

Session No. 30

Course Title: Coastal Hazards Management

Session Title: Managing Development in the Coastal Zone, Federal Policy III: Internal Revenue Code; United States Army Corps of Engineers; National Seashores; National Forests; Bureau of Land Management; Department of Defense.

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Time: 50 minutes

Objectives:

- 30.1 Review the approaches used by federal policy to manage the coastal zone.
 - 30.2 Consider the Internal Revenue Code as an incentive for increased development in the coastal zone and in particular in hazardous areas of the coastal zone.
 - 30.3 Understand the role of the United States Army Corps of Engineers in the management of the coastal zone.
 - 30.4 Understand the effects of ownership of land by the federal government on the management of the coastal zone.
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Scope:

The purpose of this session is to explore and understand the effect of federal policy on efforts to mitigate the impact of natural hazards in the coastal zone. First we will review the approaches used by the federal policies discussed in Session Number 29; we will then move on to explore several other federal programs.

Readings:

Instructor and Student Readings:

Beatley, Timothy, et al. 2002. *An Introduction to Coastal Zone Management*.
Washington, DC: Island Press, pp 63; 71 – 74; 91 – 94; 98; 112; 117 – 119; 122;
130; 275.

PowerPoint slides:

[**PowerPoint 30.1** Images of Wetlands that show ability to absorb flood waters]

[**PowerPoint 30.2** Breakwaters]

[**PowerPoint 30.3** Jetties]

[**PowerPoint 30.4** Bulkhead]

[**PowerPoint 30.5** Sandbags]

[**PowerPoint 30.6** Beach Nourishment]

[**PowerPoint 30.7** Beach Nourishment]

[**PowerPoint 30.8** Map of National Park Properties in the Coastal Zone]

[**PowerPoint 30.9** Map of Department of Defense Properties in the Coastal
Zone]

[**PowerPoint 30.10** Map of National Forests in the Coastal Zone]

[**PowerPoint 30.11** Map of US Army Corps of Engineers- Beach Nourishment]

[**PowerPoint 30.16** Map of US Forest Service]

General Requirements:

Material for Objectives 30.1, 30.2, 30.3 is to presented as lecture supported by PowerPoint slides. As with Sessions 28 and 29, the instructor has the option of presenting the material in Objective 30.4 as lecture, or may assign students or teams of students to make class presentations. Instructions for student presentations appear in Handout 28.1 which can be found in Appendix A to Session No. 28.

Another, and perhaps better, way to deal with this session would be to ask all of the students to research all of the programs (this would not be hard to do on the internet and

would be good experience for the students) and come to class prepared to discuss the programs using the format outlined in Handout 28.1.

Objective 30.1 Review the approaches used by the Coastal Zone Management Act and by the Coastal Barrier Resources Act to affect development in the coastal zone.

Requirements:

The content should be presented as a lecture.

Remarks:

Coastal Zone Management Act

- The Coastal Zone Management Act provides uses **incentives** to encourage states to formulate and administer Coastal Management Programs. These incentives take the form of:
 - **grants** made by the national government through the National Oceanic and Atmospheric Administration (NOAA) to coastal states for Coastal Management Program formulation and administration and
 - through the **consistency provisions** of the CZMA that provides a measure of control over federal activity in the coastal zone.

Coastal Barrier Resources Act

- The Coastal Barrier Resources Act **removes incentives** (federally funded infrastructure) that would encourage **development** in the Coastal Barrier Resources System.
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Objective 30.2 Consider the Internal Revenue Code as an incentive for increased development in the coastal zone and in particular in the hazardous areas of the coastal zone.

Requirements:

The content should be presented as a lecture. Class discussion is to be encouraged.

Remarks:

The Internal Revenue Code as a De Facto Management Tool

- The first program to be discussed is one not usually thought of as a management tool . However, a little thought and analysis will reveal that the Internal Revenue code is in fact a very powerful (de facto) management tool. The results may be unanticipated or at least not obviously intentional but are very real.
1. Name of the program: federal income tax
 2. Authorized by: Internal Revenue Code
 3. Administered by: Internal Revenue Service, a branch of the United States Treasury Department
 4. What does the program do: the basic function of the IRC is to raise the revenue needed to operate the government
 5. How does the program affect development in the coastal zone: the Internal Revenue Code includes provisions that provide tax credits, deductions and other forms of subsidies, such as:
 - o **mortgage interest** and **property taxes** on second homes may be treated as **deductions** from taxable income;
 - o **damage** to a property caused by a natural hazard may be treated as a **casualty loss deduction**;
 - o expenses incurred in operating a second home as a **rental property** may be treated as **business expenses**;
 - o **accelerated depreciation** allowances on **rental property** are allowed.
 6. In your judgment is the program effective?: many argue that these and similar provisions of the Internal Revenue Code provide powerful incentives for coastal development.
 7. Does the program affect the vulnerability of the coast to natural hazards: in as much as the Internal Revenue Code makes it more advantageous to own property in the coastal zone and softens the financial burden of property damaged by a natural hazard, it would seem reasonable to conclude that the Internal Revenue Code increases the vulnerability of the coastal zone to natural hazards.
 8. Could the program be used as a tool to decrease the vulnerability of property in the coastal zone?: the IRC could serve to remove the incentives it provides to develop in coastal areas, much as the CBRA does. The instructor may wish to raise the issue of the *political feasibility* of such a suggestion.
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Objective 30.3 Understand the role of the United State Army Corps of Engineers (USACOE) in the management of development in the coastal zone.

Requirements:

Present the content as a lecture supported by PowerPoint slides. Class discussion is to be encouraged.

The following PowerPoint slides will be used during this Objective:

[**PowerPoint 30.1** Images of Wetlands that show ability to absorb flood waters]

[**PowerPoint 30.2** Breakwaters]

[**PowerPoint 30.3** Jetties]

[**PowerPoint 30.4** Bulkhead]

[**PowerPoint 30.5** Sandbags]

[**PowerPoint 30.6** Beach Nourishment]

[**PowerPoint 30.7** Beach Nourishment]

[**PowerPoint 30.8** Map of National Park Properties in the Coastal Zone]

[**PowerPoint 30.9** Map of Department of Defense Properties in the Coastal Zone]

[**PowerPoint 30.10** Map of National Forests in the Coastal Zone]

[**PowerPoint 30.11** Map of US Army Corps of Engineers- Beach Nourishment]

Remarks:

- The United States Army Corps of Engineers plays two very important but different **roles** in the management of development of the coastal zone:
 - The first is that of a **regulator of certain activities** in the coastal zone;
 - The second as a **builder of very large projects** in the coastal zone.

Examples of each of these will be discussed in turn.

The USCOE as regulator:

1. Name of the program: the "dredge and fill" program.
2. Authorized by: Section 404 of the Clean Water Act
3. Administered by: the USACOE
4. What does the program do?: Section 404 of the Clean Water Act conserves water quality by regulating the discharge of dredge and fill materials into "waters of the United States."
5. How does the program affect development in the coastal zone?: As a practical matter, in the process of protecting water quality Section 404 limits development activity in wetlands. Permits issued by the COE are required for the discharge of dredge or fill material, and wetlands that are impacted must be restored, or new wetlands must be constructed elsewhere as a form of mitigation.
6. In your judgment is the program effective?: Some critics argue that the 404 Program has several inherent limitations on its effectiveness, such as: 404 pertains only to discharges, the COE too readily issues permits, the definition of "wetland" can be problematic, and wetland mitigation and restoration requirements are not stringently enforced. In addition, some claim that the effectiveness of 404 requirements have been hindered by an administration that is more eager to promote development than preserving wetlands in their natural state. Despite these criticisms, most would agree that Section 404, overall, has managed to conserve a substantial portion of the nation's wetlands.
7. Does the program affect the vulnerability of the coast to natural hazards ? Clearly Section 404 has served to decrease the vulnerability of coastal areas to natural hazards. Although water quality is the stated objective of Section 404, by protecting their natural function, wetlands can absorb floodwaters, lessening the impact on the built environment.

[PowerPoint 30.1 Images of wetlands that show ability to absorb flood waters]

8. Could the program be used as a tool to decrease the vulnerability of property in the coastal zone?: If the 404 program were strengthened in some key ways, it could more effectively reduce coastal risks and take into account future sea level rise.

The USACOE as the builder of large coastal projects

- **Hard Erosion Control Structures**

- A half century ago, the U.S. Army Corps of Engineers **shoreline protection** program focused primarily on the use of "hard" erosion control structures.
- Hard structures that are typical of USACOE works along the coast include:
 - Groins
 - Seawalls
 - Bulkheads
 - Breakwaters
- These structures were **designed to stiffen or harden the face of the coastline** to better withstand the high energy of the ocean.

[PowerPoint 30.2 Breakwaters]

[PowerPoint 30.3 Jetties]

[PowerPoint 30.4 Bulkhead]

[PowerPoint 30.5 Sandbags]

- Hard structures have been used to **increase the rigidity** of the barrier island.
 - However, this sort of structure can **interrupt the natural long-shore flow of sand** which replenishes the beaches.
 - This interruption of sand flow may actually **exacerbate the shore erosion** which the structures were built to correct.
 - *For example*, the **Galveston seawall** built following the devastating hurricane in 1906 has in fact protected Galveston from natural erosion, but **there are no beaches** in front of the seawall.
 - *For example*, the jetty system built just south of **Ocean City, Maryland** to keep an inlet open has indeed kept the inlet open, but has prevented sand from replenishing the **down-current beaches** causing them to **visibly retreat**.
 - Seawalls and revetments may also exacerbate erosion by reflecting wave energy and **steepening offshore profiles**.

- **Beach Nourishment**

- The USACOE erosion control response has since **evolved** from the construction of hard structures, and the Corps has turned to a **softer response: beach nourishment**.

[PowerPoint 30.6 Beach Nourishment]

- Beach nourishment involves the **addition of sand** in designed contours to extend the beach seaward.
- This additional sand **provides a measure of protection** to natural and developed areas that lie on the landward side of the beach.
- The nourished beaches also serve as **recreational areas**.

[PowerPoint 30.7 Beach Nourishment]

[PowerPoint 30.8 Map of National Park Properties in the Coastal Zone]

[PowerPoint 30.9 Map of Department of Defense Properties in the Coastal Zone]

[PowerPoint 30.10 Map of National Forests in the Coastal Zone]

[PowerPoint 30.11 Map of US Army Corps of Engineers- Beach Nourishment]

- Beach nourishment has **strong supporters** as well as equally **strong critics**.
 - The **supporters** see beach nourishment as **solid engineering** and **economically sound** solution to the very real problem of eroding beaches.
 - **Critics** see beach nourishment as **very temporary** and **costly** sand structures doomed to fail.
- **Studies** of beach nourishment projects **support both views**:
 - Some beach nourishment projects have lived up to their advance billing and have served to **protect landward structures**, create a **wide recreational beach**, and have provided an **economic boost** to ocean front communities through protection of the real property tax base and tourism revenues.
 - Other beach nourishment projects have **disappeared in the first storm**, millions of dollars washed out to sea.

In summary:

1. Name of the program: Beach Nourishment and Shoreline Protection
2. Authorized by: each project is authorized separately by Congress. Usually it is a two-step process in which Congress appropriates a relatively small amount to design the project and then in a separate decision, often years later, Congress appropriates funds to actually build the project.
3. Administered by: the U.S. Army Corps of Engineers. (Although the projects themselves are almost always designed and built by contractors hired by the USCOE.)
4. What does the program do?: The original function of shoreline protection projects was to protect on-shore development from the "invading" ocean. This continues to be the major function, but now projects are designed to work more as a part of the natural system rather than as an effort to "manage" the natural system.
5. How does the program affect development in the coastal zone?: By placing structures and/or large amounts of sand on the beach, landward development is perceived to be safer
6. In your judgment is the program effective?: There are approximately 90 shoreline projects conducted by the US Army Corps of Engineers located along 230+ miles of ocean and Great Lakes coastline. Some of these projects have served their purpose well; others have been unstable or have exacerbated the problems they were intended to solve.
7. Does the program affect the vulnerability of the coast to natural hazards ?
Proponents say that the COE's shoreline projects have provided protection to landward development. Critics say that at best, these projects work only in the short term; at worst they simply exacerbate vulnerability by making the barrier system look less vulnerable than it really is, thus encouraging development in hazardous coastal areas.
8. Could the program be used as a tool to decrease the vulnerability of property in the coastal zone?: Proponents argue that the projects do decrease vulnerability by deflecting wave energy (in the case of hard structures) and by providing the extra protection of a wider beach (in the case of nourishment). Critics argue that if the projects do in fact reduce vulnerability it is only for the sort term, and that these projects simply delay having to face the real problem of coastal erosion.

For Discussion:

The arguments both pro and con regarding shoreline programs conducted by the US Army Corps of Engineers could lead to a very interesting class discussion.

One of the main issues revolves around the fact that the coastlines of the Nation are already largely developed. These ocean and lakefront structures are of extreme value both to property owners as investments and income-generators, as well as to state and local governments as a source of significant tax revenues.

When these properties are threatened by erosion, a great deal of political pressure is exerted on federal, state, and local governments to "fix" the problem. The question then is merely which erosion control technique is the best.

On the other hand, some argue that these properties are owned by "fat cats" who made bad decisions. Sound investment practice should include a serious weighing of all the risks, including the risk that the investment property may fall into the ocean. Why should the government spend millions of dollars in taxpayers' money to "bail them out"?

Discuss.

Objective 30.4 Understand the effects of ownership of land by the federal government on the management of the coastal zone.

Requirements:

The content should be presented as a lecture supported by PowerPoint slides. Class discussion is to be encouraged.

The following slides will be used during this objective:

[**PowerPoint 30.12** Map of Olympic National Park]

[**PowerPoint 30.13** Map of Cap Code National Seashore]

[**PowerPoint 30.14** Map of North Carolina's National Seashores]

[**PowerPoint 30.15** Map of Military Bases across the U.S.]

[**PowerPoint 30.16** Map of US Forest Service]

Remarks:

The Federal Government as Land Owner

- The concept of **land ownership** as a **development management tool** was introduced earlier in the course, and will be discussed more fully later.
 - The purpose of this Objective is simply to make the students aware of the fact that the federal government **owns a great deal of real estate**, and as the owner of that land the government is **entitled** and has the **responsibility to manage** it.
- The bulk of the land in federal ownership is located in the western (non-coastal) states.
- However, some **very significant coastal areas** are owned and managed by various federal agencies.
 - Among these are the National Seashores and other lands managed by the **National Park Service**.

[PowerPoint 30.12 Map of Olympic National Park]

[PowerPoint 30.13 Map of Cap Code National Seashore]

[PowerPoint 30.14 Map of North Carolina's National Seashores]

- In all of the federally owned coastal areas, the agency “owner” carries out management **objectives** that **do not include mitigating the impact** of natural hazards.
- Yet, in many instances, **careful land management** can achieve **multiple objectives**.
 - *For example*, development plans for the National Seashores (managed by the US Park Service) can include the objective of beach conservation for recreational purposes by restricting beach development, which simultaneously fulfills the objective of preventing structures from being built in high-hazard areas.
- The **Department of Defense** is also a major owner of land in the coastal zone.

[PowerPoint 30.15 Map of Military Bases across the U.S.]

- The **U.S. Forest Service**, in the Department of Agriculture manages the National Forests. A few National Forests are located in the coastal zone.

[PowerPoint 30.16 Map of US Forest Service]

Surplus Federal Lands

- Of importance to coastal and/or emergency managers is the notion that the **federal government** from time to time **disposes of "surplus" lands**.
 - These lands are conveyed to **other units of government** or to **private owners**.
 - *For example*, the federal government recently **disposed** of a number of **lighthouses** that had become technologically obsolete.
 - Congress **anticipated these transfers of ownership** in the Coastal Barrier Resources Act (**CBRA**). "Otherwise Protected Areas" are included in the CBRA System so that if CBRA land is transferred, it is still subject to the restrictions against development subsidies that are contained in the Act.
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