



FACING OUR FUTURE: Infrastructure

Adapting to Connecticut's Changing Climate

“The Northeast suffered an estimated \$130 million in property damage from several intense storms in the fall of 2005 and spring 2006. Connecticut’s coast has almost \$405 billion of insured coastal [assets]. ... Coastal homes, roads, and infrastructure are at increased risk as sea level rises and storms become more intense. Scientists, insurers, investors, planners, designers, and policy makers must respond to the significant consequences of climate impacts on human health, coastal infrastructure, ecosystems, agriculture, and the economy.”

Connecticut’s 2007 Natural Hazards Mitigation Plan

Implications of a Changing Climate On Connecticut’s Infrastructure

A changing climate will impact Connecticut’s infrastructure as the resiliency of the built environs will be tested repeatedly over the coming years. Conversely, the infrastructure can serve to magnify or mitigate the anticipated effects of climate change on both the natural and human habitat depending on location, design and most significantly, Connecticut’s preparedness and ability to adapt to those changes.

To prepare for climate change, Connecticut must take stock of its primary infrastructure that includes recognizable features such as homes and neighborhoods, and the bridges, roads, railroads, schools, airports, ports, water supply treatment systems and reservoirs, sewage treatment plants, power plants, transmission lines, and recreational, industrial and commercial facilities that support Connecticut’s economy and lifestyle. Successful adaptation will require that Connecticut consider many more less recognizable landscape features as integral components of “infrastructure.” Landscape features can buffer the built infrastructure from damaging natural weather events while maintaining water supplies and the vitality of the ecosystems that rely on good quality and adequate quantity of water. Connecticut must begin to assess risk and set adaptive action priorities for both. These

adaptation choices for the built environment and the underlying landscape will affect communities and their citizens, historic and cultural resources, the economy, and the natural environment. While the adaptation considerations for Connecticut’s infrastructure are interrelated with the Water Resources and Natural Coastal fact sheets’ content, which emphasize existing variables and potential impacts of a changing climate on natural resources and habitats, this fact sheet focuses specifically on the vulnerability of infrastructure in Connecticut’s changing climate.

River Flooding - Flooding along rivers and streams is the number one natural hazard in Connecticut and its frequency is expected to increase as climate change alters precipitation patterns. The Intergovernmental Panel on Climate Change (IPCC) projects that there will be more frequent and intense storms for the Northeast region, which will increase episodic flooding. According to Connecticut’s 2007 *Natural Hazards Mitigation Plan Update*, over 32,000 homes are located in the 100-year floodplain along Connecticut’s rivers. These homes are at increased risk from flooding along with associated supporting infrastructure.

According to a 2003 report by the University of Connecticut, entitled *Precipitation in Connecticut*, there has been a statistically significant increase in precipitation amounts in

Connecticut over the past 100 years. This report analyzed precipitation data through August of 1996 in Connecticut that shows annual precipitation amounts have increased.

Flooding can significantly disrupt essential state and local services when infrastructure is damaged, destroyed or isolated, placing high demands on public safety officials. Billions of dollars in clean up and replacement costs of personal property and public infrastructure are at stake. Some communities have begun to look at adaptation options, but uncertainty in current projections and lack of adaptation strategies have resulted in limited action. As a first step, location of new or rebuilt structures must consider flood protection standards that are consistent with National Flood Insurance Program requirements and give consideration to projected storm frequencies and intensities.

Flooding may also impact or overwhelm both natural and modified landscape features designed to mitigate flooding and flood damage, including inundation and sedimentation of riverine wetlands, erosion of stream banks, damage to infiltration devices, and destruction of trees and natural vegetative practices used to control stormwater and nonpoint source runoff. Best management practices, including landscaping techniques as well as conservation, must include consideration of extreme conditions caused by changes in climate.

Coastal Flooding – The threat of more severe storms, combined with sea level rise, can result in increased infrastructure damage from coastal storm surges. Sea level rise projections vary, but moderate estimates from a 2001 report by the IPCC range from four inches to 2.9 feet by 2100, not considering the accelerated melting of ice sheets that has been observed in the past few years.

The choice between retreating and shoreline armoring will inevitably need to strike a balance between the natural and built environment. The living shoreline provides a natural buffer zone that is able to attenuate the impact of storms on coastal development while providing natural filters that protect coastal water and habitat quality.

Although hardened shorelines may be necessary to protect primary infrastructure they should be used sparingly as their protective value may be short lived and counterproductive.



Storm damage from the 1938 hurricane. Photo source: Connecticut 1938 U.S. Army Air Corps, Connecticut State Library Collection

New development siting should not assume a stable shoreline; storms and sea level rise will erode and inundate natural buffers thus increasing the threat of property damage. Further, protective landscape features narrow when pushed against development and are prevented from retreating inland. Preserving or restoring coastal features that help protect human infrastructure under today's conditions will not adequately provide those same services under changed climate conditions. To accommodate these needs, accelerated sea level rise will require a new look at Connecticut's underlying statutory and regulatory programs related to both coastal and inland water resources, landscape protection, and infrastructure and development placement to include the presumptive changes due to climate change.



Photo source: Connecticut 1938 U.S. Army Air Corps, Connecticut State Library Collection

Transportation - Major transportation corridors including interstate highways, rail lines, and ports are often located along Connecticut's river valleys and coast where they may be at risk from flooding and storm surge. Associated with this transportation infrastructure is also considerable landscape infrastructure that provides buffers for water protection, infiltration, drainage, and even fish and wildlife habitat, open space, and recreational opportunities in many cases.

The Connecticut Department of Transportation (CTDOT) is responsible for many state and interstate roads, highways and bridges, and the state's public transit system, rails, ports and some airports. Ports may need to be altered and roads, rails, and other transportation corridors redesigned due to sea level rise and threats from more frequent and more violent storms. Local authorities, similarly, have responsibilities for local roadways and transportation facilities and related structures such as marinas and roadway drainage systems through planning and zoning commissions and public works' departments.

Safety inspection procedures for bridges and other transportation infrastructure, including landscape and drainage features may need to be reevaluated for increased threats related to climate change. Transportation infrastructure not directly threatened by inundation or physical damage, such as erosion or scour, should nevertheless be comprehensively evaluated for

its ancillary contributions to climate change impacts. Transportation projects should incorporate green design with added protection of landscape features that promote infiltration and slow runoff. Keeping a variety of transportation options viable will be important for interstate commerce as well as state and local emergency response to natural disasters.

Water Supply and Treatment – Protecting human health, especially during natural disasters, relies on both safe and adequate drinking water supply. Other water uses are essential to power generation for cooling water, industry, other domestic activities, agriculture and recreation. There is considerable built infrastructure associated with water supply, including dams to create storage impoundments, treatment facilities and distribution systems. Climate change can affect the availability and quality of water supplies (See Water Resources fact sheet) but also disrupt and damage the infrastructure necessary to treat and deliver water to domestic, industrial and agricultural users. In Connecticut, domestic water supply is of primary concern. Flooding can both physically damage infrastructure and contaminate the supplies from inundation with lower quality flood waters. Extended drought or flood can impact the supply and viability of groundwater as well. It is essential that the risk to these water supplies be further evaluated in light of climate change effects, and necessary adaptations, including alternative water supply during emergencies, be developed and implemented. Regional interconnections between public water supply systems and supply sharing can provide increased system reliability during these events. Also, because loss of power is likely during severe storm situations, alternative emergency power supplies are essential to continued treatment and pumping.

Wastewater Treatment – There are over 100 sewage treatment plants (STP) that discharge directly to the surface waters of Connecticut. Most STPs in Connecticut are publicly owned by municipalities and are the responsibility of local water pollution control authorities. By design, STPs are located close to receiving waters, at low points in the sewer service area so sewage can be cost-effectively gravity fed to the treatment facility without pumping. For that reason, the risks to these STP facilities from

flooding both along rivers or the coast can be high. In cases where supplemental pumping of the waste is needed, those pump stations are also often located at low points in the sewer system and can be at risk from river and coastal flooding.

Inundation of several Connecticut STPs during the 1984 flood events graphically illustrated some inadequacies in preparedness for high water. Municipalities consequently invested in flood proofing measures at their STPs. However, with more frequent flood events anticipated, it is unclear if those measures are protective enough.

Conversely, low flowing rivers can impact attenuation and waste load may not be adequately addressed in periods of relative dryness. Streamflow is an important consideration in wasteload allocation and evaluations are generally based on the lowest seven-day flow condition in a ten-year period. Creative reuse of wastewaters for cooling, industrial or irrigation purposes may alleviate demand, and receiving water impacts, during drought conditions. (See also the Water Resources fact sheet for more details on water quality and quantity climate change related discussion).

More careful consideration must be given to future climate and weather conditions to adequately protect existing infrastructure such as pump stations and wastewater treatment facilities. This includes locating and designing new infrastructure that meets future needs and standards for protection. Planning for climate change now, when communities invest in planned updating and upgrading of their existing facilities, would save money by protecting their investments from future damage. As with water supply treatment, alternative emergency power supply is essential, and must be planned for, during power outages.

Federal regulations currently require that treatment facilities be able to sustain the impact of a 25-year storm without damage and remain operational. These wastewater facilities must also be protected from damage in the case of a 100-year storm event although operation may be temporarily affected. However, reevaluation of the character of future 25-year and 100-year

storm intensities is necessary if these standards are to be maintained and engineering and design practices upgraded accordingly. In Connecticut, protection against today's 100-year storm may provide a realistic level of protection although there should be an expectation that today's 100-year storm will occur more frequently in the future. Adaptation in the form of more frequent inspections after floods and repairs of flood proofing features may be an effective strategy to protect infrastructure from more frequent stress. Assessments of vulnerability of, and risk to, existing structures from projected increased frequencies of storm events should be a priority in Connecticut's adaptation strategy for pump stations and wastewater treatment facilities.

The Clean Water Fund (CWF) includes monies to upgrade wastewater treatment facilities and to expand their infrastructure. Connecticut's Environmental Policy Act (CEPA) requires evaluation of CWF wastewater treatment facility projects to consider indirect effects in the environmental impact evaluation prepared for each project. The broad indirect effects category should include climate related concerns such as flood proofing and locational issues associated with adaptation to climate change, and energy efficiency of these facilities, as part of climate change mitigation efforts.

In addition to wastewater treatment plant operations, changes in weather patterns may also affect sewer systems and wastewater loads to the STPs. Leaky sewers, direct inflow from storm drains and illegal homeowner sump pump and roof leader drain overflows, all stress sewer systems, especially older systems. It is imperative that combined sewer overflow (CSO) abatement projects are constructed with realistic standards in mind to address future higher flows. Several large municipalities are required to separate combined sewer systems to handle stormwater flow separately from sanitary sewage. Abatement strategies are designed to reduce the influent load on STPs and eliminate releases of raw sewage that are of concern in a few of Connecticut's large cities during storm events. If the same level of protection from CSO events that is being designed for today is to be maintained in the future under higher rainfall conditions, Connecticut and its municipalities will need to recalibrate planning models based upon newer data.

Both centralized (treating several residences) and individual subsurface sewage (septic) system efficacy may be affected by changes in weather patterns related to climate change. Effective subsurface treatment relies on adequate separation between infiltration trenches and groundwater. This can be affected by changes in water table levels or sea level rise if located in a coastal area. Presently, subsurface systems are designed with a minimum of 18 inches between the leach trenches and high ground water to protect the ground water and nearby surface waters from contamination. As hydrology changes occur, particularly in low lying shoreline communities, the rising water table may not allow for adequate soil treatment travel times to remove pollutants and protect surface and ground water quality. Increased septic system failures may occur that threaten both human and environmental health. The cost and difficulty of remediating failed subsurface systems can be very high. Future conditions need to be considered as new systems are permitted and installed and new standards and technologies are evaluated.

Dams – Of the 5,500 dams in Connecticut, 3,000 come under the Connecticut Department of Environmental Protection’s (CTDEP’s) direct jurisdiction. Presently, 239 Connecticut dams are classified as high hazard, i.e., those which could potentially cause loss of life and major damage to structures and highways if they fail; 264 are classified as significant hazard; and another 692 are classified as moderate hazard.

Connecticut is dotted with historic industrial and manufacturing sites that utilized dams for process water, cooling water and power. Many of these dams now retain contaminated sediments. If a dam with contaminated sediment behind it fails, the contaminated sediment will travel downstream and likely bury and destroy fish and benthic invertebrate habitat, as well as impact wetlands and the watercourse.

Not all dams in Connecticut today meet spillway design standards for safely passing flood flows. CTDEP generally utilizes the United States Army Corps of Engineers’ spillway design criteria as a basis for the design of repairs and reconstruction for dams. Generally a high hazard dam must be designed to pass the probable maximum flood (PMF) – the runoff

generated from the most severe meteorological and hydrologic conditions that are reasonably possible in the region, a significant hazard dam – a ½ PMF, and moderate and low hazard dams – a 100-year return frequency flood. The anticipated increase in the frequency of flooding means that Connecticut dams should be reassessed for their vulnerability and risk from additional flooding events in a changing climate.

In addition, regional climate change reports are anticipating more wet days and more extreme rainfall events. Thus climate changes such as the amount of rainfall, the variability of rainfall events, and the likelihood of extreme weather events, all emphasize the need for ensuring that dam owners keep their dams in good condition. If dams are not maintained in good condition then climate change factors which increase the stress on dams also increase the risk of those living downstream. Basically more extreme rainfall events lead to increased frequency of stress on dams, increasing the risk of dam failure.

If a high, significant or moderate hazard dam fails, there could be potentially catastrophic impacts on the built environment downstream as well as potential loss of life. The current conditions of regulated dams range from good to critical (unsafe). CTDEP has recently stepped-up efforts to assess state-owned dams and assign a priority to private and public dams for inspection and repair based on threats to public safety. As a consequence, more communities will be looking for financial and technical assistance to manage dams, especially as increased flooding is projected to further tax these structures, threaten public safety, and increase environmental risk. The best solution, in some cases to adapt to a changing climate as well as to generally improve environmental conditions, may be to remove some dams in an environmentally responsible manner.

In addition, climate change underscores the need for enhanced emergency planning for high and significant hazard dams in order to better protect those citizens living downstream in potential inundation zones. The Association of State Dam Safety Officials (ASDSO) recommends that states require dam owners to prepare an Emergency Operation Plan (EOP) for each high and significant hazard dam. Public safety is

greatly enhanced by having up-to-date EOPs in place and available for local and state emergency response personnel and dam safety officials. EOPs also must be updated periodically in order to maintain their usefulness.

Landscape “Infrastructure” – As related to some of the risk categories above, some types of infrastructure are incorporated into the landscape as “best management practices” (BMPs) to control stormwater and nonpoint source runoff quantity and quality, protecting both human water supply and natural resource needs. The BMPs often include preservation of natural features that promote infiltration and dampen runoff effects of rainfall. BMPs also are actively implemented through landscape modification that attempts to simulate natural land features. These can have substantial costs and be at risk from climate change impacts, especially storms and changes in hydrology including inundation. Some BMPs are true structures that treat runoff and are subject to the same damaging forces of nature that affect more visible infrastructure. Others, especially activities that preserve and promote natural features to infiltrate rainwater, slow runoff velocities, stabilize or protect erodible areas such as stream banks, or buffer against storm events in a manner similar to coastal wetlands or floodplains.

As infrastructure is constructed, added attention should be directed towards minimizing impervious surfaces and ensuring the types of landscape infrastructure, or BMPs, that are necessary to mitigate the effects of hardening of the landscape and altering drainage patterns that built infrastructure causes. (See effects of impervious cover in the Water Resources fact sheet). Types and sizing of BMPs, or changes in the capacity of watersheds to dampen the effects of those changes under a changed climate regime should be evaluated at the project level as well as in watershed planning exercises.

Effects may not always be as obvious as even subtle changes in vegetative cover can alter the hydrologic cycle by increasing evapotranspiration with more tree coverage, for example, which may further increase with climate change as growing periods become longer.

What Connecticut is Doing

Among CTDEP programs that can benefit infrastructure and landscape protection through adaptation now and under a changed climate regime are:

- Natural hazard mitigation planning and disaster response
- Stream channel encroachment and streamflow regulation
- Water planning and management
- Wastewater permitting and Clean Water Fund financing for STP upgrades
- Dam safety and management
- Coastal management programs
- Stormwater permitting
- Nonpoint source and watershed management planning
- Low impact development and landscape management practices

Natural Disaster Planning and Responses -

Even with a concerted and effective effort to adapt to climate change, there is a high level of uncertainty in the process, and change is likely to be slow. Connecticut will undoubtedly be struck with natural disasters along the way and, coupled with the lack of a major storm event in several decades, at risk infrastructure has grown substantially. Also, natural features, especially the number of mature trees that may contribute to both infrastructure impacts as well as debris load will add to the damaging force of a major storm or fuel a fire.

Working cooperatively with the Department of Emergency Management and Homeland Security and other state agencies, CTDEP plays an important and continuing role in natural hazard mitigation planning and disaster response. Most recently, CTDEP completed disaster debris planning, including development of the state’s *Disaster Debris Management Plan*, and debris removal and monitoring contracts. Proper planning for debris management is prudent to minimize impacts and speed recovery from a natural disaster such as flooding and significant storm events. Every community should have a debris management plan that should include a standing contract to remove material in the event of severe storm or flooding.

Plans should recognize the changes in the landscape since past major events, how more frequent and intense storm and drought patterns may affect Connecticut's infrastructure, and the task of cleaning up. Consideration should be given to prudent adaptive techniques that may involve tree removal or trimming to reduce damage to structures, transmission lines, transportation routes, and flood elevations and force. Similarly, regular inspection of streams, culverts and other drainage structures to assure that they are maintained clear of debris or obstructions is a preventive and mitigative measure.

Stream Channel Encroachment Regulation -

In order to lessen the flooding hazards to life and property, the CTDEP regulates the placement of structures and obstructions riverward of stream channel encroachment lines. Stream channel encroachment lines have been established for about 270 linear miles of riverine floodplain throughout the state, and are shown on stream channel encroachment line maps, which are on file in the town clerk's office in affected towns.

Water Supply and Streamflow –

CTDEP works in partnership with the Connecticut Department of Public Health who is responsible for assuring the purity and adequacy of drinking water supplies. CTDEP is also charged with protecting natural resources by ensuring that, in addition to meeting human needs for water, there is adequate flow left to maintain healthy ecosystems. This is a challenging proposition, to find or develop clean water sources where they are needed in Connecticut. (For additional variables impacting water resources see the Water Resources fact sheet).

In addition to the need for more foresight in planning for human needs in the face of changing weather patterns to ensure sustainable water supplies, CTDEP is developing streamflow regulations that are aimed at protecting natural resources in rivers and streams throughout the state. The success of these efforts will depend on Connecticut's ability to project future conditions of flood and drought under changed climate and incorporate these projections into development decision making. Innovative options for wastewater reuse, conservation, and wise stewardship of

available water resources all need to be factored into these plans and regulations.

Wastewater Treatment Plant Planning -

In February 2008, the CTDEP evaluated the impact of climate change on low-lying wastewater treatment plants and their tributary sewer systems. This effort is intended to facilitate informed decision-making about major repairs and reconstruction projects at STPs to avoid flooding and other damaging forces.

Monitoring State Dams During and After Flood Events -

During fiscal year 2008, CTDEP undertook the first phase of developing a computer-based monitoring system, known as DAM WATCH, for CTDEP-owned high and significant hazard dams during flooding events. DAM WATCH evaluates stream flow, rainfall and other real time hydrologic data and then applies it to established criteria to determine which CTDEP dams are most in need of on the ground surveillance and inspection. DAM WATCH allows staff to respond to concerns by quickly evaluating and responding to flooding at various state-owned dams.

Coastal Management -

CTDEP, through its federally-approved coastal management program, provides technical assistance and project review for coastal municipalities. Municipalities partner with CTDEP to implement Coastal Management Act policies, which include discouraging armored shorelines and minimizing exposure of people and property to coastal hazards. However, inherently embedded in this effort is the difficulty of reconciling these twin needs so that the reality of some inevitable armoring of the shoreline to protect existing assets does not defeat the environmental protection that is an obligation under the Coastal Management Act. While stewardship of the environment is the CTDEP's priority, it will be balanced within realistic financial means with the needs of society along Connecticut's coast.

To aid in the coastal analyses, CTDEP has a National Oceanic and Atmospheric Administration (NOAA) Coastal Services Center Program fellow who is developing a coastal hazards website to provide information, including maps and data, to the public and government officials about coastal hazards. This

will include information about how climate change may modify these hazards. CTDEP is co-chairing the Coastal Hazards Committee of the Northeast Regional Ocean Council (NROC), a partnership of the six New England states and six federal agencies focused on ocean and coastal planning and management issues on a regional basis. One of the core themes of NROC's Action Plan is to "Render New England a Coastal Hazards Ready Region." The Coastal Hazards Committee has established a work plan and, as an initial activity, held a workshop to engage federal, state and local officials in a dialogue on regional coastal hazards and resiliency issues. A new flood risk assessment for coastal systems based on hydrologic patterns and projections of the 100-year floodplain under future climate scenarios is being developed at the federal level. This information will be used by Connecticut and its municipalities to inform land use decisions moving forward and may ultimately encourage development retreat from coastal areas that cannot sustain the built environment. Actions of other adjacent states, such as the potential armoring of New York State's East River, may need to be included as potential variables in Connecticut analyses of potential shoreline impacts.

Stormwater, nonpoint source, and landscape management – State and local plans can set the tone for land regulation practices that adapt to climate change. However, state and local adaptation will ultimately require careful crafting of stormwater permit features, watershed planning and management actions, preservation of natural features that promote infiltration and runoff control, and the newest technologies to mitigate the effects of climate change such as low impact development. CTDEP is working to adjust programs in all areas to meet those adaptive demands and help ensure Connecticut's management of the land does not exacerbate the effects of climate change. (See the Water Resources fact sheet for discussion on low impact development).

Related Programs and Activities

There are numerous plans and regulations at the federal, state and local level that will require collaborative programming efforts for areas of

overlapping authority related to climate change. In particular:

- *Natural Hazards Mitigation Plan*
- *Conservation and Development Policies Plan for Connecticut (POCD)*
- Local land use zoning and regulation

The Natural Hazards Mitigation Plan - The 2007 – 2010 plan examines Connecticut's history and risk of natural disasters, evaluates Connecticut's geographic vulnerability, outlines which hazard mitigation measures merit the greatest priority, and identifies long-term measures to reduce losses from future natural disasters.

The Conservation and Development Policies Plan for Connecticut – Connecticut's five-year POCD developed within the Office of Policy and Management should set the tone for statewide adaptive actions as related to development patterns and infrastructure placement in the state. Due consideration to the changes in risk brought about by climate change from flooding, drought, and catastrophic storm events needs to be prominently addressed in the POCD and related to regional and local decisions throughout the state. Also, protection of landscape features that mitigate the effects of climate change need to be evaluated on a statewide basis, and afforded appropriate levels of protection.

Local Land Use and Zoning – Many of the authorities essential to climate change adaptation are managed at the local level by Planning and Zoning, Inland Wetland, and Conservation Commissions. Local officials need to be informed about the potential risks of climate change when updating their local plans of conservation and development to ensure planned development and infrastructure are protected from, and do not exacerbate, the effects of climate change.

Action is Needed Now

The time to plan and act is now. Adapting the natural and built environments for the inevitable changes needs to become a standard consideration as Connecticut plans and upgrades critical infrastructure components.

Flooding and its impact on Connecticut's infrastructure will test the fiscal limitations and organizational roles of the state and its municipalities. Now is the time to create resilient communities that can withstand the storms New England will face and an encroaching sea.

The CTDEP recognizes the need to implement sound flood plain management and natural hazards mitigation principles through technical guidance, model ordinances, education, and policies. The CTDEP will continue to look for opportunities to bolster the State's Dam Safety Program and continue to collaborate with other agencies and dam owners to enhance flood prevention and protection. The CTDEP will also continue to encourage local communities to become more proactive in terms of flood

management and natural hazards mitigation, by encouraging the implementation of specific mitigation projects appropriate for a community's self-assessed hazards and risks. It is vital for local communities to prepare effective Natural Hazards Mitigation Plans and maintain them in a current status.

This is one of eight documents in the series *Facing our Future* concerning Connecticut's changing climate, www.ct.gov/dep/climatechange

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RESOURCE LINKS

- For nonpoint source education and planning see nemo.uconn.edu/
- For floods and other emergencies be prepared, see the Ready America link on the Connecticut Department of Emergency Management and Homeland Security website at www.ready.gov/america/makeaplan/index.html
- Use FEMA guidance and information on preparing for hazards, preventing disaster losses, applying mitigation best practices and undertaking community mitigation planning. Visit www.fema.gov
- For transportation infrastructure changes see www.ct.gov/dot/site/default.asp
- For the latest in environmental impact evaluations for water projects see www.ct.gov/dep/cwp/view.asp?a=2719&q=382742&depNav_GID=1654
- For the Connecticut Hazard Mitigation Plan see www.ct.gov/dep/lib/dep/water_inland/hazard_mitigation/plan/hazardmitigationplan.pdf
- For the Disaster Debris Management Plan and contracting information see http://www.ct.gov/dep/cwp/view.asp?a=2718&Q=410492&depNav_GID=1646
- For the National Oceanic and Atmospheric Administration see www.noaa.gov/about-noaa.html
- For recommendations for Revisions to Municipal Plans of Conservation and Development and/or Zoning and Subdivision Regulations see www.ct.gov/dep/cwp/view.asp?a=2705&q=323570&depNav_GID=1622
- For further details on the importance of buffers see clear.uconn.edu/projects/riparian_buffer/results/CLEAR_%20Summary_021508.pdf
- For Coastal Wastewater Infrastructure review *Potential Impacts of Global Warming on Connecticut's Wastewater Infrastructure*, a preliminary 2008 report by Krista Fisk with an introduction by Dennis Greci
- For Jordan Cove Urban Watershed Project see www.jordancove.uconn.edu/jordan_cove/publications/jordan_cove_brochure.pdf