide cool, average summertime temperatures (17-19˚C), are high in dissolved oxygen (84-97% saturation; 8-9 mg/L) and have no indication of chronic pollution indicators (normal ranges for pH, turbidity, and specific conductance). Analyses of the macroinvertebrate IBI scores further suggest that water quality in both systems is good. On average and compared to the Merriland River, Branch Brook has faster flowing water (0.14 ± 0.03 m/s vs. 0.05 ± 0.01 m/s; *F-ratio 5.30, p = 0.028*), more large woody debris (9.47 ± 1.38 pieces/reach vs. 2.71 ± 0.55 pieces/reach; *F-ratio 19.18, p = <0.001*), more sandy substrates (60 ± 4% vs. 26 ± 6%; *F-ratio 16.85, p = < 0.001*) and lower macroinvertebrate IBI scores (25.17 ± 1.97 vs 28.67 ± 1.19; *F-ratio 4.58, p = 0.041*; Appendix B).



Both systems support diverse fish communities. Overall, 13 different species were observed in both systems, including one invasive species (chain pickerel), two state listed species of concern (Eastern brook trout and the American eel), and three diadromous species (Eastern brook trout, American eel, and sea lamprey). Averaged across years, the Merriland River had: (1) significantly fewer fish, (2) significantly fewer Eastern brook trout, (3) significantly lower modified index of well-being scores, and (4) significantly lower cold water index of biological integrity (CWIBI) scores, than Branch Brook (Fig 6; Appendix C). CWIBI scores indicate that Branch Brook provides "very good" stream habitat for cold water species, while score ranges for the Merriland River are in the "poor" to "fair" range (Langdon, 2001).

Figure 6. Scores for the Modified Index of Well Being and the Cold Water Index of Biotic Integrity that compares fish communities of Branch Brook (black) and the Merriland River (white). Branch Brook scores consistently higher than the Merriland (asterisk denotes significance at the p =0.05 level).

The driver for the difference in scores between systems is the number of brook trout (Fig 7). Branch Brook supports many more brook trout of all sizes than the Merriland River, including both young of year (YOY) and adult fish (Fig 7). Further analyses of average dissimilarity measures between systems indicate that in addition to Eastern brook trout, the American eel contributes the second most to differences in fish communities between rivers (a larger component of the Merriland River; Appendix D).

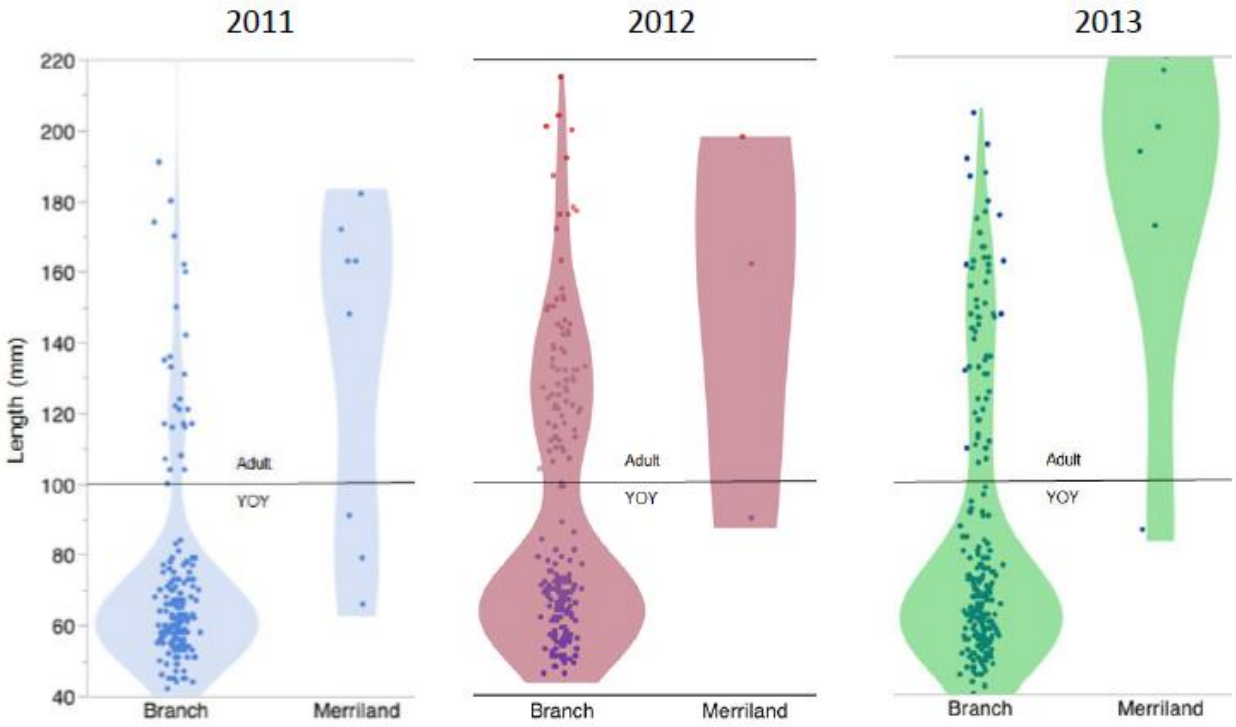


Figure 7. In all years, Branch Brook supports many more Eastern brook trout of all size ranges than the Merriland River, where each dot represents a fish and the horizontal line indicates the division between young of year (YOY) fish and adults based on size.

Comparison of Buffer Types: Forested versus Open

Analyses by buffer types indicate there were no measureable differences in any water quality, stream habitat, or biotic metric measured (Appendix E). These data suggest that differences in buffer quality are not as important as between stream differences in this southern Maine watershed. This result was surprising, but it is important to remember that riparian buffer condition exists along a continuum, that >84% of the MBLR watershed is forested (Holden, 1997), and that average LUI scores were greater than 59 at all sites (most were greater than 85; Table 1). In a 2007 review, Brauman et al. found that in general, land cover effects on hydrologic process are not observed until at least 20% of the watershed is converted from natural vegetation to other land cover types. This likely explains why no differences were found between forested and open sites in this study and suggests this watershed is at a critical point in space and time. In fact, additional analyses reveal that system wide, fish biomass is significantly and positively correlated with the amount of canopy cover (Fig 8a) and significantly and negatively correlated with the amount of fine sediments present in these rivers (Fig 8b).

These results suggest that if fish are valued by residents of the MBLR watershed, then there are conservation actions like planting trees in riparian areas to increase canopy cover or sediment erosion reduction measures like silt fencing that can be put in place to increase fish biomass.

Table 1. Average land-use index scores by site reveal high values at most sites, where 100 indicates complete natural vegetation.

Site	Average LUI Score
1A	93.86
1B	87.59
2A	94.78
2B	90.19
3A	92.42
3B	93.09
4A	92.81
4B	86.16
5A	94.83
5B	79.57
7A	93.65
7B	89.33
8A	91.96
8B	94.17
9A	91.54
9B	78.71
10A	95.00
10B	59.19
11A	89.00
11B	87.18

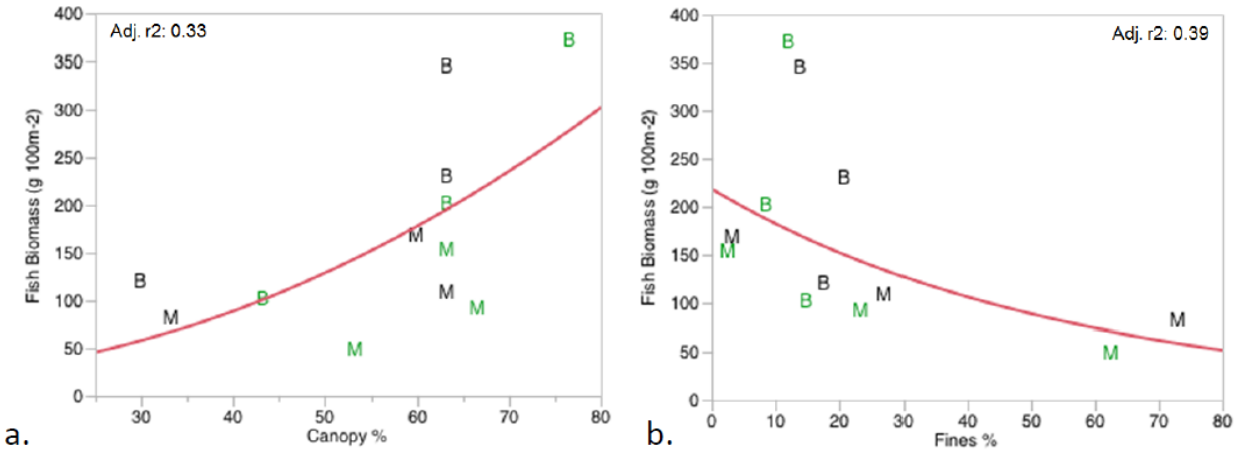


Figure 8. In both the Merriland River (M) and Branch Brook (B) for both open (black font) and forested (green font) sites, fish biomass is significantly positively correlated with percent canopy cover (a) and significantly and negatively correlated with the percentage of fine sediments in the system (b).

Lessons Learned

From an ecological perspective, this study provides new ecological information and important context for watersheds feeding into the Wells NERR. It is an exciting example of how authentic, site-specific ecological data can contribute to economic analyses that inform interpretations of residents' valuation of riparian habitats and their mental models of this ecotone.

This project would have benefitted from more in-person, whole-team data synthesis sessions, particularly toward the "end" of the project. It feels as though we just started seeing how these pieces fit together as the project came to a close. It seems like there are many logical extensions of this work. I am particularly excited to think about how both the mental modelling piece and the economic analyses may help re-frame the science stories I tell from this project. I hope to keep working with and learning from these new colleagues moving forward.

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Note

This synthesis prepared in 2014, was compiled by Kristin Wilson and incorporates earlier syntheses, summaries, progress reports, and notes from present and past Wells NERR staff and contractors who have worked on this project, principally including: Michele Dionne, Chris Peter, Hannah Wilhelm, Jake Aman, Tin Smith, Jeremy Miller, and Darcie Ritch.

Appendix A. Land use bins and weights used to calculate the land-use index scores for each site.

CATEGORY	DEFINITION	BIN	BIN_weight
Cropland	Intensive agriculture	Agriculture	4
Pasture	Extensive agriculture	Agriculture	3
Forest	Forest	Natural	1
Wetland	Nonforested freshwater wetland	Natural	1
Mining	Sand, gravel & rock	Disturbed Open	3
Open Land	Abandoned agriculture, power lines, areas of no vegetation	Maintained Open	2
Participation Recreation	Golf, tennis, Playgrounds, skiing	Maintained Open	2
Spectator Recreation	Stadiums, racetracks, Fairgrounds, drive-ins	Urban	4
Water Based Recreation	Beaches, marinas Swimming pools	Maintained Open	2
Residential	Multi-family	Residential High	5
Residential	Smaller than ¼ acre lots	Residential High	4
Residential	¼ – ½ acre lots	Residential High	4
Residential	Larger than ½+ acre lots	Residential Low	3
Salt Wetland	Salt marsh	Natural	1
Commercial	General urban, shopping center	Urban	5
Industrial	Light & heavy industry	Urban	5
Urban Open	Parks, cemeteries, public & institutional greenspace, also vacant undeveloped land	Maintained Open	2
Transportation	Airports, docks, divided highway Freight storage, railroads	Urban	5
Waste Disposal	Landfills, sewage lagoons	Urban	5
Water	Fresh water, coastal embayment	Natural	1
Woody Perennial	Orchard, nursery, cranberry bog	Agriculture	3

Appendix B. Statistics for habitat characterization comparing Branch Brook and the Merriland River by year and averaged across years. LWD = large woody debris.

Habitat Characteristics 2011-13	Branch	SE	Merriland	SE	F ratio	p value
Avg. Velocity (m s^{-1})	0.14	0.03	0.05	0.01	5.30	0.028
Discharge ($m^3 s^{-1}$)	0.17	0.05	0.07	0.03	2.23	0.146
Avg. Channel Width (m)	5.89	0.60	7.26	0.79	1.74	0.197
Avg. Depth (m)	0.21	0.05	0.25	0.06	0.22	0.639
Resident Fish Spawning Area (m^2)	42.32	9.29	28.41	10.57	0.61	0.441
Anadromous Spawning Area (m^2)	5.65	5.65	12.60	10.23	--	--
Num. LWD $reach^{-1}$	9.47	1.38	2.71	0.55	19.18	<0.001
Pool Area (m^2)	231.23	33.72	657.24	338.70	0.05	0.825
Num. Pools $reach^{-1}$	3.94	0.43	2.11	0.55	6.35	0.017
Num. Riffle $reach^{-1}$	2.06	0.49	1.67	0.41	0.68	0.418
Undercut Banks (%)	73.53	10.60	36.11	11.29	--	--
Stream Bed						
Bedrock (rel. %)	0.00	0.00	3.14	1.73	--	--
Boulders (rel. %)	1.35	0.62	10.81	3.81	--	--
Rubble (rel. %)	2.71	0.74	15.28	4.66	--	--
Gravel (rel. %)	21.01	3.97	12.65	2.46	2.94	0.097
Sand (rel. %)	60.14	4.43	26.06	6.45	16.85	<0.001
Fines (rel. %)	14.78	2.24	32.05	7.19	0.31	0.583
Total Aquatic Veg (%)	7.22	2.26	21.67	5.32	5.91	0.021
Buffer Vegetation						
Canopy %	56.67	4.12	56.67	3.23	0.00	1.000
Trees (rel. %)	17.25	2.74	21.28	1.68	2.32	0.139
Shrubs (rel. %)	9.50	2.33	9.29	2.36	0.00	0.957
Grasses (rel. %)	10.24	3.79	8.30	2.00	0.60	0.444

Appendix C. Fish statistics comparing Branch Brook and the Merriland River by year and averaged across years. Miwb = modified index of well being, CWIBI = cold water index of well-being, and BT = brook trout.

Fish Metrics	Branch	SE	Merriland	SE	F ratio	p vaule
2011						
Miwb	5.73	0.33	4.52	0.55	3.64	0.086
CWIBI	38.00	1.84	18.00	0.77	100.00	<0.001
Species Richness (spp. $reach^{-1}$)	2.67	0.49	3.50	0.50	1.41	0.263
Fish Density (# $100m^{-2}$)	25.43	7.47	9.26	2.33	3.23	0.102
BT Density (# $100m^{-2}$)	23.01	7.38	0.81	0.13	28.57	<0.001
Fish Biomass (g $100m^{-2}$)	143.75	38.88	142.47	22.73	0.00	0.978
2012						
Miwb	6.03	0.24	4.62	0.79	2.93	0.118
CWIBI	38.50	1.63	22.50	4.30	12.13	0.006
Species Richness (spp. $reach^{-1}$)	2.83	0.48	3.17	0.54	0.21	0.655
Fish Density (# $100m^{-2}$)	28.68	10.01	5.47	1.52	8.96	0.014
BT Density (# $100m^{-2}$)	24.63	8.46	0.91	0.54	30.58	<0.001
Fish Biomass (g $100m^{-2}$)	248.89	63.16	79.35	22.13	6.42	0.029
2013						
Miwb	6.95	0.38	6.01	1.03	0.99	0.35
CWIBI	37.00	1.48	16.50	1.50	86.76	<0.001
Species Richness (spp. $reach^{-1}$)	3.83	0.54	4.25	1.11	0.14	0.717
Fish Density (# $100m^{-2}$)	35.45	12.94	6.27	2.80	10.88	0.011
BT Density (# $100m^{-2}$)	25.24	9.17	0.72	0.13	28.86	<0.001
Fish Biomass (g $100m^{-2}$)	292.65	63.94	123.52	22.04	4.28	0.073
Average						
Miwb	6.24	0.21	4.93	0.44	6.62	0.016
CWIBI	37.83	0.91	19.31	1.71	97.53	<0.001
Species Richness (spp. $reach^{-1}$)	3.11	0.30	3.56	0.38	1.20	0.283
Fish Density (# $100m^{-2}$)	29.85	5.72	7.09	1.25	22.04	<0.001
BT Density (# $100m^{-2}$)	24.30	4.54	0.82	0.20	86.88	<0.001
Fish Biomass (g $100m^{-2}$)	228.43	34.20	114.06	14.21	9.23	0.005

Appendix D. Analysis of dissimilarity between Branch Brook and the Merriland River show that Eastern brook trout and the American eel contribute the most to what makes these system different in terms of their fish communities.

Species	Fish Density (# 100m^{-2}) Branch	Merriland	Contribution to Dissimilarity %	Cumulative Contribution %
2011 - Avg. Dissimilarity = 59.20				
Salvelinus fontinalis	23.01	0.81	52.86	52.86
Anguilla rostrata	2.00	6.66	21.05	73.90
Catostomus commersonii	0.11	1.32	9.57	83.48
Esox niger	0.00	0.32	6.71	90.19
Notropis cornutus	0.09	0.00	3.36	93.55
Ameiurus nebulosus	0.21	0.00	2.92	96.47
Lepomis gibbosus	0.00	0.07	1.56	98.03
Salmo trutta	0.00	0.04	0.98	99.02
Unknown	0.00	0.04	0.98	100.00
2012 - Avg. Dissimilarity = 67.38				
Salvelinus fontinalis	24.63	0.91	53.21	53.21
Anguilla rostrata	3.05	3.20	17.74	70.95
Catostomus commersonii	0.12	0.54	7.68	78.63
Esox niger	0.00	0.36	7.24	85.87
Semotilus corporalis	0.52	0.11	4.26	90.13
Lepomis gibbosus	0.00	0.34	4.05	94.18
Cyprinidae spp.	0.16	0.00	2.70	96.88
Ameiurus nebulosus	0.10	0.00	1.56	98.44
Pungitius pungitius	0.10	0.00	1.56	100.00
2013 - Avg. Dissimilarity = 66.31				
Salvelinus fontinalis	25.24	0.71	44.87	44.87
Anguilla rostrata	2.11	2.56	10.87	55.74
Lepomis gibbosus	4.28	0.55	10.21	65.95
Semotilus atromaculatus	0.21	1.47	8.82	74.77
Cyprinidae spp.	2.55	0.00	6.71	81.48
Catostomus commersonii	0.55	0.38	5.90	87.38
Semotilus corporalis	0.00	0.54	4.87	92.25
Pungitius pungitius	0.37	0.00	4.26	96.51
Petromyzon marinus	0.13	0.00	2.30	98.82
Esox niger	0.00	0.05	1.18	100.00

Appendix E. Statistical results for all study parameters comparing forested versus open buffers.

	Forested	SE	Open	SE	F ratio	p value
			2011			
Temperature (°C)	18.62	0.83	18.92	0.75	0.07	0.795
Diss. Oxygen (% sat)	88.47	5.03	84.12	5.12	0.26	0.624
Diss. Oxygen (mg L^{-1})	8.30	0.64	7.78	0.66	0.31	0.587
Spec. Cond. (mS cm^{-1})	0.08	0.01	0.07	0.01	0.66	0.429
pH	6.57	0.13	6.66	0.13	0.26	0.619
$NO3^-$ (mg L^{-1})	1.75	0.35	1.95	0.39	0.16	0.697
Turbidity (NTU)	3.40	0.74	16.71	4.95	10.81	0.004
			2012			
Temperature (°C)	18.50	0.74	19.13	0.81	0.33	0.574
Diss. Oxygen (% sat)	92.53	2.51	89.42	4.09	0.42	0.530
Diss. Oxygen (mg L^{-1})	8.83	0.28	8.56	0.51	0.22	0.649
Spec. Cond. (mS cm^{-1})	0.07	0.01	0.04	0.01	3.83	0.066
pH	6.77	0.11	6.73	0.12	0.07	0.788
$NO3^-$ (mg L^{-1})	1.46	0.48	1.18	0.54	1.12	0.289
Turbidity (NTU)	2.13	0.39	1.86	0.30	0.14	0.714
			2013			
Temperature (°C)	18.33	0.49	18.40	0.58	0.01	0.932
Diss. Oxygen (% sat)	98.82	4.17	92.65	4.19	1.09	0.321
Diss. Oxygen (mg L^{-1})	9.88	0.55	9.12	0.60	0.89	0.369
Spec. Cond. (mS cm^{-1})	0.08	0.02	0.07	0.01	0.49	0.495
pH	6.27	0.12	6.06	0.13	1.43	0.248
$NO3^-$ (mg L^{-1})	--	--	--	--	--	--
Turbidity (NTU)	49.48	45.94	25.38	21.84	0.01	0.928
			Average			
Temperature (°C)	18.48	0.39	18.83	0.41	0.32	0.575
Diss. Oxygen (% sat)	93.27	2.64	88.73	2.78	1.41	0.244
Diss. Oxygen (mg L^{-1})	9.00	0.32	8.49	0.35	1.31	0.262
Spec. Cond. (mS cm^{-1})	0.08	0.01	0.06	0.01	3.69	0.060
pH	6.54	0.08	6.50	0.09	0.29	0.592
$NO3^-$ (mg L^{-1})	1.60	0.29	1.57	0.34	0.26	0.617
Turbidity (NTU)	18.34	15.33	14.28	6.95	1.67	0.201

Habitat Characteristics 2011-13	Forested	SE	Open	SE	F ratio	p value
Avg. Velocity (m s^{-1})	0.09	0.03	0.10	0.03	0.72	0.404
Discharge (m^3 s^{-1})	0.09	0.03	0.15	0.05	0.88	0.355
Avg. Channel Width (m)	6.28	0.69	6.87	0.74	0.31	0.582
Avg. Depth (m)	0.21	0.05	0.25	0.06	0.24	0.631
Resident Fish Spawning Area (m^2)	35.91	10.59	36.18	9.35	0.01	0.929
Anadromous Spawning Area (m^2)	10.94	10.20	7.31	5.80	--	--
Num. LWD $reach^{-1}$	5.93	1.45	6.82	1.40	0.08	0.787
Pool Area (m^2)	638.44	340.28	250.03	31.15	0.08	0.779
Num. Pools $reach^{-1}$	2.78	0.42	3.28	0.64	0.40	0.534
Num. Riffle $reach^{-1}$	2.00	0.41	1.72	0.50	0.31	0.581
Undercut Banks (%)	55.56	12.05	52.94	11.72	--	--
Stream Bed						
Bedrock (rel. %)	2.86	1.73	0.29	0.29	--	--
Boulders (rel. %)	5.61	2.71	6.86	3.36	--	--
Rubble (rel. %)	8.67	3.61	9.72	3.92	--	--
Gravel (rel. %)	16.95	3.14	16.46	3.70	0.02	0.903
Sand (rel. %)	45.15	7.29	39.93	6.57	0.24	0.631
Fines (rel. %)	20.76	5.24	26.74	6.39	0.33	0.570
Total Aquatic Veg (%)	20.00	5.36	8.89	2.67	3.08	0.089
Buffer Vegetation						
Canopy %	61.11	3.01	52.22	4.01	2.81	0.104
Trees (rel. %)	20.68	2.33	17.88	2.20	0.93	0.343
Shrubs (rel. %)	9.07	2.35	9.73	2.35	0.01	0.920
Grasses (rel. %)	9.64	3.47	8.82	2.34	0.10	0.753

Macroinvertebrate Metrics	Forested	SE	Open	SE	F ratio	p value
IBI	19.50	3.17	21.50	2.94	0.21	0.654
IBI % Reference	0.39	0.05	0.42	0.05	0.19	0.675
FBI	4.50	0.44	4.54	0.39	0.01	0.946
% Contribution of Dominant Taxon	51.87	7.46	47.97	4.99	0.19	0.673
EPT : Chironomidae Abundance	0.44	0.08	0.50	0.11	0.19	0.669
Taxa Richness (spp. $reach^{-1}$)	9.67	2.11	10.83	2.14	0.15	0.706
Total abundance (# bag^{-1})	25.58	9.90	19.81	4.89	0.27	0.612
EPT Index	5.00	0.82	5.50	1.28	0.11	0.749
2012						
IBI	27.50	1.20	31.00	1.67	2.88	0.120
IBI % Reference	0.52	0.02	0.59	0.03	3.18	0.105
FBI	4.86	0.29	4.77	0.22	0.07	0.792
% Contribution of Dominant Taxon	62.16	6.51	48.38	7.37	1.96	0.192
EPT : Chironomidae Abundance	0.39	0.12	0.46	0.08	0.23	0.640
Taxa Richness (spp. $reach^{-1}$)	17.33	1.84	20.17	1.14	1.72	0.219
Total abundance (# bag^{-1})	117.89	24.95	99.42	16.97	0.38	0.564
EPT Index	9.67	1.09	10.83	0.87	0.76	0.492
2013						
IBI	30.50	2.50	31.50	1.28	0.13	0.729
IBI % Reference	0.57	0.04	0.58	0.02	0.05	0.827
FBI	4.66	0.26	4.94	0.23	0.65	0.438
% Contribution of Dominant Taxon	53.38	6.57	58.01	5.94	0.27	0.613
EPT : Chironomidae Abundance	0.41	0.09	0.34	0.07	0.34	0.572
Taxa Richness (spp. $reach^{-1}$)	18.83	0.79	20.33	1.02	1.35	0.273
Total abundance (# bag^{-1})	102.42	32.24	109.45	21.97	0.03	0.861
EPT Index	8.67	0.33	9.50	0.76	1.00	0.341
Average						
IBI	25.83	1.73	28.00	1.59	1.37	0.261
IBI % Reference	0.49	0.03	0.53	0.03	1.31	0.261
FBI	4.68	0.19	4.75	0.16	0.08	0.773
% Contribution of Dominant Taxon	55.80	3.86	51.45	3.53	0.67	0.421
EPT : Chironomidae Abundance	0.41	0.05	0.43	0.05	0.08	0.785
Taxa Richness (spp. $reach^{-1}$)	15.28	1.33	17.11	1.35	1.97	0.171
Total abundance (# bag^{-1})	81.96	16.38	76.22	13.13	0.12	0.736
EPT Index	7.78	0.65	8.61	0.77	1.26	0.270

Fish Metrics	Forested	SE	Open	SE	F ratio	p value
2011						
Miwb	5.73	0.41	5.53	0.57	1.37	0.289
CWIBI	28.00	5.12	28.00	4.22	0.00	1.000
Species Richness (spp. $reach^{-1}$)	2.67	0.45	3.17	0.60	0.85	0.828
Fish Density (# $100m^{-1}$)	25.43	8.05	17.29	4.75	2.21	0.661
BT Density (# $100m^{-2}$)	13.72	8.66	10.11	5.24	0.00	0.956
Fish Biomass (g $100m^{-2}$)	143.75	21.63	176.57	33.36	2.83	0.120
2012						
Miwb	5.62	0.54	5.03	0.48	0.49	0.501
CWIBI	28.00	5.98	33.00	2.90	0.57	0.469
Species Richness (spp. $reach^{-1}$)	3.17	0.54	2.83	0.48	0.21	0.656
Fish Density (# $100m^{-1}$)	22.11	11.59	12.04	3.45	0.06	0.813
BT Density (# $100m^{-2}$)	17.29	10.29	8.25	3.75	0.00	0.974
Fish Biomass (g $100m^{-2}$)	186.42	66.97	141.81	51.67	0.28	0.609
2013						
Miwb	6.19	0.76	6.95	0.55	0.65	0.442
CWIBI	28.80	4.61	28.80	5.82	0.00	1.000
Species Richness (spp. $reach^{-1}$)	3.60	0.87	4.40	0.60	0.67	0.471
Fish Density (# $100m^{-1}$)	28.40	17.98	19.15	4.91	0.03	0.866
BT Density (# $100m^{-2}$)	19.97	12.58	10.89	5.46	0.65	0.837
Fish Biomass (g $100m^{-2}$)	216.31	74.67	233.68	65.13	0.03	0.865
Average						
Miwb	5.47	0.31	5.77	0.42	0.45	0.509
CWIBI	28.24	2.90	30.00	2.39	0.24	0.629
Species Richness (spp. $reach^{-1}$)	3.24	0.34	3.41	0.34	0.19	0.665
Fish Density (# $100m^{-1}$)	22.30	6.85	15.98	2.48	0.84	0.362
BT Density (# $100m^{-2}$)	16.82	5.66	9.68	2.62	6.01	0.036
Fish Biomass (g $100m^{-2}$)	168.12	32.89	181.10	28.54	0.09	0.766

Economics: Quantifying Preferences and Values for Aquatic Ecosystem Services

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August 2014

The economics component of the project coordinated with the ecological and engagement components to (1) identify and disentangle the unique contributions of different ecosystem services to human well-being, (2) quantify changes in these services resulting from alternative policy interventions, (3) estimate valid and consistent economic values, and (4) evaluate implications for policy development. Results demonstrate the different ways that riparian land contributes to aquatic ecosystem services valued by the public and the coordinated use of economic and ecological models to estimate these values. These include results quantifying households' preferences and willingness to pay (WTP) for ecosystem service outcomes of riparian land restoration in the Merriland, Branch Brook, and Little River (MBLR) watershed.

The transdisciplinary approach is grounded in an ecological-economic model linking ecosystem services influenced by riparian land restoration to benefits realized by area residents. The value of these services is reflected in WTP, or the maximum amount that households would be willing to pay (e.g., in a bond payment) to obtain increases in particular ecosystem services, rather than go without. The resulting data enabled estimation of the WTP of area residents for options that would restore between 0 and 500 acres of riparian land in the watershed, along with associated changes in recreational fish abundance, swimming safety, river ecology, and riparian development restrictions. Results also enable prediction of public voting patterns for riparian land conservation proposals in the MBLR watershed, and allow the identification of policy options with the greatest predicted public benefit.

Economic preferences, values and tradeoffs are estimated using an application of discrete choice experiments coupled with the targeted ecological data and modeling detailed above. Discrete choice experiments present survey respondents with voting-type choices between multi-attribute policy options, in this case for riparian area conservation in the MBLR watershed. Each option is described by indicators of ecosystem services developed and refined in prior research phases. That is, surveyed households are presented with policy choices, similar to public referenda, that allow them to choose among riparian land restoration policies with different effects on quantities, qualities and uses of ecosystem services (as quantified and forecast by ecological models and data, summarized above), along with attributes of the policy process required to provide those outcomes. Households' observed choices (or votes) over many sets of options enables the estimation of economic preferences, tradeoffs and values.

The model and choice experiments were developed and tested over more than 3 years in a collaborative process involving scientists and other experts from the Wells National Estuarine Research Reserve. This included in-depth coordination between ecologists and economists to develop the coupled economic and ecological models and data underlying the choice experiment, along with meetings with managers and stakeholders. Nine focus groups were used to inform survey development and test questionnaire designs. Survey

language, graphics and maps were pretested carefully to ensure respondent comprehension. Particular attention was given to the presentation and interpretation of ecological information, including the amount and type of information required by individuals in able to provide meaningful survey responses. Based on input from this extensive pretesting, the survey provided information (1) describing the status of riparian land in the study area, (2) characterizing affected ecological systems and linkages, (3) describing restoration outcomes, and (4) providing definitions, derivations and interpretations of attributes used in survey scenarios. Information was conveyed via a combination of text, graphics including Geographic Information System (GIS) maps, and photographs, all of which were subject to careful pretesting. This information was followed by a sequence of voting questions through which respondents expressed their preferences and values for ecosystem services. Three independent survey treatments were developed and tested, each enabling different sets of hypotheses to be tested regarding the value of aquatic ecosystem services in the MBLR watershed. This included a survey treatment explicitly quantifying the effect of explicit spatial information (i.e., the location of each respondent's household relative to affected riparian land) on respondents' support for riparian land conservation.

The model underlying the choice experiment begins with a standard random utility specification in which household *h* chooses among three policy options, ($k = A, B, N$) for ecosystem service restoration. These include two multi-attribute riparian land restoration options (*A*, *B*) and a status quo (*N*) option with no restoration and zero household cost. Each policy option is characterized by a vector of attributes, $\mathbf{X} = [X_1 \ldots X_J]$, representing policy outcomes. These include quantified changes in ecosystem services. Here, we define $X_1 \ldots X_{J-1}$ as variables representing ecological or regulatory outcomes of restoration (i.e., effects on ecosystem services or development regulations) and X_J as a variable representing unavoidable household cost.

Within all choice experiment variants, choice options were characterized by four ecological attributes that described changes in ecosystem services, two attributes characterizing development restrictions/enforcement, and one attribute characterizing unavoidable annual cost to the household. Ecological attributes in the choice model were selected based on a conceptual model that coordinated ecological science with findings from focus groups (Johnston et al. 2012). The initial direct effect of riparian land restoration (or conservation) is to increase the number of riparian acres with natural vegetation. This is communicated by the attribute *Riparian Land Condition*. The status quo and attribute values for this variable were projected using GIS raster maps showing conditions and changes in riparian land development and clearing within the study area. The predicted consequences of this restoration include (1) changes in the ecological condition of area rivers (*River Condition*), calculated using an aquatic biotic index following Johnston et al. (2011); (2) changes in the relative abundance of recreational fish (*Recreational Fish*), quantified using MBLR sampling data on brown trout; and (3) changes in the safety of water quality for swimming at area beaches (*Safe Swimming*), characterized using data on water quality testing available from the Maine Healthy Beaches Program. In addition to these ecological outcomes, policy attributes characterized the minimum width of the riparian area in the MBLR Watershed within

which development would be restricted (*Development Setbacks*), and whether enforcement and inspections would be increased to prevent illegal development and clearing on riparian land (*Enforcement*). Household cost (*Cost*) was characterized as an increase in taxes and fees required to implement each restoration plan.

Choice options (the policy scenarios over which respondents voted) represented each ecological attribute in relative terms with regard to upper and lower reference conditions (i.e., best and worst possible in the watershed) as defined in survey materials. Relative scores represented percent progress toward the upper reference condition (100%), starting from the lower reference condition (0%). Scenarios also presented the cardinal basis for these relative scores where applicable. The final composite policy options considered by each household were developed using an experimental design that mixed and matched different outcomes for each of the attributes listed above (e.g., *Riparian Land Condition*, *River Condition*, etc.). The experimental design minimized D-error for a choice model covariance matrix with both main effects and selected two-way interactions. The final design included 72 unique choice questions divided into 24 booklets (three choice questions per booklet). A sample choice question is illustrated by Figure 1.

The experimental design allows respondents to consider a wide range of possible outcomes, in which ecological outcomes are uncorrelated. Ecological systems are typically characterized by correlation among many processes and outcomes. In the context of riparian land restoration, for example, increases in natural vegetation (*Riparian Land Condition*) are expected to be correlated with other ecological outcomes including the ecological condition of area rivers (*River Condition*) and the relative abundance of recreational fish (*Recreational Fish*). Were the choice experiment survey scenarios to incorporate the same expected correlations, it would be difficult to determine which attribute(s) caused respondents to vote for one scenario over another. For example, if large improvements in riparian land vegetation always accompany large positive effects on recreational fish abundance and large positive effects on ecosystem condition within survey scenarios, it would be difficult to estimate the relative influence of each effect on respondents' choices and values.

The experimental design used in the stated preference survey breaks this correlation, allowing different attributes to vary independently. This enables different respondents to view many different hypothetical but feasible policy proposals (or choice options), each with different combinations of *Riparian Land Condition*, *River Condition*, *Recreational Fish*, *Safe Swimming*, *Development Setbacks*, *Enforcement* and *Cost*. While some of the resulting scenarios might be unlikely in actual aquatic systems, they are not ecologically impossible. By breaking the correlation between these attributes that is normally present in ecosystems, the choice experiment design allows the independent effect of each attribute on choices to be estimated. This allows the value of each ecosystem service to be estimated, independent of all other effects.

The resulting mail surveys were implemented from December 2013 through January 2014. Surveys were mailed to 3,816 randomly-selected households of Kennebunk, Sanford and Wells—the three towns that overlap the MBLR watershed. Survey

implementation followed Dillman et al. (2009), with multiple follow-up mailings to increase response rates. Of the 3,472 deliverable surveys (344 surveys were returned as undeliverable), 1,126 were returned, for a net response rate of 32.4%. Response rates were 35.1% in Wells, 27.2% in Sanford, and 34.9% in Kennebunk. Figure 2 shows the location of mailed (black dots) and returned (colored dots) surveys, across all survey variants, within the sampled area.

Results and Findings

The data are analyzed using a discrete choice model that predicts respondents' votes as a function of policy outcomes (ecological and regulatory) and household cost. Based on each respondent's observed choices, the model predicts the relative importance given to each attribute. By comparing the relative importance given to changes in an ecosystem service to the relative importance given to program cost, it is possible to calculate each household's willingness to trade off money (the cost of a program to the household) for increases in specific ecosystem services. This is the definition of economic value, or WTP.

Results indicate that residents of the three towns have positive economic values (WTP) associated with improvements in all ecological outcomes. These WTP values may be interpreted as the maximum amount that the average area household would be willing to pay, per year (e.g., as part of a local bond referendum) to obtain ecosystem service improvements. Residents also have positive values for increases in development setbacks and for increased enforcement. That is, the average area resident would prefer to see larger setbacks and more enforcement of riparian land development restrictions, holding all else constant.

Table 1 illustrates estimated per household values associated with ecosystem services flowing from riparian land conservation in the MBLR watershed. All values are measured per household, per unit change, per year.[7] For ecological outcomes, the highest economic values (per percentage point increase) are associated with acres of riparian land with natural vegetation. This is followed, in order, by improvements to: swimming safety (the % of tests that show area beaches safe to swim), river ecology, and recreational fish abundance.

Table 1. Economic Value of Riparian Restoration Outcomes and Regulations (Willingness to Pay per Household, per Unit Change, per Year).

Attribute (ecosystem services or regulatory methods)	**Description and Units**	**Marginal Value (willingness to pay per unit change, per household, per year)**

[7] For example, holding other effects constant, the average household in the MBLR watershed is willing to pay $2.05 per year for each additional 1% of riparian land in MBLR watershed (each additional 47 acres) covered by natural vegetation, compared to current levels.

Land Condition	The percentage of riparian land in the MBLR watershed covered by natural vegetation, quantified using GIS land cover data layers for the watershed. Presented as a percentage of the reference condition. Range 0-100%. Each percentage point change is equivalent to an additional 47 acres of naturally vegetated land.	$2.05
River Condition	A 100-point index of aquatic ecological condition, reflecting the similarity of the restored area to the most undisturbed watershed area possible in south coastal Maine. Index components include the mass and variety of different macroinvertebrates distinguished by pollution tolerance. Presented as a percentage of the reference condition for the watershed. Range 0-100%.	$1.28
Recreational Fish	Average abundance of recreational fish within the MBLR watershed. Measured as the number of brook trout per 1000 square feet of river. Presented as a percentage of the reference value for the region (30 fish per 1000 square feet), defined as the highest average level sampled in any area of the Watershed. Range 0-100%. Each percentage point change is equivalent to an additional 0.3 fish per 1000 square feet.	$1.15
Swim Safety	The percentage of days during which water quality tests show safe levels of bacteria colony forming formations in samples at area beaches (Laudholm, Drakes Island, Crescent Surf, and Parson Beach). Calculated using data provided by Maine Healthy Beach Initiative. Range 0-100%. Each percentage point change is equivalent to an additional 0.3 days per month of safe swimming.	$2.02
Setbacks	The minimum width of the riparian area where development is restricted around rivers, in feet. Range 100-200 feet.	$0.14
Enforcement	Binary (0 or 1) variable indicating whether enforcement is increased to prevent illegal development or clearing on riparian land. This could	$17.31

	include inspections on private land if violations are suspected. A value of 1 indicates increased enforcement activity.	

Implications and Policy Relevance

Project results provide numerous insights into public preferences and values that are directly relevant to policy and management in south coastal Maine. For example, results reveal heretofore unexpected degrees of support for development restrictions and enforcement designed to protect natural riparian land. Contrary to common expectations voiced to project investigators at the outset of the project, the average resident of the MBLR watershed *supports* greater development restrictions and enforcement, holding all else constant. These results suggest that there are widespread misperceptions concerning the degree to which residents support regulatory changes designed to protect riparian lands. Results of the project help dispel these misconceptions, and can hence promote better-informed policy and management choices.

Results in Table 1 can also be used to calculate the total change in ecosystem service values resulting from proposed riparian restoration or conservation programs. Consider, for example, a program that would restore natural vegetation to an additional 5% (235 acres) of riparian land in the MBLR watershed. Based on ecological data reported above, each 1% increase in riparian land tree canopy cover is associated with a 2.47% increase in brook trout (recreational fish) abundance. According to these patterns, the additional 235 acres of naturally vegetated riparian land is expected to enhance recreational fish populations by 5%×2.47 = 12.35%. From Table 1, the total value of these ecosystem service improvements is equivalent to (5×$2.05) + (12.35×$1.15) = $24.45 per household, per year. This value may be interpreted as the maximum amount that area households would be willing to pay, per year, to support a bond issue that would achieve these benefits.

The model can also be used to predict the results of public votes (Johnston 2006). For example, assume that the program described above were offered to Kennebunk, Sanford and Wells voters at an average household cost of $20 per year (e.g., in additional property tax payments to support a local bond). Model results predict that 71.5% of residents would support this proposal, if given the opportunity to vote. Results may also be used to distinguish voting patterns and values across different population groups—for example residents who live in or out of the MBLR watershed, or those who live in different towns (e.g., values of Sanford versus Wells residents). Such results provide a concrete and transparent perspective on the degree to which different types of residents, in different areas, support and value programs that would provide different types of ecosystem services related to riparian land conservation. These results are directly tied to ecosystem properties and services quantified by the ecological research described above, providing a direct link from riparian land to ecosystem services to human values.

These results are based on a random sample of Kennebunk, Sanford and Wells voters. Hence, they provide a more representative perspective on public values than is revealed by the small, self-selected and more vocal set of area residents who attend public meetings, are active in advocacy groups, or engage in other activities that influence public policy decisions. As a result, results that reveal actual public values can be surprising to policymakers and other stakeholders, who may infer public values from a small but very vocal set of residents. By providing a more representative perspective, the ecosystem service value results summarized here can help policymakers develop policies that more accurately reflect the true values of all residents.

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QUESTION 5

OPTION A and **OPTION B** are possible protection options for the area surrounding the Merriland, Branch Brook, and Little River. The current situation is the status quo with **NO NEW PROTECTION**.

Given a choice between the three, how would you vote?

Method or Effect of Protection	In 5-10 years under the Current Situation	In 5-10 years under Option A	In 5-10 years under Option B
Riparian Land Condition	**85%** 4000 out of 4700 riparian acres covered by natural vegetation	**87%** 4100 out of 4700 riparian acres covered by natural vegetation	**90%** 4200 out of 4700 riparian acres covered by natural vegetation
River Ecology	**55%** of best possible (100%) ecological condition	**75%** of best possible (100%) ecological condition	**75%** of best possible (100%) ecological condition
Recreational Fish	**55%** 17 out of 30 possible fish per 1000 sq. feet	**65%** 20 out of 30 possible fish per 1000 sq. feet	**65%** 20 out of 30 possible fish per 1000 sq. feet
Safe Swimming	**85%** of beach tests meet safe swimming guidelines	**90%** of beach tests meet safe swimming guidelines	**90%** of beach tests meet safe swimming guidelines
Development Setback	**100 feet** required between development and rivers; 25 feet for streams	**100 feet** required between development and rivers; 25 feet for streams	**200 feet** required between development and rivers; 125 feet for streams
Enforcement	**No Change** in enforcement and inspections	**No Change** in enforcement and inspections	**No Change** in enforcement and inspections
$ Cost to your Household per Year	**$0** Increase in Annual Taxes or Fees	**$45** Increase in Annual Taxes or Fees	**$30** Increase in Annual Taxes or Fees
HOW WOULD YOU VOTE? (CHOOSE ONLY ONE) I vote for	☐ **NO NEW PROTECTION**	☐ I vote for **OPTION A**	☐ I vote for **OPTION B**

38717

12

Figure 1. Example Choice Experiment Question

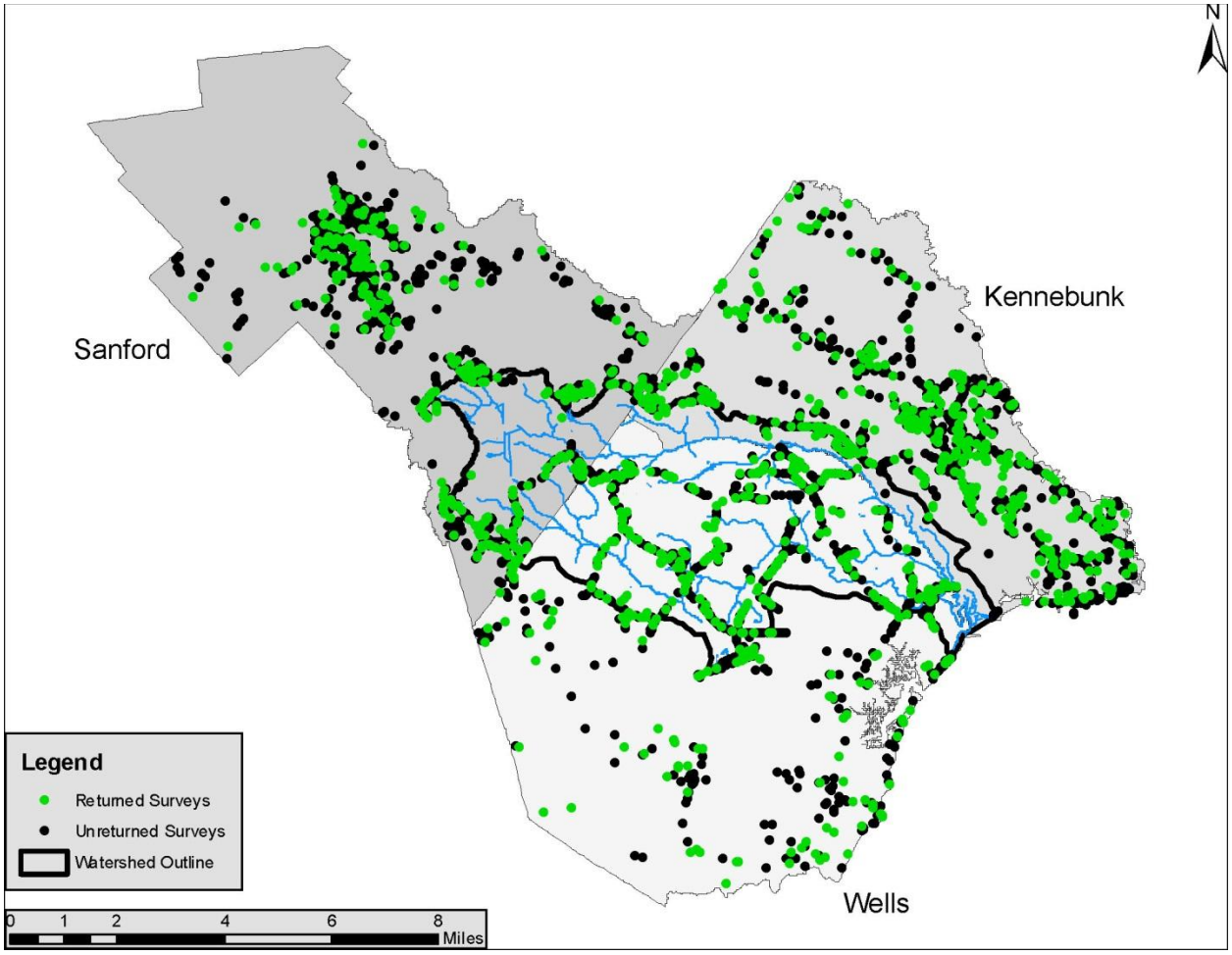

Figure 2. Location of Returned and Unreturned Surveys

Appendix to Economics Research Summary[8]

Ecosystem Services and Riparian Land Management in the Merriland, Branch Brook and Little River Watershed

Quantifying Values and Tradeoffs

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[8] This summary of the results of the Choices for Our Land and Water survey is targeted to managers and policy makers whose decisions and work focus on riparian buffer management, conservation and policy. This document was distributed to key stakeholders in the project and is available on the Wells Reserve website.

Executive Summary

Management of the riparian land (or shore land) that borders New England's rivers and streams can require difficult choices. These often involve tradeoffs between the demand for development on this land and the protection of the valued services that naturally vegetated riparian land provides to the public—often called *ecosystem services*. People value these and other ecosystem services in the same way that they value goods and services purchased in markets. However, traditional economic assessments often overlook the economic benefits provided by ecosystem services. This leads to decisions that harm the public, because they overlook the economic value provided by the protection and restoration of natural systems. Quantifying the economic value of ecosystem services can help ensure that development and conservation decisions balance all benefits and costs.

This report summarizes an analysis of ecosystem service values provided by protection and restoration of riparian land in the Merriland, Branch Brook and Little River (MBLR) watershed in south coastal Maine. These results are drawn from *Choices for Our Land and Water: A Survey of Kennebunk, Sanford and Wells Residents*, conducted through a collaboration of Clark University and the Wells National Estuarine Research Reserve, and funded by the National Estuarine Research Reserve Science Collaborative. The survey evaluated the attitudes and preferences of community residents towards actions that would conserve and restore riparian land. It also included systematic voting (or choice experiment) questions that enable the economic value of local ecosystem services to be quantified. Results show the type of economic value that riparian land provides to the public, and the tradeoffs that the public would be willing to accept.

Survey development engaged a diverse set of residents, stakeholders, policy experts and public officials from Kennebunk, Sanford and Wells over three years of careful design and pretesting. The process included meetings with state and federal natural resource managers, town planners, scientists, and stakeholder groups; nine focus groups with community residents; and extensive pretesting. The survey was implemented by mail from December 2013 through January 2014. It was mailed to a sample of 3,816 randomly selected MBLR residents split evenly across the three sampled towns (Kennebunk, Sanford and Wells), with systematic follow-up mailings to increase response rates. Out of 3,472 deliverable surveys, 1,126 were returned for an average response rate of 32.4%. Response rates were 27.0% in Sanford, 34.9% in Kennebunk and 35.1% in Wells.

Survey results demonstrate the types of economic value provided by natural riparian lands in the MBLR Watershed, and the extent to which local residents are willing to pay for programs that would enhance these valued natural resources and the ecosystem services they provide. These results are based on a random sample of Kennebunk, Sanford and Wells voters. Hence, they provide a more representative perspective on public values than is revealed by the small, self-selected and more vocal set of area residents who attend public meetings, are active in advocacy groups, or engage in other activities that influence public policy decisions. By providing a more representative perspective, the ecosystem service value results summarized here can help policymakers develop policies that more accurately reflect the values of all residents.

Some key findings of the study include:

- Residents of Kennebunk, Sanford and Wells place very high importance on environmental protection. The importance placed on environmental and ecosystem service protection is greater than that placed on the protection of landowner rights and prevention of tax increases.
- Residents hold considerable value for ecosystem services provided by riparian land. The value that people hold for riparian land restoration depends on how much land is restored, the effects on ecosystem services, and how restoration is accomplished. For example, residents are willing to pay for improvements in riparian land condition itself, as well as for improvements in the condition of local rivers, recreational fisheries, and swimming safety of local beaches that can result from the restoration of this land.
- All else equal, residents prefer management alternatives that *increase* restrictions on the development of riparian land (by increasing setback requirements) and that increase enforcement and inspections of these and other development restrictions. Residents prefer stronger regulation of development on riparian lands.
- Residents will support programs that restore and protect riparian land in the MBLR Watershed and associated ecosystem services, even if implementing these programs requires increases in the taxes and fees paid by their households.

The results of this study do not indicate what types of riparian land protection or restoration alternatives are right or wrong. Rather, the results predict which riparian land protection or restoration alternatives would be strongly supported by area residents because they are perceived as providing the greatest value. When combined with information on the projected ecological outcomes of riparian land management and the associated costs, results such as these can help identify management alternatives that best support the long term goals and values of residents, and generate the greatest sustainable economic value.

1.0 Introduction—What Ecosystem Services Are Provided By Riparian Land?
Management of the riparian land (or shore land) that borders New England's rivers and streams can require difficult choices. These often involve tradeoffs between the demand for development on this land and the protection of the valued services that naturally vegetated riparian land provides to the public—often called *ecosystem services*. Riparian lands provide many valued ecosystem services. For example, naturally forested riparian land on river banks can filter out pollutants and sediments before they reach the water (leading to cleaner and clearer water); prevent the erosion and collapse of river banks; improve habitat for fish and wildlife; enhance local aesthetics; improve the environmental health of river systems; and prevent flooding of homes and property. Figure 1 illustrates some of the main ecosystem services provided by riparian land.

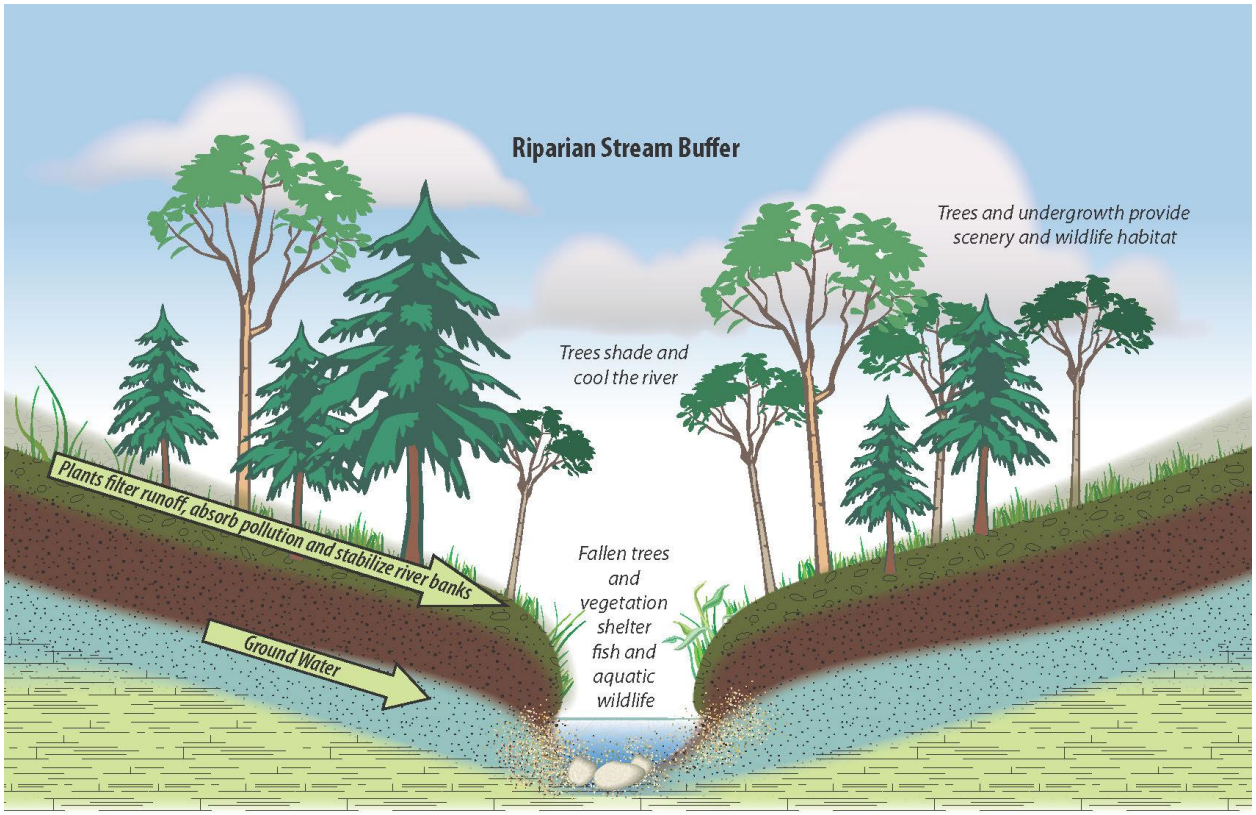


Figure 1. Natural Services of Riparian Land

People value ecosystem services like these in the same way that they value goods and services purchased in markets. In some cases ecosystem services are similar or identical to market goods and services (e.g., a fish caught in a local river may be nearly identical to a fish purchased in a market). In most cases, however, ecosystem services are not bought and sold. Because of this, traditional economic assessments (looking only at market transactions, jobs, income, etc.) overlook the economic benefits provided by these services. This can lead to decisions that harm the public, because they overlook the economic value provided by the protection and restoration of natural systems. Development of riparian land often benefits a very small group of people, for example homeowners who clear trees to obtain an improved view of the water. However, cutting down trees on riparian land can increase the flow of pollution and sediment into local

rivers, diminishing the water quality valued by thousands of residents and visitors. Quantifying the economic value of ecosystem services can help ensure that development and conservation decisions balance all benefits and costs to all affected people.

1.1 Context for the Study

This study evaluates the public's willingness to pay for ecosystem services that could be provided by riparian land management the Merriland, Branch Brook and Little River (MBLR) watershed. This small coastal watershed in south coastal Maine has importance beyond the three municipalities where it originates, flows and connects to the ocean. For example, the Branch Brook provides drinking water during peak times for up to 75,000 people in portions of seven communities. The watershed also flows to one of the two focus estuaries of the Wells National Estuarine Research Reserve and through significant habitats of the Rachel Carson National Wildlife Refuge.

1.2 Riparian Land in the MBLR Watershed

Many scientists consider riparian land within about 300 feet of the water to be most important for ecosystem services. Today, there are roughly 4,700 acres of this land bordering freshwater rivers and streams in the MBLR Watershed in Kennebunk, Sanford and Wells, Maine (Figure 2). About 4,300 of these acres are covered by trees and other natural vegetation. The remaining acres have been developed or cleared. Currently, natural riparian land is being lost to development at a rate of about 5% (approximately 235 acres) every ten years. Without new action, this loss is likely to continue. Yet the conservation of riparian land requires tradeoffs. Many different actions are possible, yet available funds are rarely sufficient to protect all sites and resources. Protection of riparian land may also require restrictions on the development or clearing of private land. Thus, difficult choices must be made. Quantifying economic benefits and costs can help illustrate the consequences of these choices for the public.

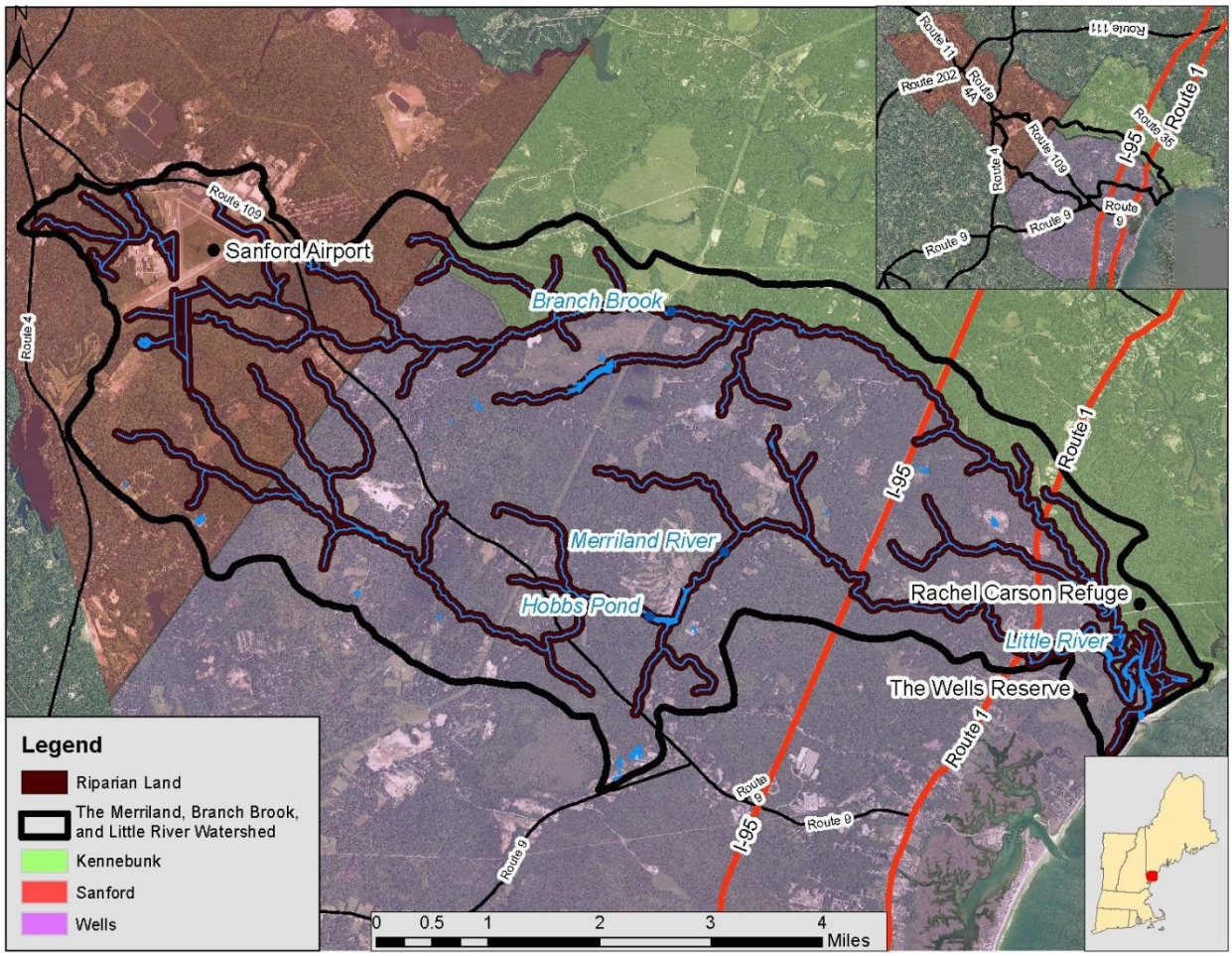


Figure 2. The Merriland, Branch Brook and Little River (MBLR) Watershed

1.3 The Goal of This Report

This report summarizes an analysis of ecosystem service values provided by protection and restoration of riparian land in the MBLR Watershed in south coastal Maine. These results are drawn from *Choices for Our Land and Water: A Survey of Kennebunk, Sanford and Wells Residents*, conducted through a collaboration of Clark University and the Wells National Estuarine Research Reserve, and funded by the National Estuarine Research Reserve Science Collaborative. This survey evaluated the attitudes and preferences of community residents towards actions that would conserve and restore riparian land. It also included systematic voting (or choice experiment) questions that enable the economic value of local ecosystem services to be quantified.[9] Results show the type of economic value that riparian land provides to the public, and the tradeoffs that the public would be willing to accept.

2.0 Survey Design

[9] For a discussion of the choice experiment approach, see Bateman, I. J., R. T. Carson, B. Day, M. Hanemann, N. Hanley, T. Hett, M. Jones-Lee, G. Loomes, S. Mourato, E. Özdemiroğlu, D. W. Pearce, R. Sugden, and J. Swanson. 2002. Economic Valuation with Stated Preference Techniques: A Manual. Cheltenham, UK: Edward Elgar.

Survey development engaged a diverse set of residents, stakeholders, policy experts and public officials from Kennebunk, Sanford and Wells over three years of careful design and pretesting. The process included meetings with state and federal natural resource managers, town planners, scientists, and stakeholder groups; nine focus groups with community residents[10]; and extensive pretesting. This survey development ensured that information in the survey was accurate and that the survey could be easily understood and answered by the public.

The goal of the survey was to understand residents' (a) attitudes concerning development, the rights of property owners, and conservation of riparian land, (b) values for the ecosystem services provided by riparian land, and (c) tradeoffs they would be willing to make to protect riparian land and the ecosystem services it provides. The survey included a wide range of attitudinal questions, along with referendum-style voting questions that enabled residents to vote for or against different types of hypothetical but realistic development and conservation alternatives for the MBLR Watershed. Results provide insight into the way that residents value riparian land in the MBLR watershed compared to other priorities such as the protection of landowner rights, and the specific types of tradeoffs they would be willing to accept in order to retain the services provided by riparian land in the watershed.

3.0 Survey Implementation and Response

The survey was implemented by mail from December 2013 through January 2014. It was mailed to a sample of 3,816 randomly selected MBLR residents split evenly across the three sampled towns (Kennebunk, Sanford and Wells), with systematic follow-up mailings to increase response rates. Out of 3,472 deliverable surveys, 1,126 were returned for an average response rate of 32.4%. Response rates were 27.0% in Sanford, 34.9% in Kennebunk and 35.1% in Wells. This is a high rate of return for a mail survey, and suggests the relevance of the topic to the public. Figure 3 shows the approximate home locations of those residents who did and did not return a completed survey.[11] The demographic characteristics of those who responded to the survey are shown in Appendix I.

[10] Within these focus groups, groups of randomly selected residents of Kennebunk, Sanford and Wells met with a moderator to freely discuss their perceptions, opinions, beliefs and attitudes related to the development and riparian land in the MBLR Watershed, and the types of policies they would support. Focus groups were also used to obtain feedback on preliminary drafts of the survey instrument.

[11] These locations are perturbed, or moved slightly to prevent identification of specific home addresses.

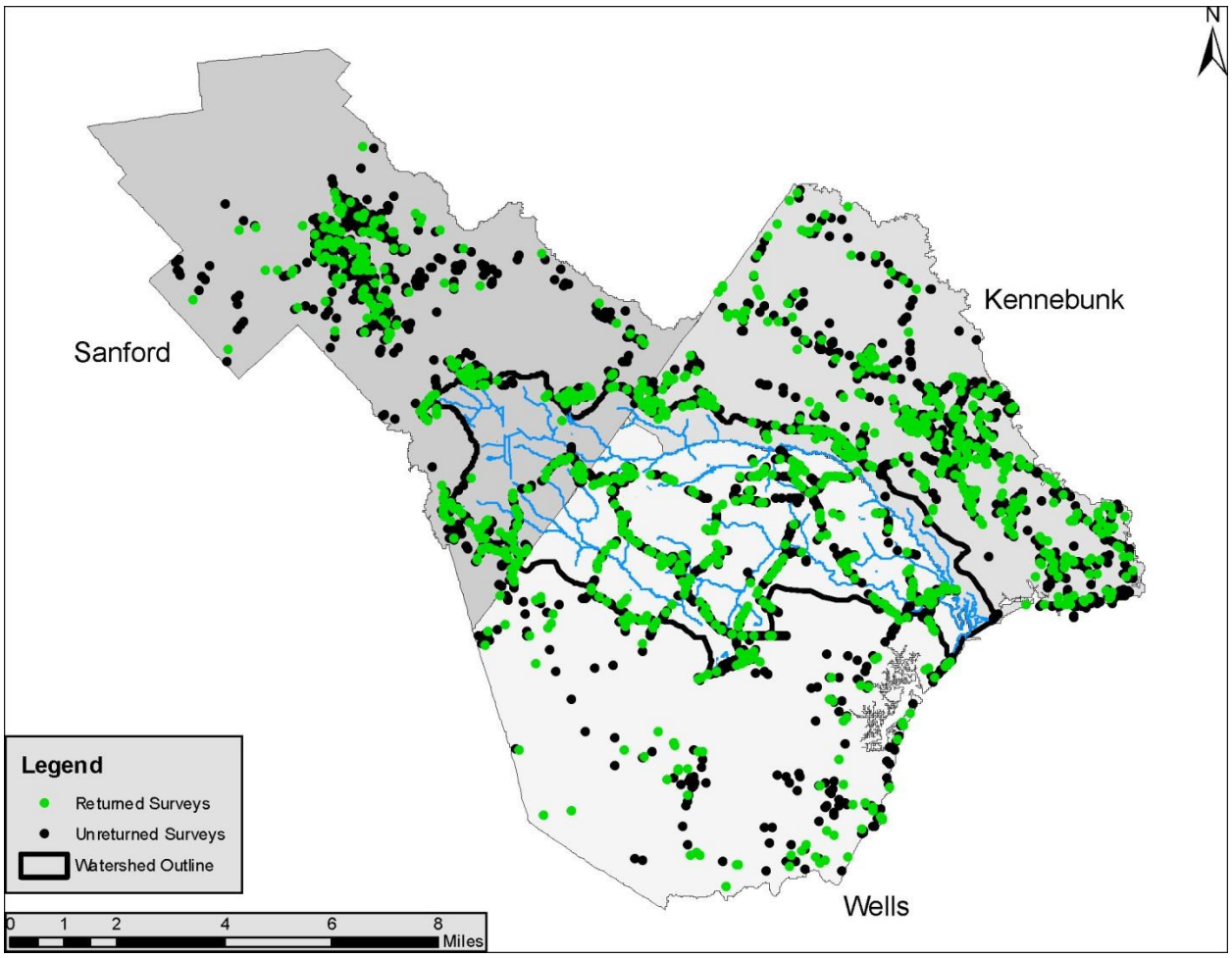


Figure 3. Approximate Location of Survey Respondents

4.0 Residents' Attitudes Concerning Development and Riparian Land

The first section of the survey asked respondents to indicate the importance of statements related to development, property rights and the protection of riparian land in the watershed. These statements were rated on a scale of 1 to 5, where 1 = Not at all important and 5 = Very important. Because these statements were rated independently, the responses cannot be used to quantify tradeoffs (e.g., how much of one outcome respondents would be willing to give up in exchange for increases in others). However, they provide insight into the extent to which residents care about different types of priorities.

4.1 Protecting the Environment

Survey responses show the high importance placed on environmental protection. This was greater than the importance placed on all other priorities, including the protection of landowner rights and prevention of tax increases. Over 85% of respondents indicated that it was "very important" that water quality is protected in lakes rivers and streams—the highest possible importance category (Figure 4). Only 1% of respondents indicated that this was less than moderately important. Similarly, over 72% of respondents

indicated that it was “very important” to protect the local environment (Figure 5). Only 1% indicated that it was less than moderately important.

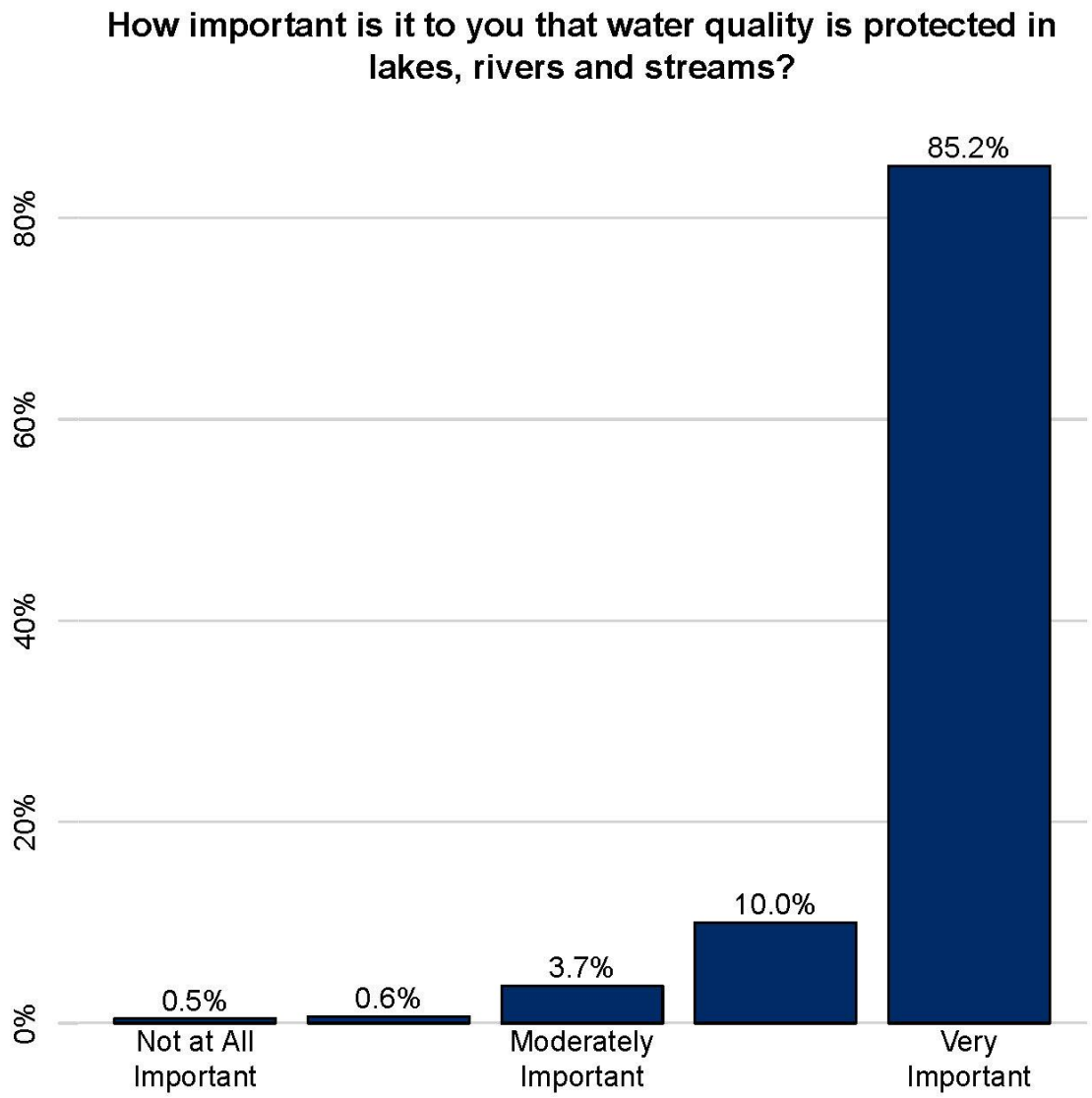


Figure 4. Importance of Water Quality Protection

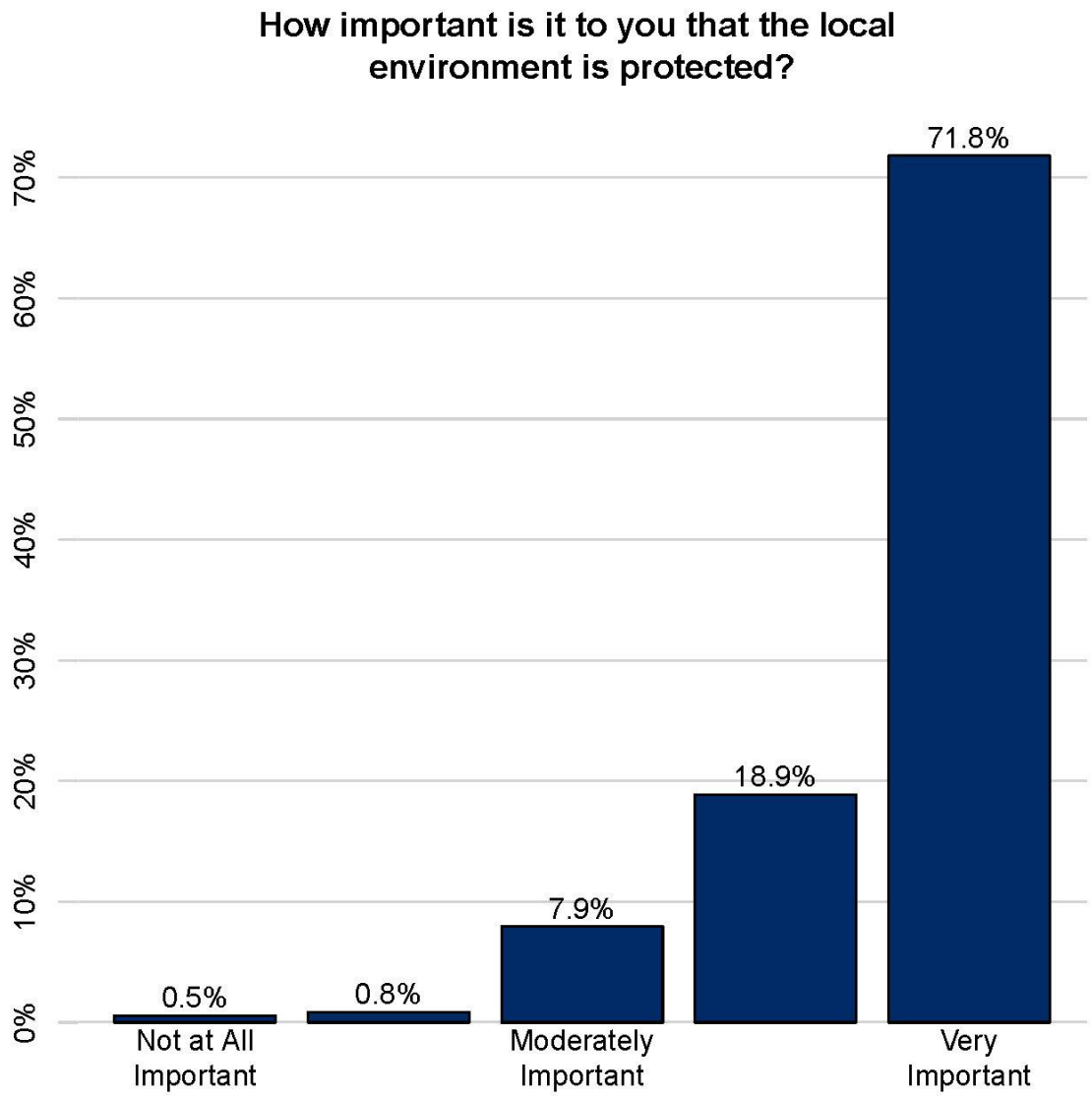


Figure 5. Importance of Environmental Protection

4.2 Respecting the Rights of Private Landowners

Some approaches to protect the natural environment require limiting the actions of private landowners, such as restricting development within a certain distance of rivers and streams. Survey respondents had mixed feelings regarding the importance of respecting landowners' rights, and most did not consider it to be a high priority. Less than 35% of respondents stated that it was "very important" that government respects the right of private landowners to develop their land, whereas 43% indicated that this was of moderate importance or less (Figure 6). Similarly, only 33% of respondents indicated it was "very important" that existing uses of private land are grandfathered, so that they are not subject to new restrictions. Approximately 47% stated that grandfathering existing land uses was of moderate importance or less (Figure 7).

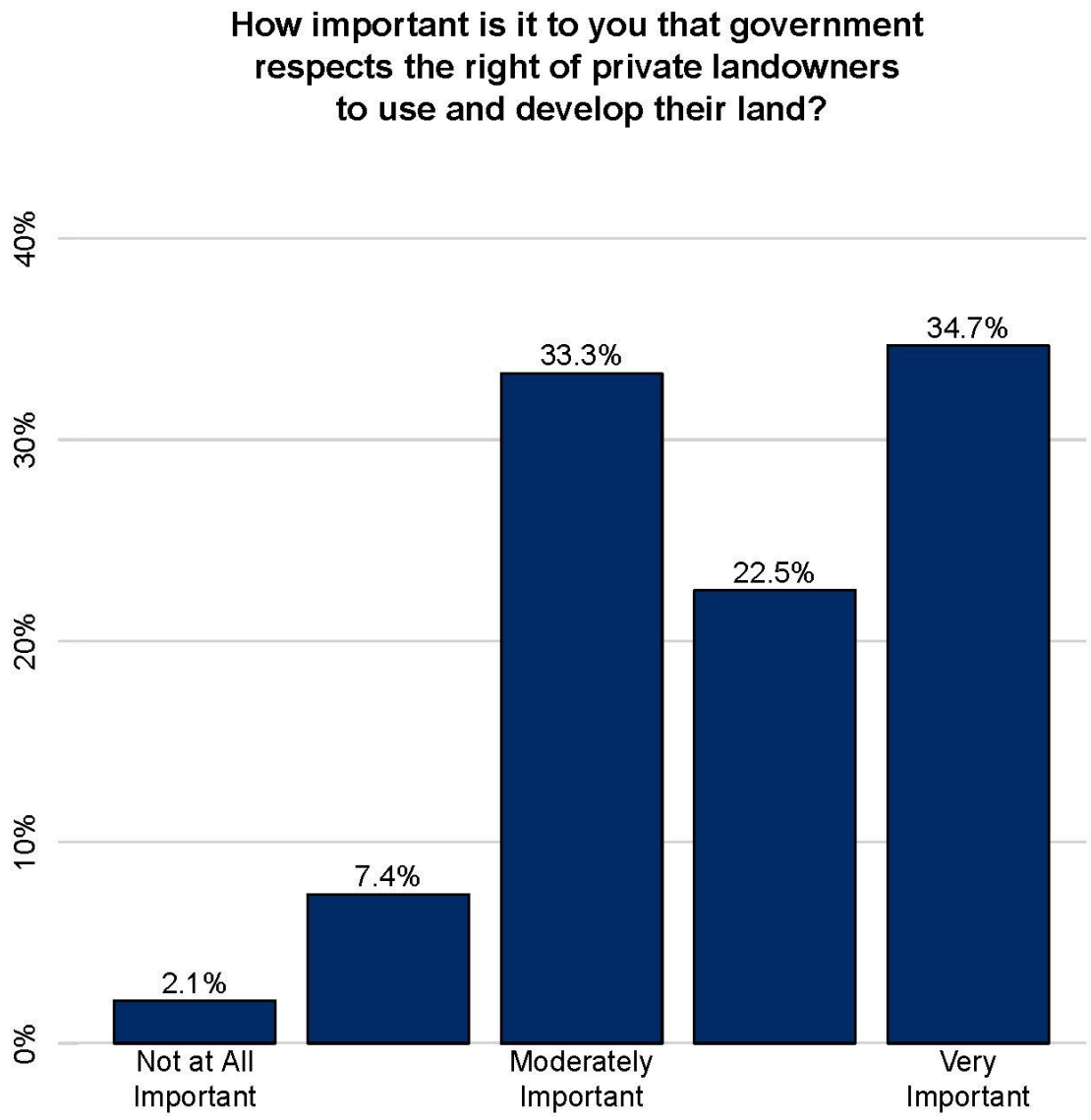


Figure 6. Importance of Landowner Rights

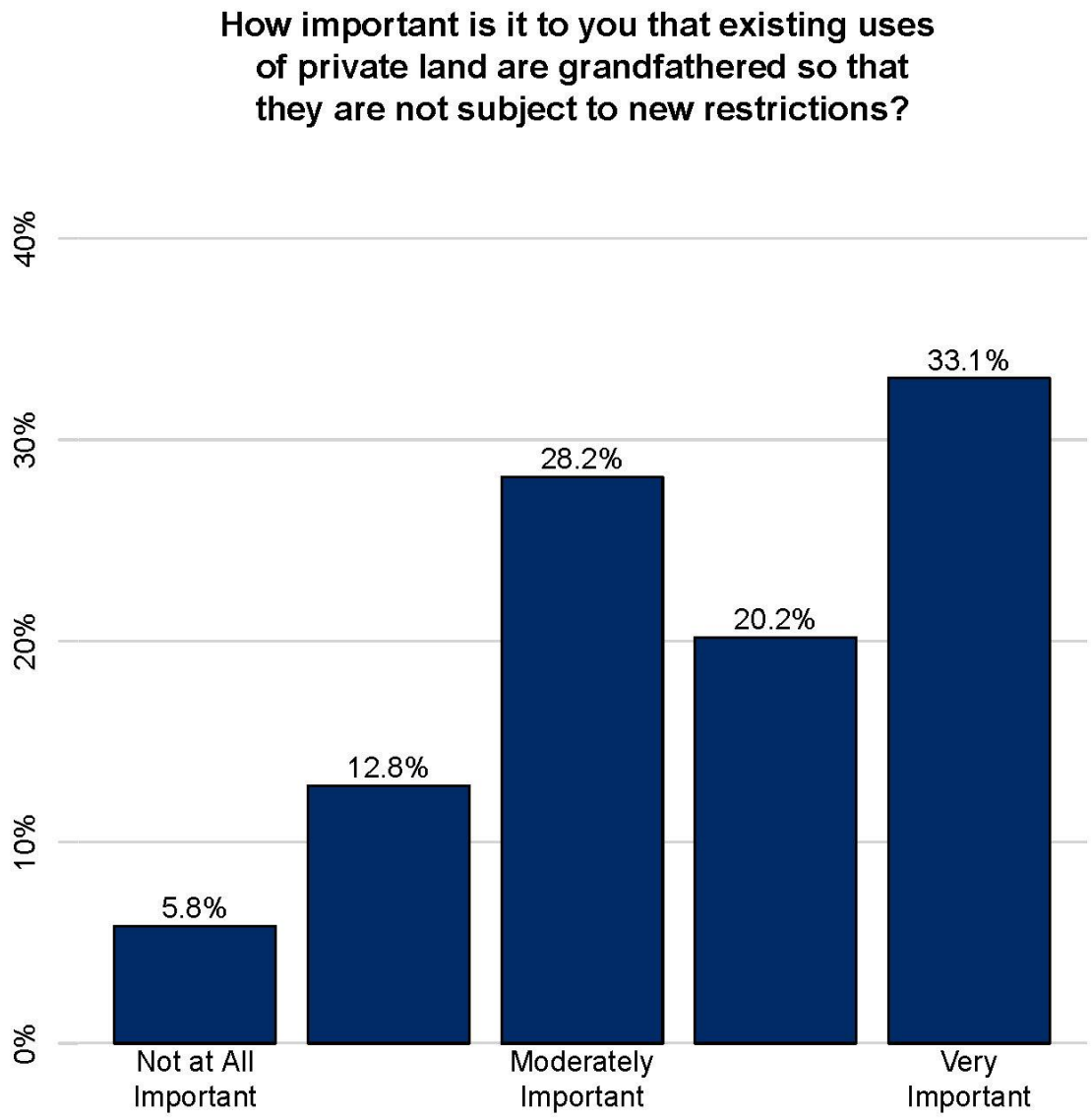


Figure 7. Importance of Grandfathering Land Uses

4.3 Fairness and Effectiveness of Land Use Regulations

In contrast to protecting the rights of landowners (which had only moderate importance on average), the fairness and effectiveness of land use regulations was considered to be very important. Approximately 65% of respondents considered it "very important" that existing regulations are enforced fairly and effectively (Figure 8). Only 2% of respondents considered this to be less than moderately important.

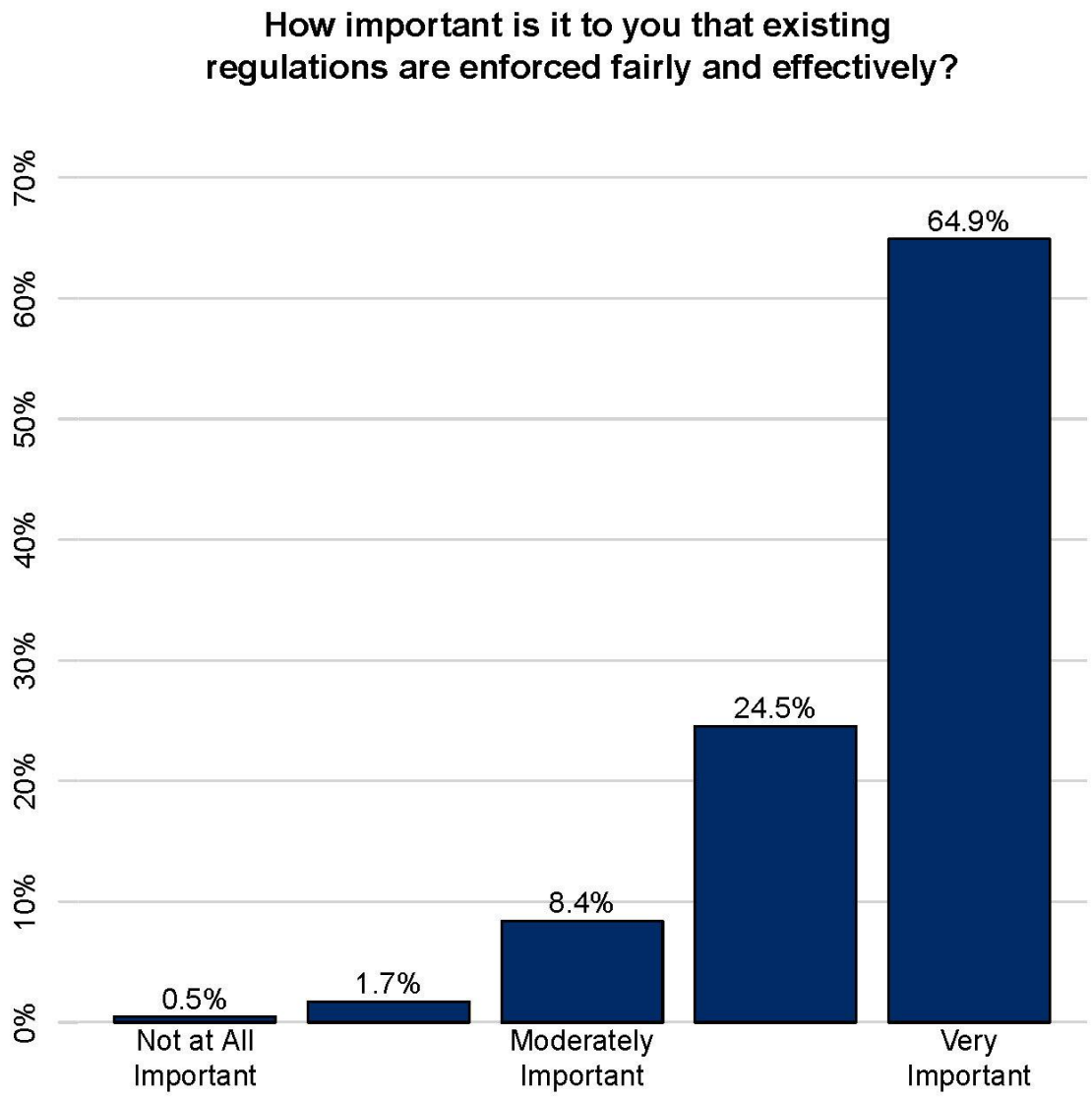


Figure 8. Importance of Fair and Effective Enforcement

4.4 Preventing Tax Increases

Actions to restore and protect riparian land can be costly, and one way to fund programs is through public taxes and fees. It is often believed that preventing tax increases is a top priority of many people. Results of the survey reject that common wisdom. Although preventing tax increases is very important to some people, it is less important on average than many other priorities. Only 44% of respondents considered it "very important" that taxes and fees paid by their households do not increase (in order to protect natural riparian land). Approximately 37% of respondents stated that preventing tax increases was moderately important or less (Figure 9).

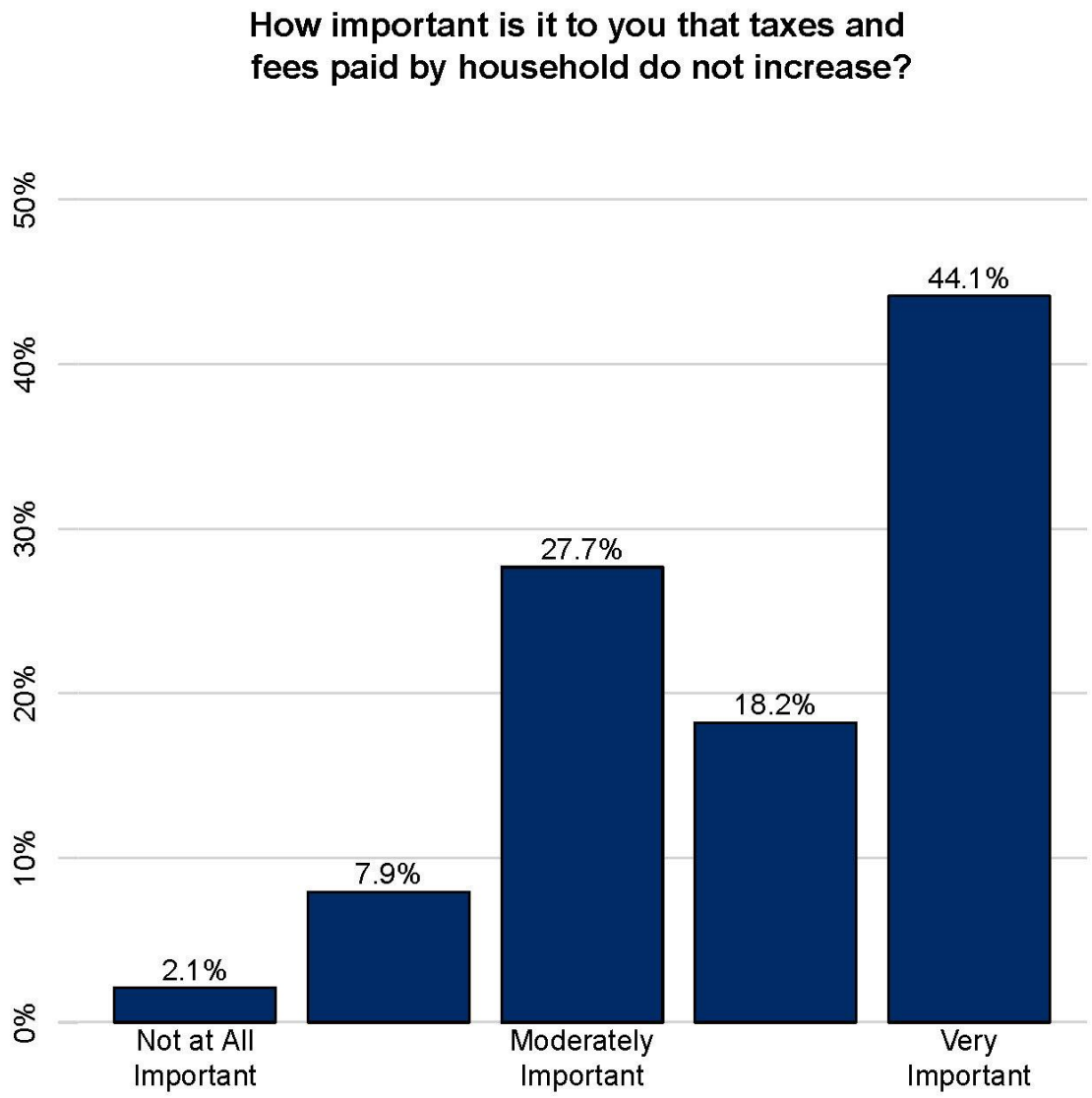


Figure 9. Importance of Preventing Tax Increases

4.5 Do Residents Support Greater Development Restrictions in General?
Survey results show that residents support the increased use of development setbacks (when development is required to be a certain minimum distance from the water) and land inspections to protect riparian land in the MBLR Watershed. As shown by Figure 10, over 73% of respondents indicated that they "support greater use of development setbacks and land inspections to limit future development on riparian land." Only 13% of respondents did not support greater use of these tools (the remaining 14% were unsure).

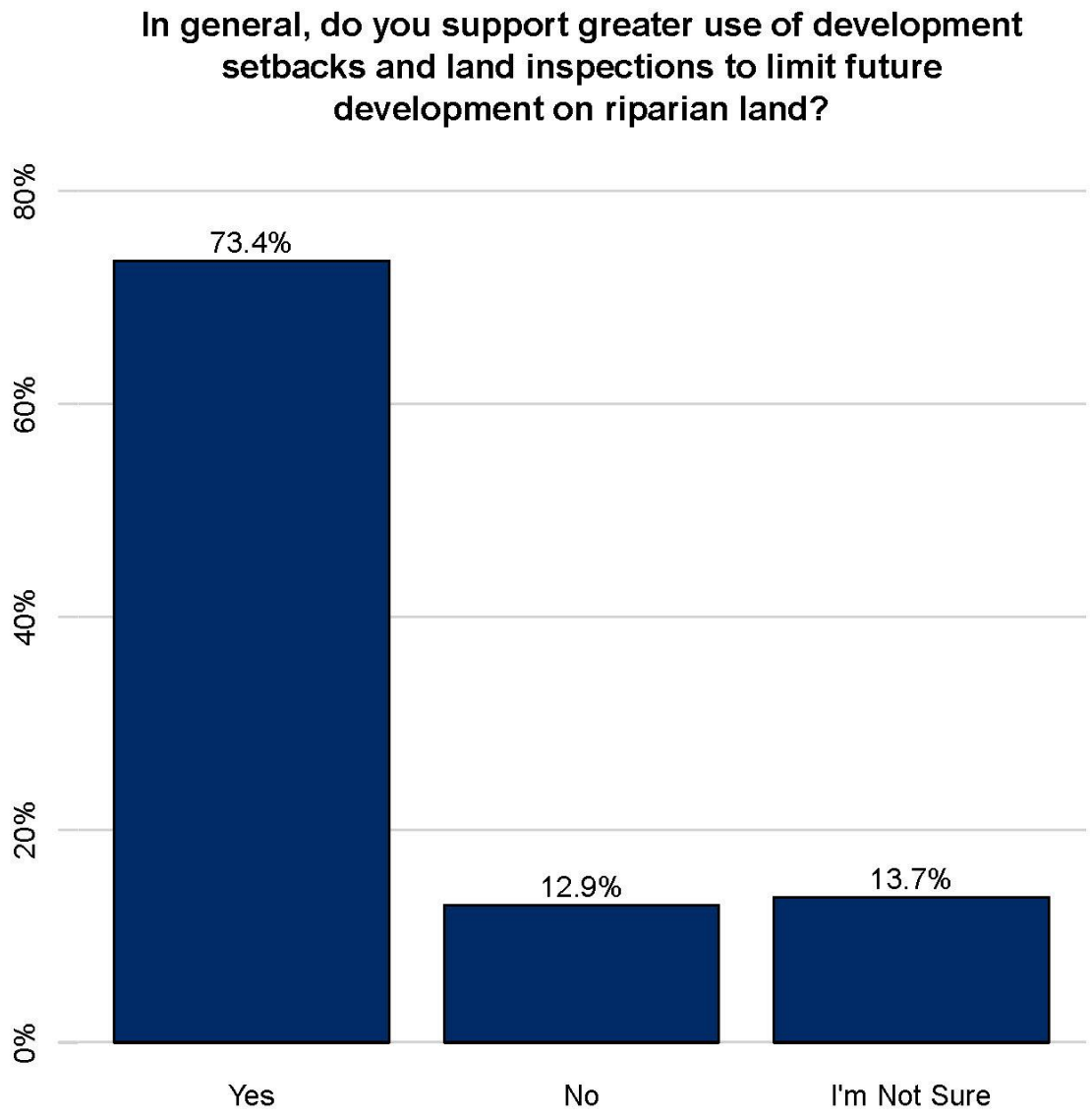


Figure 10. General Support for Development Setbacks and Inspections

5.0 Quantifying Ecosystem Service Values

One of the primary goals of the survey was to evaluate the types of tradeoffs that would be supported by Kennebunk, Sanford and Wells residents, when considering different ways to protect and restore riparian land in the MBLR Watershed. One of these tradeoffs is respondents' willingness to give up money (e.g., accept increased taxes or fees) to obtain different types of riparian land protection programs, with different effects. This is

interpreted as residents' willingness to pay (WTP), and may be used to quantify their values for the ecosystem services delivered under each plan.[12]

For example, assume that a person would vote "yes" for a program that would increase her tax bill by $100, in return for a specific set of ecosystem service improvements. That positive vote indicates that the person values the environmental improvements by at least $100—otherwise they would not support the program. This is the same way that market purchases reveal economic values, by showing the monetary tradeoffs that people are willing to make. By modeling how residents would vote for or against different possible programs to protect riparian land—with different costs and effects on ecosystem services—it is possible to calculate the value of ecosystem services to those residents.

To evaluate the tradeoffs supported by Kennebunk, Sanford and Wells residents, surveyed households were asked to choose among different types of programs to protect and restore riparian land in the MBLR Watershed, within referendum-style voting questions called choice experiments. Each voting choice was described in terms of projected effects on natural riparian land, the condition of local rivers, abundance of recreational fish in those rivers, the safety of water at local beaches for swimming, development restrictions and inspections, and annual household costs. Each of these voting questions asked the respondent to choose between two hypothetical but feasible protection programs with different effects and costs, and a "business as usual" alternative with no additional cost (i.e., Option A versus Option B versus Neither [N], or A-B-N). Seventy-two hypothetical A-B-N choices were developed, and divided randomly among surveys sent to different households. Each of these questions illustrated a different set of riparian land protection programs. Each household was asked to answer three of the seventy-two A-B-N choices. The combined votes of all households over all of these hypothetical A-B-N choices were used to calculate the tradeoffs households were willing to make, based on their observed votes. This rigorous, systematic design helps to ensure the validity of results.

Possible effects of each hypothetical riparian land management program over the next 10 years ("Comparing Protection Options"—Figure 11) used as a basis for the A-B-N choices were derived from scenarios for the MBLR Watershed. These were developed in coordination with scientists at the Wells National Estuarine Research Reserve, based on available ecological data collected from local watersheds specifically for this study. Within each question, each alternative (A, B or N) shows a possible outcome of riparian land protection and/or restoration in the watershed. The initial effect of riparian land programs is to increase the number of naturally vegetated riparian acres, described by the attribute *Riparian Land Condition*. The predicted consequences include (1) changes in the ecological condition of area rivers (*River Condition*), calculated using an aquatic biotic index; (2) changes in the relative abundance of recreational fish (*Recreational Fish*), quantified using MBLR sampling data on brook trout; and (3) changes in the safety of water quality for swimming at area beaches (*Safe Swimming*), characterized using data

[12] More generally, willingness to pay is defined as the maximum amount of money that a person (or group) would be willing to give up in exchange for a specified quantity of a good or service, rather than go without. It is the measure most commonly used by economists to quantify value.

on water quality testing from the Maine Healthy Beaches Program. In addition to these ecological outcomes, some of the presented programs would change the minimum width of the riparian area in the MBLR Watershed within which development would be restricted (*Development Setbacks*), and whether enforcement and inspections would be increased to prevent illegal development and clearing on riparian land (*Enforcement*). Annual household cost (*Cost*) was characterized as an unavoidable increase in taxes and fees required to implement each restoration plan.

COMPARING PROTECTION OPTIONS

The upcoming questions will ask you to compare different ways of protecting riparian land in Kennebunk, Sanford and Wells, and vote for the ones you prefer. You may also vote to reject the proposed programs and retain the status quo. **Effects of each option will be described by the following effects, as estimated by scientists:**

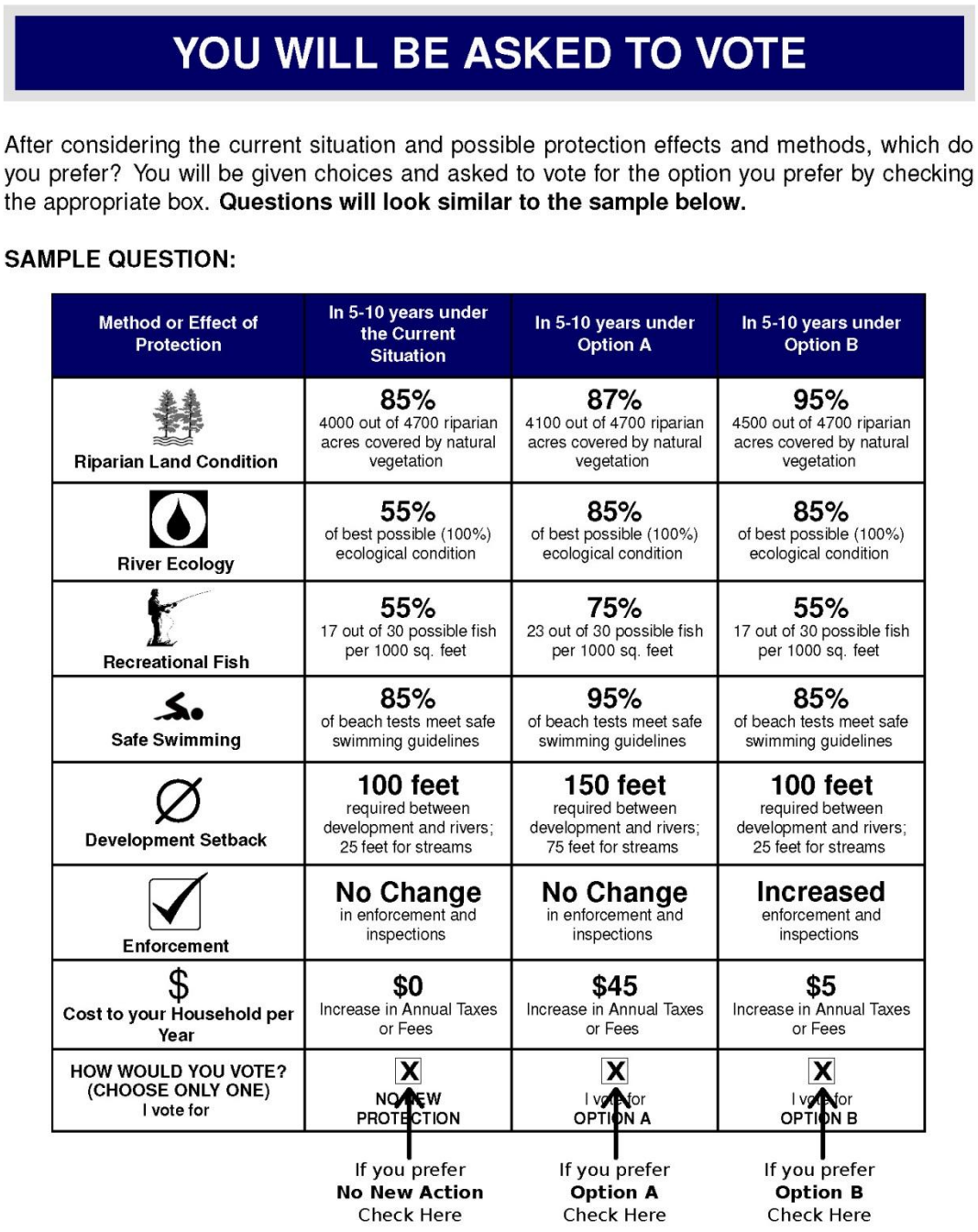
Effect	What it Means
Natural Riparian Land	The amount of riparian land covered by natural vegetation. Currently about 91% of the land is in natural condition. With no action **85%** of riparian land in the area (4000 acres) will remain in natural condition in 5-10 years.
River Ecology	Average ecological condition of area rivers, measured by the diversity of small organisms (dragonflies, mayflies, etc.) that live there. A score of 100% is the best possible condition in the area. A score of 0% means nothing lives in the water. With no action, the ecological condition in area rivers will be **55%** in 5-10 years. The score today is about 60%.
Recreational Fish	The number of recreational fish in area rivers, measured by scientific sampling of brook trout. A score of 100% would mean that area rivers contain the maximum number of trout possible (30 trout per 1000 sq. feet). Today there are about 19 trout per 1000 sq. feet. With no action, scientists predict there will be an average of 17 trout per 1000 sq. feet (**55%** of the most possible) in 5-10 years.
Safe Swimming	The percentage of days in which government tests show that area beaches (Laudholm, Drakes Island, Crescent Surf, and Parson) are safe for swimming. 100% means that all tests show water safe for swimming. With no action, scientists predict **85%** of tests will show water safe for swimming in 5-10 years.
Development Setback	The minimum width of the riparian area where development is restricted. Currently development and clearing is restricted within a minimum distance of **100 feet from rivers** and **25 feet from streams**. This distance is larger in some areas and for some types of development. Existing (legal) development would be grandfathered if setbacks change.
Enforcement	Whether enforcement is increased to prevent illegal development or clearing on riparian land. This could include inspections on private land if violations are suspected. Currently, inspections can only occur when a violation has been reported or as part of permitting.
Cost to your Household per Year	How much the policy will cost your household in unavoidable annual taxes and fees. These are guaranteed to only be spent on the protection option that is indicated.

7

Figure 11. Effects and Costs of Riparian Land Management Included in Choice Questions

Figure 12 shows an example of the type of A-B-N choices included in the survey. The annual household costs presented in each A-B-N choice are hypothetical. Some programs

include higher costs and others include lower costs, to evaluate how changes in these costs affect residents' votes for or against different types of programs.



YOU WILL BE ASKED TO VOTE

After considering the current situation and possible protection effects and methods, which do you prefer? You will be given choices and asked to vote for the option you prefer by checking the appropriate box. **Questions will look similar to the sample below.**

SAMPLE QUESTION:

Method or Effect of Protection	In 5-10 years under the Current Situation	In 5-10 years under Option A	In 5-10 years under Option B
Riparian Land Condition	**85%** 4000 out of 4700 riparian acres covered by natural vegetation	**87%** 4100 out of 4700 riparian acres covered by natural vegetation	**95%** 4500 out of 4700 riparian acres covered by natural vegetation
River Ecology	**55%** of best possible (100%) ecological condition	**85%** of best possible (100%) ecological condition	**85%** of best possible (100%) ecological condition
Recreational Fish	**55%** 17 out of 30 possible fish per 1000 sq. feet	**75%** 23 out of 30 possible fish per 1000 sq. feet	**55%** 17 out of 30 possible fish per 1000 sq. feet
Safe Swimming	**85%** of beach tests meet safe swimming guidelines	**95%** of beach tests meet safe swimming guidelines	**85%** of beach tests meet safe swimming guidelines
Development Setback	**100 feet** required between development and rivers; 25 feet for streams	**150 feet** required between development and rivers; 75 feet for streams	**100 feet** required between development and rivers; 25 feet for streams
Enforcement	**No Change** in enforcement and inspections	**No Change** in enforcement and inspections	**Increased** enforcement and inspections
$ Cost to your Household per Year	**$0** Increase in Annual Taxes or Fees	**$45** Increase in Annual Taxes or Fees	**$5** Increase in Annual Taxes or Fees
HOW WOULD YOU VOTE? (CHOOSE ONLY ONE) I vote for	X NO NEW PROTECTION	X I vote for OPTION A	X I vote for OPTION B

If you prefer **No New Action** Check Here

If you prefer **Option A** Check Here

If you prefer **Option B** Check Here

8

Figure 12. Example Choice Question

Prior to each choice, the survey presented information on the situation in the MBLR Watershed, as well as the different types of riparian land protection actions that could be used. Maps and graphics were included to illustrate the effects of these actions. All materials were subjected to extensive pretesting and revision over the three year survey development process. This process ensured that survey information and questions were clear and easily understood, and that questions addressed outcomes that were important to community residents.

5.1 Ecosystem Service Values and Riparian Land Protection

The choices of Kennebunk, Sanford and Wells residents show strong support for riparian land protection and/or restoration, even if it requires new taxes and fees. The choices also demonstrate the value of different types of protection outcomes (e.g., changes in ecosystem services).

Table 1 shows the value of each protection outcome and method (described in Figure 10) to an average household in the survey sample, based on observed votes. These may be interpreted as the amount that an average household would be willing to pay per year, in additional and reoccurring town taxes and fees, to obtain each of these outcomes. These are average values for each respondent household and reflect a WTP per year, *in perpetuity*. These results show that the value placed on riparian land protection depends on what is protected and how.

Table 1. Economic Value of Riparian Land Protection Outcomes

Outcome	**Description of Outcome** (All effects are within the MBLR Watershed)	**Value per Household, per Year** (Additional taxes/fees that each household would be willing to pay, per year)
Riparian Land Condition	The number of riparian acres with natural vegetation.	**$0.044** per additional acre with natural vegetation.
River Condition	The average ecological condition of area rivers, measured using a 100-point aquatic biotic index.	**$1.280** per point increase in the biotic index
Recreational Fish	The average number of brook trout per 1000 square feet of river.	**$3.833** per additional fish, per 1000 square feet of river
Swim Safety	The percentage of days during which government tests show that area beaches (Laudholm, Drakes Island, Crescent Surf and Parson) are safe for swimming.	**$2.020** per percentage point increase in safe swimming days
Setbacks	The minimum width of the riparian area where	**$0.140** per foot of **increased** development

	development is restricted, in feet.	setbacks.
Enforcement	Whether enforcement is increased to prevent illegal development or clearing on riparian land.	**$17.310** for increased enforcement and inspections, compared to the status quo

These results can be used to calculate residents' total value for different types of ecosystem service changes, and also to illustrate the tradeoffs that residents are willing to make. For example, increasing the number of brook trout in MBLR rivers by 1 fish per 1000 square feet (which as a value of $3.83 per household, per year) would have the same value to residents as restoring natural vegetation on 87.88 acres of riparian land (value = 87.89 × $0.04 ≈ $3.83 per household, per year). The same value would be provided by a program that increased the percentage of safe swimming days by 1.90 (value = 1.90 × $2.02 ≈ $3.83 per household, per year). Results such as these can be used to calculate the type of programs that would be most valued by residents of the area, and how to best design programs to meet residents' priorities.

Results also show that increases in minimum development restrictions (setbacks) and enforcement are *positively* valued by local residents—residents are more likely to support riparian land protection programs if those programs involve stronger restrictions on development, holding all else constant. This finding contradicts "common wisdom" that Maine residents would not support development restrictions to obtain improved environmental outcomes.

These results can also be used to quantify the combined value of riparian land protection or restoration to Kennebunk, Sanford and Wells residents. For example, consider a hypothetical riparian land protection and restoration plan that would lead to the following projected outcomes within the MBLR Watershed: (1) restore natural vegetation on 200 acres of currently cleared riparian land, (2) increase the ecological condition of rivers by 5 points on the 100 point aquatic biotic scale, (3) increase the average number of brook trout by 3 fish per 1000 square feet of river, (4) have no effect on the safety of local beaches for swimming, (5) make no change in required development setbacks, (6) increase enforcement and inspections of development restrictions on private land. Table 2 shows the total value of this plan, both to each household (on average) and to the three communities as a whole.

Table 2. Illustrative Economic Value of a Hypothetical Riparian Restoration Plan in the MBLR Watershed

(A) **Projected Outcome**	**(B)** **Additional Taxes/Fees that Each Household would be Willing to Pay – See Table 1**	**(C)** **Total Value per Household, Per Year** **(= A×B)**
Restore natural vegetation on 200 acres of riparian land	$0.044 per acre	$8.72
Increase ecological condition of rivers by 5 points on aquatic biotic index	$1.28 per point	$6.40
Increase the average number of brook trout by 3 fish per 1000 square feet of river	$3.833 per fish	$11.50
No effect on the safety of local beaches for swimming	$2.02 per percentage point increase in safe swimming days	$0.00
No change in required development setbacks	$0.140 per foot	$0.00
Increase enforcement and inspections	$17.31 for increased enforcement and inspections	$17.31
Total Plan Value per Household Per Year The amount that an average household would be willing to pay in additional taxes and fees, per year and in perpetuity, to obtain these combined outcomes		**$43.93** per household, per year (Equivalent to a total value of **$760,443 per year**, in perpetuity, when multiplied by all 17,309 households of Kennebunk, Sanford and Wells.)[13,14]

The illustrative scenario in Table 2 is just one of many examples that can be developed using the choice experiment results. As shown by Tables 1 and 2, residents of Kennebunk, Sanford and Wells receive considerable value from the potential outcomes of riparian land restoration, as reflected in their WTP. If given a choice, residents would vote to support programs (such as local bond issues) that would generate increased ecosystem services from riparian land in the MBLR watershed, even if those programs required additional taxes and fees. For example, assume that the program described above were offered to Kennebunk, Sanford and Wells voters at an average household cost of $20 per year (e.g., in additional property tax payments to support a local bond). Model results predict that 73.7% of residents would vote 'yes' for this proposal. This support reflects the personal value that the ecosystem services of riparian land provide to residents. Of course, residents' willingness to support any public program depends on a

[13] As of the 2010 Census there were 4,120 households in Wells, 4,689 in Kennebunk and 8,500 in Sanford.
[14] For example, over 20 years, this would imply that Kennebunk, Sanford and Wells residents would be willing to pay a total of $15.2 million in additional taxes and fees (20 × $760,443), in order to obtain these outcomes. This reflects the value they receive.

variety of other factors as well, including whether a program is viewed as feasible and whether funds are guaranteed to be spent for the intended purposes. Residents are also willing to accept greater restrictions on the use of private lands, and indeed are more likely to vote for programs that include more strict regulation of development in the riparian zone, and additional enforcement.

The survey also included questions to evaluate the validity of these results, and how respondents felt about the survey. The vast majority of respondents viewed the survey instrument favorably. Most indicated that the information and questions were easy to understand, that survey content was fair and balanced and that they were confident about their answers. For example, 76% of respondents agreed or strongly agreed that they felt confident in their survey answers, and 83% of respondents agreed or strongly agreed that they would vote the same way in a binding referendum.

5.2 Are these Real Economic Values?

These values are derived from a survey instrument and not a real binding vote. If given an actual choice (say, in a real binding vote), would people *really* pay these amounts? Although there is concern among some economists that surveys such as this can generate inflated value estimates, comparisons to actual binding referenda show that well-designed surveys such as this accurately predict people's votes and values.[15] Hence, while there is some degree of uncertainty in all scientific measurements (including measurements of economic value), the results provided here provide strong evidence that Kennebunk, Sanford and Wells residents receive considerable value from the ecosystem services of riparian land, and would vote for programs that enhance these services.

6.0 Conclusion

Quantifying the ecosystem service values and tradeoffs associated with environmental management alternatives can provide information crucial for policy design and to identify the often overlooked benefits of policies that enhance ecosystem sustainability. Results of the survey *Choices for Our Land and Water: A Survey of Kennebunk, Sanford and Wells Residents* demonstrate the types of economic value provided by natural riparian lands in the Merriland, Branch Brook and Little River Watershed, and the extent to which local residents are willing to pay for programs that would enhance these valued natural resources and the ecosystem services that they provide. These results are based on a random sample of Kennebunk, Sanford and Wells residents. Hence, they provide a more representative perspective on public values than is revealed by the small, self-selected and more vocal set of area residents who attend public meetings, are active in advocacy groups, or engage in other activities that influence public policy decisions. By providing a more representative perspective, the ecosystem service value results summarized here can help policymakers develop policies that more accurately reflect the values of all residents, not just a select few.

Some key findings of the study include:

[15] Johnston, R.J. 2006. Is Hypothetical Bias Universal? Validating Contingent Valuation Responses Using a Binding Public Referendum. Journal of Environmental Economics and Management 52(1): 469-481.

- Residents of Kennebunk, Sanford and Wells place high importance on environmental protection. The importance placed on environmental and ecosystem service protection is greater than that placed on the protection of landowner rights and prevention of tax increases.
- Residents hold considerable value for ecosystem services provided by riparian land. The value that people hold for riparian land restoration depends on how much land is restored, the effects on ecosystem services, and how restoration is accomplished. Residents are willing to pay for improvements in riparian land condition itself, as well as for improvements in the condition of local rivers, recreational fisheries, and swimming safety of local beaches that can result from the restoration of this land.
- All else equal, residents prefer management alternatives that *increase* restrictions on the development of riparian land (by increasing setback requirements) and that increase enforcement and inspections of these and other development restrictions. Residents prefer stronger regulation of development on riparian lands.
- Residents will support programs that restore and protect riparian land in the MBLR Watershed and associated ecosystem services, even if implementing these programs requires increases in the taxes and fees paid by their households.

The results of this study do not indicate what types of riparian land protection or restoration alternatives are right or wrong. Rather, the results predict which riparian land protection or restoration alternatives would be strongly supported by area residents because they are perceived as providing the greatest value. When combined with information on the projected ecological outcomes of riparian land management and the associated costs, results such as these can help identify management alternatives that best support the long term goals and values of residents, and generate the greatest sustainable economic value.

Appendix I. Demographic Profile of Respondents

The survey was mailed to a random sample of residents in Kennebunk, Sanford and Wells, including all residents of the MBLR watershed. The following summarizes the characteristics of those who responded. These results suggest that responses were received from a wide range of demographic groups, but the sample was of somewhat greater age, income and education than the general population. Females were more likely to respond than males.

Selected Socio-demographic Characteristics of the Survey Sample (Survey Responses)

What is your gender?

Male	Female
40%	60%

What is your age?

20~29	30~39	40~49	50~59	60~69	70~80	More than 80
2%	8%	14%	28%	26%	17%	6%

Do you live in the Merriland, Branch Brook and Little River Watershed?

Yes	No	Not Sure
55%	32%	13%

What is the highest level of education you have completed?

Less than high school	High school/GED	Some college	2~Year College	4~Year college	Graduate Degree (MS, PHD, etc.)
1%	17%	19%	14%	31%	19%

How long have you been a Maine resident?

Less than 5	5-19	20-34	35-49	50-65	More than 65
6%	23%	26%	19%	18%	9%

What category best describes your total household annual income?

Less than $10,000	$10,000 ~ $19,999	$20,000 ~ $39,999	$40,000 ~ $59,999	$60,000 ~ $79,999	$80,000 ~ $99,999	$100,000 ~ $249,999	$250,000 or more
2%	7%	18%	19%	17%	13%	20%	3%

Of the final survey sample, 33.7% of returned surveys were from Kennebunk residents, 33.1% were from Sanford residents, and 33.2% were from Wells residents.

Appendix II. Technical Details of the Choice Model and Results

Table A.1 shows the statistical results underlying the value estimates provided in Table 1. The random utility model for the choice experiment was estimated using mixed logit with Halton draws, allowing for correlations across multiple responses from each respondent. The model predicts the choices (or votes) that were made by each survey respondent, as a function of the attributes of the riparian land protection plans they considered. The final specification was chosen after the estimation of preliminary models with varying specifications of fixed and random coefficients. Coefficients on an alternative specific constant for the status quo (*ASC*), *Recreational Fish*, *Safe Swimming*, *Development Setbacks*, and *Enforcement* are specified as random with a normal distribution. The coefficient on *Cost* (sign-reversed) is random with a bounded triangular distribution, ensuring positive marginal utility of income. The coefficients on *Riparian Land Condition* and *River Condition* are specified as non-random. The model is statistically significant at $p<0.0001$, with all coefficient estimates on fixed and random parameters statistically significant at $p<0.01$. Willingness to pay estimates reported in Tables 1 and 2 are calculated from these results. Very similar results are derived from other specifications of the model (i.e., the results are statistically robust).

Table A.1. Mixed Logit Model Results

Chi squared [13 d.f.] 1174.99325
Significance level .00000
McFadden Pseudo R-squared .2411012
Number of obs.= 2218

	Coefficient	Standard Error	z	Prob. |z|>Z*	95% Confidence Interval
|Random parameters in utility functions					
NEITHER	-3.26424***	0.51291	-6.36	0.0000	-4.26952 -2.25896
FISH_PCT	0.04075***	0.00596	6.84	0.0000	.02907 0.05243
SWIM_PCT	0.07220***	0.01322	5.46	0.0000	.04629 0.09811
SETBACK_	0.00541***	0.00182	2.98	0.0029	.00185 0.00897
ENFORCE	0.64542***	0.11486	5.62	0.0000	.42031 0.87054
NEG_COST	0.04932***	0.00504	9.80	0.0000	.03945 0.05919
|Nonrandom parameters in utility functions					
LAND_PCT	0.07392***	0.01680	4.40	0.0000	.04099 0.10685
WATER_PC	0.04546***	0.00566	8.03	0.0000	.03436 0.05656
|Distns. of RPs. Std.Devs or limits of triangular					
NsNE	6.70172***	0.67433	9.94	0.0000	5.38006 8.02337
NsFISH_P	0.03404*	0.01758	1.94	0.0529	-.00042 0.06849
NsSWIM_P	0.05711	0.03967	1.44	0.1499	-.02063 0.13486
NsSETBAC	0.02565***	0.00370	6.94	0.0000	.01840 0.03289
NsENFORC	1.07711***	0.25742	4.18	0.0000	.57258 1.58165
TsNEG_CO	0.04932***	0.00504	9.80	0.0000	.03945 0.05919

Communication Audit and Mental Mapping Research Summary

Prepared By Verna DeLauer Ph.D., Franklin Pierce University & Clark University

April 2015

Introduction: If natural resource managers are to influence positive beliefs and behaviors toward riparian ecosystem services and shoreland protection then a clearer picture of how adults make meaning of these systems and themselves within them is critical (DeLauer 2013). Understanding adult beliefs, perceptions and values increases the opportunity for the Wells National Estuarine Research Reserve science to make the greatest impact with stakeholders and residents. The goals of the communications/mental modeling research stream were to evaluate current communication messages among the Wells Reserve and its partner stakeholders, capture Reserve staff and stakeholder beliefs about shoreland protection, test to see if those same beliefs were prevalent among residents within the Merriland, Branch Brook, and Little River (MBLR) watershed, and reevaluate communication messages and strategies to improve mutual understanding. The overarching research question was: *How should the Wells Reserve and its partner stakeholders communicate messages about shoreland protection and riparian buffers more effectively to build trusting relationships with residents, improve attitudes and change beliefs?*

Methods: A mental model methodology was adapted from Morgan et al's (2002) work on risk communication and included three data collection techniques: communication audit, mental modeling interviews and a confirmatory questionnaire. First, a communication audit of the Wells Reserve and four other environmental organizations in the MBLR watershed was conducted. A communications audit is an inventory of communication efforts of an organization (Brooks et al 2010). This includes capturing key audiences, messages, techniques, available resources, and program evaluation (Downs and Adrian 2004). The goal of an audit is to identify effective communications and engagement practices, areas of improvement and resource needs. This audit provided baseline information about the ways the Reserve and stakeholders were communicating about shoreland protection and how might the research results improve how they communicate or what they communicate. Workshops and presentations by experts to landowners were the most common engagement methods. Messaging focused on land conservation, viewsheds and how land use affects water quality. Time, financial and staff resources were lacking to increase outreach efforts, evaluate them, and conduct social science research.

Mental modeling interviews were conducted after the communications audit. Mental models, also called cognitive models or mapping, are used in a variety of contexts to assess ways in which people comprehend complex and uncertain environmental issues (CRED 2009; Welp et al. 2006; Morgan et al. 2002). They depict a person's beliefs about a concept, idea or system, including a representation of how a person interprets and relates disparate pieces of information and experiences.

Purposive and snowball sampling techniques were used to acquire a representative sample of 22 individuals of stakeholders, including municipal officials, developers and realtors, engineers, state officials and NGO staff. The first step in the mental modeling process was to conduct in-depth, open-ended interviews with this representative sample. The goal of these interviews was to capture patterns of beliefs one has about shoreland protection and riparian buffers. These interviews began with very open-ended questions such as, "Tell me what you know about buffers." Then questions such as, "You mentioned XX. Can you give me an example?" were asked to provoke participants to elaborate on their beliefs. As widely held or different beliefs became apparent, these patterns and divergences were further explored.

In qualitative research, data coding and analysis happen simultaneously. This involved identifying themes within the data and iteratively testing and retesting them to prove or disprove their salience. NVivo, a qualitative data analysis program, was used to organize the data and perform queries to explore latent connections in the data. Kohen's Kappa statistic was used to ensure greater than 80% inter-rater reliability between two coders. This process resulted in three themes that described common patterns of inference and belief held by stakeholders: 1. Change perception about regulation; 2. Specifically target new and seasonal residents; and, 3. Communicate with more empathy when working with landowners.

Using these data, individual mental models were created first to explore individual cognitive processes.
Next aggregate mental models were created using a program called Vensim to visually depict the beliefs stakeholders' collectively held about these three themes. The cognitive linkages illustrated in the final models showed shared frames of meaning among 50% or more stakeholders. An example is given at the end of this section.

Using the mental model findings, a set of confirmatory questions were added to the project's choice experiment survey to confirm whether the patterns of inference and belief found among stakeholders' mental models were also present among a large population of residents, i.e. n = 1,126.

Mental Model Findings

How should the Wells Reserve and its partner stakeholders communicate messages about shoreland protection and riparian buffers more effectively to build trusting relationships with residents, improve attitudes and change beliefs?

There were three collective beliefs that stood out among Wells staff and its stakeholder partners.

1. Perception about regulation must change so that landowners believe regulators are interested in the natural resources on *their* properties and are evaluating them on a case-by-case basis.
2. One's identity as a "Mainer" only assumes an interest in environmental custodianship if you are a long-time resident; new and seasonal residents are

mainly interested in ownership. An effort must be made to target new and seasonal residents with messages that encourage environmental custodianship.

3. To more fully engage landowners, they must be communicated to with empathy so that they believe that their property rights are being considered equally to environmental protection.

Likert scale questions were created related to these three beliefs to test agreement among residents.

1. To maintain a high quality of life in Maine, it is important to balance development with preservation and conservation.
2. I have heard of the Shoreland Protection Act.
3. I understand the goals of the Shoreland Protection Act.
4. There is sound scientific research that supports current zoning regulations on riparian land.
5. I consider myself a custodian of the land.
6. Regulations are needed to protect shoreland and clean water in York County.
7. It is equally important to protect private property rights and clean water. The long-term protection of the environment is more important than the right of an individual property owner to develop his/her property.

Mental Model Themes	Shoreland Regulation	Identity & Custodianship among new/seasonal residents	Environmental & Personal Balance
Survey Result	Over 50% of residents were not secure in their understanding of shoreland protection regulations	Over 50% of residents considered themselves custodians of the land regardless of years of residency	Nearly 90% of respondents agreed that private property rights were just as important as environmental protection
Communication Recommendation	Target younger audience; messaging about type of regulation	Strengthen messages about owners of one's land to custodians of one's land.	Messaging about the relationship between protecting one's home and the natural resources on one's property.
Survey Result	As one's income increased, support of regulation decreased.		Interest in private property rights decreased as one's affluence and education increased.
Communication	Further research on		Further research on

Recommendation	perception of regulation & of one's rights		perception of one's rights & of govt. to protect one's rights

Survey Results and Implications by Theme: A correlation matrix was used to identify potential relationships between individual questions and between individual questions and demographic attributes such as age, income, education, and years of residency in Maine. Chi Square analyses were conducted to further test significance.

Theme 1: Shoreland Regulation: Over 50% of respondents were not secure in their understanding of the Shoreland Protection Act though as age increased, understanding of the act increased. *Communication Tip*: The Reserve could target communications about shoreland regulations to a younger audience who may not currently own land but may do so in the future.

Despite an average knowledge and understanding of the Act, nearly 90% of respondents believed that shoreland regulations were important. *Communication Tip*: The Reserve could conduct further research to learn how residents were making sense of the idea of regulation or they could more strategically define regulation, using the Shoreland Protection Act as one example.

Those who were interested in environmental protection also favored regulation. However, as one's income increased, support of regulation decreased. *Communication Tip*: Further research would be needed to understand why regulation is not as important to more affluent residents. Becoming a steward and taking personal responsibility might be more powerful messages to this audience than a message about following regulations.

Results also indicated that there might not be a clear understanding of the science underlying the Shoreland Protection Act. *Communication Tip*: If the Reserve wanted to increase the impact of their science, more education about their research projects and how they would be useful to residents would be needed.

Theme 2: Targeting new/seasonal residents: Over half of respondents considered themselves custodians of the land. There were not any significant relationships between this and length of residency, age, education, or income. *Communication Tip:* The Reserve could recruit residents involved in stewardship activities to help educate and inform other residents. The Reserve could work with municipal officials to strengthen their messages about community stewardship and changing mindsets from owners of one's land to custodianship of one's land.

Theme 3: Recognizing the balance between private property rights and environmental protection: Nearly 90% of respondents agreed that private property rights were just as important as environmental protection yet these were negatively correlated, as interest in private property rights increased, interest in environmental protection decreased. *Communication Tip:* The Reserve could use messaging that showed a significant

relationship between protecting one's home and the natural resources on one's property or in one's community.

Similarly to regulation, interest in private property rights decreased as one's affluence increased. *Communication Tip:* More research could be conducted to understand how residents of different socio-economic means perceive private property rights, e.g. do less affluent residents feel their rights are more vulnerable therefore they are more protective of them and possibly see regulation as one way of protecting their rights.

In addition to income, as one's education increased one's interest in private property rights decreased. *Communication Tip:* More research could be conducted to understand whether there are particular educational experiences that contribute to this decreased sense of importance on rights, e.g. do more educated residents feel their rights are less vulnerable to political decisions because they better understand the political process?

Overall, results indicate that the Reserve and its partners could be more strategic in their communication strategies. The mental model results are applicable to the Reserve and its stakeholder partners because they identify common patterns of inference and belief and can be useful toward more strategic collaboration with one another, particularly those who are trying to communicate with similar audiences. The results also suggest the need for much more targeted and nuanced types of communication. The confirmatory questionnaire results could be applicable to the Reserve, its stakeholder partners and other Reserves around the country trying to gain more support of regulation, more interest in stewardship programs, and more balanced discussions about the many trade-offs involved in natural resource decision-making. Some of the recommendations call for further research and the communication audit showed that education and outreach resources were already tight. Inter-organizational collaboration could be useful. This research stream was able to use the existing choice experiment survey to administer a confirmatory questionnaire to a broader population while not expending additional resources. Interdisciplinary collaboration has the potential to be cost effective and mutually supportive.

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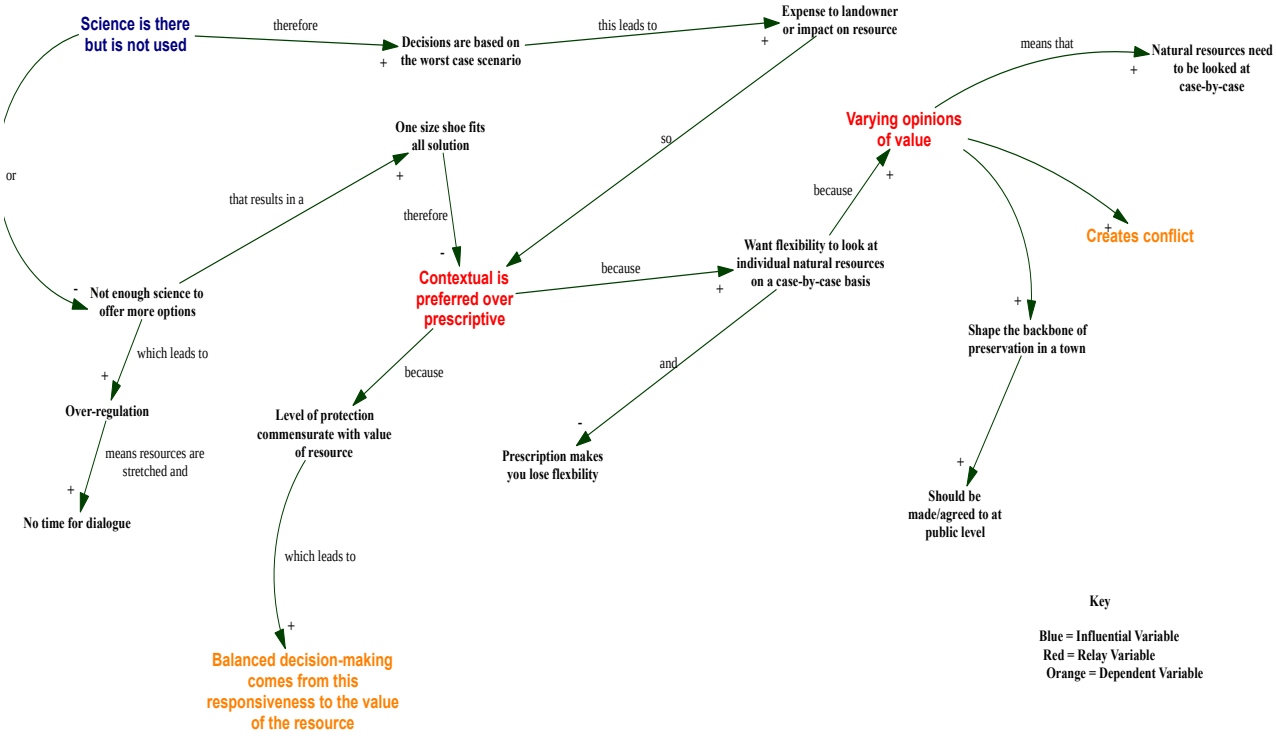
Mental Model Example from Shoreland Regulation Theme.



Appendix to Communications Audit and Mental Modeling
Handout Prepared for Ecosystem Valuation in the NERRS Summit April 2015

Sustaining Coastal Landscapes – Communication Audit and Mental Mapping

By Dr. Verna DeLauer, Franklin Pierce University & Clark University
Member of Research Team for Wells NERR Science Collaborative Project
"Sustaining Coastal Landscapes and Community Benefits:
Developing an Interdisciplinary Model for Enhancing the Impact of NERRS Science"

Introduction: If natural resource managers are to influence positive beliefs and behaviors toward riparian ecosystem services and shoreland protection then a clearer picture of how adults make meaning of these systems and themselves within them is critical (DeLauer 2013). Understanding adult beliefs, perceptions and values increases the opportunity for the Wells National Estuarine Research Reserve science to make the greatest impact with residents. The goal of the communications/mental mapping research was two-fold: to understand the collective beliefs about riparian buffers among Reserve staff and their stakeholder partners (e.g. municipal and state government, not-for-profit organizations) and based on those beliefs, to identify which communication and engagement strategies should be collectively prioritized.

Communication Audit: First, a communication audit of the Wells Reserve was conducted. A communications audit is an inventory of communication efforts of an organization (Brooks et al 2010). This includes capturing key audiences, messages, techniques, available resources, and program evaluation (Downs and Adrian 2004). For example, the Wells National Estuarine Research Reserve does not currently have an overarching communication vision. Rather, limited resources are spent promoting Reserve programs and events to attract visitors. The Reserve has specific targeted audiences such as town planners, the planning board, selectmen and landowners. They are interested in connecting with these particular audiences about land use as it relates to riparian ecosystem services.

Geographically, the Reserve staff is focused on messaging relevant to southern Maine. They want to communicate that clean water is a product of a natural landscape and requires greater attention to land conservation, proper riparian buffers and non-point source pollution. The tourism industry in particular causes tension for the Reserve and other environmentally-oriented organizations in Maine because of the economic benefits tourism brings to the State and the environmental impacts tourism has on pristine beaches, lakes and ponds.

The Reserve uses a variety of mechanisms to communicate these messages about clean water and land protection. Workshops, Coastal Training Program events and Rotary events are a few examples. Reserve staff also participates in watershed planning efforts in the region. They try to capitalize on existing opportunities to reach landowners and town planners. The Coastal Training Program, which is situated at the Reserve, is an important resource and support for communications staff. Other community organizations are also

important in building and maintaining a network of partners. Reserve staff uses other organizations' newsletters, for example, to communicate with their targeted audiences.

At present, there are limited resources for thorough, ongoing evaluation of their communication efforts. They do evaluate some of their workshops but do not have an evaluation plan in place for their other work. Overall, due to very little, if any, financial resources, communications staff takes advantages of opportunities to reach targeted audiences. Because of the lack of resources, communication planning is opportunistic rather than an integral process to further the NERRS mission.

Mental Mapping: Mental mapping interviews were conducted after the communications audit. Mental maps are used in a variety of contexts to assess ways in which people comprehend complex and uncertain environmental issues (CRED 2009; Welp et al. 2006; Morgan et al. 2002). Mental mapping was a useful methodology to understand how Reserve staff and stakeholder partners comprehend the complexity of riparian buffers. Purposive and snowball sampling techniques were used to acquire a representative sample of 22 individuals, including Reserve staff, municipal officials, developers and realtors, engineers, state officials and NGO staff. The first step in the mental mapping process was to conduct in-depth, open-ended interviews with this representative sample. The goal of these interviews was to capture patterns of beliefs one has about shoreland protection and riparian buffers. These interviews began with very open-ended questions such as, "Tell me what you know about buffers." Then questions such as, "You mentioned XX. Can you give me an example?" were asked to provoke participants to elaborate on their beliefs. As widely held or different beliefs became apparent, these patterns and divergences were further explored.

In qualitative research, data coding and analysis happen simultaneously. This involved identifying themes within the data and iteratively testing and retesting them to prove or disprove their salience. NVivo, a qualitative data analysis program, was used to organize the data and perform queries to explore latent connections in the data. Kohen's Kappa statistic was used to ensure greater than 80% inter-rater reliability between two coders. We mapped what the research participants believed to be true about York County residents and riparian buffers. Using these data, individual mental models were created first to explore individual cognitive processes. Next aggregate mental models were created using a program called Vensim to visually depict the collective beliefs held about these three themes.

Mental Mapping Results: There were three collective beliefs that stood out among Wells staff and its stakeholder partners.

1. Perception about regulation must change so that landowners believe regulators are interested in the natural resources on *their* properties and are evaluating them on a case-by-case basis.

2. One's identity as a "Mainer" only assumes an interest in environmental custodianship if you are a long-time resident; new and seasonal residents are

mainly interested in ownership. An effort must be made to target new and seasonal residents with messages that encourage environmental custodianship.

3. To more fully engage landowners, they must be communicated to with empathy so that they believe that their property rights are being considered *equally* to environmental protection.

Survey: To explore the relevance of the mental mapping results to residents, seven questions were added to an existing survey that was administered to nearly 1200 residents within the watershed. A correlation matrix was used to identify potential relationships between individual questions and between individual questions and demographic attributes such as age, income, education, and years of residency in Maine. Chi Square analyses were conducted to further test significance.

What Reserve staff and stakeholder partners believed	How residents responded
Residents see regulation as negative.	Over 50% of (particularly younger) residents did not understand shoreland protection regulations. Residents with higher incomes felt more mistrust for regulation than those with lower incomes.
Long-time residents care about environmental protection more than new/seasonal residents	There was no correlation between length or type of residency and caring about environmental protection
Residents believe individual rights *and* environmental protection must be balanced.	90% of residents, particularly those with lower income and less formal education believe private property rights are *as* important as environmental protection

Strategies for Achieving Communication Goals: First and foremost, it is important for the Reserve and the stakeholders who participated in this research to discuss results and generate a collective plan for better educating and communicating with residents about riparian buffers. The communication audit for the Reserve identified the challenges they face in fully addressing their communication needs. The collective mental mapping results identified the communication priorities among the Reserve and its partners. The survey results tested the relevance of the mental maps with a larger population. Based on these results, the following strategies are recommended:

1. Target communications about shoreland regulations to a younger audience who may not currently own land but may do so in the future.

2. Further research is needed to understand why regulation is not as important to more affluent residents. Becoming a steward and taking personal responsibility might be more powerful messages for this audience rather than messaging about rules and regulations.

3. Specifically communicate the usefulness of the Reserve's research to residents, e.g. how is a particular research project or outcome beneficial to a specific segment of the population.

4. Recruit residents involved in stewardship activities (particularly long-term residents) to help educate and inform other residents. The Reserve could work with municipal officials to strengthen their messages about community stewardship.

5. Use messaging that shows an integral relationship between protecting one's home and the natural resources on one's property or in one's community.

6. Further research is needed to understand why less affluent and less educated residents are particularly interested in protecting the balance between their property rights and environmental protection.

7. Communicate with landowners in ways that promote protection of riparian ecosystem services while simultaneously honoring their property rights.

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Connecting Place-based Ecosystem Services Research with National Priorities

Prepared by Peter Wiley
NOAA Office for Coastal Management
August 2014

One of the most important outcomes of this project is the contributions it makes to NERRS and NOAA level needs for specific information about ecosystem service values, how they are applied, and examples of comprehensive and appropriate methodology and approach.

NOAA and Ecosystem Services

For some time, NOAA has been interested in expanding the agency's ability to estimate and apply ecosystem services in a variety of management contexts. Although there are many examples of ecosystem services research in NOAA, they are largely inconsistent, disjointed, and not well supported. One of the reasons for this has been the historic lack of a consistent platform with which to conduct this kind of research (fisheries research notwithstanding). The NERRS has great potential to provide a consistent platform with a diversity of geographic, habitat and stakeholder contexts.

Use of information on the economic value of coastal and ocean resources at NOAA is not a new idea. This work has been ongoing for some time in support of fisheries management, natural resource damage assessment, and sanctuaries management. What has been missing is an explicit connection between economic value and ecosystem condition and function. The trend toward integrating ecological and economic parameters in the estimation of values has been going up in recent years but there is still considerable confusion as to what constitutes ecosystem services research. Specifically, ecosystem services valuation work that does not include, or has weaknesses in either the ecological or economic side remains common.

This project provides a clear example, which includes significant ecological and economic research, as well as an iterative process by which the economists and ecologists had regular communication regarding relative needs, and how the work could best be integrated. Additionally, the stakeholder engagement, and communication aspects of this project provided further clear examples of what is required for an ecosystem services project to be effectively carried out and applied.

The project team has regularly interacted with NOAA staff in order to assure that the lessons learned in the conduct of the project would benefit existing and future NOAA efforts. The interaction included the Office of the Chief Economist, the Ecosystem Services Working Group, the Ecosystem Research Agenda Committee, as well as numerous other staff who conduct or manage ecosystem services work.

In order to manage coastal and ocean resources from an informed perspective, NOAA must have consistent and comprehensive information about the relative benefits and costs

of its management actions. This information will depend heavily on the agency's capacity to conduct ecosystem services research as is illustrated in the results of this project.

NERRS as a "Living Laboratory" for research on ecosystem service valuation

The NERRS, with its established monitoring program and its role in individual communities, have a unique potential to take advantage of this context to explore the significant potential for utilizing ecosystem services research in a variety of management and decision frameworks.

Through work with local coastal managers, planners and decision-makers, NERRS staff has the connections with their local networks and an understanding of the information needs to make informed decisions. NERRS staff also has access to the System Wide Monitoring Program, a rich repository of water quality monitoring data that can serve as the foundation for the ecological data needed to conduct ecosystem services work.

The results of this project can be used to explicitly identify what is needed in terms of these data and to identify the remaining gaps. The economic components of this work are one area that will need to be enhanced to expand this work. In partnership with NERRA, NOAA is currently exploring the best way to approach this work, including the establishment of a socioeconomic observing system that could be a regular source of socioeconomic data to complement the SWMP data.

The approach, data needs, and interdisciplinary interactions in this project have, and will continue to serve as a model for how this program might be developed.
It also applies a collaborative approach to increase the likelihood that results will be directly applied to address coastal area management challenges in the Wells NERR and surrounding coastal areas. The work is directly responsive to goals of the NERRS Strategic Plan, including "demonstrate and facilitate the development of sound science and best practices for improved local and regional coastal resource management" (NERRS 2006). It explicitly addresses Goal 4 of the NERRS Research and Monitoring Plan (2006-2011), to ensure that scientific, coastal management and education communities, as well as the general public, use data, products, tools, and techniques generated at the NERRS.

Developing an Interdisciplinary Model for Enhancing the Impact of NERRS Science

Prepared by Christine Feurt Ph.D.
Coastal Training Program Director, Wells National Estuarine Research Reserve
Director Center for Sustainable Communities, University of New England
July 2015

> *Estuaries, where rivers meet the sea, are among the nation's most biologically rich and economically important ecosystems. They are also one of the most vulnerable – situated on the front lines of natural and human-induced change. The interconnection between the health of estuaries and society's economic and recreational well-being is increasingly evident, and coastal conservation is being driven by both ecological and societal needs. The National Estuarine Research Reserve System, a network of 28 protected areas along America's coasts, responds to these needs by providing platforms for learning and teaching, applying research to management, and practicing coastal stewardship. Each reserve in the national system serves as a place-based living laboratory and classroom where program development, research techniques, and management approaches can be piloted and applied to issues of local, regional, and national importance*
>
> Introduction to NERRS Strategic Plan, 2011

<u>This Reserve Initiated Project Enhanced Capacity within the NERRS</u>

The National Estuarine Research Reserve System (NERRS) protects over 1.3 million acres of salt and fresh water estuaries. These estuaries have been selected for inclusion in the system as representative examples from distinct bio-geographical regions of the US including Puerto Rico. The concept for the system was established by the Coastal Zone Management Act of 1972. Reserves are managed as a state-federal partnership where NOAA is the federal partner. State partners can be agencies, universities or designated partnerships. Each Reserve implements a site specific management plan consisting of research, education, training and stewardship programs.

This project engaged all aspects of the NERR system in collaborative interdisciplinary research aligned with national goals articulated in the NERRS Strategic Plan and in response to coastal management issues identified as important to local Wells NERR stakeholders. As part of one of the stakeholder workshops developed for this project, a mental model narrative of "Collaborative Research" was developed. This mental model narrative was used during the *Bridging the Gulfs* workshop at the Wells NERR,

> Collaborative Research is an approach to addressing a research question or testing a research hypothesis that includes people who have a stake in or connection to the research. Collaborative research is an adaptable

> approach that can engage stakeholders in a single phase of a research project or in multiple aspects of the research. Stakeholders and researchers can work together to identify the research question, determine methods of data collection, make sense of research findings and evaluate applications of research findings. There is evidence to support the concept that engaging stakeholders in the research project increases the application of research findings to solve societal problems. Collaborative research methods have been used in social sciences for decades, especially in anthropology. Collaborative research methods are becoming increasingly important in interdisciplinary research practices associated with adaptive ecosystem management, coupled human and natural systems research, research on social ecological systems and resilience, and sustainability science.

Collaborative research was a relatively new concept for the NERRS in 2010 when the NERRS Science Collaborative released their first RFP. This project was developed in response to that RFP addressing the requirements and criteria specifically articulated therein. Because the proposal was initiated by a Reserve, the proposal design was strongly aligned with the goals and objectives of the NERRS. Proposals emanated from a University owe allegiance and compliance first to their University's Office of Sponsored Research. NERRS strategic goals and priorities are of secondary importance and are highlighted in a proposal primarily in the limiting context of an individual RFP.

The Reserve system is guided by a Strategic Plan developed collaboratively by members of the system and NOAA (NERRS/NOAA, 2011). This project was designed to specifically address key elements of the NERRS Strategic Plan, which was developed as the project began. Alignment of this project with multiple goals of the NERRS Strategic Plan is highlighted below.

> NERRS Priorities addressed by *Sustaining Coastal Landscapes and Community Benefits*
>
> **Protected Places Goal**: Estuaries and coastal watersheds are better protected and managed by implementing place-based approaches at Reserves.
>
> *Objective*: Develop, demonstrate, and evaluate tools and practices at reserves that advance progress on habitat protection, water quality, and climate change impacts.
>
> *Priority Strategy Used*: Implement engagement programs to promote estuarine resource stewardship.
>
> **Science Goal**: NERRS scientific investigations improve understanding and inform decisions affecting estuaries and coastal watersheds.

Objectives: Characterize coastal watersheds and estuary ecosystems and quantify ecosystem services to support ecosystem-based management of natural and built communities.

Increase social science research and use of social information to foster coastal stewards that value and protect estuaries.

Priority Strategies Used:
Lead Reserve-based collaborative projects that connect scientists with intended users from problem definition through implementation.

Develop and implement strategies that build reserve capacity to conduct and use social science to address coastal management issues

People Goal: NERRS education and training increases participants' environmental literacy and ability to make science-based decisions related to estuaries and coastal watersheds.

Objective: Improve the capacity and skills of coastal decision makers to use and apply science-based information in decisions that affect estuaries and coastal watersheds.

Priority Strategies Used:
Include relevant estuarine research and data in reserve professional training and education programs.

Expand training for coastal decision makers focused on climate change, habitat protection, and water quality issues.

A Suite of Six Training and Outreach Approaches Engaged the NERRS with the Project

I. *Working Together to Get Things Done* Training 2012
Collaborative Learning Training developed in partnership with Wells NERR CTP and the NERRS Science Collaborative. During the period from January – August 2012 eight trainings were delivered at: Elkhorn Slough NERR, Waquoit Bay NERR, Rookery Bay NERR, Grand Bay/Weeks Bay NERR, Tijuana River NERR, Padilla Bay NERR, Old Woman Creek NERR, and North Carolina NERR. 250 participants attended the two day training at all sites. While these trainings were not funded as part of this grant they did contribute to goals of increased used of collaborative research methods in the NERRS and provided valuable insights into national challenges faced by Reserve stakeholders attempting to implement collaborative approaches. This focused interaction with the NERRS staff provided useful information that was used to adapt the findings of this project for dissemination to the system as part of subsequent meetings and

trainings. This training was offered in 2013 at the Narragansett Bay NERR and was adapted to a one day and half day training workshop for national conferences sponsored by EPA and A Community for Ecosystem Services (ACES). This training is available for all Reserves and can be scheduled through the Wells NERR Coastal Training Program. Materials for this training will be available on the Wells Reserve website beginning September 2015. Resource materials include a participant and facilitator workbook, process agenda, Collaborative Learning Guide, Cultural Models Primer and workshop power point slides.

II. Qualitative Methods On-line Course 2013 Archived on Wells NERR website at, http://www.wellsreserve.org/blog/664-nerrs_online_qualitative_research_course

Designed following a needs assessment of Coastal Training Program (CTP) Coordinators, this three part seminar style on-line course provided CTP Coordinators with an overview of qualitative research methods relevant to their work. Resources for this course include videos of the seminars, course assignments and key literature resources.

III. Webinars: Qualitative Methods & Ecosystem Service Valuation 2012 & 2015
Dr. Verna DeLauer presented a preliminary webinar before the on line course. The information in this webinar was incorporated into the on line course.

Dr. Robert Johnston presented a webinar entitled *Ecosystem Service Valuation – An Economist's Perspective* in July 2015. This presentation was a repeat of Dr. Johnston's presentation at the Ecosystem Services Summit at the Wells NERR in April 2015. The webinar was recording and will be archived on the Wells NERR website and made available with other resources from the Ecosystem Services Summit. This webinar provided an overview for people considering conducting an ecosystem services valuation, using a decision-making framework to guide the design of such studies.

IV. *Bridging the Gulfs* 2014 Wells NERR; 2015 Mission Aransas NERR. Funded by a NERRS Science Collaborative Transfer Grant to share lessons learned from a suite of collaborative research projects. A description of the Mission Aransas course appears below. A Wells NERR website of resources from the trainings is under development and should be available in September 2015.

Interdisciplinary Methods for Stakeholder Engagement and Collaborative Research
Lessons from the National Estuarine Research Reserve System (NERRS)
January 14 – 15, 2015
Mission Aransas National Estuarine Research Reserve, Texas

Workshop Goal: *to build awareness, capacity and skills to enable coastal management and research communities to use expert interdisciplinary practices to*

engage stakeholders in developing and implementing collaborative research projects that link science to coastal management and policy.

Overview

Collaborative research is one method for "bridging the gulf" between science and policy. The NERRS Science Collaborative (NSC) projects use interdisciplinary methods for understanding stakeholder priorities and motivations for engaging in collaborative projects with researchers. For the past five years, developing and applying methods for stakeholder engagement in collaborative research that facilitates the use of science in decision-making has been a national focus for the NSC projects. The Wells, Maine and Mission-Aransas, Texas NERRs projects used different methods to understand and engage stakeholders and researchers in their projects. The *Bridging the Gulfs* training shares those methods more broadly with the NERRS and their partners through two trainings – one delivered at the Wells NERR in the Gulf of Maine (September 2014) and one delivered at the Mission-Aransas NERR in the Gulf of Mexico. Reserve staff, coastal managers and researchers in each region are the audience for the trainings. The trainings transfer collaborative research methodologies between Texas and Maine as well as engaging other reserves and their partners in a discussion of lessons learned about collaborative research best practices that can be adopted across the NERRS and within the coastal management community.

Both the Wells NERR and Mission-Aransas NERR projects have expanded upon the framework provided by Collaborative Learning to explicitly assess stakeholder understanding, foster the development of shared knowledge and move diverse stakeholder groups toward mutually agreed upon improvements in management and policy. In addition to the Maine and Texas examples, the Chesapeake Bay Maryland NERR has adapted Collaborative Learning in a project focusing on marsh and human community resilience to sea level rise that will be included in the training. The *Bridging the Gulfs* training builds competencies in particular collaborative research methodologies including: conducting mediated modeling, mental modeling and resilience practice. Evaluation of additional practices will be shared among participants at both trainings to develop a *Bridging the Gulfs Best Practices Primer* for the NERRS and key partners. We hope this *Primer* will inform the next generation of NERRS Science Collaborative projects and will be a resource for groups engaged in collaborative research.

<u>Bridging the Gulf Objectives</u>

1. Participants will have a clear understanding of the interdisciplinary methods used by NSC projects in Wells, Mission-Aransas and Chesapeake Bay Maryland NERRs and evaluate how those methods might be adapted to their work.
2. Participants will provide examples from their work of methods used to foster stakeholder engagement and collaborative research in coastal management.

3. Participants will learn how the concept of boundary spanning and the role of boundary spanners *bridge the gulf* between science and management, and will evaluate the boundary spanning concept for its relevance to their own work.
4. Drawing from their experience, participants will identify common barriers to stakeholder engagement and the effective translation of science to decision-making that could be addressed using methods identified during the training.
5. Drawing from experience, presentations, small group work and facilitated discussions, participants will contribute to the development of a Primer of best practices for stakeholder engagement in collaborative research.
6. Participants will experience and evaluate a Collaborative Learning event as a method designed to model stakeholder engagement that generates collective findings to make progress on shared goals.

V. Ecosystem Services Summit At the Wells NERR 2015

This Summit was funded as part of the original grant to bring participants from across the NERRS together to learn about the findings of the project. Objectives of the workshop are listed below. These included furthering the conversation across the system for using an ecosystem services approach to support the mission of the NERRS. Results of the Summit are currently being analyzed and will be posted on the Wells NERR website with other resources from the Summit in September 2015. Results of the Summit will be shared during the NERRS/NERRA Annual Conference in October 2015.

Valuing Ecosystem Services in the NERRS
A Summit at the Wells NERR
April 30-May 1, 2015

Objectives for the Summit

- Build upon current ecosystem services work in the NERRS to adapt an ecosystem services approach more broadly to accomplish the mission of the system and contribute to NOAA priorities.
- Explore the economic, ecological, engagement and communication elements of ecosystem services work in the NERRS with economists, ecologists, NERRS and NOAA staff.
- Understand the research and capability requirements for conducting ecosystem services research that contributes to coastal management efforts to build resilience in coastal communities.
- Building upon reserve specific system models developed at the 2015 NERRS Program Managers' Meeting; develop a more detailed strategy for conducting ecosystem services research at specific reserves.
- Understand the common needs for valuing ecosystem services across the NERRS and explore the potential for cross-reserve collaboration.

Agenda Day 1: Thursday April 30, 2015

Time	Topics and Objectives	Responsibility
8:30	**Registration and Breakfast** *Objectives:* Participant list is finalized and brains are fueled and caffeinated	**Cox** **Wiley**
9:00	**Welcome and Introductions** *Objectives:* Participants understand objectives for the summit and review the agenda. Through individual introductions, participants identify what comes to mind for them about ecosystem services through an introductory activity "Ecosystem services are _____(one word) because _____ (a few words)" 30 seconds each person	**Miller** facilitate **Cox** record on flip chart **Nick** record on computer **Wiley, Miller, Cox,** provide examples
9:40	**Ecosystem Services 101** *Objectives*: Participants understand the definition of ecosystem services and the elements that are part of the framework of an ecosystem service approach	**Wiley**
10:00	**Break and Gallery Walk** *Objectives of Gallery Walk:* participants use flip charts around the room to record coastal management issues they face that would benefit from an ecosystem services approach	**Miller and Cox**
10:15	**Ecosystem Services Work Currently Underway in the NERRS** *Objectives:* Participants can identify diverse examples of projects in the NERRS where an ecosystem services approach was used and describe the coastal management issue, the role the NERR played in the project, the ecosystem services, and key stakeholders for each project. Each presenter speaks for 10 minutes using about 10 slides. Describe: The coastal management issue and objective of the project The role the Reserve played in the project The ecosystem services focused on Key stakeholders The outcome of the project resulting from use of an ecosystem service approach If the application of the approach is in progress speak to	**Goodrich** *Tijuana River NERR, CA* **Swanson** *Mission Aransas NERR, TX* **Washburn** *Lake Superior NERR, WI* **Riley** *Great Bay NERR, NH*

	that time frame.	
11:30	**Valuing Ecosystems Services – An Economist's Perspective** *Objectives:* Participants will understand • The definition of economic value from an economist's perspective. • The methods that economists use to determine value • The reasons for conducting an ecosystem service valuation • The basic elements of an ecosystem service valuation • What a NERRS manager needs to know to develop or evaluate a proposal to conduct ecosystem service valuation work at a Reserve	**Johnston** *George Perkins Marsh Institute* *Clark University*
12:30	**Lunch**	
1:30	**Discussion of NERRS ideas for Ecosystem Services Work** *Objectives:* NERRS participants share ideas and pose questions for ecosystem services work in discussion with Dr. Robert Johnston	**Participants & Johnston**
2:00	**Learning from Ecosystem Services Work in Contexts outside the NERRS** *Objectives:* Participants will identify diverse approaches to applying an ecosystem services approach in projects outside the NERRS. Participants will understand • The management issue addressed • The methods used in the Ecosystem Services approach • The management and/or policy implications of the project Each presenter speaks for 10 minutes using about 10 slides.	**Nadeau** *Eastern Research Group, Inc.* **Yoskowitz** *NOAA* **Logsdon** *University of Michigan / Graham Sustainability Institute*
3:00	**Break**	
3:15	**Promising Ideas for advancing an ecosystem services approach in the NERRS Small Group Breakout** *Objectives:* Working individually and in small groups participants identify promising ideas for ways that an ecosystem service approach can be applied at their	**Feurt** **Miller** **Facilitators**

	reserve and broadly in the NERRS	
4:00	**Idea Sharing and Facilitated Discussion** *Objectives:* Participants share ideas developed	**Feurt** **Miller** **Participants**
4:20	***Most Promising Ideas Listening Walk*** Objectives: Participants discuss and listen to ideas for applying an ecosystem services approach in the NERRS. Participants process concepts from the day's training more deeply through reflection and listening.	**Feurt** **Participants**
5:30	**Lobster Dinner**	**Gulf of Maine**

Agenda Day 2: Friday, May 1, 2015

Time	Topic and Objectives	Responsibility
8:30	**Breakfast** *Objectives:* Brains are fueled and caffeinated	**Cox** **Nick**
9:00	**Morning Refresher and Reflection** *Objectives*: Participants review key concepts from day 1 to identify burning questions, and "now that I've slept on it" reflections	**Miller** **Feurt**
9:30	**Most Promising Ideas for Advancing an Ecosystem Services Approach in the NERRS: Targeted Breakout Sessions** *Objectives:* Participants self-organize into targeted breakout groups to develop strategies for moving ideas to action using the Ideas to Actions Worksheet. • Research and Monitoring Applications • Education, CTP, Outreach and Communication Applications • Stewardship, Mapping and GIS Applications • Emerging crosscutting ideas	**Facilitators:** **Miller** **Cox** **Feurt** **Participants** Each targeted breakout group will have a note taker and reporter
10:30	**Break**	
10:45	**Moving from ideas to actions that advance an ecosystem services approach in the NERRS: Targeted Breakout Sessions report out to group.** *Objectives:* Participants report ideas from breakout to full group to identify synergies, realistically assess capacity, boldly address barriers and link ideas to NERRS Strategy Documents.	**Reporter from each group**

11:45	**Lunch**	
12:45	**Charting the Path from Actions to Outcomes & Measures of Progress** *Objectives:* Participants reconvene in groups to complete the final worksheet linking ideas to outcomes and measures of progress including identification of: • Funding strategies for ecosystem services work. What can be done using current resources? What are some sources for funding innovative approaches? • How does an ecosystem services approach contribute to achieving the goals and objectives of the NERRS Strategic Plan/NOAA priorities? • What does an ecosystem services approach mean to the current work of each sector and to NERRS initiatives in place such as CTP, Sentinel Sites, SWMP and TOTE?	**Facilitators** **Participants**
2:00	**Break**	
2:15	**The Way Forward - Building the capacity for an ecosystem services approach in the NERRS** *Objectives:* Participants review action items developed during the Summit and prioritize next steps from an individual and system-wide perspective including mechanisms for distributing the results of the Summit to the System.	**Feurt** **Miller**
3:15	**Evaluations and Award Ceremony** *Objectives:* Participants will complete a written evaluation and assessment of the progress made at the Summit. Participants will receive formal professional recognition for their participation in the Summit and the opportunity to receive valuable prizes.	**Feurt** **Cox** **Miller**
3:30	**Adjourn & Safe Travels Home**	

VI. Annual Meeting Presentations, Sessions and Trainings (2011 – 2014)

During NERRS/NERRA Annual Meetings from 2011-2014 findings and methods used during the project were shared with participants from all sectors. This information was shared and used to refine the project to address the needs of the system. Feedback from the Annual Meetings inspired the transfer projects, on line course and webinars providing additional support and capacity building for the system.

The Wells NERR Stakeholder Network Participated Actively in the Project

The Wells NERR Stakeholder Network is described on page 7 of this report. Members of this network were engaged in the development of the proposal, contributed to focus groups for the mental models and economic portion of the research and provided input into the design and methodology of the ecological research. The ecosystem service valuation survey, Choice for our Land and Water was developed in collaboration with the Stakeholder Network. This three year process required focus group interaction with every day citizens like those who would complete the survey as well as the professionals in the Stakeholder Network. Rigorous inspection and critique of the survey design by members of the network resulted in a survey that was understandable by participants and accurate in terms of ecological messaging.

The stakeholder network was enriched through the Choices for Our Land and Water survey process. The Wells Reserve non-profit partner Laudholm Trust offered one year free membership in Laudholm Trust for people completing the survey who were not already members. Over 1,000 new members became part of the Wells NERR "family" during 2014 and 2015. Special events during the year presented the results of the research for all aspects of the project.

During the final meeting with the Stakeholder Network to share final results ideas about how the findings would be used by the stakeholders were collected. One key finding from this meeting is that the complexity of the findings for ecosystem service valuation and mental models required additional synthesis for use by stakeholders. These ideas are being explored for potential use in a transfer project to carry the work forward.

The project has been shared beyond the Stakeholder Network at local and regional conferences. Findings will be shared in November 2015 with the Maine Watershed Roundtable, a statewide network of water professionals. The project has also been shared with Maine's George Mitchell Sustainability Institute at the Maine Water and Sustainability Conference in 2014 and 2015. The potential to share findings and develop communication and outreach materials from this project is just beginning.

Retrospective Questions Posed by the NERRS Science Collaborative
Prepared by Christine Feurt Ph.D.

1. What did you find challenging or unexpected about this project? This could include any aspect of the project—the integration of collaboration and applied science, physical, social, political, technical barriers, project management, communication, duration, resources etc.

   This project was designed as a three year project. After five years of work as a team, we could tackle a new project and complete the work in three years, but this initial project required five years. Collaborative interdisciplinary research, engaging a new team of researchers and stakeholders, is time and effort intensive.

The demands of rigorous disciplinary research are embedded within a paradigm shifting framework of interdisciplinarity and stakeholder engagement. Even from the writer's perspective as a specialist in collaborative processes, the demands of interdisciplinary, stakeholder engaged research are under appreciated, underfunded and yet remain the most powerful component of any project focusing on solutions to complex coastal management issues. This project accomplished planned objectives in the five years with additional support from the NERRS Science Collaborative through transfer project funds. These transfer funds were critical to accomplishing the level of impact that this project has had on the NERR system.

2. How did collaboration with intended users impact the applied science components of the project?

   This question is thoroughly addressed in the individual sections of each element of the project above.

3. Did you have all the skill sets on the team that you needed? If not, please identify the missing skill sets and how you adapted to the gap.

   Our team was fortunate to have the right balance of expertise.

4. Did your budget include sufficient resources to execute the project? If not, what kinds of expenses would you include in a budget for this project if you were developing it today?

   Transfer funds during the course of the project made a difference. We had a large portion of the budget dedicated to engagement and communication, 40% I believe. This was critically important.

5. What do you know now that you wish you had known when you started?

   I would be up front with collaborators from outside institutions about the time required to participate on conference calls, on-site meetings, and meetings with stakeholders. Our team gave considerable time to this interaction.

6. If additional resources and time were available, how would you proceed from this point?

   Our team shared the feeling that we were just beginning our work together. We generated findings in ecology, communication and economics that were integrated and connected to stakeholders. We have results of that work and are poised to engage stakeholders in the use and application of that work. Future work would focus on the knowledge to action aspects of coastal management using our findings. This boundary work (Clark, et al 2010) would build upon the relationships we have developed as a research team, the relationship with the

national network of Research Reserves and the managers and policy makers at multiple scales who would benefit from the methods developed. What we have learned about building capacity for integrating different sources of knowledge and understanding the role of mental models in fostering effective action are key aspects of the research that can be shared and applied across contexts of ecosystem science.

While this project developed from the ecosystem management approach, the approaches used are in alignment with social ecological systems approaches used in sustainability science. The Wells NERR Coastal Training Program shares with many CTPs a commitment to bridging the gulfs separating science and its application to management and policy. The Collaborative Learning approach used in this project worked well due to the adaptability of the approach to the demands of diverse situations. The Wells Reserve research team anticipates continued work within our local Stakeholder Network and nationally within the NERR system using this project as a foundation.

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XVII. Summary Climate Change Risk Assessment, 2014

New England
Climate Adaptation
PROJECT



Summary Climate Change Risk Assessment
Wells, Maine

March 2014

PRODUCED BY:

Massachusetts Institute of Technology Science Impact Collaborative

Consensus Building Institute

The Wells National Estuarine Research Reserve System

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About the MIT Science Impact Collaborative

The Massachusetts Institute of Technology Science Impact Collaborative (MIT SIC) is a research group focused on developing and testing new ways of harmonizing science, politics, and public policy in the management of natural resources and resolution of environmental disputes. MIT SIC's tools and approaches include collaborative adaptive management, joint fact-finding, scenario planning, collaborative decision-making, multi-stakeholder engagement, and role-play simulation exercises.

MIT SIC was established in 2003 with initial support from the United States Geological Survey. Today, the research group has numerous partners and supporters, ranging from the U.S. National Estuarine Research Reserve System to the Dutch research organization TNO. By engaging in community-based action research projects, MIT SIC researchers—including doctoral students, masters students, and faculty from the MIT Department of Urban Studies and Planning—train emerging environmental professionals while simultaneously testing the latest environmental planning methods and providing assistance to communities and policy-makers who seek their help.

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About the Wells National Estuarine Research Reserve

The National Estuarine Research Reserve System (NERRS) is a network of 28 areas representing different biogeographic regions of the United States that are protected for long term research, water-quality monitoring, education, and coastal stewardship. The reserve system is a partnership program between the National Oceanic and Atmospheric Administration (NOAA) and the coastal states. Reserve staff work with local communities and regional groups to address natural resource management issues, such as climate change, non-point source pollution, habitat restoration, and invasive species. Through integrated research, stewardship, and education, the reserves help communities develop strategies to deal successfully with these coastal resource issues. Reserves provide adult audiences with training on coastal and estuarine issues of concern in their local communities. They offer educational programs for students, teachers, decision-makers, and community members. Reserves also provide long term weather, water quality, and biological monitoring as well as opportunities for scientists and graduate students to conduct research in a "living laboratory."

The Wells National Estuarine Research Reserve works to expand knowledge about coasts and estuaries, engage people in environmental learning, and involve communities in conserving natural resources, all with a goal of protecting and restoring coastal ecosystems around the Gulf of Maine. The Wells Reserve protects 2,250 acres of salt marsh, freshwater wetland, beach, dune, forest, and field.

Visit the Wells Reserve website for more information: wellsreserve.org

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Executive Summary

The Town of Wells faces several climate-related risks, the most notable being the risk of increased flooding from intense precipitation events, coastal storm surges, and sea level rise. Wells also faces the potential for a significant increase in the occurrence of extreme heat events, with the worst case climate projections indicating that Wells could experience more than ten times as many days over 90 degrees (°) Fahrenheit (F) per year by the end of the century. Further, the sea level near Wells is projected to rise by as much as 5 feet by 2085, which will have considerable impacts on Wells' barrier islands and the homes that have been built there. These changes, if not prepared for and managed, could threaten Wells' population, buildings, infrastructure, landscape, property tax-base, and ecosystem health. While Wells has improved its physical infrastructure and services in response to related historical weather events, there is much more that can and needs to be done.

This Summary Risk Assessment presents how the climate could change in Wells over the 21st century, and outlines the town's key climate change risks as well as possible adaptation options to address those risks. This assessment was developed by the New England Climate Adaptation Project with the primary objective of providing targeted content for a role-play simulation exercise for Wells residents. While the information gathered by this project alone is not sufficient to guide Wells' planning and adaptation efforts, it may begin to inform local officials and town residents about potential future climate risks and adaptation options. Wells could benefit from a more detailed vulnerability assessment.

This report consists of two sections. Section 1 outlines potential future climatic conditions of Wells based on climate change projections downscaled to the nearest meteorological station of Portland, Maine, including historical and future trends for temperature and precipitation. Sea level rise and storm surge projections are based upon the tidal gauge in Portsmouth, NH. Climate change and sea level rise projections are presented for two scenarios—a high emissions scenario (Global Emissions Scenario A1fi reflecting a 940ppm CO_2 concentration by 2100) and a low emissions scenario (Global Emissions Scenario B1 reflecting a 550ppm CO_2 concentration by 2100). These scenarios are used to represent uncertainty concerning the amount of future global greenhouse gas emissions. Projections are presented in terms of three time scales — short term (2010-2039), medium term (2040-2069), and long term (2070-2099) -- to capture change over time. The historical baseline refers to the time period between 1980 and 2010. For a detailed discussion on downscaling see Appendix 1.

Section 2 discusses how future climatic changes (including those in temperature, precipitation, and sea level) combine with other factors (such as built environment, economics, demographics, and natural context) to create integrated risks and increased vulnerability for Wells. Vulnerabilities largely stem from flood-related impacts leading to costly infrastructure damages, public health risks, and extensive ecosystem deterioration. In addition, Wells is expected to see more frequent heat waves, as well as potential droughts, and changes to marine habitats.

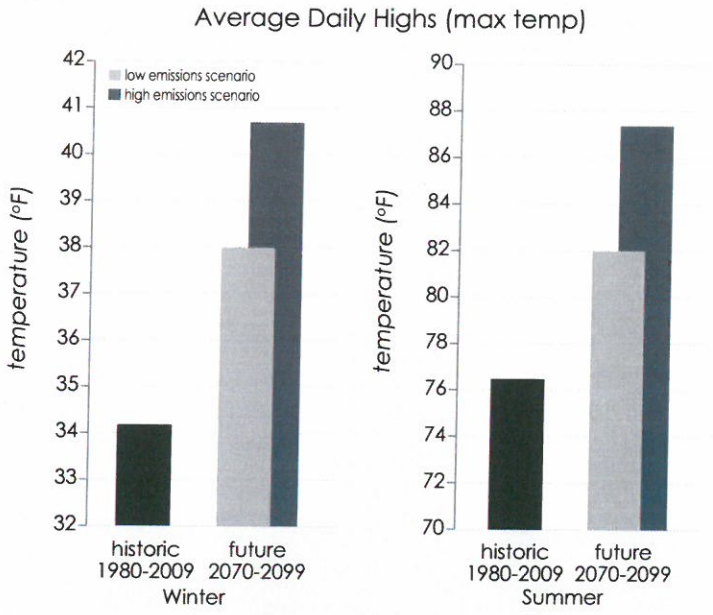
While climate change may have some benefits—such as a longer summer tourist season and reduced snow removal maintenance costs—overall climate-related changes are predicted to lead to large-scale, costly damages. Wells has begun to consider future sea level rise and increased storm precipitation in its infrastructure planning, but there is still more potential to adopt a wider range of adaptation options. Both physical infrastructure and policies may need to be modified to address projected climate changes. The vulnerabilities and adaptation options for Wells discussed in Section 2 were developed based on input from town officials and Wells' experience with past climate-related issues, as well as a review of published documents, including the 2011 New England Great Bay Report and Maine's 2009 Climate Future Assessment. Examples of adaptation options include moving out of vulnerable areas (i.e. buybacks), increasing flood insurance, expanding wetlands, and investing in flood-protection infrastructure, retrofits, and efficiency measures.

Even though some climate change impacts seem to be a long way off, many adaptation measures may take years of planning, coordination, and investment in order to come to fruition. Additionally, the choices and investments Wells makes today will either increase or decrease the town's vulnerability to current and future climate-related risks. Wells can increase its resilience in the face of a changing climate, but doing so will require that residents, business owners, and local and regional agencies work together and begin preparing for a changing climate now rather than waiting to confront the challenge after the damage has been done.

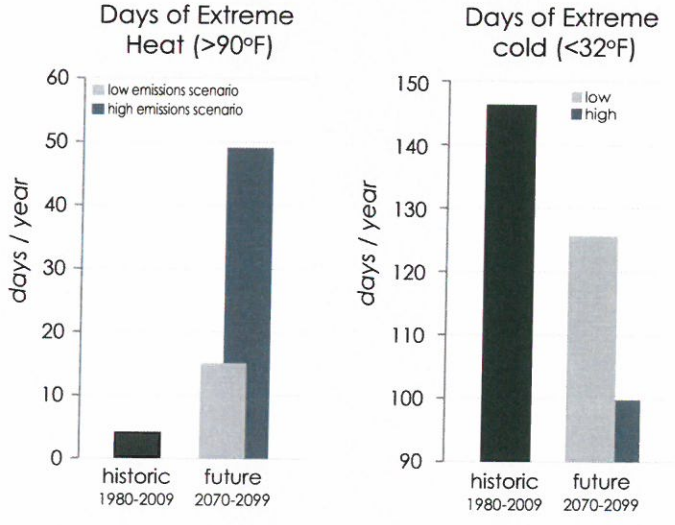
What do climate projections tell us about Wells by the end of the century?

A Warmer Wells. Average annual maximum temperatures are expected to increase by between 4.3 and 8.5°F under the low and high emissions scenarios, respectively.

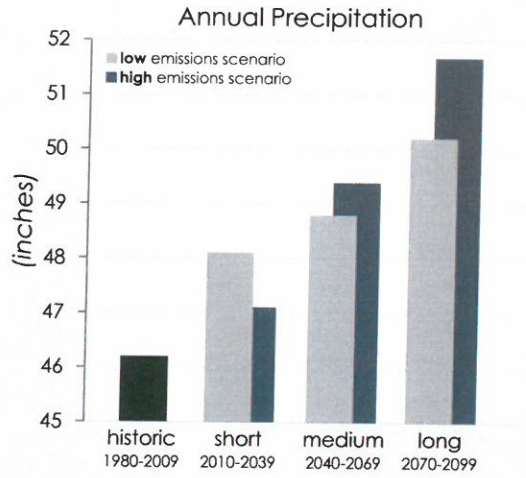
Warmer Summer Nights. Climate change will have a greater warming influence on nighttime minimum temperatures than daytime maximum temperatures. As a result summer nights will remain much warmer than they have been in the past.



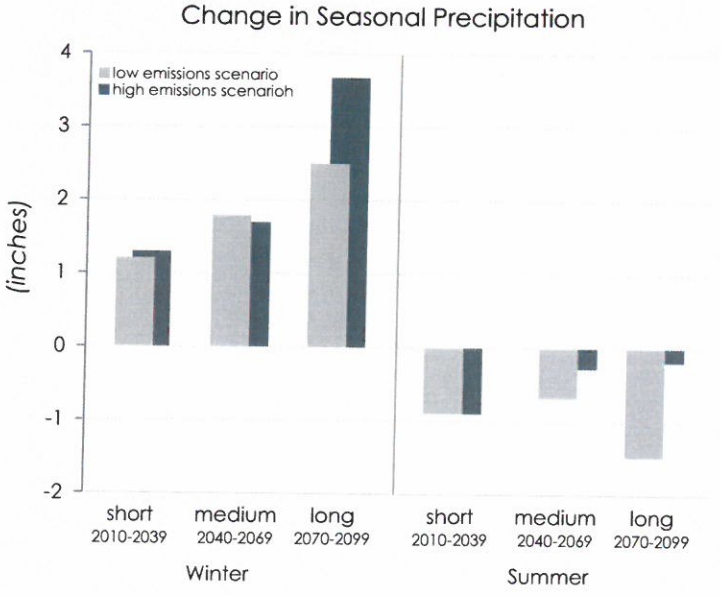
More Days Above 90°F. Fewer Below 32°F. In the long term, Wells may experience a more than tenfold increase in the number of days with extreme heat (above 90°F) from 4 days to 49 days per year and one third fewer days of extreme cold (below 32°F), decreasing from an average of 147 to about 100 days per year under the high emissions scenario.



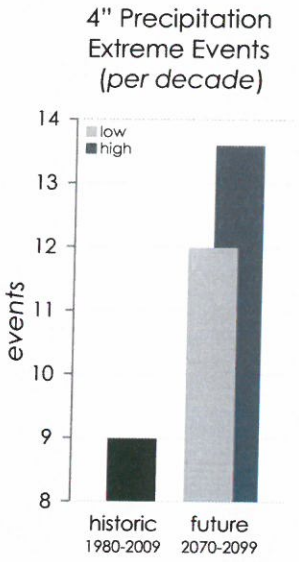
More Precipitation. Under both the high and low emissions scenarios, annual precipitation is expected to increase. Under the high emissions scenario, average annual precipitation may be as much as 12% higher than the historical baseline (5.5 more inches of rain per year).



Wetter Winters. Drier Summers. Wells is projected to see wetter winters and slightly drier summers compared to the baseline.



More Extreme Precipitation. Under the high emissions scenario, Wells is projected to see a doubling in the number of events per year where 2" of precipitation fall in 48 hours. Wells is further projected to see a 50% increase in the number of events per decade where 4" of precipitation fall in 48 hours.



Rising Sea Level. By the end of the century, average sea level is projected to increase by anywhere from 2 feet (low emissions scenario) to nearly 5 feet (high emissions scenario) from the historical baseline.



What are the major risks for Wells and what can be done?

Flooding

Increased riverine and coastal flooding is expected to be the greatest climate change risk in Wells. Wells is vulnerable to flooding primarily due to its dense development along thin coastal barrier islands. In the future, more frequent heavy precipitation events and sea level rise are expected to increase the frequency and magnitude of flooding along the coast.

Communities along the coast of Wells—including Wells Beach, Moody Beach, Drakes Island, and Wells Harbor—are projected to experience the greatest damages from future tidal and surge flooding due to sea level rise. Inland areas, such as the Little River, may see increased flooding from more frequent extreme precipitation events and greater tidal and surge inundation. Heavy rainfall can also result in significant stormwater runoff, especially within developed landscapes, which can also lead to flooding.

Accentuating climate impacts, change in Wells' landscape may increase flood risks. The expansion of impervious surfaces resulting from future development will exacerbate flooding by decreasing the infiltration capacity of the land. Further, the submersion of beaches and marshes due to sea level rise represents an elimination of natural defensive barriers, which makes coastal habitat and human settlement even more vulnerable to storm surges.

Examples of Adaptation Options



Sand Replenshiment
ex: Ocean City, MD



Flood Resilient
Building Design
ex: Providence, RI



Wetland Restoration
ex: Woonasquatucket,RI

Heat Waves and Warmer Temperatures

Wells is likely to see a rise in public health risks associated with heat-related illnesses and invasion of pests as year-round temperatures rise and Wells experiences more frequent extreme temperature events. In addition, more frequent and prolonged heat waves can damage electrical equipment and create additional pressures on sensitive ecosystems.

Tourism and Fiscal Diversity

The Town of Wells relies heavily on summer tourism and coastal property tax revenues, both of which are dependent on the condition of Wells' coast. Damages to coastal properties due to flooding and sea level rise could severely impact Wells' fiscal wellbeing. Warmer temperatures may increase the length of the summer tourist season, which could benefit businesses. However, tourism relies on Wells' natural attractions, such as its beaches, marshes, and natural areas, which may be degraded by flood-related impacts.

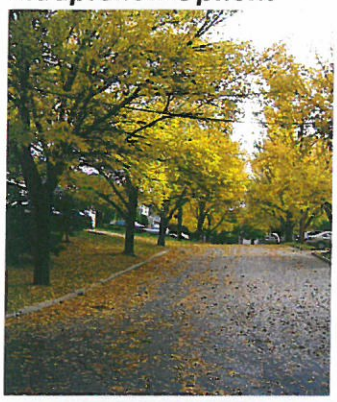
Drought

The threat of increased drought in Wells is driven by the projected decrease in summer precipitation combined with an increase in summer temperatures, which will result in more evaporation and transpiration. Drought, in general, may impact residents relying on groundwater wells. Prolonged drought could potentially impact the town's surface water supply for drinking water.

Marine Habitat Health

In the Gulf of Maine, changes in temperature, nutrient flows, and salinity associated with climate-related alterations in the Labrador Current will influence both the composition and distribution of marine species. While this study does not include a vulnerability analysis for marine habitats, past reports indicate that nearshore habitat and species with lower tolerance for temperature variation and pollution will be at a higher risk.

Examples of Adaptation Options



Tree Canopy
ex: Providence, RI



Water Conservation



Protected Salt Marshes
ex: Wells, ME

Section 1: Future Climate in Wells

This section highlights temperature and precipitation projections that have been downscaled for Wells, Maine, from the nearest meteorological station of Portland, Maine. Statistical downscaling translates coarse global climate model projections to the spatial scale of local weather station observations (Stoner et al., 2012). This is done by quantifying historical relationships[1] between large-scale weather features and local patterns. Two irreducible uncertainties govern the use of multiple projections in estimating future change. The first is the sensitivity of the climate to increased atmospheric concentration of CO_2, which is addressed through the use of multiple computational models. The second is predicting how much CO_2 and other greenhouse gases will be emitted over the next century, which is captured in multiple emissions scenarios. In order to capture the full range of future climate changes that Wells might experience during the 21st century, this project looks at the projections of four global climate models (GFDL, HdCM3, PCM, and CCSM3) and two Intergovernmental Panel on Climate Change (IPCC) emissions scenarios (A1fi, reflecting the highest projections of emissions and B1, reflecting the lowest projections of emissions) (Figure 1). Projections are presented in terms of three time scales—a short term (2010-

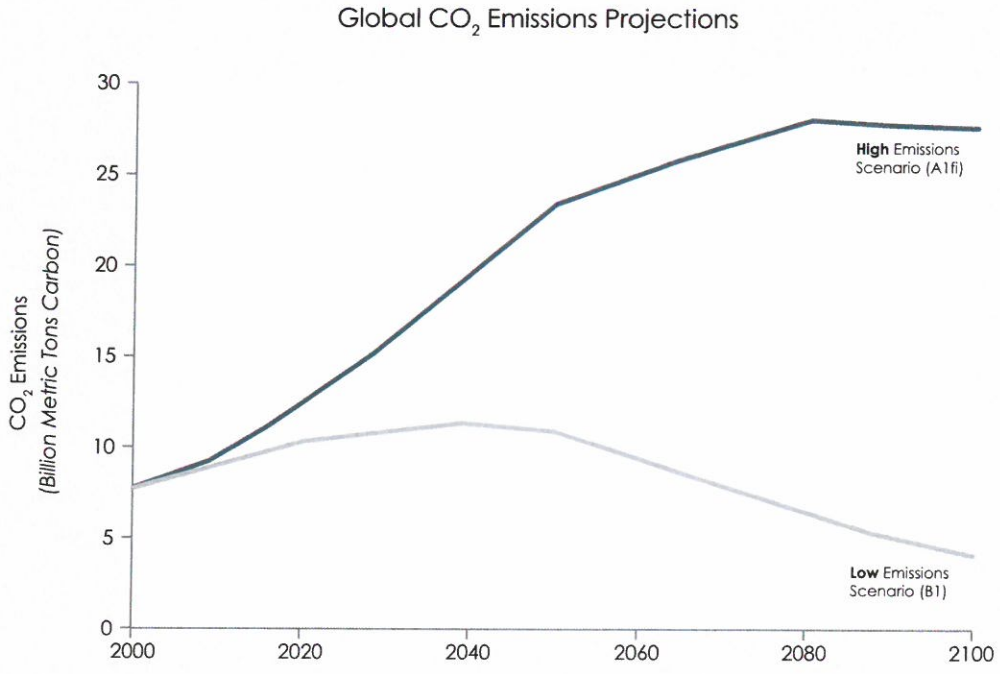


Figure 1. Global CO_2 Emissions Projected over a Century for High and Low IPCC Scenarios

1 It is worth noting that the historical period represents a relatively short and recent series of data relative to the period of anthropogenic greenhouse gas emissions – namely 1980-2009. That is, the historical period does not represent an era "pre-climate change," but is instead a baseline created due to available record-keeping. As an example, the New York Panel on Climate Change 2013 report states that for each decade between 1900 and 2011, the annual mean temperature rose by 0.4° Fahrenheit, precipitation increased by 0.7 inches, and sea level rose by 1.2 inches.

2039), medium term (2040-2069), and long term (2070-2099)—to capture change over time. A full description of the statistical downscaling methodology used for this report is provided in Appendix 1. Sea level projections are from a statistical analysis of the relationship between global temperatures and sea level rise (Appendix 1).

Temperature

Average Daily Temperatures

The average temperature in Wells is projected to increase over the next century for both the high and low emissions scenarios, although the high emissions scenario (A1fi) corresponds with larger and faster temperature increases (Figure 2). The low and high scenario temperature projections begin to diverge noticeably around the middle of the century. By midcentury (2040-2069) average daily lows (minimum) are expected to warm by between 3.0°F under the low emissions scenario and 4.8°F under the high emissions scenario. By the end of the century (2070-2099), daily lows are projected to warm by between 3.8°F (low emissions scenario) and 7.7°F (high emissions scenario). By the end of the century, maximum daily temperatures are projected to increase by 4.3°F under the low emissions scenario and upwards of 8.5°F under the high emissions scenario.

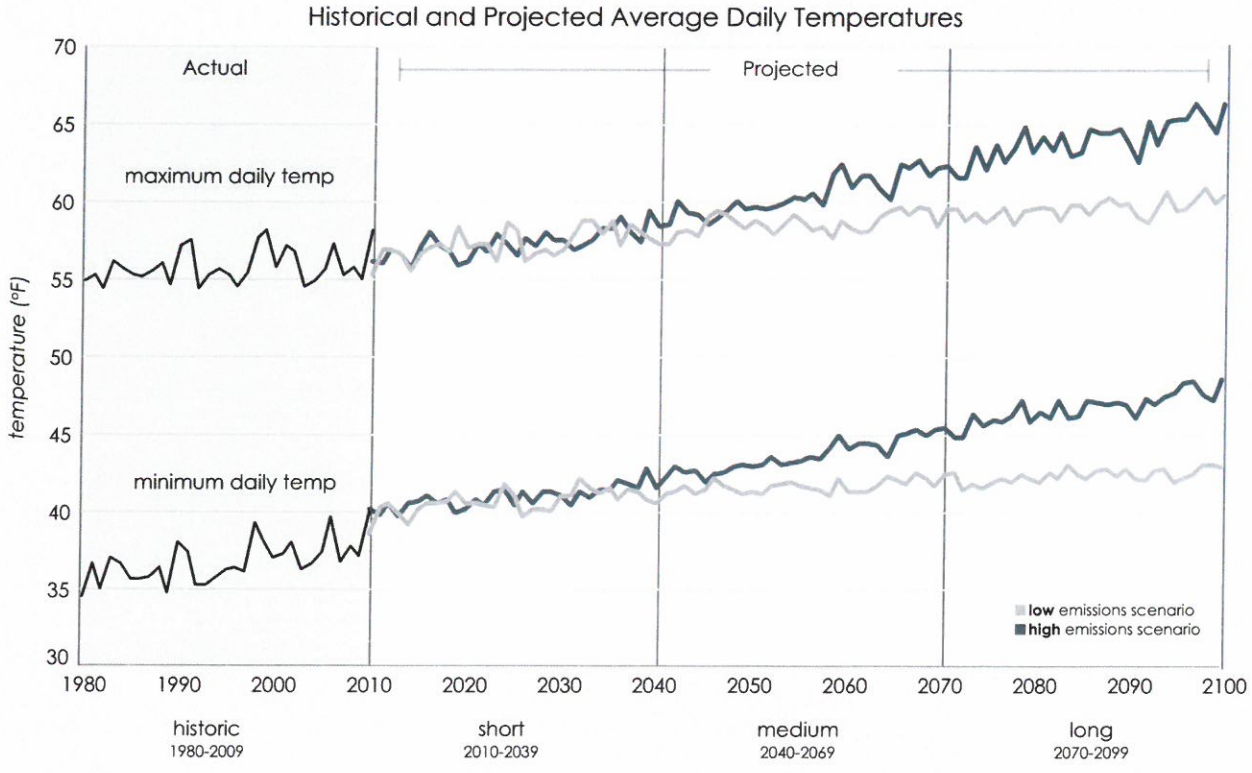


Figure 2. Historical (Actual) and Future (Projected) Daily Temperatures for Wells Based on Different CO_2 Emissions Scenarios and Timeframes

Seasonal Highs and Lows

Average minimum (daily low) and maximum (daily high) temperatures are projected to increase over the next century during both summers and winters. The projections indicate that climate change will have a greater influence on nighttime minimum temperatures than daytime maximum temperatures. This means that, especially in the long term, summer nights will be warmer than they have been in the past. By the end of the century (2070-2099), summer minimum daily averages in Wells will potentially increase from 57.1°F (1980-2009 historical average) to between 60.6 and 64.0°F. Summer maximum daily averages may increase by anywhere from 5.4°F to more than 10°F, raising the average daily high in the summertime from a historical average of 76.5°F to over 87°F under the high emissions scenario (Figure 3b). According to climate change projections, winter temperatures will be significantly affected by climate change in the long term, especially the minimum temperatures. By the end of the century, minimum winter temperatures will very likely increase from the historical average daily low of 16.5°F to between 21.5°F and 25.9°F. Due to this warming, cold winter nights may no longer function to eliminate pests such as the Hemlock Wooly Adelgid and ticks. Winter maximum temperatures will also rise, increasing from the historical average of 34.2°F to between 38.0°F and 40.7°F (Figure 3c). Together, the projections indicate a trend towards milder winters and fewer days of below-freezing weather. For both scenarios, but especially for the high emissions scenario, more winter days are projected to experience above-freezing temperatures (>32°F). As a result, more precipitation is expected to arrive in the form of rain rather than snow.

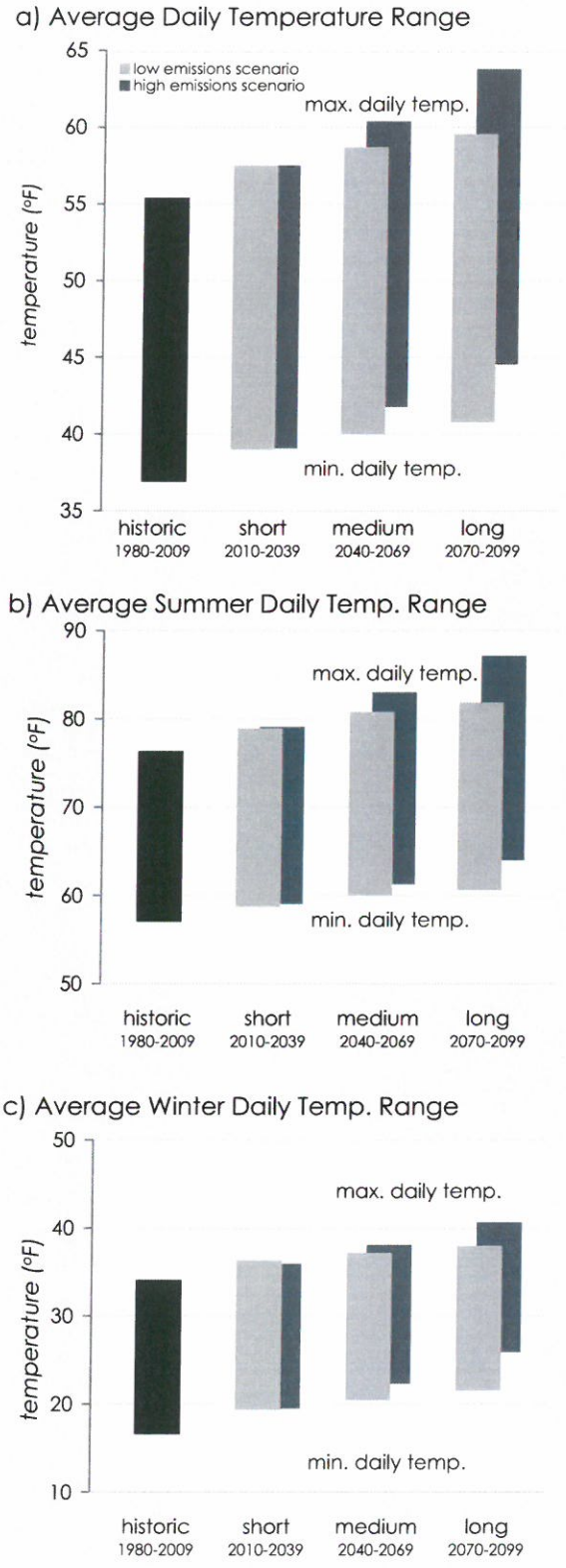


Figure 3. Future Average Daily Lows and Highs as Compared to Historical Baseline

Temperature Extremes

As temperatures increase, Wells is likely to experience more days of extreme heat and less of extreme cold. In fact, in the high emissions scenario by the end of the century, Wells could see more than 10 times as many days of extreme heat per year (with daily highs above 90°F) compared to what has occurred historically (Figure 4a). With regard to extreme cold events, Wells has historically experienced temperatures below 32°F on 147 days every year, on average. In the long term, under the low emissions scenario, the number of days Wells experiences temperatures below 32°F could decrease to 126 days per year. Under the high emissions scenario, this could decrease to 100 days, a 32% reduction from Wells' historical average (Figure 4b).

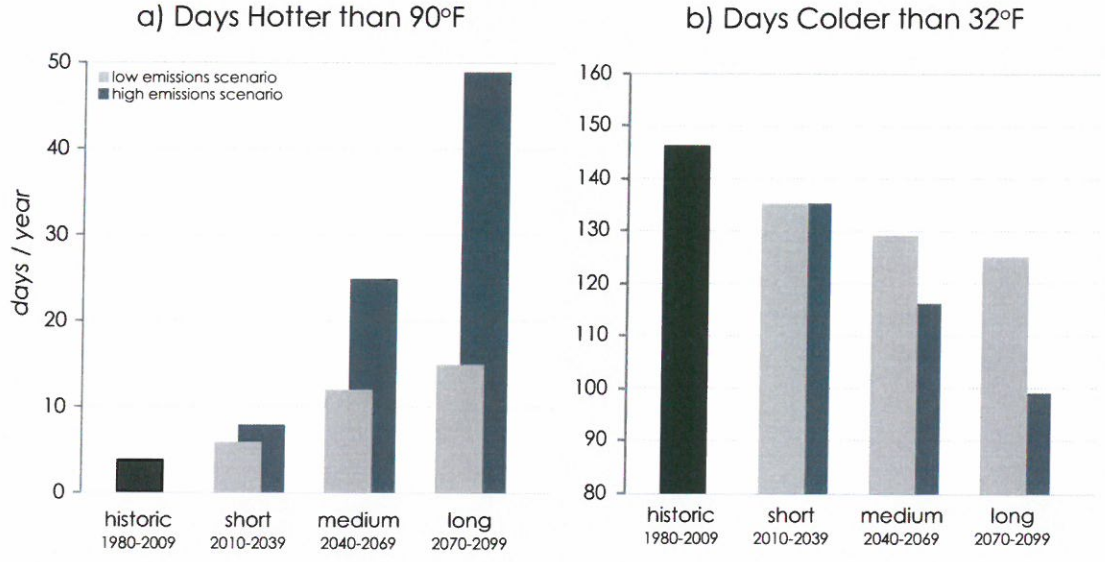


Figure 4. Extreme Temperature Events

Table 1. Potential Impacts of Higher Temperatures

Change	Potential Impacts of Higher Temperatures
↑	**Health impacts:** Extended and magnified heat events will increase risk of heat strokes, air pollution, and vector borne diseases.
↑	**Infrastructure damages:** Extreme heat and heat waves may damage roads and electricity transformers.
↓	**Water supply:** Higher temperatures will result in more precipitation falling as rain rather than snow. Snowpack functions as a natural reservoir to store water outside of manmade reservoirs for drinking water supply. The reduction of snowpack may reduce spring and early summer supplies. Higher average temperatures can also be associated with increased evaporation and transpiration which could further reduce water availability.
↓/↑	**Agriculture productivity:** Higher temperatures may cause a longer growing season, supporting agricultural benefits in crop production. Higher temperatures could also harm agricultural crops that are not suited for higher temperatures.
↑	**Ecosystem stress:** Higher temperatures can cause populations and habitats to migrate to lower temperature areas (high elevation or higher latitude), where possible. Ecosystems that cannot migrate or adapt to changing climatic conditions may degrade or collapse.
↓	**Snow removal costs:** Governments and property managers may be able to reduce their budgets for snow removal due to fewer extreme cold days.
↓/↑	**Heating and air conditioning bills:** People may save money if the warmer winter temperatures enable them to reduce the amount of energy needed to heat buildings. Conversely, higher summer temperatures may lead to higher air conditioning costs.

Precipitation

Average Daily Precipitation

There is high variability in average annual precipitation, both historically and in future projections (Figure 5). Comparing the average historic baseline (1980-2009) to short term, medium term, and long term projected averages reveals trends more clearly (Figure 6). The climate projections indicate a gradual increase in annual average precipitation through the century, with slightly higher increases under the high emissions scenario compared to the low emissions scenario (Figure 6). In the long term, projections indicate an increase of between 4.0 and 5.5 more inches of annual precipitation, raising the historical baseline by about 10%.

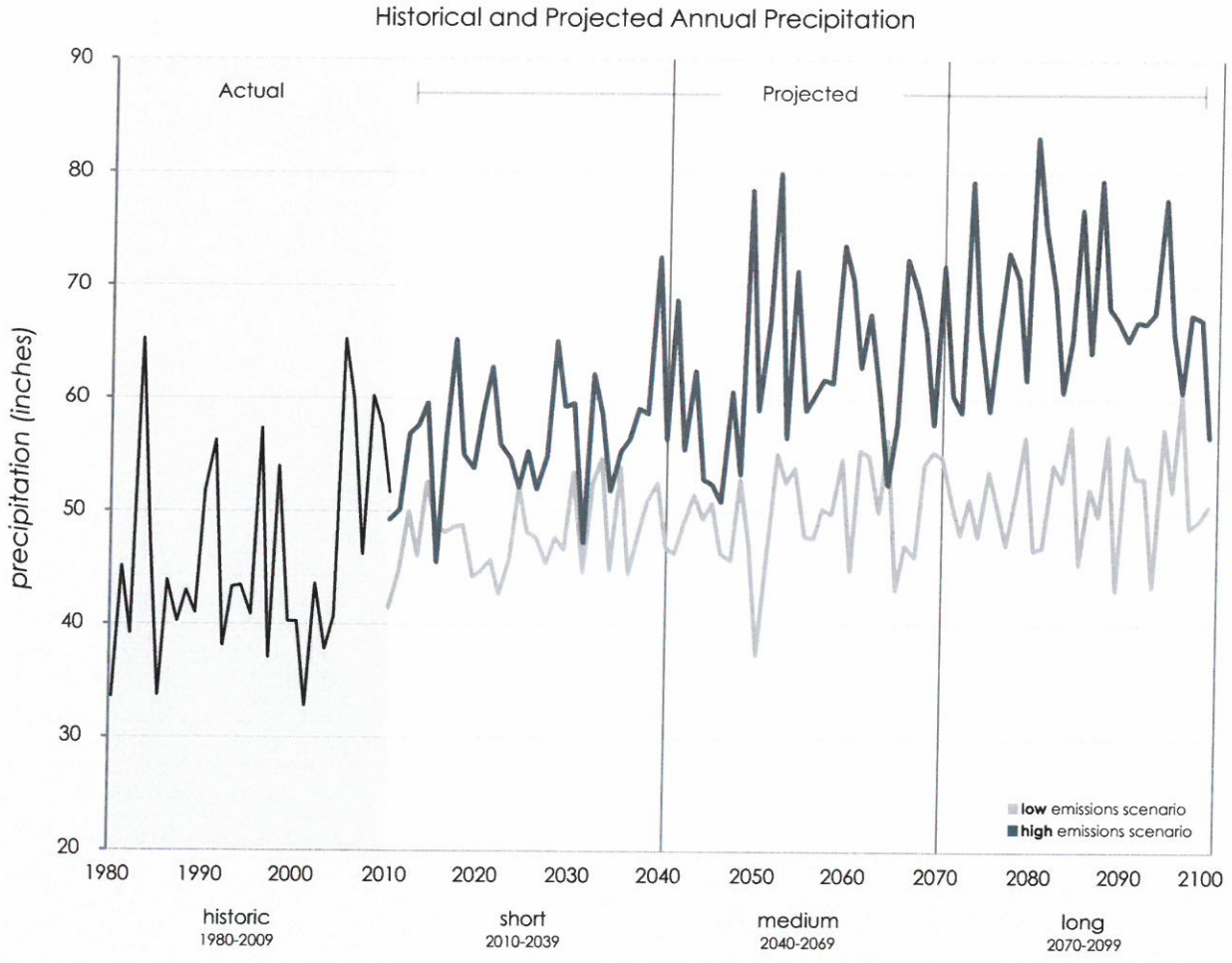


Figure 5. Historical and Future Average Annual Precipitation Trends

Seasonal Precipitation

Seasonal precipitation projections show a more nuanced picture of average rainfall totals. The projections indicate that additional precipitation will occur in the winter, while summers will become slightly drier. Historic baselines for precipitation in both winter and summer are quite similar, at 10.2 and 10.5 inches, respectively. However, by the end of the century (2070-2099) winter precipitation is predicted to rise to between 12.7 and 13.7 inches, varying between the low and high emissions scenario, respectively. This may translate into a nearly 35% increase in winter precipitation (Figure 7a). Projections indicate a decrease in summer precipitation by the end of the century, although the trend is inconsistent over the short, medium, and long term (Figure 7b). By the end of the century, summers in Wells may see as little as 9 inches of precipitation under the low emissions scenario[2].

2 In the case of seasonal precipitation, the low emissions scenario shows a more pronounced change over the long term than the high emissions scenario.

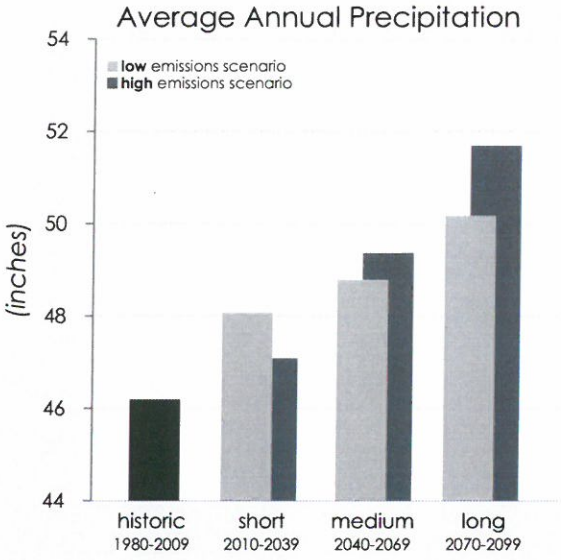
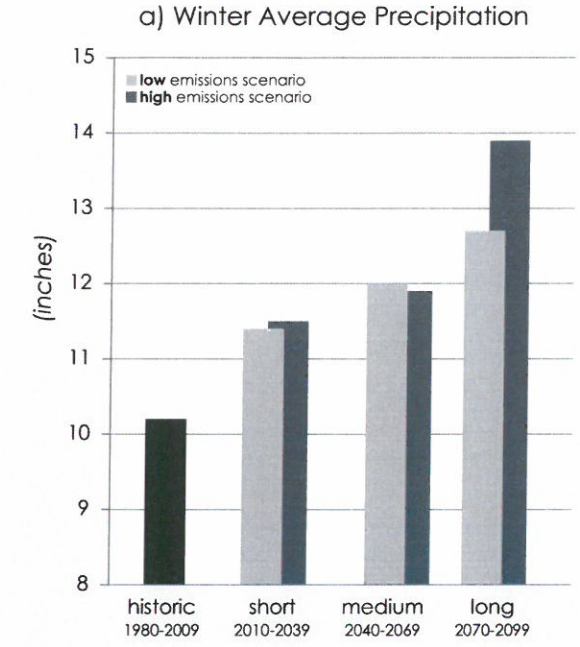


Figure 6. Short, Medium, and Long Term Annual Precipitation Trends





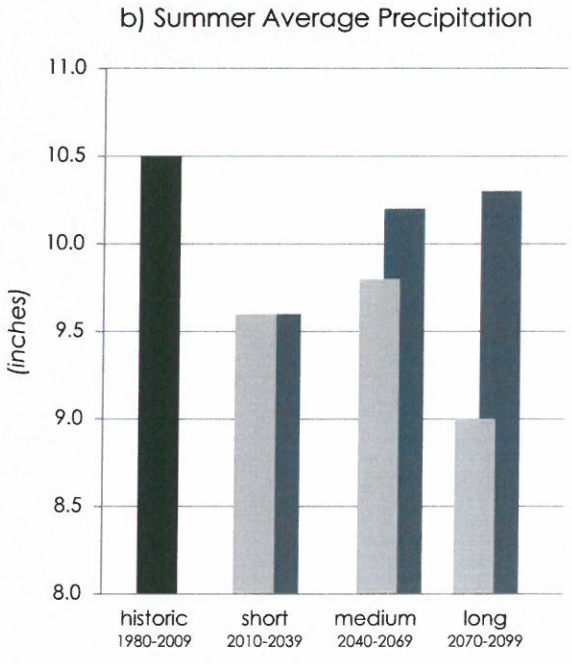


Figure 7. Seasonal Precipitation Pattern

Extreme Precipitation Events

Extreme precipitation events are characterized by the amount of rain that falls within a 24-hour or 48-hour period. These events are strongly correlated to flooding, as the precipitation comes all at once with reduced time for infiltration. Wells is projected to see more extreme precipitation events in the future, especially under the high emissions scenario. The most dramatic change is a projected doubling in the annual number of events characterized by 2 inches of precipitation in 48 hours under the high emissions scenario in the long term. Also significant is the increase in the annual number of events characterized by 4 inches of precipitation in 48 hours, which could increase from a historical baseline of 9 events per decade to upwards of 12 to 14 events, for the low and high emissions scenarios, respectively (Figure 8c). To provide perspective, the Mother's Day and Patriots' Day Storms dumped 16 inches and 8.5 inches of rain, respectively (USGS, 2009).

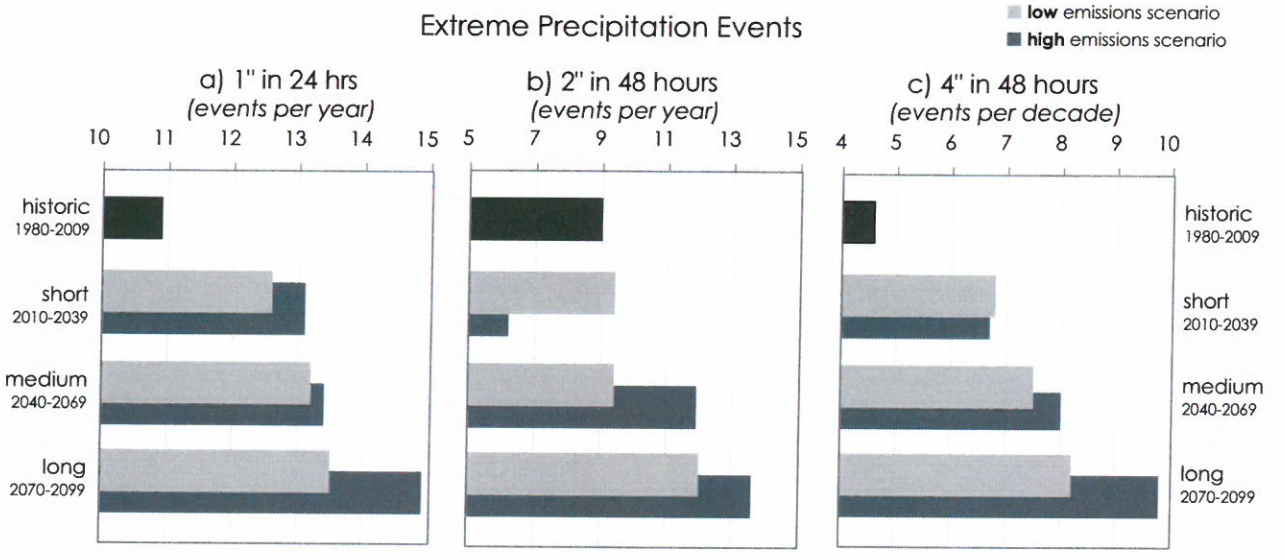


Figure 8. Extreme Precipitation Events

Table 2. Potential Impacts of Precipitation Changes

Change	Potential Impacts of Precipitation Changes
↑	**Flooding:** One of the key impacts associated with higher precipitation and more extreme precipitation events is increased flooding risk, which can potentially damage houses, businesses, and infrastructure and disrupt livelihoods.
↑	**Erosion:** Flash flooding and storm surges associated with extreme precipitation events may lead to increased erosion, especially along steep slopes and non-vegetated soil.
↓	**Water quality:** Increased stormwater runoff associated with precipitation events could increase the concentration of water-borne pollutants in urban streams.
↑	**Vector borne disease:** An increase in the amount and duration of standing water may lead to an increase in pests and vector borne diseases such as West Nile Virus.

Sea Level Rise

In the long term, Wells' sea level is projected to rise by up to 5 to 6 additional feet from levels in the year 2000 under the high emissions scenario. Sea level rise will likely have the largest impact on community assets already threatened by high daily tide levels and groundwater levels, as well as those already experiencing storm-related flooding and erosion. The high emissions scenario projects a little more than twice as much sea level rise as the low emissions scenario in the long term. Sea level projections from both high and low emissions scenarios reflect a doubling of water levels when comparing the short to medium term time frames, as well as the medium to long term time frames (Figure 9).

Table 3. Potential Impacts of Sea Level Rise

Change	Potential Impacts of Sea Level Rise
↑	**Daily tidal inundation:** Sea level rise will likely increase the extent of daily tidal inundation with social, economic, and ecological implications.
↑	**Coastal Flooding:** Coastal flooding risk will increase due to sea level rise, especially when coupled with increases in extreme precipitation events and possible increases in hurricane intensity.
↑	**Groundwater levels:** Rising groundwater levels may damage infrastructure and property along the coast.

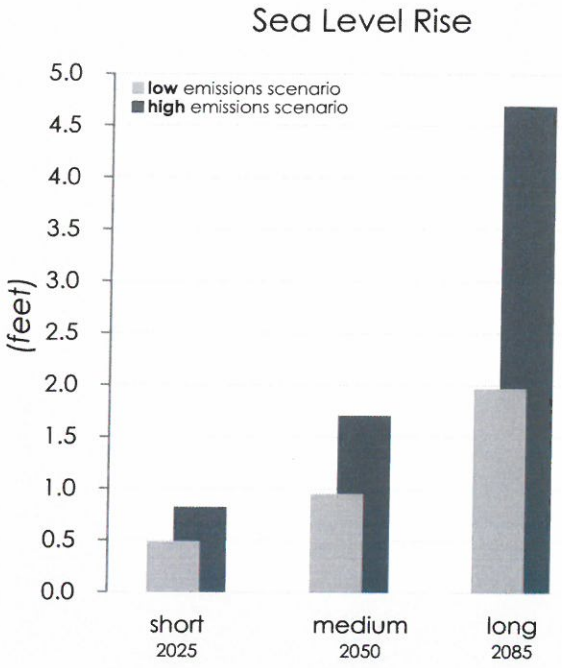


Figure 9. Sea Level Rise Projections



Figure 10. Coastal Sea Level Rise. Mean Sea Level Inundation

High emissions scenario - *medium term (2050)*
High emissions scenario - *long term (2085)*
(additional area flooded)

Section 2: Integrated Risks and Adaptation Options

This section of the report builds on the climate change projections and possible impacts from Section 1, and applies them to community systems and assets in the Town of Wells to examine some of its key climate change risks, vulnerabilities, and adaptation options. Figure 11 represents the approach we used to understand and assess risk. This approach is based on the Intergovernmental Panel on Climate Change's (IPCC) Special Report on Extreme Events (IPCC, 2012). Risk (white circle) is the likelihood of impact resulting from the interaction of:

- a **threat,** an event caused by natural variability and/or anthropogenic climate change, and

- **vulnerability,** the sensitivity, exposure, and adaptive capacity of a place and its likelihood to be adversely affected.

Climate adaptation refers to efforts focused on reducing local and regional vulnerability and increasing resilience to climatic risks. Adaptation options (right side of the diagram) reflect alternative mechanisms that can be used to reduce Wells' risk to a given climatic threat through minimizing exposure (e.g. moving out of harm's way), reducing sensitivity (e.g. storm-resistant building techniques), and increasing adaptive capacity (e.g. wide buffers). Adaptation options can be broadly grouped under four categories: 1) no action, 2) accommodation, 3) protection, and 4) retreat. The type of adaptation option that is appropriate in a given situation and time will depend on a number of factors, including, but not limited to, the magnitude of the threat, the timeframe and probability of the threat, the associated economic, social, and ecological cost of the risk, and the availability of resources and knowledge at the time. Accommodation

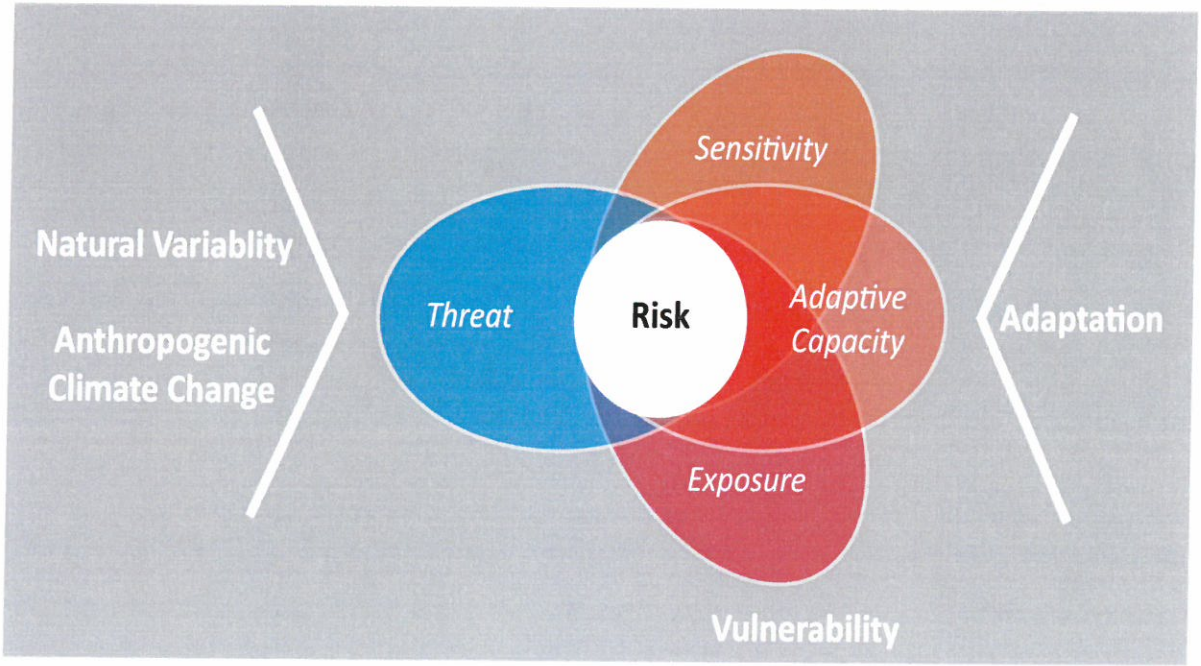


Figure 11. Integrated Risks (Adapted from IPCC SREX Report)

options focus on increasing preparedness and reducing sensitivity in case a threat occurs. These approaches may include early warning systems, the modification of ground floors of buildings to decrease flooding damages, and/or removal of critical infrastructure from ground floors. Protection options seek to reduce risk through preventing a threat from occurring. These measures could include things such as repairing seawalls and restoring or creating wetlands to prevent flooding. Lastly, retreat options reduce exposure by moving the population away from the threat, such as through relocation, setback requirements, and phasing out development in high-risk areas. In contrast to climate change adaptation, climate change mitigation practices that reduce global greenhouse gas emissions aim to lessen the speed and severity with which regional climates are changing and, as a result, minimize climate change risks globally and in the long term.

This section highlights several risks including ***flooding***, ***heat waves and rising temperatures***, ***tourism and fiscal diversity***, ***drought*** and ***marine habitat health***. Specific vulnerabilities for Wells were identified through consultation with key individuals from the town and climate change experts, as well as through the review of published documents, including the 2011 New England Great Bay Report and the 2009 Maine's Climate Future Assessment. See Additional Resources in Appendix 2 for more in-depth narratives and diverse examples of adaptation options.



Flooding

Risks

Wells is already vulnerable to river and coastal flooding[3], and the risk of flooding will likely increase with additional climatic changes that lead to more extreme precipitation events, warmer winter temperatures resulting in precipitation falling as rain instead of snow, sea level rise, and higher storm surges during extreme precipitation events. Wells is also vulnerable to flooding associated with stormwater runoff.

Coastal Flooding. Coastal flooding is a major threat for Wells due to the region's shallow and developed coastline. The majority of the 2008 Federal Emergency Management Agency's (FEMA) 100-year floodplain for Wells is characterized by coastal, rather than riverine, flooding (Figure 12). Coastal flooding will almost certainly increase in the future due to sea level rise, which is caused primarily by the thermal expansion of seawater, melting of ice on land, and glacial melt occurring as a result of increasing air temperatures around the globe. Future sea level rise will increase the average high tide elevation, as well as lead to higher storm surges. Based on climate projections for the high emissions scenario, over 4,000 acres will be inundated on a daily basis by the end of the century due to rising sea levels (Figure 13). The area inundated by future sea levels expands beyond the current federally designated floodplain. In other words, in the future, it is projected that the area currently designated as having a high flood risk will be underwater on a daily basis.

Sea level rise will shift the tidal level such that the capacity of stream channels to take on water during storms will be reduced and the height of storm surges will rise. As a result, Wells may see a greater extent of flooding associated with hurricanes and other severe storms. This could mean that, in the future, a category 1 hurricane might inundate an area similar to the area that a category 3 hurricane would currently flood (Figure 14) as there are only ~2 feet in difference between the maximum elevations of category 1 and 3. While sea level is expected to rise between 2 to 5 feet over the long term.

River Flooding. In addition to coastal flooding, Wells may see increased flooding along its rivers and streams. The floodplain is delineated based on the probability of flooding in a given year. Figure 15 shows both the current 100-year floodplain (i.e., an area with a 1% chance of flooding in given year) and the 500-year floodplain (i.e. an area with a 0.2% chance of flooding in a given year). The current 100-year floodplain in Wells covers an area of 4,600 acres while the 500-year floodplain adds an additional 520 acres. FEMA is currently in the process of updating the 100- and 500-year floodplain maps for the Town of Wells. These map updates will predominately reflect changes in flood risk due to changes in land cover and better elevation data (Fernandes, 2013). Future increases in annual precipitation and frequency of extreme precipitation events will likely further increase the risk of flooding along Wells' streams. In addition, as noted above, sea level rise will reduce the capacity of coastal streams to take on water during storm events, which means they will overflow their banks under lower precipitation conditions than they did in the past.

3 Recent floods include the Patriots' Day Storm of 2007 and the Mother's Day Storm of 2006.

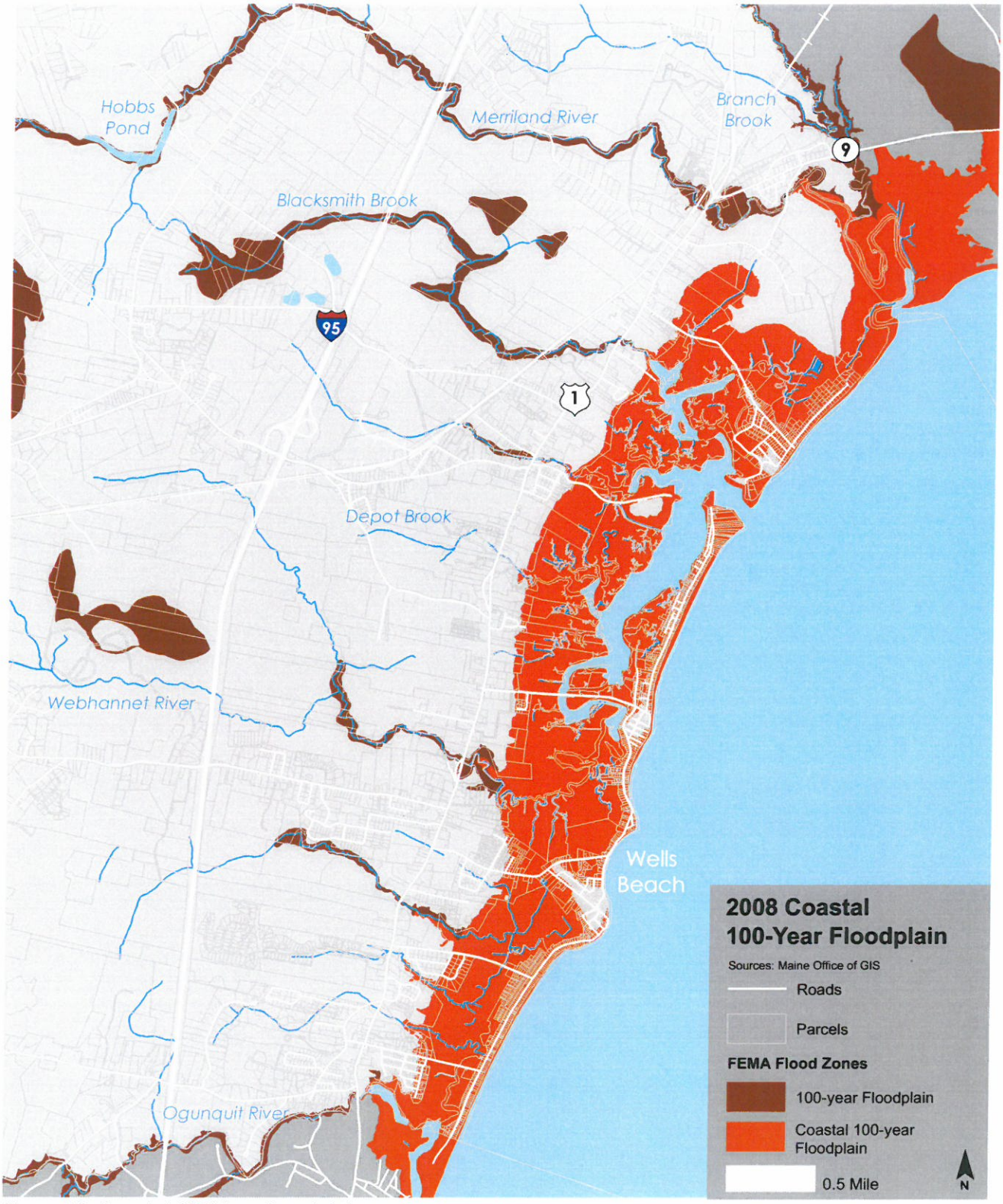


Figure 12. Coastal 100 Year Floodplain

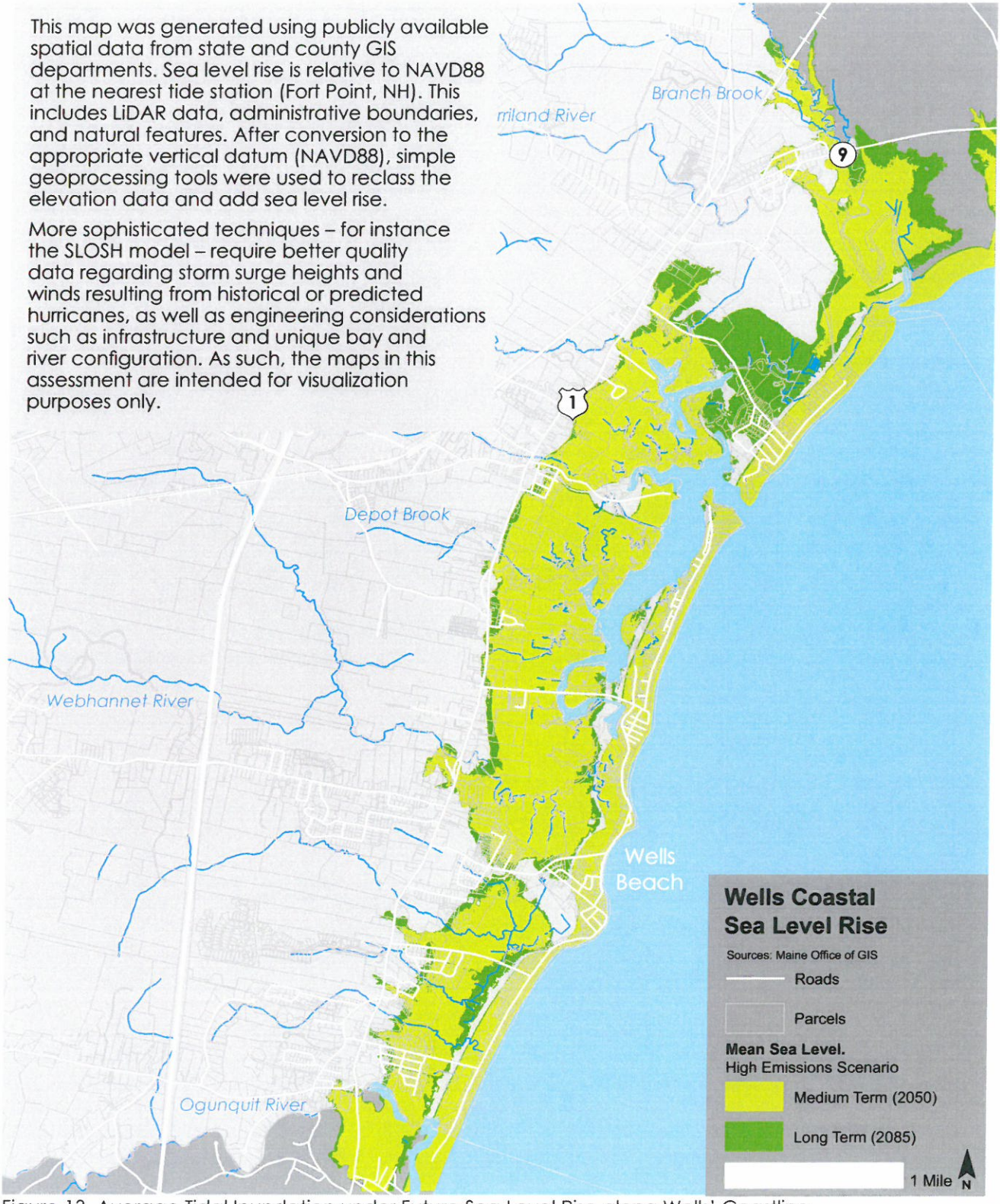


Figure 13. Average Tidal Inundation under Future Sea Level Rise along Wells' Coastline

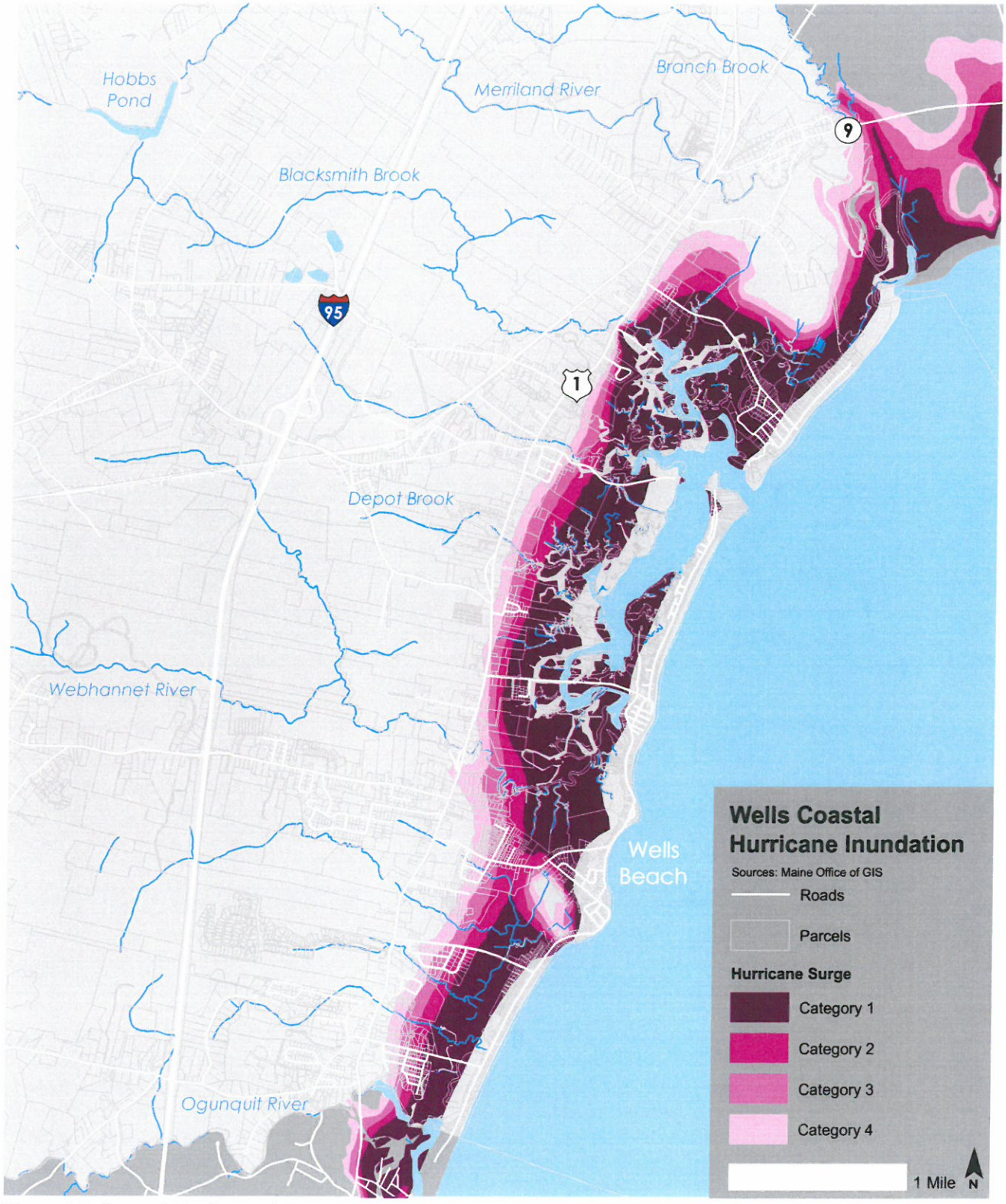


Figure 14. Current Hurricane Surge

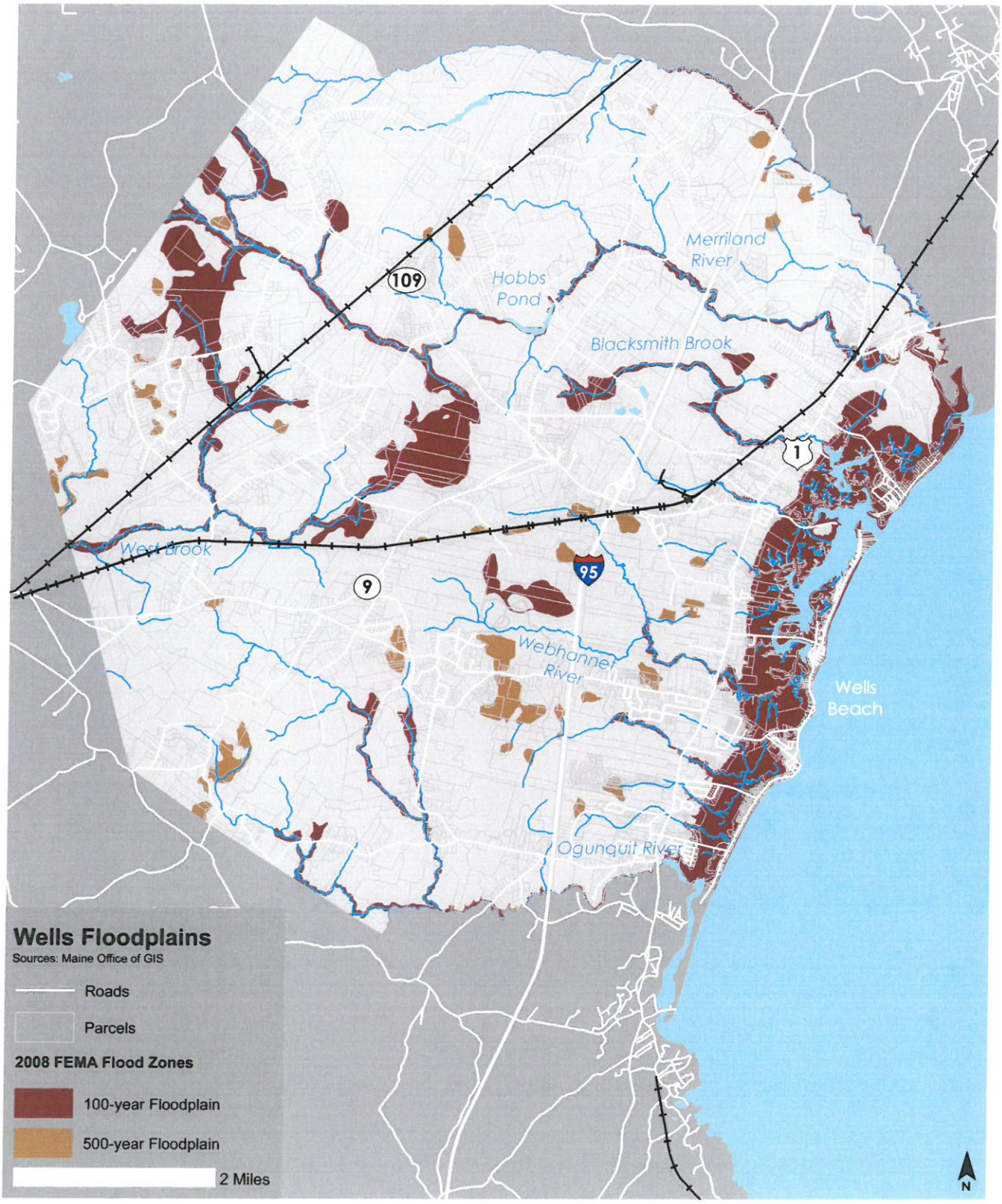


Figure 15. Wells' 100 and 500 Year Floodplains



Figure 16. Street Flooding



Figure 17. 2010 Storm at the Wells Reserve

Stormwater Runoff

The increase in frequency of extreme precipitation events is expected to increase the risks associated with stormwater runoff. In developed landscapes, stormwater runoff flows quickly off of impermeable and hard surfaces into drainage ditches, streams, and culverts. This large load of water picks up sediment and debris along its path, and can erode stream banks and wash out roads, as was the case during the recent Mother's Day and Patriots' Day storms (Figure 16). Due to Wells' small size, it is not regulated under EPA's MS4 (Municipal Separate Storm Sewer System). However, Wells is undertaking best management practices to deal with stormwater runoff challenges. Low impact development methods such as biofiltration, green infrastructure, and natural buffers are already part of Wells' regulatory, permitting, and design processes. However, these practices focus on water quality issues more than flooding.

Vulnerabilities

Neighborhoods and Properties. The areas of Wells that are most vulnerable to sea level rise include the neighborhoods of Wells Beach, Moody Beach, Drakes Island, and Wells Harbor. Sea level rise could also affect interior waterways, such as the Little River. Based on climate projections, over 1,900 parcels will be in moderate to high risk of flooding over the long term within the town of Wells . In the future, properties in the current flood hazard area will be at greater risk of flooding, since the frequency of flooding is predicted to rise. Buildings can be severely damaged by floodwaters, causing displacement of residents and businesses. Basements can become damaged from higher groundwater levels and leaks associated with flood events. Flooding may also cause residences and businesses to lose power and water service, and road closures caused by flooding can prevent access to homes, businesses, and services, such as hospitals and schools.

Infrastructure and Transportation Networks. Flooding can temporarily block or impede the function of infrastructure, as well as lead to costly repairs. Transportation networks can be blocked by floodwaters, closing off evacuation routes. For example, the community of Drakes Island is entirely within the 100-year floodplain and may need to be evacuated during a flood emergency. Comparing the road network to the flood risk layers, it appears that coastal routes such as Atlantic Ave and Ocean Ave as well as inland roads including State Highway 9, Quarry Road and Bragdon Road may be impaired in a flood emergency. Amtrack's rail line may be inundated in the future where it crosses the Merriland River and Blacksmith Brook (Figure 18). During the large storm events of recent years, Wells experienced damage to its public infrastructure including culverts, roads and bridges, and the seawall. These structures are being replaced with larger storm capacities to accommodate future impacts.

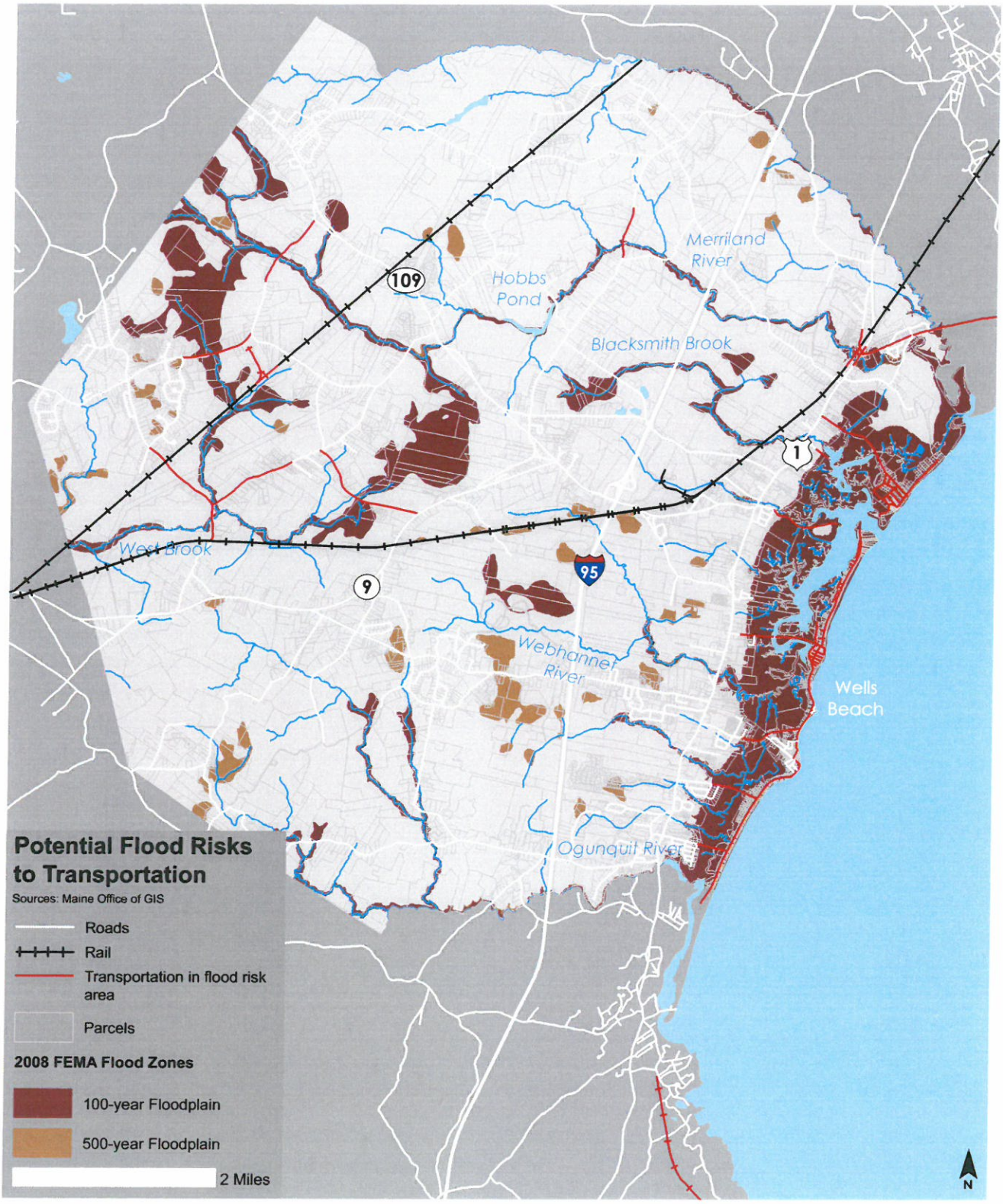


Figure 18. Potential Flood Risks to Transportation

Social Vulnerabilities. Displacement caused by flooding is a major social vulnerability. Populations with lower mobility, due to both physical and economic reasons, may be more sensitive to flood impacts. Sensitive populations (such as the elderly, very young, and presently ill) have lower physical mobility rates and are therefore at risk from major hazards. However, there are no nursing homes or hospitals within the Town of Wells. Lower income households may have limited savings and can be especially hard hit by the disruption of work and expenses of recovery associated with flooding. According to the 2010 US Census, fewer than 5% of households in Wells are below the poverty level.

Ecosystem Changes. Barrier beach and interior marsh ecosystems provide valuable flood protection for nearby properties as well as other important ecosystem services. However, they are also highly susceptible to negative effects from coastal flooding, and are highly vulnerable to sea level rise (SeaGrant). By the end of the century, sea level rise is projected to fully submerge the Wells Reserve estuarine lands (Figure 20). In the shorter term, it is unclear whether Wells' marshes will have room to migrate upland, and whether they will be able to migrate quickly enough.

Beach erosion is caused by sea level rise and increased intensity of storms. Wells has already experienced beach erosion, but climate change will increase the rate of erosion as the sea level rises and extreme precipitation events become more common. Beach erosion can be a threat to coastal properties. It also may have negative economic impacts, since the town's tourism industry relies on Wells' beaches as a primary attraction.

Accelerated sea level rise and erosion could also threaten coastal wetlands, where diverse species including mollusks and the endangered Piping Plover find food and protection. Saltwater marshes and freshwater marshes are both vulnerable to sea level rise. Inundating the salt marshes could lead to waterlogging and plant death (Figure 21). Further, salt marshes provide important functions to coastal zones as they reduce wave actions during storms (Mudd, 2011).

Increased stormwater runoff has been associated with damage to riparian and estuary habitat. Rainfall can carry nutrients and pollutants into rivers and estuaries, leading to water quality issues and negatively affecting river and coastal ecosystems. While downriver wetlands are natural filtering stations, declining marshes due to sea level rise combined with heavier storms and upstream development could lead to significantly impaired waterways in the future. Water quality impacts could negatively increase bacteria counts, leading to beach shutdowns and detrimentally affecting surrounding ecosystems. While in the past beach closures have occurred infrequently, Wells' economic reliance on tourism makes closures one of the town's highest concerns (Livingston, 2014).



Figure 19. 2010 Storm Damage

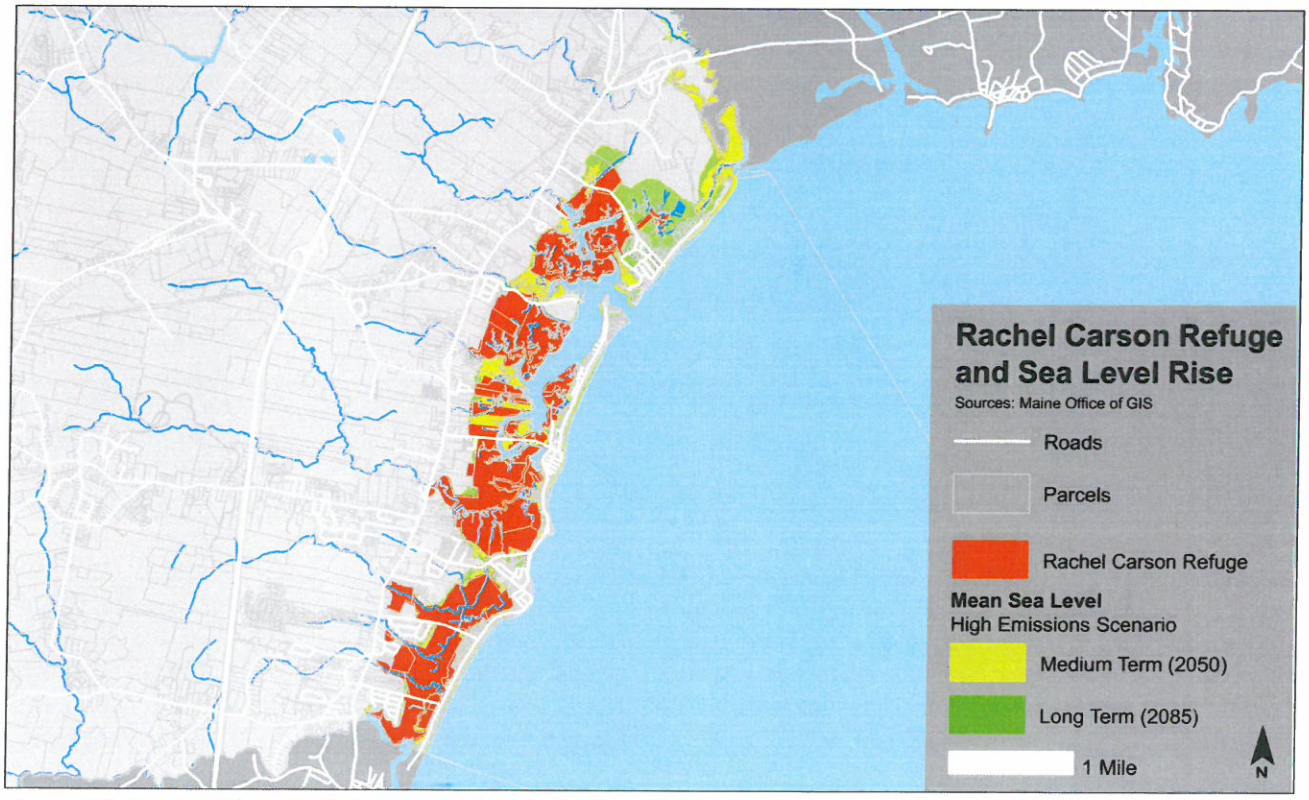


Figure 20. Rachel Carson Refuge and Sea Level Rise Scenario

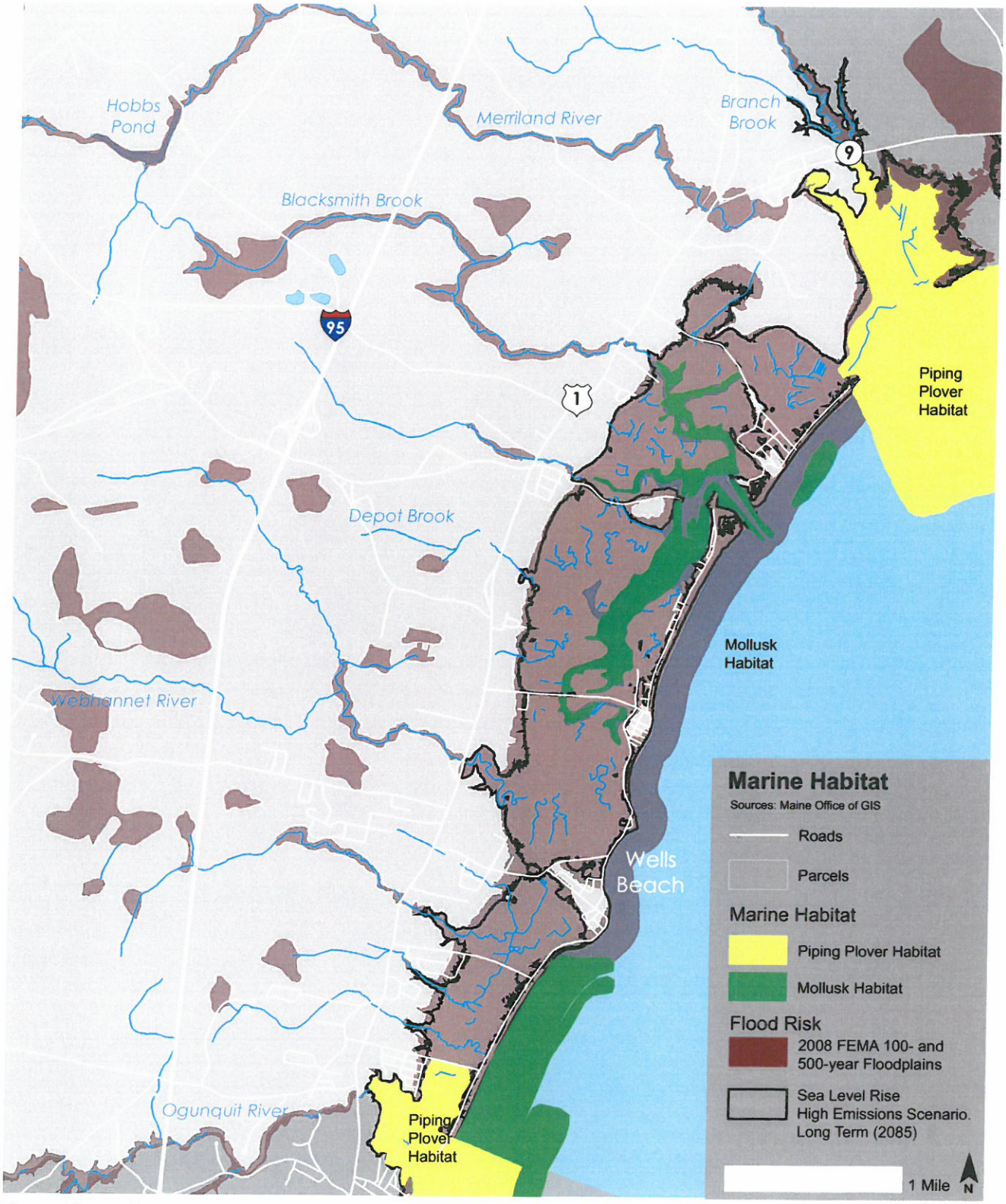


Figure 21. Marine Areas

Adaptation Options

There are a wide variety of adaptation options that can be undertaken to reduce Wells' sensitivity to flooding (such as flood-proofing houses) and to reduce the town's exposure to flooding (such as moving communities out of the flood zone). While some communities employ protective structures (for example seawalls and levees) these are not legal in Maine. Alternative adaptation options aimed at reducing individual property and community flood risks are included in Table 4a. Table 4b focuses on minimizing flood risks to infrastructure. Lastly, Table 4c focuses on reducing flood impacts on ecosystems. During the stakeholder interview process several stakeholders emphasized the importance of education for youth and adults about climate change adaptation. Local organizations, such as the Wells Reserve at Laudholm, Maine Sea Grant, and others, have been active in this effort.

Table 4. Adaptation Options for Flooding

a. Adaptation Options to Reduce Community and Property Flood Risks
Flood-proofing: Raise homes and other structures above the 100-foot floodplain elevation.
Insurance: Flood insurance and other forms of financial security can help people rebuild after a climate-related disaster.
Emergency services: The Fire Department, Police Department, and Emegency Management Department continue to play a critical response role in emergency relief. Succesful efforts employ various strategies that are coordinated in time and location. There is an opportunity for greater collaboration between adjacent municipalities on services like water infrastructure or emergency management, rather than duplicating efforts.
Protect and restore dune systems: Replenish sand in beaches and protect dune systems from development and further erosion. Replenishing sand is considered a short-term strategy as it requires constant maintenance.
Planning and zoning approaches: Limit future development in flood-prone areas and/or incentivize development in less flood-prone areas.
Buy-backs: Implement a voluntary building buy-back program to help residents move out of the floodplain. Cranston, Rhode Island is doing this on a pilot basis, and a number of cities in New York and New Jersey are offering buy-back programs as part of their post-Sandy reconstruction toolkit.

b. Adaptation Options to Reduce Infrastructure Flood Risks

Retrofit: Raise and fortify emergency routes between the coast and the inland town. Culverts can be upgraded to handle larger amounts of runoff during storms.

Gray and green infrastructure: Reduce stormwater runoff by implementing "green" solutions (e.g. low-impact development regulations) or "gray" solutions (e.g. bigger sewage pipes and storage tanks). This may be helpful in developed areas and areas susceptible to riverine floods, but it will not reduce flooding due to storm surges or sea level rise.

Redundant systems: Invest in alternative systems that complement rather than replace current infrastructure. For example, support a multi-modal transportation system or multiple evacuation routes in case one route fails.

c. Adaptation Options to Reduce Environmental Impacts from Flood Risks

Addressing beach erosion: Possible short-term adaptation steps to combat beach erosion could include: sand replenishment, geotubes to shore up beaches, and dune restoration and vegetation, which would be more durable than dumping sand alone. Unfortunately, all of these options are temporary solutions. As sea level rises and storms become more intense, erosion and/or migration of Wells' beaches may be unpreventable.

Addressing marsh habitat: Acquire lands adjacent to marshes to facilitate marsh migration and remove barriers to marsh migration, such as roads, floodwalls, or armoring. Keep marshes healthy by minimizing pollution and damage in order to make them as resilient as possible, which will increase their chances of being able to adapt to changing conditions. Although these measures may help, marshes may not be able to migrate quickly enough to keep up with sea level rise.

Addressing stormwater runoff: Implement "green infrastructure" approaches, such as greenroofs and rain gardens. Green infrastructure can both slow down runoff and reduce pollution loads through biofiltration. It can also be implemented incrementally and, unlike most traditional infrastructure, actually increases in effectiveness over time. For instance, a 20-year-old tree can absorb a lot more water than a 5-year-old tree. Putting in place green infrastructure may also help Wells to increase the adaptive capacity of its species and habitats by supporting wider ecological buffers and providing extensive habitat corridors and more interior habitat. While green infrastructure has many benefits, it is important to recognize that, as the magnitude of flooding increases, the capacity of green infrastructure may be overwhelmed.

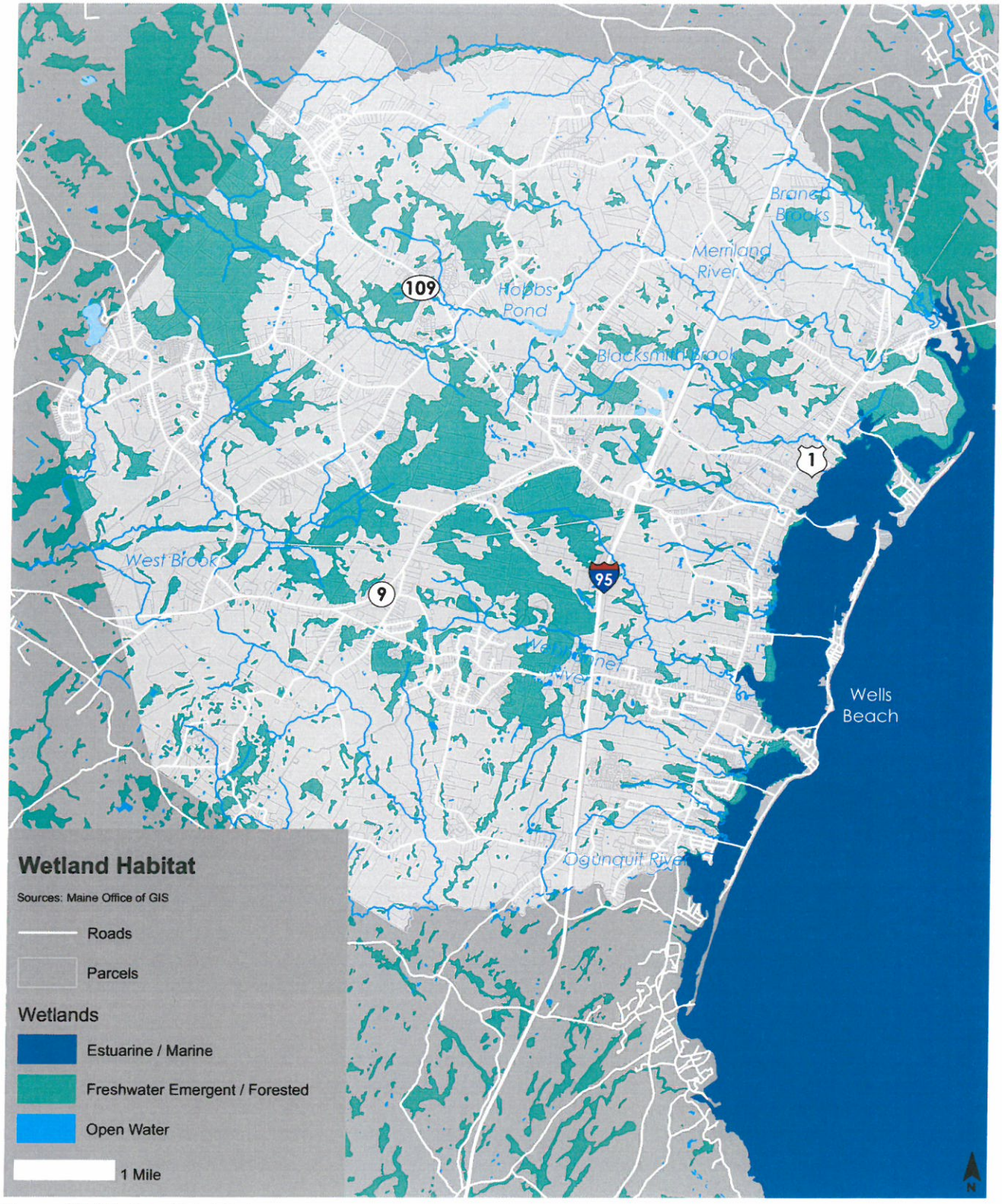
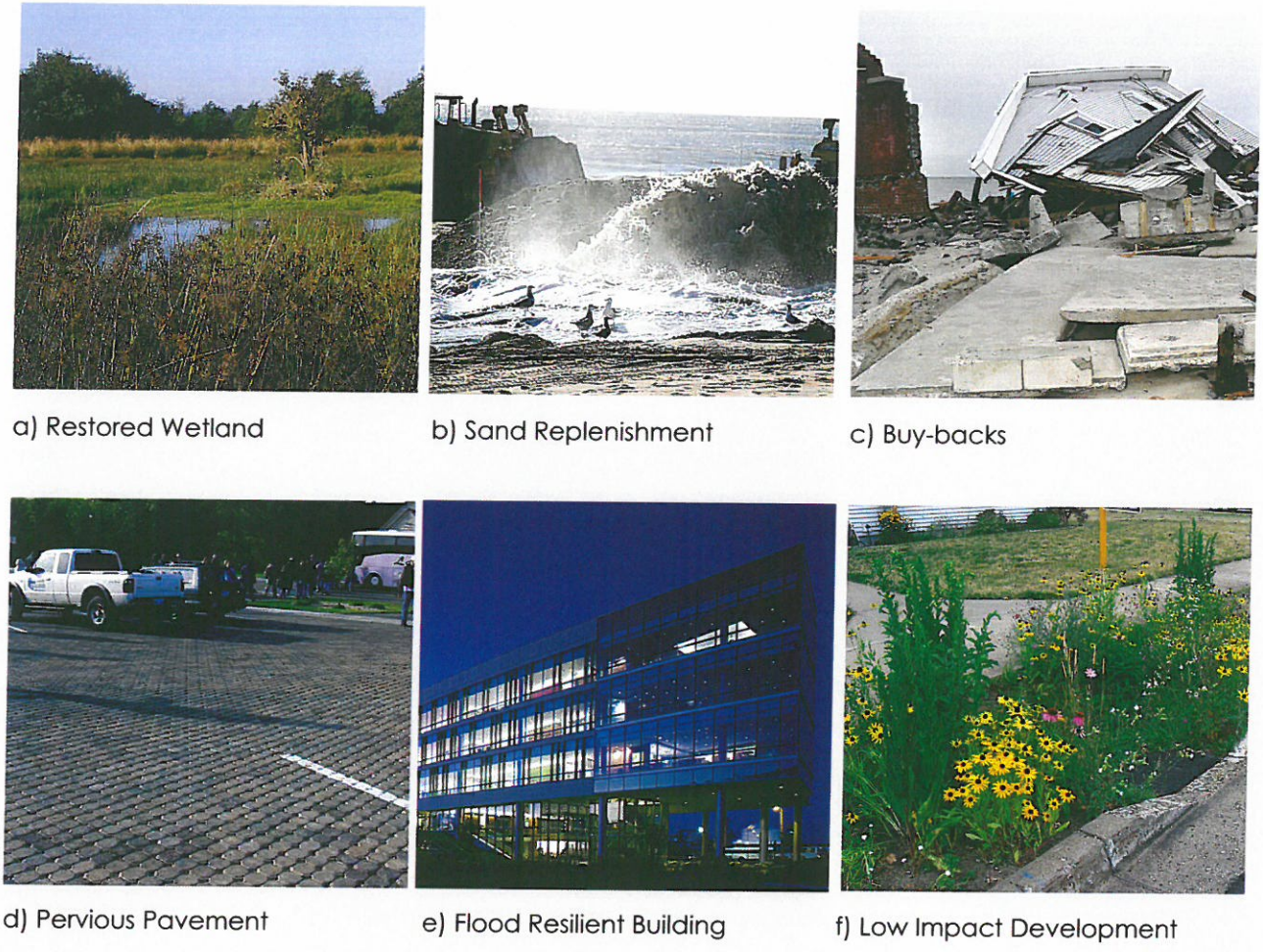


Figure 22. Wetland Habitat



a) Restored Wetland

b) Sand Replenishment

c) Buy-backs

d) Pervious Pavement

e) Flood Resilient Building

f) Low Impact Development

Figure 23. Flood Adaptation Options

Heat Waves and Warmer Temperatures

Risks

Heat waves are driven by extreme heat events, which are projected to occur up to 9 times as often by the end of the century. Heat waves are particularly dangerous for human health and infrastructure when they last for long periods of time, when evenings do not cool down, and when heat is coupled with high humidity.

Vulnerabilities

Public Health. Maine residents may be vulnerable to heat-related health impacts because many homes do not currently have air conditioning. The elderly, children, low-income residents, and those who work outside are especially susceptible. Higher temperatures can also contribute to more air pollution, which disproportionately affects the health of the young and elderly.

Increased temperatures may increase exposure to disease vectors that are more common in warmer climates, such as Lyme disease-bearing ticks and West Nile-bearing mosquitos. Residents may need to be educated about new disease vectors and pests that are not currently common in the area, in order to prevent unnecessary exposure.

Electricity Infrastructure. Extremely high temperatures can cause electrical wires to sag and come into contact with trees or structures. Prolonged heatwaves can also damage other electricity distribution equipment, such as transformers, which are designed to cool down during the evenings. Additionally, peak electricity demand tends to occur during hot summer afternoons and increased demand due to hotter days has the potential to cause reliability problems, such as brownouts or blackouts, if electricity demand outstrips supply.

Adaptation Options

Reduce Exposure and Sensitivity of Vulnerable Populations. An option for reducing the health impacts of heatwaves is to reduce the exposure of vulnerable populations. Strategies include providing cooling centers during heatwaves, retrofitting substandard housing, and providing assistance for people who cannot afford their electricity bills. Planting shade trees can function as a long term strategy to reduce residential air conditioning use.

Reduce Vulnerability of Electricity Infrastructure. Options for reducing the vulnerability of electrical infrastructure to heat waves include improving the equipment and implementing energy efficiency measures that reduce stress on the electricity system during heat waves. Many electric utilities employ innovative demand management techniques, including programs that compensate customers who agree to have the electrical supply for certain devices (such as irrigation pumps or air conditioners) cycled on and off during periods of peak demand to reduce overall energy use. Some large industrial utility customers can even agree to run their operations at night, which reduces the load on the system during daytime peaks. General energy efficiency policies and practices also serve to lower average energy



a) Building Retrofits



b) Cooling Center



c) Shade Trees

Figure 24. Adaptation Options for Heat Waves

demand. Distributing and diversifying electricity sources is another way to improve electrical system reliability during extreme weather events. This could involve backup generation options, electricity storage options, and on-site energy options, such as rooftop solar power. Finally, maintaining and updating aging distribution infrastructure, such as transmission lines and transformers, is important for preventing system failures during heat waves (Vine, 2011).

Tourism and Fiscal Diversity

Risks

Tourism is one of the primary sources of economic activity in Wells. Summer residents and short-term visitors come to Wells to stay in coastal properties and enjoy the area's beaches and natural amenities. In addition, a large percentage of Wells' tax base comes from coastal properties. The fiscal wellbeing of Wells is therefore largely dependent on the safety and access to those properties. In light of Wells' reliance on tourism and coastal property values, climate change impacts on the town's natural and built environments have the potential to significantly affect the town financially and economically.

Vulnerabilities

Tourism. Longer summer seasons and warmer winters may extend Wells' tourist season, which could have a positive economic impact, at least in the short term. However, the potential impacts of climate change on Wells' beaches, marshes, and other natural areas may degrade their environmental quality, which would likely have negative impacts on the tourism industry. In addition, tourist infrastructure in flood-prone areas, such as along the coast, is vulnerable to sea level rise and coastal storms.

Wells' large population of summer-only residents and tourists may provide an additional challenge to Wells' adaptive capacity. Seasonal residents and visitors are less likely to have detailed local knowledge or familiarity with emergency response procedures. They also may be

less likely to implement personal resilience measures, such as having emergency supplies or a generator on-hand. Therefore, they may be a particularly vulnerable population in the event of a major storm. Further, they may be less willing to invest in collective adaptation options, such as infrastructure upgrades.

Coastal Properties. A large storm that destroys a substantial amount of coastal property could threaten the town's ability to raise tax revenue. Additionally, as the sea level rises and resultant impacts begin to manifest, such as coastal erosion and increased flood risk, coastal property values may decline, which will also negatively affect the local tax base. Abandonment of properties that are severely damaged by storms and flooding could also create liability for the town.

Adaptation Options

Potential adaptation options include diversifying the town's economy and encouraging development away from the coast, adapting tourist infrastructure to reduce its vulnerability, and protecting natural areas for their ecotourism value.

Drought

Risks

The threat of increased drought in Wells is driven by the projected decrease in summer precipitation, increase in summer temperatures, which could result in more evaporation and transpiration, and warmer winters, which could result in less snow pack. For this report, we have not included drought projections because of their high uncertainty. However, previous analysis has suggested that, in the long term, much of New England will experience a significant increase in drought. For example, short-term drought (up to one month in duration) is expected to increase two- to three-fold by the end of the century under the high emissions scenario (Hayhoe et al., 2007).

Vulnerabilities

Drinking Water Supply. The duration and frequency of drought will determine its impacts on water supply. Drought can particularly impact the potable water supply. Wells' water supply comes from wells and Branch Brook. Wells residents may be particularly vulnerable if a drought causes groundwater levels to fall, because they are not relying on water stored in reservoirs. A prolonged drought could impact Wells' surface water supply, but the vulnerability of that water supply has not been analyzed in this study.

Ecosystem Impacts. A prolonged drought may result in negative environmental impacts. Wells may be affected by flooding and drought. As water levels in wetlands and streams decline and temperatures increase due to a drought, water quality challenges can be exacerbated. Lower water levels can further reduce habitat ranges, increasing predation and encroachment pressures.

Adaptation Options

Wells can reduce its exposure to drought-induced water supply shortages by acquiring additional water supplies. This might involve digging deeper wells for those using well-water or partnering with nearby municipalities. Decreasing municipal, industrial, business, and residential demands through water conservation also reduces sensitivity. Reducing water demand may also keep more water in local waterways, which can help ecosystems survive drought as well.

Marine Habitat Health

Risks

Not only are increased atmospheric temperatures warming ocean waters, but greenhouse gas emissions are also altering ocean currents and the chemistry of the sea (NOAA, 2012). Carbon dioxide is absorbed by ocean water, creating a much more acidic oceanic environment across the globe. The acidity represents a threat to all marine life, but shellfish are particularly vulnerable to ocean acidification (Maine Department of Marine Resources).

Vulnerabilities

In the Gulf of Maine, temperature, nutrient flows, and salinity are affected by the Labrador Current from the north and the Gulf Stream from the south (Jacobson et al, 2009). Climate change is expected to significantly alter these ocean currents, which would impact the composition and distribution of marine species in the Gulf of Maine. Warmer temperatures may benefit lobster but drive cod north. In the short-run, the Gulf of Maine may actually become colder and less saline as Arctic ice melts (NOAA, 2013). While this study does not provide a vulnerability analysis for marine habitats, past reports indicate that nearshore habitat and those species with lower tolerance for temperature variation and pollution will be at a higher risk.

Adaptation Options

It is impossible to isolate marine habitat from oceanic changes. While climate change mitigation options have the potential to reduce changes to ocean circulation and chemistry, some changes may be inevitable in the long term. Wells can invest in increasing the adaptive capacity of its marine habitat by increasing high quality habitat areas and reducing additional pressures on marine ecosystems (e.g. pollution and fishing). Individuals and industries that are reliant on marine ecosystems may want to further investigate projected impacts of climate change on the Wells marine environment and develop adaptation strategies accordingly.



a) Protect Salt Marshes



b) Vegetated Waterway Buffers

Figure 25. Adaptation Options for Marine Habitat Health

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Executive Summary: Sand Replenishment, www.OCtheBeach.com; Flood Resilient Building. Photo by: Jeffrey Tortaro, Design firm: Tsoi/Kobus & Associates in Cambridge, MA; Wetland Restoration; Woonasquatucket Wetland Restoration http://www.dem.ri.gov/programs/benviron/water/wetlands/wetplan.htm.; Tree canopy, Courtesy of Douglas Still, City Forester, Providence, RI; Water Conservation, Wikicommons; Protected Salt Marshes, Wells Reserve at Laudholm

Salt marsh Photo credit to Erica Simmons

Street Flooding Photo credit to the Town of Wells

2010 Storm at the Wells Reserve Photo credit to Wells Reserve at Laudholm

2010 Storm Damage. Bridge Closed Photo credit to the Wells Reserve at Laudholm

Adaptation Options for Flooding: Restored Wetland. Three Bridges Foundation; Sand Replenishment, www.OCtheBeach.com; Buy-backs, Photo by Marilee Caliendo/FEMA; Flood Resilient Building. Photo by: Jeffrey Tortaro, Design firm: Tsoi/Kobus & Associates in Cambridge, MA; Low Impact Development, Southeast Michigan Council of Governments.

Adaptation Options for Heat Waves: Building Retrofits. RafterTales; Cooling Center. NYC Urbanlife Blogspot; Shade Trees, Courtesy of Douglas Still, City Forester, Providence, RI

Adaptation Options for Marine Habitat Health: Protect Salt Marshes. Photo credit to the Wells Reserve at Laudholm; Vegetated Waterway. Photo credit to Erica Simmons

Appendix 1: Methodology for Downscaled Projections and Sea Level Rise

The Wells downscaled projections were generated as output from four different global circulation models (GCMs) that have been well-established and evaluated in the peer-reviewed scientific literature: 1) the US National Oceanic and Atmospheric Administration's Geophysical Fluid Dynamics Laboratory (GFDL) CM2.1; 2) the United Kingdom Meteorological Office's Hadley Centre Climate Model version 3 (HadCM3); 3) the National Center for Atmospheric Research's Parallel Climate Model (PCM) and 4) Community Climate System Model Version 3 (CCSM3). These models have different climate sensitivities, where sensitivity refers to the amount of temperature change resulting from a doubling of atmospheric CO_2 concentrations relative to pre-industrial times. GFDL, CCSM3, and HadCM3 have medium sensitivity, and PCM has a low sensitivity.

Each global model produces output in the form of geographic grid-based projections of daily, monthly, and annual temperatures, precipitation, and other climate variables. GCMs operate on the scale of hundreds of miles, which is too coarse a resolution to distinguish changes across different towns and cities in a given region, such as New England. However, scientists used state-of-the-art statistical downscaling models to capture historical relationships between large-scale weather features and local climate, and use these to translate future projections down to the scale of local weather station observations. In this project we used a relatively new statistical downscaling model, the Asynchronous Regional Regression Model (Stoner, et al, 2012). This report uses the projections downscaled to the meteorological station in Portland, Maine, because it is the closest station to Wells.

Two different climate change scenarios drove the projections from the GCMs: a high emissions scenario (A1fi) and a low emissions scenario (B1). The high emissions scenario assumes that the world will experience economic growth dependent primarily on fossil fuels and that atmospheric concentrations of CO_2 will reach 940 parts per million by 2100. The low emissions scenario assumes that economies will shift to cleaner, less fossil-fuel intensive technologies, and that atmospheric concentrations of CO_2 will reach 550 parts per million by 2100[4]. The purpose of choosing a high emissions and a low emissions scenario is to create a likely range of future climatic change that Wells may experience during the 21st century.

4 The emissions scenarios and GCM simulations used in this report consist of models that contributed to phase 3 of the Coupled Model Intercomparison Project (CMIP3). These are the results presented in the Intergovernmental Panel on Climate Change (IPCC) Third (2001) and Fourth (2007) Assessment Reports. More recent scenarios combined with CMIP5 climate projections were recently released (September 2013) in the IPCC Fifth Assessment Report.

The projections are also presented in three time frames: short term, medium term, and long term. The short term refers to the time period between 2010 and 2039, the medium term refers to the time period between 2040 and 2069, and the long term refers to the time period between 2070 and 2099. The historical baseline refers to the time period between 1980 and 2009. We averaged the results of the historical baseline and climate projections over their respective 30-year timeframes. This period is long enough to filter out any inter-annual variation or anomalies and short enough to show longer climatic trends.

Table A1: Global Circulation Models

Origin	Model	Scenarios	Equilibrium Climate Sensitivity (°C)*
National Center for Atmospheric Research, USA	CCSM3	A1fi, B1	2.7
National Center for Atmospheric Research, USA	PCM	A1fi, B1	2.1
Geophysical Fluid Dynamics Laboratory, US	GFDL CM2.1	A1fi, B2	3.4
UK Meteorological Office Hadley Centre	HadCM3	A1fi, B3	3.3

* data from IPCC 2007 Fourth Assessment Report, Chapter 8.

Table A2: Downscaled Projections for Wells: Temperature Anomalies

Temperature Anomaly (°F)							
	Historical	Short Term (2010-2039)		Medium Term (2040-2069)		Long Term (2070-2099)	
	1980-2009	Low Emissions	High Emissions	Low Emissions	High Emissions	Low Emissions	High Emissions
Annual TMIN	37.0	39.0	39.1	40.0	41.8	40.8	44.7
Annual TMAX	55.6	57.7	57.7	59.0	60.7	59.9	64.1
Winter TMIN	16.5	19.4	19.5	20.5	22.4	21.5	25.9
Winter TMAX	34.2	36.4	36.1	37.2	38.2	38.0	40.7
Summer TMIN	57.1	58.8	59.1	59.9	61.4	60.6	64.0
Summer TMAX	76.5	79.0	79.2	80.9	83.2	81.9	87.3

Table A3: Downscaled Projections for Wells: Temperature Extremes

Temperature Extreme (days per year)							
	Historical	Short Term (2010-2039)		Medium Term (2040-2069)		Long Term (2070-2099)	
	1980-2009	Low Emissions	High Emissions	Low Emissions	High Emissions	Low Emissions	High Emissions
<32°F	147	136	136	130	117	126	100
>90°F	4	6	8	12	25	15	49

Table A4: Downscaled Projections for Wells: Precipitation

Precipitation (inches)							
	Historical	Short Term (2010-2039)		Medium Term (2040-2069)		Long Term (2070-2099)	
	1980-2009	Low Emissions	High Emissions	Low Emissions	High Emissions	Low Emissions	High Emissions
Annual mean	46.2	48.1	47.1	48.8	49.4	50.2	51.7
Winter mean	10.2	11.4	11.5	12.0	11.9	12.7	13.9
Summer mean	10.5	9.6	9.6	9.8	10.2	9.0	10.3

Table A5: Downscaled Projections for Wells: Extreme Precipitation Events

Extreme Precipitation (events per year)							
	Historical	Short Term (2010-2039)		Medium Term (2040-2069)		Long Term (2070-2099)	
	1980-2009	Low Emissions	High Emissions	Low Emissions	High Emissions	Low Emissions	High Emissions
1" in 24 hrs	10.9	12.6	13.1	13.2	13.4	13.5	14.9
2" in 48 hours	4.6	6.8	6.7	7.5	8.0	8.2	9.8

Extreme Precipitation (events per decade)							
	Historical	Short Term (2010-2039)		Medium Term (2040-2069)		Long Term (2070-2099)	
	1980-2009	Low Emissions	High Emissions	Low Emissions	High Emissions	Low Emissions	High Emissions
4" in 48 hrs	9.0	9.4	6.2	9.4	11.9	12.0	13.6

Relative sea level rise (SLR) at a site is considered to be the sum of global climate change and local subsidence. Other factors such as circulation changes are not considered. Based upon research done in Portsmouth, NH (Wake et al, 2011), it is only necessary to consider global changes in the area of Portsmouth NH since subsidence is insignificant. Therefore the estimates of global SLR can be taken from Figure A1 (Vermeer and Rahmstorf, 2009), similar to the later projections of Parrish et al (2012) used for the US National Climate Assessment. For any particular time period, we suggest using the upper and lower values in the gray areas in the curve. Thus the SLR is approximately 1 to 2 feet by 2050 and 3 to 6 feet by 2100.

Table A6: Downscaled Projections for Wells: Sea Level Rise

Sea Level Rise (feet)						
	Short Term (2025)		Medium Term (2050)		Long Term (2085)	
	Low Emissions	High Emissions	Low Emissions	High Emissions	Low Emissions	High Emissions
Sea Level Rise	0.5	0.8	1.0	1.7	2.0	4.7

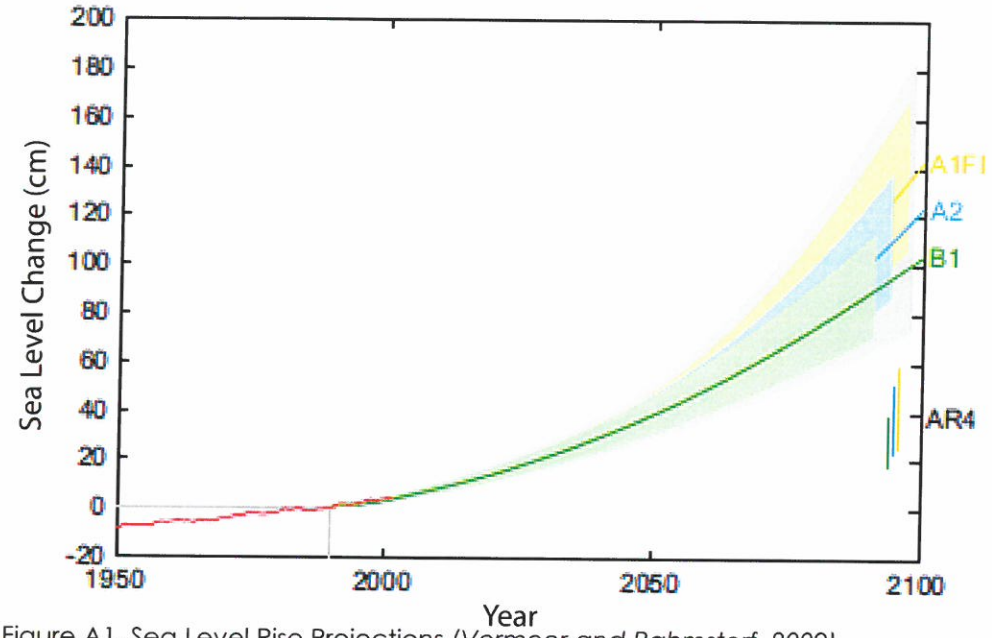

Figure A1. Sea Level Rise Projections *(Vermeer and Rahmstorf, 2009)*

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Appendix 2: Additional Resources

Below are additional resources on climate change risks and adaptation at various scales.

Maine

Seagrant. Maine Property Owner's Guide to Managing Flooding, Erosion & Other Coastal Hazards: http://www.seagrant.umaine.edu/coastal-hazards-guide

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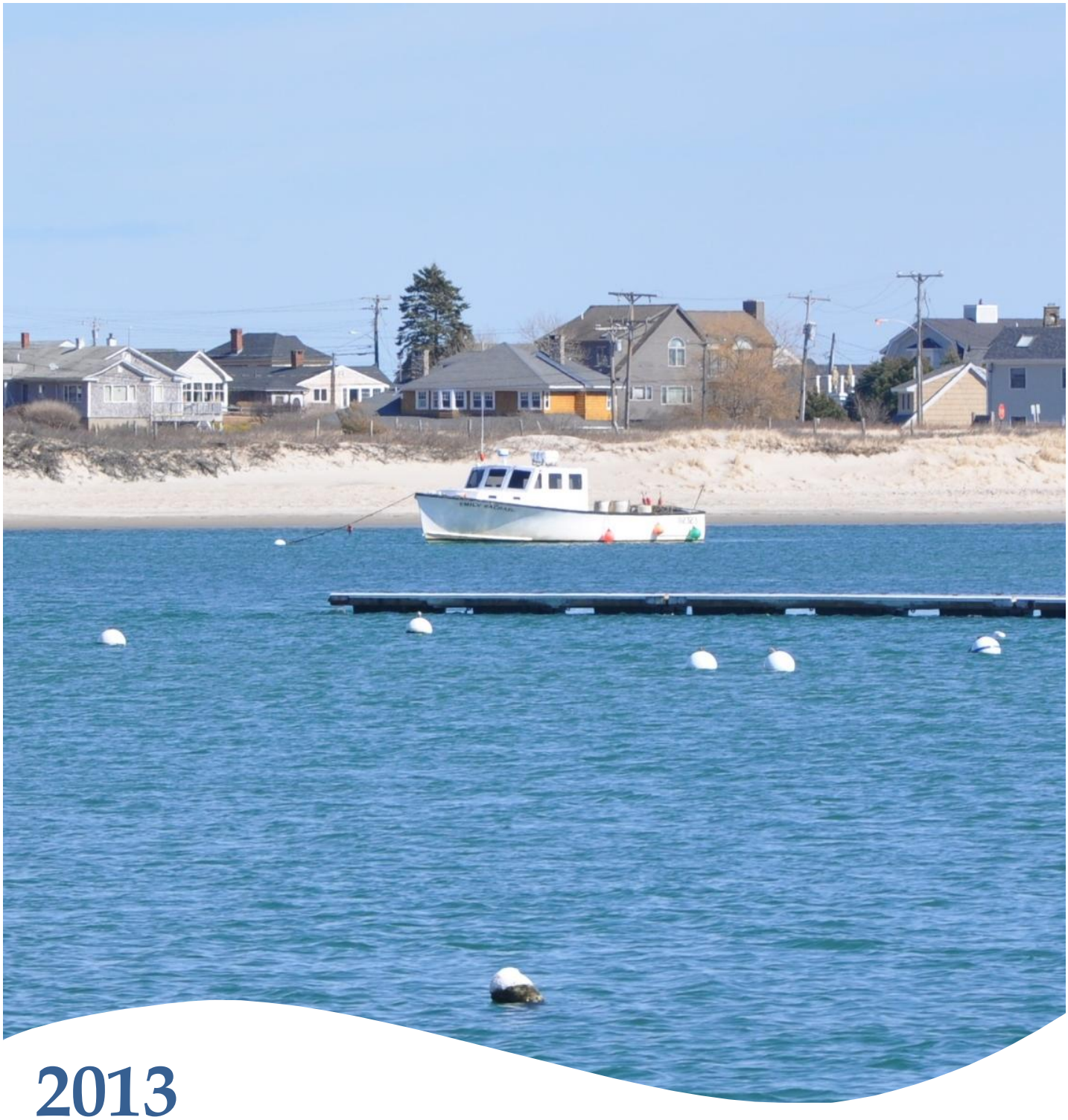
New England
Climate Adaptation PROJECT



2013
Wells Harbor Management Plan

WRIGHT-PIERCE
Engineering a Better Environment

Elizabeth A. Della Valle, AICP
Mathew Eddy Consulting

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APPENDICES

A. Preliminary Pier Assessment Report

B. Ecological Information from the Wells Reserve

C. Excerpt from the final Report of the Wells Scientific Review Panel (2007)

D. Town of Wells Harbor Ordinance

Introduction

The 2013 Update of the Wells Harbor Plan was developed for the Town of Wells by Wright-Pierce, in association Elizabeth A. Della Valle AICP and Mathew Eddy Consulting. Funding for this plan was provided through a Shore and Harbor Technical Assistance Grant from the Maine Coastal Program at the Maine Department of Conservation

Consultant team members from Wright-Pierce were Jonathan Edgerton, P.E. Senior Vice President, Amanda Bunker, Senior Land Use Planner, as well as Travis Pryor, Jason Wise, Chris Hinkley and Kim McIntire. Consultant team members from supporting firms include Elizabeth Della Valle and Mathew Eddy.



Significant guidance and plan development assistance came from the Wells Harbor Committee and Town Staff:

Jonathan Carter, Town Manager
Chris Mayo, Harbormaster
Kendall Crocker
Frank Parillo
Robert Liston, Jr.
Phil Pickering
Scott Worthing
Katheryn Mooney
James Shaw
William Comeau
Chris Chase
Robert Foley



Thanks go to this Committee for their work, and to the citizens and representatives of local organizations who participated in the public outreach efforts and meetings, and who provided input.

The 2005 update to the Wells Comprehensive Plan required the 1991 Harbor Management Plan to be updated, submitted to the State Planning Office (SPO) for review, and incorporated into the Town's

Comprehensive Plan. It also calls for the establishment of a committee "to explore ecologically oriented tourist opportunities", maintaining a "viable harbor and facilities for public access to the waterfront", and maintaining "Wells Harbor as an active harbor that provides access, service and mooring facilities for both commercial, marine-related vessels and recreational boats." The 2013 Update of the Wells Harbor Plan is intended to expand and build off the 1991 Wells Harbor Plan, and certain historical material has been drawn from that document.



While the Town's efforts since adoption of the Comprehensive Plan have largely focused on dredging issues and adoption of a new Wells Harbor Ordinance, numerous programs and facilities in nearby areas have advanced, including the Eastern Shore Beach Parking Lot and Jetty Beach area, the Harbor Park, and efforts to support shellfish facilities and programs and to protect the environment of the estuary. This management plan has included efforts to pull these disparate, but related projects together, identify and address and apparent "holes" among them, and update the Harbor Plan to strategically guide future related efforts through the coming decade and beyond.

The planning process was developed to incorporate input from a variety of interests, including business and natural resource oriented organizations, boating interests, tenants, commercial fishermen, tourists, the Wells National Estuarine Research Reserve, Laudholm Trust, The Nature Conservancy, Great Works Regional Land Trust, and the Rachel Carson National Wildlife Refuge, the Board of Selectmen, and others. We are confident that his community participation process has resulted in an updated Harbor Plan that includes appropriate strategies to encourage sustainable, ecologically-oriented, tourist opportunities and an active harbor capable of accommodating commercial and recreational uses. The Plan seeks to establish priorities and outline strategies to address the following key elements:

- Marketing
- Land Use Surrounding the Harbor
- Harbor Facilities and Infrastructure
- Harbor Economy and Sustainability
- Commercial Fishing
- Shellfish and Aquaculture
- Recreational Boating
- Natural Areas
- Beach Erosion
- Dredging

1 History of Wells Harbor[1]



The historic and current Town of Wells remains centered around its marine resources and Harbor. Prior to the founding of the Town around the Harbor in 1641, temporary residences were built on the beaches by traders and fishermen. During the 1600's Wells' residents harvested salt hay, fish, eels, and clams and coastal traders supplied nearby areas with boards, shingle, and hoops. Clusters of farms were concentrated near rivers and brooks that provided water power for grist and sawmills. Often found in these areas were a blacksmith shop, store, post office, one-room school, and church. The core of these early settlements can still be found in the Coles Corner, Wells Corner, Eldridge Corner, Moody, Tatnic, Merriland Ridge, Highpine (formerly Wells Deport), and Wells Branch areas.

From the late 1600's to 1905, shipbuilding, lumber mills, and fishing were the primary occupations in the Harbor. The area was set back briefly by the War of 1812, but the Age of Sail soon followed shipbuilding and commerce by coastal schooners flourished.

By 1825, Congress, in recognition of Wells' dependence on its maritime heritage and economy, constructed a 1,980 foot long pier so trading vessels could on/off load their cargos beyond the shoals at the mouth of the Harbor, confirming that the sedimentation problem in Wells Harbor has a long history.

The railroads arrived in 1842, 1872, and 1907 and eventually replaced schooners as the preferred mode to transport freight.

Wells' beaches were discovered by wealthy industrialists by the late 1840's although tourism didn't flourish until the 20th century. Large lodging and entertainment centers like the Atlantic House at Fishermen's Cove and the Island Ledge House at Wells Beach were constructed, though they were not replaced when they burned in later years. Instead numerous smaller hotels and boarding homes, and subdivisions for individual houses were built in the late 1800's and early 1900's, and local shipwrights became home carpenters. In the years following World War II, with the increased use of personal automobiles, Wells became known as a family vacation spot. Again,

[1] The 1991 Harbor Plan includes a considerably longer history of the Town of Wells. It was taken from a more detailed history by Hope M. Shelley, which can be found on the Town's web site.

largely because of its coastal environment and resources. With this trend came the service industry of hotels, motels, cabins, restaurants, specialty shops, and entertainment centers.

By the late 1950's, the community was seeking additional harbor improvements from the federal government. In 1961-1962, two jetties were constructed, the existing channels and anchorage were dredged, and the spoils were used to fill behind the jetties. Erosion of the beach was nearly immediate.

In 1977, another coastal engineering study was undertaken. It found that the channel was too wide for tidal currents and is in the prevailing direction of onshore seas. It also found that the anchorage is in the path of tidal currents, fostering a natural deposition of sand, and that the gross movement of sand was more significant than previously predicted. The study recommended reducing the width of the mouth of the channel with stone spurs and a pump, but the plan was dropped in 1980. Additional dredging of the Harbor was undertaken in 1991, 1996, 1999, 2000, 2002, 2005 and 2012.

Recent decades have seen the conversion of many of Wells' seasonal cottages to year round homes.





2 Goals

The Harbor Committee developed the updated goals listed below for the harbor area at the onset of the planning process. These goals provide specific direction to the following mission statement regarding the management of Wells Harbor:



> *To manage the use of Wells Harbor by balancing working waterfront interests, local business development, recreational interests, safe Harbor interests, visitor attractions, and community uses within the constraints presented by the natural environment. Recognize the Harbor as a preeminent Maine place for environmental education and ecotourism development.*

The Town of Wells should seek to:

Overarching Goals

- Balance additional development of the Harbor with its inherent constraints, both natural (marshes, habitat, sensitive plants and wildlife) and built (access roads, limited upland area) to minimize negative environmental impacts.
- Generate revenue from commercial and recreational use of the Harbor to offset the need for investments in support of the goals of the Harbor Plan. Seek federal and state as well as private and nonprofit/foundation funds to support implementation of the Plan.
- Treat Harbor planning as a continuous process.

Natural Areas

- Continue to support and expand research and education about Wells Harbor and its resources and environments in partnership with the Wells National Estuarine Research Reserve (WNERR), Rachel Carson National Wildlife Refuge (Rachel Carson), Wells – Ogunquit Consolidated School District (CSD), and others.
- Continue efforts to monitor, improve, and maintain water quality in the Harbor.

- Continue to support efforts aimed at improving and maintaining the health of the dune ecosystems including both flora (such as dunegrass) and fauna (such as piping plovers).



Harbor Economy and Sustainability

- Celebrate the Harbor, its activities, visitors, and users in understanding the importance of its role in Wells' culture and local economy.

- Establish a three part marketing program for the Harbor that assists local business interests, supports environmental education and experience, and enhances residents' use, awareness, and understanding of the economic importance of the Harbor to the community.

Harbor Facilities and Infrastructure

- Consider the effects of projected sea level rise on both Harbor infrastructure and ecological aspects of the Harbor/estuary and make investment and maintenance decisions that mitigate anticipated impacts of projected sea level rise. Work with the public to increase its understanding of the impacts and potential threats of sea level rise.

- Support, promote, and plan for capital improvement and maintenance of pier, floating dock, and other boat facilities, including, but not limited to, on-shore boat storage, sewage pumpout, and additional services.

Commercial Fishing, Shellfishing and Aquaculture

- Support traditional use and job creation associated with Wells' working waterfront, including but not limited to a commercial fleet for commercial and recreational fishing and clamming.

- Support aquaculture initiatives that are consistent with maintaining water quality within the estuary and limiting the likelihood of genetically modified species escaping into the natural system.

Harbor Park

- Make improvements to Harbor Park. The Park needs to be "refreshed" to better serve the community for the next 10-20 years. Enhance the aesthetics of facilities, improve the quality of materials used, expand activities, and reduce management demands.

Transportation and Access



- Make improvements on Harbor Road to upgrade access, circulation, and parking; encourage increased use of public transit, bicycles, and walking.

- Improve local signage and promotional materials to improve visitors' and users' knowledge of how to get to/use the Harbor. Improve knowledge about Harbor activities and facilities, "wayfinding" and safety notifications.

- Explore the feasibility of increasing pedestrian access throughout the Harbor, through creating a cross-harbor pedestrian bridge or water taxi service between the west and east sides of the Harbor. Assess the feasibility of paths and/or boardwalks to connect to Mile Road, Laudholm Farm, and Drake Island and plan for phased implementation of this recommendation.

- Promote carless vacationing in Wells. Increase and improve public transit options. Investigate remote parking/shuttle systems. Improve pedestrian, bicycle, moped/scooter access and amenities along Harbor Road and in the Park.

3 Goals and Working Plan

This Chapter includes the goals listed in Section 2 and recommended actions the Town of Wells will pursue to attain each goal.



3.1 OVERARCHING GOALS

A. Balance additional development of the Harbor with its inherent constraints, both natural (marshes, habitat, sensitive plants and wildlife) and built (access roads, limited upland area) to minimize negative environmental impacts.

1. Plan for dredging of the Harbor to maintain its navigability. Continue to work with the US Army Corps of Engineers to develop solutions to ongoing dredging issues.
2. Continue to restrict development that would increase undesirable impacts on this sensitive area.
3. As use of the Harbor area increases, plan for increased pressure on road and water access, parking, and stormwater management. Explore public transit and remote parking options. See Strategies II.B.1., VI.A.3., and VII.A.2. regarding stormwater management.
4. Where appropriate, include provisions to maintain or enhance natural buffers between differing uses to address aesthetic, water quality, and/or habitat issues.

B. Generate revenue from commercial and recreational use of the Harbor to offset the need for investments in support of the goals of the Harbor Plan. Seek federal and state as well as private and nonprofit/foundation funds to support implementation of the Plan.

1. As the Town manages the property it owns in the Harbor area, establish rents, licenses, and fees that will generate revenue from commercial and recreational users to offset the need for investment of local public funds in implementing the Plan.
2. Seek federal and state as well as private and nonprofit/foundation funds to support implementation of the Plan.

C. Treat Harbor planning as a continuous process.



1. The Harbor Advisory Committee will monitor implementation of the Harbor Plan to determine the effectiveness and appropriateness of continuing efforts in achieving community goals and report on progress and performance in the Town's Annual Report each year. This will include monitoring specific benchmarks related to the environmental health of the Harbor, and identifying opportunities for potential collaboration and/or potential conflicts with other Town plans or policies.
2. The Harbor Advisory Committee will prepare amendments to the Harbor Plan to be approved by the Wells Selectmen.
3. The Harbor Advisory Committee will periodically review the Harbor Ordinance and recommend revision as necessary.

3.2 NATURAL AREAS

A. Continue to support and expand research and education about Wells Harbor and its resources and environments in partnership with the Wells National Estuarine Research Reserve (WNERR), Rachel Carson National Wildlife Refuge (Rachel Carson), Wells – Ogunquit Consolidated School District (CSD), and others.

1. Continue to support monitoring, research and science-based environmental education efforts of the WNERR, Rachel Carson, CSD, Harbor Advisory Committee, and other groups, in support of natural processes and ecosystems and the human role in managing and stewarding natural resources. This should specifically include research and education surrounding water quality, erosion, and dredging impacts[1].
2. Improve environmental conditions of the Harbor by restoring salt marsh on the five acres of undeveloped dredge spoils and removing sand and restoring the adjoining marsh.
3. Explore opportunities for expanded public education, using the Harbor as a demonstration site for best management practices.
4. Work with the WNERR, Rachel Carson, CSD, Harbor Advisory Committee, local businesses, and others on an on-going basis to review threats to environmental interests in the Harbor area, inform customers and clients about environmental issues of the Harbor, and make recommendations to resolve problems. Educational

[1] In both areas that are dredged and where dredge spoils are disposed.

information for customers and clients might include a brief orientation to the area, including what they can expect to see, and advise about how to avoid affecting sensitive areas, staying out of the way of commercial boats, etc.

5. Work with and the WNERR, Rachel Carson, CSD, Harbor Advisory Committee, and others to keep the public apprised of all local, state and federal research projects and work in the Harbor area. The final results of each research project, or a link to the results, will be posted on the Town's web site as they become available.



6. Work with the WNERR, Rachel Carson, piping plover volunteers, Town staff, CSD, Harbor Advisory Committee, and others to annually survey the beach for wildlife nesting areas to properly protect those sited within high traffic areas. Encourage the CSD to continue its participation with beach profile monitoring at Drakes Island. Consider municipal funding of monitoring efforts.
7. Work with beachfront owners to improve their knowledge about their potential impacts on natural areas and involve them in solving problems and working with programs to ensure compliance with local, state, and federal laws.
8. Seek opportunities for "win-win" initiatives that benefit the ecology and economy of the Harbor and surrounding areas.

B. Continue efforts to monitor, improve, and maintain water quality in the Harbor.

1. Use best management practices in ongoing Harbor operation and infrastructure improvement to reduce the impacts of stormwater runoff on erosion and water quality.
2. Work with the WNERR, Rachel Carson, Harbor Advisory Committee, and others to prioritize and conduct stream shoreline surveys to identify faulty septic systems and inadequate stream buffers, and other threats to water quality. Seek outside funding to support retrofits to reduce identified threats to water quality. Prepare materials and activities to support efforts to inform homeowners/residents about the important role they play in protecting and improving water quality. If appropriate, reach out to other communities within targeted watersheds.

3. Review land use ordinances and amend, as appropriate, to ensure that best management practices are required for maintenance and new construction. Draft and adopt low impact development (LID) standards to reduce water quality impacts from maintenance and new construction activities. Work with the WNERR, Rachel Carson, Harbor Advisory Committee, and others to inform the public about of LID and its benefits.



4. Continue to support the Healthy Beaches program, Beach Profile Monitoring Program, and other community monitoring efforts.

C. Continue to support efforts aimed at improving and maintaining the health of the dune ecosystems including both flora (such as dunegrass) and fauna (such as piping plovers).

1. These efforts should include protecting the dunes from foot traffic and provide public education regarding the ecological values the dunes provide to the Harbor.
2. Explore the need and value of buying out properties that have or are likely to suffer repeated storm damage, as was done in the Intervale neighborhood of Kennebunk after the Patriot's Day storm. If properties are acquired, take advantage of the opportunity to restore associated sand dunes.

3.3 HARBOR ECONOMY AND SUSTAINABILITY

A. Celebrate the Harbor, its activities, visitors and users in understanding the importance of its role in Wells' culture and local economy.

B. Establish a three part marketing program for the Harbor that assists local business interests, supports environmental education and experience, and enhances residents' use, awareness, and understanding of the economic importance of the Harbor to the community.

1. Enhance the ability of local businesses within the Harbor to flourish and expand successfully into the shoulder seasons.
   a. Utilize the various offerings of the Webhannet River Boatyard to expand reasons for visitors to visit their site and make use of the various services they offer.
   b. Provide good information of those offerings, both locally and on the web.
   c. Provide better connectivity to the boatyard and its environs such that visitors can easily understand the offerings.

d. Improve circulation and other logistical features at the boat ramp to make it easier to use the facility and draw more users to the site. Consider separate ramps for launching versus hauling out boats.
e. Enhance and expand local commercial fishing activity, not only as a primary use, but as a secondary tourism attraction (looking is a wonderful thing).
f. Develop marketing and support for the commercial excursion program which recognizes the importance of this economy in the region and work with existing owners to enhance and make this program more predictable.

2. Work to expand the shoulder season such that local restaurants can maintain a high level of business in the spring and fall.
   a. Coordinate current events (for example Mother's Day) with other celebratory, educational, and environmental events with a focus on the shoulder season.
   b. Establish annual environmental and recreational events in the shoulder season that will attract new and repeat visitors to the Harbor (e.g. kayak races, environmental search and find, etc.) and connect them to local services already there.
   c. Improve vehicular connections between the Harbor and the rest of the region through a coordinated bike plan[2], trolley transit, water transit, walking paths, and other connections not yet identified.



3. Make Wells a destination for a unique interactive experience with its natural assets (the Harbor, marsh, wildlife, etc.) by incorporating environmental education and ecotourism experiences into a Harbor experience marketing program that recognizes and relates to similar regional programs.
   a. Develop and expand upon existing programs that explain the unique environmental nature of the Harbor ecosystem, including restoration of undeveloped dredge spoils, and expand businesses around this offering with interpretive signage, a boardwalk, walking paths, etc. (See Strategies III.A.3.h. and VI.A.4. regarding Harbor Park improvements and creation of a marshwalk.)
   b. Incorporate the educational program of the Harbor into the vast regional system related to the WNERR and Rachel Carson programs.
   c. Develop and market educational programs that specifically invite and educate visitors on the importance of the Harbor to the local and regional ecosystem.

[2] Including connection to the Eastern Trail, a bicycle pathway system that extends from Maine to Florida.

d. Create a permanent residence/visitor and nature center that is consistent with existing park goals for the Harbor as a place to view, learn, and experience the various environmental jewels it has to offer.
e. Encourage and provide the WNERR and Rachel Carson systems with a permanent location within the boundaries of the Harbor. This location could provide information about environmental, sea level rise, weather, water and wildlife monitoring efforts and opportunities.
f. Encourage the Audubon Society of Maine to partner with the Town, WNERR, and Rachel Carson as part of its focus on bird watching and protection of habitat in Wells.
g. Develop a strong planning relationship with the CSD to market environmental interests, converting those interests into economic events; use that program to market to school systems through Maine that are interested in visiting (this takes the existing visitor program and expands the students involved based on commercial fishing, economic development, policy development, and other interests).



h. Work with the WNERR, Rachel Carson, and others to link and, where necessary create, a walking path and trail system to create a coastal walking network and marshwalk in Wells. The coastal walking network and marshwalk should be designed to support the educational strategy under *3.2 Natural Areas*, while minimizing or note creating negative environmental impacts on important wildlife habitats, including shading. Creation of a marshwalk may require access to private property for which the Town will need permission. Seek public, private, and nonprofit/foundation funds to support construction of linkages, new paths/trails, and a marshwalk.

4. Develop an informational program aimed at both year round and seasonal residents that helps those interested in understanding the importance of the Harbor to local economic development interests.
   a. Prepare a formal State of the Harbor Report as part of the Town's Annual Report.
   b. Establish two annual community events, one to open the Harbor and one to close the Harbor. These events should be aimed at using local businesses and the Park to serve local residents with unique celebrations (work this into the existing system of activities, but focus on local vs. regional or away).
   c. Improve signage and connections between the community, the Harbor, and local Route 1 businesses. Provide more consistency in design and materials to

create a consistent image to improve overall aesthetics and assist with "wayfinding."

3.4 HARBOR FACILITIES AND INFRASTRUCTURE



A. Consider the effects of projected sea level rise/climate change on both Harbor infrastructure and ecological aspects of the Harbor/estuary and make investment and maintenance decisions that mitigate anticipated impacts of projected sea level rise. Work with the public to increase its understanding of the impacts and potential threats of sea level rise.

   1. Continue to work with the regional sea level rise working group (SLAWG) to increase understanding of the potential impacts of sea level rise on Wells Harbor, the most effective ways to mitigate its impacts on public and private property, and the impacts of the jetty on beach erosion in combination with sea level rise.
   2. Incorporate data on projected sea level rise into all capital planning efforts relating to Harbor infrastructure.
   3. Investigate whether there is a negative impact from the floating docks/slips on sand displacement.
   4. Investigate whether sand is eroding on the east side of the Harbor as a result of the dredge and ship usage.

B. Support, promote, and plan for capital improvement and maintenance of pier, floating dock, and other boat facilities, including, but not limited to, on-shore boat storage, sewage pumpout, and additional services.

   1. Assess how residents and summer visitors currently use the Harbor.
   2. Assess the relative pros and cons associated with maintaining a fuel dock, including a key system, within the Harbor.
   3. Ensure that boat storage is sited and designed to minimize potential negative impacts on the aesthetics of the Harbor area during the expanded shoulder seasons. If not possible to do so within the Harbor area, explore an off shoreline location for winter boat storage.
   4. Seek applicable state and federal funding programs to implement the Plan.
   5. Continue to maintain and support the Wells Boat Launch for both motorized and non-motorized public boat access to the water.

6. Estimate costs for capital needs, evaluate and select preferred funding mechanisms, and include Harbor improvements in the Town's Capital Improvement Program.

3.5 COMMERCIAL FISHING, SHELLFISHING AND AQUACULTURE



A. Support traditional use and job creation associated with Wells' working waterfront, including but not limited to a commercial fleet for commercial and recreational fishing and clamming.

1. Continue efforts associated with maintenance of a sustainable recreational clamming program and assess the viability and needs of a commercial clamming program.
2. Monitor invasive species impacts on commercial fishing.
3. Monitor fishing trends in the Gulf of Maine to identify emerging opportunities as well as problems in fishing stocks to guide any efforts the Town might consider to increase commercial and recreational activities in recognition of the health of current fisheries.
4. Facilitate communication between commercial fishermen, owners/operators of commercial excursion vessels and resource managers/scientists at state and federal resource agencies, the Wells National Estuarine Research Reserve (WNERR), Rachel Carson National Wildlife Refuge (Rachel Carson), and others, to enhance research, environmental education and stewardship.

B. Support aquaculture initiatives that are consistent with maintaining water quality within the estuary and limiting the likelihood of genetically modified species escaping into the natural system.

1. Assess the viability of commercial aquaculture involving bivalve mollusks/filter feeders, such as oysters.
2. Maintain a dialogue with area ecological groups with respect to appropriate aquaculture initiatives, including discussion on location and magnitude.

3. Watch for and seek to mitigate any negative water quality issues that might arise from aquaculture initiatives through working with the industry and/or regulation, as necessary.

3.6 HARBOR PARK

A. Make improvements to Harbor Park. The Park needs to be "refreshed" to better serve the community for the next 10-20 years. Enhance the aesthetics of facilities, improve the quality of materials used, expand activities, and reduce management demands.



1. Prepare a plan to guide public investments in Harbor Park, including but not limited to, site and building improvements. The plan should specify appropriate improvements, design themes, and use of higher quality materials to improve the overall aesthetics of the Park. Link such improvements to the visitor center concept described in Strategy III.A.3.d. Where possible, use "green" construction materials.
2. Focus event and celebration activities in Harbor Park
3. Upgrade the Harbor Park experience by focusing on improving facilities, amenities, design, and services. Encourage the use of local farm goods and prohibit national chains.
4. Make the present operation more personally appealing through basic design improvements.
5. Provide and/or encourage the private sector to provide goods and services for those who use the area including, but not limited to, commercial and recreational boaters, tourists, summer and year round residents, school children, and families who swim and/or recreate on the beaches on both sides of the Harbor. These services may include vendors in Harbor Park and in nearby waters tied to planned activies, truck canteens, and lunch boats.
6. Improve the layout and treatment of automobile and boat trailer parking areas to improve aesthetics, provide amenities, and improve stormwater management and efficient use of available space. Minimize the creation of new, paved (i.e., impervious) surfaces.
7. Upgrade the beach near the boatyard in response to its increasing use as a destination, with consideration of its location adjacent to the boatyard, services, and vendors, a future marshwalk, and/or improved pedestrian connections between the west and east side of the Harbor.
8. Examine alternative approaches that do not use pesticides to address sand flea problems near the Park and Pavilion areas.

9. Make better use of the cooking area to attract local groups to celebrate their various events in Harbor Park.

3.7 TRANSPORTATION AND ACCESS

A. Make improvements on Harbor Road to upgrade access, circulation, and parking; encourage increased use of public transit, bicycles, and walking.

1. Design and construct sidewalks, bikepaths, and streetscape improvements and provide pedestrian amenities along Harbor Road and in Harbor Park. Minimize the need to widen impervious surfaces and roadway width.
2. Redesign and reconstruct parking areas, using porous pavement, interlocking pavers, or other materials to manage stormwater impacts while providing opportunities to stripe spaces or otherwise manage parking more efficiently.
3. Work with regional and state transportation planners and local economic interests, including but not limited to, hotels, campgrounds, and the Chamber of Commerce to investigate and consider remote parking options in concert with improved, convenient, and more frequent public transit options. Seek support from public and private funding sources.



B. Improve local signage and promotional materials to improve visitors' and users' knowledge of how to get to/use the Harbor. Improve knowledge about Harbor activities and facilities, "wayfinding" and safety notifications.

1. Prepare and implement a signage plan that improves public knowledge about key features of Wells Harbor, safety notifications, and the rest of the community. The Plan should adopt consistent standards for signs and identify locations where they should be posted to ensure that they are an attractive addition to Wells and to help visitors and residents of the community find routes to key features. A consistent format, size, color, and logos will make "wayfinding" easier for those who are unfamiliar with the community.

2. Review tourism materials and encourage those publishing them to include information about Harbor activities and facilities. As appropriate, develop materials that would be suitable for insertion in public and private promotional materials.

Share these materials with local, regional, and state tourism interests. Post them on the Town's web site.

C. Explore the feasibility of increasing pedestrian access throughout the Harbor, through creating a cross-harbor pedestrian bridge or water taxi service between the west and east sides of the Harbor. Assess the feasibility of paths and/or boardwalks to connect to Mile Road, Laudholm Farm, and Drake Island and plan for phased implementation of this recommendation.

D. Promote carless vacationing in Wells. Increase and improve public transit options. Investigate remote parking/shuttle systems. Improve pedestrian, bicycle, moped/scooter access and amenities along Harbor Road and in the Park.

1. Work with regional and state transportation planners and local economic interests, including but not limited to, hotels, campgrounds, and the Chamber of Commerce to investigate and consider remote parking options in concert with improved, convenient, and more frequent public transit options. Seek support from public and private funding sources.
2. Design and construct sidewalks, bikepaths, and streetscape improvements and provide pedestrian amenities along Harbor Road and in Harbor Park.
3. Make a better connection between the Harbor and the Wells beach area.
4. Permanently develop a system (bridge or water taxi) that makes a predictable connection between movement of folks on the beach to the Harbor and inland.
5. Continue to investigate and create connections to Mile Road and Drake Island.

4 Marketing and Investment Plan

4.1 GENERAL

Section 7 of this Plan discusses the conventional economic engines for the Harbor. They are real and must be fed. Ecotourism and the existing harbor facilities are natural partners. They do not exist as stand alones—they are key pieces of a local economy that needs to be marketed and taken advantage of. A marriage with the Wells Land Trust and Rachel Carson National Wildlife Refuge (Refuge) are key to this. The combination with the Webhannet River Boatyard, rental of kayaks and other recreational amenities, in particular, are key to this policy. Along with that, is a recommendation to take advantage of the existing trail system and extend it from the core of the harbor activities. These additions can be combined with a formal marketing program focused on special aspects of the area.



The marketing program must come from within and without. Wells needs to understand the gem that it has and the importance of the activities that already exist there. In this sense, local activities in the Harbor should be planned and carried out focused on showing the distinct economic value and experience the harbor presents to those in the community. Local education is critical to that effort—the Harbor extends well beyond its visual limits: understanding the ecology of the Harbor and balancing its mix is important to how one markets its beauty.

Educational programs, at the local level, in conjunction with the Wells Reserve (Reserve), Refuge and other environmental originations, the School District and the like should continue to be an objective of local education. This does not just include visiting school children (which was identified as a regular activity in the marsh), but should include adults as well. A critical piece of the marketing program is engaging local school children as those who can train, provide tours and be "so called experts" of the marsh. Developing this program in the school system would help the community to understand the gem that it has.



Public events, including continued concerts and celebrations, in an upgraded facility, will draw attention to the Harbor and support needed improvements as the community comes to understand the importance of this facility. Wells' citizens need to understand the resource that the community has and come to embrace it as an important element.

We recommend the following two-part approach to marketing Wells Harbor:

- Bringing attention to the Park and Harbor about how important they are to the local community, and
- Presenting the Harbor as an attraction to those who visit the area and are looking for a different vacation experience, with an element of ecotourism.

The commitment on a local level will surely bring additional activity from a visitor's standpoint. The sense is that existing businesses relish the opportunity to reach out and embrace the community, while at the same time growing and making the Harbor a small, but iconic showplace. Concerts, special events, community cookouts and the like can become an important selling point about why people gather in this environmentally exquisite place. And each of those events represents a marketing event for the community and the Harbor. This is a way to tell the Harbor's story.

It was clear in this analysis that, on the local level, the Harbor is not well understood. There are important businesses and attractions in the Harbor that depend on the Harbor's upkeep and maintenance. To insure that loading facilities or fuel facilities are upgraded, there is a need for continued community support for the Harbor. In this direction, we suggest building on the above suggestions with basic implementation:

- Ensure that the public launching area at the Harbor is maintained at an acceptable level to support local and long distance boaters.
- Market the boat launch as a critical access to the ocean, ensuring existing users and inviting others to a system that is well organized and supported by the community.
- Continue to market events at the Harbor and Park that are locally driven, but can capture national attention. These can continue to be oriented towards the local populations, but will gain credence on a regional level. This is an important part of this program: local Wells

residents need to understand the various activities, both commercial and recreational, that the community needs to support for the Harbor to continue to succeed.



- Within that marketing, ensure that attention is focused on the local businesses, both in the Harbor and outside, that take advantage of the many amenities offered at this location.

More than anything, this part of the marketing is about telling the story about the Harbor. Much of the community, including components within the business sector, does not understand the Harbor's importance to local businesses, the importance of existing services available through the boatyard, of the Park and providing local celebrations, and the need to express a desire to protect what a valuable asset the Harbor is are all viewed as key, and collaborative efforts.

Marketing on a Regional Level. The Harbor is attractive to those from around the region because of what it has to offer: fishing, food, access to the water by boat, and entertainment in the Park. This attraction should be captured in all Chamber of Commerce information, in web site presentations by the Town, but should also be captured in the advertising associated with the camping grounds, hotels, condominiums, and other "stay-cation" destinations. Therefore, the community should take a proactive approach to this marketing aspect, focusing on:

- Advertising in magazines such as "DownEast" and similar productions. This effort should focus on specialized articles about what is available in the Harbor, special celebrations and other aspects that tie them to the community and local accommodations. There are also excellent web sites that should be investigated: any link can be a good one.

- The greatest area now missed is taking advantage of the ecotourism aspect of the Harbor and its connected ecosystems. It clearly is linked to the Reserve, Refuge, and other naturalist activities. The Harbor attracts visitors to both watch, paint, and recreate within the beauty of the area. This should be a central theme for to those who want to look, walk (on a new trail system), and experience its natural beauty. There are any number of places to write, publish, and find stories in such areas (see the web sites):

    - The National Wildlife Refuge System - http://www.fws.gov/refuges/
    - The Rachel Carson National Wildlife System – http://www.fws.gov/northeast/rachelcarson
    - Wells National Estuarine Research Reserve – http://wellsreserve.org

These credible web sites, links and stories can be tied to a visitor interested in this experience. Links should be tied back to local motels and hotels and other travel packages. These links and stories should be exhibited on a national or statewide level, with focused efforts helping people understand the beauty of the Harbor and surrounding marsh lands.



With the advent of the Eastern Maine Trail, and other biking and hiking opportunities, access to the trails should come to the forefront of the community and private marketing. To visit areas from Ogunquit to Kennebunk is now convenient and easy for the biking enthusiast and Wells is at the center of this activity. Marketing in appropriate magazines, web sites, along with all accommodations, should be a critical focus. These should be tied together and worked through the local Chambers of Commerce.

The introduction of the Downeaster as a rail connection should not be overlooked. The train offers easy access, alternative access for bikers, etc. and can be intertwined with a primary visit to the area. Keeping in mind that most visitors generally have a secondary visit in mind (Digital Resources, Kennebunk, 2009), Wells should identify those secondary targets and develop packages that link into the Wells experience.

In summary, the local and regional experience should be melded. Out of that collaboration will come numerous jobs and business opportunities. The better they are coordinated, the easier it will be to understand both the short- and long-term impacts of these economic development efforts.

5 Surrounding Land Uses

5.1 GOALS

As outlined in Sections 2 and 3 of this Plan, over the course of working with the Harbor Committee and community stakeholders a number of goals were initially identified and then refined. Those that are most relevant to a discussion on Land Use are as follows:

- Balance additional development of the Harbor with its inherent constraints, both natural (marshes, habitat, sensitive plants and wildlife) and built (access roads, limited upland area) to minimize negative environmental impacts.
- Support traditional use and job creation associated with Wells' working waterfront.
- Make improvements on Harbor Road to upgrade access, circulation, and parking; encourage increased use of public transit, bicycles, and walking.
- Explore the feasibility of increasing pedestrian access throughout the Harbor.
- Promote carless vacationing in Wells. Increase and improve public transit options.
- Investigate remote parking/shuttle systems. Improve pedestrian, bicycle, moped/scooter access, and amenities along Harbor Road and in the Park.

Strategies identified for achieving this objective include the following:

- Continue to restrict development that would increase undesirable impacts on this sensitive area.
- As use of the Harbor area increases, plan for increased pressure on road and water access, parking, and stormwater management. Explore public transit and remote parking options.
- Improve the layout and treatment of automobile and boat trailer parking areas to improve aesthetics, provide amenities, and improve stormwater management and efficient use of available space.
- Redesign and reconstruct parking areas, using porous pavement, interlocking pavers, or other materials to manage stormwater impacts while providing opportunities to stripe spaces or otherwise manage parking more efficiently.

- Where appropriate, include provisions to maintain or enhance natural buffers between differing uses to address aesthetic, water quality, and/or habitat issues.
- Design and construct sidewalks, bikepaths, and streetscape improvements and provide pedestrian amenities along Harbor Road and in Harbor Park. Minimize the need to widen impervious surfaces and roadway width.
- Work with regional and state transportation planners and local economic interests to consider remote parking in concert with improved, convenient, and more frequent public transit options.
- Prepare and implement a signage plan that improves public knowledge about key features of Wells Harbor, safety notifications, and the rest of the community to help visitors and residents find routes to key features.

5.2 LAND USE DESCRIPTION

Land use has not changed dramatically since adoption of the 1991 Harbor Master Plan.

The vast majority of the land immediately surrounding the Harbor continues to be marshland, most in the Refuge, which is owned and managed by the U.S. Fish and Wildlife Service. Pockets of marshland remain in private ownership. These areas are zoned "resource protection" where development is not allowed.



The upland adjacent to the inland side of the marsh continues to be fairly heavily developed with residential structures and an occasional commercial establishment and is zoned either "Residential A" or "General Business GB" with 20,000 sq. ft. minimum lot sizes. Maximum shore coverage restrictions are provided for in the Town's shoreland overlay district. There is dispersed development along the western side of the marsh with a number of subdivisions with housing densities greater than current zoning allows and a number of shoreland segments developed at about the 20,000 square foot minimum lot size, and with a few sections remaining undeveloped.

The barrier islands to the east of the Harbor, zoned "Residential B," "Residential D," with a portion zoned "Beach Business BB," are some of the most densely developed land segments in Maine. The minimum lot size for the Wells Beach barrier is 5,000 square feet; the entire barrier is developed at

this density or greater with average lot coverage (including driveways, etc.) amounting to approximately 80%. Development in this area is almost all residential; a small portion near Mile Road is dominated by commercial establishments, governed by the BB District, which also establishes a maximum lot size of 5,000 square feet and maximum of four housekeeping or seasonal cottages per net acre, and twenty hotel/motel units per net acres. The Drakes Island barrier is exclusively residential with slightly larger average lot sizes, reflecting the required minimum lot size of 7,500 square feet.



The upland north of the Harbor, most of which is encompassed by the Reserve, is zoned "rural" and requires a minimum lot size of 100,000 square feet. This land is largely undeveloped and supports high numbers of deer and other wildlife.

The shoreland immediately adjacent to the normal high water line or the upland edge of the marsh is addressed by the Town's Shoreland Zoning. The "Shoreland Protection SO" District requires a 75-foot minimum setback from the upland edge of a wetland.[1] The minimum setback on the ocean side of Wells Beach, Drakes Island, and Moody Beach is 20 feet from the sea wall.[2] The minimum setback from all other water bodies is 75 feet from the high water line.

Upland in the immediate vicinity of the Town Landing is in the Harbor District. Uses currently permitted or conditionally permitted in this district include aquaculture, concerts, public gatherings, bazaars, passive and active recreation, low intensity commercial uses that require access to the water, shows (boat, craft, antique, etc.), estuarine and marine research and education facilities, marinas, municipal and public utility facilities, restaurants, and accessory uses including piers and docks. Existing uses in the district include a restaurant, marina, town dock and facilities, parking lots, the Hope Hobbs Gazebo, Wells Rotary Pavilion, Memorial Playground, and a passive Park.

Figure 5-1 – Recent Land Use Changes

1990	Creation of Harbor Park and Hope Hobbs Gazebo
2000-2005	Several dredges of Harbor, replenishment of beaches, marsh restoration, other environmentally sound practices permanently in place

[1] This setback may be reduced to the average of the setbacks of structures within 200 feet of the proposed structure on lots abutting the wetlands but shall not be less than 25 feet.
[2] Where there is no seawall, the setback shall be from a theoretical sea wall line extrapolated from the existing sea walls.

2003	Piping Plover Beach Management Agreement, calling for new beach management techniques, signed/implemented
2003	Newly refurbished boat launch
2003	Rebuilt sand dune at the northern end of Drakes Island using over 700 cubic yards of materials from the Harbor Park area
2003	Began participating in Maine's Healthy Beaches Program
2004	Beginnings of the large summer cottage complexes at Summer Village and Beach Dreams in Moody Beach area
2004	Installation of new Memorial Playground at Harbor Park
2005	Refurbished pressure-treated seating at Harbor Park
2006	Initiate the "Shoreline Explorer," an intermodal transportation program, featuring trolleys that connect Wells with neighboring communities
2006	Completed tidal gate to restore salt water marsh and improve stormwater management at Drakes Island
2006	14" Mother's Day Storm damaged countless roads and culverts, including Route 1 at Houston's Curve
2007	Repaired section of Webhannet seawall and stairs
2007	Replaced chains for the helix moorings which hold the float mooring system
2007	Patriot's Day storm broke off last four launching ramps and a piling
2007	Creation of Town of Wells Geographic Information System Website (WebGIS) www.wellstown.org
2008	Received Tree Canopy Grant from the State of Maine to plant elm trees along Route 1 and Route 109
2008	Reconstruction of Harbormaster's building
2008	Repaired and reconstructed Webhannet Seawall, severely damaged during both the Mothers' Day and Patriot's Day storms
2008	Amended ordinance to reduce seasonal cottage density from ten to four cottages per square mile and increase minimum spacing between cottages from 15 to 25 feet
2008	Renovated restrooms at Wells Beach
2008	Completed drainage improvements at Dike Street
2008	Installed new town signs
2008	Created Ordinance Review Committee
2008	Devastating ice storm struck Southern Maine
2009	Beginning of contentious issue of large-scale water extraction – moratorium approved
2009	Acquired 2, 27-foot military surplus bridge erection boats
2009	Secured bond to finance improvements for the Webhannet Seawall

2010	Construction of the Wells Rotary Pavilion
2010	Worked on revision of shoreland zoning ordinance
2011	Christopher Mayo replaced retiring Roland "Chick" Falconer as harbormaster
2011	Took possession of a new, donated 21-foot center console harbormaster boat
2011	U.S. Coast Guard installed a white light for the "WH" entrance buoy to help navigating the entrance to the Harbor
2011	Winterized and completed most work on the interior of the Wells Rotary Pavilion
2012	Rebuilt commercial pier and located new bait lockers at location of old harbormaster's office

The Town constructed Harbor Park and the Hope Hobbs Gazebo in the 1990's and has continued to invest in harbor facilities. In 2004, new harbor moorings were installed, the boat launch was refurbished and the Memorial Playground was constructed. Community events at Harbor Park have continued to expand and now include the Harbor Day Festival, Summer State, Regional Chamber Chili Festival, Pow Wow, the weekend concert series, and other events. Ocean front development has continued to take place with the addition of some large summer cottage complexes, though revised ordinances and the down economy have slowed down this trend in land use development.[3] In 2005, the Town installed a new boat launch and Wells Rotary Pavilion building and the Harbor Park Refurbishment Project replaced the old pressure-treated seating. In 2006, the Shoreland Explorer started operating, providing visitors and residents alike a public transportation option during the summer season. The Town installed tidal gate on Drake's Island to restore a salt water marsh and improve stormwater management. In 2007, the Town replaced mooring chains, launch ramps, and pilings. In 2008/2009, the Town replaced the harbormaster's building and the damaged Webhannet sea wall. It also amended its land use ordinance to reduce the allowed density of seasonal cottage development. In 2009, the Town acquired 2, 27 foot military surplus bridge erection boats which were proposed for a number of uses. The Town also secured a bond to rebuild the Webhannet sea wall and constructed the Rotary Pavilion and worked on revision of the shoreland zoning ordinance. Over the years, the Town has undertaken ongoing work on steps and seawalls. In 2011, Christopher Mayo replaced Roland Falconer as harbormaster. The Town



[3] Although Wells has had a reputation as a community with summer rental housing and wonderful beaches for a long time, the scale of recent large developments dwarfs anything that had been developed in more recent years. The phenomena of people purchasing small cottages that cannot be converted to year round use and must be shut down from November to April is new.

also acquired, through donation a new 21' center console boat for the harbormaster. The US Coast Guard installed a light for the "WH" entrance buoy to improve navigation into the entrance of Wells Harbor. The Pavilion was weatherized and the commercial pier rebuilt.

5.3 RECOMMENDATIONS

This Harbor Plan recommends continuing to maintain currently permitted uses and dimensional standards as currently required, with a focus on supporting traditional and some new waterfront uses and targeted efforts to improve stormwater management and resource protection. For Wells, traditional waterfront uses include water dependent uses like fishing, clamming, marina, docks and moorings as well as water enhanced tourist support facilities. Aquaculture is a new use recently proposed for Wells. People will continue to be drawn to the Harbor, particularly with proposed harbor improvements and economic development. If not carefully thought out and managed, more people could bring more cars to the area. This Harbor Plan proposes greater emphasis on pedestrian, bicycle, moped, scooter access and amenities along Harbor Road and in the Park. At the same time, the Town needs to improve the efficient use of parking areas with striping, but without increasing the amount of impervious area. Furthermore, the Town should continue to promote carless vacationing in Wells by supporting improved public transit options and explore the use of a remote parking/shuttle system to bring visitors to the Harbor without burdening the shoreline with day long (or longer) vehicle storage. Overall, the Town needs to design and improve its signage system to provide attractive and effective information about how to find and use the Town's most valuable resource, its Harbor shoreline.

6 Harbor Facilities and Infrastructure



Wells Harbor offers a number of public and private facilities to the tourists and commercial and recreational boaters that use and enjoy the Harbor. Most of these facilities are situated on land reclaimed from the water with spoils from the dredging project that reshaped the Harbor in the early 1960's. Wells Harbor offers a number of amenities to recreational and commercial boaters, including: docking access, a public boat ramp, water, food, and disposal of trash. Some levels of boat maintenance are also available. A full-time harbormaster administers the Town-owned harbor facilities from an office located adjacent to the west side pier. Most harbor facilities are available for year round use, and there has been some discussion regarding seeking designation of the port as a Harbor of Refuge[1].

6.1 GOALS

As outlined in Sections 2 and 3 of this Plan, over the course of working with the Harbor Committee and community stakeholders a number of goals were initially identified and then refined. Those that are most relevant to a discussion on Harbor Facilities and Infrastructure are as follows:

- Balance additional development of the Harbor with its inherent constraints, both natural (marshes, habitat, sensitive plants and wildlife) and built (access roads, limited upland area) to minimize negative environmental impacts.
- **G**enerate revenue from commercial and recreational use of the Harbor to offset the need for investments in support of the goals of the Harbor Plan. Seek federal and state as well as private and nonprofit/foundation funds to support implementation of the Plan.
- Continue efforts to monitor, improve, and maintain water quality in the Harbor.
- Consider the effects of projected sea level rise on both Harbor infrastructure and ecological aspects of the Harbor/estuary and make investment and maintenance decisions that mitigate anticipated impacts of projected sea level rise.

[1] A Harbor of Refuge means a port, harbor, inlet, or other body of water normally sheltered from heavy seas by land and in which a vessel can navigate and safely moor (Harbors and Navigation Code Section 70-72.9).



- Support traditional use and job creation associated with Wells' working waterfront, including but not limited to a commercial fleet for commercial and recreational fishing and clamming.
- Make improvements to Harbor Park. The Park needs to be "refreshed" to better serve the community for the next 10-20 years. Enhance the aesthetics of facilities, improve the quality of materials used, expand activities, and reduce management demands.
- Make improvements on Harbor Road to upgrade access, circulation, and parking; encourage increased use of public transit, bicycles, and walking.
- Improve local signage and promotional materials to improve visitors' and users' knowledge of how to get to/use the Harbor. Improve knowledge about Harbor activities and facilities, "wayfinding" and safety notification.
- Explore the feasibility of increasing pedestrian access throughout the Harbor, through creating a cross-harbor pedestrian bridge or water taxi service between the west and east sides of the Harbor. Assess the feasibility of paths and/or boardwalks to connect to Mile Road and Drake Island and plan for phased implementation of this recommendation.
- Increase and improve public transit options. Investigate remote parking/shuttle systems. Improve pedestrian, bicycle, mo-ped/scooter access and amenities along Harbor Road and in the Park.
- Treat Harbor planning as a continuous process.

6.2 PUBLIC FACILITIES

West Side Pier and Floats

Port facilities on the west side of the Harbor include a timber pier and a number of floating docks (floats) accessed via a ramp. These facilities are located at the end of Harbor Road. The pier and floats on this side of the Harbor are open to the public and shared by a variety of commercial and recreational users. Dockage for dinghies is available at this location. The facility also includes a bait pier and there is a slip equipped with a mechanical hoist for loading/offloading. The pier is also set up with scales and tote boards as Wells hosts sport fishing tournaments during the summer.

The west side facilities provide approximately 120 linear feet of "tie up" capacity, with recreational craft limited to 30 minute duration and commercial fishing vessels limited to 45 minutes per tie-up.



Total parking associated with the west side pier and associated facilities have been calculated at 205 spaces. This includes approximately 60 spaces for boat trailers just up the road from the boat launching ramp.

There was a general concurrence during Plan development that the community should support, promote, and plan for capital improvement and maintenance of the Town's piers, floating docks, and other boating facilities, including, but not limited to, on-shore boat storage, and additional services.

Input from the public suggested that the Town should assess the relative pros and cons associated with maintaining a fuel dock (including the potential for a key system) within the Harbor.

East Side Pier and Floats

Port facilities on the east side of the Harbor include a timber pier and a number of floating docks (floats) accessed via a ramp. These facilities are located adjacent to the parking area at the end of Atlantic Avenue, respectively. Access to the pier and floats on this side of the Harbor is restricted by a (lockable) gate. Floating docks at the pier are accessed by a ramped walkway, and there is little available in the way of marine services.

A public parking lot was constructed adjacent to the south jetty in 1961. This lot provides public access to both the east side harbor facilities and to Wells Beach.

Mooring Fields

Under ideal conditions (i.e., when recently dredged), Wells Harbor is capable of accommodating approximately 150 mooring spaces (144 have been permitted). These include both moorings within the harbor (accessible by dinghy) and slips along the floating dock systems. Vessels greater than 24 feet in length are typically located on moorings, while smaller boats are allocated slip space. Typically, approximately 75% of the moorings/slips are allocated to recreational users. During the 2012 summer season, due to the impact of sedimentation, the number of moorings available for use had been reduced to approximately 93.

The harbormaster manages the administration of the moorings, including applications and the waiting list. As noted, the waiting list for moorings/slips is typically substantially greater than the spaces available, and currently stands at 168. The dynamic nature of sand deposition within the harbor area requires regular dredging in order to maintain navigable water depths in the vicinity of the floats and mooring fields.

Both sand depositions and the administration of mooring fields and slips within the Harbor are discussed in greater detail in Section 10, Recreational Boating.

Public Boat Launch

The Town maintains a public boat launching ramp, located adjacent to the west side pier and floats. The ramp can accommodate one launch at a time, and the town has expressed interest in improving circulation and other logistical features to make it easier to use the facility and draw more users to the site. Consideration should be given to creating a second ramp, such that there would be separate facilities for launching versus hauling out boats. Justification for this project may include the fact that demand for moorings can be documented to far exceed the harbor's capacity, and that the available mooring space has been reduced due to the accumulation of sediments within the harbor.



The State of Maine provides funding for such expansions via several state agencies, with the Department of Conservation, Bureau of Parks and Lands being the most likely funding source.

No fees are charged for use of the ramp.

Harbormaster's Facilities

The Wells harbormaster's office is a 600 square foot, two story structure located adjacent to the pier on the west side of the Harbor which commands excellent views of the Harbor. The harbormaster's boat is a radio-equipped 22-foot fiberglass skiff with a 90 hp outboard engine. Replacement of the engine is currently under consideration.

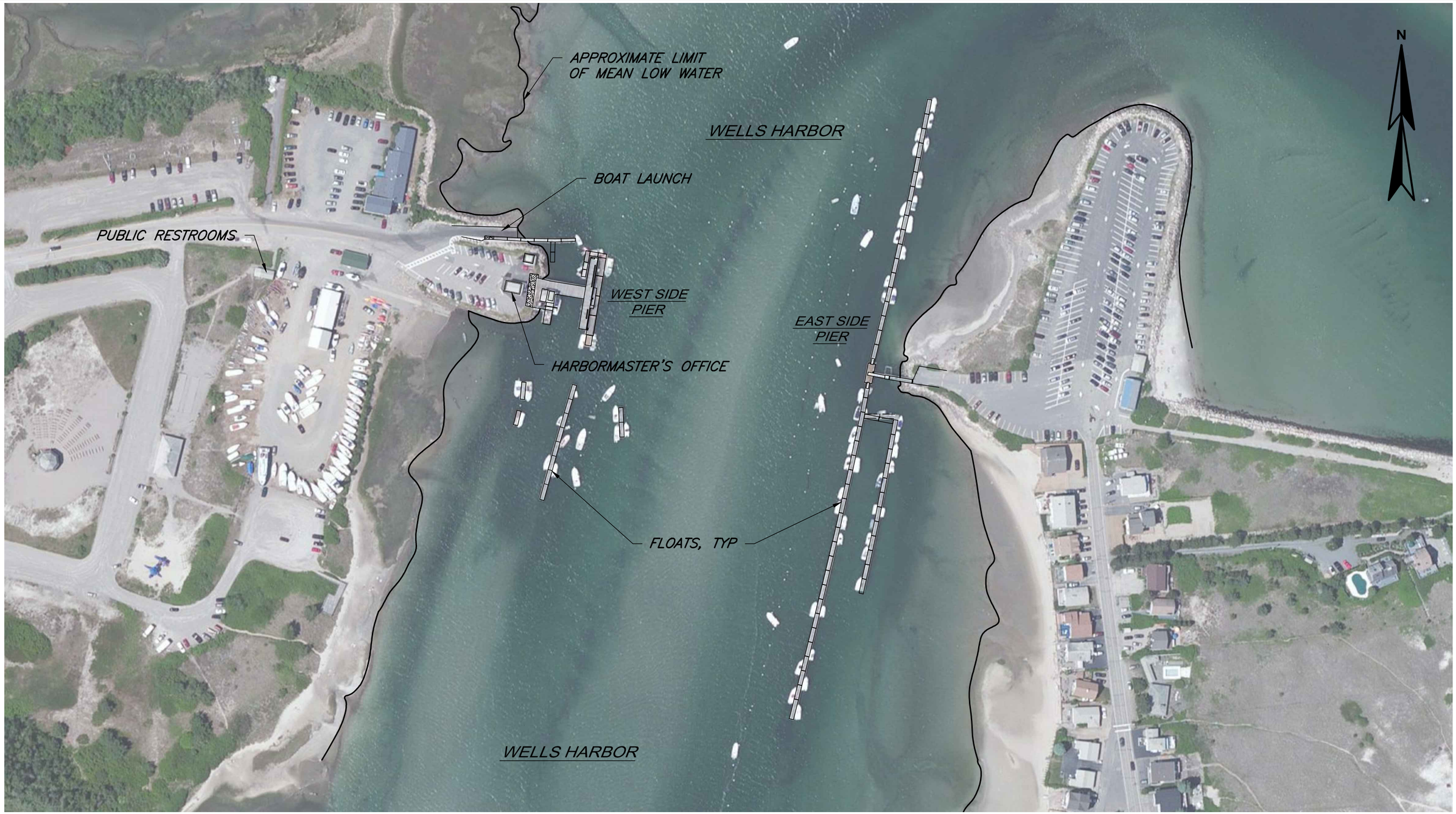
Public Restrooms

Public restrooms are located in a separate, dedicated building between the west side pier and Harbor Park. The restrooms are open only seasonally, but see significant use during the summer months.

Utility Service

Both the west and east side harbor facilities are served by public water, via the Kennebunk, Kennebunkport and Wells Water District and by public sewer, via the Wells Sanitary District.

More detailed information regarding the layout, nature and condition of these facilities is shown in Appendix A.



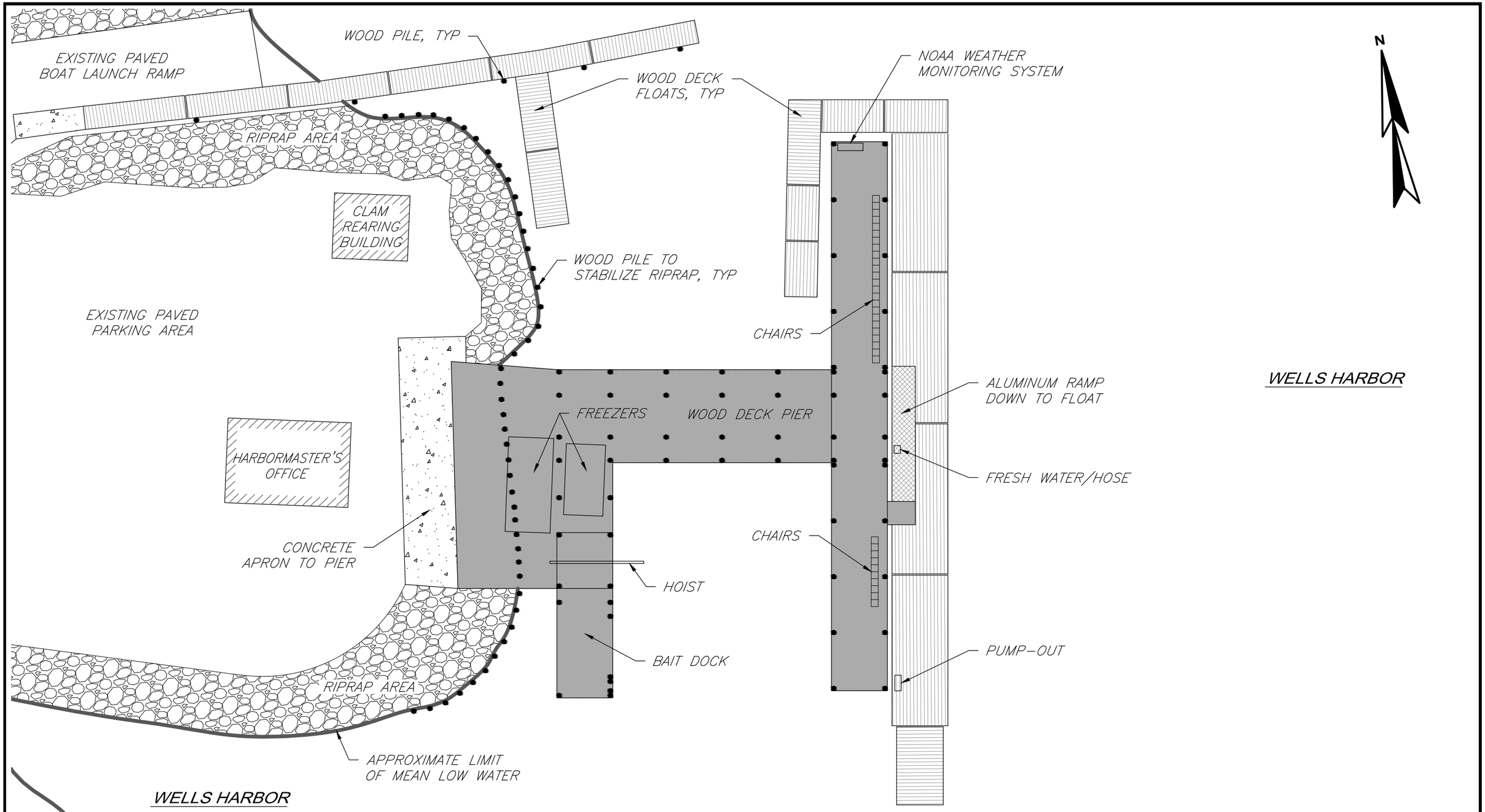
GRAPHIC SCALE

150 0 75 150

(IN FEET)

1 inch = 150 ft.

TOWN OF WELLS, ME WELLS HARBOR PIER & FLOAT LOCATION	NO.	REVISIONS	APP'D
	1		
	2		
	3		
PROJ NO: 12504A DATE: FEBRUARY 2013			
WRIGHT-PIERCE Engineering a Better Environment	OVERALL HARBOR MAP		FIGURE: 6.1



GRAPHIC SCALE

20 0 10 20

(IN FEET)

1 inch = 20 ft.

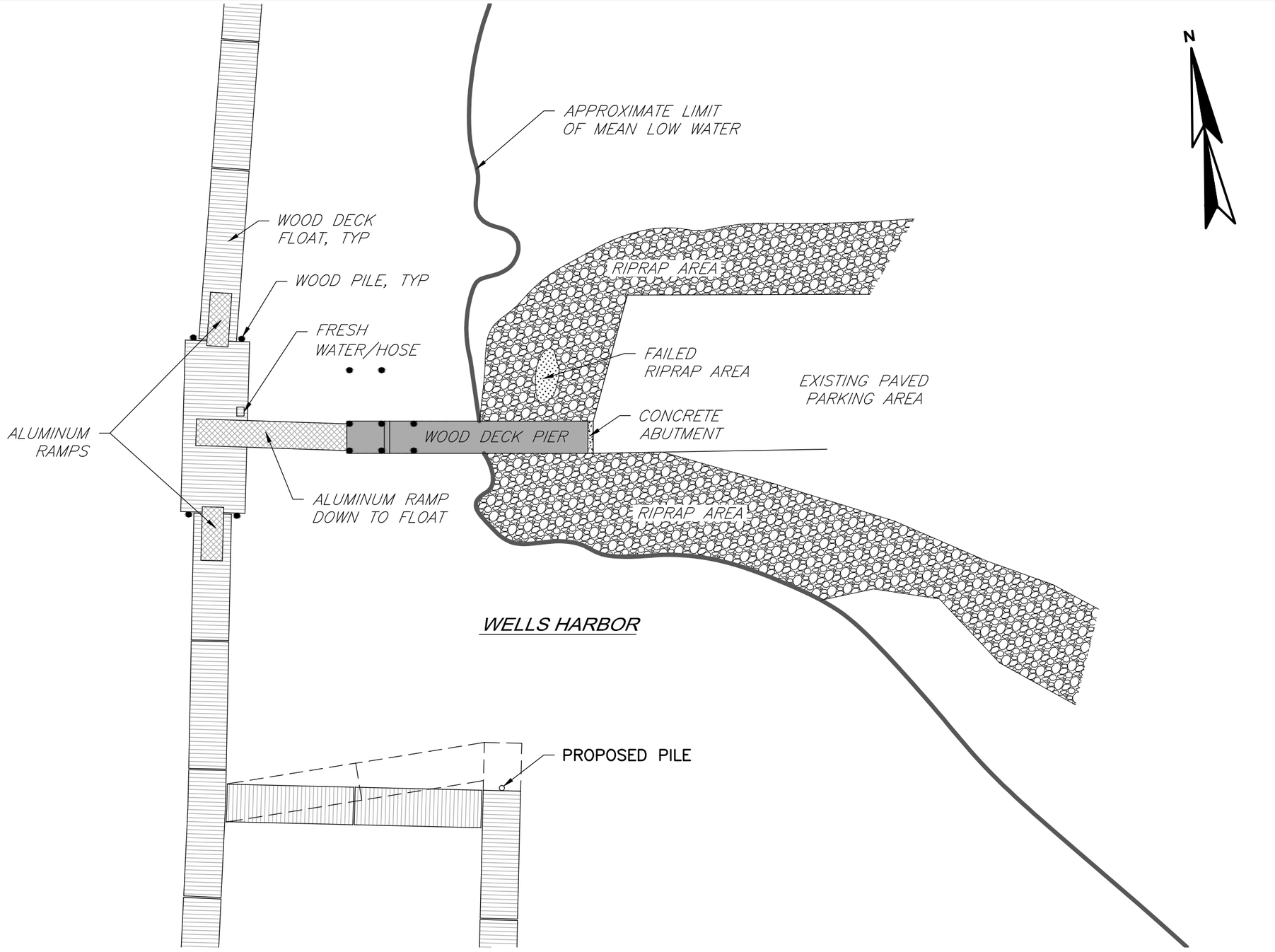
TOWN OF WELLS, ME	
WELLS HARBOR	
PIER - WEST SIDE	
PROJ NO: 12504A	DATE: FEBRUARY 2013

WRIGHT-PIERCE
Engineering a Better Environment

NO.	REVISIONS	APP'D
1		
2		
3		

WEST SIDE PIER PLAN

FIGURE: 6.2



GRAPHIC SCALE

20 0 10 20

(IN FEET)

1 inch = 20 ft.

TOWN OF WELLS, ME	
WELLS HARBOR	
PIER - EAST SIDE	
PROJ NO: 12504A	DATE: FEBRUARY 2013

WRIGHT-PIERCE
Engineering a Better Environment

NO.	REVISIONS	APP'D
1		
2		
3		

EAST SIDE PIER PLAN

FIGURE: 6.3

6.3 NAVIGABILITY AND DREDGING



The "original" harbor dredging that was performed in 1961 created a number of opportunities for the Harbor. The dredge spoils were used to create significant new land area around the natural harbor basin, and the "new" harbor was able to accommodate a much greater number of moorings for both commercial and recreational vessels. The Harbor was used effectively for a number of years, but by the mid-1970s, sand in-fill began to cause areas within the channel and the inner harbor to shoal significantly. The failure of the US Army Corps of Engineers to maintenance dredge every seven years, as originally planned, has meant that significant areas of the Harbor periodically become unusable from a navigational perspective. Shoaling also impacts the harbor entrance (between the jetties) making passage in and out of the Harbor dangerous. Within the Harbor itself, the deposition of sand has decreased the area available for moorings, and is making maneuverability increasingly difficult.

Section 13, Dredging, discusses issues pertaining to dredging in greater detail.

6.4 HARBOR PARK

A three acre Park exists to the south of Lower Landing Road, behind the marina. The Park includes a number of amenities, such as picnic tables, park benches, nature trails, a playground on the west side, walkways, a gazebo in the center, and an assortment of trees and shrubs.



In the course of the Plan development, it was determined that the community should seek to make a variety of improvements to Harbor Park. The Park needs to be "refreshed" to better serve the community for the next 10-20 years by enhancing the aesthetics of facilities, improving the quality of materials used, expanding activities, and reducing management demands. Efforts should upgrade the Harbor Park experience by focusing on improving facilities, amenities, design, and services.

A key initial element in the implementation process is to develop a plan to guide public investments in Harbor Park, including but not limited to, site and building improvements. The plan should specify design themes and use of higher quality materials to improve the overall aesthetics of the Park. Such improvements should be linked to the visitor center concept.

Specific identified considerations include:

- Make the present operation more personally appealing through basic design improvements,
- Make better use of the cooking area to attract local groups to celebrate their various events in Harbor Park,
- Maximize the use of "green" construction materials, and
- Focus development of amenities on authentic, locally-based opportunities.

The community should provide and/or encourage the private sector to provide goods and services for those who use the area including, but not limited to, commercial and recreational boaters, tourists, summer and year round residents, school children, and families who swim and/or recreate on the beaches on both sides of the Harbor. These services may include vendors in Harbor Park and in nearby waters tied to planned activities, truck canteens, and lunch boats.

Efforts should be undertaken to upgrade the beach near the boatyard in response to its increasing use as a destination, with consideration of its location adjacent to the boatyard, services, and vendors, a future marshwalk, and/or improved pedestrian connections between the west and east side of the Harbor.

The Town should examine alternative approaches that do not use pesticides to address sand flea problems near the Park and Pavilion areas. Consider use of citronella “torches” and other environmentally friendly options to control insects around the gazebo.

It was suggested that the community should create a permanent visitor center that is consistent with existing park goals for the Harbor as a place to view, learn, and experience the various environmental jewels it has to offer. The facility might include a nature center, with opportunities that connect to bird watching and other elements related to the area’s marsh habitat. Look for opportunities to partner with area conservation organizations.

6.5 PRIVATELY-OWNED FACILITIES AT THE HARBOR

While the Town has retained title to all of the land that was created in 1961 through the original harbor dredge, two portions of this property are leased to commercial interests. Lord’s Harborside

Restaurant is located just to the north of the west side pier, and the Webhannet River Boatyard is located just to the south of the pier. The Boatyard provides supplies, repairs, fuel and a launching/haul-out and seasonal storage facilities for a range of boats. The Boatyard also offers seasonal kayak rentals. The Restaurant serves patrons who arrive by both land and sea.

6.6 BICYCLE AND PEDESTRIAN ACCESS TO THE HARBOR



In the course of discussions leading to the development of this Plan, it was clear that significant opportunity exists for the enhancement of bicycle and pedestrian access to the Harbor, particularly the west side. Increasing recreational use of the west side facilities (beach, Harbor Park, pier) has resulted in increased non-vehicular traffic. A review of Harbor Road suggests that a sidewalk and/or multi use trail could be constructed from the vicinity of its intersection with Route 1 to the Harbor. Challenges to be addressed during the design and implementation of such improvements include working around access and parking for commercial establishments along the route and avoiding impact to adjacent protected natural resources (the marsh). Specifically, concerns were expressed with respect to possible impacts to customer parking in the vicinity of the Fisherman's Catch Restaurant, which is located on the north side of Harbor Road. Patrons routinely park both in front of the restaurant, on the north side of Harbor Road, as well as on the south side. Plans to enhance bicycle and pedestrian circulation along Harbor Road should be sensitive to the continued need for parking in this area.

The community should seek to improve connections between the Harbor and the rest of the region through a coordinated Plan, which accounts for non-vehicular transportation modes, including pedestrian, bicycle, trolley transit, water transit, and other connections not yet identified. Efforts should look for opportunities for large scale bike and pedestrian connectivity, such as connecting the Eastern Trail and other biking and hikers opportunities with access to the Harbor. The effort should include working with regional and state transportation officials as well as local economic interests, including but not limited to, hotels, campgrounds, and the Chamber of Commerce. The Town is currently contemplating the placement of bicycle racks in the vicinity of the west side pier and harbormaster's office.

The Town should continue to work with regional and state transportation planners and local economic interests, including but not limited to, hotels, campgrounds, and the Chamber of Commerce to investigate and consider remote parking options in concert with improved, convenient, and more frequent public transit options.

6.7 CROSS-HARBOR PEDESTRIAN BRIDGE AND MARSH WALK



Among the more significant initiatives contemplated for enhancing connectivity in the area of the Harbor is the concept of constructing a pedestrian bridge across the Harbor from the landing area to the Wells Beach parking lot. Among the attractive features of this idea: it would provide ready access to the harbor facilities from the Wells Beach parking lot and vice versa, and, if creatively designed and constructed, would likely constitute an interesting tourist attraction. The Town has initiated a separate study to explore the feasibility of this option for enhancing pedestrian mobility within the harbor area should.

Much interest has been expressed in the potential for development of a system of paths and/or boardwalks to connect the nucleus on the west side of the harbor with Mile Road and/or Drake Island. The Town has initiated a separate study to explore the feasibility of this opportunity for enhancing pedestrian mobility and creating a tourist draw within the harbor area.

6.8 SIGNAGE AND WAYFINDING



In order to enhance awareness of the recreational opportunities available in the vicinity of the Harbor, the community should seek to improve signage and connections among the community, the Harbor, and local Route 1 businesses. In order to accomplish this objective, the community should prepare and implement a signage plan that improves public knowledge about key features of Wells Harbor, safety notifications, and the rest of the community. The Plan should adopt consistent standards for signs and identify locations where they should be posted to ensure that they are an attractive addition to Wells and to help visitors and residents of the community find routes to key features. A consistent format, size, color, and logos will make "wayfinding" easier for those who are unfamiliar with the community.

6.9 STORMWATER MANAGEMENT

In order to protect the quality of place associated with Wells Harbor, as well as the ecological values of the adjacent marsh and estuary, the community should continue to restrict large scale development that would increase undesirable impacts on this sensitive area.

As use of the Harbor area increases, the community should plan for increased pressure on road and water access, parking, and stormwater management. Where appropriate, the community should include provisions to maintain or enhance natural buffers between differing uses to address aesthetic, water quality, and/or habitat issues, and redesign and reconstruct parking areas, using porous pavement, interlocking pavers, or other materials to manage stormwater impacts while providing opportunities to stripe spaces or otherwise manage parking more efficiently.

6.10 LONG TERM SEA LEVEL RISE/CLIMATE CHANGE

A commonly expressed sentiment during the Plan development was that initiatives relating to new or upgraded facilities should consider the effects of projected sea level rise and/or climate change. It was determined that the community should make investment and maintenance decisions that mitigate anticipated impacts of projected sea level rise, and include educational components. Town officials should continue to work with the regional sea level rise working group to increase understanding of the potential impacts of sea level rise on Wells Harbor and the most effective ways to mitigate its impacts on public and private property.

According to information published by the Maine Geological Survey, "based on yearly average sea level measurements, Maine has been recording sea level change rates similar to that of the global ocean over the past century (around 1.8 mm/year), as measured by the tide gauge in Portland). Satellite altimetry measurements of the global oceans from 1993 through 2011 indicate that there has been an acceleration in the rate of sea level rise over the last 18 years to around 3.1 mm/year). Based on yearly sea level data from 1993 through 2009, Maine had not yet seen this acceleration, and was trending near 1.9 mm/year. However, taking into account newer data from 2010 and 2011, it is clear that the Portland tide gauge recorded higher water levels in 2010 than in any of the previous years. Over this 18 year period, Portland's averaged annual sea level rise rate increased to almost 4.2 mm/year (or around 1.4 feet per century), over double the historic trend over the past 100 years. Looking even closer at this sea level data on a monthly basis since January 2007 through June 2011, one can see that the highest sea level measurements over this time period corresponded with the February and March 2010 storms. It is clear that this was the highest average monthly water level recorded in the past 100 years. It is also noteworthy that previous winters (2007, 2008, and 2009) had monthly sea levels below the trend of the linear regression. So the winter sea level of 2010 was on the order of 0.6 to 0.9 meters (2 to 3 feet) above that in the previous three winters. The winter of 2011 saw monthly sea levels fall to below the regression line."

7 Harbor Economy and Sustainability

7.1 INTRODUCTION

The key to understanding the Wells Harbor Economy is how it can and does relate to the rest of the community. There are several distinct components that can be brought into other community activities:



- Commercial Fishing
- Recreational Boating
- Webhannet River Boat Yard
- Webhannet Kayaks Storage and Rentals
- Webhannet Bait Shop
- Aquaculture and Recreational Clamming
- Ecotourism/Passive Recreation
- Restaurants

Each one of these components represents something different to the community. Yet, in all cases, they tie to a critical industry in the community, tourism. Wells Harbor is a support structure for much of the economic activity that goes on in the community. Whether it be from a services or supply industry (commercial fishing, commercial sightseeing/fishing, kayaking, etc.), the Harbor is an important part of the experience of visiting Wells. Not surprisingly, therefore, the Harbor is also a place where artists often visit; capturing both the natural environment and all that comes with a working Harbor. To place a value on that is difficult, but to understate its importance to the local economic engine is not hard to understand.

7.2 GOALS

As outlined in Sections 2 and 3 of this Plan, over the course of working with the Harbor Committee and community stakeholders a number of goals were initially identified and then refined. Those that are most relevant to a discussion on Harbor Economy and Sustainability are as follows:

- Celebrate the Harbor, its activities, visitors and users in understanding the importance of its role in Wells' culture and local economy.

- Establish a three part marketing program for the Harbor that assists local business interests, supports environmental education and experience, and enhances residents' use, awareness, and understanding of the economic importance of the Harbor to the community.

7.3 COMMERCIAL BOATING

Commercial fishing vessels currently based in Wells harbor consist of the following:

- 13 Charter-generally six person vessels
- 9 full-time lobster boats
- 2 larger Charters / commercial boats
- 15, 5-trap recreational lobster boats

With the exception of the recreational trap boats (recreational by definition), commercial fishing remains a critical industry for the community. Visitors are attracted to the availability of charter options and how to extend their experience in their visit to Maine.

The lobster industry in the Harbor is significant, although it has faced a very difficult period recently because of the surplus of Canadian lobsters being dumped on the market. As result, the value of lobster has declined in recent years, although the hauls are significantly greater than they were in 1990. Interestingly, the number of full time lobster boats in the Harbor has not changed: there were 8 in 1990 and there continue to be about that number today. The 1991 Harbor Management Plan reported 14 part time trap haulers; today the harbormaster reports that there are 15 part time trappers laying 5 traps apiece.



While there is no specific information available with respect to landings in Wells Harbor, York County shows an increase in lobster landings from 2,098,391 pounds in 1990 to 3,293,634 pounds in 2011. The 2011 catch represents 3% of the catch in Maine and 4% of the total value. Based on the 1991 Plan, that would suggest a multiplier effect of almost $22 million in the local

economy (for York County as a whole. Hence, the Wells Harbor portion of York County's total continues to play an important and critical role in the local fishing industry.

An emerging industry in the Harbor, since the 1991 Plan, is the success of the charter boat industry. There now exists approximately 15 commercial charter boats in the Harbor conducting different kinds of fishing and sightseeing trips. These charters are important to the local fishing economy, but also are an important bell weather for the industry as a whole. Charter boats bring a great deal of funds into the community:

- As an example, a 6 person boat charter ranges from $350 for a 3 hour trip to $1,600 for a 12 hour trip
- As an example, a 10 person boat charges $75 per person for 4 hours or $95 per person for 6 hours for in shore fishing

Charter boats draw visitors to the hotels and the community. The charter and individuals purchase goods and services throughout the community. While the multiplier effect is unclear, what is true is that the charters, in combination with campgrounds and other "stay-cations", are important to the local economy.

7.4 RECREATIONAL BOATING

Under ideal conditions (i.e., when recently dredged), Wells Harbor is capable of accommodating approximately 150 mooring spaces (144 have been permitted). These figures include both moorings within the Harbor (accessible by dinghy) and slips located within the floating dock systems. Vessels greater than 24 feet in length are typically located on moorings, while smaller boats are allocated slip space. Typically, approximately 75% of the moorings/slips are allocated to recreational users. During the 2012 summer season, due to the impact of sedimentation, the number of moorings available for use had been reduced to approximately 93. Again, these boat activities represent visitors to the Harbor that reflect annual business activity.

Beyond the practice of local moorings, the Town also sees:

- A conservative estimate of an average of 7 boats launched per day (individual days can be much higher) over 92 days for 644 total launches
- Sale of fuel, goods and services, and overnight accommodations by recreational boaters.

These purchases represent critical inputs into the economy.

7.5 LOCAL HARBOR BUSINESSES



The Webhannet River Boatyard pays an annual rent of approximately $4,500 to the community, adjusted annually. Within their agreement, the community can receive the following:

- Boat storage: around 85 boats per year
- Boat repair is a major service for individual boats but also providing critical services for all users
- The boat yard purchases parts and supplies from many supporting businesses inland, including fuel and parts
- Owners of the boat yard estimate that they engage at least 50 different businesses inland, for services that are provided by the yard (suppliers, restaurants, accommodations, etc.). This is a critical multiplier to the local economy.
- The boat yard launches roughly 80 boats per year, 50 of which are launched by individual trailers, the remainder by their hydraulic launch system—launches cost between $8.50 per foot for commercial boat and $10.50 per foot for recreational boats. Trailer launches are $3.50 per foot. These payments represent important economic multipliers to the community.

What is very new from the 1991 Plan is the emergence of the ecotourism industry to which this 2013 Plan recommends a new commitment by the community. Key to this strategy is the alternatives for recreational experiences in the harbor and marshlands. As an example:

The Webhannet boat yard rents an average of 60-75 kayaks per week and tandems for $40.00 for two hours and $25.00 for singles.

- Their activity is heaviest between July and August; a recent weekend actually rented out 22 over two days.
- An improved shoulder season would increase use in May and September-October; there is no reason why this period cannot be expanded
- The Webhannet yard stores privately owned kayaks at $100 per year. Many are local or seasonal visitors that use the Harbor on a regular basis

- This service is extremely beneficial to the accommodations industry, particularly the camp grounds and motels. Additionally, most users are steered towards restaurants and ice cream places in the community after the rental, again fueling the local economy.

The Webhannet boat yard also provides additional services. The bait shop provides:

- Bait for both commercial and recreational fishing, including those who fish from the shore
- Annual revenue is based on average sales of $1,000 per days for visiting patrons, which can be assumed to be at least three months out of the year.

7.6 HARBOR RESTAURANTS AND THEIR VISITORS



Visitors have been enjoying a restaurant experience in the Harbor for over 40 years. Based on surveys, this includes both local and visiting patrons. Shoulder seasons, while weak, tend to be dominated by local patrons. The summer tends to dominated by visitors from away. The Lord Harborside restaurant and the Fisherman's Catch have been at the site for many years and have seen many land-use proposals for the area come and go, as the seasons fluctuate. They exist as a very attractive seasonal draw, with The Lord Harborside having the capacity to expand. In both cases, the restaurants are open six months per year, but the shoulder seasons tend to be slow, hence business tapers off.

From a community perspective, Harborside pays rent annually to the Town. However, the lease is up in two years, suggesting that other revenue flows should be explored. The restaurant is top-rated and should be preserved as part of any future development proposal. There is an ability to expand the restaurant, based on existing permits, which should also be considered. However, the successful expansion should be based on an ability to expand seasonal capacity of the harbor. As one thinks about the advantages of such an expansion, the following should be considered:

There are 35 seasonal workers, mostly permanent workers with benefits and very competitive salaries. Most are from the area, half are from Wells—average salary for six months can be as much as $40,000.

7.7 ISSUES AND IMPLICATIONS

We have discussed the conventional economic engines for the Harbor. They are real and must be fed. For example, a fueling station and supportive services would make sense and help serve the public.

The community needs to understand the importance of the Harbor and how it relates to overall economic traffic. The restaurants, the water access, the Harbor, represent key uses that today contribute significant resources to the local economy. All of these feed local services and have important local economic implications. This will not stop, but existing businesses must find ways to build on this unique environmental place.

Ecotourism and the existing Harbor Park are natural partners. They do not exist as stand alones—they are key pieces to a local economy that needs to be marketed and taken advantage of. A marriage with the Laudholm Trust, Reserve and Refuge are key to this. The combination with the Webhannet boat yard, the kayak's and other rentals, in particular, are key to this policy. Along with that focus, is a recommendation to take advantage of the existing trail system and extending it from the Harbor, in either direction. These relatively inexpensive additions to the trail network could be combined with a key marketing program, to talk about the special characteristics of the area.

When we look at the local harbor economy, the following are in play:

Estimated Revenue Flow-Harbor and Beach Activities

Town Revenues		**fy 2011**
	Rent	55,500.00
	Beach Passes	309,600.00
	Gazebo	9,000.00
	Boat excise	9,723.00
	Clamming licenses	6,332.00
Total Revenues		**390,155.00**
Expenses		
	Harbor/beach spending	306,488.00
	Clam preservation	6,332.00
Total Expenses		**312,820.00**
Balance		**77,335.00**
Private revenues/charters		201,500.00
Total private/public revenues		591,655.00
Estimate: Annual Consumer Secondary and Tertiary Spending in the Community		
Multiplier of 1.5 (low)		**887,482.50**
Multiplier of 4.0 (high)		**2,366,620.00**

Note 1: Estimates to be confirmed with Departments
Note 2: Private revenues based on 13 boats* one trip per day* $350* Seasonal Days (4th of July-Labor Day, Friday-Sunday only), plus 2 larger boats* one trip per day (12 hours)
Note 3: Lord Harborside assumed to be included in multiplier, probably underestimated given 75% are visitors staying somewhere at some expense

The multipliers are key. They can be expanded upon. A coordinated ecotourism program path, including all local agencies and environmental non-profits, and which is focused on protecting the delicate nature of the Harbor, can be incorporated into a community marketing plan that tells everything about the beauty of the harbor marshlands, the Harbor, and the community itself.

The Harbor Park is at the center of this effort. The Park needs to be upgraded, made more attractive and user friendly, but remain a significant place where locals and visitors come to gather. More events, more activities, should be part of this local marketing program, all bringing to attention the fact that Wells is more than a beach attraction; it is a fantastic natural environment that needs to explored and admired.

8 Commercial Fishing

Local historians indicate that commercial fishing vessels have operated out of Wells Harbor since the 1800s, though the Harbor and its present infrastructure has only been in existence since the major dredging operation of 1961. While the commercial fleet takes advantage of opportunities associated with charter fishing for a variety of species, lobstering is the primary commercial fishing endeavor. Aspects relating to shellfish and aquaculture are discussed separately in Section 9 of the Plan.



8.1 GOALS

As outlined in Sections 2 and 3 of this Plan, over the course of working with the Harbor Committee and community stakeholders a number of goals were initially identified and then refined. Those that are most relevant to a discussion on Commercial Fishing are as follows:

- Support traditional use and job creation associated with Wells' working waterfront, including but not limited to a commercial fleet for commercial and recreational fishing and clamming.

Strategies identified for achieving this objective include the following:

- Monitor fishing trends in the Gulf of Maine to identify emerging opportunities as well as problems in fishing stocks to guide any efforts the Town might consider to increase commercial and recreational activities in recognition of the health of current fisheries.

- Monitor the potential impacts of invasive species on commercial fishing. If problems are identified, work with the Maine Coastal Program, Department of Maine Resources, U.S. Fish and Wildlife, local environmental, marine interests and other to address the emerging problem.

8.2 LOBSTERING



Lobstering is one of Maine's oldest and most consistently productive industries. Records suggest that in 1889 the total (statewide) catch was 24.5 million pounds; in 1989 the catch was 23.4 million pounds. But while the catch has remained stable, keeping pace has required a far greater expense of time and money. Statewide, it is estimated that there are now twenty times as many traps and four times as many lobstermen fishing today as in 1889. While much of the 1900's saw a slow decline in the magnitude of the catch, landings slowly began to increase again starting in the 1970's. Several theories have been advanced to explain the stabilization of the lobster stocks, from a slight warming of the ocean water that scientists believe may contribute to the survival of a greater number of young post-larval lobsters, to a decrease in the numbers of groundfish that prey on juvenile lobsters.

Figures compiled by the National Marine Fisheries Service for York County illustrate that, while there have been periodic downturns, the lobster catch has remained generally strong locally over the past several decades. The greatest obstacle to lobstermen recently has been the extremely low wholesale (and retail) prices for their catch, which has resulted in very challenging economics, particularly when considering the elevated price of fuel and bait.

According to the Wells harbormaster, most of the lobstermen operating out of Wells Harbor fish a season of May through October. One or two vessels operate on a year-round basis.

See Section 7, Harbor Economy and Sustainability for a discussion of the economic impact associated with lobstering activities on the community

8.5 CHARTER FISHING

According to the harbormaster, Wells Harbor supports approximately twelve licensed charter vessels. Typically licensing falls into two categories: obtaining a license from the Town to operate a commercial activity within the community, and obtaining a license from the U.S. Coast Guard to serve as captain of a boat-for-hire. It is suspected that considerable other charter boat activities take place in addition to the dozen or so vessels that are formally licensed by the Town, but tracking and enforcing municipal registration of commercial vessels is challenging and time consuming.

The charter boats typically take patrons out in search of either striped bass/bluefish or offshore groundfish. In some cases the quarry is deep sea shark or tuna. The charter fishing season is generally active between May and October.



See Section 7, Harbor Economy and Sustainability for a discussion of the economic impact of charter fishing activities on the community.

8.3 WELLS HARBOR FLEET AND FACILITIES

Wells Harbor has supported a small but viable lobster fleet for most of the past century. In the 1950's the fleet was six to eight boats. Although data suggest that the size of the fleet increased to as much as 25 to 30 boats during the 1970's and 1980's, the number has dropped again to approximately 9 or 10 vessels.

Wells harbor facilities are well suited to maintaining a commercial fishing fleet. The west side pier and floating dock system, which was constructed following the major harbor dredge of 1961, provides dock access for loading and unloading commercial vessel. It also provides non-potable water, a bait dock, coolers, parking and spots for dinghy tie-up. There is a slip adjacent to the bait dock and refrigerator units that are equipped with a mechanical hoist for offloading. Further discussion of the harbor facilities is included in Section 6, Harbor Facilities and Infrastructure.

9 Shellfish and Aquaculture



Shellfish have been an important part of Wells' history. The extensive estuarine system and mud flats comprise an ideal shellfish habitat. The most important commercial species for Wells is the soft-shell clam, *Mya arenaria*, that inhabits the mud flats of the Webhannet river tidal waters. The softshell clam is a filter feeder which strains planktonic plants and animals from sea water. Softshells attain their largest size in the lower tidal zone, where they may also achieve a maximum density of 300 clams per square meter (Maine State Planning Office, 1985). Natural predators include flounder, ducks, moon snails and most importantly, green crabs. Softshells are particularly vulnerable to changes in their stable, low-energy environment: because they circulate water directly through their system, consume and accumulate biological contaminants in their tissue, and depend on water currents to deliver a steady flow of nutrients. Any activities that affect the flow of water over the clam flats - like the Wells Harbor jetties - will also necessarily affect the condition of the clams. Additionally, both temporary and long-term changes in the sediment structure of the mud flat can harm both mature and juvenile stocks, and prevent or disrupt the reestablishment of clambeds.

9.1 GOALS

As outlined in Sections 2 and 3 of this Plan, over the course of working with the Harbor Committee and community stakeholders a number of goals were initially identified and then refined. Those that are most relevant to a discussion on Shellfish and Aquaculture are as follows:

- Support aquaculture initiatives that are consistent with maintaining water quality within the estuary and limiting the likelihood of genetically modified species escaping into the natural system.

- Support traditional use and job creation associated with Wells' working waterfront, including but not limited to a commercial fleet for commercial and recreational fishing and clamming.

Strategies identified for achieving this objective include the following:

- Work with environmental groups, the Harbor Advisory Committee, and other to prioritize and conduct stream shoreline surveys to identify facility septic systems and inadequate stream duffers, and other threats to water quality.
- Continue efforts associated with maintenance of a sustainable recreational clamming program and assess the viability and needs of a commercial clamming program.
- Monitor invasive species impact on commercial fishing. If problems are identified, work with state, federal, and local interests to address emerging problems.
- Assess the viability of commercial aquaculture involving bivalve mollusks/filter feeders, such as oysters.
- Maintain a dialogue with area ecological groups with respect to appropriate aquaculture initiatives, including discussion on location and magnitude.
- Watch for and seek to mitigate negative water quality issues that might arise from aquaculture initiatives through working with the industry and/or regulation, as necessary.

9.2 BACKGROUND

Through the 1960's, Wells was identified as one of the state's most productive shellfish areas. The Wells marsh was rated as one of the two most valuable coastal marshes in the state by marine biologists, and the town took progressive measures to protect the resource. For example, in the early 1960's the Town took significant measures to control predation of juvenile clams by green crabs. The health of the industry reflected this proactive management as the annual shellfish landings through the mid-1960's ranged from 1,500 to 2,700 bushels, with a value in 1991 dollars of $75,000 to $135,000.

By the mid-1960's however, marine biologists were calling attention to increasing levels of pollution in the Webhannet estuary. In March of 1969, Maine's Commissioner of Sea and Shore Fisheries (predecessor to the Department of Marine Resources) closed the Webhannet estuary to all harvesting of shellfish. The pollution that resulted in closure of the clamflats was caused by two sources. Most notable were "the large number of cesspools, septic tanks, and drainage fields in marshland areas which are washed by high tides," circumstances aggravated by additions made to the jetties at the mouth of the Harbor which apparently reduced the exchange of seawater in the estuary. In addition, extensive development along Route 1 was identified as a secondary source of pollution within the estuary.

In order to address water quality within the estuary, the Town undertook the construction of sewers and a wastewater treatment facility in the late 1970's utilizing funding from the U.S. Environmental Protection Agency.

Although the wastewater collection and treatment system became operational in 1979, the clam flats remained closed to all but the most restricted harvests because of pollution attributed to non-point sources of coliform bacteria[1] in the vicinity of the estuary. As an indication of the level of harvests occurring during this period (1977 through 1980), Town records indicate that only six licensed commercial clam diggers worked in Wells, landing a high of 534 bushels in 1978 and a low of 47 bushels in 1980. All of the catch was polluted to some extent and subject to depuration[2]. The Wells Harbor Advisory Committee should work with environmental organizations, shell fisheries groups, and others to identify faulty septic systems, inadequate stream retrofit their systems, plant stream buffers, and reduce threats to water quality. The groups should also prepare educational materials and promote activities that inform property owners about the important role they play in protection and improving water quality. If appropriate, the groups should reach out to other communities and their landowners within targeted watersheds. These, and other efforts, are necessary because water quality issues remain, despite the Town's construction of its sewer collection and treatment system.

9.3 CURRENT SHELLFISH HARVESTING

Based on discussions with Doug Knox, former Shellfish Warden and Chair of the Wells Shellfish Committee, there are two harvest areas, one extending to Drake's Island, and the other within the Harbor. The harvest season runs on alternate weekends (plus holidays) starting January first and extending until the end of March inside the Harbor (or December first and extending until the end of March outside the Harbor)



The Town issues 300 recreational clamming licenses each season. No commercial licenses are issued. The limit for the recreational licenses is one peck of clams per day. While state law requires that at least 10% of these licenses be made available to non-residents at a cost not exceeding two times the cost for residents, this requirement has not been an issue in recent years, and a significant percentage of the licenses are sold to non-residents.

[1] An indicator of contamination from faulty septic systems, poorly functioning or inadequate waste treatment systems, and/or inadequately managed animal waste disposal systems.

[2] The process by which shellfish are held in tanks of clean seawater under conditions which maximize the natural filtering activity which removes impurities from them prior to sale and/or use for human consumption.

The Shellfish Committee operates a facility at the Harbor to raise clams for "seeding" the flats. This operation produces approximately 65,000 small clams (1/4 to 1/2 inch in length) each year. The selection of areas for seeding is based on observation. While it would be desirable to close seeded areas for two years following the seeding to allow the young clams to grow to harvestable size, this is currently deemed impractical due to the limited area of flats, thus limiting potential yields.

It is currently felt that the operation is sustainable, both in terms of clam harvesting, as well as financially. The fees paid for licenses covers the cost of buying eggs as well as the operations and maintenance of the seed clam nursery facility.

The state monitors water quality at approximately ten locations in the vicinity of the clam flats (the process includes volunteers who obtain samples). Red tide has not been an issue in recent years, largely because the season for red tide is generally April through September, which does not overlap with the harvest season in Wells.

The following link provides access to a study regarding soft shell clam distribution within the Webhannet estuary: http://swim.wellsreserve.org/csc/uploads/ClamSurvey2003-04.pdf

9.4 OTHER AQUACULTURE INITATIVES



Over the years, there have been a number of discussions regarding the potential for capitalizing on Wells Harbor and portions of the Webhannet River estuary as a site for aquaculture. In general, most of these enterprises have recognized that the limited tidal flushing and sensitive ecosystem in Wells create conditions that are a poor match for finfish-based aquaculture, which typically involves the addition of significant nutrients as the fish are fed to promote growth. The possibility of utilizing a portion of the Harbor/estuary for the cultivation of bivalve mollusks, such as oysters has been viewed more favorably. As these species are "filter feeders" and extract their nutrients directly from the water they may actually have a beneficial effect on the quality of estuary water.

In 2012, the Maine Department of Marine Resources approved an aquaculture lease for the experimental culture of the eastern oyster (C*rassostrea virginica*) within the Webhannet River estuary. The U.S. Army Corps of Engineers approved the installation of up to ten (10) 55-inch by 36-foot oyster growing cages within a 400 square foot area below the mean high water mark. At the time of Plan issuance, four of these cages have been located along the western shore of the

Harbor, approximately 3,000 feet south of the west side municipal pier, and in the vicinity of the entrance to Pope's Creek.

9.5 SHELLFISH HABITAT AND THREATS

The state has classified the tidal portions of the Webhannet River and its tributaries as SB. This is the middle classification for tidal waters, lower than SA but higher than SC, recognizing the significant development of portions of the Wells shoreline. The SB classification presumes that the water quality is suitable for recreation (both in and on the water), fishing, aqua-culture, propagation and harvesting of shellfish, navigation, and as a habitat for fish and other estuarine and marine life (in addition to other uses). Attainment of a classification is determined by whether the water meets standards for dissolved oxygen, bacteria, and temperature.

There are three main categories of contaminants that typically cause problems in coastal estuaries: bacteria, nutrients, and heavy metals and other chemical contaminants. Bacterial contamination affects the suitability of shellfish for consumption and ultimately human contact with the water. Pathogens associated with bacteria are harmful to humans if consumed either through shellfish or directly from the water. Common sources of bacterial contamination include septic systems, animal feces combined sewer overflows (when stormwater and sewerage are combined and create capacity problems at the sewer treatment plant during a significant storm events), and leaking sewage collection systems.

Nutrients, such as nitrogen and phosphorous, act as fertilizers in the water and can result in algal blooms. Of these, nutrients, nitrogen is of most concern as it is usually the limiting nutrient in marine waters. The growth of algae and other marine plants is typically of concern both for aesthetic and biological reasons. Algal blooms can result in a depletion of dissolved oxygen and many marine organisms need plentiful amounts of dissolved oxygen to survive. Thus nutrient loading can adversely affect the quantity and quality of marine organisms within the ecosystem. Common sources of nutrients include stormwater runoff from developed areas, lawns, exposed soil, and developed areas, as well as effluent from sewage treatment plants and poorly functioning septic systems.



Heavy metals such as zinc, iron and lead typically sink to the bottom of the water body and settle in the bottom sediment. These metals are mainly a problem when the sediment is disturbed, although their presence in the substrate can be a problem for marine worms and other species that live in harbor sediments. Other chemicals, such as chlorine, remain suspended in the water and may be

toxic to marine organisms, as well as to humans that eat affected organisms. Common sources of heavy metals include industrial and municipal stormwater and/or wastewater discharges, residential overboard discharges from straight pipes and other stormwater runoff.

A likely source of Wells for the bacterial contamination is malfunctioning septic systems in the vicinity of the estuary. Also of concern is the proximity of development to the marsh along the Webhannet River and in many areas. When development extends directly to the marsh's edge, the vegetative buffer around the marsh is lost. Marsh buffers filter out a portion of the nutrients and other contaminants before they enter the aquatic ecosystem. Without the buffers, runoff enters the marsh directly and is only filtered by the marsh itself.

10 Recreational Boating

Because of its location in the seasonally popular coastal area of southern Maine and its proximity to recreational beach areas and to sport fishing grounds, Wells Harbor is, geographically, ideally suited for the recreational boater. With a steadily increasing population of both seasonal and full-time residents, many of whom come to enjoy the numerous ocean-related amenities that the community has to offer, there is significant demand for facilities to support recreational boating activities within the community.



10.1 GOALS

As outlined in Sections 2 and 3 of this Plan, over the course of working with the Harbor Committee and community stakeholders a number of goals were initially identified and then refined. The one that is most relevant to a discussion of Recreational Boating is as follows:

- Support, promote, and plan for capital improvement and maintenance of piers, floating docks, and other boat facilities, including, but not limited to, on-shore boat storage, sewage pumpout, and additional services.

10.2 CAPACITY AND DEMAND FOR MOORINGS

The 1991 Harbor Management Plan indicated that the total demand for recreational boating mooring capacity increased at an annual rate of approximately 14% from 1979 to 1990 (from 116 to 298 boats). Under ideal conditions (i.e., when recently dredged), Wells Harbor is capable of accommodating approximately 150 mooring spaces (144 have been permitted). These figures include both moorings within the Harbor (accessible by dinghy) and slips that are part of the floating dock systems. Vessels greater than 24 feet in length are typically located on moorings, while smaller boats are allocated slip space. Typically, approximately 75% of the moorings/slips are allocated to recreational users. During the 2012 summer season, due to the impact of sedimentation, the number of moorings available for use had been reduced to approximately 93.

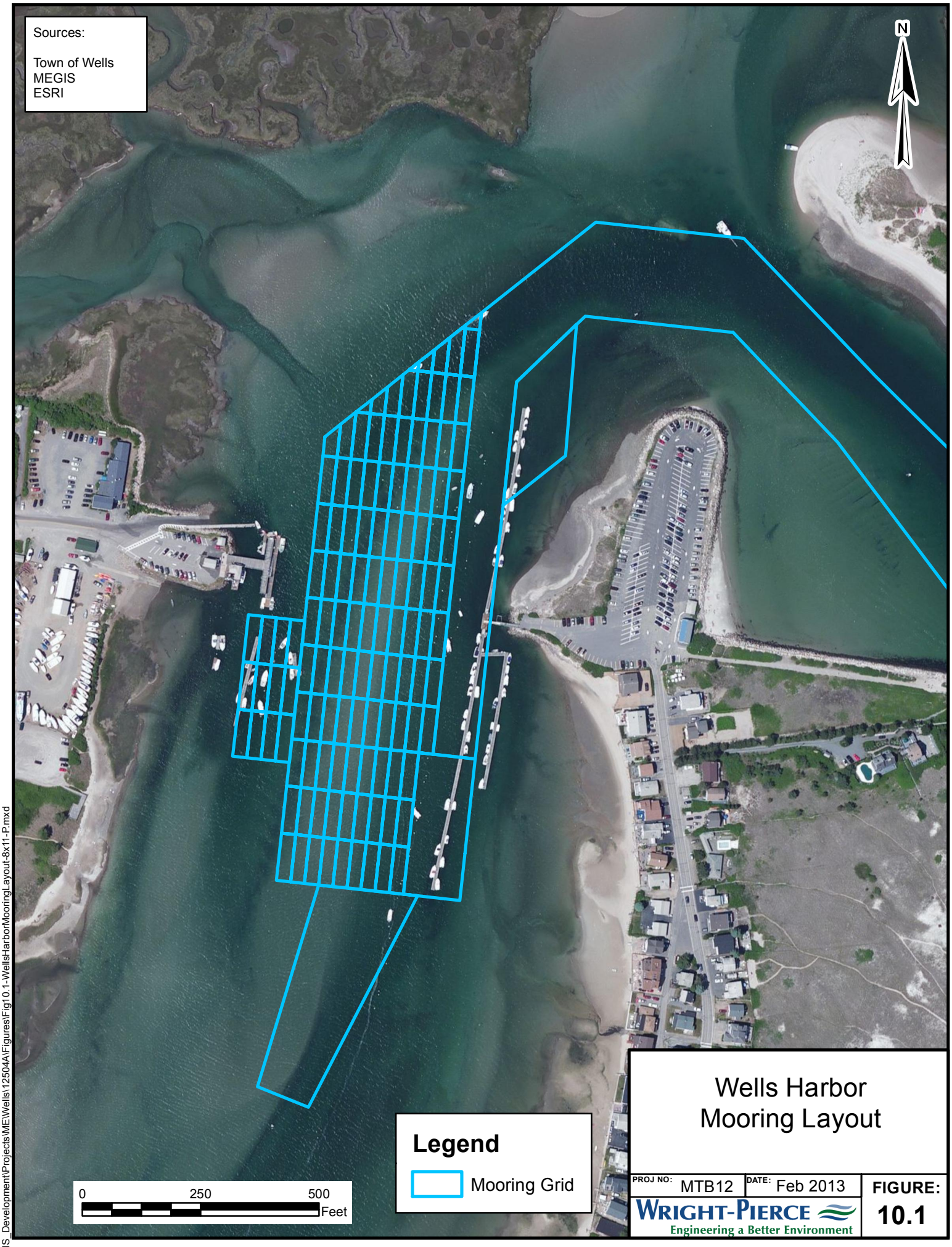
Discussion with the Wells harbormaster as a part of developing this Plan indicated that the current waiting list stands at approximately 168 (115 for slips and 53 for moorings). The harbormaster is currently implementing several adjustments to the process of administering the waiting list, which are expected to address some inherent problems. Among the changes will be a need for annual update of applicant data. It is hoped and expected that these adjustments will reduce the length of the list and make the process less unwieldy.



Regardless, the demand for moorings/slips far exceeds the current capacity of Wells Harbor, and the combination of increasing demand and decreasing capacity (due to accumulation of sediments within the Harbor) means that the unmet need is increasing. This unmet need is likely reflected in the increase of usage of the boat launch at the Harbor, as area residents who would typically moor their boats within the Harbor are restricted to launching and haul out whenever they wish to use their vessels.

10.3 MOORING PLANS

The optimum mooring layout in Wells Harbor is illustrated in Figure 10-1. Because of the constraints imposed by sand deposition within the Harbor, the harbormaster must exercise judgment in determining when mooring locations will no longer be available due to the accumulation of sediments.



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10.4 OTHER WATER SPORTS

A beach area is located on the west side of the Harbor, to the south of the pier facilities. The beach is well-suited for launching windsurfers, canoes, and other small boats. The Harbor and estuary provide excellent opportunities for the recreational sports such as windsurfing, sailing and canoeing. Jet skis and water skiers also frequent the Harbor during the warm summer months.



Given the high level of activity taking place within the Harbor during the summer months, as well as the sensitive nature of the ecosystem, concern has been expressed in the past regarding certain recreational water sports, such as water skiing and jet skiing, as these generally involve significant speed, are noisy and cover a lot of area. While some believe it is more appropriate to reserve the calmer harbor waters for canoe, day sailing, dinghy traffic, and windsurfing, jet skiing and water skiing are allowed within the Harbor to the extent they are conducted in a manner consistent with other regulations, such as operating in a "safe and prudent" manner when more than 200 feet from shore, and maintaining no wake when less than 200 feet from shore. A certain amount of enforcement of these rules is required by the harbormaster over the course of the summer months.

11 Natural Areas

11.1 GOALS AND STRATEGIES

As outlined in Sections 2 and 3 of this Plan, over the course of working with the Harbor Committee and community stakeholders a number of goals were initially identified and then refined. Those that are most relevant to a discussion on Natural Resources are as follows:



- Balance additional development of the Harbor with its inherent constraints, both natural (marshes, habitat, sensitive plants and wildlife) and built (access roads, limited upland area) to minimize negative environmental impacts.
- Continue efforts to monitor, improve, and maintain water quality in the Harbor.
- Continue to support and expand research and education about Wells Harbor and its resources and environments in partnership with environmental organizations, the school district, and others.
- Make Wells a destination for a unique interactive experience with its natural assets by incorporating environmental education and ecotourism experiences into a Harbor experience.
- Establish a three-part marketing program for the Harbor that assists local business interests, environmental education and experiences and enhances residents' use, awareness, and understanding of the importance of the Harbor to the community.
- Consider the effects of projected sea level rise on both Harbor infrastructure and ecological aspects of the Harbor/estuary. Work with the public to increase its understanding of the impacts and potential threats of sea level rise.
- Continue to support efforts aimed at improving and maintaining the health of the dune ecosystems including both flora (such as dunegrass) and fauna (such as piping plovers).

Strategies identified for achieving this objective include the following:

- Continue to restrict development that would increase undesirable impacts on the Harbor.
- Explore means to create a hydraulic connection between areas of the marsh to the north and south of Harbor Road.
- Continue to support monitoring, research and science-based environmental education efforts of environmental and other groups in support of natural processes and

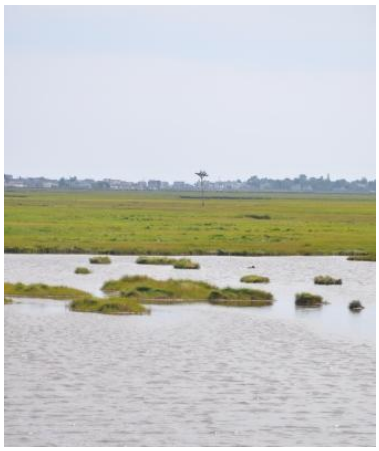
ecosystems and the human role in managing and stewarding natural resources, including research and education surrounding water quality, erosion, and dredging impacts.

- Improve environmental conditions of the Harbor by restoring salt marsh on the undeveloped dredge spoils and removing sand and restoring the adjoining marsh.
- Explore opportunities for expanded public education, using the Harbor as a demonstration site for best management practices.
- Work with environmental organizations, the CSD, Harbor Advisory Committee, local businesses, and others on an on-going basis to review threats to environmental interests in the harbor area, inform customers and clients about environmental issues of the Harbor, and make recommendations to resolve problems.
- Work with environmental organizations, the school district, Harbor Advisory Committee, and others to keep the public apprised of all local, state and federal research projects and work in the harbor area.
- Work with environmental organizations, volunteers, Town staff, the school district, Harbor Advisory Committee, and others to annually survey the beach for wildlife nesting areas to properly protect those sited within high traffic areas. Consider municipal funding of monitoring efforts.
- Work with beachfront owners to improve their knowledge about their potential impacts on natural areas and involve them in solving problems and working with programs to ensure compliance with local, state, and federal laws.
- Seek opportunities for "win-win" initiatives that benefit the ecology and economy of the Harbor and surrounding areas.
- Protect the dunes from foot traffic and provide public education regarding the ecological values the dunes provide to the Harbor.
- Explore the need and value of buying out properties that have or are likely to suffer repeated storm damage. If properties are acquired, take advantage of the opportunity to restore associated sand dunes.
- Use best management practices in ongoing harbor operation and infrastructure improvement to reduce the impacts of stormwater runoff on erosion and water quality.
- Work with environmental organization, Harbor Advisory Committee, and others to prioritize and conduct stream shoreline surveys to identify faulty septic systems, inadequate stream buffers, and other threats to water quality. Seek outside funding to support retrofits to reduce identified threats to water quality. Prepare materials and activities to support efforts to inform homeowners/residents about the important role they play in protecting and improving water quality. If appropriate, reach out to other communities within targeted watersheds.
- Review land use ordinances and amend, as appropriate, to ensure that best management practices are required for maintenance and new construction. Draft and adopt low impact development (LID) standards to reduce water quality impacts from

maintenance and new construction activities. Work with environmental organizations, Harbor Advisory Committee, and others to inform the public about of LID techniques and their benefits.



- Continue to support the Healthy Beaches program, Beach Profile Monitoring Program, and other community monitoring efforts.
- Continue to work with the regional sea level rise working group to increase understanding of the potential impacts of sea level rise on Wells Harbor, the most effective ways to mitigate its impacts on public and private property, and the impacts of the jetty on beach erosion in combination with sea level rise.
- Investigate whether there is a negative impact from the floating docks/slips on sand displacement.
- Investigate whether sand is eroding on the east side of the Harbor as a result of the dredge and ship usage.
- As use of the harbor area increases, plan for increased pressure on road and water access, parking, and stormwater management.
- Where appropriate, include provisions to maintain or enhance natural buffers between differing uses to address aesthetic, water quality, and/or habitat issues.
- Improve the layout and treatment of automobile and boat trailer parking areas to improve aesthetics, provide amenities, and improve stormwater management and efficient use of available space. Minimize the creation of new, paved (i.e., impervious) surfaces.
- Redesign and reconstruct parking areas, using porous pavement, interlocking pavers, or other materials to manage stormwater impacts while providing opportunities to stripe spaces or otherwise manage parking more efficiently.
- Where appropriate, include provisions to maintain or enhance natural buffers between differing uses to address aesthetic, water quality, and/or habitat issues.



11.2 WELLS HARBOR ECOLOGY

Wells Harbor continues to be surrounded on several sides by large expanses of salt marsh that serve as habitat for an abundance of wildlife. Most of the marshland is part of the Refuge, one of 450 wildlife refuges nation-wide owned by the federal government and administered by the U.S. Fish and Wildlife Service. The Refuge was established in 1966 and includes other divisions along the southern Maine coast

stretching from Kittery to Cape Elizabeth. The division that includes the Wells Harbor area is referred to as the Lower Wells Division.

This marshland and adjacent upland is considered an important environmental resource by residents of Wells as well as government agencies. The Reserve was created in the early 1980's to research the area's natural resources and enhance public awareness and understanding about Wells' estuarine environment. Reserve boundaries encompass land owned by the Town (245 acres), state (200 acres), and federal governments (1,155 acres). Around Wells Harbor, the Reserve overlaps with the Refuge. Both organizations, therefore, are involved in managing the Town's marshlands, although a Memorandum of Understanding gives the U.S. Fish and Wildlife Service primary responsibility.

Wells' coastal and upland habitat attracts birds and wildlife throughout the year, including spring and fall migrations of waterfowl, songbirds, raptors, and thousands of shorebirds. The Refuge has recorded over 250 species of birds in the refuge system, and most of them frequent the Lower Wells Division. The Reserve lists nearly as many. See Appendix B. The Wells Reserve includes the marsh in the Lower Wells Division of the Refuge as well as "a patchy habitat of open fields, old fields, and forests."[1] Marine habitats include muddy sediments and intertidal flats as well as sandy beaches sand dunes, and subtidal sandy bottoms. See Appendix B, All Invertebrates, and Appendix B, Zooplankton.

There are a variety of vegetative areas within the Wells Reserve including macroalgae (seaweed), submerged aquatic vegetation, dune vegetation, salt marsh vegetation, grasslands, old fields, and forests, each with its own set of characteristic plants. See Appendix B, Plants, fungi and algae.



Several amphibian and reptile species favor habitat found at the Reserve's brushy or open habitats, wetlands, and numerous vernal pools: blue-spotted x Jefferson salamander, spotted salamander, red spotted newt, redback salamander, American toad, spring peeper, gray tree frog, wood frog, green frog, bull frog, painted turtle (threatened), Blanding's turtle (endangered), snapping turtle, eastern milk snake, eastern smooth green snake, northern red-bellied snake, eastern garter snake; rare sightings of eastern black racer, ribbon snake, wood turtle, spotted turtle (threatened), and Blandings turtle. See Appendix B, Reptiles and Amphibians, Sightings and highly probable habitat for common species. See also Appendix B, Sightings of rare reptiles and amphibians.

[1] 2007. Wells National Estuarine Research Reserve. *Site Profile of the Wells National Estuarine Research Reserve*.

Fifty-seven fish species have been identified within the Reserve's estuaries and the adjacent waters of the Wells Embayment. See Appendix B. Fish species.

The Wells Harbor area is also home to a variety of mammals and includes a significantly used seal haul out area along the southern Maine coast. White tailed deer are numerous and there have been documented sightings of the New England cottontail. See Appendix B Mammals.



In the 1980's and 1990's, federal, state, and local environmental organizations began to focus on protecting and restoring habitat for the piping plover. In 2003, the Town adopted the Piping Plover Beach Management Agreement. The Refuge has cooperatively monitored the federally threatened, state endangered piping plover and the state endangered least tern which both nest on Laudholm Beach and Crescent Surf Beach. The area within the Reserve has been designated by the state as essential habitat for least tern and piping plover, receiving regulatory protection under the Maine Endangered Species Act which requires that no state agency or municipal government shall permit, license, fund or carry out projects that would significantly alter the habitat or violate protection guidelines adopted for the habitat (12 MRSA Part 13, Subchapter 3 - Endangered Species). Wells had piping plovers nesting on the Reserve's beaches from 1991-2005, but in 2006, there was no nesting activity documented, although plovers did use the area for feeding and migration, and Crescent Surf Beach had five nesting pairs. The two areas together make up an important area for plovers within the state.

Least terns also are listed as state endangered, are a species of high conservation priority for the U.S. Fish & Wildlife Service, and have been monitored within the state since 1977. Least terns reach the most northern portion of their range in southern Maine. Gathering accurate population estimates for the state is difficult due to the bird's dynamic nesting habits; however, population estimates for Laudholm and Crescent Surf Beach together generally host the bulk of least terns nesting within the state. In recent years, predators and beach erosion have depressed the nesting activity for plovers and terns at Laudholm Beach. In 2006, there were no nesting plovers or terns present and the habitat available to them was of exceedingly low quality. Beach erosion has left only a small band of sandy habitat for nesting, which is not attractive to the birds. Predators further depressed productivity at the adjoining Crescent Surf Beach. The Piping Plover Recovery Plan calls for a minimum productivity of 1.5 fledglings per a pair to ensure plover population growth. For seven out of the past ten years Laudholm has met or exceeded those productivity measures. However, recent years have fallen well below that standard. Predation of the nests and chicks of plovers and terns has limited the ability of plovers to meet recovery plan productivity criteria. Identification of predators responsible for nest and chick loss and determination of the best course of management action is a complex problem as predators appear to change on an annual basis, although some like crow are documented repeat offenders.

From 2000 to 2005, the Harbor was dredged several times, beaches were replenished, marshes were restored, and the Town adopted other environmentally sound practices. Wells joined the Maine Healthy Beaches Program in 2003 and began rebuilding sand dunes at the northern end of Drake's Island. In 2007, the Town created its Wells GIS website, which provides ready access to the Town's GIS maps. In 2008, the Town received a Tree Canopy Grant to support the planting of elm trees.



In 2007, the Reserve prepared a detailed environmental profile of its holdings.[2] The profile includes a characterization of the estuary, its habitats, historical and cultural setting, the national reserve system and its designations, research and management priorities and recommendations, and reserve protection efforts. It also includes expanded chapters on the:

- environmental setting, including a description of its geomorphology, climate and weather, hydrogeography, land use, and water quality;
- biological setting, including habitats, vegetation, invertebrates, reptiles and amphibians, fish, birds, and mammals;
- ecological setting, including origin and evolution of the estuary, physical influences on the biota, community structure and processes, and biological productivity;
- research and monitoring, including its research and monitoring programs; and
- bibliography and glossary of terms.

Though focused on the Reserve's land holdings, much of the information detailed in the profile provides the most recent and detailed compendium of information about natural resources in the Wells Harbor area.

11.3 MONITORING PROGRAMS AND RESEARCH FOCUS

The Town, the Reserve, and a number of other public and private interests sponsor and participate in a number of monitoring programs in Wells, many at the WNERR, including the:

- System Wide Monitoring Program (SWMP) – established in 1995 the Reserve began to track short term variability and long term changes in estuarine environments

[2] 2007. Wells National Estuarine Research Reserve. *Site Profile of the Wells National Estuarine Research Reserve*.

- National Water Level Observing Network (NWLON) – established in 2005, the Reserve's SWMP was integrated into the NWLON, a 175 long-term, a network of continuously operating water level stations
- Watershed Evaluation Team – established in 1991, the Reserve's volunteer-based water quality monitoring program for the Little and Webhannet River estuaries
- Emergent Vegetation Monitoring – the Reserve's long term monitoring of salt marsh emergent vegetation
- Maine Healthy Beaches Program – in 2002, Wells began monitoring its bathing beaches for the presence of enterococci, a bacterial indicator, as part of a state and national effort
- Southern Maine Beach Profiling – the Reserve's site hosts the University of Maine Cooperative Extension and Maine Sea Grant-supported long term beach profiling to measure the contour of its beach to guide informed decisions about beach management
- Shellfish Growing Area Classification Program – the Maine Department of Marine Resources' water quality monitoring of fecal coliform levels at several locations in the Little and Webhannet River estuaries
- National Marine Debris Monitoring Program – coordinated by The Ocean Conservancy, a station at Laudholm Beach studies the effectiveness of the 1998 International Treaty on Marine Pollution
- Maine Damselfly and Dragonfly Survey – Maine Department of Inland Fisheries and Wildlife's five-year, volunteer-based survey of damselflies and dragonflies
- Piping Plover and Least Tern Monitoring – Maine Audubon's coordinated Piping Plover and Least Tern Recovery Project that includes searching for and protecting active plover nest sites, began in Wells in 2002
- Monitoring Avian Productivity and Survivorship (MAPS) – weekly mist-net survey of bird population began in 1988, incorporated into the MAPS program in 1990

The research focus for the Reserve for the immediate and near future includes:

- Salt marsh habitats and communities
- Habitat value for fish, shellfish, and birds
- Salt marsh degradation and restoration
- Coastal food webs and habitats, underlying physical and biological processes, and response to natural changes and human activities

12 Beach Erosion and Management



The beaches along the eastern side of Drakes Island and Wells Beach make up two of the community's three major sandy beach segments. Wells Beach is a municipally owned and managed public beach and Drakes Island Beach is privately owned, but open to the public. Historically, these beaches have been well supplied with sand and have been considered to be among the finest beaches in southern Maine. Both beaches are used heavily during the summer months by Wells residents and visitors alike. In addition, there is a smaller segment of beach along the eastern side of the Harbor, just to the south of the east side pier.

Since the major harbor dredge and construction of the jetties in 1961, there has been considerable theorizing and speculation with respect to the interaction between dredging activities and the effects of the jetties on longshore currents, wave activities and sediment transport. Extensive monitoring and research has been undertaken to characterize patterns of erosion and accretion, and to better understand the causal relationships with activities that have been undertaken, or could be undertaken. The use of dredged sediments for beach nourishment, and the locations in which they are deposited has been studied as well. One thing remains clear: decisions regarding management of dredging in the Harbor (and disposal of the resulting sediments) should consider the potential for effects on beach erosion and vice versa.

While it certainly appears that the jetties (and the need for periodic dredging) are here to stay, there are a number of other aspects of the beach and dune systems that community residents and tourists can do much to protect. Numerous scientific studies have established that healthy dune grass systems are critical to both the stability of the beach system and to the habitat for certain species.

12.1 GOALS

As outlined in Sections 2 and 3 of this Plan, over the course of working with the Harbor Committee and community stakeholders a number of goals and strategies were initially identified and then

refined. Those that are most relevant to a discussion on Beach Erosion and Management are as follows:



- Continue to seek to understand the complex relationship between sand deposition, dredging, and the constriction/installation of physical facilities within the Harbor,
- Continue to support efforts aimed at improving and maintaining the health of the dune ecosystems including both flora (such as dune grass) and fauna (such as piping plovers),
- Work with the Reserve Refuge, piping plover volunteers, Town staff, CSD, Harbor Advisory Committee, and others to annually survey the beach for wildlife nesting areas to properly protect those sited within high traffic areas,
- Work with beachfront owners to improve their knowledge about their potential impacts on natural areas and involve them in solving problems and working with programs to ensure compliance with local, state, and federal laws,
- Continue to support and conduct beach profile monitoring and other community monitoring efforts, and
- Continue to engage in efforts to protect the dunes from foot traffic and provide public education regarding the ecological values the dunes provide to the Harbor.

As tourism represents the mainstay of the local economy in Wells, anything that impacts tourism impacts the Wells economy. In addition to adversely affecting tourism, the erosion and related values of area beaches is of concern to local residents, both those who live on the oceanfront and those who live elsewhere in Town. Furthermore, dunes provide a line of defense for the shoreline and properties against damage from significant storm events.

12.2 IMPACT OF THE JETTIES ON BEACH EROSION

Since the construction of the jetties at the harbor entrance in the early 1960s, the sections of these beaches that are farthest from the jetties have been eroding and sand has been accumulating on both sides of the jetties. A number of geological studies have looked at the sand transport patterns in this area. These studies have indicated that littoral drift (sand transported by longshore

currents) occurs in both northerly and southerly directions, but that net transport appears to be primarily towards the north.

While the sand trapped along the jetties has produced some excellent beaches in the immediate vicinity of the jetties, large sections of both Drakes Island and Wells Beach have been subject to significant net erosion since the early 1960's. A comparison of aerial photographs then and now reveals that many sections of Wells' beaches are now significantly narrower than they were prior to construction of the jetties.



In 1991, the U.S. Army Corps of Engineers initiated development of a sand-transport analysis of the Wells and Drakes Island Beaches which was intended to better define the dynamics associated with erosion and accretion in the vicinity of the harbor, jetties and beaches.

12.3 OTHER FACTORS IMPACTING BEACH EROSION

It is important to recognize that the jetties are only one of the factors affecting the erosion of these beaches. Another more significant factor influencing the present erosion appears to be the presence of private sea walls. Seawalls reflect wave energy back onto the beach and thus enhance the scouring effect on the sand. As a beach becomes narrower and the beach profile becomes steeper, the erosion will tend to increase as larger waves (no longer impeded by shallow lower beach conditions) are able to reach the shore. Larger waves can move heavier sediments, and this is why cobble has replaced sand in many parts of Wells' beaches: these rocks are very common in high energy wave environments. The seawalls that line these beaches are responsible for initiating this process, and the beaches were most likely eroding slowly even before the jetties were constructed in the early 1960's. While the jetties clearly aggravated the erosion problem, the seawalls and residential development along the frontal dunes of a naturally mobile barrier system remain a key factor affecting beach erosion and should be considered in defining a solution to the erosion problems.

According to the Maine Geological Survey, beach profiles adjacent to seawalls "generally show a more concave up shape, and undergo less overall profile change, in general, from season to season, than profiles at natural dunes…In winter, when profiles erode, the beaches with seawalls have less sediment available in the profile to begin with (thus the concave shape), and thus undergo slightly less change in response to winter storms. The natural profiles, which typically have more sand, undergo more erosion (including frontal dune erosion) in the winter months. Conversely, in the

summer, the natural profiles typically see more sand return to form a better defined summer berm, indicating recovery, while beaches "stabilized" with seawalls only see a slight return since they don't undergo as much change."

12.4 MONITORING OF BEACH EROSION



The Maine Department of Conservation, Agriculture and Forestry, Bureau of Geology, Natural Areas and Coastal Resources conducts monitoring of a number of beaches in southern Maine and assesses trends. Much of this work is accomplished under the auspices of the Maine Beach Profiling Project, which relies heavily on volunteer beach monitors, to obtain monthly, seasonal, and yearly data relative to beach change. In addition to providing hard data with respect to how a specific beach (or segment of a beach) is performing, it is interesting to compare how specific events, such as major storms, impact beaches at multiple locations along our coast. In the case of Wells, this may be useful in differentiating between annual impacts associated with "human influenced" factors (littoral drift due to the jetties, e.g.) and "naturally occurring" changes in beach profile due to winter storms, etc. Reporting is developed and made available via the Bureau's website, at the following links:

For Wells Beach:

http://www.maine.gov/doc/nrimc/mgs/explore/marine/beaches11/wells.htm

For Drakes Island Beach:

http://www.maine.gov/doc/nrimc/mgs/explore/marine/beaches11/drakes.htm

As noted by the Bureau:

> "The report reviews profile changes using the immediate post-2007 Patriots' Day Storm (either from April, May, or June 2007, as data is available) with profile shapes from subsequent years from roughly the same months, through April or May 2011. This allows the Bureau to build upon the review completed for the 2009 report, which detailed profile recovery through April or May 2009. Review of the "winter" beach profile shapes will allow us to detail whether or not the beaches have continued to recover (or erode, or switch their recovery) from the Patriots' Day Storm event, which is considered in many locations to have created the most erosive beach profile shape over the past four years.

> The Bureau also reviews profile changes and recovery from 2007 through 2010 for the "summer beach" profile shapes at each profiling location. This includes (as data is available) profile data from August or September of each year from 2007 through 2010; unfortunately, we will be unable to include 2011 summer beach data since it has not been collected yet. It is generally not sound to compare May or June profiles with August or September profiles, since Maine beaches are typically still recovering from the winter in May and June, and fully developed by August or September. However, in specific cases such as at Ferry Beach in Saco, we decided to include analysis of profile data collected in June 2011. This was included because (a) beach profile starting pins were relocated in spring 2010, and (b) additional profile data was needed to investigate how the dune restoration project completed in that area in spring 2009 has been fairing.
>
> As part of this review, consistent with the 2009 assessment, we assigned a "grade," based on the amount of stability or recovery (or lack thereof) exhibited by each profile for both summer and winter beach profile shapes. Then, for each beach, an average grade for the "winter" beach changes (2007 to 2011) and the "summer" beach changes (2007 to 2010) were created. Finally, an overall beach grade was assigned, as an average of all the summer and winter profile scores."

The guidance manual developed for volunteer monitoring of beach profiles in southern Maine is available on-line at the following link:

http://www.seagrant.umaine.edu/files/pdf-global/06volman.pdf

12.5 WELLS BEACH MANAGEMENT AGREEMENT

The Town and other area entities, such as Save Our Shores, Drakes Island Beach Committee, and the Reserve have adopted an agreement aimed at maintaining certain aspects of beach health and habitat. The areas covered under the agreement includes all of the beachfront commencing 1,300 feet north of Casino Square Public Parking Lot (including public rights of way on Wells Beach) to the northern limit at the boardwalk access at Laudholm State Beach on Drakes Island. The beachfront is defined to extend from the concrete seawall and/or the seaward side of the frontal dune (in areas where no seawall exists) to mean low water.

The primary intent of the agreement is to provide a means to protect piping plovers on Wells and Drakes Island Beaches. It is recognized that the ultimate success of the agreement depends on the voluntary participation and cooperation of private landowners and the Town.

12.6 WELLS BAY REGIONAL BEACH MANAGEMENT PLAN

The comprehensive plan associated with managing the area's beaches is available at the following link:

http://www.smrpc.org/landuse/Coastal/wellsbayplan4_18_02accepted.pdf

12.7 PROPOSED BEACH NOURISHMENT



In the context of obtaining state and federal approvals for another major harbor dredge, the Town and U.S. Army Corps of Engineers have proposed the disposal of approximately 150,000 cubic yards of sand. The proposal currently awaiting funding proposes to reuse half of the dredged material at two locations on Drake's Island Beach. At the first location, the effort would include a sand dune reconstruction project (approximately 550 linear feet) and beach nourishment covering approximately 5.8 acres. At the second location, dredged material will be reused for beach nourishment covering approximately 10.4 acres. The second half of the dredged material would be placed at Wells Beach in the vicinity of Casino Point, and be used for beach nourishment over an approximately 10.5-acre area.

13 Dredging

The current federally designated dredge project associated with Wells Harbor includes two sand-tight stone jetties, and eight foot deep entrance channel (100 feet wide) a six foot deep inner channel (150 feet wide) a 7.4 acre anchorage 6 feet deep. A discussion with the Harbor Advisory Committee and the public associated with development of this Plan, raised the most prominent recurring theme - the need for regular Harbor dredging in order to maintain the navigability of the resource.



While neither the Town nor the Harbor Plan Committee is in a position to make a final decision on dredging the Harbor which decision lies with state and federal agencies - the Town and its citizens are certainly a part of the decision-making process, or at least are in a position to influence the process.

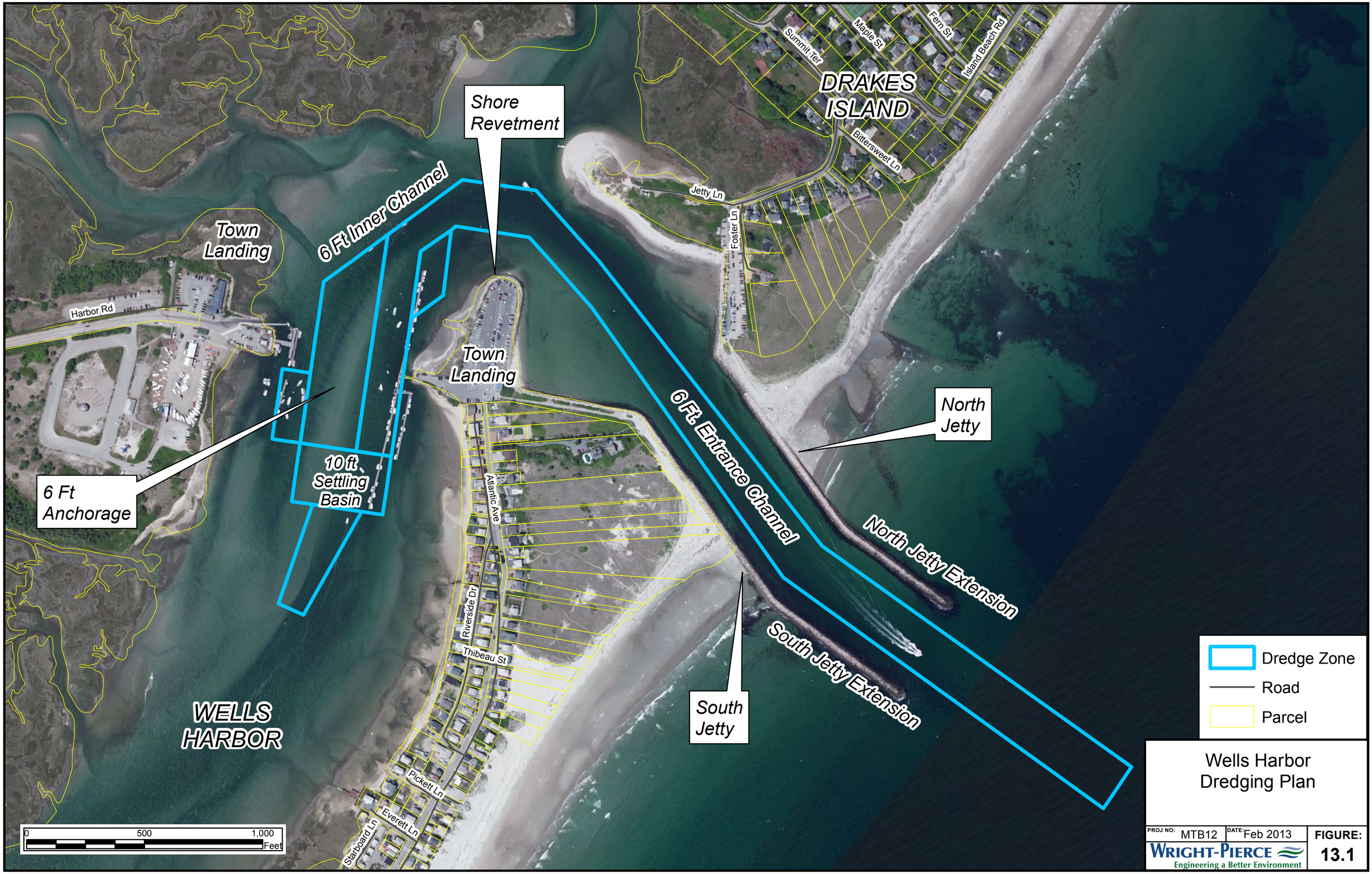
13.1 GOALS

As outlined in Sections 2 and 3 of this Plan, over the course of working with the Harbor Committee and community stakeholders, a number of goals were initially identified and then refined. While one of the overarching goals associated with the Plan is to ***arrange for the Harbor to be dredged on a frequency that allows for continuous navigability in order to facilitate ongoing harbor activities***, several of the other goals are relevant to such an initiative as follows:

- Continue to seek to understand the complex relationship between sand deposition, dredging and the construction/installation of physical facilities within the Harbor, and the impacts on organisms in the sand (clams, etc.) both within the dredged area and where the sand is dropped.

- Work with beachfront owners to improve their knowledge about their potential impacts on natural areas and involve them in solving problems and working with programs to ensure compliance with local, state, and federal laws.

- Continue to support and expand research and education about Wells Harbor and its resources and environments in partnership with the Wells Reserve Refuge, and others.


Shore Revetment
6 Ft Inner Channel
Town Landing
Harbor Rd
6 Ft Anchorage
10 ft Settling Basin
Town Landing
Atlantic Ave
Riverside Dr
Thibeau St
Pickett Ln
Everett Ln
Starboard Ln
WELLS HARBOR
DRAKES ISLAND
Summit Ter
Maple St
Fern St
Island Beach Rd
Bittersweet Ln
Jetty Ln
Foster Ln
6 Ft. Entrance Channel
North Jetty
North Jetty Extension
South Jetty
South Jetty Extension
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500
1,000
Feet
Dredge Zone
Road
Parcel
Wells Harbor
Dredging Plan
PROJ NO: MTB12
DATE: Feb 2013
WRIGHT-PIERCE
Engineering a Better Environment
FIGURE:
13.1

13.2 HISTORY OF DREDGING INITIATIVES



The most recent dredging at Wells Harbor was performed during the spring of 2012 and included maintenance dredging of the entrance channel. Approximately 20,000 cubic yards of sand was removed over the course of a 12 day period, addressing the most restrictive shoals from the entrance channel. The work was performed by the federally-owned and operated special purpose "hopper" dredge ***Currituck***. The dredge utilized two articulated "arms" and hydraulic pumping to remove the material from the channel bottom and place it in a hopper in the center and bow of the vessel. The dredged sediments were deposited in a near shore area off Wells Beach, about 5,000 feet south of the dredge site. The dredged material is intended to function as a feeder berm, providing a sand source for nourishment of the beach.

The following timeline provides context for several relevant milestones associated with the Harbor's dredging history.

1835 The initial federal authorization for Wells Harbor was issued;

1960 The congressionally authorized project was authorized under the River and Harbor Act of 1960 (with Amendments).

1961-2 Approximately 382,000 cubic yards of sand were removed, creating 43 acres of upland where the town dock, boat yard, park, and restaurant are presently located. The jetties were also constructed at this time.

1962 The federal project was subsequently modified by the U.S. Army Corps of Engineers' Chief of Engineers in September of this year;

1965 The federal project was subsequently modified by the U.S. Army Corps of Engineers' Chief of Engineers in September of this year;

1991 Maintenance dredging was performed.

1996 The community undertook a planning effort which resulted in the current layout of much of the Harbor's boating facilities, as they currently exist (installation of many of these features were deferred until after the 2000 dredge).

1999 The federal project was subsequently modified by the Water Resources Development Act in August of this year;

2000 September to December 2000, when 147,000 cubic yards of sediment were removed and pumped via a pipeline to a location about 1.5 miles south of the dredged area at Wells Beach and a second area about 1 mile north of the dredged area at Drakes Island Beach;

2002 In June of 2002 when the federal dredge vessel *Currituck* removed approximately 10,000 cubic yards of sediments and discharged them to nearshore areas in front of Wells Beach;

2005 The *Currituck* removed 10,000 cubic yards of sediments and discharged them to nearshore areas in front of Wells Beach (the U.S. Army Corps of Engineers had originally requested permission for dredging every two to five years in the amount of 20,000 to 60,000 cubic yards, but the request was subsequently reduced);

2012 The *Currituck* removed 10,000 cubic yards of sediments and discharged them to nearshore areas in front of Wells Beach

During the pre-project review associated with regulatory approval for the Harbor dredging that was completed in 2000, agencies identified concerns with respect to the possible connection between dredging activities and marsh and shoreline erosion within Wells Harbor. As a result, a multi-year assessment was completed following the completion of the dredging and a report was issued in 2005. The effort involved monitoring changes to the marsh through the processes of erosion and accretion.



Designated channel depths are below Mean Lower Low Water (MLLW).

13.3 WELLS SCIENTIFIC REVIEW PANEL



Given the strong potential for significant adverse impacts to the area's ecological health, a multi-disciplinary "Scientific Review Panel" was established in 1998, to review the data, provide recommendations to the project management at the Corps of Engineers, and, perhaps most importantly, assess the results of monitoring data from 39 locations in the vicinity of the dredging activities, both before and after the 2000 Harbor dredge took place. The Panel included representation from a number of sectors, including: Maine Geological Survey, Wells Reserve, and several prominent New England colleges and universities.

At its meeting of May 5, 2004, the Panel, chaired by the Maine Geological Survey, discussed the results of the monitoring study and, based on the data, determined that there were no significant adverse impacts to the Webhannet Marsh associated with the major Harbor dredge of 2000.

Appendix C includes an excerpt of a report prepared by the Review Panel.

13.4 AGENCY REVIEW AND APPROVAL

The regulatory requirements associated with all federal dredging activities involve review and comment by a number of state and federal agencies. Among them are:

Federal Agencies:
National Marine Fisheries Service (NMFS)
Environmental Protection Agency (EPA)
U.S. Fish and Wildlife Service (USF&WS)
U.S. Army Corps of Engineers (ACOE)

State Agencies:
Maine Department of Environmental Protection (MEDEP)
Maine Department of Marine Resources (DMR)
Maine Department of Conservation (MEDOC) Submerged Lands Program
Maine Coastal Program (MCP) (Now at MEDOC, formerly part of the State Planning Office)
Maine Geological Survey (MGS)
Maine State Historical Preservation Commission (MSHPC)

Other:
Public Notice: A 30-day public notice
Scientific Review Panel (may be convened)

13.5 JUSTIFICATION FOR DREDGING

Among other things, supporters of harbor dredging site the following justifications for dredging:

1) The present "undredged" conditions in the Harbor constitute a safety risk and pose severe hardship on the commercial fishing fleet that is based in the Harbor,
2) Dredging increases tidal flushing within the estuary, which in turn enhances water quality,
3) The dredged sand is the only feasible source of sand for beach nourishment at Drakes Island and Wells Beaches,
4) Mooring space in York County is essentially "at capacity" and Wells Harbor is an important mooring area,
5) Wells has invested in some of the best public Harbor facilities in York County - dredging is essential for the community and the region to realize full benefit from these facilities, and
6) There will be major adverse impacts on tourism and the local economy if dredging is further delayed.

The safety issue pertains both to entry and exit through the channel between the jetties and to navigation within the Harbor. Shoaling in the entrance channel can result in conditions with even moderate seas that make navigation dangerous. Shoaling in the mooring area has also proved hazardous on numerous occasions as even the most experienced boaters have "touched" in their attempts to access the town dock. Perhaps the greatest safety risk is associated with visiting recreational boaters unfamiliar with the Harbor who access the water from the boat ramp. Posted hazard warnings might reduce but would certainly not eliminate this problem.

The hardship to the commercial fishing fleet is discussed somewhat in Chapter 8, Commercial Fishing. As dock access as well as entry and exit from the Harbor can only occur at higher tides, fishermen must operate under a severely restricted and constantly changing schedule. As conditions continue to worsen, it will only be a matter of time before this situation begins to force fishermen out of the Harbor or out of business.



The need for sand on the Drakes and Wells Beaches is discussed in in Chapter 12, Beach Erosion and Management. Many advocates for beach nourishment point to Wells Harbor sand as the only logical and feasible source for the needed sand.

The impacts on tourism and the local economy of not dredging the Harbor would be significant. These impacts would include the eventual loss of the many "day trippers" who currently use the public boat ramp; the many non-resident recreational

boaters who currently spend money in Town because they moor their boats here; and the loss of a variety of tourist attracting activities.

Supporters of dredging have also pointed to several potentially beneficial effects that dredging would likely have on the Harbor environment. Dredging would improve the flushing process in the Harbor which would tend to improve water quality and benefit marine organisms, including fish, in the estuary. Additionally the dredged material, if placed appropriately, could improve the attractiveness of area beaches to nesting piping plovers.

13.6 ECOLOGICAL CONCERNS ASSOCIATED WITH DREDGING

The regulatory process has provided a forum for many parties, including state and federal agencies, as well as non-governmental organizations, to express their concerns. Several of the (sometimes conflicting) issues or agency comments, ultimately impacting the nature, scope or timing of dredging includes:

- According to Maine Department of Marine Resources: Dredging should be completed during the recommended work window of January 1 to April 15 to avoid adverse impacts to anadromous fish [1] including striped bass. Striped bass generally migrate to Maine waters in late May and June and are an important recreational fishery, during the summer and early fall.
- According to the federal National Marine Fisheries Service: In order to not adversely affect Essential Fish Habitat, it has been recommended that dredging occur between June 1 and February 15 in Wells Harbor to protect spawning and developing winter flounder. The Service also indicates that no federally listed or proposed threatened or endangered species and/or designated critical habitat for listed species under the jurisdiction of National Oceanic and Atmospheric Administration Fisheries are known to exist in the project area.
- During the course of regulatory negotiations associated with the 2000 Harbor dredge, and intertidal sand bar, located in the center of the Harbor and adjacent to the anchorage area was provided with permanent protection, in the form of a conservation easement to provide shorebird habitat. The conservation easement is approximately 4.7 acres in size.
- According to the Maine Historic Preservation Commission: There are no historic properties (architectural or archaeological) within the area of potential effect.

1) Anadromous fish migrate up rivers from the sea to breed in fresh water.

13.7 MOVING FORWARD

Given the continued siltation of the Harbor and entrance channel, the Town and U.S. Army Corps of Engineers have been working towards obtaining regulatory approval and establishing funding necessary to perform both a major dredge project and establish a program of regular maintenance dredging. Following federal approval of the proposed dredge operations under the National Environmental Protection Act (NEPA), in the fall of 2011, the Maine Department of Environmental Protection issued approval for the U.S. Army Corps of Engineers to proceed with a dredge of the entire federal navigational project to its authorized depth, plus an additional one foot of allowable over-dredge. Concurrent with the U.S. Army Corps of Engineers' dredge event, the Town proposes to dredge the two mooring basins, which cover approximately 83,360 square feet, to a depth of -6 feet MLLW, plus an additional one foot of allowable over-dredge.

Based on hydrographic surveys completed at the time of application submittal, the volume of material associated with the U.S. Army Corps of Engineers' effort was projected at approximately 130,000 cubic yards, and the Town's effort was estimated at approximately 20,000 to 30,000 cubic yards. Disposal of the dredged material would be at Drake's Island Beach and Wells Beach.

The Town and U.S. Army Corps of Engineers have also sought and received State and NEPA approval of a ten-year permit authorizing multiple dredging events. Subsequent dredging events would be of a significantly smaller scale, similar to past efforts undertaken with the ***Currituck***, i.e., dredging the jetty-controlled entrance navigation channel and settling basins.



According to the permit issued by the Maine Department of Environmental Protection, if the dredge operations are not initiated within four years, the permit will lapse and the Town/ U.S. Army Corps of Engineers will need to reapply for a new permit. The current approval, if construction is begun within the four-year time frame, is valid for seven years.

The proposed major dredge action is currently on hold as the U.S. Army Corps of Engineers awaits allocation of funding to address this and other activities. The Town has allocated funding as necessary to represent the required "local match" for the federal funds, and has considered using these monies to address emergency maintenance dredging in the event that the federal government is unable to address their share within the required timeframe.

INSERT APPENDICES



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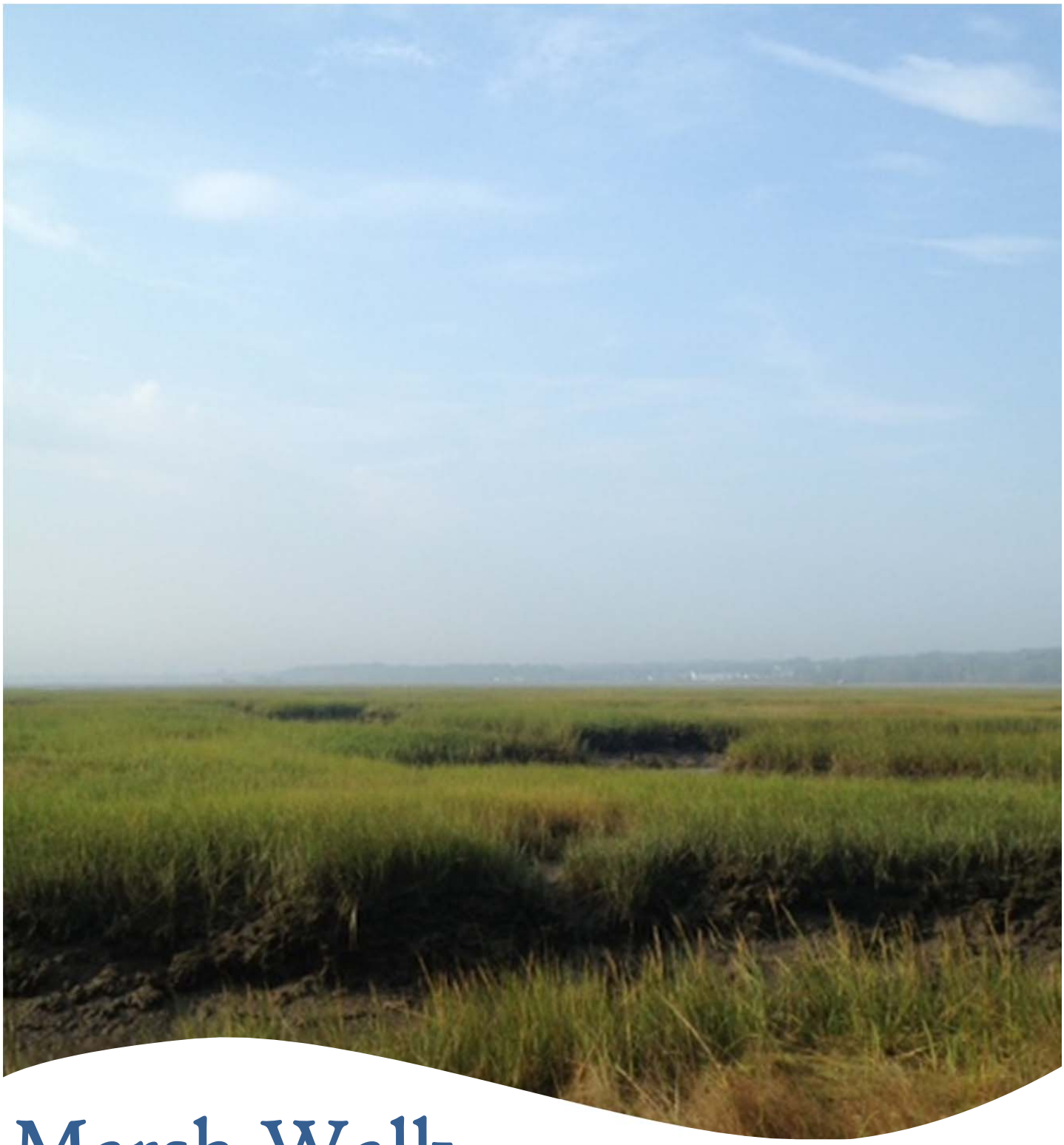
In association with Beth Della Valle and Mathew Eddy.

Land Use
Planning and
Development



Marsh Walk Feasibility Study

W-P# 12549A October, 2013

Town of Wells, ME

WRIGHT-PIERCE
Engineering a Better Environment

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B. Project Memos and Meeting Minutes

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Introduction

The 2013 Marsh Walk Feasibility Study was developed for the Town of Wells by Wright-Pierce. Funding for this plan was provided by the Town.

Guidance and plan development assistance came from Town Staff, most notably, Jonathan Carter, Town Manager and Chris Mayo, Harbormaster. Ward Feurt, Refuge Manager at the Rachel Carson Wildlife Refuge, and Paul Dest, Director of the Wells Reserve, generously offered valuable insight and guidance.

Consultant team members from Wright-Pierce were Jonathan Edgerton, P.E., Senior Vice President; Jennifer Claster, Landscape Architect; Travis Pryor, Landscape Architect; and Thomas Hamill, GIS Analyst.



GIS data was graciously provided by Michael Livingston, Town Engineer, Shannon Belanger, Town Planning Assistant, and Susan Bickford, GIS/Natural Resource Specialist, Wells National Estuarine Research Reserve.

Thanks go to the citizens and representatives of local organizations, and state environmental regulators who participated in the public outreach efforts and meetings, and who provided input.

The draft plan was presented at a Town Council Workshop on September 10, 2013.

1 History of the Marsh Walk

In 1999, the Town hired a consultant to conduct a feasibility study for a boardwalk across the Webhannet Marsh. The report highlighted four major impediments to building a Marsh Walk at that time:

1) Unwillingness to participate by two private landowners

2) Unwillingness to participate by the Rachel Carson National Wildlife Refuge (Rachel Carson *or* the Refuge), manager of most of the land that would be affected by the proposed boardwalk. According to information compiled by the consultant, the Refuge felt that allowing construction of the boardwalk would be contrary to their mission of preserving wildlife habitat

3) Regulatory restrictions affecting what can be built within the marsh, and most particularly in the tidal zone

4) The boardwalk lengths between access points were felt to be too long (one mile, more or less) and monotonous to appeal to a broad public

In response to these obstacles, the study recommended three possible courses of action:

- Alternative A: Create a shorter, looped walkway near the Wells Sanitary District off Mile Road.
- Alternative B: Develop a shorter Marsh Walk in Webhannet Marsh as the centerpiece of a constellation of bird watching stations to be located within the marsh, outside the original project area.
- Alternative C: Buy a large, unspecified estate in Wells, and create a nature center on the land, while also pursuing Alternatives A and B, above.



A view of the marsh from the beach at Harbor Park

In the intervening thirteen years, the Town has held onto its vision of creating a Marsh Walk centered on Harbor Park. Since the 1999 study was performed, one of the privately owned parcels was acquired by the Town of Wells (2013). In addition, local, State, and Federal regulations have changed and Rachel Carson has developed trails at its headquarters off Port Road that receive upwards of 60,000 users a year.

In 2012, Wright-Pierce was retained to complete a new feasibility study for the Marsh Walk. The project was undertaken in conjunction with an update of the Town's Harbor Management Plan and the feasibility assessment of a cross-harbor pedestrian bridge that would link the easterly and westerly shores of the Webhannet River. The report that follows is the result of that effort.

The initial concept for the Marsh Walk included a boardwalk over the marsh that would connect Harbor Park south to Mile Road and north to Drakes Island Road, and, by doing so, create a coastal walking network in Wells that would eventually link up with other existing paths and trails, such as those at Laudholm Farm. Due to the ecological significance of the Webhannet Marsh and the complexity of land ownership in the vicinity of the planned project, the following stakeholders were involved in an evaluation of Marsh Walk concepts that took place between January and August 2013:



Map of Marsh Walk alternatives reviewed with stakeholders in the summer of 2013

- Town of Wells (represented primarily by the Town Manager and Harbormaster)
- Wells Conservation Commission
- Wells Harbor Commission
- Maine Department of Environmental Protection (Maine DEP)
- Maine Department of Inland Fisheries and Wildlife (IF&W)
- United States Army Corps of Engineers (USACE)
- Rachel Carson National Wildlife Refuge (Rachel Carson *or* the Refuge)/USFWS
- Wells National Estuarine Research Reserve (WNERR)
- Maine Audubon

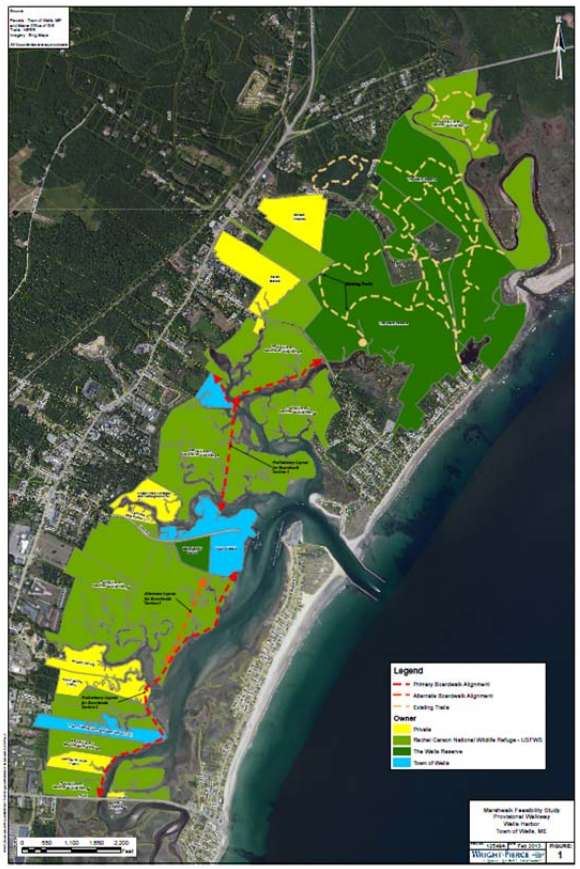
As a result of the site's ecological complexity, and in conformance with the recommendations of key stakeholders, the design was revised to reduce its impact on the marsh.

The figures included in Appendix C document the progression of alternatives that were explored with input from the above-mentioned stakeholders. In August 2013, a final alternative was selected by the Town for the further development of conceptual design and cost estimates. This alternative is described in more detail in the pages that follow.

2 Project Goals

In the Wells Harbor Management Plan Update of 2012, the Harbor Committee developed the following mission statement regarding the management of Wells Harbor:

To manage the use of Wells Harbor by balancing working waterfront interests, local business development, recreational interests, safe Harbor interests, visitor attractions, and community uses within the constraints presented by the natural environment. Recognize the Harbor as a preeminent Maine place for environmental education and ecotourism development.



An early concept plan of the Marsh Walk (in red) crossing the Webhannet Marsh from Drakes Island Road to Harbor Park and south to Mile Road. The tan lines represent existing trails at Laudholm Farm and the Rachel Carson headquarters.

To that end, under the heading of Transportation and Access, the plan listed as a goal "assess[ing] the feasibility of paths and/or boardwalks to connect to Mile Road, Laudholm Farm, and Drake Island and plan for phased implementation of this recommendation."

In the course of conducting this feasibility study, however, it became clear that key stakeholders and regulatory agencies were not supportive of the concept of an elevated Marsh Walk running parallel to the coastline from Drakes Island Road to Mile Road. A primary concern was that the Webhannet Marsh was habitat for the globally rare salt marsh sharp-tailed sparrow, which return faithfully to the same marshes, are declining in number, and need open areas to survive. There was a sense that the boardwalk as proposed might inhibit the movement of the sparrows within the marsh and harm their survival.

The marsh's value as wading bird habitat was also cited as a concern, as was the fact that coastal marshes were threatened by sea level rise and additional stress on the marsh would only make them more vulnerable. It was noted that, as one of the largest unbroken expanses of tidal salt marsh in the State, the continuity and extent of the

Wells Marsh, in and of itself, has important value to wildlife. Finally, it was thought that the boardwalk may have a negative visual impact on the marsh.

A series of case study phone interviews with the managers of wildlife refuge areas containing marsh boardwalks (see April 4, 2013 memo in Appendix B) was conducted to better understand how marsh boardwalks and habitat conservation could potentially coexist. Following these interviews, it was suggested by stakeholders and regulatory agencies that a shorter boardwalk that entered the marsh perpendicular to the shoreline might be preferable to a long boardwalk running parallel to the coast. Another suggestion was to try to set the boardwalk in from the coastline and buffer it with plantings.

Through continuing discussion with the Town, regulatory agencies, and stakeholders, a new concept for the Marsh Walk was developed that would involve following the Harbor Road right-of-way as much as possible and taking advantage of the Town-owned land at Harbor Park, running a pedestrian and bicycle route perpendicular to the coastline along existing infrastructure, and ultimately connecting Harbor Park up to Route One and the Wells Transportation Center.
The goals of the project were clarified and amended to reflect the new concept.

2.1 PROJECT GOALS

The Marsh Walk is currently seen by the Town as promoting the following goals:

- Support eco-tourism and enhance the experience of carless vacationing in Wells by providing a destination for travelers arriving from the Eastern Trail or from the train station at the Wells Transportation Center using public transit or a planned future bicycle pedestrian connection through the Town's school properties and along Harbor Road



The Shoreline Explorer has two signed stops on Harbor Road

- Improve visual access to plant and animal species in a variety of habitats
- Use interpretive signage to educate Marsh Walk users about the ecology of the marsh

- Support and expand research and education about the marsh and its natural communities in partnership with the Wells National Estuarine Research Reserve and Rachel Carson National Wildlife Refuge

- Complement planned improvements to Harbor Park

- Minimize and avoid negative environmental impacts on important wildlife habitats, such as shading of *Spartina alterniflora* grass, and disturbance of shore birds using the marsh

- Construct the project in phases, as funding becomes available

These goals are still consistent with the recommendations of Harbor Management Plan Update, which includes the goal of improving Harbor Park to better serve the community for the next 10-20 years. Improvements would enhance the aesthetics of facilities, improve the quality of materials used, expand activities, and reduce management demands. These improvements would also include changes to the existing parking area to increase the efficiency of its layout, improve aesthetics, and provide stormwater management.

Encouraging use of public transit, bicycling, and walking is another goal of the Harbor Management Plan Update. It recommends designing and constructing sidewalks, bikepaths, and streetscape improvements and providing pedestrian amenities along Harbor Road and within Harbor Park, while minimizing the need to widen impervious surfaces and the existing roadway.

Finally, these goals are consistent with Part 4: Capital Investment Strategy of the Town's 2005 Comprehensive Plan, which lists the following as capital investment needs (Pp. 102-103):

Marsh Walk: *Public interest is strong for some type of coastal walkway along the Webhannet River. However, abutting property owners have resisted the development of such a facility, and community issues would need to be resolved before pursuing the Marsh Walk. The estimated cost of this project is $750,000.*
Priority Rating: Desirable, further study required

Route 1/Elementary School Path: *A need has been identified for a walking path connecting Route 1 to the new Wells Elementary School on Route 109 to help pedestrian access for children. This trail could be built on property owned by the Wells-Ogunquit CSD. Its estimated cost is $40,000.*
Priority Rating: Desirable"

3 Land Ownership and Project Partners

Because the Town of Wells does not have exclusive ownership of the land that would be impacted by the Marsh Walk, it is important to identify the prospective affected land owners and work with them to obtain the easements and permissions needed. Figure 1 illustrates land ownership in the vicinity of the proposed Marsh Walk.

Property and right-of-way boundaries depicted on Figure 1 and referenced in this report are based on mapping provided by the Town and should be considered approximate, for planning purposes only. Any future design development of the Marsh Walk should begin with a boundary survey, to firmly establish ownership and determine precisely where rights and permissions are needed along the proposed Marsh Walk route.

3.1 TOWN OF WELLS



Harbor Park

The Town of Wells owns Harbor Park, as well as much of the land at the eastern terminus of Harbor Road. It is envisioned that Marsh Walk users arriving in cars would use existing Town parking located inside the Park. Alternatively, they could arrive on the Shoreline Explorer bus, which has one stop across from the Fisherman's Catch Restaurant on Harbor Road and another stop at the public restroom in Harbor Park. Marsh Walk users could also arrive on foot or by bicycle using the proposed future connection from the Wells Transportation Center to Harbor Road.

The Town also owns the right-of-way along Harbor Road. This right-of-way abuts land owned by the USFWS, and that is part of the Rachel Carson National Wildlife Refuge (Rachel Carson *or* the Refuge), colored light green on Figure 1.

The Town has fee interest in another parcel adjacent to Harbor Park that is managed by the Wells NERR under a conservation easement held by the Maine Department of Conservation (DOC). The property is labeled "Managed by NERR" and is coded in the NERR color on Figure 1, and is described in more detail below.

3.2 RACHEL CARSON NATIONAL WILDLIFE REFUGE

The U.S. Fish and Wildlife Service (USFWS), manager of the Refuge, owns the vast majority of land in the vicinity of Harbor Road. The currently proposed Marsh Walk alignment very likely encroaches beyond the right-of-way to affect land owned by USFWS, but without a boundary survey it is unclear exactly where and to what extent these impacts occur. This study has assumed that constructing the Marsh Walk will require some degree of cooperation with and permission from USFWS/the Refuge.



A view of the marsh from the trails at the Rachel Carson headquarters on Port Road in Wells

The Town has suggested in the past that it could pay for the Marsh Walk's construction incrementally through the fees it collects from the USFWS every year in lieu of taxes, as a result of the Revenue Sharing Act.

The USFWS has eliminated its internal grant program, and the Refuge's budget is being reduced due to Sequestration. The Refuge, however, has indicated that it would be willing to partner with the Town in identifying and applying jointly for external grants, which can be expected to lead to stronger applications. A joint application that focuses on the public health benefits of the Marsh Walk was suggested as a possible strategy for receiving grant funding.



Regulatory trail signage at the Rachel Carson headquarters

If the Marsh Walk does, in fact, occur partially on USFWS land, the Refuge would want to come to an agreement with the Town about hours of operation and permitted uses, recognizing that the Marsh Walk will function similarly to a public sidewalk where it follows Harbor Road. Typically, the Refuge is only open dawn to dusk, and the Refuge would prohibit motorized vehicles, littering, any activity off the trail, and unleashed pets. USFWS's participation in the boardwalk would be part of a good faith effort that would assume that Harbor Park is not going to undergo significant commercial development. USFWS has indicated that it would be willing to assist with the development of educational materials along the Marsh Walk.

Given the Refuge's current funding outlook, it would want to have a clear understanding of who is maintaining and caring for the boardwalk. Pursuing the project will require staff time, and the Refuge will need to make sure it has the resources required for any future involvement.

According to the Refuge manager, Ward Feurt, there are two different ways the Town could pursue legal permission from the Refuge for the Marsh Walk, if and where it affects USFWS/Rachel Carson land:

- **Obtain a Special Use Permit from USFWS**

  Advantages: Low to no cost and low effort required for application. The Refuge would obtain the permit.

  Disadvantages: A new permit would need to be granted every five years, so the permission would not be permanent.

- **Negotiate a right of way that travels with the deed from the USFWS Division of Realty**

  Advantages: Permanent.

  Disadvantages: The process would be more involved than obtaining a special use permit, both from a legal, and potentially also financial, perspective.

3.3 WELLS NATIONAL ESTUARINE RESEARCH RESERVE



The upland to the left of the photo is managed by the WNERR; the marsh to the right is part of the Rachel Carson Refuge, owned by the USFWS. This photo was taken from the south side of Harbor Road.

While the WNERR does not own land directly affected by the boardwalk, it does manage the approximately 10 Acre piece of land comprising the southern edge of Harbor Park. This land was created from dredge fill, and there has been discussion over the last ten years relative to restoring it to marsh, possibly using it as a demonstration site to evaluate and interpret different marsh restoration techniques. Ten acres of marsh would be restored, which could take up to two years and which would be done at a considerable cost. Because of the potential costs involved, this project is not seen as occurring in the short term. Funding would need to be secured in order for a restoration to move forward.

In the meantime, the land is undergoing natural succession, with areas of open field now giving way to coastal shrublands and early successional forest communities, attracting a wide variety of wildlife within a small geographic area.

The WNERR is also an important project partner in the sense that its educational mission is compatible with that of the Marsh Walk and it could potentially contribute to the development of educational materials along the Marsh Walk. The WNERR's inventory of data relating to the marsh has been helpful in assessing preliminary alignments for the boardwalk.

Source:

Parcels - Town of Wells, ME
and Maine Office of GIS
Imagery - ESRI World Imagery

All boundaries are approximate

N

Rachel Carson
National Wildlife Refuge

Cardinals
Real Estate LLC

Harbor Rd

Town of Wells

Harbor
Park

Managed by
NERR

Rachel Carson
National Wildlife Refuge

Stephen Eaton Ln
Brook Ln
Sanford Rd
1
Post Rd
Main St
Central Ave
Morison Ave
Davis St
South St

Legend

- Proposed Overlook
- Proposed Boardwalk Trail
- Proposed Trail on Grade

Owner

- Private
- Rachel Carson National Wildlife Refuge - USFWS
- The Wells Reserve (NERR)
- Town of Wells

0 150 300
Feet

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Marsh Walk Feasibility Study
Ownership
Harbor Road
Town of Wells, ME

PROJ NO:	DATE:	FIGURE:
12549A	Sep 2013	1

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4 Environmental Conditions

4.1 GENERAL

The Webhannet River is a tidal river that flows northward behind Wells Beach, winding for four miles through extensive tidal marshes to the Atlantic Ocean. It divides Drake's Island Beach to the north from Wells Beach to the south as it enters the Ocean through a dredged channel with stone jetties. The estuary includes about 50 acres of open water, 350 acres of intertidal land (below mean high water), and 810 acres of irregularly flooded (high) salt marsh (USACE EA 2004).



Kayakers on the Webhannet River near the beach at Harbor Park

Wells Harbor supports a wide range of species, including a diverse population of bird species, because of the many habitat types it contains. These include tidal sand, mudflat, low salt marsh, high salt marsh, upland, dune and beach, pannes, and both freshwater and brackish ponds. (USACE EA 2004). The marsh itself, as part of the larger Wells and Oqunguit Marsh Complex, is the second largest salt water marsh in the State and considered a Focus Area of Statewide Ecological Significance, due to its importance in preserving biodiversity. Focus Areas of Statewide Ecological Significance are "landscape scale areas that contain exceptionally rich concentrations of at-risk species and natural communities and high quality common natural communities, significant wildlife habitats, and their intersection with large blocks of undeveloped habitat" (Maine Natural Areas Program http://www.maine.gov/doc/nrimc/mnap/focusarea/).

Harbor Road extends into the Webhannett Marsh, apparently cutting off a channel that appears to have connected prior to the road's development. As part of this project, a culvert reconnecting the two sides of the marsh across Harbor Road has been discussed. This will be addressed more fully in Section 5.

Environmental considerations that pose regulatory and physical constraints to Marsh Walk placement are described in detail below.

4.2 SOILS

Deep, unconsolidated organic soils can pose significant challenges for the construction of anchored boardwalks. Figure 2 illustrates the NRCS soil categories found in the project area.



Marsh soils near proposed Overlook 3

In the project areas adjacent to the marsh, soils are classified as "Sulfihemists, frequently flooded", in Hydrologic Soil Group D. These soils are found in the toe slope of salt marshes. They are deep, and very poorly drained, comprised of mucky peat and muck, with a parent composition of organic material. In theory, these soils could pose a difficulty for boardwalk construction. The piers supporting the boardwalk, however, will most likely be driven into the fill material that was imported for the creation of Harbor Road, or that was brought in as part of the dredge fill that created the land area adjacent to Harbor Park.

Closer to Harbor Park, soils are classified as "Udipsamments – Dune land complex", in Hydrologic Soil Group A. These soils are found on gently to moderately sloping dune fields. They are deep, and excessively drained, comprised of very fine sandy loam, with a parent material of beach sand. These soils are generally amenable to the construction of trails and kiosks.

It is recommended that soil borings be conducted to assess the geotechnical properties of the soils in the areas intended for boardwalk and overlook construction, as a necessary step in design development.

4.3 INTERTIDAL RANGE – CURRENT AND FUTURE PROJECTIONS

The HAT line is used to define a coastal wetland's upland edge. Based on Maine DEP 2012 Levels, accepted for regulatory permitting purposes, the Highest Annual Tide (HAT) for this area is 6.4 feet using NAVD88 vertical datum as a reference. Using LiDAR data from NOAA, this study has created two foot contours for the project area and has mapped the approximate HAT line of 6.4 feet. This information is not based on field surveys and should be regarded as suitable for planning

level study only. As ***Figure 3 illustrates, none of the planned Marsh Walk features appear to fall within the coastal wetland, as defined by the HAT line.***

Chris Mayo, Wells Harbormaster, has noted that the astronomical high tide in the project area is 11', with water reaching an average depth of approximately 6" across the marsh at high tide. This is consistent with the HAT levels based on standard published tide tables (11.4 feet), which reference other nationally recognized vertical datums. Based on this tide information, the Town estimates that keeping boardwalks and overlooks three feet above the level of the marsh should be adequate to protect them from typical current storm surges.

Converting the Harbormaster's information to the datum associated with the planning level mapping completed for this study, it is anticipated that the current Marsh Walk and overlooks would generally be positioned 3'-0" or more above the mapped HAT level of 6.4 feet, with most of the boardwalk portion and overlooks occurring at about 10'-0", rising to 12'-0" in the vicinity of the Fisherman's Catch Restaurant.

Maine DEP
Highest Annual Tide (HAT) Levels for Year 2012
Maine Coast from Eastport to Portsmouth, NH

Location	2012 HAT (Tide Table- ft.)	HAT (NGVD29) (elev. feet)	HAT (NAVD88) (elev. feet)	Ref. Station
Vaill Island	11.7	7.3	6.5	Portland
Long Island	11.9	7.4	6.7	Portland
Cow Island	11.9	7.4	6.7	Portland
Presumpscot River Bridge	12.0	7.4	6.7	Portland
Back Cove	11.6	7.1	6.3	Portland
Great Diamond Island	11.9	7.4	6.7	Portland
Peak Island	11.8	7.4	6.7	Portland
Cushing Island	11.8	7.3	6.6	Portland
PORTLAND	11.9	7.4	6.7	Portland
Fore River	11.9	7.4	6.6	Portland
Portland Head Light	11.6	7.2	6.4	Portland
MAINE, outer coast				
Old Orchard Beach	11.6	7.3	6.5	Portland
Camp Ellis, Saco River Entrance	11.6	7.2	6.4	Portland
Biddeford, Saco River	11.8	7.3	6.6	Portland
Cape Porpoise	11.3	7.0	6.3	Portland
Kennebunkport	11.6	7.2	6.5	Portland
Wells, Webhannet River	11.4	7.1	6.4	Portland
Cape Neddick	11.3	7.0	6.3	Portland
York Harbor	11.3	7.1	6.4	Portland
Fort Point, York Harbor	11.3	7.0	6.3	Portland
Seapoint, Cutts Island	11.4	7.1	6.4	Portland
MAINE and NEW HAMPSHIRE				
Portsmouth Harbor				
Jaffrey Point	11.3	7.0	6.3	Portland
Gerrish Island	11.3	7.0	6.3	Portland
Fort Point	11.2	7.0	6.3	Portland
Kittery Point	11.4	7.1	6.4	Portland
Seavey Island	10.6	6.6	5.9	Portland
Portsmouth	10.3	6.4	5.7	Portland
Piscataqua River				
Atlantic Heights	9.8	6.2	5.4	Portland
Dover Point	8.3	5.3	4.6	Portland
Dover, Cocheco River	9.2	5.8	5.1	Portland
Salmon Falls River	8.9	5.7	5.0	Portland
Squamscott River RR. Bridge	8.9	5.7	5.0	Portland
Gosport Harbor, Isles of Shoals	11.1	7.0	6.2	Portland
Hampton Harbor	10.9	6.7	6.0	Portland

NOTE: The HAT elevations provided in this table may be used to survey locate the upland edge of coastal wetlands for regulatory purposes, under both the Natural Resources Protection Act and the Mandatory Shoreland Zoning Act. If you have any questions related to this document or the data provided, please contact the Department of Environmental Protection, Division of Land Resource Regulation at 287-3901.

Acknowledgements: Stephen M. Dickson, State Marine Geologist, Maine Geological Survey, was instrumental in providing the data necessary to construct this document. The Department appreciates his significant contributions.

2012 Maine DEP HAT chart

It will be necessary to perform topographic survey and to firmly establish the HAT line within the project area based on local benchmarks for this project to advance into permitting. Building permanent structures on or over tidal areas requires a Maine DEP regulated full Natural Resource Protection Act (NRPA) permit and U.S. Army Corps of Engineers State Programmatic General Permit, and it will be important during permitting to demonstrate that the Marsh Walk and associated structures are outside the coastal wetland to the greatest extent possible.

4.4 SEA LEVEL RISE

Sea level rise is caused primarily by two factors. The first is thermal expansion of the sea as the water warms and expands. The second is the melting of glaciers and ice sheets in Antarctica and Greenland. Scientists cannot predict exactly how much the sea level is expected to rise along the Maine coast, but data clearly indicates that the sea has risen in the last hundred years and trends indicate that it will continue to do so.

Since 2004, the State of Maine has used a rate of a 2 foot sea level rise over the next 100 years to plan for changes in the coastal sand dune system, but has not established standards for planning related to sea level rise within any other context. According to more recent projections of sea level rise, 2 feet over 100 years is conservative, with 2008 work by the Natural Resource Council of Maine suggesting a range of 3 feet to 20 feet of static sea level rise in the next 100 years. In the face of this uncertainty, some Maine planners have begun using the 1978 benchmark 100 year storm level of 2 meters of static rise (about 6.5 feet) as a 2100 sea level rise scenario for forecasting purposes.



Sea level rise is considered a threat to the Webhannet marsh

According to analysis by Peter Slovinsky at the Maine Geological Survey, sea level in Maine has been rising at a rate of about 1.8 mm/year between 1912 and 2009. Based on measurements, this has amounted to about a 7" rise along the Southern Maine coast - the fastest increase in sea level rise in Maine in 3000 years ("Adaptation to Sea Level Rise – A Regional Approach in Saco Bay, Maine"). A 2012 study by the Virginia Institute of Marine Science (VIMS) at the College of William and Mary found that sea level rise started accelerating abruptly in 1987 in the northeast United States and its rate is projected to continue to increase. The VIMS study projects a .7 meter +/- .15 meter (2.3 feet +/-.5 feet) change in sea level in Boston by 2050.

Assuming a 3 foot change in static sea level by 2050, the proposed boardwalk portion of the Marsh Walk and the overlooks will remain above sea level, but will be subject to storm surges.

Studies indicate that as the sea level rises, the salt marshes at the WNERR will have a difficult time adapting. Typically, as sea level rises, a marsh would accrete in a landward direction. However, the sharp change in topography between the Webhannet marsh and the adjacent upland will make this landward migration difficult, thus threatening the continued existence of the marsh (WNERR report 18-19). Due to the stresses associated with sea level rise, marsh managers currently regard any additional stresses to be unacceptable.

In an effort to limit the Marsh Walk's impact on the marsh and the species that inhabit it, its alignment has been rotated 90 degrees to eliminate crossing any portion of the marsh. What was originally envisioned as over a mile of elevated boardwalk across open marsh has been

reconsidered as a walkway following an existing public roadway, with modest marsh overlooks at three locations. Where possible, the walkway is intended to take the form of an asphalt or stone dust trail on grade. Where building a trail on grade would require fill to be placed adjacent to the marsh, a boardwalk will be constructed instead, to avoid the potential for granular fill to migrate into the marsh.

The boardwalk will be constructed to marine standards and should be fairly resilient to storm surges.

4.4 WINTER CONDITIONS

Both the Harbormaster and Rachel Carson Refuge personnel have verified that the marsh does freeze in winter. Migrating ice has been cited as a concern for any structure located within the marsh. The Marsh Walk is not anticipated to involve structures within the coastal wetland, and is therefore not anticipated to be subject to damage from ice.

4.5 FLORA

Spartina patens (Salt Marsh Hay) is the predominant plant species in the high marsh. Smaller areas of *Spartina alterniflora* (Smooth Cord Grass) in the low marsh area along the west edge of the Webhannet River channel and *Juncus gerardii* (Salt Marsh Rush) along the upper, northwest edge of the high marsh area are also present. *Spartina* salt marsh is considered a rare and exemplary natural community. To avoid shading marsh grasses, for every foot of boardwalk width, the USACE requires that the lowest part of the boardwalk deck be an equal distance above the marsh vegetation growing beneath it. The current Marsh Walk alignment does not propose constructing elevated structures over the marsh, and thus is not anticipated to impact marsh grasses.



Spartina patens (Salt Marsh Hay) in Webhannet Marsh

4.6 FAUNA

The marsh provides important nesting and feeding grounds for waterfowl, waterbirds, shorebirds, raptors, and passerines (WNERR report 181). Waterfowl primarily use the marsh for wintering and migratory habitat, though a few species also breed in the marsh (WNERR report 181). The

salt marsh and mudflats are habitat for several priority shorebirds. (WNERR report 182). A wide variety of wading birds feed within the tidal salt marshes and rivers. (WNERR report 182). Salt marsh and Nelson sharp-tailed sparrows, of important conservation value, nest in the tidal marshes and interbreed there. (WNERR report 182). Finally, nearby Laudholm Beach is an important breeding area of the state-endangered least tern and federally threatened, state endangered piping plover (WNERR report 183). Laudholm Beach has been designated as essential habitat by the State of Maine, because of the presence of these species. New England Cottontail, a candidate for the federal Endangered Species list, is present in some areas of the upland edge of the marsh.



Salt marsh sharp-tailed sparrow (http://www.fws.gov/refuge/rachel_carson/wildlife_and_habitat/index.html

Much of the marsh is mapped as tidal wading bird/waterfowl habitat and salt marsh sharp-tailed sparrow habitat by the Maine Department of Inland Fisheries and Wildlife (see Figures 4A and 4B). These mapped habitat areas overlap with parts of the planned Marsh Walk alignment. While salt marsh sharp-tailed sparrows are not listed as threatened or endangered, they are of concern to the Refuge, due to their narrow habitat requirements and shrinking habitat. Tidal wading bird/waterfowl habitat in a wetland of over 25 Acres is considered high value and is classified under Maine's Natural Resource Protection Act (NRPA) as a significant wildlife habitat. Any work in the significant wildlife habitat must meet the NRPA general standards of avoidance, minimal alteration, no unreasonable impact, and possibly compensation if the DEP determines that an impact to significant wildlife habitat will cause habitat functions or values to be lost or degraded as identified by the department.

Additionally, an area of shorebird feeding and roosting habitat has been identified near the proposed Marsh Walk alignment (Figure 4A). The mapped area includes a regulatory buffer of 250 feet. The Marsh Walk and associated structures do not fall within the mapped shorebird feeding and roosting area.

At the request of Ward Feurt, manager of the Rachel Carson National Wildlife Refuge, case study interviews were performed with biologists and managers of National Wildlife Refuges where boardwalks have been constructed through tidal marshes (see Appendix B). The request was related to a concern that the boardwalk then proposed would inhibit movement of salt marsh sharp-tailed sparrows. Interviewees were asked how boardwalk design minimized impacts to wildlife, and what observations have been made with regard to the boardwalks' impact on wildlife.

Themes that emerged from the interviews were:

- There is a lack of data demonstrating the effects of human activity on marsh bird behavior
- A boardwalk across the marsh would probably not create a barrier to movement for salt marsh sharp-tailed sparrows
- A boardwalk would reduce the amount of breeding ground in the marsh. Salt marsh sharp-tailed sparrows and other nesting birds will not nest within a certain distance from the boardwalk, due to human and dog activity. The distance is species-specific. Staff members at the Great Bay National Estuarine Research Reserve in New Hampshire have observed salt marsh sharp-tailed sparrows nesting close to an area heavily used by people and dogs.
- A boardwalk would create a perch for predators and would make it easier for them to eat the eggs of nesting birds.
- Because of mapped least tern and wading bird habitat, it would be difficult to permit a boardwalk in the marsh.
- The boardwalks discussed had either been in place for 15+ years, or were sited in areas that had previously been used, formally or informally, as trails. Thus, they were built before permitting became difficult, or were placed in areas where human disturbance had historically occurred.
- Few, if any, of the boardwalks discussed were built in a free-flowing, previously undisturbed salt marsh. The Gordon's Pond and Nisqually boardwalks follow former dikes. The Edwards Environmental Education Center boardwalks are in an area cut off by railroad tracks. Parker River's boardwalk is in an impounded, previously saline marsh.
- Building the boardwalk on Town land and/or as part of a marsh restoration effort seemed like the most viable options, based on the outcome of the interviews.
- Placing a boardwalk on the edge of the marsh would reduce the potential impact on breeding ground, by limiting impact to one side of the boardwalk.

Source:

Parcels - Town of Wells, ME and Maine Office of GIS
Soils - NRCS
Imagery - ESRI World Imagery

All boundaries are approximate

N

Rachel Carson
National Wildlife Refuge

Cardinals
Real Estate LLC

Harbor Rd

Town of Wells

Managed by
NERR

Harbor
Park

Rachel Carson
National Wildlife Refuge

Phen Eaton Ln
Brook Ln
Sanford Rd
1
Post Rd
Main St
Central Ave
Morison Ave
Davis St
South St

Legend

- Proposed Overlook
- Proposed Boardwalk Trail
- Proposed Trail on Grade

NRCS Soil Name

- Adams loamy sand, 0 to 8 percent slopes
- Adams loamy sand, 15 to 40 percent slopes
- Croghan loamy sand, 0 to 8 percent slopes
- Croghan-Urban land complex, 0 to 8 percent slopes
- Lyman-Rock outcrop complex, 8 to 15 percent slopes
- Naumburg sand
- Sulfihemists, frequently flooded
- Udipsamments-Dune land complex
- Urban land
- Water bodies

0 150 300
Feet

Marsh Walk Feasibility Study
Soils
Harbor Road
Town of Wells, ME

PROJ NO:	DATE:	FIGURE:
12549A	Sep 2013	2

WRIGHT-PIERCE
Engineering a Better Environment

Source:

2004 ME Coastline
LiDAR/Contours - NOAA
Parcels - Town of Wells, ME
and Maine Office of GIS
Imagery - ESRI World Imagery

All boundaries are approximate

N

Rachel Carson
National Wildlife Refuge

Cardinals
Real Estate LLC

Harbor Rd

Town of Wells

Managed by
NERR

Harbor
Park

Rachel Carson
National Wildlife Refuge

Stephen Eaton Ln
Brook Ln
Sanford Rd
1
Post Rd
Main St
Central Ave
Morrison Ave
Davis St
South St

Legend

- Proposed Overlook
- Proposed Boardwalk Trail
- Proposed Trail on Grade
- HAT (NAVD88) 6.4 feet
- 2-Ft Contours

0 150 300
Feet

Marsh Walk Feasibility Study
Highest Annual Tide (NAVD88)
Harbor Road
Town of Wells, ME

PROJ NO:	DATE:	FIGURE:
12549A	Sep 2013	3

WRIGHT-PIERCE
Engineering a Better Environment

Source:

Parcels - Town of Wells, ME
and Maine Office of GIS
Habitat Data - Maine DIFW
Imagery - ESRI World Imagery

All boundaries are approximate

N

Rachel Carson
National Wildlife Refuge

Cardinals
Real Estate LLC

Harbor Rd

Town of Wells

Harbor
Park

Managed by
NERR

Rachel Carson
National Wildlife Refuge

***Shorebird
Feeding &
Roosting Habitat***

***Includes 75' disturbance
protection zone
around feeding site
Includes 250' disturbance
protection zone
around roosting site***

***Tidal Wading Bird
& Waterfowl Habitat***

Sanford Rd

Brook Ln

Post Rd

Main St

Central Ave

Morrison Ave

Davis St

South St

1

Legend

- Proposed Overlook
- Proposed Boardwalk Trail
- Proposed Trail on Grade
- Tidal Wading Bird/Waterfowl Habitat
- Shorebird Feeding/Roosting Habitat
- Piping Plover and Least Tern Habitat (not in project area)
- Inland Wading Bird/Waterfowl Habitat (not in project area)
- Significant Vernal Pools (not in project area)
- Roseate Tern Habitat (not in project area)
- Seabird Nesting Islands (not in project area)

0 150 300
Feet

Marsh Walk Feasibility Study
Essential Habitat
Harbor Road
Town of Wells, ME

PROJ NO:	DATE:	FIGURE:
12549A	Sep 2013	4A

WRIGHT-PIERCE
Engineering a Better Environment

Source:

Parcels - Town of Wells, ME and Maine Office of GIS
IFW Rare Animal Polygon Data - Maine DIFW
Imagery - ESRI World Imagery

All boundaries are approximate

N

Rachel Carson
National Wildlife Refuge

Cardinals
Real Estate LLC

Harbor Rd

Town of Wells

Harbor
Park

Managed by
NERR

Saltmarsh
Sharp-Tailed
Sparrow Habitat

Rachel Carson
National Wildlife Refuge

Stephen Eaton Ln
Brook Ln
Sanford Rd
1
Post Rd
Main St
Central Ave
Morrison Ave
Davis St
South St

Legend

- Proposed Overlook
- Proposed Boardwalk Trail
- Proposed Trail on Grade
- Saltmarsh Sharp-tailed Sparrow
- Citrine Forktail (not in project area)
- Harlequin Duck (not in project area)
- Least Tern (not in project area)
- New England Cottontail (not in project area)
- Piping Plover (not in project area)
- Salt Marsh Tiger Beetle (not in project area)

0 150 300
Feet

Marsh Walk Feasibility Study
Essential Habitat
Harbor Road
Town of Wells, ME

PROJ NO:	DATE:	FIGURE:
12549A	Sep 2013	4B

WRIGHT-PIERCE
Engineering a Better Environment

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

5 Regulatory Requirements

5.1 OVERVIEW

As described in Section 4, the proposed Marsh Walk's adjacency to the Webhannet Marsh makes it subject to regulatory requirements. The regulations that are most relevant to the construction of the Marsh Walk are as follows:

- **Local Regulations**: Town Code Section 116 Floodplain Management, Section 124 Harbor Ordinance, and Section 145 Article V, District Regulations
- **State Regulations:** Maine Natural Resource Protection Act (NRPA) (MaineDEP)
- **Federal Regulations:** Section 404 of the Clean Water Act

Several meetings were held with state and federal regulators and resource managers to review potential Marsh Walk alignments and concepts, including a site walk held on June 24th, 2013. See Appendix B for full meeting notes. Project specific comments are included after the descriptions of applicable regulations in the sections below.

Based on LiDAR data available from NOAA, it appears that none of the proposed marsh walk project lies within the coastal wetland, however, storm surges and future sea level rise will need to be considered where the marsh walk is in close proximity to the marsh. Performing a survey of the site will help to establish the exact location of the marsh's boundary, and will help to make clear the regulatory ramifications of this project. At this time, however, is anticipated that the following conditions will likely necessitate permits to be acquired from the Town and State:

- The project is located near tidal wading bird and waterfowl habitat (considered significant by Maine DEP) and is within salt marsh sharp-tailed sparrow habitat
- Parts of the project are located within the 100 year flood zone
- Parts of the project may be located within 25' of the regulatory boundary of the tidal marsh
- Parts of the project are within 75' of a protected natural resource
- The project is within the Town's Resource Protection and Shoreland Overlay Districts

It is recommended that the approved concept be reviewed with regulators another time after detailed topographic and boundary survey (including a ground-based determination of the HAT line) have been performed and before commencing design development.

5.2 LOCAL REGULATIONS

A. Town Code Section 116 Floodplain Management



The Marsh Walk would follow Harbor Road, taking advantage of breaks in the existing vegetation to provide views into the marsh

As illustrated on the attached FEMA flood zones map, Figure 6, the boardwalk portion of the Marsh Walk and a small portion of the at grade trail lie within an area of special flood hazard, the 100-year floodplain, Zone AE, which means that the area has a 1% chance of flooding and base flood elevations are available. In this case, the base elevation is 10. Newer flood projections place the base elevation at 9. The Marsh Walk is not located in a high velocity area.

Because the Marsh Walk would constitute "development", a flood hazard development permit would be required under the Town's Floodplain Management Ordinance. According to the Ordinance, all development in Zone AE must:

(1) Be designed or modified and adequately anchored to prevent flotation (excluding piers and docks), collapse or lateral movement of the development resulting from hydrodynamic and hydrostatic loads, including the effects of buoyancy;

(2) Use construction materials that are resistant to flood damage;

(3) Use construction methods and practices that will minimize flood damage;

The Town's Code Enforcement Officer had confirmed, based on an earlier design concept, that for the purpose of the ordinance, the boardwalk and overlook portions of the construction would be considered a wharf/pier/dock.

This should be reviewed with the Town's code Enforcement office again, now that a final design concept has been chosen, before advancing into design development.

The ordinance states that wharves, piers and docks are permitted in Zone AE, in and over water and seaward of the mean high tide if the following requirements are met:

(1) Wharves, piers, and docks shall comply with all applicable local, state, and federal regulations; and

(2) For commercial wharves, piers, and docks, a registered professional engineer shall develop or review the structural design, specifications, and plans for the construction.

Additionally, the ordinance states that within coastal floodplains, "all new construction located within Zones AE, A, and VE shall be located landward of the reach of mean high tide".

The proposed Marsh Walk is anticipated to be landward of the mean high tide.

B. Town Code Section 124 Harbor Ordinance

The Harbor Ordinance applies to "all shores of Wells Harbor as described in the definition of "Wells Harbor" in § 124-3, with the addition of the channel to the outer end of the north and south jetties, all of its access roads and lands adjacent thereto, both now and hereafter created by natural or mechanical erosion, including acreage on all public properties" as well as "the jetties, access roads, parking lots and all other public properties adjacent thereto."

Under the Harbor Ordinance, "no dock, floats or any other type of structure shall be erected in Wells Harbor without first obtaining all necessary permits, including from the Board of Selectmen and the Army Corps of Engineers whenever required."

C. Town Code Section 145, Article V District Regulations

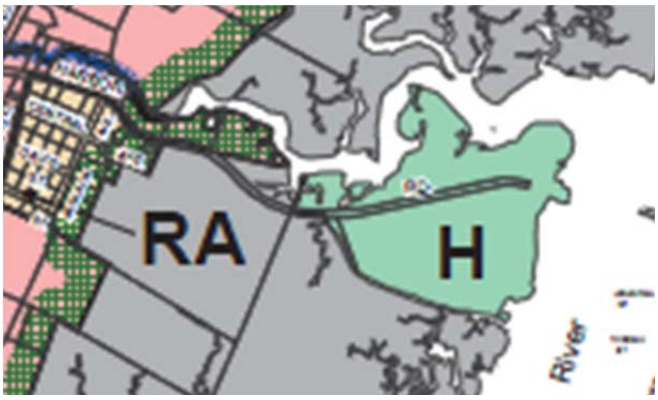
1) Defining the Marsh Walk:

According to the Town's Code Enforcement Officer, the Marsh Walk would fall under the heading of Passive Recreation under the Town's District Regulations. Passive Recreation is defined as "outdoor recreational activities, such as hiking, fishing and hunting, which involve no structural or mechanical components or facilities or no modification of the landform or landscape."

2) Zones and Permitted Uses

The proposed Marsh Walk falls within two zones, Resource Protection (RP) and the Harbor District (H).

a) Harbor District (H): Passive recreation and low-intensity commercial recreation are permitted uses. Estuarine and marine research and educational facility, and municipal facilities are permitted with approval of a site plan and required permits. Setbacks: All structures must be located 6′-0″ from lot lines other than street rights-of-way; 4′-0″ from a lot line abutting any street right-of-way



Excerpt from the Town's official zoning map

b) Resource Protection District (RP): Passive recreation and wildlife habitat management are permitted uses. Municipal facilities and piers, docks, and wharves are permitted with approval of a site plan and required permits. There are no dimensional requirements, except as may be required by the Planning Board for the protection of the public health and safety.

c) Shoreland Overlay District: All structures must be located 75′-0″ from the upland edge of a wetland, which may be reduced to the average of the setbacks of structures within 200′-0″ of the proposed structure on lots abutting the wetlands but shall not be less than 25′-0″. The minimum setback from all other water bodies shall be 75′-0″ from their high-water line. A footpath not to exceed 10 feet in width as measured between tree trunks is permitted, provided that a cleared line of sight to the water through the buffer strip is not created. Clearing of vegetation for development is strictly regulated.

The above requirements may make it difficult to construct the Marsh Walk, unless it is considered to fall under the heading of wharfs, piers, and docks.

§ 145-33 (G.) Piers, docks, wharves, breakwaters, causeways, marinas, bridges and other structures and uses extending over or beyond the high-water line of a water body, stream or within a wetland. In addition to federal or state permits which may be required for such structures and uses, they shall conform to the following:

(1) Shore access shall be developed on soils appropriate for such use and constructed to control erosion.

(2) The location shall not interfere with developed or natural beach areas.

(3) The facility shall be located to minimize adverse effects on fisheries.

(4) The facility shall not be larger in dimension than necessary to carry on the activity and be consistent with existing conditions, use and character of the area.

(5) No new structure shall be built on, over or abutting a pier, wharf, dock or other structure extending beyond the high-water line of a water body or within a wetland unless the structure requires direct access to the water as an operational necessity.

(6) No existing structures built on, over or abutting a pier, dock, wharf or other structure extending beyond the high-water line of a water body or within a wetland shall be converted to residential dwelling units in any district.

(7) Structures built on, over or abutting a pier, wharf, dock or other structure extending beyond the high-water line of a water body or within a wetland shall not exceed 20 feet in height above the pier, wharf, dock or other structure.

5.3 STATE REGULATIONS

A. Natural Resources Protection Act (NRPA)

Maine DEP's Chapter 310 Wetlands and Water Body Protection applies to the alteration of a coastal wetland. Under the act, all coastal wetlands are considered Wetlands of Special Significance. Activities within 75 feet of a protected natural resource, including Wetlands of Special Significance, are regulated under NRPA.

If a project falls within 25-75 feet of a protected natural resource, it can potentially qualify for a NRPA Permit by Rule (PBR), which is a type of approval for an activity that requires a permit under the Natural Resources Protection Act and that will not significantly affect the environment if carried out in accordance with Maine DEP's Chapter 305 Permit by Rule. PBR activities generally have less of an impact on the environment than an activity requiring an individual permit. Obtaining a PBR typically requires less effort than obtaining an individual permit.

If an activity (such as the construction of the Marsh Walk) falls within 25 feet of a protected natural resource, it must typically obtain an individual permit under NRPA. In the case of a coastal wetland, this 25 foot setback must be maintained between the normal high water line or upland edge of a coastal wetland, as defined by the highest annual tide (HAT) line.



Overlook platform # 1 would be located in the vicinity of these existing benches, overlooking shorebird feeding and roosting habitat.

The Marsh Walk project includes activity within 25 feet of the HAT line. Under consideration is the construction of a culvert that is being proposed to reconnect waterways that were disconnected as a result of the construction of Harbor Road, for the purpose of improving wildlife habitat within the marsh. Furthermore, portions of the proposed Marsh Walk boardwalk likely fall within 25 feet of the HAT line. Also, the project will be subject to NRPA because parts of the Marsh Walk fall within mapped tidal wading bird/waterfowl habitat, and are therefore considered to occur in, on, or over significant wildlife habitat. Finally, there is an area of mapped shorebird roosting and feeding habitat near the proposed Marsh Walk whose boundaries will need to be further examined to determine whether the project will be seen as an impact. If the department determines that the activity will not negatively affect the freshwater wetlands or other protected natural resources present, it may qualify for Tier 1 or 2 review.

It is anticipated that this project will require an individual NRPA permit, with or without the proposed culvert.

It will be necessary to perform topographic survey and to firmly establish the HAT line within the project area based on local benchmarks for this project to advance into permitting. Building permanent structures on or over tidal areas requires a NRPA permit, and it will be important during permitting to demonstrate that the Marsh Walk and associated structures are outside the coastal wetland to the greatest extent possible.

A 25 foot setback has been drawn on the Marsh Walk concept plan (Figure 8), and the Marsh Walk in the vicinity of the Fisherman's Catch Restaurant appears to be located within this 25 foot distance from the HAT line, even with the centerline of the roadway adjusted 2 feet to the north to try to minimize impacts. A portion of the proposed boardwalk in the vicinity of the Fisherman's Catch restaurant has been located within the 25' distance from the HAT line because it is necessary to do so while maintaining a geometrically correct Shoreline Explorer stop in accordance with the proposed design.

In addition, some of the overlooks have been positioned within 25' of the HAT line to provide meaningful visual access to the marsh. While it could be possible to eliminate the overlooks or relocate the Shoreline Explorer stop to avoid impacts within 25' of the HAT line, a portion of the Marsh Walk across from the Fisherman's catch restaurant would still fall within this zone, based on the current mapping.

It should be noted, however, that a ground survey of the HAT line will provide a refined location for both the HAT line and the 25 foot buffer that could have different permitting implications for the proposed Marsh Walk concept. Until that survey is performed, impacts are not certain, and are being discussed at a planning level only.

A more detailed description of the requirements of Maine DEP's Chapters 310 Wetlands and Water Body Protection and 335 Significant Wildlife Habitat follows.

B. Maine DEP's Chapters 310 Wetlands and Water Body Protection and 335 Significant Wildlife Habitat

Under "General Standards", for an activity proposed in, on, or over wetlands, a practicable alternative that is less damaging to the environment is considered to exist, unless the activity falls under certain categories, which include water dependent uses and walkways. For these uses, an analysis of alternatives is required. ***An alternatives analysis may be required for the culvert but is not anticipated to be required for the Marsh Walk, which is not in, on, or over the coastal marsh.***

For all proposed activities, "the amount of wetland altered must be kept to the minimum amount necessary."

Single, complete projects comprised of walkways or access structures for educational purposes or to comply with the Americans with Disabilities Act are not required to provide a functional assessment or compensation.

If the project is deemed to have unreasonable impact on the wetland, it will be denied.

For projects in, on, or over wetlands of special significance containing threatened or endangered species, the applicant must demonstrate that the wetland alteration will not disturb the threatened or endangered species and that the overall project will not affect the continued habitation or use of the site by the threatened or endangered species.

Essential habitat describes areas critical to the survival of threatened and endangered species. If the activity is located in essential habitat, IF&W must supply a "certification of review and approval". Nearby Laudholm Beach is an important breeding area of the state-endangered least tern and federally threatened, state endangered piping plover (WNERR report 183), and has been designated as essential habitat by the State of Maine, because of the presence of these species***, but would not be affected by the Marsh Walk.*** Additional piping plover and least tern areas are included in the Maine Department of Inland Fisheries and Wildlife's Rare Animal Polygon dataset***, but do not appear to be affected by the proposed Marsh Walk.***

The marsh is mapped as **salt marsh sharp-tailed sparrow habitat** by the Maine Department of Inland Fisheries and Wildlife, but the salt marsh sharp-tailed sparrow is not listed as threatened or endangered. Habitat of the **New England cottontail**, a candidate for the federal Endangered Species list, is present at the upland edge of the marsh near Upper Landing Road, but this species has not yet been listed***, and it would not be affected by the Marsh Walk.***



A view into the coastal wetland from Harbor Road

The NRPA individual permit will include a review of impacts to **significant wildlife habitat,** which includes seabird nesting islands, significant vernal pool habitat, **high and moderate value waterfowl and wading bird habitat, and shorebird nesting, feeding, and staging areas.** The proposed activities must be determined to have no unreasonable impact on significant wildlife habitat. Activities within 250′ of significant vernal pool habitat are strictly regulated. Activities located in, on or over high or moderate value inland waterfowl and wading bird habitat, **or shorebird nesting, feeding, and staging areas** are strictly regulated and include a 100′ buffer around shorebird feeding areas and a 250′ buffer around shorebird roosting areas. **A high or moderate value tidal habitat "has documented outstanding use by waterfowl or wading birds or use by a rare species of waterfowl or wading birds."**

Much of the marsh is mapped as **tidal wading bird/waterfowl habitat** by the Maine Department of Inland Fisheries and Wildlife (see Figures 4A and 4B). These mapped habitat areas overlap with parts of the planned Marsh Walk alignment. Tidal wading bird/waterfowl habitat in a wetland of over 25 Acres is considered high value and is classified under NRPA as a significant wildlife habitat. Any work in the significant wildlife habitat must meet the NRPA general standards of avoidance, minimal alteration, no unreasonable impact, and possibly compensation if the DEP determines that an impact to significant wildlife habitat will cause habitat functions or values to be lost or degraded as identified by the department.

Additionally, an area of **shorebird feeding and roosting habitat** has been identified near the proposed Marsh Walk alignment (Figure 4A). The mapped area includes a regulatory buffer of 250 feet. The Marsh Walk and associated structures do not fall within the mapped shorebird feeding and roosting area.

Aesthetic impacts of alterations of scenic resources such as and including coastal wetlands are also evaluated as part of the NRPA individual permit. A visual impact assessment may be required if a proposed activity appears to be located within the viewshed of, and has the potential to have an unreasonable adverse impact on, a scenic resource.

A NRPA application for a project of this nature will most likely require the following parts: Alternatives Analysis, Site Characteristics Report, Activity Description, and Additional Information.

C. Take Away Points from Discussions with State Regulators

The Marsh Walk, but not the culvert, has been discussed with Maine DEP and IF&W. Project-specific input from Maine DEP and IF&W has included the following:

- IF&W does not support constructing trails through marshes. They do not support reduction of critical habitat.
- NRPA requires compensation for wetlands impacts. Even if there is no fill, and the boardwalk affects the function and value of the wetland, it will be a problem. DEP considers piers and helical piles to constitute fill, even though helical piles have a small footprint. Shading is considered a wetland alteration. Avoidance and minimization are key considerations.
- Any trail that falls within the footprint of an existing structure or disturbance will be more favorable than a new disturbance. The regulators would consider allowing

boardwalk spurs to observation points within limits. They are concerned with limiting new shadow on previously undisturbed marshland. Any boardwalk spurs would need to be located away from open water to deter fishermen, who are seen as generators of large amounts of litter. The boardwalk design would need to balance drawing people in with minimizing their impact. The regulators liked the idea of incorporating an elevated tower that would allow birders long views over the marsh, but would keep them away from open water.

- In general, alignments following existing roadways, existing trails, or that could be constructed in conjunction with a marsh restoration project were viewed more favorably.
- If the Marsh Walk were advanced into permitting, survey would need to be conducted to determine the exact location of the HAT line (which defines the coastal wetland's upland edge), so that the NRPA application can demonstrate the boardwalk is out of the coastal wetland to the greatest extent possible.
- Any permit will require revegetation of disturbed areas and will require that disturbance be minimized during construction.
- Maintain shrubs and other vegetation within 25 feet of the HAT, but pruning could be allowed to open sight lines.
- Keep proposed work 25 feet from the wetland edge.
- Care will need to be taken in documenting the shorebird roosting and feeding habitat and providing an adequate buffer.
- Provide railings to keep people from stepping into the marsh.
- Consider using spur trails to overlooks, rather than trails that follow the marsh edge for longer stretches.
- Think about maintenance and policing.
- Confine the Marsh Walk to upland areas and provide views into the marsh.
- A photosimulation may be required, depending on the height and length of the boardwalk. The application should include photos from other refuges with boardwalks.
- Construction would need to take place between October 1 and March 1.
- When the scope of work is delineated, the Department of Marine Resource will need to be involved. The project should be reviewed with DMR soon to determine whether there will be any problems with migratory fish. IF&W fisheries will also be involved because of anadramous fish.

- According to Section 480Q, re-constructing any portion of the road in place would fall within exemptions, but any improvement of shoulders or expansion of the roadway into the marsh would not.
- Signage will need to be incorporated near the endpoints of the trail close to overlooks instructing visitors not to walk in the marsh.
- All portions of this project should be permitted at one time, including future phases.
- The width of the boardwalk and Marsh Walk should be justified in terms of ADA, to demonstrate that it is the smallest width allowable.
- If the vegetated strip between the boardwalk and road can be eliminated to minimize impacts, it should be. Otherwise, there will need to be a very clear justification for including it.



Evidence of people walking on the marsh can be seen in the vicinity of proposed overlook platform #3

It will be essential for this project to demonstrate that it is avoiding and minimizing impacts to the coastal wetland and significant wildlife habitat to the greatest extent possible. A clear justification of the Marsh walk's reasons for being within the 25 foot buffer will be key to the permit application. It should be stressed that the project is providing public access to view the resource. As the design progresses, it will be important to establish how far back the overlooks can be placed while still providing effective visual access to the marsh.

5.4 FEDERAL REGULATIONS

A U.S. Army Corps of Engineers (USACE) permit would be required for any structure seaward of the mean high water line or any fill placed seaward of the high tide line, or in any adjacent marsh. ***The proposed culvert would require a Category II General Permit from USACE. It is anticipated that the culvert, or series of culverts, will need to be constructed at a width to satisfy USACE.***

The Marsh Walk, but not the culvert, has been discussed with Jay Clement, USACE. Project-specific input from USACE has included the following:

- A permit would be needed for any structure seaward of the mean high water line or any fill placed seaward of the high tide line, or in any adjacent marsh. **It appears the current Marsh Walk concept would not require a permit from USACE, but it would be a good idea to send them a review copy before proceeding to design development.**
- USACE would prefer that no boardwalk be located over the marsh. If it is, locate the boardwalk such that it hugs the wetland/upland transition – and minimize any portion directly over the marsh
- Elevate the boardwalk and overlooks above the marsh at elevations suitable to allow sunlight to reach grasses and minimize flood damage
- Avoid using CCA and creosote in building materials
- During construction, minimize impacts to the marsh by using low pressure tires or treaded vehicles, or steel/plywood mats under vehicles if traversing the marsh itself
- ACE does not consider pilings to be fill, but DEP does
- Be cognizant of ADA and FEMA flood zone issues

Source:

Parcels, FIRM Layer - Town of Wells, ME
and Maine Office of GIS
2003 Floodway - FEMA
Imagery - ESRI World Imagery

All boundaries are approximate

N

phen Eaton Ln

Brook Ln

1

Sanford Rd

Post Rd

Main St

Central Ave

Morrison Ave

Davis St

South St

Harbor Rd

Rachel Carson
National Wildlife Refuge

Cardinals
Real Estate LLC

Town of Wells

Harbor
Park

Managed by
NERR

Rachel Carson
National Wildlife Refuge

Legend

- Proposed Overlook
- Proposed Boardwalk Trail
- Proposed Trail on Grade
- 2003 FIRM Floodway
- AE: 100-Yr Floodplain
- X500: 500-Yr Floodplain
- X: Outside 500-Yr Floodplain

0 150 300
Feet

Marsh Walk Feasibility Study
FEMA Flood Zones
Harbor Road
Town of Wells, ME

PROJ NO: 12549A | DATE: Sep 2013 | FIGURE: 5

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Engineering a Better Environment

Source:

Parcels - Town of Wells, ME and Maine Office of GIS
Zoning - Town of Wells, ME
Imagery - ESRI World Imagery

All boundaries are approximate

N

Rachel Carson
National Wildlife Refuge

Cardinals
Real Estate LLC

Harbor Rd

Town of Wells

Managed by
NERR

Harbor
Park

Rachel Carson
National Wildlife Refuge

Brook Ln

Sanford Rd

1

Post Rd

Main St

Central Ave

Morison Ave

Davis St

South St

Legend

- Proposed Overlook
- Proposed Boardwalk Trail
- Proposed Trail on Grade
- General Business District
- Harbor District
- Residential A District
- Resource Protection

0 150 300
Feet

Marsh Walk Feasibility Study
Zoning
Harbor Road
Town of Wells, ME

PROJ NO:	DATE:	FIGURE:
12549A	Sep 2013	6

WRIGHT-PIERCE
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6 Connectivity



The Marsh Walk would eventually form part of a larger pedestrian route linking to Route One and Wells Junior High and continuing on to the Wells Transportation Center

In concept, the Marsh Walk would become part of a bicycle and pedestrian connection between the Wells Transportation Center and Wells Beach. As illustrated on the Bicycle and Pedestrian Connectivity Vision figure at the end of this section, the connection would take various forms along the proposed route.

Bicycle and pedestrian upgrades would follow Route 109 from the Wells Transportation Center to the Elementary School. From the Elementary School, a trail would be connected on land owned by the Wells-Ogunquit CSD, becoming a sidewalk and bike route that would connect to Route 1 between the Junior High School and the Public Library. Bicycle and pedestrian upgrades would follow Route 1 and would continue on-road along South Street and Morrison Avenue to Harbor Road. These would link up with the planned sidewalk and 4'-0" bike shoulders on Harbor Road. Across from the Fisherman's Catch Restaurant, at the Shoreline Explorer stop, the Marsh Walk would begin as a boardwalk, changing to an on-grade trail that would continue to the eastern extreme of the Town-owned land on Harbor Road.

A study was being performed at the time of writing to determine the feasibility for a low pedestrian bridge that would connect the east and west sides of the harbor. This would open up further parking options, with an estimated 150 parking spaces at the east side of the harbor, and would create the opportunity for a continuous bicycle and pedestrian connection to Wells Beach from the Wells Transportation Center.



A pedestrian bridge (in yellow) could connect Harbor Park to the parking area at the end of Atlantic Avenue. From there, it would be an easy walk to Wells Beach, pictured at the extreme right of the image.

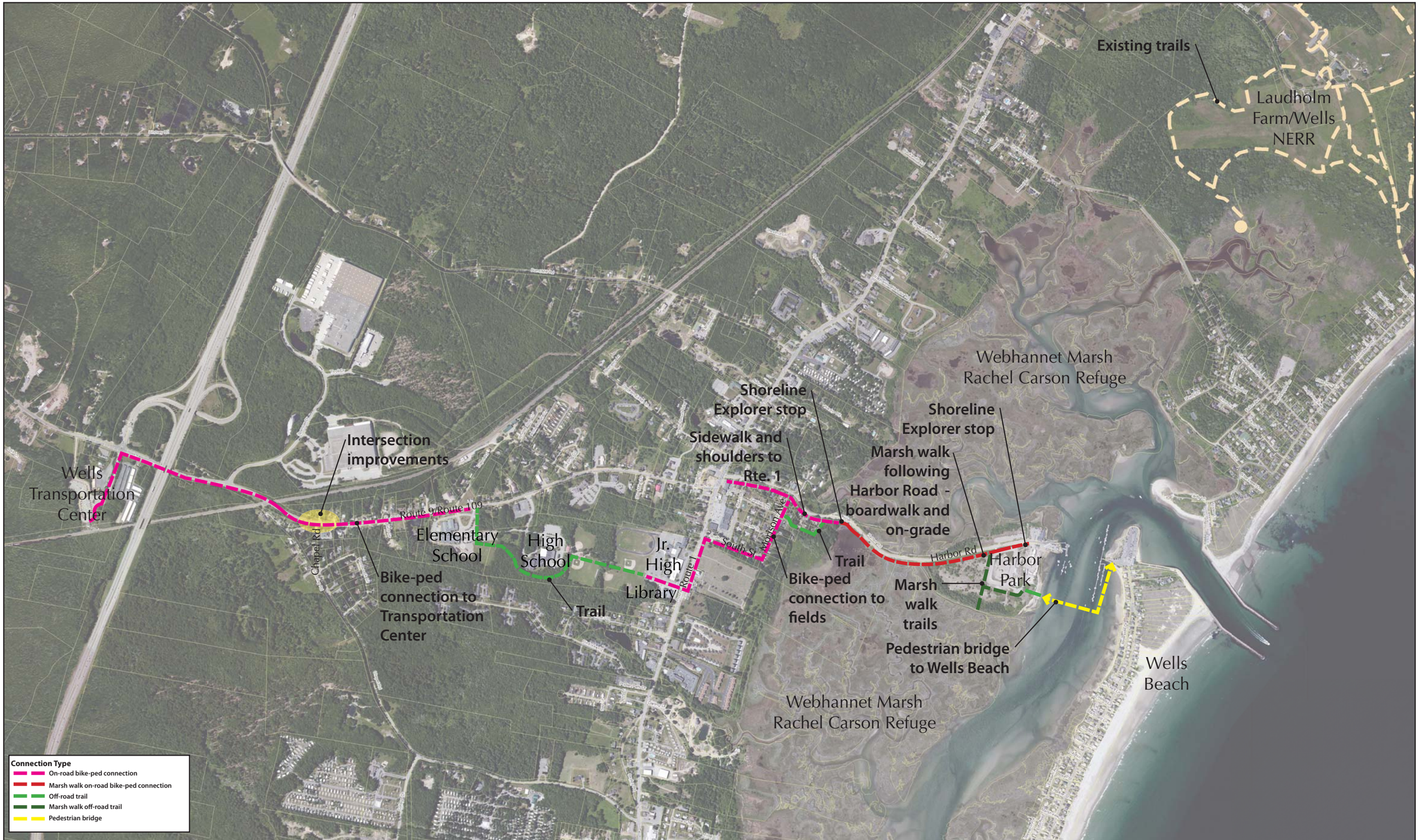


The Marsh Walk would improve conditions for cyclists and pedestrians along Harbor Road

Also at the time of writing, the Harbor Master was conducting an alternatives analysis for a water taxi that could ferry boaters to their crafts and also shuttle people from one side of the harbor to the other.

Users of the Marsh Walk could arrive without cars via a future connection to the Eastern Trail. From the Wells Transportation Center, they could arrive via the new bicycle and pedestrian connection or on the Shoreline Explorer bus, disembarking across from the Fisherman's Catch Restaurant on Harbor Road or at the public restroom in Harbor Park. Users with cars could take advantage of the 205 parking spaces and 60 spaces for boat trailers, on Town land near Harbor Park.

Although one of the initial project goals was stated as connecting existing paths and trails to create a coastal walking network in Wells, the WNERR has indicated that it is unlikely to connect its trail network to the trails at the Rachel Carson headquarters, and the initial concept of a Marsh Walk connecting from Drakes Island Road to Mile Road is no longer being pursued because of regulatory difficulty.



Sources:
Imagery - Bing Maps Approximate Property Lines - Town of Wells GIS Tax Map

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0' 275' 550'
Scale: 1"=550'

BICYCLE AND PEDESTRIAN CONNECTIVITY VISION

August, 2013 Town of Wells, Maine

7 Marsh Walk Concept Plan

7.1 EXISTING CONDITIONS

The concept plan used field observations and available GIS data as base information and is not based on actual survey data. Contours are not tied to a benchmark.

It appears that travel lanes are generally 10'-6" to 11'-0" on Harbor Road. Gravel shoulders are generally 6'-0" wide on the south side of the road, where the Marsh Walk is proposed, but can be as wide as 10'-0" in some places.

Two Shoreline Explorer bus stops are located on the south side of Harbor Road.



Harbor Road in the vicinity of the proposed boardwalk. Note narrow travel lanes, existing gravel shoulder, benches, utility poles across the road, and the Fisherman's Catch restaurant in the background

Utility poles are present along the roadway, and it appears the project can be designed such that they are not disturbed.

In the process of finishing this plan, it came to light that the Town possesses existing conditions plans for a portion of Harbor Park that indicate the property line between the Town-owned land and the adjacent land managed by WNERR, as well as locations of existing trails and other basic site features. The existing survey for this area could be built upon to establish a base map for this area, and should be examined for contours, existing vegetation, etc. It is recommended that shrub masses and individual tree locations, species, and diameter at breast height (DBH) for trees that might be affected by trail improvements and overlook construction be added to the survey, as well as any other needed information.

7.2 PROPOSED CONCEPT PLAN

The Marsh Walk concept plan, with typical sections, is included at the end of this section. The following considerations apply:

- The design proposes shifting the road centerline 2′-0″ to the north in some places. The red centerline on the concept plan indicates a shifted centerline.
- The design assumes an 11′-0″ travel lane and 4′-0″ shoulder in each direction from Harbor Park to Route 1.
- Because a curb is not being used along the Marsh Walk, overland drainage is assumed.

A. Future Curbed Sidewalk to Route One



The future curbed sidewalk would extend from the existing Harbor Road sidewalk near the Route 1 intersection, pictured above

The curbed sidewalk and 4′-0″ shoulder between the Fisherman's Catch and Route 1 are considered a future phase of roadway improvements and are not considered part of the Marsh Walk project. Nonetheless, they are important to keep in mind, in the interest of providing connectivity for bicyclists and pedestrians. In the event that the slopes and curves on the west end of Harbor Road make it difficult to construct a 4′-0″ shoulder for the length of the project, the Town could consider narrowing the shoulders and providing Shared Lane Markings (SLM's) and signage that indicate that cyclists may use the vehicular travel lanes.

B. Future Trail and Pedestrian Bridge

A discussed trail connection to Morrison Avenue and the pedestrian bridge to Wells Beach are also considered future improvements outside the scope of this project.

C. Marsh Walk - Boardwalk Trail

A 5′-0″ wide boardwalk is proposed between the Fisherman's Catch restaurant and the land managed by Wells NERR. At the Shoreline Explorer stop across from the Fisherman's Catch Restaurant, the sidewalk and a standard ADA compliant 8′-0″ landing area adjacent to the bus turn out would also be constructed as a boardwalk. It is in this area, close to the proposed crosswalk, that the upland edge of the salt marsh appears to be closest to the roadway and to the proposed improvements. A boardwalk is proposed in this area for several reasons:

- The existing shoulder is narrower here, where the roadway has been constructed through the marsh, and the existing grade drops off toward the marsh at about a 10% grade beyond the shoulder. To construct a sidewalk on grade, fill would need to be imported. Due to the sensitivity of the marsh and the fact that some of the proposed work may be occurring within 25' of the marsh boundary, fill will need to be strictly limited in this area.



A low boardwalk at the Rachel Carson headquarters

- The potential for storm surges and for impacts due to projected sea level rise are greatest along this section of the Marsh Walk. Building the Marsh Walk as a boardwalk through this area will make it more resilient to impacts resulting from future environmental changes.
- Proximity to the marsh along this stretch provides good wildlife viewing opportunities and also creates a temptation, as evidence of current use suggests, for people to enter the marsh. The grade separation provided by the boardwalk, reinforced by the proposed 42" railing, will deter people from entering the marsh itself, while providing an aesthetic experience that heightens the sensation of being in a special ecological setting.

D. Marsh Walk - Trail on Grade



A stone dust trail at the Rachel Carson headquarters

The at-grade portions of the Marsh Walk will take the form of a 5'-0" wide compacted stone dust or asphalt trail. A 3'-0" esplanade with a timber guardrail will create a separation between pedestrians and traffic on Harbor Road. The esplanade will require periodic maintenance and trimming. Where the pedestrian way is too close to the roadway to permit the use of an esplanade, such as at the Shoreline Explorer stops, granite bollards could be used to further delineate pedestrian space.

Where the trail is adjacent to the parking lot in Harbor Park, a minimum 10'-0" planted buffer with a split rail fence is proposed, to provide separation from cars and focus attention on the natural areas of the park. A 2'-0" to 3'-0" strip is recommended to be mown on both sides of the trail, to reduce exposure to ticks and provide an area for site amenities such as benches and trash receptacles. Plants would be comprised of shrub and grass species native to the park, such as Switchgrass, Virginia Rose, and Bayberry.

A path around the marsh-facing edge of the NERR-managed land has not been proposed, due to the fact that it would be set at least 25' back from the edge of the woods and would not seem to avoid and/or minimize impacts for permitting purposes. However, a path connecting to the beach path at Harbor Park from the new Marsh Walk is proposed as part of this project, to improve pedestrian connectivity within the park.

E. Marsh Walk - Plazas

Two small plazas are proposed, one at the bathroom and one at the trail kiosk. The Town should consider using pavers or other higher quality materials in these areas. At a minimum, kiosks with signage about the bus system, the trails, and Harbor Park are proposed. Site amenities, such as benches, trash receptacles, plantings, and bicycle racks are also recommended in the plaza areas.



Small plazas could use higher quality materials and incorporate kiosks and site furnishings

F. Marsh Walk – Overlook Platforms



Proposed overlooks would be similar in size to the platforms at the Rachel Carson headquarters

Three cantilevered overlook platforms are proposed. Each platform is intended to provide a unique experience of the marsh.

- The longer, narrower platform (#1) overlooks the prime birding area near the Fisherman's Catch Restaurant.
- A smaller platform (#2) is located near the NERR managed land in a

location that provides a peek around the woodlands to a beautiful view of the channels, and could be partially blinded to provide better wildlife viewing opportunities.

- The third platform (#3) emerges from the forest to a more isolated location on the marsh, away from the roadway. It has been noted that the remote location of this platform will necessitate some form of community policing.

G. Proposed Culvert

A culvert is being considered just west of overlook platform #2 to reconnect waterways that were disconnected as a result of the construction of Harbor Road, for the purpose of improving wildlife habitat within the marsh. This culvert is not needed because of flooding, and is solely being considered for the purpose of providing compensation and improving marsh ecology. It should be noted that no need for compensation has been identified at this time, and the culvert is strictly being proposed as a good faith effort by the Town. That does not preclude the possibility that a need for compensation will be identified as part of the permitting process.

In the location of the proposed culvert, as generally indicated on the Marsh Walk concept plan, Harbor Road is acting as a dike. This location has been suggested by the Rachel Carson Refuge, with the caveat that more study and discussion with the Refuge and the marsh ecologists at USFWS would be needed to ensure that the culvert will have a positive effect on the marsh before embarking on such a costly project. A full feasibility study of this culvert is beyond the scope of this report, however, we have been able to make some cost assumptions based on similar projects elsewhere in the state. As noted in Section 5, there are considerable permitting requirements associated with a culvert of this nature.

H. Impacts to Abutters

At the Fisherman's Catch restaurant, the depth of the area available for pull in parking will be reduced by at least 4'-0" feet. There would still, however, be at least 20'-0" to the face of the building, which should still accommodate perpendicular pull-in parking. The Town should consider encouraging the restaurant to shift to angled parking in front of the building, which is more



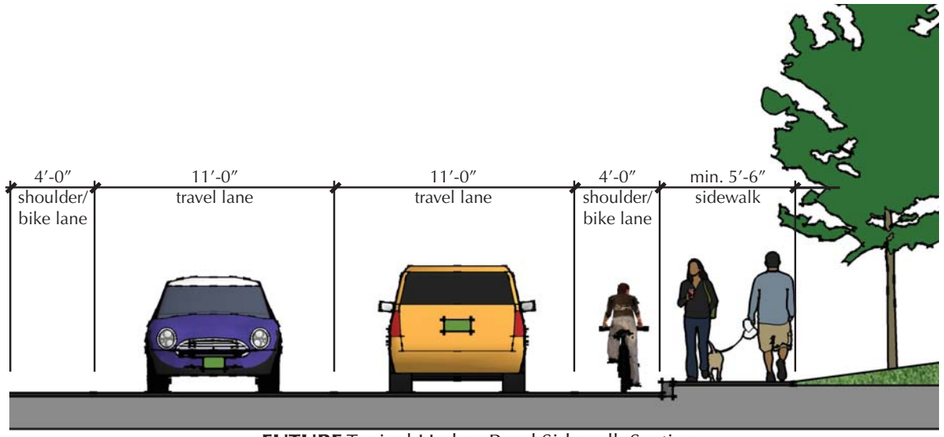
The parking lot at the Fisherman's Catch restaurant could potentially be reconfigured as angled parking to create more room for bicycle and pedestrian facilities

compatible with backing into the public roadway and would require less depth. Back-in angled parking has been used with mixed success in other Maine communities, where a bike lane is proposed adjacent to pull-in parking, which has some advantages for cyclists and pedestrians, and could also be discussed with the owners of the restaurant. As it is now, visitors to the restaurant appear to walk in the street to reach their cars.

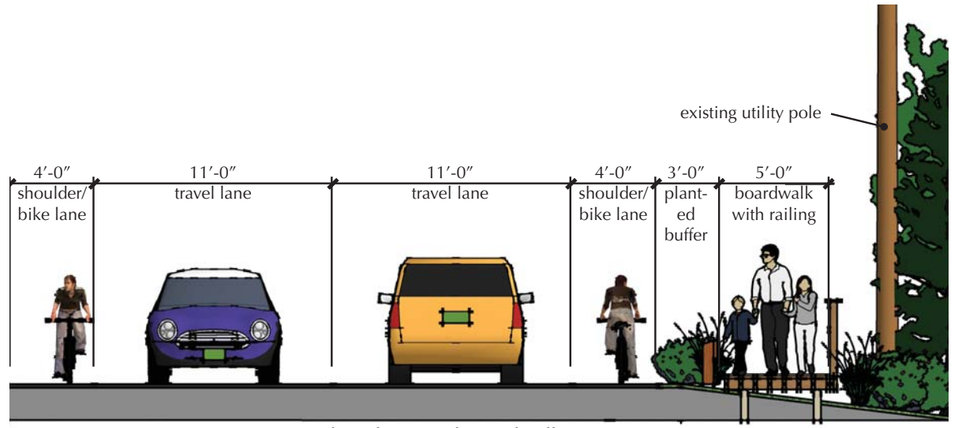


The Rachel Carson National Wildlife Refuge abuts the Harbor Road right-of-way

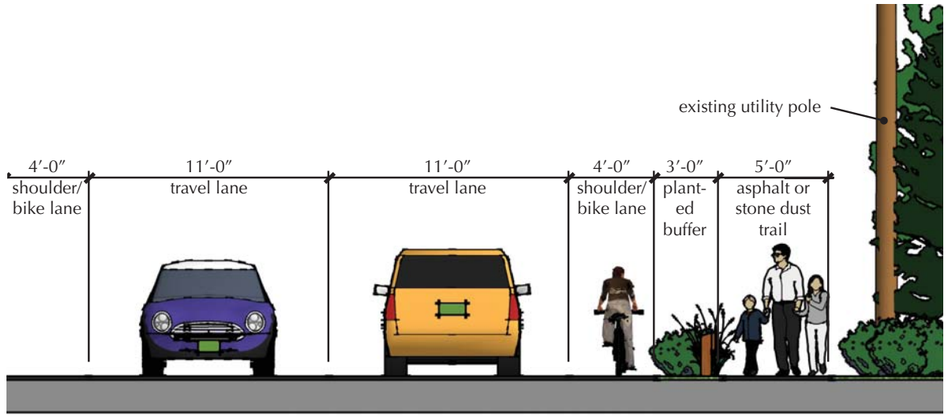
As has been discussed elsewhere in this report, sections of the Marsh Walk and some of the proposed overlook platforms may be partially or wholly located on Rachel Carson land in some locations, depending on the exact location of the right-of-way (to be determined). At the time of writing, the Refuge was seemingly still open to the proposal described in this plan, as long as the concerns expressed in Section 3 were able be addressed to their satisfaction.



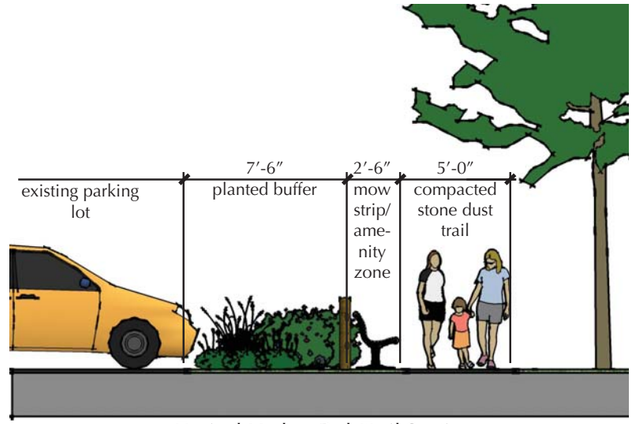
FUTURE Typical Harbor Road Sidewalk Section
Not to Scale



Typical Harbor Road Boardwalk Section
Not to Scale



Typical Harbor Road Trail Section
Not to Scale



Typical Harbor Park Trail Section
Not to Scale

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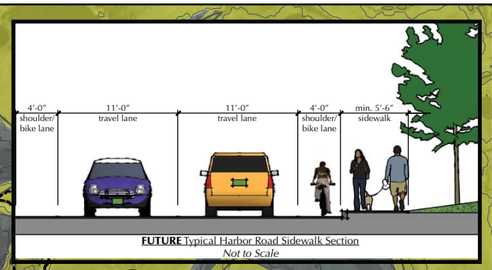
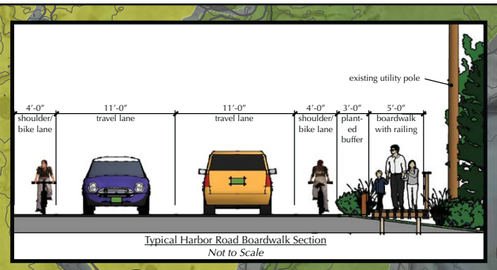
TYPICAL SECTIONS - MARSH WALK FEASIBILITY STUDY

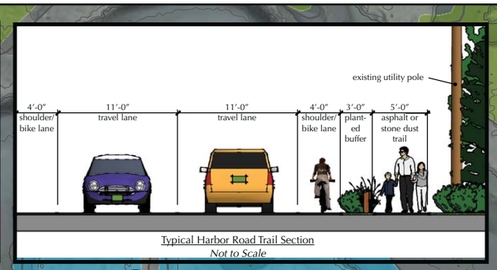
12549A September, 2013 Town of Wells, Maine



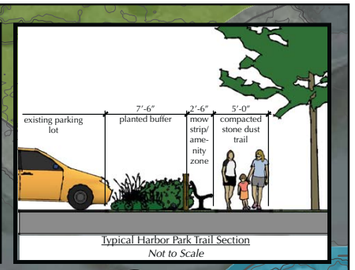
FUTURE Typical Harbor Road Sidewalk Section
Not to Scale



Typical Harbor Road Boardwalk Section
Not to Scale



Typical Harbor Road Trail Section
Not to Scale



Typical Harbor Park Trail Section
Not to Scale

Shoreline Explorer stop
Crosswalk
Future sidewalk and shoulders to Rte 1
Stone dust or asphalt trail (80 LF)
Section A
Section B
Section C
Section D
Fisherman's Catch Restaurant
Potential future trail to Morrison Ave
Webhannet Marsh
Plaza with kiosk and site amenities (1,700 SF)
Shoreline Explorer stop
Lord's Harborside Restaurant
Public Restroom
Harbor Road
Harbor Park
Play Equipment
Existing trail and platform
Boardwalk (1,200 LF)
Centerline offset 2' to the north
Stone dust or asphalt trail along Harbor Road (1,220 LF)
Appx. 2 ft. contour lines, based on LiDAR
Appx. HAT line at 6.4', based on LiDAR
Appx. location of 50' right-of-way
Overlook platform #1 (5' x 24')
25 foot buffer from appx. HAT line
Potential culvert location
Overlook platform #2 (10' x 14', possibly with partial blind)
Webhannet Marsh
Stone dust or asphalt trail along parking lot (910 LF)
Plaza with kiosk and site amenities (2,400 SF)
Stone dust trail in field and woods (310 LF)
Potential future pedestrian bridge to Wells Beach
Overlook platform #3 (14' x 10')

Owner
- Private
- Rachel Carson National Wildlife Refuge - USFWS
- Owned by Town of Wells, Managed by Wells NERR
- Town of Wells

Walkway Type
- Boardwalk
- Stone dust or asphalt trail on grade
- Future pedestrian connection

Sources:
Imagery - Bing Maps *2004 ME Coastline LiDAR/Approximate 2' Contours - NOAA* *Approximate Property Lines - Town of Wells GIS Tax Map*

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Scale: 1"=100'

CONCEPT PLAN AND SECTIONS - MARSH WALK FEASIBILITY STUDY

12549A September, 2013 Town of Wells, Maine

8 Materials Selection and Preliminary Construction Details

Materials are illustrated in the figure at the end of this section.

8.1 PLANTED BUFFER ZONE – HARBOR ROAD

- Cedar or pressure treated southern yellow pine guardrail 2′-0″above finish grade; posts spaced 8′-0″ on center
- 3′-0″ buffer zone to be seeded with native forbs (wildflowers) and grasses and mown or "weed whacked" at least 2x/year

8.2 PLANTED BUFFER ZONE – HARBOR PARK PARKING LOT

- Cedar split rail fence 3′-0″ above finish grade; 6″ dia. posts spaced 8′-0″to 10′-0″ on center
- 10′-0″ buffer zone to be planted with a mix of shrub and grass species native to the park, such as Switchgrass, Virginia Rose, and Bayberry
- Municipal grade benches and trash receptacles



An existing split rail fence in Harbor Park

8.3 BOARDWALK

- Precast 8″ dia. concrete piers to be formed in sonotubes and treated with a chloride ion screen to resist salt damage
- Framing to be ACQ – no CCA or creosote are to be used on this project
- Decking to be composite (i.e. Trex) or pressure treated southern yellow pine wooden planking
- 42″tall cedar or composite railing to be used at overlook locations to provide a support for interpretive signage, discourage people from walking into the marsh, and provide a bumper for wheelchairs

- Interpretive and regulatory signs to be mounted on railings or railing posts
- Boardwalk to be wider at the westernmost Shoreline Explorer stop to provide an adequate (8'-0" min. for ADA compliance) loading and unloading zone

8.4 MARSH WALK – OVERLOOK PLATFORMS

Overlook materials will be similar to those used to construct the boardwalk. A schematic of the 5' x 24' overlook platform is included on the materials illustrations. Photographs of an overlook on the Carson Trail at the Wells Headquarters of the Refuge have also been provided for reference. The Carson Trail overlooks utilize timber framing with composite decking and railings.



Composite decking and railings at the Rachel Carson headquarters

8.5 TRAIL ON GRADE

Stone dust and asphalt are proposed as surfacing materials for the at-grade portions of the Marsh Walk.

While stone dust has a lower installation cost, it is prone to erosion from surface runoff; requires annual maintenance in terms of re-grading, compaction, and weed control; and may be more suitable for the trails within Harbor Park than it is along the Harbor Road right-of-way.

Where the trail is adjacent to and subject to surface runoff from Harbor Road, asphalt should be considered. Asphalt is more expensive than stone dust, but is also more durable, is easier to plow, and requires less routine maintenance. The cost estimates in the next section reflect these recommendations.

8.6 PLAZAS



An existing kiosk in Harbor Park will be replaced and situated within a small plaza

The Town should consider using granite or brick pavers in the plaza areas. Kiosks with signage describing the bus system and the trails within Harbor Park are proposed, and could range from very simple and utilitarian to quite elaborate in style. Two kiosk examples are provided on the accompanying materials illustrations. Benches and trash receptacles with wood or composite slats on cast aluminum supporting members are recommended.

Loop-type bicycle racks are preferred over other options due to ease of use by cyclists.

8.7 PROPOSED CULVERT

Materials and dimensions for the culvert have not been closely considered as part of this study.



Trash Receptacle and Bench



Bicycle Rack



Granite Bollards





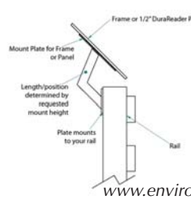
Kiosks

Site Amenities









www.envirosigns.com

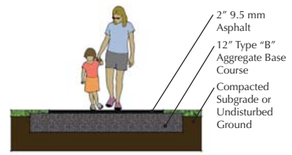
Interpretive Signage



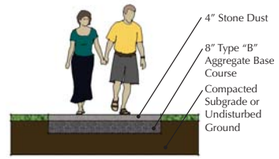


Regulatory Signage

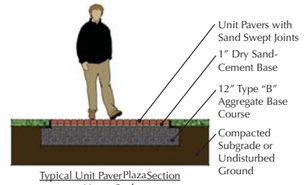
Signage



Typical Asphalt Trail Section
Not to Scale



Typical Stone Dust Trail Section
Not to Scale



Typical Unit Paver Plaza Section
Not to Scale



Asphalt



Stone Dust



Pavers

Paving



Overlook Platform on the Carson Trail
Appx. 10′ x 14′



Proposed Boardwalk with 5′ x 24′ Overlook Platform

Overlook Platforms and Boardwalks



Timber Guardrail



Split Rail Fence

Fences and Guardrails

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MATERIALS & PRELIMINARY DETAILS - MARSH WALK FEASIBILITY STUDY

12549A September, 2013 Town of Wells, Maine

9 Cost Estimates and Phasing

9.1 MARSH WALK COST ESTIMATES BY PHASED SECTION

The costs below have been broken into segments by construction type and location, with an eye toward phasing the construction of the various pieces involved, should it be necessary to construct the project in pieces over time.

Wells Marsh Walk

Cost Estimates by Segment

Section 1 - 5' wide asphalt trail and crosswalk to Fisherman's Catch Restaurant

DESCRIPTION	QTY	UNIT	UNIT COST	COST
5' Asphalt Trail and 3' Esplanade/Planted Buffer	80	LF	40	3200
Timber Guardrail	80	LF	$40.00	$3,200.00
Curb Ramp Detectable Warning	32	SF	75	2400
Painted Crosswalk - 24" Lines	64	LF	$4.00	$256.00
			Subtotal:	$9,056.00
30% Permitting, Engineering, and Materials Contingency:				$2,716.80
			Total	$11,772.80

Section 2 - 5' wide boardwalk, boardwalk bus turn out, and overlook platforms #1 and #2

DESCRIPTION	QTY	UNIT	UNIT COST	COST
5' Boardwalk and 3' Esplanade/Planted Buffer	1,200	LF	$340.00	$408,000.00
Timber Guardrail	1,200	LF	$40.00	$48,000.00
Additional Boardwalk Width at Turn Out	50	LF	$205.00	$10,250.00
Overlook Platform #1	24	LF	$340.00	$8,160.00
Overlook Platform #2	1	LS	$10,000.00	$10,000.00
Interpretive Signage	3	EA	$4,000.00	$12,000.00
Regulatory signage	1	EA	$500.00	$500.00
			Subtotal:	$496,910.00
30% Permitting, Engineering, and Materials Contingency:				$149,073.00
			Total	$645,983.00

Section 3 - 5' wide asphalt trail along Harbor Road and plaza at public restroom

DESCRIPTION	QTY	UNIT	UNIT COST	COST
5' Asphalt Sidewalk and 3' Esplanade/Planted Buffer	1,220	LF	$40.00	$48,800.00
Timber Guardrail	1,220	LF	$40.00	$48,800.00
Plaza Surfacing	190	SY	$100.00	$19,000.00
Kiosk and Interpretive Signage	1	EA	$7,000.00	$7,000.00
Regulatory signage	1	EA	$500.00	$500.00
Granite Bollards	6	EA	$600.00	$3,600.00
Site Amenities (2 trash receptacles, 2 benches, 5 bike loops)	1	LS	$5,000.00	$5,000.00
Plantings at Plaza	1	LS	$5,000.00	$5,000.00
			Subtotal:	$137,700.00
30% Permitting, Engineering, and Materials Contingency:				$41,310.00
			Total	$179,010.00

Section 4 - 5' wide stone dust trail along Harbor Park parking lot and plaza at trail junction

DESCRIPTION	QTY	UNIT	UNIT COST	COST
5' Stone Dust Trail	910	LF	$25.00	$22,750.00
Split Rail Fence	950	LF	$35.00	$33,250.00
Planted Buffer	190	LF	$20.00	$3,800.00
Plaza Surfacing	270	SY	$100.00	$27,000.00
Kiosk and Interpretive Signage	1	EA	$7,000.00	$7,000.00
Regulatory signage	1	EA	$500.00	$500.00
Granite Bollards	4	EA	$600.00	$2,400.00
Site Amenities (1 trash receptacle, 8 benches, 3 bike loops)	1	LS	$11,000.00	$11,000.00
Plantings at Plaza	1	LS	$5,000.00	$5,000.00
			Subtotal:	$112,700.00
			30% Permitting, Engineering, and Materials Contingency:	$33,810.00
			Total	$146,510.00

Section 5 - 5' wide stone dust trail in Harbor Park and overlook platform #3

DESCRIPTION	QTY	UNIT	UNIT COST	COST
Clearing	1	LS	$5,000.00	$5,000.00
5' Stone Dust Trail	530	LF	$25.00	$13,250.00
Overlook Platform #3	1	LS	$10,000.00	$10,000.00
Interpretive Signage	1	EA	$4,000.00	$4,000.00
			Subtotal:	$32,250.00
			30% Permitting, Engineering, and Materials Contingency:	$9,675.00
			Total	$41,925.00

Section 6 - Roadway improvements including repaving roadway, paving asphalt shoulders and striping

DESCRIPTION	QTY	UNIT	UNIT COST	COST
Grind Existing Pavement	7,000	SY	$15.00	$105,000.00
Asphalt Binder Course (2")	960	TONS	$110.00	$105,600.00
Asphalt Surface Course (1.5")	720	TONS	$125.00	$90,000.00
4" Striping	5,200	LF	$0.50	$2,600.00
			Subtotal:	$303,200.00
			30% Permitting, Engineering, and Materials Contingency:	$90,960.00
			Total	$394,160.00

Section 7 - Culvert

DESCRIPTION	QTY	UNIT	UNIT COST	COST
Culvert	1	LS	$100,000.00	$100,000.00
			Total (Includes 30% Permitting, Engineering, and Materials Contingency):	$100,000.00

GRAND TOTAL

DESCRIPTION	COST
Section 1 - 5' wide asphalt trail and crosswalk to Fisherman's Catch Restaurant	$11,772.80
Section 2 - 5' wide boardwalk, boardwalk bus turn out, and overlook platforms #1 and #2	$645,983.00
Section 3 - 5' wide asphalt trail along Harbor Road and plaza at public restroom	$179,010.00
Section 4 - 5' wide stone dust trail along Harbor Park parking lot and plaza at trail junction	$146,510.00
Section 5 - 5' wide stone dust trail in Harbor Park and overlook platform #3	$41,925.00
Section 6 - Roadway improvements including repaving roadway, paving asphalt shoulders and striping	$394,160.00
Section 7 - Culvert	$100,000.00
Survey	$20,000.00
Grand Total :	$1,539,360.80

Section 1 and section 2 would probably be constructed together as one project, completing the approach to the boardwalk, the crossing from the Fisherman's Catch Restaurant, the boardwalk, and overlook platforms #1 and #2 at the same time.

Sections 3 (trail on grade along Harbor Road), 4 (trail through Harbor Park along parking lot), and 5 (trail from parking lot to marsh and overlook) could be completed as discrete projects, or as part of more comprehensive improvements to Harbor Park.



Section 4 would include improvements in the vicinity of the existing kiosk and new trails connecting Harbor Road, the parking area within the park, and formalized trails to the beach and overlook platform #3.

Section 6 (roadway improvements) and 7 (culvert) would probably be completed at the same time, but it is not yet certain that the culvert is necessary to benefit the marsh ecosystem, and it may not be pursued in the long term. Section 6 could be completed simultaneously with any of the improvements in sections 1 through 5.

9.2 DESIGN, ENGINEERING AND PERMITTING COSTS

Given the nature of the project's environmental context, design and engineering for the structure will need to both optimize construction to limit disturbance of the wetland and tidal areas to the maximum extent possible and manage costs for construction. In addition, as noted above, the project will require significant local, state and federal coordination and permitting.



The Marsh Walk's proximity to the coastal wetland is both a design opportunity and a permitting challenge

Approximately $20,000 should be allocated for topographic survey, boundary survey, utility survey, and coastal wetland delineation (HAT), which will provide greater clarity regarding costs for permitting and right-of-way acquisition.

The 30% addition to the construction cost estimates by segment, above, includes the following assumptions. Typical design and permitting costs for a project of this nature can be expected to run on the order of 8%-12% of the projected construction cost. Construction phase engineering assistance can

be expected to run between 8%-12% of the projected construction cost. A 10% materials contingency has been included.

Permitting costs will depend somewhat on the nature of project funding, as the use of federally originating funds will require the project to obtain clearance under the National Environmental Policy Act (NEPA) which can be expected to increase the level of effort required above local, state, and federal permits as described in Section 5.

The costs associated with acquiring rights or use agreements from the USFWS/Rachel Carson refuge are expected to vary depending upon whether a 5-year special use permit (lower cost) or permanent right-of-way acquisition (cost unknown – but could include legal fees, and purchase fee) is sought.

Other unknown costs which should be accounted for in the overall project budget would include: potential additional legal fees, local administrative costs, and miscellaneous fees.

9.3 OPERATION AND MAINTENANCE BUDGET

Municipal managers are often keenly attuned to the fiscal impact of operations and maintenance costs associated with new infrastructure on existing departments and budgets. It is important, therefore, that the Town include consideration of these costs when considering whether to proceed with the initiative.

Regular annual operations and maintenance components are likely to include the following:

- winter maintenance (snow removal),
- maintenance and periodic replacement of boardwalk and overlook framing and decking,
- maintenance and periodic replacement of timber guardrail,
- trash removal,
- removal of graffiti from signs and refreshing of informational materials at kiosks,
- maintenance of the culvert to keep it clear of debris and monitor its performance,



Informational materials at the Harbor Park Shoreline Explorer stop

- policing of project components, particularly in remote areas, such as at overlook platform #3, and
- landscape maintenance, such as periodic weeding of 10' landscaped buffer areas through establishment and beyond, and periodic trimming (at least 2x/year) of seeded 3'esplanade buffer areas.

Over the long-term, the facility will require periodic inspection and replacement of materials. The life expectancy of the various components of the bridge will invariably depend on final material selection, with added investment "up front" in more durable materials tending to reduce the need for future investment in maintenance or replacement.

We would suggest an annual budget for operations and maintenance on the order of $3,000 to $4,000 per year for the initial 20 years. After that time, the Town can expect to see an increase due to a higher level of repairs to aging materials.

9.4 OVERALL PROJECT BUDGET SUMMARY

Based on the figures discussed above, but without costs associated with right-of-way acquisition or maintenance, the full project could cost on the order of **$1,500,000 to $2,000,000**.

It is important to note that the costs expressed herein are budgetary figures based on a planning level assessment into the feasibility of constructing the Marsh Walk. In the event the community has a strong interest in implementing such a project, we recommend that further effort be expended to better define the likely magnitude of permitting and right-of-way acquisition costs.

10 Funding and Implementation

10.1 NEXT STEPS

The following next steps to continue the project effort are suggested for the Town's consideration:

1) Secure funding for survey, design engineering, and permitting

2) Perform a ground survey of the HAT line/coastal wetland boundary, topographic survey, utility survey, and boundary survey

3) Overlay the concept plans with the existing conditions survey to see whether the implications for permitting and design have changed. Make revisions as necessary.

4) Review the revised concept plans with Town, State and federal regulators and stakeholders including the Town's Code Officer, Maine DEP, Maine IF&W, Maine Department of Marine Resources, the USACE, the USFWS/Rachel Carson, the Wells NERR, the Wells Conservation Commission, the Wells Harbor Commission, Maine Audubon, and the Fisherman's Catch Restaurant. The review would have two purposes – to verify permitting and partnership requirements in light of better existing conditions information (including ownership) and to confirm buy-in and receive comments prior to design development. It will be critical to confirm with the Town's Code Officer that the project is in conformance with local codes. It will also be important to define the terms and costs of the use agreement between the Town and USFWS.

5) Hold a public meeting to receive additional comments on and continue to verify support for the project

6) Prepare 90% plans for permitting purposes, including sections and details. The NRPA permit alone has a 120 day review period, so it will be a major factor in the timing of construction.

7) Finalize plans, specifications, and cost estimates

8) Secure construction funding

9) Solicit bids for the portions of the project that are selected for construction and select a contractor.

10.2 POTENTIAL FUNDING SOURCES

All of Maine's municipalities struggle with the realities of the costs associated with investing in public improvements. For trail and recreation efforts, there are a number of traditional approaches to funding that many Maine communities have employed to see their plans through to implementation.

Most of the funding programs traditionally used to fund trails originate from federal sources and are administered by the State. These funding sources in recent years are also subject to fluctuation in the level of funding provided from year to year. The information provided here on various programs is the most current available, but program details such as availability, deadlines, and requirements may change, and communities should contact the appropriate agencies to ensure they have the best information about a funding program.

The following is a partial list of potential funding sources for this Marsh Walk project:

- **Town Funds (TIF, CIP budget, discretionary, in-kind, etc.):** The primary need for local funding will come from the need to provide match funds for most grant sources. Many grants allow for a certain amount of in-kind match such as the use of city labor or resources or other donated services from within the community. However, the Town should consider the strategic use of local funds such as from TIF or CIP budgets to construct smaller projects or take advantage of public-private partnerships that can result in trail implementation. For example, in implementing the crosswalk to the Fisherman's Catch Restaurant, there could be opportunities to match private funds with local funds to develop the crossing.



The Town raises revenue from parking fees collected at Wells Beach

  As many of the grants used by Maine communities to develop trails become less available and more competitive, many communities look to dedicating funds such as from impact fees or other development fees to secure funding. The Town has previously indicated that it could allocate resources for the Marsh Walk's construction incrementally through the fees

it collects from the USFWS every year in lieu of taxes, as a result of the **Revenue Sharing Act.**

Also, while local bonds can be less favorable politically, they could be a practical and financially feasible opportunity to fund recreation and conservation efforts.

- **Private Foundations:** Although USFWS no longer has an internal grant program, Rachel Carson is willing to jointly apply for private grants with the Town and can help to identify appropriate sources of funding. Applying for grants with a public health focus has initially been identified as a potential direction to pursue.

- **Maine Department of Transportation (MaineDOT):** Funded through the federal Transportation Alternatives Program (TAP), formerly known as Transportation Enhancement (TE), MaineDOT's Quality Community Program is reduced from previous years and may no longer be a reliable source of funding for sidewalk and trail projects. Projects with complex ownership and permitting needs are less likely to receive funding priority than simple projects within the public right-of-way. In addition, Maine's program has been unable to guarantee funding for project's submitted within the last funding cycle.



Rental fees for of the shelters within Harbor Park are another local source of revenue

The Quality Community Program typically requires separate applications for the design and the construction phases. Projects must have their design phase complete and approved by MaineDOT before applying for construction funds. There is no stated limit to the funds for each project, however, MaineDOT typically has approximately $8 million each funding round, and project awards typically vary from $200,000 to $1 million. The Town should monitor the program and coordinate with the MaineDOT Bicycle, Pedestrian, and Quality Community Program Manager for questions or to coordinate potential applications.

For more information: http://www.maine.gov/mdot/pga/qcp

The Transportation, Community, and System Preservation (TCSP) program has largely been overlooked as a source for pedestrian/bicycle facilities funding, but may be a possible funding source. This is an annually funded federal program. For more information, the Town should contact MaineDOT.Web sources for the TCCP Program: *http://www.fhwa.dot.gov/tcsp/* and *http://www.fhwa.dot.gov/discretionary/tcsp2012info.htm*

In addition to this program, the Town may wish to explore other MaineDOT funding, such as discretionary grants and federal programs, or funding through the Biennial Capital Work Plan, however, however, the need for MaineDOT funding for other city road and transportation projects may push many trail projects down on the list of funding priorities (http://www.maine.gov/mdot/planningdocs/bcwp2012-2013).

- **Maine Department of Conservation (DOC):** Funding through the Maine Department of Conservation offers another potential pool of funds for trail and park facility-related implementation, including Shore and Harbor grants, the Recreational Trails Program, and the Land & Water Conservation Fund.



An existing dirt trail would be upgraded to an ADA compliant stone dust surface as part of improvements associated with Section 5

The Recreational Trails Program (RTP) was contacted in August of 2013 regarding this project. The program funding is on an 80%/20% basis. The federal share of a project may be up to 80% of a project's total cost or the maximum grant amount of $35,000 for non-motorized trails and $5,000 for education. All of the trails in this project would potentially be eligible for funding. Education could include signage related to environmental protection with regard to trail use. The sponsor's match may consist of cash or the value of donated services and/or materials. The program is administered through the Bureau of Parks and Lands.

A site walk for this project was conducted with the grant program manager in September, 2013. Under consideration was the portion of the project described in the previous section as Section 5, including approximately .1 miles of stone dust trail in Harbor Park and overlook platform #3. During the site visit, birders were encountered at the site of proposed overlook platform #3, and the project elicited favorable comment from the administrator. Describing the project as part of a larger bike and pedestrian connectivity plan will help with scoring. It was suggested that competition in the non-motorized category is high, and that allowing several user groups to use the trail would place it in a less competitive category, but the Town was not interested in pursuing this route.

Because survey had not yet been conducted to help identify the level of permitting and right-of-way acquisition that would be required for this project, it was decided to delay applying for this grant until that information can be assembled. At issue is the fact that there are several parts of the project that will require a NRPA permit, and rather than permit it in several smaller pieces, the Town would like to apply for one overarching

permit, as has been suggested by Maine DEP. Once the design is advanced for the entire project and permitting is more in hand, the Town will be in a better position to apply for DOC funds for a portion of the Marsh Walk.



A photograph from the location of proposed overlook platform #3, taken on the day of the site walk with the RTP administrator

In general, with regard to the RTP grant, eligible **projects include:**

- Development and rehabilitation of trailside and trailhead facilities and linkages for recreational trails;
- Construction of new recreation trails;
- Acquisition of easements and fee simple title to property for trail purposes from a willing landowner/seller;
- Funding of educational programs to promote safety and environmental education and protection as they relate to the use of recreational trails.

Projects not eligible include:

- Feasibility Studies;
- Law Enforcement – Routine law enforcement is not permitted in the RTP legislation;
- Planning – Trail planning is not a permissible use of RTP funds;
- Road construction, sidewalks, gardening/landscaping, parks or park equipment, sprinklers or campgrounds;
- Routine trail maintenance;
- Construction/improvements within a federal, state, county, or town road right-of-way;
- Funding of staff/intern positions not related to a specific RTP-funded project/program.

For more information:
http://www.state.me.us/doc/parks/programs/community/trailsfund.html

The Land and Water Conservation Fund funds the development of public outdoor recreation facilities. Projects must be in accordance with the current (2009-2014) State Comprehensive Outdoor Recreation Plan (SCORP) (http://www.maine.gov/doc/parks/programs/SCORP/index.html).

Projects should have significant impact to a community, region or the State of Maine in general, including but not limited to:

- Acquisition of property to prevent loss of an existing public outdoor recreation facility;
- Acquisition of land to protect critical natural areas and/or wetlands;

- Development of public outdoor recreation facilities to meet established, documented needs in a community or region;
- Development of public outdoor recreation facilities that serve a broad range of users including special needs populations;
- Renovation of existing public outdoor recreation facilities that serve an established, documented need.

The program is administered through the Bureau of Parks and Lands. A 50% cash or in-kind match is required, with up to $200,000 for eligible acquisition and/or development projects. A pre-application inspection/meeting must be scheduled with BPL staff, and the deadline for 2013 applications has passed.

For more information:
http://www.maine.gov/doc/parks/programs/community/lwgrants.html

- The York-based southern Maine **Healthy Maine Partnership**, Choose to be Healthy, (dir. Deborah Erisckson-Irons (207) 439-6504) may be able to help identify funding sources for sections of the Marsh Walk, under the aegis of public health.



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