



**THE ARMY CORPS OF ENGINEERS:  
A FORCE IN U.S. HISTORY**  
**by Dr. Paul Dickler**

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**Grade:** 7-12

**Objective:** To understand the mission and range of activity of The Army Corps of Engineers (USACE).  
To learn about the application of technology in the work of The Army Corps of Engineers.  
To understand the impact, both good and bad, of The Army Corps of Engineers' projects.

**Time:** Two to five days, depending on the depth desired. This lesson can be done all at once, or spread out over the course of a school year. The USACE's history covers more than 200 years.

**Standards:**

**United States History:**

**Era 6: The Development of the Industrial United States.**

**Era 7: Standard 3: How the United States changed from the end of WWI to the advent of the Great Depression.**

**Era 9: Standard 1: The Economic boom...of postwar United States.**

**Era 10: Standard 2: Evaluate how scientific advances and technological changes...affect the economy...**

**Eras 1-5 and 8: Economic change.**

**Background:**

The United States Army Corps of Engineers is the nation's oldest and largest engineering organization. It is also one of the most controversial. Established by Congress in 1802, the Corps began as a fort-building agency and military academy. Its mission quickly evolved to public works construction: canal building, road and railroad surveying, river improvement, harbor and lighthouse construction, city planning, and massive fortifications at more than fifty American ports. In a nation suspicious of peacetime armies and in a society devoted to individualism and private enterprise, the Corps has always been controversial. Army science and engineering has often been at odds with civil engineering traditions. To study the Corps is to grapple with the fundamental disputes that have shaped government and the role of the professional expert in American life.

The Corps emerged from the French-born engineers and artillerymen recruited by Congress during the American Revolution. In 1777, France aided the patriot cause with academically trained scientific advisors. Some stayed on to become, in 1794, a U.S. Army Corps of artillerymen and engineers. President Thomas Jefferson reorganized the Corps as part of the U.S. Military Academy at West Point. The academy became America's first scientific school for civil engineering. Professors and textbooks were French and closely modeled Napoleon's Ecole Polytechnique in Paris. The Corps used French and French-American engineers to plan some of the Republic's most spectacular projects; notably, Fort Monroe, the Cumberland Road, the Chesapeake and Ohio Canal, the Potomac aqueduct, and the streets, buildings, and parks of Washington, D.C. In 1825, as the Erie Canal neared completion, Congress greatly expanded the peacetime mission of the army engineers. West Point-trained topographical engineers supervised a nationwide program of clearing rivers for navigation. A fleet of army snag boats removed dangerous logs from the Mississippi and Ohio, clearing a path for steamboats. Topographical engineers also surveyed the first American railroad, the Baltimore and Ohio. In 1838, Congress created a semi-independent Corps of Topographical Engineers. The topographical corps assisted the Corps of Engineers in the great reconnaissance of the roads, railroads, and waterways that moved Americans west. Topographers also built harbors on the Great Lakes. During the Civil War, the topographers rejoined the fortification experts as an expanded Corps of Engineers. Railroad and bridge construction

dominated the work of the USACE during the Civil War. The Confederacy also created its own Corps of Engineers.

The USACE remained active in a range of projects between the Civil War and World War II. The Panama Canal (1904-1914) was, for its day and age, technologically the equivalent of putting a man on the moon for 1969. The Corps then increased its project load to more than 27,000 military and industrial projects during World War II. Its work included the Manhattan Project and the Pentagon! Consider some of these additional projects that have involved the USACE throughout U.S. History: Boston Harbor, Bonneville Dam, the St. Lawrence Seaway, the Panama Canal, the Washington Monument, the Mississippi River/Tributary Project, and Cape Canaveral (the space program).

The Corps is also **CONTROVERSIAL**. It does what Congress directs it to do. Many of these projects are wasteful and even harmful to the environment. In addition, some of its biggest projects have caused environmental chaos. The St. Lawrence Seaway allowed eels to migrate to the Great Lakes, destroying most fresh water fish there and the Great Lakes fishing industry, along with it. The levee system along the Mississippi has prevented many floods, but contributed to some huge ones. Katrina is only the latest disaster related to USACE projects. Florida's second largest fresh water lake was opened to the salt water Gulf of Florida, killing all the fresh water plants and fish there, during the 1950's. Lake Okeechobee, also in Florida, was dammed up to prevent floods, but this has caused much destruction in the Everglades, along with the construction of the cross-Florida barge canal, another highly controversial USACE project.

Today the Corps remains the **WORLD'S LARGEST** public engineering organization, employing more than 34,000 civilian and more than 600 military employees. Its stated mission is to "provide vital public engineering services in peace and war to strengthen our nation's security, energize the economy, and reduce risks from disasters." Its officially stated "vision" is to be "a great engineering force of highly disciplined people working with our partners through disciplined thought and action to deliver innovative and sustainable solutions to the Nations engineering challenges."

Most of us know the United States Army Corps of Engineers (USACE) from their work with locks, dams, flood control, and other water related projects. While the USACE does plan, design, and build these projects, it also deepens waterways for navigation, enhances beaches to prevent ocean erosion, and it plans and builds military structures for the Air Force, Army, and other Federal agencies. In addition, almost 25% of our country's hydroelectric power comes from the USACE. It is also the chief architect of recreation areas in the United States. Furthermore, it is an important component of U.S. foreign policy with **CONSTRUCTION PROJECTS IN MORE THAN 90 COUNTRIES TODAY!**

The USACE has compiled, and Wikipedia presently lists, the following areas under its purview:

- One HQ, 8 Divisions, 2 Provisional Division, 45 Districts, 6 Centers, one active-duty unit, 2 Engineer Reserve Command
- At work in more than 90 countries
- Supports 159 Army installations and 91 Air Force installations
- Owns and operates 609 dams
- Owns and/or operates 257 navigation lock chambers at 212 sites
- Owns and operates 24% of US hydropower capacity (3% of the total US electric capacity)
- Operates and maintains 12,000 miles (19,000 km) of commercial inland navigation channels
- Maintains 926 coast, Great Lakes, and inland harbors
- Dredges 255,000,000 cubic yards (195,000,000 m<sup>3</sup>) annually for construction or maintenance
- Nation's number one provider of outdoor recreation with more than 368 million visits annually to 4,485 sites at 423 Corps projects (383 major lakes and reservoirs)
- Total water supply storage capacity of 329,900,000 acre feet (4.069×10<sup>11</sup> m<sup>3</sup>)
- Average annual damages prevented by Corps flood risk management projects (1995-2004) of \$21 billion—(note: this does not count damage caused by the Corps)
- Approximately 137 environmental protection projects under construction as of 2006
- Approximately 38,700 acres (157,000,000 m<sup>2</sup>) of wetlands restored, created, enhanced, or preserved annually under the Corps' Regulatory Program—(note: does not count wetlands lost by past Corps projects)
- Approximately \$4 billion in technical services to 70 non-Department of Defense Federal agencies annually
- Completed (and continuing work on) thousands of infrastructure projects in Iraq at an estimated cost over \$9 billion: school projects (324,000 students), crude oil production (3 million barrels per day (480,000 m<sup>3</sup>/d)), potable water projects (3.9 million people (goal 5.2 million)), fire stations, border posts, prison/courthouse improvements, transportation/communication projects, village road/expressways, railroad stations, postal facilities, and aviation projects. More than 90 percent of the USACE construction contracts have been awarded to Iraqi-owned businesses—offering employment opportunities, boosting the economy, providing jobs, and training, and promoting stability and security where before there was none. Consequently, the mission is a central part of the U.S. exit strategy.

The USACE has also provided services for the Department of Homeland Security and the Federal Emergency Management

Agency (FEMA) since their creation.

The American Recovery and Reinvestment Act of 2009 (The Stimulus Package) has provided 4.6 billion dollars on a range of projects covering the country. A full multi-page listing is available at the USACE website.

The Corps exemplifies the a long history of debate over the role of military experts in civilian life.

**Procedures:**

Students will be assigned to research the history of the USACE. They should first view Todd Shallat's PowerPoint presentation and talk on the USACE, either in class or on their own (posted at [FPRI.org/education](http://FPRI.org/education)). They will need to answer questions from the worksheet below after completing their research. Students will then be divided into groups of two or three, each group to investigate a specific project of the USACE. Each group must describe the history of the project, explain the technologies utilized in the project (and consider their innovativeness), and then assess its successes and/or failures. After all the groups have finished their research and assessments, they will report their findings to the class. The class will discuss as a whole, the impact of each project, both short term and long term. (As an alternative to this, students can report on their projects as the chronological course curriculum reaches their projects. The culminating activity would then be in the final stages of the course.)

(For an extra credit option, students can consider American traits cited by writer and historian Walter McDougall—including a careless lack of responsibility, amnesia, resilience, confidence, nationalism, and sanctimoniousness without cynicism—and apply them to the work of the USACE.)

**Questions Concerning the History of the United States Army Corps of Engineers:**

1. Describe the circumstances of the founding of the United States Army Corps of Engineers. Which date or dates best approximate the Corps' beginning?
2. Identify the purposes for which the Corps has existed throughout U.S. History.
3. List the major areas of USACE concern throughout its history.
4. Explain how the USACE is funded and directed.
5. List 20 of the MOST SIGNIFICANT projects undertaken by the USACE.
6. List several technological innovations applied by the USACE.
7. Describe several of the major criticisms directed at the USACE.
8. Professor Shallat has described the USACE as a hybrid agency which can be viewed: as scientific innovators, as an agent of federalism (Hamiltonian, pro-business, pro-federal), and as a de facto national planning agency. Do you agree? Explain your reasoning.

**Sources for information:**

1. FPRI.org At this site are articles and videos from numerous historical and technological experts. Materials will include talks from the Wachman Center Weekend on The Military in America's Domestic History, April 2010. Many of the papers from this Weekend are highly relevant, especially Todd Shallat's "Building Infrastructure—The Army Corps of Engineers". In addition, materials on Innovation and Invention are also posted at FPRI's website here:

<http://www.fpri.org/education/innovation/>

2. U.S. Army Corps of Engineers websites:

<http://www.usace.army.mil/library> or [HQPublications@usace.army.mil](mailto:HQPublications@usace.army.mil)

And... Tables of USACE publications:

- Army Pamphlets (USACE/OCE Proponent)
- Army Regulations (USACE/OCE Proponent)
- Army Regulations, Supplements (USACE/OCE Proponent)
- Army Technical Manuals (USACE/OCE Proponent)
- Commander's Policy Memorandums (CPM)
- Engineer Circulars (EC)
- Engineer Directives (ED)
- Engineer Design Guides
- Engineer Forms (Electronic fillable: requires PureEdge)
- Engineer Manuals (EM)
- Engineer Pamphlets (EP)
- Engineer Regulations (ER)
- Engineer Technical Letters (ETL)
- Engineer Standards - Graphics

- Miscellaneous
- Office Memorandums

**Other USACE-related publications:**

- Corps of Engineers Library of CADD Designs
- Engineer Improvement Recommendation System (EIRS) Bulletins
- Engineer Instructions (TECHINFO series: AEI, EI, DBI, TI)
- Federal and Military Specifications and Standards (FMSS)
- Guide Specifications for Construction
- National Water Safety Program (web site)
- Disaster Engineering (web site)

**Library services and publications of the USACE Engineer Research and Development Center**

- U.S. Army Corps of Engineers technical and laboratory publications

**Related publications maintained by other federal agencies:**

- Engineering Construction Bulletins
- Department of the Army Forms (download electronic DA forms)
- Department of the Army Publications (ordering printed DA publications)
- Department of the Army Department of the Army Publications (viewing electronic DA publications)
- Department of Defense Reports, and Forms
- Federal Register (links to GPO server)
- OMB Circulars by number and by category
- U.S. Army Publishing Agency
- Official Department of Defense Website for DOD Issuances

3. Library of Congress, Digital History. American Memory: The Army Corps of Engineers. There are 2318 Item Titles for the Army Corps of Engineers. These include articles, maps, charts, and at least 142 photographs.

<http://memory.loc.gov/cgi-bin/query> (for searching) [http://www.digitalhistory.uh.edu/learning\\_history/](http://www.digitalhistory.uh.edu/learning_history/)

4. Leslie Carde. AMERICA BETRAYED, 2008. This documentary film is highly critical of the Army Corps and Engineers and the Congressmen funding it.

5. TECHNOLOGY REVIEW (an Massachusetts Institute of Technology publication) <http://www.technologyreview.com>

6. <http://www.ideafinder.com/history/timeline> This website provides an extensive listing of innovations and inventions.

7. USACE. Wikipedia. [http://en.wikipedia.org/wiki/United\\_States\\_Army\\_Corps\\_of\\_Engineers](http://en.wikipedia.org/wiki/United_States_Army_Corps_of_Engineers)

8. A Google search of The Army Corps of Engineers yields nearly 6 million references/ comments.

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