

Case Studies of Local Coastal Wetland Protections

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National Association of Wetland Managers

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Introduction

Project Background

In 2022, the Interagency Coastal Wetlands Workgroup (ICWWG) released the *Recommendations for Reducing Wetland Loss in Coastal Watersheds of the United States*¹. The report presents voluntary recommendations that aim to reduce and reverse the loss of wetlands in coastal watersheds and are intended to apply to program managers, non-governmental organizations, and government staff (federal, state, tribal, local, and regional) involved in coastal wetland and watershed management. The intent of the report is to help forge cooperation and build capacity to reduce coastal wetland losses nationwide.

Based on the ICWWG *Recommendations*, the National Association of Wetland Managers (NAWM) has undertaken a project developing case studies of local coastal wetland ordinances that are designed to protect and restore coastal wetlands and aquatic resources. **The purpose of the case studies is to better understand the challenges that local governments and disadvantaged communities face when developing and enacting such policies as well as highlight successes that local governments have had and insights into what factors led to their success.** This effort will help the U.S. Environmental Protection Agency (EPA) implement the ICWWG *Recommendations* under theme 2, including Recommendation 2.4 regarding supporting local planning to increase the acreage of protected coastal wetlands and Recommendation 2.4.2 regarding developing local planning best practices for wetland protection.

Overview of this Report

This report provides eight (8) in-depth qualitative case studies of local wetland protections from coastal communities across the country. The section below provides background on how the case studies were developed. Following the background methodology section, are the individual community case studies. Each case study provides a community overview, describes the local wetland protections, the relationship between local protections and state/federal regulations, information on the history and implementation of these protections, information on impacts of the local wetland protections on both wetlands and the local community, lessons learned, and future directions for wetland protections. Finally, the Summary of Findings section provides key takeaways and overall themes observed. Appendix A of this report is a compilation of resources noted throughout the report, while Appendix B provides a summary table comparing key features of each of the eight case studies.

¹ *Recommendations* report is available to download at https://www.epa.gov/system/files/documents/2022-06/ICWWG%20Recs_Final_508.pdf.

Case Study Development

NAWM initiated research and outreach for this report in the winter and spring of 2023. Preliminary development of the case studies focused on the above-stated purpose of better understanding challenges in developing and enacting local wetland protections, as well as highlighting successes that local governments have had. In May 2023, the U.S. Supreme Court decided the *Sackett v. EPA* case, which resulted in the EPA revising the definition of “waters of the United States” to conform with the *Sackett* decision. More on the definition of “waters of the United States” can be found at www.epa.gov/wotus. The *Sackett* decision resulted in questions among many state, tribal, and local communities about how they would fill the gap in wetland protections. While some states, Tribes, and local communities already have wetland protections in place, others may be interested in developing protections in response to the *Sackett* decision.

While the changing definition of “waters of the United States” was not the impetus for this project, this report will provide useful examples and lessons for those local communities that are interested in using local ordinances to address concerns about potential gaps in wetland protections. The purpose of this report remains unchanged and the information provided here is expected to be valuable for local communities aiming to better protect their wetlands, regardless of whether they are trying to fill a gap in state or federal protections.

To develop these case studies, NAWM gathered input on potential communities to include in case studies through review of references listed in the ICWWG *Recommendations* report, feedback received during the January 31, 2023, NAWM webinar on the ICWWG *Recommendations*, review of NAWM’s *Urban Wetlands Protection and Restoration Guide*² and resources listed therein, as well as outreach to NAWM members and contacts at coastal state agencies and corresponding EPA regional offices.

Through this research and outreach effort, several communities were identified for potential inclusion as case studies. State agency contacts also provided useful feedback about states where no such local wetland protections are known to exist. For example, no communities in Delaware³ or Alaska⁴ are known to have local ordinances or other enforceable wetland protections at the local level. New Jersey similarly does not have known local wetland protections, and instead has emphasized state-level regulations while local projects typically focus on voluntary restoration.⁵

Once a list of potential case-study communities was assembled, NAWM reviewed local government websites to identify points of contact and conducted targeted outreach to local government representatives. For those local government representatives that agreed to participate in the project, NAWM shared a list of discussion topics and held individual meetings

² Dooley, W., Stelk, M. (2021). *Urban Wetlands Protection and Restoration Guide*. Association of State Wetland Managers. Windham, Maine. Available to download at https://www.nawm.org/pdf/lib/local_wetland_programs/urban_wetlands_protection_and_restoration_guide.pdf.

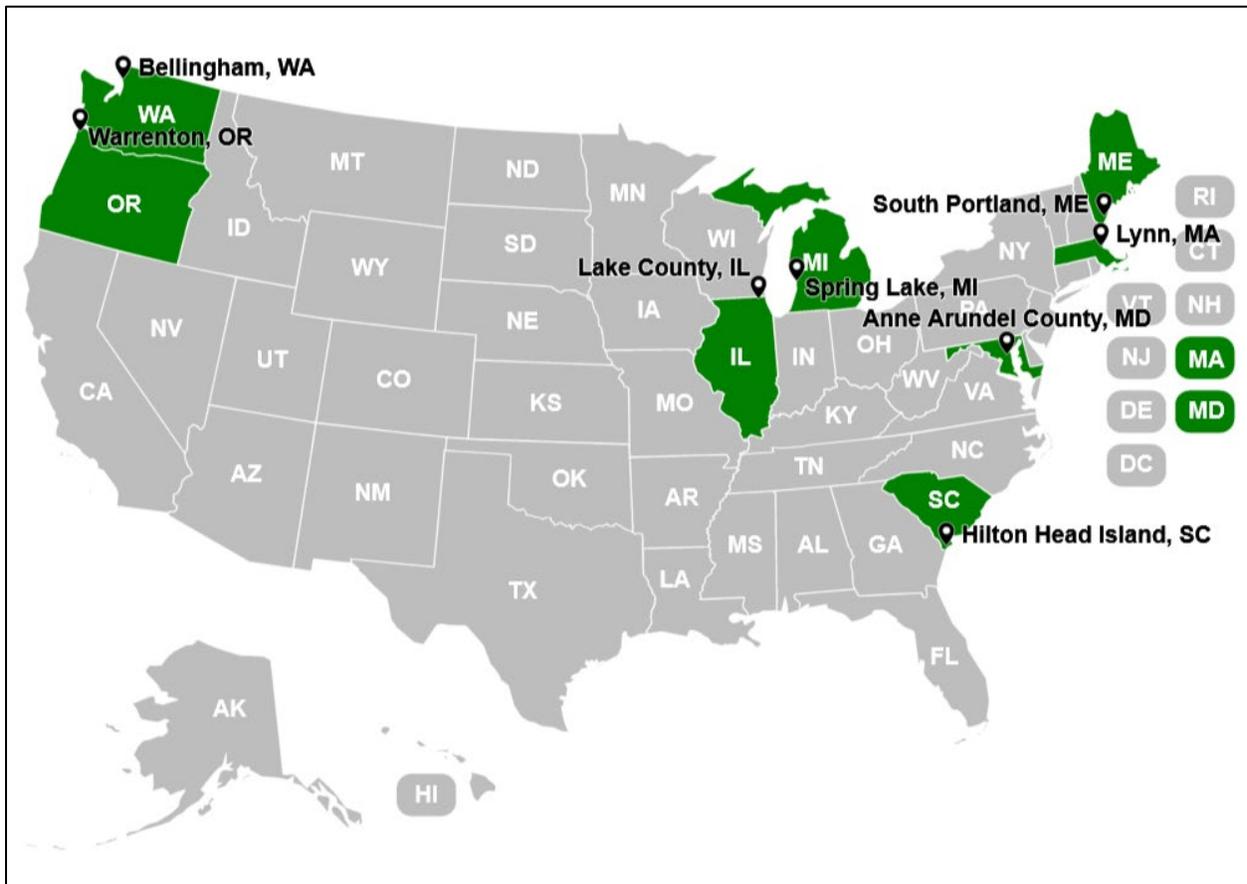
³ M. Biddle, personal communication, April 3, 2023.

⁴ W. Weimer, personal communication, June 27, 2023.

⁵ S. Lockwood, personal communication, March 29, 2023.

to gather information. Case studies are based on discussions with local government staff, as well as reviews of local government websites, local ordinance language, and state agency websites.

During the development of the case studies, NAWM strove to include communities that represent a range of geographic locations, community sizes, presence of disadvantaged communities as identified in the Climate and Economic Justice Screening Tool (CEJST), and state regulatory environments. The following sections provide the 8 case studies of local communities with wetland protections arranged from west to east across the continental United State (see map below for case study locations). Each coastal community varies in size from a town population of about 6,200 residents to a county with over 700,000 residents. Communities are included from the Pacific Northwest, Northeast, Mid-Atlantic, Southeast, and Great Lakes regions. As will be shown in the case studies and summarized in the Findings section, the local wetland protections highlighted in these case studies represent a range of state regulatory contexts (from local programs mandated by state law to protections at the local level that fill a gap in state regulations). The summary table in Appendix B compares key features of each of the eight case studies and may be useful in identifying case studies most relevant to a reader’s interest or needs.



Map showing case study locations within the continental United States. Case studies in this report are arranged geographically from west to east.

Case Studies



Case Study 1: Warrenton, Oregon

At-a-Glance

Community Name: **Warrenton, Oregon**

- Population: 6,277
- Watershed: Lower Columbia River / Pacific Ocean

Summary of Local Wetland Protections:

Warrenton adopted wetland development standards into the city municipal code in compliance with statewide planning goals. Projects that impact land in or within 25 feet of wetlands must obtain approvals; no impacts to “locally significant wetlands” are allowed under the standards.

Community Overview

Warrenton is located in Clatsop County in the northwestern corner of Oregon. The city borders the Pacific Ocean to the west and the Columbia River to the north. Warrenton had a population of 6,277 as of 2020, which was a 26% increase from 2010 and reflects the high growth rate that has been seen in recent years. The median household income is \$65,258 and approximately 5.7% of the city population lives in poverty.⁶

According to the Climate and Economic Justice Screening Tool (CEJST)⁷, a portion of Warrenton is located within a census tract that is identified as a disadvantaged community due to low household incomes and high climate burdens (including expected building loss rate, expected population loss rate, and projected flood risk), proximity to Superfund sites, and transportation barriers. The majority of the city is located in a census tract that is not identified as disadvantaged and does not meet the CEJST’s threshold for socioeconomic burden; however, this census tract also has high expected building loss rate, expected population loss rate, and projected flood risk.

Description of Local Wetland Protections

The City of Warrenton’s Development Code includes **Wetland and Riparian Corridor Development Standards** that are designed to comply with Statewide Planning Goal 5 (discussed further in the following section). The standards require that applicants to the City of Warrenton for grading or building permits must verify that the project would not alter land in or within 25 feet of wetlands; or provide plans showing impacts would be limited to the area surrounding the wetland and not alter the wetland; or, if work would occur within a wetland, applications must include a wetland delineation that has been approved by the Oregon Department of State

⁶ U.S. Census Bureau. QuickFacts: Warrenton, Oregon. Available at <https://www.census.gov/quickfacts/>. Accessed September 2023.

⁷ Council on Environmental Quality. Climate and Economic Justice Screening Tool (CEJST). Available at <https://screeningtool.geoplatform.gov>. Accessed September 2023.

Lands. Such proposed projects must also receive a State of Oregon Wetland Removal-Fill Authorization through a separate process as described in the following section. For projects that would alter wetlands, the Warrenton Community Development Director verifies that the impacted wetland area is not considered a “locally significant wetland” as identified in the Local Wetlands Inventory (LWI). Alteration of locally significant wetlands is prohibited, except for limited uses as described in the standards (e.g., replacement of existing structures, removal of non-native vegetation, etc.).



A forested wetland in Warrenton. Photo courtesy of Jay Blake.

Relationship Between Local Protections and State/Federal Regulations

Oregon has a statewide program for land use planning that is overseen by the State Department of Land Conservation and Development. Both the Department and the Land Conservation and Development Commission were created by the state legislature in 1973 due to concerns over rapid population growth and associated threats to the farming and timber industries. The Commission adopted Statewide Planning Goals that present the state’s policies on land use and related topics. There are now 19 Statewide Planning Goals; those most relevant to wetlands are summarized by the Department of Land Conservation and Development as follows:

- **Goal 5 Open Spaces, Scenic and Historic Areas and Natural Resources:** Goal 5 covers more than a dozen natural and cultural resources such as wildlife habitats and wetlands. It establishes a process for each resource to be inventoried and evaluated. If a resource or site is found to be significant, a local government has three policy choices: preserve the resource, allow proposed uses that conflict with it, or strike some sort of a balance between the resource and the uses that would conflict with it.
- **Goal 16 Estuarine Resources:** This goal requires local governments to classify Oregon's 22 major estuaries in four categories: natural, conservation, shallow-draft development, and deep-draft development. It then describes types of land uses and activities that are permissible in those "management units."
- **Goal 17 Coastal Shorelands:** The goal defines a planning area bounded by the ocean beaches on the west and the coast highway (State Route 101) on the east. It specifies how certain types of land and resources there are to be managed: major marshes, for example, are to be protected. Sites best suited for unique coastal land uses (port facilities, for example) are reserved for "water-dependent" or "water related" uses.

The Statewide Planning Goals are achieved through local comprehensive plans, which are required for cities and counties in Oregon. The Department of Land Conservation and Development reviews plans for consistency with land use statutes and rules, while the Land Conservation and Development Commission is responsible for approving certain amendments to plans. Cities and counties are responsible for adopting local comprehensive plans, as well as the local ordinances that are needed to implement their plans.

Based on the structure of the Statewide Planning Goals, freshwater and tidal wetlands are addressed separately through land use planning. Under Goal 5, an inventory of freshwater wetlands is first conducted and approved by the Department of State Lands. This approved LWI includes identification of “locally significant wetlands.” Then, to comply with Goal 5, local governments can either (1) adopt protection measures for all of their significant wetlands (known as a “safe harbor ordinance”) or (2) conduct an analysis of the positive and negative economic, social, environmental, and energy consequences of land uses that may impact those wetlands and adopt zoning ordinances or provisions that allow for certain uses or developments while protecting other significant wetlands.

Warrenton’s wetlands were inventoried and assessed in 1998 following Department of State Lands procedures at the time. Wetlands were determined to be significant if they met one or more of the following criteria: (1) the wetland has the highest Oregon Freshwater Assessment Methodology rank for any of the four ecological functions assessed; (2) the wetland contains one or more rare wetland plant communities; (3) the wetland is inhabited by a species listed as state or federally threatened or endangered; or (4) the wetland has a direct surface water connection to a stream segment mapped as habitat for indigenous anadromous salmonids.

While freshwater wetlands are addressed under Goal 5, tidal wetlands are managed through Goals 16 and 17. Goal 16 guides planning and management of estuaries while Goal 17 addresses lands bordering estuaries, the ocean shore, and coastal lakes. Local governments with authority over an estuary must prepare Estuary Management Plans that protect the values and benefits of the estuary and associated wetlands and allow for appropriate development. These plans are reviewed and approved by the Department of State Lands.

Warrenton, like other cities and counties in Oregon, has developed its own Comprehensive Plan and local ordinances in accordance with the statewide planning goals. Changes to the Comprehensive Plan and zoning are reviewed by the Department of Land Conservation and Development. The City of Warrenton has its own review process for building and grading permits that incorporates wetland review; furthermore, the municipal code refers to state requirements as appropriate where locally approved projects would also need to obtain state-level permits.

History and Implementation of Local Wetland Protections

In the 1990s, the Columbia River Estuary Task Force (CREST) did a study of area wetlands and made recommendations that became the basis for Article 5 in Warrenton’s Comprehensive Plan (which was last amended in 2011). Article 5 was then reflected in Chapter 16 of the city code (i.e., the *Wetland and Riparian Corridor Development Standards*). A wetland study specific



Warrenton marsh land. Photo Credit: © Trevor Cook/ Adobe Stock

to Warrenton was conducted in 1997, and the results were used to form the LWI and identify locally significant wetlands.

As local governments are required to comply with Statewide Planning Goals, their codes and ordinances have historically been reviewed for consistency with state laws and regulations. Warrenton's Wetland and Riparian Corridor

Development Standards were

reviewed and found to be consistent with state laws and regulations in both 2011 and 2016. Currently, the Community & Economic Development Department is starting a new code audit that will ensure the entire development code is in compliance with State laws and regulations.

All applications for building or grading permits, site design reviews, floodplain permits, and other planning commission approvals go through a wetland review and, due to the large extent of wetlands in Warrenton, this can take a substantial amount of staff time. The Community & Economic Development Department has two full-time staff and it was estimated that they each spend 15 to 20 percent of their time on wetland issues and analyses for proposed developments.

Wetland reviews and analyses begin with review of the State Wetlands Inventory (SWI), which incorporates data from the National Wetlands Inventory (NWI), approved LWIs (including the Warrenton LWI), and mapped hydric soils from the SSURGO Database (updated 2022). While the NWI and LWI are similar, city staff noted that do have some differences and do not always match current conditions. If these sources indicate the potential for a wetland on a given site, then a site-specific wetland delineation is recommended. The Department of State Lands reviews and concurs with wetland delineations, which are then valid for 5 years.

In the past decade, as the city has grown in population, there has also been increasing recognition of the value of wetlands. While wetlands may have been impacted by developments in the past, the review process and a general understanding of the importance of wetlands for flood storage has reduced impacts to wetlands from newer projects. For example, a recent subdivision was approved on 270 acres. The development was designed such that all of the housing lots will be on 70 acres, leaving the remaining 200 acres, which are dominated by wetlands, in a permanent conservation easement. This project was an example of design that meets the project goals and avoided impacts to wetlands.

Another change in the past decade has been the requirement for geotechnical studies and reports for all new buildings. These studies are used to verify a site's soil conditions and identify

any special construction methods needed to build on the site. The requirement comes from the City's Building Department and is necessary due to unstable soils in many areas within the city. However, the requirement has been controversial due to the added expense to developers.

Enforcement of state wetland regulations must be done when fill is placed in, or material is removed from, a wetland without prior authorization. In such cases, the Department of State Lands is notified of the violation. For other violations of city code, the city sends a non-compliance letter and the landowner or developer has 30 days to respond, followed by appropriate remediation of unauthorized wetland alterations.

Impacts on Wetlands

Warrenton is located on a peninsula between the Columbia River and the Pacific Ocean. Topography in the area is dominated by dunes and ridges, with low-lying areas between the ridges often forming wetlands. Much of the land within the city is mapped as hydric soils or as wetlands within the LWI. In discussions with city staff, it was noted that much of the land located at higher elevations has already been developed. The remaining undeveloped areas located lower in the landscape are more likely to contain wetlands. Because of the predominance of wetlands within the City, the protections that Warrenton has in place and the City's compliance with statewide planning goals are important ways to protect these resources.

Impacts on the Local Community

The city of Warrenton is highly vulnerable to flooding and has experienced several catastrophic rain and flood events in recent years. There is also a risk of earthquakes and tsunamis in the region. City staff observed an increasing concern among the general public about the risks of flooding and natural hazards. Proposed developments get public attention, and members of the public are aware of and involved in the city's development approval process. Many of the questions and concerns that the city receives are focused on flooding and stormwater management. The city has started to make more information readily available online to interested members of the public.

As in many parts of Oregon, Warrenton has a high demand for housing and increasing prices are a challenge for many residents. Building new housing often requires putting in new sewer and water lines across a low-lying area to an upland development site; because there are limited pockets of developable land, the cost of this infrastructure is higher per new housing unit. City staff noted that their buildable land inventory identifies a lot of land within Warrenton as buildable; however, it is not entirely accurate as some of that land actually contains wetlands. Further, much of the land around Warrenton is zoned for agriculture/forestry and therefore developing these areas would require an expansion of the city's urban growth boundary. This has led to redevelopment into housing in some parts of the city, which is more expensive than building new housing but makes use of lands within the existing urban growth boundary. There is also a lot of retrofitting being done to address stormwater management in older parts of the city. The City of Warrenton recently increased the housing density criteria in the city in direct response to wetland issues and the limited amount of developable land. City staff also noted that wetlands are located throughout the city, and the challenge of building housing while avoiding impacts to wetlands has been observed across neighborhoods and income levels.

Lessons Learned

- Make the wetland review process understandable and straightforward for developers and the general public, so they understand why the regulations are in place. The City's review process can seem cumbersome and applicants sometimes get frustrated at the time it takes to get a project reviewed and approved. Using clear language and providing a transparent process can help to alleviate these concerns.
- Prioritize staff training and communication to ensure effective implementation of existing ordinances. Given the high rate of staff turnover in recent years, a focus on training has helped the Community & Economic Development Department to be consistent in their interpretation and application of the municipal code and wetland standards.
- Focus on concerns specific to the community and their environment. As discussed above, the general public in Warrenton is very aware of and concerned about flooding, as well as the risk of earthquakes and tsunamis. Using local wetland protections as a way to address these concerns can be an effective way to protect the resources and alleviate some of these concerns.

Future Directions

As mentioned above, the City is beginning a code audit that will focus on (1) ensuring the city code is consistent with state requirements and (2) streamlining their process. The City aims to make the land use authorization application and review process more straightforward and understandable for applicants and the general public.

As developers and the general public are becoming more aware of the value of wetlands, the Community & Economic Development Department is making an effort to emphasize this when meeting with developers. Similar to the example above with the 270-acre development, of which approximately 200 acres will be held in a permanent conservation easement, the City is working to encourage the design of other housing developments to include wetland vistas and put these areas into easements.

Finally, the Community & Economic Development Department is working with the North Coast Land Conservancy, a local nonprofit focused on habitat protection. This organization is a large landowner in the city as they purchase properties where wetlands are an obstacle to development and hold them with deed restrictions so no development can occur. The city is working to link North Coast Land Conservancy properties with city and county properties to connect wetland habitats and provide outdoor spaces for recreational use.

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Case Study References and Additional Resources

Warrenton Community & Economic Development Department resources:

- Department website: <https://www.ci.warrenton.or.us/ced>
- Webpage on Wetland Development: <https://www.ci.warrenton.or.us/ced/page/wetland-development>
- Comprehensive Plan: <https://www.ci.warrenton.or.us/ced/page/comprehensive-plan>

Warrenton, Oregon Municipal Code. Title 16 Development Code. Division 3 Design Standards. Chapter 16.156 **Wetland and Riparian Corridor Development Standards**. Available at https://library.qcode.us/lib/warrenton_or/pub/municipal_code.

Oregon Department of Land Conservation and Development resources:

- Webpage on Oregon's Statewide Land Use Planning Goals: <https://www.oregon.gov/lcd/OP/Pages/Goals.aspx>
- Webpage on the History of Land Use Planning: <https://www.oregon.gov/lcd/OP/Pages/History.aspx>
- A Summary of Oregon's Statewide Planning Goals. Available online at <https://www.oregon.gov/lcd/OP/Documents/goalsummary.pdf>
- Statewide Planning Goal 5: Natural Resources, Scenic and Historic Areas, and Open Spaces: <https://www.oregon.gov/lcd/OP/Pages/Goal-5.aspx>
- Statewide Planning Goal 16: Estuarine Resources: <https://www.oregon.gov/lcd/OP/Pages/Goal-16.aspx>
- Statewide Planning Goal 17: Coastal Shorelands: <https://www.oregon.gov/lcd/OP/Pages/Goal-17.aspx>
- *Oregon Statewide Planning Goals and Guidelines*. July 2019. Prepared by the Oregon Department of Land Conservation and Development (DLCD). Available online at https://www.oregon.gov/lcd/Publications/compilation_of_statewide_planning_goals_July2019.pdf.

Oregon Department of State Lands resources:

- Webpage on Wetland Planning and Conservation: <https://www.oregon.gov/dsl/WW/Pages/WetlandConservation.aspx>
- Webpage on Inventories and Maps, including Statewide Wetlands Inventory web map: <https://www.oregon.gov/dsl/wetlands-waters/Pages/inventories-maps.aspx>
- Approved Local Wetland Inventories: <https://www.oregon.gov/dsl/WW/Pages/Inventories.aspx>

Oregon Department of State Lands and Department of Land Conservation and Development. 2004. *Oregon Wetland Planning Guidebook*. Salem, OR. Available online at https://www.oregon.gov/dsl/WW/Documents/wet_plan_guide.pdf



Case Study 2: Bellingham, Washington

At-a-Glance

Community Name: **Bellingham, Washington**

- Population: 91,482
- Watershed: Nooksack River / Pacific Ocean

Summary of Local Wetland Protections:

Bellingham has a Critical Areas Ordinance as required by state law. This ordinance protects wetlands and wetland buffers, which may be up to 200 feet wide. Mitigation sequencing must be followed and off-site mitigation is often required to achieve no net loss of ecological functions.

Community Overview

Bellingham is located in Whatcom County in northwestern Washington. The Nooksack River flows through Bellingham and into Bellingham Bay, which is part of the Salish Sea and Pacific Ocean. Bellingham had a population of 91,482 as of 2020. The median household income is \$59,163 and approximately 19.7% of the city population lives in poverty.⁸

According to the Climate and Economic Justice Screening Tool (CEJST)⁹, Bellingham includes one full census tract and a portion of another tract that are identified as disadvantaged communities due to low household incomes and a high climate burden (expected population loss rate due to natural hazards), low life expectancy, housing barriers (including housing costs, lack of green space and lack of indoor plumbing), and legacy pollution (including presence of Formerly Used Defense Sites and proximity to hazardous waste facilities, Risk Management Plan facilities, and Superfund sites). The remainder of the city is located in census tracts that are not identified as disadvantaged and do not meet the CEJST's threshold for socioeconomic burdens; however, these census tracts also have high expected population loss rates as well as housing and legacy pollution burdens.

Description of Local Wetland Protections

The city of Bellingham, WA has a **Critical Areas Ordinance (CAO)** that regulates most activities in "critical areas" and buffers around these areas and requires a permit from the city for regulated activities to occur. Critical areas include wetlands, critical aquifer recharge areas, frequently flooded areas, geologically hazardous areas, fish and wildlife habitat conservation areas (including streams), and designated critical areas of local significance. The stated purpose of the CAO is to "designate and classify environmentally sensitive and hazardous areas as critical areas and to protect, maintain and restore these areas and their functions and values, while also allowing for reasonable use of public and private property."

A critical area permit is required for "any proposal to alter any critical area and/or required buffer including, but not limited to, clearing, grading, draining, removal of vegetation,

⁸ U.S. Census Bureau. QuickFacts: Bellingham, WA. Available at <https://www.census.gov/quickfacts/>. Accessed October 2023.

⁹ Council on Environmental Quality. Climate and Economic Justice Screening Tool (CEJST). Available at <https://screeningtool.geoplatform.gov>. Accessed October 2023.

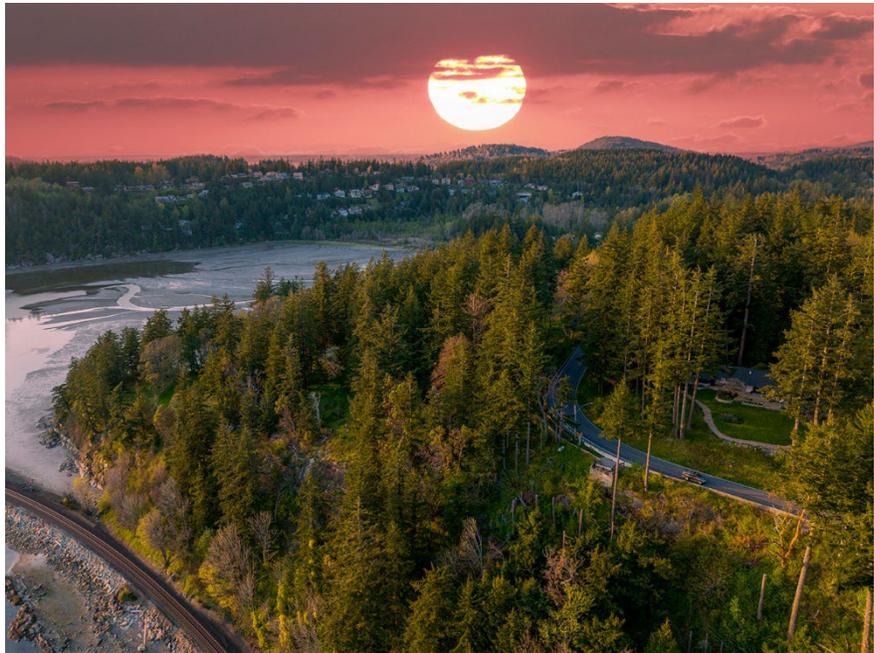
construction of buildings, facilities, utilities and related infrastructure” unless it falls under an exemption or a “minor activity” (which include emergencies; normal operation, maintenance, demolition and deconstruction or repair; modification to existing structures; minor utility projects; select vegetation removal activities; fish, wildlife and wetland restoration activities; and others as defined in the ordinance).

If a proposed project is within, adjacent to, or is likely to impact a critical area, the applicant must submit a critical area report to the city. A critical area report must be prepared by a qualified professional, incorporate the best available science, and include the site plan, identification and characterization of critical areas and their buffers on and adjacent to the site, an assessment of cumulative impacts from the proposed development, and, for those projects that propose an impact to a critical area and/or buffer, an analysis of alternatives and plans for mitigation. The city reviews the critical area report and potential impacts to the critical area and determines if the applicant’s proposed mitigation meets the requirements in the CAO. The city may, at its discretion, consult with state agencies including the Washington Department of Ecology and Washington Department of Fish and Wildlife to ensure that critical area reports are accurate. Mitigation must follow the mitigation sequencing described in the CAO, which requires all reasonable efforts be made to avoid and minimize impacts to critical areas and buffers prior to considering compensatory mitigation measures. Wetland mitigation may be conducted on-site, off-site at a site owned by the developer (and within the same watershed where feasible), or through a mitigation bank. The required wetland replacement ratios for mitigation are listed in the CAO and vary based on the type of mitigation activity (e.g., creation or reestablishment, restoration, enhancement, preservation) and the wetland category. Wetland categories are determined by rating wetlands following the *Washington State Wetland Rating System for Western Washington – 2014 Update*; ratings range from Category I (including relatively undisturbed estuarine wetlands larger than one acre; bogs; mature forested wetlands larger than one acre; and wetlands that perform many functions well on the rating form) to Category IV (wetlands with a low level of functions on the wetland rating form). Impacts to wetland buffers must be compensated for at a mitigation ratio of 1:1. Applicants are required to post a bond for 150 percent of the total costs of mitigation to ensure that the plan is fully implemented. Mitigation sites must be maintained and monitored for a minimum of 5 years.

The CAO requires that any actions taken under the ordinance “shall result in equivalent or greater functions and values of the critical areas associated with the proposed action, as determined by the best available science. All actions and developments shall be designed and constructed in accordance with mitigation sequencing to avoid, minimize, and restore all adverse impacts.” The ordinance goes on to state that no actions will be allowed that result in a “net loss of the functions or values of critical areas.”

Bellingham’s CAO applies to all wetlands, although there are exemptions from the buffer requirements and mitigation sequencing for certain isolated wetlands that are small (less than 1,000 square feet), low functioning, and meet other requirements, as well as for wetlands and drainage structures that were artificially and intentionally created from non-wetland sites and are not part of a mitigation site.

Required wetland buffer widths are provided in the CAO and range from 25 feet to 200 feet; the buffer width for a given wetland is determined based on the wetland category, adjacent land use, and the functions provided by the wetland (as determined on the wetland rating form). Impacts to the buffer must be reviewed by the city and compensatory mitigation for such impacts is required. Further, buildings, paving, and other hard surfacing are required to be set back 15 feet from the edge of the wetland buffer.



Chuckanut Bay Drive Estuary, Photo Credit: © CascadeCreatives / Adobe Stock

In addition to the wetland protections described above, city staff noted that there are additional indirect protections for wetlands through the city's stormwater management regulations. In western Washington, the standard is to model a site as fully forested and then design stormwater facilities to match the runoff rate and treatment that would occur under those conditions. Since 2019, the city has required additional data collection on sites with wetlands so that the development plans can match the release rate and volume of the site pre-development.

Relationship Between Local Protections and State/Federal Regulations

Many proposed projects are subject to Washington's State Environmental Policy Act (SEPA) and must be reviewed to identify and analyze the environmental impacts associated with the proposal. Bellingham is typically the lead agency for projects subject to SEPA review within city limits. Depending on the scope of the proposed project, environmental review under the SEPA includes public involvement such as sending notices to property owners within 500 feet of the site or holding a neighborhood meeting prior to application submittal.

Under the Growth Management Act, Washington State requires that all cities and counties have a CAO. The State's Department of Ecology provides technical assistance, guidance, and training on developing and implementing these ordinances. The Department of Ecology has published guidance for local governments to develop and update their critical area protections, as well as a synthesis of the best available science for wetlands. The Department of Ecology has also published guidance on wetland mitigation, tools for evaluating wetland functions and values, and compensatory mitigation.

Local CAOs such as Bellingham’s are very protective and include large buffers; buffer sizes depend on the wetland type and other factors and are determined using a rapid assessment method. Many ordinances are similar to one another as the State has provided sample ordinance language and guidance for ordinance development. More variation among communities is seen in the implementation of the ordinances, which may vary due to staffing, budget, and local priorities.

Buffer widths are determined based on the following criteria:

- The wetland type and the functions needing protection
- The types of adjacent land use and their expected impacts
- The characteristics of the buffer area (slope, soils, vegetation)

The Department of Ecology provides recommended buffer widths that are based on a moderate-risk approach to protecting wetland functions. The Department of Ecology has provided several options for buffer widths, as discussed in the *2022 Wetland Guidance for Critical Areas Ordinance Updates*, and each city and county may select an option that best fits their jurisdiction.

Washington also requires local protection of shorelines under the Shoreland Management Act, which aims to protect natural resources on shorelines, promote public access, and foster appropriate uses (e.g., marinas, piers, ports, etc.). The Shoreland Management Act applies to saltwater shorelines, lakes over 20 acres, certain rivers (based on flow) and associated wetlands, and any land within 200 feet of shorelines. Under the Act, local governments are required to develop and adopt Shoreline Master Programs (SMPs). The Department of Ecology has final approval authority over SMPs and has oversight over the development and some of the implementation of these regulations. SMPs incorporate critical area protections, and the Department of Ecology’s review and approval process includes confirmation that the local CAO regulations meet the State’s SMP guidelines and the “no net loss of ecological functions” requirement under the Shoreline Management Act.

As with CAOs, local governments are responsible for the implementation of their SMPs, including project review and permit issuance. Applications for variances from SMPs and certain other types of permit applications are reviewed and approved by the Department of Ecology.

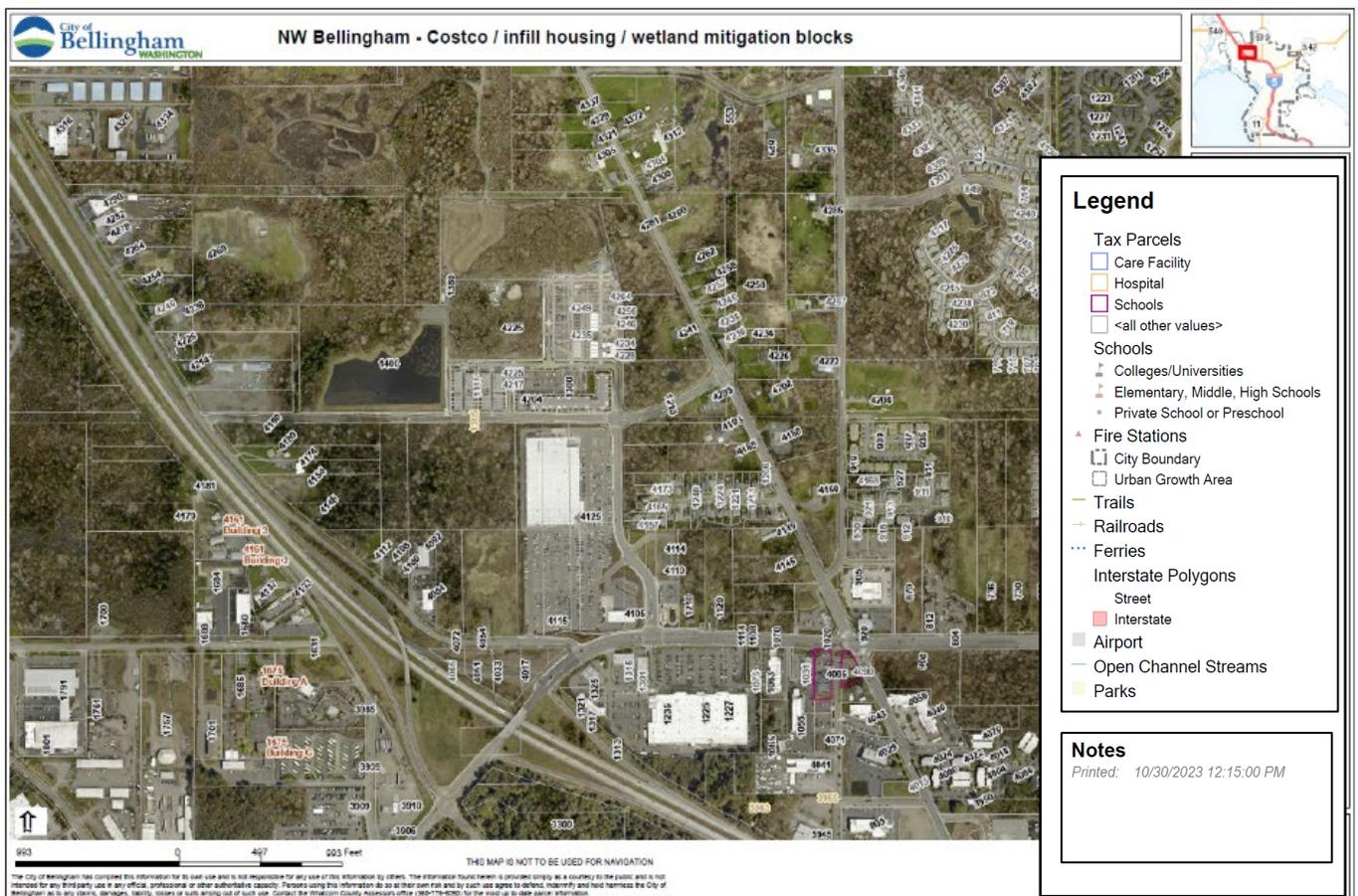
History and Implementation of Local Wetland Protections

The Washington State Growth Management Act was passed in 1990, and Bellingham passed their first wetland and stream ordinance the following year to comply with state law. Bellingham’s CAO was first adopted in 2005 and was last updated in 2016 to incorporate updates to the best available science released by the Department of Ecology.

For the Bellingham Planning and Community Development Department, permit applications that involve impacts to wetlands require a lot of review and coordination with the developer. Mitigation is especially complicated as projects must follow the mitigation sequencing and meet the “no net loss of ecological functions” requirement to be approved. There are no mitigation banks with credits currently available for projects in Bellingham, although the city is in the process of applying for a city-owned bank. Often developers purchase a separate

property in order to complete off-site mitigation. City staff noted that this leads to an inequity between larger developers, who can afford to buy additional sites and conduct mitigation activities, and proponents of smaller projects who may have to scale back or alter their project in order to meet mitigation requirements. Further, as development continues, land supply for off-site mitigation properties is becoming a limiting factor.

City staff provided an example of off-site mitigation sites that are shown on the below map. This portion of northwest Bellingham, which is not as densely developed as the central part of the city, includes a large stormwater pond as well as several tracts north of the pond that have been purchased and utilized as off-site mitigation properties for the city, a school, and private developers. These mitigation sites are contiguous, resulting in a larger block of protected habitat than anticipated since they were protected on a project-by-project basis. However, as the city has continued to grow, recent developments have occurred in this area including commercial developments (e.g., Costco) and dense townhouses (both shown in the middle of the map below). Further development in this area will consist mostly of redevelopment or smaller projects as many of the remaining undeveloped tracts are protected mitigation sites for existing developments located elsewhere in the city.



A map of northwest Bellingham, showing recent development (including commercial developments and townhouses; center) adjacent to wetland mitigation sites (upper left). Map courtesy of Steve Sundin.

Enforcement is an important part of implementing the CAO, and violations that involve illegal filling in wetlands have a big impact on department workload. When a violation is reported, the city issues a stop-work order and then conducts fact finding, reconciliation, and comes to an agreement with the developer on appropriate mitigation. Work on the project cannot resume until this process has been completed. Investigating and reconciling violations can require a lot of staff time and resources to address.

Impacts on Wetlands

As described above the CAO is protective of wetlands and wetland buffers and mitigation is required for projects to meet the “no net loss of ecological functions” requirement. Mitigation plans must include a minimum of 5 years of maintenance and monitoring, with annual reports being submitted to the city for review. City staff noted that monitoring reports are used to assess hydrology and vegetation in the mitigation sites and that, as summers are becoming longer and hotter, management of mitigation sites has to be adjusted. For example, some sites need to be watered during the summer to maintain an appropriate hydroperiod. Also, planting density has to be increased to account for more loss of vegetation during site establishment.

Many of the undeveloped sites remaining in Bellingham include wetlands and present challenges to infill development. As these sites are already surrounded by urbanized areas, it is difficult to design projects that avoid wetlands. Often, proposed projects encroach into the wetland buffer or result in indirect impacts to the wetland due to the limited space available for development. City staff noted that mitigation for these types of projects can result in a higher quality wetland post-development due to on-site enhancement and other mitigative measures.

While the city thoroughly tracks and reviews individual projects and mitigation sites, they do not currently track wetland impacts or mitigation across projects. However, city staff indicated that they are in the process of updating their permit tracking software to add this type of information for individual projects, which will allow for future tracking of wetland impacts and mitigation sites across projects.

Impacts on the Local Community

The city of Bellingham is rapidly growing, with an expected population increase of 30,000 people over the next several decades. This creates pressure to build housing and infrastructure, which must be balanced with protection of wetlands and other sensitive environmental features. There is a lot of public support for environmental protections in the area. The general public is very aware of what developments are being approved and provides lots of feedback to the city, generally in favor of greater environmental protection.

Lessons Learned

- Ensure staff are adequately trained in interpreting wetland delineations and ratings during project reviews to minimize potential wetland impacts on a site.
- Provide opportunities for smaller developers to complete required mitigation, such as city-owned banks or in-lieu fee programs. In Bellingham, City staff noted that the lack of mitigation credits available to developers led to an inequity between larger developers, who can afford to buy additional properties and conduct mitigation activities, and

proponents of smaller projects who may have to scale back or alter their project in order to meet mitigation requirements.

- If off-site mitigation is necessary, consider including ordinance language that requires locating off-site mitigation to be contiguous with other protected habitat blocks to maximize ecological benefits.

Future Directions

The City will continue to implement and enforce the CAO, SMP, and SEPA, and no changes to these regulations are anticipated at this time. The CAO is subject to a periodic update every 10 years and Bellingham will have their next update due by June 30, 2025.

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Case Study References and Additional Resources

Bellingham Planning and Community Development Department resources:

- Department website: <https://cob.org/gov/dept/pcd>
- Webpage on Environmental Plans and Regulations: <https://cob.org/services/planning/environmental>
- Webpage on Critical Areas Ordinance: <https://cob.org/services/planning/environmental/critical-areas>

Bellingham Municipal Code (BMC). Title 16 Environment. Chapter 16.55 **Critical Areas**. Available at <https://bellingham.municipal.codes/BMC/16.55>.

Washington Department of Ecology web resources:

- Local Wetland Regulations: Growth Management Act Technical Assistance: <https://ecology.wa.gov/Water-Shorelines/Wetlands/Regulations/Local-regulations>
- Shoreline Management: <https://ecology.wa.gov/water-shorelines/shoreline-coastal-management/shoreline-coastal-planning>
- Overview of Washington State Environmental Policy Act (SEPA): <https://ecology.wa.gov/Regulations-Permits/SEPA/Environmental-review/SEPA-guidance/Basic-overview>
- Wetland Rating System: <https://ecology.wa.gov/Water-Shorelines/Wetlands/Tools-resources/Rating-systems>
- Best Available Science for Wetlands: <https://ecology.wa.gov/water-shorelines/wetlands/tools-resources/best-available-science>
- Wetlands & Climate Change: <https://ecology.wa.gov/water-shorelines/wetlands/tools-resources/wetlands-climate-change>

Washington Department of Ecology publications:

- Granger, T., T. Hruby, A. McMillan, D. Peters, J. Rubey, D. Sheldon, S. Stanley, E. Stockdale. April 2005. Wetlands in Washington State - Volume 2: Guidance for Protecting and Managing Wetlands. Washington State Department of Ecology. Publication #05-06-008. Olympia, WA. Available to download at <https://apps.ecology.wa.gov/publications/SummaryPages/0506008.html>.
- Hruby, T. 2013. Update on Wetland Buffers: The State of the Science, Final Report, October 2013. Washington State Department of Ecology Publication #13-06-11. Available to download at <https://apps.ecology.wa.gov/publications/SummaryPages/1306011.html>.
- Sheldon, D., T. Hruby, P. Johnson, K. Harper, A. McMillan, T. Granger, S. Stanley, and E. Stockdale. March 2005. Wetlands in Washington State - Volume 1: A Synthesis of the Science. Washington State Department of Ecology. Publication #05-06-006. Olympia, WA. Available to download at <https://apps.ecology.wa.gov/publications/SummaryPages/0506006.html>.
- Washington Department of Ecology. 2022. Wetland Guidance for Critical Area Ordinance (CAO) Updates: Western and Eastern Washington. Publication #22-06-014. Olympia, WA. Available to download at <https://apps.ecology.wa.gov/publications/summarypages/2206014.html>.
- Washington State Department of Ecology, U.S. Army Corps of Engineers Seattle District, and U.S. Environmental Protection Agency Region 10. 2021. Wetland Mitigation in Washington State—Part 1: Agency Policies and Guidance (Version 2). Washington State Department of Ecology Publication #21-06-003. Available to download at <https://apps.ecology.wa.gov/publications/documents/2106003.pdf>.
- Washington State Department of Ecology, U.S. Army Corps of Engineers Seattle District, and U.S. Environmental Protection Agency Region 10. March 2006. Wetland Mitigation in Washington State— Part 2: Developing Mitigation Plans (Version 1). Washington State Department of Ecology Publication #06-06-011b. Olympia, WA. Available to download at <https://apps.ecology.wa.gov/publications/documents/0606011b.pdf>.



Case Study 3: Lake County, Illinois

At-a-Glance

Community Name: **Lake County, Illinois**

- Population: 714,351
- Watershed: Des Plaines River / Fox River / Chicago River / Lake Michigan

Summary of Local Wetland Protections:

The Lake County Stormwater Management Commission administers a Watershed Development Ordinance that applies to the 52 municipalities in the county. Under the ordinance, minimum standards for stormwater management are established, including specific protections for wetlands. The ordinance covers both wetlands jurisdictional under the Clean Water Act and isolated waters (including wetlands) of Lake County, and a *Watershed Development Permit* must be obtained for developments that impact such wetlands.

Community Overview

Lake County is located in northeastern Illinois, north of Chicago and along the shore of Lake Michigan. The county includes 52 municipalities as well as unincorporated areas; in total, approximately 714,351 people resided within the county as of 2020.¹⁰ Lake County is relatively affluent, with the second highest per capita income of counties in Illinois (\$104,553) and a relatively low poverty rate (8.2%) compared to other counties. However, a range of socioeconomic levels are present and several census tracts within the county are identified as disadvantaged communities according to the Climate and Economic Justice Screening Tool (CEJST).¹¹

Lake County is a suburban county with many residents working in nearby Chicago. Much of the county is developed with a high overall population density. The easternmost portion of Lake County is within the Lake Michigan watershed, while the central and western portions of the county lie within the Fox River, Des Plaines River, and North Branch Chicago River watersheds, all of which flow southward to the Illinois and Mississippi Rivers.

Description of Local Wetland Protections

The Lake County Stormwater Management Commission's (SMC's) mission is to "coordinate the stormwater activities of over 80 local jurisdictions to improve water quality, reduce flood damages, and restore and enhance the natural drainage system." The SMC was established in 1990 through state legislation and works to administer floodplain and stormwater management standards, reduce flood damage, and protect and restore natural resources throughout the county. SMC administers the **Lake County Watershed Development Ordinance (WDO)**, which is one part of the Lake County Comprehensive Stormwater Management Plan. The goal of the

¹⁰ U.S. Census Bureau. QuickFacts: Lake County, Illinois. Available at <https://www.census.gov/quickfacts/>. Accessed September 2023.

¹¹ Council on Environmental Quality. Climate and Economic Justice Screening Tool (CEJST). Available at <https://screeningtool.geoplatform.gov>. Accessed September 2023.

WDO is to ensure “that new development does not increase existing stormwater problems or create new ones. The WDO establishes minimum countywide standards for stormwater management, including floodplains, detention, soil erosion/sediment control, water quality treatment, and wetlands.”

The WDO applies to the 52 municipalities in Lake County; development in unincorporated areas of the county is reviewed by the Lake County Planning, Building & Development Department under their Unified Development Ordinance. This department issues Site Development Permits, which are the equivalent of Watershed Development Permits for unincorporated areas.

The WDO includes several purposes of the ordinance, including the following:

“Conserve the natural hydrologic, hydraulic, water quality, and other beneficial functions of wetlands by having, at a minimum, no net loss of wetlands in Lake County, and further these beneficial functions of wetlands by having an objective of a ‘net gain’ of wetland function as specified in the Wetland Restoration and Preservation Plan component of the Lake County Comprehensive Stormwater Management Plan.” (WDO §102.10)

The WDO is implemented by either SMC or at the local level by municipalities that have been approved as “Certified Communities.” SMC reviews permit applications for impacts to isolated wetlands unless a municipality is “Wetland Certified.”

The WDO requires that a **Watershed Development Permit** be obtained for any development that:

1. Is located in a Regulatory Floodplain; or
2. Is located in a flood-prone area with one hundred (100) acres of tributary drainage area or more; or
3. Is located in a depressional storage area with a storage volume of 0.75 acre-foot or more for the base flood; or
4. Creates a wetland impact within an area defined as Waters of the U.S. or Isolated Waters of Lake County; or
5. Modifies the flood-prone area of a channel where the tributary drainage area is twenty (20) or more acres; or
6. Includes the total land area of an ownership parcel that results in:
 - a. More than one (1) acre of new impervious surface area; or
 - b. More than three (3) acres of hydrologically disturbed area, unless the total new impervious surface area is less than one-half (0.5) acre; or
 - c. An impervious surface area ratio of fifty percent (50%) or greater, unless the total new impervious surface area is less than one-half (0.5) acre; or
7. Any public road development meeting both of the following criteria:
 - a. One and one-half (1.5) acres or more of new impervious surface; and
 - b. One and one-half (1.5) acres or more of new impervious surface per mile, for linear or nonlinear projects; or
8. Any development that hydrologically disturbs 5,000 square feet or more; or

-
9. Any activity to a building in a Special Flood Hazard Area (SFHA) as described in FEMA Publication 480 National Flood Insurance Program Flood Management Requirements.

Isolated Waters of Lake County (IWLC) are defined in the ordinance as “all waters such as lakes, ponds, streams, farmed wetlands, and wetlands that are not under U.S. Army Corps of Engineers jurisdiction.” Certain exclusions from this category are also described in the ordinance and include roadside ditches, wetlands created incidentally to construction grading on a development site, and excavations and impoundments that meet set criteria.

Wetland impact is defined as IWLC or waters of the United States that “are hydrologically disturbed or otherwise adversely affected by flooding, filling, excavation, or drainage which results from implementation of a development activity.”



Late summer wetland. Photo Credit: © Hank Erdmann / Adobe Stock

While the WDO is not solely focused on wetland protection, there are both direct protections for wetlands included in the ordinance (as discussed further below) and the possibility of indirectly protecting wetlands through the other portions of the ordinance that address floodplain protections, compensatory

storage requirements for loss or displacement of flood storage capacity, and protections of flood-prone areas. For example, the WDO has specific requirements for maintaining the volume of runoff that drains to preserved IWLC on development sites. Further, SMC staff noted that wetlands are recognized as an important part of green infrastructure and that the preservation of wetlands on a development site can aid in meeting the project’s stormwater requirements.

For development sites that include waters of the United States or IWLC, applicants must have a wetland delineation prepared by a Lake County Certified Wetland Specialist¹² and a valid jurisdictional determination (JD) from the U.S. Army Corps of Engineers (USACE) that identifies which wetlands on the development site are waters of the United States or IWLC. For development impacts to waters of the United States, the applicant must provide SMC with a

¹² Certified Wetland Specialists (CWS) must have completed a SMC-approved wetland delineation course, meet minimum qualifications, and pass the CWS Exam, which is administered by SMC. Certification is valid for three years after which time one must applied for recertification as a CWS.

USACE permit for the proposed development or a letter stating that the development does not require USACE authorization. Any mitigation for impacts to waters of the United States is to be conducted as required by the USACE, including following the USACE's mitigation hierarchy and utilizing USACE-approved mitigation banks located within Lake County. For impacts to waters of the United States, the applicant must follow buffer requirements as described in the WDO.

For impacts to IWLC, detailed permit applications must be submitted to SMC or the Certified Community, depending on project location; application requirements include a description of the proposed activity, a calculation of wetland impacts, development site plans, a wetland hydrology assessment, documentation regarding high-quality aquatic resources and state and federal endangered species, a mitigation plan, and a narrative of alternative measures taken to avoid, minimize, or mitigate for the anticipated wetland impacts. Mitigation requirements for impacts to IWLC are described in the WDO, including mitigation ratios based on the quality of the impacted aquatic resources and plans for long-term management and monitoring of wetland mitigation sites. SMC has a Wetland Restoration Fund that may be used to fulfill mitigation requirements when wetland mitigation bank credits are not available. The cost per acre to utilize the Wetland Restoration Fund varies by watershed within Lake County, and the Fund is used to support mitigation projects in the watershed where impacts occurred.

Under the WDO, SMC or Certified Communities are responsible for inspecting site developments and ensuring compliance with the ordinance. If needed, SMC Enforcement Officers can issue stop work orders, charge fines for WDO violations, and take other legal actions.

Relationship Between Local Protections and State/Federal Regulations

As described in the previous section, SMC works closely with the USACE Chicago District for review of projects that impact waters of the United States. In addition, the State of Illinois regulates wetlands under state and federal regulations as described below.

Under Clean Water Act Section 401, projects that require a federal license or permit and may result in a discharge into waters of the United States, such as Clean Water Act Section 404 permits issued by the Corps, must obtain a Section 401 water quality certification or waiver from Illinois Environmental Protection Agency's (IEPA's) Division of Water Pollution Control, Permit Section. IEPA has the authority to determine whether the federally licensed or permitted project will comply with the applicable water quality requirements. The term "water quality requirements" includes water quality standards set by IEPA under Section 303 of the Clean Water Act, in addition to: any limitation, standard, or other requirement under Clean Water Act sections 301, 302, 303, 306, and 307; any Federal and state laws or regulations implementing those sections; and any other water quality-related requirement of state law.

In addition to IEPA's role under Section 401 of the Clean Water Act, Illinois has a separate wetland regulatory program under the State's Interagency Wetlands Policy Act of 1989, which

authorizes the Illinois Department of Natural Resources to regulate state-funded projects.¹³ Under this program, several state and federal agencies participate in a committee to approve such projects. Agencies represented on the committee include: Illinois Department of Natural Resources, Illinois Department of Agriculture, IEPA, Illinois Historic Preservation Society, the Capital Development Board, the Department of Commerce and Community Affairs, the Illinois Department of Transportation Bureau of Design and Environment, Natural Resources Conservation Service, USACE, U.S. Fish and Wildlife Service, and the U.S. EPA.

History and Implementation of Local Wetland Protections

In 1957, the Northeastern Illinois Planning Commission (NIPC)¹⁴ was created by the state legislature. The NIPC provided ordinance templates that Lake County used to develop their WDO; DuPage County and McHenry County have also adopted ordinances with similar language.

In Lake County, the SMC was formed following major flooding in the 1980s. Local elected officials recognized that there was a need for stormwater management at a county-wide level. The WDO was put in place in 1992 and has been amended periodically. For example, the provisions for including Isolated Waters of Lake County were added to the WDO after the definition of “waters of the United States” was changed as a result of the



Photo Credit: © Hank Erdmann / Adobe Stock

2001 Supreme Court decision in *Solid Waste Agency of Northern Cook County v. United States Army Corps of Engineers* (the SWANCC decision). When SMC is considering ordinance changes, they get input from their Technical Advisory Committee (TAC). The TAC has 13 members, including representatives from the USACE, Lake County, the Illinois Department of Transportation, the development community, environmental representatives, and representatives from municipalities and unincorporated areas within Lake County. TAC meetings are open to the public and held monthly, and SMC staff noted that members of the general public often provide their input at these meetings as well.

¹³ The Interagency Wetlands Policy Act applies to state and state pass-through funded construction activities (with some exceptions), state-supported land management activities, state and state supported technical assistance programs, and other state activities that result in adverse impacts to wetlands. More information available in the text of the Act, available here: <https://www.ilga.gov/legislation/ilcs/ilcs5.asp?ActID=279&ChapterID=5>

¹⁴ NIPC is now part of the Chicago Metropolitan Agency for Planning (CMAP).

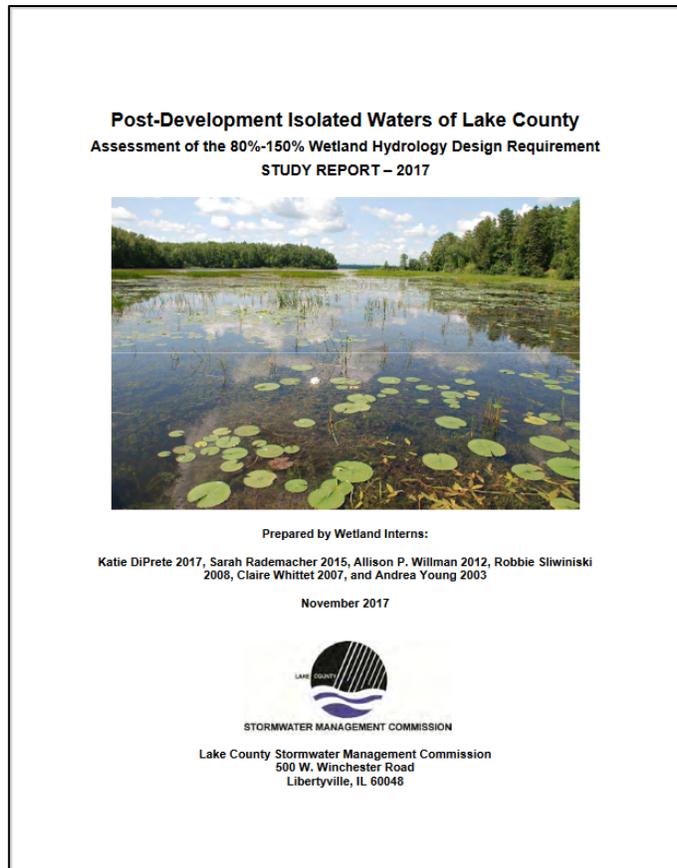
Implementation of the WDO is staff-intensive, and SMC typically has two and a half full-time wetlands staff. Within Lake County, there are 42 local municipalities that are certified to administer the WDO on their own; about half of these are also certified for isolated wetlands. In those cases, the municipal government issues permits, does inspections, and enforces the ordinance. SMC provides oversight and can require a concurrent review for a community's permit applications to ensure the ordinance is being implemented as expected. SMC recertifies local municipalities every 5 years.

Impacts on Wetlands

SMC staff track impacts to wetlands for each project that is issued a Watershed Development Permit. The information tracked includes area of impact to wetlands, preserved wetland areas (i.e., undisturbed wetlands remaining on a development site), and amount of wetland mitigation provided for the project (broken down into in-watershed and out-of-watershed amounts). In January 2023, SMC summarized this information for authorized impacts to IWLC from the program's inception in 2001 through the end of 2022. They found that there had been 485 developments with impacts to IWLC reviewed by SMC during this time period. In total, impacts to 159.8 acres of IWLC were recorded and 219.9 acres of mitigation were provided. Further, 803.3 acres of IWLC were preserved on development sites during this time. In their January 2023 memo, SMC concluded that these data indicate that the "isolated wetland provisions in the WDO are working effectively to meet Goal #2 of the Lake County Comprehensive Management Plan (1990, updated 2002)." Goal #2 states: "Protect existing water resources, including lakes, streams, floodplains, and wetlands, from detrimental and unnecessary modification so that their beneficial functions are maintained and public expenditures and damages are minimized."

Impacts on the Local Community

As discussed above, SMC's TAC holds monthly meetings. In addition to TAC members, the general public is able to comment on WDO standards and other matters before the committee during these meetings.



Example report providing results of SMC's ongoing work to determine conditions of preserved Isolated Waters of Lake County relative to pre-project conditions

Stormwater management and flooding concerns impact communities throughout Lake County, although SMC staff noted that there may be disproportionate impacts on lower-income communities. One reason for this disparity is that flood-prone areas have lower land values, so individuals with lower incomes can afford to live in these areas. In addition, many areas that were developed prior to the adoption of the WDO have housing located in floodplains, which creates a risk of flooding the existing houses.

Lessons Learned

- Identify opportunities for wetland protections that also meet other local goals. The WDO is part of the Lake County Comprehensive Stormwater Management Plan and the goal of the WDO focuses on stormwater problems from developments. The protection of wetlands, while not the primary goal of the WDO, directly supports this goal through conserving the “natural hydrologic, hydraulic, water quality, and other beneficial functions of wetlands.”
- Keep the ordinance language clear and straightforward. Although the WDO is a long document, SMC aims to keep it concise and user-friendly.
- Perform outreach to other communities and prioritize education, outreach, and training. For Lake County, this includes both continuing education for SMC staff and SMC providing training to others. They collaborate with nearby counties and share experiences, and have worked with a neighboring county to streamline their protections and ordinances.

Future Directions

A recent update to the WDO was completed in July 2023, which included some minor updates and clarifications to mitigation requirements and other wetland-related sections. Also, in response to more frequent and stronger rainfall events occurring in Lake County, SMC revised the rainfall data used in stormwater calculations in 2020 to incorporate updated data from the Illinois State Water Survey.

SMC staff noted that the extent of IWLC has changed over time due to shifting federal definitions of “waters of the United States”, and that they expect a large increase in waters considered to be IWLC following the U.S. Supreme Court’s decision in the *Sackett* case. This will likely increase the workload for SMC wetland staff. As of August 2023, they are awaiting further guidance on the revised definition of “waters of the United States” and how to apply this definition.

SMC staff noted that USACE-approved mitigation banks in Lake County are mostly sold out of credits, and the SMC Wetland Restoration Fund is a last-choice option in the USACE mitigation hierarchy. Future work may include partnering with the USACE on the use of the Wetland Restoration Fund or identifying other potential wetland mitigation banks in Lake County.

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Case Study References and Additional Resources

Lake County Stormwater Management Commission (SMC) website:
<https://www.lakecountyil.gov/553/Stormwater-Management-Commission>

Watershed Development Ordinance:

- Full ordinance: <https://www.lakecountyil.gov/DocumentCenter/View/3445/Lake-County-Watershed-Development-Ordinance-July-11-2023-PDF?bidId=>
- Webpage with background, 2023 Ordinance Amendments, and information on Watershed Development Permits: <https://www.lakecountyil.gov/2358/Watershed-Development-Ordinance>

Wetlands-specific resources:

- SMC webpage on Wetlands: <https://www.lakecountyil.gov/2499/Wetlands>
- Isolated Waters of Lake County (IWLC) webpage: <https://www.lakecountyil.gov/2508/Isolated-Waters-of-Lake-County>
- Lake County Certified Wetland Specialist (CWS) requirements and certification process: <https://www.lakecountyil.gov/2469/Certified-Wetland-Specialist>
- Wetland Restoration Fund webpage: <https://www.lakecountyil.gov/2526/Wetland-Restoration-Fund>
- *Post-Development Isolated Waters of Lake County Assessment of the 80%-150% Wetland Hydrology Design Requirement STUDY REPORT – 2017*. Available to download at <https://www.lakecountyil.gov/2309/Reports-Studies>.

Lake County Planning, Building & Development Department webpage on Site Development Permits: <https://www.lakecountyil.gov/729/Site-Development-Permit>

IEPA 401 Water Quality Certification Program: <https://epa.illinois.gov/topics/forms/water-permits/401-water-quality-certification.html>

Illinois Department of Natural Resources Office of Water Resources:
<https://dnr.illinois.gov/waterresources.html>

Illinois Department of Natural Resources Wetlands Webpage:
<https://dnr.illinois.gov/conservation/wetlands.html>



Case Study 4: Spring Lake Township, Michigan

At-a-Glance

Community Name: **Spring Lake Township, Michigan**

- Population: 12,799
- Watershed: Lower Grand River / Lake Michigan

Summary of Local Wetland Protections:

Spring Lake adopted a Wetland Protection Ordinance in 2009 that requires a local Wetland Use Permit for impacts to wetlands from regulated activities. The ordinance covers some wetlands that are not regulated by the state. Other local protections include a wetland setback requirement for new developments.

Community Overview

Spring Lake Township is located in Ottawa County in western Michigan along the shore of Lake Michigan. The Township had a population of 12,799 as of 2020¹⁵; there has been steady population growth in the Township since 1990. The community is relatively affluent, with median household income growing to \$70,712 in 2020. No census tracts within the township are identified as disadvantaged communities according to the Climate and Economic Justice Screening Tool (CEJST)¹⁶. Spring Lake Township encompasses part of Spring Lake and its confluence with the Grand River, which flows into Lake Michigan just downstream of the township boundary. Water sports and recreation are popular for both residents and visitors to the area, and there are several state parks and public beaches along Lake Michigan in and near Spring Lake Township.

Description of Local Wetland Protections

Wetland Protection Ordinance

Spring Lake Township's **Wetland Protection Ordinance** was adopted in 2009 and is found in Chapter 14 (Environment) of the Code of Ordinances. The Wetland Protection Ordinance is intended to ensure the protection and preservation of wetlands as a benefit to the people of the township and lists numerous benefits of wetlands, including flood and storm control, wildlife habitat, erosion control, open space, and "maintaining the overall quality of life and future interests for both those persons residing within this township and those persons visiting and recreating within the township." The ordinance also cites the high rate of wetland loss in Ottawa County to support the protection of remaining wetlands in the area.

Under the Wetland Protection Ordinance, more wetlands are protected and regulated than under state or federal regulations. The ordinance states that the Michigan Department of Environment, Great Lakes, and Energy (EGLE; formerly MDEQ) and the USACE "do not have regulatory authority over all noncontiguous wetlands in the township even though many of

¹⁵ U.S. Census Bureau. QuickFacts: Spring Lake Township, Michigan. Available at <https://www.census.gov/quickfacts/>. Accessed September 2023.

¹⁶ Council on Environmental Quality. Climate and Economic Justice Screening Tool (CEJST). Available at <https://screeningtool.geoplatform.gov>. Accessed September 2023.

these wetlands may provide important resource values and benefits to the people of the township.” The ordinance includes the following purposes:

- The protection and preservation of *noncontiguous wetlands* that are not covered by state regulations; and
- Increased protection and preservation of remaining *contiguous wetlands* (which are also regulated by the State) within the township.

The ordinance defines *nonregulated wetlands* (i.e., not regulated by the township) and explains that the “township has decided to not regulate (these wetlands), pursuant to this article, based on their size, vegetative composition, physical features, assumed minimal resource value, and as a means of allocating township resources to effectively regulate wetlands with perceived greater resource values and functions.” Examples of nonregulated wetlands include noncontiguous wetlands less than 300 square feet in size; larger noncontiguous wetlands with low floristic quality indices; and wetlands within road rights-of-way.



Sand Dunes along Lake Michigan within PJ Hoffmaster State Park in Spring Lake Township.
Photo Credit: A Healthier Michigan, “PJ Hoffmaster State Park,” CC BY-SA 2.0 DEED

Under the Wetland Protection Ordinance, a **wetland use permit** is required for regulated activities; this permit is issued by either the township’s Wetland Office or the Wetland Review Board (see description below). A permit must be obtained to conduct the following activities within a wetland:

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- Depositing or permitting the placement of fill material;
 - Grading of the surface profile of the land;
 - Dredging, removing, or permitting the removal of soil, vegetation (including root system removal in any form) or minerals;
 - Draining, or causing to be drained through artificial means, any water into or from a wetland; and
 - Constructing, operating, or maintaining any use or development (e.g., any activity that occupies space and/or diminishes the ability of the area to function; any activity that requires a building permit, septic permit or any other required state, county or local permit).

Mitigation is required for permitted impacts to wetlands over 0.25 acre; the ordinance includes options for compensatory mitigation through wetland creation, mitigation, restoration, or enhancement to compensate for losses and pursue the goal of no net loss of wetlands. Activities that were completed prior to the adoption of the ordinance in 2009 did not require wetland use permits, and permits are not required for ongoing maintenance or repair of such activities or structures.

Enactment of the Wetland Protection Ordinance included the creation of a Wetland Review Board to review applications. The Board consists of five unpaid community members who are appointed by the Township Board; Board membership must include representatives with both development and environmental protection backgrounds. The role of the Wetland Review Board is to review and provide feedback on wetland permit applications and make decisions in the case of applicants or landowners appealing a wetland use permit application decision, wetland identification, or wetland verification by the township staff or their wetland consultant. The Board's involvement in application review varies with project size and complexity; for projects with minor wetland impacts, the Wetland Office staff typically complete the project review and share their recommendations with the Board. For larger projects, the Board is more involved in reviewing the permit application, alternatives, and proposed site design. The use of a Board consisting of community members and appointed by elected officials takes pressure off Township staff and adds validity to the wetland permitting process. Township staff also noted that, once the Board was established, it has required relatively little staff time to conduct ongoing Board facilitation.

Additional Wetland Protections in the Zoning Ordinance

The Wetland Protection Ordinance notes that EGLE and USACE “do not have regulatory authority to require construction or land alteration activities to be located a specific distance away from a wetland. Activities on upland are not regulated pursuant to part 303 of the Natural Resources and Environmental Protection Act (‘NREPA’), even though the close proximity of these activities to wetlands may result in adverse impacts to those resources.” However, the Township has chosen to regulate areas in close proximity to wetlands by establishing a Wetland Setback requirement for projects subject to their Zoning Ordinance. The wetland setback consists of a 25-foot-wide buffer around wetlands to protect these resources from “inadvertent and secondary impacts” and improve wetland functions and services, such as wildlife habitat and erosion control.

In accordance with the Zoning Ordinance, the wetland setback area or buffer is to be maintained in a natural state without any structures, dredging or filling, or removal of soils, minerals or vegetation. Township staff noted that enforcement of these requirements can be challenging, and in particular the setback areas are sometimes mowed in violation of the ordinance. Structures are only allowed in the wetland setback area with proper permits or variances approved by the Township.

Wetlands are also included in the definition of “significant natural features” in the Township’s Zoning Ordinance. New developments in the Township are required to have a minimum of 20 percent open space¹⁷ and the open space must be located within the parcel to preserve significant natural features (including wetlands).

A recent addition to the Zoning Ordinance is a requirement for any wetlands and wetland setback areas to be included in the “Common Element” (i.e., the area designated for use by all owners within a development) of new developments. This requirement will ensure that regulated wetlands and their associated setback areas are not on individual land parcels but rather within the area that is designated for use by all residents of a housing development. By incorporating wetlands and wetland setback areas into the Common Element, the management and maintenance of these areas now falls to the homeowner’s association. This is expected to provide additional protection to wetlands and an added layer of enforcement as unpermitted activities within wetlands or setback areas would be violating the rules of the homeowner’s association (in addition to Township ordinances).

Relationship Between Local Protections and State/Federal Regulations

Michigan has robust wetland protections at the state level as detailed in the Natural Resources and Environmental Protection Act (NREPA) and administered by the Michigan Department of Environment, Great Lakes, and Energy (EGLE; formerly MDEQ). Further, Michigan is one of only three states which has assumed the Clean Water Act Section 404 program from the federal government. In general, applicants in Michigan submit one wetland permit application to EGLE which processes the permit meeting state and Clean Water Act requirements.

Under the NREPA, the State of Michigan regulates specific wetlands, including wetlands connected to or within 1,000 feet of one of the Great Lakes or Lake St. Clair; wetlands connected to or within 500 feet of an inland lake, pond, river or stream; and wetlands that do not fit the above categories but are more than 5 acres in size. The State allows for local governments to enact ordinances to regulate wetlands, in addition to state regulation, as long as certain criteria are met. EGLE’s “Local Wetland Protection” webpage provides guidance and sample ordinance language for local governments considering such protections; extensive guidance is also available in *Protecting Michigan’s Wetlands: A Guide for Local Governments* from the Tip of the Mitt Watershed Council.

¹⁷ Open space is defined as “any property or area of land or water essentially unimproved and set aside, dedicated, designated, or reserved for active or passive public or private use or enjoyment or for the use and enjoyment of owners, occupants, and their guests of land adjoining or neighboring such Open Space, excluding easements for Streets or Private Roads.”



Photo Credit: © SNEHIT PHOTO / Adobe Stock

Through the adoption of the Spring Lake Township Wetland Protection Ordinance, the township regulates smaller sized and non-adjacent wetlands as allowed by the State. Wetland use permits issued by the Township do not replace any state or federal permits that are required for a proposed project. In most cases, a developer or their consultant begins working with the Township on a proposed project before submitting permit applications (to the township or the State). This allows for an effective review process, including early discussions of alternatives and identification of wetland boundaries on the site. The Township utilizes the services of a private wetland consultant to do a field visit and confirm the wetland boundaries that have been flagged by the developer’s consultant. Township staff work closely with representatives at EGLE on project reviews. If the project impacts wetlands that are regulated by the State, the process is made more efficient by utilizing only the state application (which the Township can also use for their review).

Spring Lake Township is unique among western Michigan communities in their use of local wetland protections. While no other communities in the area are known to have similar ordinances, there has not been too much pushback from the local community or developers. This may be partly attributed to knowledge of the ordinances; the state permit reviewers and private consultants that work in the area are aware of these requirements and are able to bring them to the attention of developers early in the planning process. The added layer of local review and permitting is generally accepted as a “cost of doing business” in Spring Lake Township.

History and Implementation of Local Wetland Protections

Prior to the enactment of the Wetland Protection Ordinance in 2009, proposed projects had to obtain permits from the State as discussed above, but did not require local approval for wetland impacts. In at least one case, the extent of wetland impacts allowed under a State-

issued permit was surprising to Township officials. This experience resulted in a desire for more local input in the permitting process and an increased role of the local government in wetland regulations. There was political will within the Township to enact wetland protections and the existing ordinance was adopted with little controversy.

Once the Wetland Review Board was set up and the process for reviewing and issuing permits was in place, Township staff report that the review process has been running smoothly. Much of the work of implementing the ordinance is assigned to the Township's external wetland consultant, and Township staff noted that having an experienced and knowledgeable consultant has been key to implementation of the ordinance. This external expert is able to speak to elected officials and planning commissioners to help them understand the benefits of wetland protections and the role of local ordinances in protecting the community's natural resources.

The robust fee schedule and associated escrow account cover the costs of running this program. Application fees support the staff time needed for project review, coordination with the Wetland Review Board and the Township's external wetland consultant, and permit issuance. The fees for the consultant are paid through an escrow account that developers pay into to cover consultant fees (which may include the wetland consultant and other external experts such as landscape architects, engineers, and attorneys as appropriate for a given project). This added cost is put on the applicant (i.e., the project developer) and is not paid for by constituents.

Most of the challenges of ordinance implementation come from inspections and enforcement issues. Township staff routinely conduct pre-development inspections but have less time available to conduct post-development inspections. This reduces the ability for the Township to enforce violations since they cannot conduct the necessary inspections to identify such violations.

When an ordinance violation occurs, the first step in enforcement is typically a courtesy notice with requirements that the landowner/developer have a professional wetland delineation done and re-establish the previous conditions within the impacted wetland. Township staff can be flexible in how the ordinance is enforced and are open to compromises and finding agreement. An example was provided of a landowner who put in a driveway through a wetland without obtaining the necessary permit. Rather than requiring the driveway be removed, Township staff were able to work with the landowner and present an option of leaving the new driveway and putting a separate portion of the property into a conservation easement.

Another example of flexibility in implementation is a caveat in the wetland setback requirement that allows for negotiations during the permitting process. If a part of a structure is proposed to encroach upon the setback area, the Township may allow this development to occur in exchange for placing another part of the property in a conservation easement to be kept in a natural state in perpetuity.

Impacts on Wetlands

One major benefit of having wetland ordinances in place is the requirement that a wetland delineation be conducted early in the project development process so that wetland boundaries can be included on site plans. While the Township does not track the total area of wetlands impacted or avoided under their ordinances, there is a general sense from staff that having these ordinances in place has increased wetland protections throughout the community. The ordinances can be thought of as educational tools to spread public awareness about both the required permits and the importance of wetlands more broadly. The threat of enforcement is enough of an incentive to obtain some level of compliance with the ordinances. There is also value in having these protections in place at the local level. The staff who enforce the ordinances live in the community and know the area well, including the local geography and ongoing developments. They can be very responsive to calls about potential violations, which may be in contrast to state agency representatives who are not based in the area and may have large workloads.

Impacts on the Local Community

As discussed above, the local community has had a generally positive response to the adoption and implementation of wetland protection ordinances. The Planning Commission and Township Board have typically been supportive of wetland protections and the regulated public understands that obtaining wetland permits is a part of doing business in Spring Lake Township. During conversations with Township staff, no concerns regarding the disproportionate impacts of these ordinances on disadvantaged communities were identified. However, Township staff noted that Ottawa County is the fastest growing county in Michigan and there is pressure to continue to develop. While limited resistance to wetland protections has been encountered, there is also a sense that further increases in protections or regulations might cause frustration in the community.

The group Wetland Watch is a nonprofit, volunteer organization founded in 2002 to protect wetlands in the lower Grand River watershed. Township staff noted that this group was a source of community support during the development and early implementation of the Wetland Protection Ordinance, although they are no longer very active. Wetland Watch also organized educational activities, participated in wetland projects such as treating *Phragmites*, and reported potential ordinance violations to the Township for them to follow up and conduct inspections.

Lessons Learned

- Know where wetlands are located in your community and what tools are available to identify potential wetland areas. Utilize existing databases, Geographic Information Systems (GIS), and other useful tools. Having non-regulatory maps can be useful for informational and planning purposes.
- Utilize experts who can speak to the specifics of your community, understand the big picture, have a strong understanding of science and policy, and can communicate this information to local elected officials and the larger community.

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- Use external consultants (paid for by applicants/developers) as well as an appointed Wetland Review Board to increase the community's trust and confidence in the wetland permitting process.
 - Encourage community members who are interested in supporting local wetland protections to start a committee or group that can work toward this goal.
 - Have flexibility in a wetland protection ordinance and how it is enforced. For example, when violations occur, be willing to work with landowners and present options that will work for all parties.
 - When reviewing plans during the permitting process, maintain a "big picture" perspective and look for ways to ensure larger and more valuable wetlands are protected.
 - Use the ordinance as an educational tool to share the importance of wetlands and their protection. Community engagement is key to successful implementation of local ordinances. Be very communicative so community members feel that they have a sense of what the local government is doing.
 - Start small, if necessary, by regulating the wetland setback area through a zoning ordinance. This ensures that wetlands are field delineated and included on site plans and could serve as a first step to allow for additional protections in the future.
 - Be responsive to calls about potential violations. Township staff indicated that their knowledge of the local geography and ongoing developments allows for timely and thorough responses to potential violations.

Future Directions

The requirement that wetlands and wetland setback areas be included in the "Common Element" of new developments is a recent addition to the Zoning Ordinance. Township staff hope that this will alleviate some pressure on them to enforce violations as the homeowner's association can be involved in violations of association rules. As wetlands and wetland setbacks will be included in the Common Element, regulated wetlands and their associated setback areas will be on land designated for use by all residents of a housing development. This shifts the responsibility to obtain wetland permits to developers; individual homeowners will not have wetlands or wetland setbacks on their properties under this new requirement.

There is pressure to continue developing Spring Lake Township due to the rapid population growth in Ottawa County. However, many of the remaining undeveloped areas contain wetlands. Township staff noted that future development will become harder to accomplish due to the increased proportion of wetlands on potential development sites. The Township is also increasing their efforts to protect wetlands in other ways, such as acquiring and preserving high-value properties.

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Case Study References and Additional Resources

Spring Lake Township Building & Planning Department website:

<https://springlaketwp.org/departments/building-planning-department/>

Wetland Protection Ordinance: Spring Lake Township, Ottawa County, Michigan – Code of Ordinances, Chapter 14 – Environment, Article V. – Wetland Protection. Available online at https://library.municode.com/mi/spring_lake_township_ottawa_co/codes/code_of_ordinances?nodeId=COOR_CH14EN_ARTVWEPR

Zoning Ordinance: Spring Lake Township Zoning Ordinance, Effective April 30, 2010, Updated August 8, 2022. Available online at <https://springlaketwp.org/wp-content/uploads/delightful-downloads/2022/08/Zoning-Ordinance-2019-updated-through-8-8-2022.pdf>

Spring Lake Township Master Plan Update Summary, October 2022. Available online at <https://springlaketwp.org/wp-content/uploads/delightful-downloads/2022/12/SLT-Master-Plan-Update-Oct-2022-FINAL.pdf>

Michigan Department of Environment, Great Lakes, and Energy (EGLE) resources:

- Webpage on State and Federal Wetland Regulations: <https://www.michigan.gov/egle/about/organization/water-resources/wetlands/state-and-federal-wetland-regulations>
- Webpage on Local Wetland Protection: <https://www.michigan.gov/egle/about/organization/water-resources/wetlands/local-wetland-protection>

Tip of the Mitt Watershed Council resources:

- Webpage on Wetland Regulations: <https://www.watershedcouncil.org/wetland-regulations.html>
- *Protecting Michigan's Wetlands: A Guide for Local Governments*. A publication of the Tip of the Mitt Watershed Council, edited by Grenetta Thomassey, PhD. Available online at https://www.watershedcouncil.org/uploads/7/2/5/1/7251350/wetland_ebookfinal.pdf

Wetland Watch website: <http://www.wetlandwatchspringlake.org/>



Case Study 5: Hilton Head Island, South Carolina

At-a-Glance

Community Name: **Hilton Head Island, South Carolina**

- Population: 37,661
- Watershed: Atlantic Ocean

Summary of Local Wetland Protections:

Hilton Head Island has a Wetland Protection Ordinance that applies to all wetlands (tidal and freshwater), including those that may not be federally jurisdictional waters of the United States. The mitigation requirements and use of vegetated buffers help to protect these wetlands and maintain their functions and values on the island.

Community Overview

Hilton Head Island is a barrier island located near the southern end of the South Carolina coast; the island is about 12 miles long and 5.5 miles wide. To the north of the island is the Beaufort River and Port Royal Sound and to the west of the island is the May River, Calibogue Sound, and the Intracoastal Waterway; the Atlantic Ocean is located east and south of the island. The town of Hilton Head Island had a population of 37,661 as of 2020. The median household income is \$87,884 and approximately 7.6% of the town population lives in poverty.¹⁸ The town is a destination for year-round tourism and prides itself on its natural beauty; environmental quality and sustainability are cited in the town's Comprehensive Plan as key values of the community.

According to the Climate and Economic Justice Screening Tool (CEJST)¹⁹, two of the census tracts within Hilton Head Island are identified as disadvantaged communities due to low household incomes, high climate burdens (including expected population loss rate and projected flood risk), and high housing costs. The majority of the island is located in census tracts that are not identified as disadvantaged and do not meet the CEJST's threshold for socioeconomic burden; however, these census tracts also have high expected population loss rates and projected flood risks.

Description of Local Wetland Protections

The town of Hilton Head Island has a **Wetland Protection Ordinance** within their Land Management Ordinance (Title 16 of the Municipal Code) that protects both freshwater and tidal wetlands and applies to all development activities in the town. The purpose of the ordinance is to "protect and conserve natural wetlands that control flooding by absorbing and retaining flood waters, minimize erosion and sedimentation, maintain and enhance the chemical, physical, and biological integrity of open bodies of water, provide important wildlife habitat and native vegetation, and otherwise enhance the sustainability of the coastal island environment so important to the livability and economy of Hilton Head Island."

¹⁸ U.S. Census Bureau. QuickFacts: Hilton Head Island, South Carolina. Available at <https://www.census.gov/quickfacts/>. Accessed October 2023.

¹⁹ Council on Environmental Quality. Climate and Economic Justice Screening Tool (CEJST). Available at <https://screeningtool.geoplatform.gov>. Accessed October 2023.

If a wetland will be impacted by proposed development activities, a Natural Resources Permit must be obtained from the Town. The applicant must show that the wetland alteration cannot be avoided and must propose mitigation to result in no net loss to the wetland's values, functions, and area. As there are no approved wetland mitigation banks on the island, the town prefers that mitigation be performed on-site; if this is not feasible, mitigation may be allowed off-site within a watershed on Hilton Head Island. Mitigation projects require monitoring every 6 months during a three-year establishment period, with replanting and removal of exotic species as needed. The ordinance also allows for payment of fees to the town in lieu of mitigation; these fees are to be spent by the town on qualifying wetland creation projects.

In addition to regulating impacts to tidal and freshwater wetlands, the ordinance also protects wetland buffers. Buffer widths vary based on the type of wetland and type of development adjacent to the project site. Minimum buffer widths of 20 feet (with an additional 5-foot setback) are required around tidal wetlands, while freshwater wetland buffers are a minimum of 10 to 20 feet wide. No buffers are required for freshwater wetlands adjacent to single-family residential developments. Note that these are minimum buffer widths and the town prefers larger buffers; however, buffers with the minimum widths are approved on a case-by-case basis depending on project-specific information and the amount of impervious cover on a given site.

Within wetland buffers, prohibited activities include dumping or filling, placement of structures or other pervious or impervious surfaces, and removal or destruction of vegetation. Allowed activities in buffers include landscape maintenance, construction and maintenance of public multi-purpose pathways and pedestrian walkways, "essential development activities" (such as for stormwater management and utility lines), and water-dependent development activities. Vegetation in wetland buffers can be removed or selectively pruned with town approval in order to create view corridors.

Relationship Between Local Protections and State/Federal Regulations

The State of South Carolina's Department of Health and Environmental Control uses its authorities under Clean Water Act Section 401 to ensure that federal licenses or permits that may result in any discharges into waters of the United States, like Clean Water Act Section 404 permits issued by the USACE, will comply with applicable water quality requirements.²⁰ In addition, the Department's Office of Ocean and Coastal Resource Management (OCRM)'s manages coastal wetlands under state regulations. OCRM has a Critical Area Permitting section that issues state permits for projects that will alter critical areas, which include coastal waters, tidelands,²¹ and beaches and beach/dune systems. Further, OCRM's Coastal Zone Consistency section is responsible for Coastal Zone Consistency Certifications within South Carolina's eight coastal counties. This section has the authority to review federal permits, such as Clean Water Act Section 404 permits, for compliance with applicable policies under the Coastal Zone

²⁰ While the requirement to obtain a Section 401 certification or waiver is triggered by the potential for any discharges into waters of the United States, states that have laws applicable beyond "navigable waters" may apply those laws to those state waters in the certification context.

²¹ Tidelands are defined as all areas which are at or below mean high tide and coastal wetlands, mudflats, and similar areas that are contiguous or adjacent to coastal waters and are an integral part of the estuarine systems involved.

Management Program. The Coastal Zone Consistency section also reviews state permits, including stormwater-land disturbance permits and mining permits; under this authority, OCRM has the ability to regulate wetlands in coastal counties that are not jurisdictional waters of the United States.

The town of Hilton Head Island’s local wetland protections are separate from state and federal regulations and projects may require review at all three levels of government (depending on the type and extent of wetlands being impacted).

History and Implementation of Local Wetland Protections

Hilton Head Island has a history of being a “nature-centered” community. Early resorts on the island (built in the 1960s) were designed with a focus on maintaining trees and natural beauty, and this tradition has continued as the town has grown and developed. In addition to protecting tidal and freshwater wetlands, the town has ordinances that protect beach and dune systems, as well as trees and forested areas.



Example of Beach and Salt Marsh on Hilton Head Island. Photo Credit: O. McCrosson, “Fish Haul Creek Beach and Salt Marsh,” CC BY-SA 4.0

Sea level rise is being seen across the island, and vegetated buffers are an important tool that the Community Development Department uses to account for these changes. They strive to make buffers larger if feasible (depending on lot size), and carefully review landscaping plans for proposed projects. In wetland buffers, only native plants are allowed and tree removals are highly restricted.

In discussions with town staff, it was noted that many of the freshwater wetlands on Hilton Head Island are manmade wetlands within golf courses. While the use of herbicides and fertilizers is typically limited in freshwater wetland buffers (and prohibited in tidal wetland buffers), it is more of a challenge to limit use of herbicides and fertilizers on golf courses. Herbicide and fertilizer applications follow the Department of Health and Environmental

Control rules and label instructions. In addition, Town staff require water quality checks and use of best management practices within these wetland buffers.

The Community Development Department has a large workload and only one employee focused on natural resources. Every proposed development requires a natural resource review; such reviews are also needed for proposed vegetation removals and landscaping plans.



Marshes of Hilton Head, Photo Credit: © SKPG_Arts / Adobe Stock

Impacts on Wetlands

As stated above, the town's Wetland Protection Ordinance applies to all wetlands (tidal and freshwater). The local ordinance may, therefore, protect some wetlands that may not be covered by state or federal regulations. The mitigation requirements and use of vegetated buffers help to protect these wetlands and maintain their functions and values on the island. In order to track impacts to wetlands on Hilton Head Island, the Town has started to include wetlands in their stormwater inventory database.

Impacts on the Local Community

The local community has long been very involved in the town, which is reflected in well-attended biweekly public forums. Community members have a lot of knowledge and interest in town ordinances; the public is generally supportive of the town's natural resource protections and understands the importance of maintaining the natural environment for the town's tourism industry, as well as to maintain water quality for the local fishing and oyster industries. Town staff noted that there is an established natural aesthetic on Hilton Head Island that most residents appreciate and value. However, there can be frustration from newer developers or residents who want more flexibility to develop their properties or to have clear beach views. In addition, as the population grows, there is more demand for buildable land and the town's environmental protections can limit the areas that may be developed. Rather than all new builds, there is an emphasis on the island on redeveloping existing sites.

Lessons Learned

- Use vegetated buffers to provide separation between human activities and the natural environment, further protecting the natural features' functions and values. Use of native vegetation is preferred in buffers and the Town of Hilton Head Island has had success in allowing trimming to provide for beach views while maintaining the protective features of the buffers.

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- Allow for flexibility in applying the ordinance while maintaining the overall objective of the wetland protections. In Hilton Head Island, many freshwater wetlands are located on golf courses and cannot meet the vegetated buffer requirements. The Town has addressed this through regular water quality checks and use of best management practices, ensuring these wetlands continue to meet state water quality requirements.

Future Directions

Staff at the Community Development Department will continue to implement the wetland protection ordinance and other natural resource protections in the town code. They are also interested in making buffer regulations more robust, such as requiring wider buffers (if more impervious surface is proposed) or more densely vegetated buffers. Overall, there is an effort to limit impervious surfaces on Hilton Head Island as a whole and keep buffers intact.

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Case Study References and Additional Resources

Hilton Head Island Community Development Department resources:

- Department website: <https://hiltonheadislandsc.gov/communitydevelopment/>
- Webpage on Wetlands and Development: <https://hiltonheadislandsc.gov/wetlands/>

Hilton Head Island, South Carolina Municipal Code. Title 16 Land Management Ordinance. Chapter 16-6 Natural Resource Protection. **Wetland Protection Ordinance**. Available at https://library.municode.com/sc/hilton_head_island/codes/land_management_ordinance?nodeId=CH16-6NAREPR_SEC.16-6-102WEPR.

Town of Hilton Head Island Community Development Department Comprehensive Plan: Our Plan 2020-2040. Available at <https://hiltonheadislandsc.gov/ourplan/overview.cfm>.

South Carolina Department of Health and Environmental Control resources:

- Ocean and Coastal Resource Management (OCRM) webpage: <https://scdhec.gov/environment/your-water-coast/ocean-coastal-resource-management-ocrm>
- Critical Area Permitting: <https://scdhec.gov/environment/your-water-coast/ocean-coastal-resource-management-ocrm/critical-area-permitting>



Case Study 6: Anne Arundel County, Maryland

At-a-Glance

Community Name: **Anne Arundel County, Maryland**

- Population: 588,261
- Watershed: Chesapeake Bay

Summary of Local Wetland Protections:

Anne Arundel County has a Critical Area Program as required by state law that regulates tidal waters, tributary streams, and tidal wetlands, as well as all land within 1,000 feet of those waterbodies and wetlands. The County has additional protections for nontidal (freshwater) wetlands and bogs.

Community Overview

Anne Arundel County is located in central Maryland on the western shore of the Chesapeake Bay. Major waterbodies in the county include the Patapsco River, Severn River, and Patuxent River, all of which flow into the Chesapeake Bay. Anne Arundel County had a population of 588,261 as of 2020; the county includes the city of Annapolis, one town (Highland Beach), and several census-designated places and unincorporated communities. The median household income in the county is \$108,048 and approximately 6.2% of the population lives in poverty.²²

According to the Climate and Economic Justice Screening Tool (CEJST)²³, no census tracts within Anne Arundel County are identified as disadvantaged communities.

Description of Local Wetland Protections

Anne Arundel County has a **Critical Area Program** that regulates tidal waters, tributary streams, and tidal wetlands, as well as all land within 1,000 feet of those waterbodies and wetlands. While some portions of the Critical Area are allowed to be developed, areas within a 100-foot buffer around wetlands are not permitted to be developed except for water-dependent facilities or by variance. The process to obtain a variance is stringent and requires thorough project review and a public hearing. Local regulation of the critical area is state-mandated, as described in the following section, and is set forth as an overlay in the county code.²⁴

Anne Arundel County's General Development code has additional non-state-mandated protections for (1) nontidal (freshwater) wetlands along with a 25-foot wetland buffer; (2) bogs as well as a 100-foot bog buffer; and (3) other "environmentally sensitive areas" as defined in the code. These areas are not permitted to be disturbed unless applicants receive a "modification" to the Subdivision and Development Code (i.e., a permit for the proposed impact to an environmentally sensitive area), in addition to any applicable authorizations or

²² U.S. Census Bureau. QuickFacts: Anne Arundel County, Maryland. Available at <https://www.census.gov/quickfacts/>. Accessed October 2023.

²³ Council on Environmental Quality. Climate and Economic Justice Screening Tool (CEJST). Available at <https://screeningtool.geoplatform.gov>. Accessed October 2023.

²⁴ An overlay district or overlay zone is a tool to place a special zoning district over the existing base zone(s). This creates additional zoning provisions or standards that must be met within the overlay district boundaries.

approvals from the State. Applications for such modifications require additional review beyond a typical development application to ensure that the impacts to wetlands have been minimized, as well as community notification due to the proposed disturbance to environmental features that are protected in the county code. County staff indicated that most approved modifications are for projects on small lots or for utilities (e.g., sewer lines). In addition, while new developments within wetland buffers are typically not approved, the county may approve applications for redevelopment of existing houses or buildings within the buffer.

Relationship Between Local Protections and State/Federal Regulations

Maryland has a Critical Areas law to minimize adverse effects of human activities on water quality and natural habitats in the Chesapeake Bay and Atlantic Coastal Bays. The “Critical Area” is all land within 1,000 feet of tidal waters and tidal wetlands. Within the Critical Area (excluding land owned by the federal government), all lands are assigned to one of the following classifications:

- Intensely Developed Areas: areas of twenty or more adjacent acres dominated by residential, commercial, institutional or industrial land uses.
- Limited Development Areas: areas with low or moderate intensity development, as well as natural habitats; within these areas, development or redevelopment is permitted if it is consistent with the prevailing character of land use and meet local zoning regulations.
- Resource Conservation Areas: natural environments or areas where resource-utilization activities are taking place (such as agriculture, forestry, fishing, and aquaculture). New development within these areas is limited to residential uses; these new developments also have restrictions on density (one dwelling unit per 20 acres) and lot coverage (limited to 15% of a parcel or lot occupied by structures, parking areas, roads, walkways, pavers, gravel, or any man-made material).

Within the Critical Area, the main protection for wetlands is a 100-foot buffer from the edge of tidal waters and tidal wetlands; the buffer can also include adjacent nontidal wetlands. New development activities are not allowed in this buffer except for water-dependent facilities or by variance. The State requires that the buffer be field delineated for a site prior to permit applications so that the development plan reflects the current wetland and buffer boundaries.

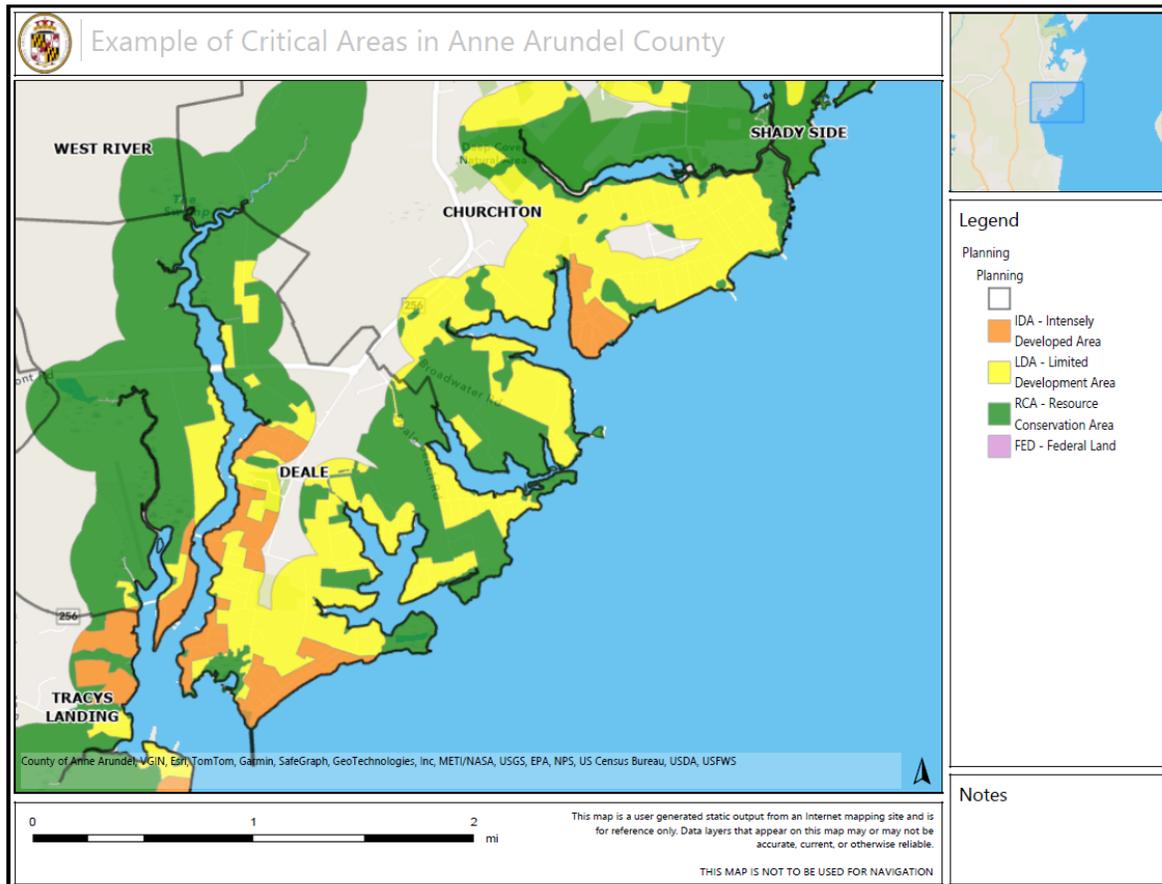
As part of the Critical Area Act, a Critical Area Commission was created. Today, the Commission is composed of 29 voting members and includes elected or appointed officials of counties and municipalities that implement the Critical Area Act; appointed individuals from select coastal counties who “represent diverse interests” including one private citizen; and representatives from seven State departments. The Commission is tasked with reviewing and approving State projects within the Critical Area, major developments on private lands or lands owned by local jurisdictions, and changes to a jurisdiction’s Critical Area Program.

The Critical Areas Law in Maryland is implemented by local jurisdictions (counties and municipalities) that contain tidal waters of the Chesapeake Bay or Atlantic Coastal Bays. While local jurisdictions are required to implement the program, they have flexibility in how they incorporate the Critical Area provisions into their zoning and land use regulations. Local

governments are also responsible for land use decisions within the Critical Area, except for the situations noted above that are reviewed by the Critical Area Commission.

The Maryland Department of Natural Resources (DNR) provides model ordinances for counties and municipalities, recorded training videos for local government staff, and other resources to support local implementation of the Critical Areas Law. The DNR also conducts reviews of local governments' Critical Area programs every six years to ensure the programs are up to date.

Maryland Department of the Environment (MDE) is the state agency responsible for reviewing and permitting projects that would impact both tidal and freshwater wetlands. Most activities in tidal and nontidal wetlands or their buffers require authorization from MDE; if a project also requires Clean Water Act Section 404 authorization, MDE forwards applications to the USACE for review as well. MDE's Wetlands and Waterway Protection Program is separate from the local Critical Area programs, therefore projects that propose impacts to wetlands are reviewed at both the local and state levels.



Map showing an example of Critical Areas by classification within the communities of Deale and Churchton in Anne Arundel County. Image from My Anne Arundel Map Viewer.

History and Implementation of Local Wetland Protections

Anne Arundel County's Critical Area Program was approved in 1988. In 2005, the nontidal wetlands code was adopted. In 2023, it was slightly revised to allow for stream restoration projects. Previously, the county required a modification for all wetland disturbances, including stream restorations. In 2023, the nontidal wetlands code revision added a definition of "water quality improvement projects." Under the revised code, if a project meets this definition, then no modification approval is needed from the county. County staff noted that such projects would still need MDE authorization.

Implementation of the Critical Areas Program and nontidal wetlands protections is conducted by the Anne Arundel County Planning and Zoning Department. For projects that include wetlands disturbances, a wetland report must be submitted along with the permit application. Reviewers utilize state and county mapping programs to identify potential wetlands and buffers and confirm anticipated impacts. Projects that disturb wetlands or their buffers also require state authorization; this process adds a layer of review to verify that the wetland mapping is accurate. If an applicant disagrees with the department's decision, they can challenge it through the Board of Appeals.

The Anne Arundel County Planning and Zoning Development Division is divided into three teams: Residential Team, Regional Team (reviews commercial developments), and Critical Area Team (reviews all proposed developments in the critical area). The Critical Area Team includes 8 full-time staff to conduct their reviews; staff shared that the recent addition of a staff planner who is a Professional Wetland Scientist has aided in the team's ability to conduct site verifications.

Enforcement of the county code is a joint effort between the Planning and Zoning Department and the Code Compliance Division (a separate county department). Violations, such as developments without proper permits or unauthorized disturbances, are reviewed by both the Code Compliance Division and the MDE.

Note that Anne Arundel County contains two cities: Annapolis and Highland Beach. Annapolis has its own city Department of Planning and Zoning. Highland Beach is a small city without environmental resource ordinances or permits, so they are covered by the county. Therefore, Anne Arundel County regulates all areas in the county that are outside the Annapolis city limits.

Impacts on Wetlands

Anne Arundel County does not track the impact of their wetland protections across projects. However, County staff indicated that having these regulations in place has been effective at protecting these sensitive resources from disturbance. As noted above, modifications under the nontidal wetlands protections are generally issued for relatively minor impacts (e.g., house redevelopment) or for utility projects.

Impacts on the Local Community

Public engagement varies based on the scope and potential impacts of proposed projects. The county holds community meetings or sends out notifications for any proposed disturbance to an environmental feature. For variances (not modifications), they hold a public hearing.



Patuxent River shore at Jug Bay Wetlands Sanctuary, Photo Credit: © Yvonne Navalaney / Adobe Stock

Lessons Learned

- Strive for a balance between wetland protections and individual property rights. County staff noted that, as a regulatory agency for development, the county has faced pressure from both project developers who would prefer a more streamlined review process and community members in favor of stronger environmental protections.
- Ensure that ordinance language is clear and straightforward. County staff noted it can be difficult to establish regulations that allow for both environmental protection and flexibility without being too convoluted as each development project is unique and site specific. It would be helpful if the ordinance language were simplified or clearer for applicants.

Future Directions

Staff at the Planning and Zoning Department are focused on the implementation of the current ordinances. They are also preparing for a rewrite of the Critical Area code, as required by the State. Finally, County staff are waiting to see what the effects of the U.S. Supreme Court's decision in the *Sackett* case will be when it comes to wetland protections, both in their county/state and in upstream jurisdictions.

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Case Study References and Additional Resources

Anne Arundel County Planning and Zoning Department resources:

- Department website: <https://www.aacounty.org/planning-and-zoning>
- Critical Area Team Webpage: <https://www.aacounty.org/planning-and-zoning/development/critical-area>
- Environmental Regulations and Policies (including Natural Features Regulations): <https://www.aacounty.org/planning-and-zoning/development/environmental-regulations-and-policies>
- My Anne Arundel Map Viewer: <https://gis.aacounty.org/gcx/WebViewer/?app=c82c5cff02544a56af888e4ff5c166a2>

Anne Arundel County Code. Article 17 Subdivision and Development. Title 6 General Development Provisions. Subtitle 4 **Natural Features**. Available at https://codelibrary.amlegal.com/codes/annearundel/latest/annearundelco_md/0-0-0-116688.

Anne Arundel County Code. Article 17 Subdivision and Development. Title 8 **Critical Area Overlay**. Available at https://codelibrary.amlegal.com/codes/annearundel/latest/annearundelco_md/0-0-0-117108.

Anne Arundel County Code. Article 18 Zoning. Title 13 **Critical Area Overlay**. Available at https://codelibrary.amlegal.com/codes/annearundel/latest/annearundelco_md/0-0-0-120539.

Maryland Department of Natural Resources (DNR) resources:

- Critical Area Commission webpage: <https://dnr.maryland.gov/criticalarea/Pages/default.aspx>
- Critical Area Boundary Map Viewer: <https://webmaps.esrgc.org/cbca/>
- Webpage on Local Government Resources (including forms, model ordinances, fact sheets, and recorded trainings): <https://dnr.maryland.gov/criticalarea/Pages/local-government-contacts.aspx>
- County Model Ordinance: https://dnr.maryland.gov/criticalarea/Documents/County-Model-Ordinance_Nov2022.pdf
- Municipal Model Ordinance: <https://dnr.maryland.gov/criticalarea/Documents/Municipal-Model-Ordinance-2023.pdf>
- Webpage on Property Owner Resources (including local government contacts, Critical Area Commission contacts, and FAQs): <https://dnr.maryland.gov/criticalarea/Pages/property-owner-resources.aspx>
- *Bay Smart: A Citizen's Guide to Maryland's Critical Area Program*. Critical Area Commission for the Chesapeake and Atlantic Coastal Bays. Revised December 2008. Available online at <https://dnr.maryland.gov/criticalarea/Documents/baysmart.pdf>.

Maryland Department of the Environment (MDE) webpage on the Wetlands and Waterways Protection Program:

<https://mde.maryland.gov/programs/water/wetlandsandwaterways/pages/index.aspx>.



Case Study 7: Lynn, Massachusetts

At-a-Glance

Community Name: **Lynn, Massachusetts**

- Population: 101,263
- Watershed: Massachusetts Bay / Atlantic Ocean

Summary of Local Wetland Protections:

The Lynn Conservation Commission is a volunteer board that administers the Massachusetts Wetlands Protection Act at the municipal level, as well as the local Wetlands Protection By-Laws.

Community Overview

The city of Lynn is located north of Boston on the Atlantic coast. The city had a population of 101,263 as of 2020.²⁵ The median household income is \$63,922 and approximately 14.9% of the city population lives in poverty. According to the Climate and Economic Justice Screening Tool (CEJST)²⁶, approximately 16 out of 22 census tracts within the city of Lynn are identified as a disadvantaged. Some of the burdens to the community that are identified in the CEJST include unemployment rate, housing cost, projected flood risk, lack of green space, and proximity to hazardous waste facilities and Risk Management Plan facilities.

Lynn is a densely developed city located only a few miles north of Boston. Most of the city is developed, including a working harbor and industrial/commercial developments along the waterfront. The City Planning Department is working on plans for the harbor, vulnerability preparedness due to risk of flooding in the city, and plans to provide more affordable housing to the community.

Description of Local Wetland Protections

The Lynn Conservation Commission (LCC) administers the Massachusetts **Wetlands Protection Act** at the municipal level and the local **Wetlands Protection By-Laws**. The Wetlands Protection Act is a state law that is administered by Conservation Commissions at municipalities across the state and by the Massachusetts Department of Environmental Protection statewide. The city of Lynn chose to enact the LCC Wetlands Protection By-Laws on top of existing state-level regulations. The By-Laws have the following purpose:

The purpose of these By-Laws is to protect the wetlands, related water resources, and adjoining land areas in Lynn, Massachusetts by regulating or prohibiting activities deemed by the Lynn Conservation Commission (L.C.C.) likely to have a significant or cumulative effect upon resource area values, including, but not limited to, the following: public or private water supply, ground water, flood control, erosion and sedimentation control, storm damage prevention including coastal storm flowage, water quality, water

²⁵ U.S. Census Bureau. QuickFacts: Lynn, Massachusetts. Available at <https://www.census.gov/quickfacts/>. Accessed September 2023.

²⁶ Council on Environmental Quality. Climate and Economic Justice Screening Tool (CEJST). Available at <https://screeningtool.geoplatform.gov>. Accessed September 2023.

pollution control, fisheries, shellfish, wildlife habitat, rare species habitat including rare plant species, agriculture, aquaculture, and recreation values, deemed important to the community (collectively, the "resource area values protected by these By-Laws"). These By-Laws are intended to utilize the Home Rule authority of this municipality to protect additional resource areas, for additional values, with additional standards and procedures stricter than those of the Wetlands Protection Act, G.L. Ch. 131, S.40, and Regulations thereunder, 310 CMR 10.00.

The By-Laws apply to "resource areas" that are broadly defined as "any freshwater or coastal wetlands; marshes; wet meadows; bogs; swamps; vernal pools; banks; reservoirs; lakes; ponds of any size; rivers; streams; creeks; beaches; dunes; estuaries; oceans; lands under waterbodies; lands subject to flooding or inundation by ground water or surface water; lands subject to tidal action, coastal storm flowage, or flooding; and lands within 100 feet of any of the aforesaid resource areas." The By-Laws also note that resource areas are protected "whether or not they border surface waters."

An applicant must receive a permit (called an "Order of Conditions") from the LCC (or fall under a "Conditional Exception" in the By-Laws) to remove, fill, dredge, build upon, degrade, discharge into, otherwise alter resource areas.



Example of Urban Development along the Atlantic Ocean in Lynn. Photo Credit: Tomwsulcer, "Lynn Massachusetts view from park blustery autumn day looking north," CC0 1.0

The LCC accepts the Notice of Intent and plans required under the Wetlands Protection Act as a permit application under the By-Laws. If an applicant is unsure whether an activity or area is subject to the By-Laws, they may submit a Request for Determination to the LCC.

Filing fees under the By-Laws depend on the type of project and can range from \$110 for minor residential projects (such as a house addition or pool deck) to a maximum of \$10,000 for subdivisions or commercial or industrial projects. The LCC may also require the applicant to pay Consultant Fees to cover the costs of utilizing outside experts for engineering services, wildlife habitat evaluations, drainage analyses, or other consultant services.

For each Notice of Intent application or Request for Determination submitted, the LCC holds a public hearing during their monthly meeting. The LCC then issues its permit or determination within 21 days after the public hearing. The LCC may impose conditions on the permit to protect the resource area values that are being impacted by the proposed activity. The Commission may also deny a Notice of Intent if they determine that the proposed activity is likely to have “a significant individual or cumulative effect” on the resource area values that protected by the By-Laws.

Performance standards are provided in the By-Laws, including 30-foot buffers around freshwater wetlands and 100-foot buffers around vernal pools. The LCC may require that a 100-foot-wide undisturbed, vegetated buffer be maintained around resource areas to protect the values of the resources. Should wetland impacts be authorized, the LCC can require compensation at a 1.5-to-1 ratio; mitigation requirements must be consistent with the Wetlands Protection Act.

The LCC may combine the public hearing under the By-Laws with the public hearing required for applications under the Wetlands Protection Act. In addition, in most cases, the LCC combines their permit or determination issued under the By-Laws with the Order of Conditions or Determination of Applicability issued under the Wetlands Protection Act.

Relationship Between Local Protections and State/Federal Regulations

Massachusetts has a Wetlands Protection Act that protects “wetlands and the public interests they serve.” Local communities’ volunteer Conservation Commissions administer the Wetlands Protection Act at the municipal level and the State Department of Environmental Protection oversees administration of the law statewide.

The Massachusetts Conservation Commission Act was passed in 1957 in response to identified needs for local protection of natural resources. This Act allowed municipalities to form conservation commissions, and by the mid-1980s a commission had been established in every city and town in Massachusetts.

The Wetlands Protection Act was passed in 1972 and the administration of the Act was assigned to local conservation commissions. In addition to this regulatory role, commissions also have a conservation role in planning for and acquiring open spaces.

The Massachusetts Wetlands Protection Act protects “important water-related lands such as wetlands, floodplains, riverfront areas, and other areas from destruction or alteration.” A

permit (“Order of Conditions”) from the local conservation commission is required for most proposed work within these protected resources. Regulations under the Act are similar to those outlined above for the Lynn Wetlands Protection By-Laws. For example, both the state and local regulations require a 100-foot buffer around protected resources.

An Order of Conditions issued by a Conservation Commission is appealable by the project proponent, abutters, a ten-resident group, or the Massachusetts Department of Environmental Protection. The appeal is then reviewed by the Department of Environmental Protection, and a Superseding Order of Conditions is issued. The State is also involved in enforcement of the Massachusetts Wetlands Protection Act for complex cases or situations where the entity does not respond to the local Conservation Commission.

Over 100 communities in Massachusetts, including Lynn, have local wetlands protection by-laws in addition to state and federal laws. These non-zoning by-laws are allowed under the home rule provisions of the state constitution and provide additional protections to wetlands beyond the protections afforded under state law.

The Massachusetts Association of Conservation Commissions (MACC) provides resources and training to conservation commissioners across the state. The MACC website provides answers to frequently asked questions, history of conservation commissions, and access for commissioners to an environmental handbook. MACC holds training events, workshops, and an annual conference for conservation commissioners from across the state.



Lynn Beach, Photo Credit: © RHC Photography / Adobe Stock

History and Implementation of Local Wetland Protections

Limited information was available on the history of the LCC or of implementation of the Massachusetts Wetlands Protection Act in Lynn. The LCC Wetlands Protection By-Laws were first passed in June 2000 and have been revised several times since then, most recently in 2017.

Implementation of the Wetlands Protection By-Law is the responsibility of the LCC, which is an all-volunteer commission. Being a member of the commission requires a substantial time investment in becoming familiar with the regulations, learning to read site plans and review applications, attending LCC meetings, and conducting site visits. This can take at least 10 hours per week and easily more time, which is a substantial effort for volunteers who often have other responsibilities such as work, school, or family. The time investment makes it difficult to become a successful member of a conservation commission, and it can be a challenge to recruit new members to join the commission. Further, due to these requirements, the make-up of the commission does not always reflect the diversity of city residents. Even scheduling LCC meetings can be a challenge, and under the By-Laws the commission must have a quorum present in order to make official decisions.

Support for commission members comes from the City and the MACC. The City of Lynn provides a budget for the commission and a staff point of contact. The MACC provides training opportunities and resources, including scholarships to attend training events.

The work of the LCC is primarily focused on implementation of the Massachusetts Wetlands Protection Act and the LCC Wetlands Protection By-Law; their role as a conservation organization that acquires land (as described above) is a much smaller part of the commission's work. While the State provides guidance and is involved in some enforcement cases, enforcement of regulations is mainly left to the local conservation commission to conduct. The city of Lynn has a lot of wetland areas and is highly developed, which results in violations for small actions such as backyard decks and sheds. If the LCC is made aware of a violation, they send a letter to the landowner and require them to attend the next monthly LCC meeting. While the LCC is able to require fines for non-compliance, they often instead use this as an educational opportunity to inform residents of the wetland regulations and share the forms required to complete the review process. Landowners are typically required to clean up or return the impacted wetland area to its prior state and to follow the proper review process in the future.

Impacts on Wetlands

The LCC does not track the impact of wetland protections across projects. However, through enforcement letters and meetings the work of the commission has provided education to city residents about wetlands and the regulations in place to protect these resources.

Impacts on the Local Community

Despite the educational component to the LCC's work, there is a sense that the community in general does not know about the commission or their work to protect and regulate wetlands within the city.

Applicants have at times expressed frustration with the LCC and wetland regulations. The city of Lynn has a large need for affordable housing and developers have cited the review process as slowing down housing projects. The commission works to review and approve projects quickly while following the requirements in the Massachusetts Wetlands Protection Act and the LCC Wetlands Protection By-Laws.

Lessons Learned

- Maintain flexibility in enforcing local protections. In Lynn, many violations are for small actions such as backyard decks or sheds. The LCC often uses these violations as educational opportunities to inform residents of the wetland regulations and share the forms required to complete the review process rather than imposing fines.
- Consider the trade-offs of establishing a conservation commission system, which involves community members in local government and wetland protection. Commissioners have to take on substantial workloads for these volunteer positions, and the responsibilities of the position also limit who is able to participate as a commission member. If other states or municipalities were to consider setting up a similar system, it would be worth considering hiring paid staff rather than relying on community volunteers.
- Utilize existing resources for developing and implementing local wetland protections. The templates and guidance from the State and the training available through the MACC help to ensure that the LCC complies with state requirements and eases the transition into the role for new commission members.

Future Directions

The LCC will continue to implement and enforce the Massachusetts Wetlands Protection Act and the LCC Wetlands Protection By-Law, and no changes to these regulations are anticipated at this time. Commission members hope that the LCC can also expand on their role in planning for and acquiring open spaces.

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Case Study References and Additional Resources

Lynn Conservation Commission website: <https://www.lynnma.gov/boards/conservation.shtml>

City of Lynn General Wetlands Protection By-Law:

https://www.lynnma.gov/cityhall_documents/boards_commissions/City_of_Lynn_General_Wetlands_Protection_ByLaw_October_2017.pdf

City of Lynn Planning Department website:

https://www.lynnma.gov/departments/planning.shtml#gpm1_1

Massachusetts Department of Environmental Protection (MassDEP) resources:

- Main Wetlands webpage: <https://www.mass.gov/wetlands-protection>
- Webpage about Protecting Wetlands in Massachusetts: <https://www.mass.gov/info-details/protecting-wetlands-in-massachusetts>
- Wetlands Permitting Forms: <https://www.mass.gov/lists/wetlands-permitting-forms>
- Wetlands information, guidance, and resources: <https://www.mass.gov/guides/wetlands-information>
- Wetlands Enforcement Manual. A Guide to Effective Compliance with the Massachusetts Wetlands Protection Act Regulations. November 2004. Available to download at <https://www.mass.gov/doc/enforcement-manual-for-wetlands/download>.
- Hydrology Handbook for Conservation Commissioners. A Guide to Understanding Hydrologic and Hydraulic Data and Calculations Under the Massachusetts Wetlands Protection Act. March 2002. Available to download at <https://www.mass.gov/doc/hydrology-handbook-for-conservation-commissioners/download>.
- Applying the Massachusetts Coastal Wetlands Regulations: A Practical Manual for Conservation Commissions to Protect the Storm Damage Prevention and Flood Control Functions of Coastal Resource Areas. August 2017. Available to download at <https://www.mass.gov/doc/czm-coastal-manual-applying-the-massachusetts-coastal-wetlands-regulations/download>.

Massachusetts Association of Conservation Commission (MACC) resources:

- Main MACC website: <https://www.maccweb.org/>
- Webpage about Conservation Commissions in Massachusetts: <https://www.maccweb.org/page/AboutConCommMA>
- Wetlands Protection Act Frequently Asked Questions: <https://www.maccweb.org/page/ResWPAFAQS>
- MACC Non-Zoning Wetlands Protection Bylaw/Ordinance. Approved by MACC in 2006 for Inclusion in the 9th Edition of the MACC Environmental Handbook for Massachusetts Conservation Commissioners. Available to download at <https://www.maccweb.org/page/ElecResLibrary>.
- Protecting Wetlands and Open Space: MACC's Electronic Environmental Handbook for Massachusetts Conservation Commissioners. *Available for purchase at* <https://www.maccweb.org/page/PubEhandBook>.



Case Study 8: South Portland, Maine

At-a-Glance

Community Name: **South Portland, Maine**

- Population: 25,002
- Watershed: Presumpscot River / Atlantic Ocean

Summary of Local Wetland Protections:

South Portland has a freshwater wetlands ordinance that builds on state protections to regulate smaller wetlands or impacts to wetlands that are exempt from state permitting. The ordinance requires an upland buffer around wetlands and provides a process for compensatory mitigation to offset wetland impacts.

Community Overview

The city of South Portland is located in southern Maine along the Atlantic Ocean and across the Fore River from the city of Portland. As of 2020, the city population was 26,498; the population had grown about 6% from 2010 to 2020.²⁷ The median household income was \$82,489 as of 2022. In comparison to other communities in the Greater Portland region, South Portland had a slightly lower median income and higher percentage of families below the poverty level. No census tracts within the city are identified as disadvantaged communities according to the Climate and Economic Justice Screening Tool (CEJST)²⁸. The most common employment industry for residents is education and health care.

South Portland has a working waterfront dominated by commercial and industrial uses, although there are also publicly accessible oceanfront areas including boat access and beaches. Much of the City is developed and includes highly developed neighborhoods, commercial and industrial areas along the waterfront, and a large retail shopping center.

The City has many initiatives focused on climate change resiliency, including the Office of Sustainability's *Preparing for Coastal Flooding in South Portland* project and *One Climate Future*, a joint climate action and adaptation plan for South Portland and Portland. There is also an emphasis of providing access to open space and the benefits that open space provides to a community, including protecting natural resources and promoting public health and wellness, as described in the City's recent *Open Space Plan*.

Description of Local Wetland Protections

The City of South Portland has a freshwater wetlands ordinance (titled **Performance Standards with Respect to Activities in or Adjacent to Freshwater Wetlands**) that aims to "maintain the functions and values of the community's freshwater wetlands and to ensure the health and safety of the residents of the City while preserving our economic vitality." As the freshwater wetlands ordinance is located in the City's Zoning Code, it applies to proposed projects that require either a building permit or Planning Board review. For those projects that require

²⁷ U.S. Census Bureau. QuickFacts: South Portland, Maine. Available at <https://www.census.gov/quickfacts/>. Accessed September 2023.

²⁸ Council on Environmental Quality. Climate and Economic Justice Screening Tool (CEJST). Available at <https://screeningtool.geoplatform.gov>. Accessed September 2023.

Planning Board review, certain projects are exempt from the freshwater wetlands ordinance such as revisions of approved site plans that do not increase the area of building or impervious surfaces and projects limited to the creation of accessory dwelling units.²⁹ For building permits, compliance with the ordinance is required for any projects on parcels that include mapped freshwater wetlands, contain hydric soils, or are in certain protected areas. In addition, projects proposing more than 1,200 square feet of new buildings or structures or more than 4,300 square feet of new impervious surface must comply with the ordinance.

South Portland's freshwater wetlands ordinance requires that alterations of freshwater wetlands be avoided and minimized to the extent feasible to complete the project. Further, the ordinance requires maintenance of a naturally vegetated upland buffer strip around wetlands, and that the proposed project not violate any state water quality laws. Under this ordinance, a delineation of all wetlands at the project site must be conducted and the site plan must contain wetland boundaries and proposed upland buffers. The required upland buffer areas are a minimum of 25 feet wide but vary in size based on the type of natural resource being altered. The ordinance states that the buffer should contain native, non-invasive plant species (either naturally occurring or planted) and the applicant must provide a plan for long-term management of the buffer including legally binding documentation (e.g., an easement or deed restriction).

During conversation with City staff, it was noted that the freshwater wetlands ordinance is separate from the City's shoreland zoning ordinance, which complies with state regulations to protect inland and coastal waters and wetlands. The Shoreland Area Overlay District, where this ordinance applies, includes all land areas within 250 feet of coastal wetlands,³⁰ all land areas within Stream Protection Overlay Subdistricts, and all land areas within 250 feet of "shoreland freshwater wetlands." A shoreland freshwater wetland is defined as a "freshwater wetland that is not a forested wetland and that is ten (10) or more contiguous acres, or less than ten (10) contiguous acres and adjacent to a surface water body, excluding any river, stream, or brook, such that, in a natural state, the combined area is in excess of ten (10) acres." While the South Portland shoreland zoning ordinance is structured to meet the State's requirements, the City's freshwater wetlands ordinance extends protection beyond such requirements as will be discussed in the following section.

Relationship Between Local Protections and State/Federal Regulations

The State of Maine has extensive wetland protections under the Natural Resources Protection Act (NRPA), which is administered by the Maine Department of Environmental Protection (MDEP). Natural resources protected under the NRPA include freshwater wetlands, as well as

²⁹ An accessory dwelling unit is defined as "a residential living unit, subordinate to a single-family detached unit or a primary dwelling unit that is part of a multi-unit structure...that provides complete independent living facilities, including permanent provisions for living, sleeping, cooking, eating, and sanitation."

³⁰ Coastal wetlands are defined as "all tidal and subtidal lands; all areas with vegetation present that is tolerant of salt water and occurs primarily in a salt water or estuarine habitat; and any swamp, marsh, bog, beach, flat or other contiguous low-land that is subject to tidal action during the highest astronomical tide level for the year in which the activity is proposed as identified in tide tables published by the National Ocean Service. Coastal wetlands may include portions of coastal sand dunes."

coastal wetlands, coastal sand dune systems, significant wildlife habitat, fragile mountain areas, great ponds, rivers, streams, and brooks. A permit is required for activities (including dredging, draining, filling, and construction or repair of permanent structures) located in, on, or over any protected natural resource, as well as activities adjacent to certain types of natural resources. A 75-foot-wide setback area or buffer is applied to most protected natural resources. Proposed activities within the buffer area require either a permit or exemption under NRPA. For projects that require Clean Water Act Section 404 authorization and qualify for the Maine General Permits (which are issued by the USACE New England District), the General Permits state that the same form that is submitted for a NRPA permit can be submitted as an application to the USACE.

There are several exemptions from NRPA permitting, including the following types of impacts to freshwater wetlands:

- Projects are exempt from NRPA permitting if they affect “less than 4,300 square feet (approximately 1/10 of an acre) of wetland area, as long as the affected area is not within a shoreland zone (based on Municipal Shoreland Zoning Act requirements), is not peatland, does not contain 20,000 sq.ft. of open water or emergent vegetation, maintains a setback of at least 25 feet from all other natural resources, and constitutes a single, complete project.”
- Activities adjacent to (i.e., within 75 feet of) a freshwater wetland, but occurring outside of the wetland, are exempt from NRPA permitting “unless the wetland contains either peatlands or at least 20,000 square feet of marsh vegetation or open water (excluding artificial ponds or impoundments unless they are alterations of other protected resources such as streams).”

Note that the South Portland freshwater wetlands ordinance applies to projects with proposed impacts to freshwater wetlands, with some exceptions as described in the previous section. If a project includes small impacts to wetlands and falls under one of the NRPA exemptions listed above, it may still require approval from the City under their local ordinance.

An application for a state NRPA permit must include an alternatives analysis to demonstrate that a practicable alternative to the proposed activity does not exist. Compensation is required for the loss of wetland functions and can be accomplished through on-site or off-site compensation projects or a fee in lieu of a compensation project. The MDEP operates a Maine In Lieu Fee Compensation Program with “resource compensation rates” based on the costs of enhancement and restoration, the average assessed land value in the project county, and a multiplier for impacts to certain types of significant natural resources. There are exceptions to the compensation requirement under NRPA, including (1) alterations of less than 500 square feet in a freshwater wetland of special significance and (2) alterations of less than 15,000 square feet in a freshwater wetland not of special significance; MDEP must approve these exceptions.

South Portland’s freshwater wetlands ordinance states that, for projects requiring a NRPA permit from the state, applicants must submit the same application materials and supporting documentation to the City. For projects that fall under a general permit (called a “Permit-by-

Rule”) or do not require a NRPA permit, guidance is provided on submission requirements for the City’s review and approval of freshwater wetland alterations. These include a formal alternatives analysis for projects with impacts to as little as 1,000 square feet of freshwater wetlands. The alternatives analysis should demonstrate whether there is a practical alternative to the proposed wetland impacts and, if there is not a practical alternative, how wetland alteration has been minimized. City staff noted that they have rigorous expectations for the alternatives analysis, and may request additional information to ensure that applicants provide an in-depth, thought-out analysis of potential alternatives.

Mirroring the State’s process, South Portland requires compensatory mitigation for alterations to freshwater wetlands and allows the applicant to meet this requirement either by implementing a compensation project or through payment of a compensation fee. The City does not “double charge” on projects that also require mitigation under the NRPA or the federal Clean Water Act. However, if a project involves impacts to wetlands, but no compensation is required by the MDEP or USACE, the City will charge a compensation fee for the proposed wetland alterations. The fee is calculated based on the area of freshwater wetland alteration as well as any area of required upland buffer that is not provided in the site plan. Fees collected by the City are deposited in a Freshwater Wetland Compensation Fund and used for projects such as restoration of degraded wetlands, enhancement of existing wetlands, preservation of existing wetlands or adjacent upland buffers, creation of freshwater wetland from non-wetland upland area, and stormwater improvements that protect or improve the function and value of a freshwater wetland.

History and Implementation of Local Wetland Protections

Limited information was available on the history of South Portland’s freshwater wetlands ordinance. It was adopted sometime between 1991 and 2010 and is assumed to be a result of requirements for wetland protections that were imposed by the State.

For all reviews conducted by the Planning Department, they retain the right to hire external experts (at the applicant’s expense) to complete their review. The external experts hired for a given project are based on project-specific needs (i.e., if a project triggers an impact to that resource); the City will often utilize an external wetland biologist for projects that require review under the freshwater wetlands ordinance. While the wetland biologist provides expertise, planning staff are also deeply involved in the permit application review. They are encouraged to thoughtfully review applications and ask questions to ensure that the ordinance is being implemented as intended and that applicants have thoroughly examined alternatives to avoid or minimize wetland impacts. City staff acknowledged that it takes time and investment for staff to know and understand the ordinance so they can fully engage in the review process, although it is hard to quantify the impact of the freshwater wetlands ordinance on staffing needs or workload within the Planning Department as these reviews are tied into larger permit applications.

An example of the Planning Department’s detailed review process was provided. An application was submitted for a commercial/industrial project on a narrow parcel of land with wetlands along the edge of the parcel and adjacent to a utility corridor. The original site plan proposed minimal parking for the facility, but included a large paved area for truck turnarounds. The

developer was prepared to pay the required compensatory mitigation costs to obtain the building permit. Planning staff felt that the alternatives analysis did not justify the proposed wetland impacts and, upon further discussions with the developer and business owner, found out that such turnarounds would not be needed for the proposed facility (as the biggest trucks that might be needed for business operations would be smaller and not require a large turnaround space). The site plan was redesigned to reduce pavement area, which reduced wetland impacts and still met the project design needs. City staff cited this as a positive outcome for both natural resource protection and the developer and business owner, who were able to build out the facility as needed and avoid wetland mitigation costs by carefully reviewing their site design.



Map showing Wetlands (in green) among Commercial, Industrial, and Residential Developments in South Portland. Image from South Portland’s Web GIS Viewer.

Impacts on Wetlands

The City does not track the impact of their freshwater wetlands ordinance across projects. While relevant information is stored in a tracking database for more recent projects, this data is not organized into a database for older projects and could not be compiled easily.

While not quantified, City staff noted that one result of the freshwater wetlands ordinance and other wetland protections (e.g., the shoreland zoning ordinance) is up-to-date mapping of

wetlands on proposed project sites. The City requires a field delineation at the time of application, so the mapped wetlands on a site plan reflect current conditions on the ground. In comparison, the National Wetlands Inventory data for South Portland are from about 20 years ago.

Impacts on the Local Community

In general, the freshwater wetlands ordinance has been received positively by the local community. City staff noted that South Portland is a progressive community and citizens are generally in favor of natural resource protections.

Applicants typically do not express concerns about the City's freshwater wetlands ordinance when they are also going through the State's review process. However, for projects that require only local review, applicants tend to convey more frustration about the requirements of the ordinance. City staff noted that, in general, they may have more stringent expectations of meeting the ordinance requirements than state reviewers. While some applicants push back against the City's requirements, City staff cited numerous examples, including the one described above, where their rigorous review process has resulted in better outcomes to wetlands and the regulated public.

Based on the geography and existing development in South Portland, most proposed activities with potential for wetland impacts are commercial and industrial developments (not residential). While the existence of the freshwater wetlands ordinance does increase the cost and time to build in South Portland, City staff do not think the increased cost is significant enough to have an impact on housing prices or to decrease interest in developing within the city.

Lessons Learned

- Encourage applicants/developers to conduct a wetland delineation early in the planning process, so they will understand a site first and then put together the design. A plan tailored to a specific site can minimize impacts to wetlands and other natural resources, reduce stormwater concerns, and still meet the project design needs.
- Use local ordinance development as a chance to protect wetlands that are not covered by state or federal regulations. South Portland regulates small impacts to wetlands that may fall under NRPA exemptions and therefore not require state-level review.
- Prioritize training of planning staff and use of external experts as appropriate to ensure successful implementation. Planning Department staff should be knowledgeable about the freshwater wetlands ordinance and confident in how it is applied. Planning staff are encouraged to meaningfully engage with the proposed site design and application materials during the review process and ask questions to understand the project purpose and identify ways to minimize wetland impacts. The focus on thoughtfully implementing the ordinance will ensure that the intent of the ordinance continues to be met and the process retains credibility to the regulated public.

Future Directions

The City of South Portland continues to implement the freshwater wetlands ordinance for applicable projects that require a building permit or Planning Board review. In addition to the

climate resiliency initiatives noted above, the City is working on a new coastal resilience effort with the Gulf of Maine Research Institute and the Greater Portland Council of Governments. This project includes analyzing potential future impacts to shoreland areas and identifying upland areas that may contribute to downstream flooding in future extreme rain events. The results of this effort are expected in the next 1-2 years and may include additional protections for wetlands that attenuate storm surge or flooding.

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Case Study References and Additional Resources

City of South Portland Planning & Development Department website:
<https://www.southportland.gov/242/Planning>

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South Portland Web GIS Viewer (AxisGIS). Available at
<https://www.southportland.org/departments/water-resource-protection/web-gis-viewer/>.

Maine Department of Environmental Protection (MDEP) resources:

- Natural Resources Protection Act (NRPA) webpage:
<https://www.maine.gov/dep/land/nrpa/index.html>
- Maine In Lieu Fee Compensation Program (ILF) and Maine Natural Resource Conservation Program (MNRCP) webpage:
https://www.maine.gov/dep/land/nrpa/ILF_and_NRCP/index.html

Summary of Findings

While the local communities represented in these case studies vary with size, geography, and regulatory context, a number of themes were brought up throughout conversations with local government and state agency representatives. The following paragraphs describe the overall themes that were observed throughout the development of these case studies.

Local governments can adopt ordinances in response to local needs or concerns. The reasons for adopting local wetland protections varied, but often were in direct response to the needs or concerns of the community. For example, local leaders in Lake County, IL saw a need for coordination across municipalities to improve stormwater management. The formation of the Lake County Stormwater Management Commission addressed this need and has allowed for a coordinated approach to watershed development (and accompanying wetland impacts) across the 52 municipalities in Lake County. In Spring Lake Township, MI, Township officials wanted to have more local input in the permitting process when projects would impact wetlands. The adoption of a Wetland Protection Ordinance has allowed for greater local input on wetland regulations in the township. In Warrenton, OR, the existing wetland protections were put in place to comply with state laws and regulations but are also cited as a way to address increasing concerns from the public over flooding and tsunamis.

Local governments can use ordinances to build on state regulations or fill a gap in protections. In South Portland, ME, the local ordinances are built upon the State's minimum requirements to add to wetland protection and mitigation requirements. In Hilton Head, SC, the town's Wetland Protection Ordinance provides protection to wetlands that are not federally jurisdictional waters of the United States. Finally, in Anne Arundel County, MD, the county follows State requirements to implement their Critical Areas Program and has built on this by adding protections for freshwater wetlands outside of mapped critical areas.

Vegetated buffers are a useful tool in protecting wetland functions and values. Many of the ordinances highlighted in this report rely heavily on buffers to protect wetlands from the impacts of development. In Bellingham, WA, buffers are required in the Critical Areas Ordinance and can be between 25 and 200 feet depending on the wetland category, adjacent land use, and the functions provided by the wetland. Impacts within the buffer area require mitigation. Similarly, in Anne Arundel County, MD, no work is permitted within the Critical Area in either wetlands or a 100-foot buffer around them (except for water-dependent facilities or by variance). Anne Arundel County's additional protections for nontidal (freshwater) wetlands and bogs also include required buffers around these features. Ordinances in South Portland, ME, and Hilton Head Island, SC require that the wetland buffers be vegetated with native species (or, in Hilton Head Island, obtain approval of a landscaping plan); South Portland also requires a long-term management plan for buffer areas with legally binding documentation.

Mitigation is an important component of protecting wetland functions and values. Many of the local communities interviewed for this project have their own mitigation programs or requirements, which in some cases adds to the mitigation required under state and federal regulations. In Bellingham, WA, applicants must follow the mitigation sequencing and

replacement ratios described in the Critical Areas Ordinance. These requirements aid in meeting the “no net loss of ecological functions” standard of the ordinance. Without mitigation bank credits available, many applicants purchase off-site properties to use as their mitigation sites; the city requires that such mitigation sites be maintained and monitored for 5 years. Mitigation is required for impacts to isolated wetlands of Lake County, IL, and their Watershed Development Ordinance includes mitigation ratios and long-term management and monitoring provisions. The Lake County Stormwater Management Commission also has a Wetland Restoration Fund that may be used to fulfill mitigation requirements when wetland mitigation bank credits are not available. In Hilton Head Island, SC, the town prefers that mitigation be performed on-site as there are no approved banks on the island. The town also has an in-lieu fee option; fees collected through this program are used on wetland creation projects. In South Portland, ME, if a project involves wetland impacts but does not require compensation through state or federal regulations, the City will charge a compensation fee for the proposed wetland alterations. Fees collected by the City are deposited in a Freshwater Wetland Compensation Fund and used for a variety of projects (including wetland restoration, enhancement, and creation activities).

Local wetland protections should be enforceable, but also flexible in how they are implemented. Several local government representatives interviewed for this project noted the importance of balancing enforcement actions with educating the local community about the importance of wetlands and the role of local ordinances. Spring Lake Township, MI enforces violations, but also uses their ordinances as tools to spread public awareness about both the required permits and the importance of wetlands more broadly. Similarly, in Lynn, MA, when minor violations are reported, the Conservation Commission sends a compliance letter and requires the landowner to attend the next Commission hearing. They can require fines, but often do not and instead use the hearing as an opportunity to educate members of the public. They also typically require that the impacted resource be returned to its previous conditions. Flexibility in implementing local wetland protections was also discussed in conversations with Hilton Head Island, SC town staff. Their Wetland Protection Ordinance includes both preferred and minimum buffer widths; town staff work with applicants to strive for larger buffers but have the flexibility to allow for smaller buffers based on project-specific information such as lot size or the amount of impervious cover on the site.

Community engagement is key to the success of local wetland protections. The local government staff interviewed for this project frequently spoke of engaging the local community and responding to the concerns of the general public. Staff from Warrenton, OR noted that community members are often well informed about environmental issues and vocal about proposed projects and associated impacts to wetlands and flood risk. Many of the local protections described in this report incorporate neighborhood meetings or public hearings into the review process. More involved forms of community engagement were observed in discussions with the Lynn Conservation Commission; Lynn and other municipalities in Massachusetts use a system where volunteers are appointed to the commission and are responsible for administering the state Wetlands Protection Act and local Wetland By-Laws (if applicable). Similarly, in Spring Lake Township, MI, there is a Wetland Review Board made of

community members who are appointed by the Township Board and involved in the wetland permitting process.

Climate change is not yet considered in many local wetland protections. During discussions with local government staff, the topic of addressing climate change through local wetland protections resulted in more questions than answers. In general, staff interviewed for this report recognized the threat of climate change and the potential role wetlands may play in addressing climate threats. Many local governments are planning for climate change impacts (such as the efforts in South Portland, Maine to improve coastal resilience), and some are incorporating recent trends into their reviews and analyses (such as updates to stormwater calculations for Lake County, IL based on more frequent and stronger rainfall events). However, there is still much more potential for an increased use of local wetland protections to address potential impacts from the changing climate. Future work may focus on ways that local governments can address climate change through wetland protection ordinance development and implementation.

In conclusion, the case studies provided in this report represent a range of coastal communities, varying in size, geography, and regulatory context. These communities have taken a variety of approaches to protecting wetlands at the local level, although several recurring themes were observed across case studies. These case studies highlight the challenges and successes that local governments face when enacting wetland protections and provide examples that may be useful for other coastal communities interested in protecting their wetland resources.



Appendix A: Resource List

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Appendix B: Case Study Summary Table

This report provides eight case studies of local communities’ wetland protection ordinances. These eight coastal communities vary in size from a town of about 6,200 to a county of over 700,000. Communities are included from the Pacific Northwest, Northeast, Mid-Atlantic, Southeast, and Great Lakes regions. The following table provides a summary of the case studies presented in this report.

Case Study Number and Location	Case Study #1 Warrenton, OR
Summary of Local Wetland Protections	Warrenton adopted wetland development standards into the city municipal code in compliance with statewide planning goals. Projects that impact land in or within 25 feet of wetlands must obtain approvals; no impacts to “locally significant wetlands” are allowed under the standards.
Mechanism for Local Protections	Wetland and Riparian Corridor Development Standards within the Development Code
Local Protections Required by State?	Yes
Types of Wetlands Covered	Freshwater and tidal wetlands
Method of Wetland Protection	Wetland review as part of issuance of building and grading permits, site design reviews, floodplain permits, and other planning commission approvals
Address Climate Change?	No
Case Study Number and Location	Case Study #2 Bellingham, WA
Summary of Local Wetland Protections	Bellingham has a Critical Areas Ordinance as required by state law. This ordinance protects wetlands and wetland buffers, which may be up to 200 feet wide. Mitigation sequencing must be followed and off-site mitigation is often required to achieve no net loss of ecological functions.
Mechanism for Local Protections	Critical Areas Ordinance
Local Protections Required by State?	Yes
Types of Wetlands Covered	All wetlands (with exemptions for certain wetlands such as isolated wetlands that are less than 1,000 square feet)
Method of Wetland Protection	Permit required for proposed work within, adjacent to, or likely to impact a critical area (including buffers around wetlands); compensatory mitigation is required for permitted impacts
Address Climate Change?	No

Case Study Number and Location	Case Study #3 Lake County, IL
Summary of Local Wetland Protections	The Lake County Stormwater Management Commission administers a Watershed Development Ordinance that applies to the 52 municipalities in the county. Under the ordinance, minimum standards for stormwater management are established, including specific protections for wetlands. The ordinance covers both wetlands jurisdictional under the Clean Water Act and isolated waters (including wetlands) of Lake County, and a <i>Watershed Development Permit</i> must be obtained for developments that impact such wetlands.
Mechanism for Local Protections	Watershed Development Ordinance is run by the Stormwater Management Commission
Local Protections Required by State?	No
Types of Wetlands Covered	Wetlands that are Waters of the U.S. or Isolated Waters of Lake County (with some exclusions)
Method of Wetland Protection	Permit required for any development that will create a wetland impact
Address Climate Change?	Not in ordinance, although updated rainfall data was recently used to revise stormwater calculations in response to more frequent and stronger rainfall events
Case Study Number and Location	Case Study #4 Spring Lake Township, MI
Summary of Local Wetland Protections	Spring Lake adopted a Wetland Protection Ordinance in 2009 that requires a local Wetland Use Permit for impacts to wetlands from regulated activities. The ordinance covers some wetlands that are not regulated by the state. Other local protections include a wetland setback requirement for new developments.
Mechanism for Local Protections	Wetland Protection Ordinance; additional protections within the Zoning Ordinance
Local Protections Required by State?	No
Types of Wetlands Covered	All wetlands (with exceptions based on size, low floristic quality, and wetlands within road rights-of-way)
Method of Wetland Protection	Permit required for activities within a wetland, mitigation required for wetland impacts over 0.25 acre
Address Climate Change?	No

Case Study Number and Location	Case Study #5 Hilton Head Island, SC
Summary of Local Wetland Protections	Hilton Head Island has a Wetland Protection Ordinance that applies to all wetlands (tidal and freshwater), including those that may not be federally jurisdictional waters of the United States. The mitigation requirements and use of vegetated buffers help to protect these wetlands and maintain their functions and values on the island.
Mechanism for Local Protections	Wetland Protection section within the Land Management Ordinance
Local Protections Required by State?	No
Types of Wetlands Covered	Freshwater and tidal (saltwater) wetlands
Method of Wetland Protection	Permit required for work in wetlands or their surrounding buffers; Limitations on vegetation removal and revegetation requirements; Mitigation required for wetland loss
Address Climate Change?	No
Case Study Number and Location	Case Study #6 Anne Arundel County, MD
Summary of Local Wetland Protections	Anne Arundel County has a Critical Area Program as required by state law that regulates tidal waters, tributary streams, and tidal wetlands, as well as all land within 1,000 feet of those waterbodies and wetlands. The County has additional protections for nontidal (freshwater) wetlands and bogs.
Mechanism for Local Protections	Critical Area Overlay District; Protections and requirements for impacts to wetlands provided in County's Subdivision and Development Code and Zoning Code
Local Protections Required by State?	Yes
Types of Wetlands Covered	Tidal and nontidal wetlands
Method of Wetland Protection	Critical Area overlay district in the zoning code includes Resource Conservation Areas; Permit needed for impact to "environmentally sensitive areas" including wetlands and surrounding buffers
Address Climate Change?	No

Case Study Number and Location	Case Study #7 Lynn, MA
Summary of Local Wetland Protections	The Lynn Conservation Commission is a volunteer board that administers the Massachusetts Wetlands Protection Act at the municipal level, as well as the local Wetlands Protection By-Laws.
Mechanism for Local Protections	MA Wetlands Protection Act and local Wetlands Protection By-Laws
Local Protections Required by State?	Yes
Types of Wetlands Covered	By-Laws specify numerous wetland types including freshwater and coastal wetlands and vernal pools
Method of Wetland Protection	Permit required for activities in wetlands or surrounding buffers
Address Climate Change?	No
Case Study Number and Location	Case Study #8 South Portland, ME
Summary of Local Wetland Protections	South Portland has a freshwater wetlands ordinance that builds on state protections to regulate smaller wetlands or impacts to wetlands that are exempt from state permitting. The ordinance requires an upland buffer around wetlands and provides a process for compensatory mitigation to offset wetland impacts.
Mechanism for Local Protections	Wetland protections (Performance Standards) within Zoning Code
Local Protections Required by State?	No
Types of Wetlands Covered	Freshwater wetlands
Method of Wetland Protection	Permit required for projects that require a building permit or Planning Board review
Address Climate Change?	No

