ARMY CORPS OF ENGINEERS

The Past, Present and Future of the Nation's Premier Public Engineering Organization

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INTRODUCTION

The U.S. Army Corps of Engineers is the world's largest public engineering agency. This organization has a long and distinguished history that spans a period of 226 years. From its earliest days, the Corps has been involved in new ventures, pushed the edge of Engineering and Construction technology, and extended its influence and reputation to the farthest reaches of the globe. The ultimate purpose of the Corps is, as stated by James Madison in the Federalist, "… the public good, the real welfare of the great body of people, (that) is the supreme object to be pursued; and that no form of government whatever has any other value than as it may be fitted for the attainment of this object." The purpose of the Army Corps of Engineers is to provide quality, responsive engineering service to the Nation in peace and war (13:Unpaged). Today's Corps of Engineers provides engineering and related services in four broad areas: water and natural resource Management (Civil Works); military construction and support; engineering research and development; and, support to other government agencies (13:unpaged). The purpose of this paper is to present the vision and missions of the organization as it strides to be the premier public engineering organization responding to our nation's needs in peace and war in the 21st Century.

SYSTEM DESCRIPTION

Corps of Engineers Mission

Organizational Purpose

The purpose of the Army Corps of Engineers is to provide quality, responsive engineering service to the Nation in peace and war (13:Unpaged). Today's Corps of Engineers provides engineering and related services in four broad areas: water and natural resource

Management (Civil Works); military construction and support; engineering research and development; and, support to other government agencies (13:unpaged).

Civil Works Program

The Civil Works Program – Overall Purpose and Mission

The purpose of the Civil Works Program, as stated in the March 2000 draft Department of the Army Civil Works Program Strategic Plan, is to conduct responsible development, management, protection and enhancement of the nation's water and related resources for the purpose of improving public welfare. That is to be accomplished by providing fundamental public engineering services to the Nation and the Army.

In its broadest sense, the mission of the Civil Works Program is to transform society's goals, needs, and mandates into infrastructure and technologies that link people, towns, and industries with one another and to the rest of the world. During this process engineering resources are equitably distributed for the public good taking public safety and risk into consideration.

The Draft Strategic Plan operationally defines the Civil Works Mission as:

> to contribute to the national welfare and serve the public's needs by providing the nation, the Army, and our customers with quality and responsive development, management, and integration of the nation's water resources; protection, restoration, and management of the environment; disaster response and recovery; and, engineering and technical services in an environmentally sustainable, economical, and technically sound manner through partnerships and the project management business process.

Under the direction and supervision of the Secretary of the Army, through the Assistant Secretary of the Army (for Civil Works), the Chief of Engineers has responsibility for investigating, developing and maintaining the nation's water and related environmental resources; constructing and operating projects for navigation, flood damage reduction, major

drainage, shore and beach restoration and protection, related hydropower development, water supply, water quality, fish and wildlife conservation and enhancement, and outdoor recreation; responding to emergency relief activities directed by other federal agencies; and administering laws for the protection and preservation of navigable waters, emergency flood control and shore protection. Detailed mission statements have been developed for several of the mission areas and follow below. The Civil Works Program for fiscal year 2000 was $4.3 billion or about 40% of the Corps' total program of $11.4 billion.

The Genesis of and Rationale for the Civil Works Mission -The Great Western Expansion

With the purchase of the Louisiana Purchase from France in 1803 for $15 million, the size of the United States was doubled. After the initial exploratory journey of Captain Meriwether Lewis and Lieutenant William Clark during the period from 1803 - 1806, the Corps received the overall assignment of exploring, mapping, and surveying the Western frontier (15:6). A series of expeditions, such as those led by Major Stephen H. Long and Lieutenant John C. Fremont, began in 1819 and continued for a period of nearly 30 years. These explorations compiled valuable information that set the stage for the great western expansion of America. Many interesting journals were compiled during the period. Suggested additional readings include Baldwin (1a), Bartlett (2), Goetzmann (6), Nichols and Halley (10), and Schubert (19). The exploration of the vast new territory added to the United States with the purchase of the Louisiana Purchase and the events accompanying the War of 1812 made it clear that the nation needed an improved defense and transportation system. Such a system, to permit rapid armed concentration against invading armies and swift, economical logistical lines was necessary if the nation was to survive as a Republic. On April 30th, 1824, the Congress passed the General

Survey Act. This act authorized the President to use the Army Engineers to survey road and canal routes of national importance (14:39). On May 24th, Congress passed the River and Harbors Act of 1824. This legislation authorized the President to improve navigation on the Ohio and Mississippi rivers (14:8). The following highlights illustrate the extent of Corps involvement in the development of America's infrastructure and its critical role in building a single unified nation.

Cumberland Road – In 1825 the Corps, at the request of the Department of the Treasury, took over the repair of the road east of Ohio and extended it across Ohio, Illinois, and Indiana. Under the leadership of Lieutenant Mansfield and Captain Delafield, the existing road was reworked using the latest European technology and new sturdy bridges, including the first iron bridge in America, were constructed (11:7) and (14:33).

Lighthouses - In 1831, the U.S. Treasury provided funds for Army engineers to begin supervising the construction of the Nation's lighthouses. These significant engineering achievements were constructed all along the eastern Atlantic coast and the Great Lakes.

Railway System - Between 1853 -1855, Army engineers participated in the surveying of four routes from the Mississippi River to the Pacific Ocean for the first transcontinental railroad (11:11). Captain William Gibbs McNeil and Lieutenant George Washington Whistler, who became known as the fathers of American railroad construction, assisted the Czar of Russia with the first Russian railroad, which went from St. Petersburg to Moscow. Army engineers assisted with the construction and operation of early railroads in Mexico, Cuba, and Panama (15:7). Army Engineer officers were often loaned to private companies to serve as technical advisors during design and construction.

The Soo Locks at Sault Ste. Marie - This 1850s project, and later Corps directed replacement lock projects, opened a 1,000 mile-long shipping route from the great open pit iron ore mines of Minnesota to the industrial plants of the East (15:10), (14:44), and 11:10). Today the Corps operates or maintains 275 lock chambers and maintains 12,000 miles of commercial navigation channel. It also maintains 299 deep draft harbors and more than 600 shallow draft harbors (coastal and inland). In 1996 a total of 258 million cubic yards of material was dredged.

Washington Monument – The Corps of Engineers takes over construction of the monument and completes the project in 1884.

Library of Congress – Corps supervises the construction of this facility during the years from 1897 – 1915.

Panama Canal – The Corps, under the leadership of Colonel George Goethals, takes over the abandoned 50-mile Panama project in 1889 and completes the project in August of 1914. This incredible engineering feat stands as a monument to the determination, courage, and engineering ability of the Army Engineers.

St. Lawrence Seaway – The Corps completed the United Section of the St. Lawrence Seaway in 1958. Completion of this project allows oceanic vessels to pass nearly half way across the United States, from the Atlantic Ocean to Duluth, Minnesota.

Specific Civil Works Missions

Navigation Mission -

The mission of the navigation business function is to provide safe, reliable, and efficient waterborne transportation systems (channels, harbors, and waterways) for the movement of commerce, national security needs, and recreation.

The legislation of May 24, 1824, directed the Corps to begin the removal of snags and floating trees from the Ohio and Mississippi Rivers and to improve the Ohio River's channel by removing impeding sandbars. By 1829, the Corps was removing river obstructions with snag boats and constructing wing dams to improve channel conditions in the Ohio and Mississippi rivers (14:43 and 11:8). "This early activity marked the beginning of the Corps' civil works mission - a duel role that emphasized a practical blending of civil works and military skills and fostered the development of a Federal agency prepared to shoulder the engineering burden in the event of war or national emergency" (11:8).

Natural Resources Management Mission -

The lands and water stewardship mission is to manage and conserve those natural resources, consistent with ecosystem management principles, while providing quality public outdoor recreation experiences to serve the needs of present and future generations. In all aspects of natural and cultural resources management, the Corps promotes awareness of environmental values and adheres to sound environmental stewardship, protection, compliance, and restoration practices. The Corps manages for long-term public access to, and use of, the natural resources in cooperation with other Federal, State, and local agencies as well as the private sector. The Corps integrates the management of diverse natural resource components such as fish, wildlife, forest, wetlands, grasslands, soils, air, and water with the provision of public recreation opportunities. The Corps conserves natural resources and provides public recreation opportunities that contribute to the quality of American life. All programs will be executed in such a fashion as to comply with federal, state, and local environmental laws and regulations.

Natural resources are managed on 11.7 million acres of land and water located at 456 projects located across the United States. Authority to manage these lands, that were acquired to construct flood control reservoirs and navigational structures such as locks, dams, groins, and jetties, is contained in a variety of legislation, including the Reservoir Area Forest Management Cover Act of 1960, P.L. 86-717, 74 Statute 817.

Recreation Mission -

The mission of the Recreation Business function is to provide a sustainable level of high quality water-oriented outdoor recreation opportunities within a safe and healthful environment that meets the needs of present and future project visitors.

The Flood Control Act of 1944 authorized the Corps to develop facilities on Corps projects and to develop water development projects in the Missouri River Basin (14:12). Through the 1960s, 1970s, and 80s recreation facilities were constructed at 456 Corps projects. More than 2,200 recreation areas are operated and maintained by the Corps with the remaining 2,000 being managed by concessionaires, state, and local partners. More than 30% of all federal recreation occurs at Corps projects. Corps visitors spend more than $10 billion each year and generate economic activity that supports 600,000 jobs.

Regulatory Program Mission -

The mission of the Regulatory Business Function is to protect the Nation's aquatic environment and to assure the navigability of the Nation's rivers, harbors, and waterways through regulation of work conducted by others, to include the deposit of dredged and fill material, in the waters of the United States, including wetlands. Timely regulatory decisions will be made in an

open-minded, impartial, consistent, truthful, candid, and straightforward manner where all customers are treated with dignity, courtesy, compassion, and sensitivity. All decisions are to be fact-based and properly documented.

The Corps gained the mission of regulating the Nation's navigable waters with the passage of the 1899 Rivers and Harbors Act. Under the provisions of Section 10, the Corps evaluates and permits any kind of construction activity that might interfere with navigation on the waters of the United States. Subsequent to the passage of Section 404 of the Clean Water Act of 1972, the Corps became the Federal decision-maker regarding actions involving the filling of the Nation's wetlands. In this role the Corps is heavily involved in protecting more than 75 million acres of wetland. A total of 84,000 activities were authorized in 1997 and 53,400 acres of wetland restoration/creation were required to mitigate the damage resulting from those activities.

Emergency Operations Mission -

The mission of the Emergency Operations program is to provide public works and engineering support to protect life and property in preparing for, responding to, and recovering from catastrophic earthquakes or other major disasters where the nature of the disaster exceeds the capabilities of state and local interests. The Federal Emergency Management Agency (FEMA) tasks the Corps to work directly with State authorities in providing temporary repair and construction of roads, bridges, and utilities; temporary shelter; clearance or removal of debris; emergency water and power supplies; temporary restoration of public facilities; temporary housing; and technical assistance in engineering, design, construction, and contract management.

The Corps officially gained the mission of responding to the needs of the public during times of natural disasters with the passage of Public Law 84-99, as amended by Section 206 of the Flood Control Act of 1962 (11:31). In recent times the Corps has played a major role in recovery operations after the following natural disasters: Hurricane Agnes in 1972; the 1973 Mississippi River Flood; the Mt. St. Helens eruption; Hurricane Frederick in 1979; Hurricane Andrew in 1992; the Mississippi River and Midwest floods of 1993; the 1994 Northridge earthquake in Low Angeles, Hurricane Fran in 1996; the Red River floods of 1997; Tropical Storm Charlie, 1998; and, Hurricane Floyd in 1999.

Support for Others (SFO) Mission -

The SFO mission is to provide planning, design, contract management, and construction support to non-Department of Defense agencies, states and political subdivisions of states, other levels of governmental jurisdiction, and emerging nations on a reimbursable basis where agencies do not possess the technical expertise to fulfill the in-house engineering needs of their programs.

Authorization for this program comes from general Corps authorities, specific mission assignments by Congress, and through the signing of agreements between the Corps and other agencies. A total of $772 million in reimbursable work was executed by the Corps through this program in 1999. The Corps became the design and construction agent for NASA in 1958 within this program. During this period of time the Corps has undertaken a number of projects for NASA including construction of the Johnson Manned Spacecraft Center, the Kennedy Space Center, Apollo Launch Complex 39, as well as Saturn Launch Complexes 24 and 57 (14:103-107).

Flood and Coastal Storm Damage Reduction Mission -

The mission of the Flood and Storm Damage Reduction Business Function is to save lives and reduce property damage associated with storms and floods. Inland and coastal flood plains are managed through Federal and non-Federal action as a continuous process in a manner that seeks a balance between resource use and environmental quality as components of larger human communities. Flood plain land use regulations are utilized to reduce future susceptibility to flood hazards and damage consistent with risk, while "flood or storm control" measures are physical measures used to modify floods and modifying the susceptibility of property to damage.

Corps involvement in flood control projects began in 1882, when Congress, for the first time, authorized the Mississippi River Commission to build levees as part of its plan to improve the river (11:12). The first reservoirs were completed in 1884 at Leech Lake, Winnibigoshish, and Pokegama in Minnesota. A series of catastrophic floods in 1912, 1913, and 1927 led to the 1936 Flood Control Act which stated that flood control was “a proper activity of the Federal Government in cooperation with States, their political subdivisions, and localities thereof” (14:51). This legislation vested responsibility for federal flood control projects with the Corps of Engineers. Today the Corps manages 383 lakes and reservoir, 8,300 miles of levee, and 89 shore protection projects for flood control and storm damage reduction. These projects have prevented more than $628 billion in damages.

Hydropower Mission -

The hydropower mission is to provide reliable, efficient, and cost-effective power and related services to the American public. The Corps became involved in hydropower

development during the late teens and 1920s as private dam construction for the purpose of hydropower development escalated and threatened to hinder navigation. Public power at multi-purpose water development projects proliferated with the New Deal and after WWII (14:54). Today 142 hydropower plants (75 Corps and 67 non-federal) located at Corps projects produce a total of more than 22,000 megawatts of power. Corps owned and operated facilities produce approximately one-fourth of all hydropower-generated electricity in the United States (18:not numbered).

Continuing Authorities Program (CAP) Mission –

The mission of the CAP program is to plan, design, and construct a variety of low risk/low cost relatively simple water resource and ecosystem restoration projects without having to go through Congress for specific project authorization. The nine authorities that constitute this program allow the following types of efforts to be undertaken: emergency stream bank and shoreline erosion protection for public facilities and services; protection of publicly owned shores from hurricane and storm driven waves and currents; mitigation of coastal and Great Lakes shoreline damage to non-Federal public and privately owned shorelines attributed to Federal navigation projects; reduction of nuisance flood damage caused by debris and minor shoaling of rivers; projects associated with dredging that protect, restore, or create aquatic and ecologically related habitats, including wetlands; development of projects that improve the quality of the environment, are in the public interest, and are cost effective; and, modification of structures and project operations constructed by the Corps for the purpose of improving the quality of the environment.

Construction Mission -

The mission of the construction program is to build high quality, reasonably priced navigation, flood damage reduction, hydropower generating and water supply facilities, recreation facilities, and environmental restoration projects for the Corps of Engineers. Construction mission areas also extend into the military program, the Continuing Authorities Program, and the Work For Others Program. The accomplishments of this program are too numerous to detail, but they include the construction of 456 reservoir projects, several hundred navigation locks, and hundreds of navigational structures on the Great Lakes and the coastal areas of the United States.

The Military Program

Military Program - Purpose of and Rationale for Military Mission – Major Command

The Corps of Engineers is, among other things, an Army Major Command established to provide combat and service engineering and construction support to the Army and Air Force. The purpose of the Military Program is to provide engineering, construction, and environmental services to the Army, Air Force, other assigned U.S. Government agencies, and foreign governments.

The engineering and construction services provided by the Corps of Engineers to military installations includes facilities engineering, environmental, real estate, planning, design and construction management services, both in the continental United States and overseas, as required, and to provide construction and engineering support services relating to mobilization and Civil Defense. These services are provided during peacetime as well as during times of war.

The Corps combat mission which is called Contingency Support is to provide engineering, construction, real estate and environmental support to the Engineer troops who build roads and airfields, demolition, erect temporary bridges, detect and clear land mines and perform other combat engineering services to facilitate forward movement of ground troops.

The Corps of Engineers has been providing combat support since its inception on June 16, 1775, more than a year prior to the American Declaration of Independence (14:17). From its beginning on Bunker Hill the Corps has won 150 battle streamers in this traditional military mission (15:3). From 1807 to 1812, military engineers designed and supervised the construction of 24 forts and 32 coastal batteries. The Corps operated West Point until 1866. Army engineers participated in direct combat as well as road construction and the erection of siege batteries in the Mexican War (14:69). During the Civil War, the first of the modern wars, engineers were used extensively to accomplish tasks relating to the construction of earthworks, bridge and road building, railroad construction and demolition.

In WWI more than 296,000 engineer troops built hundreds of bridges, railroads, airfields, hospitals, port and harbor facilities, cantonments, depots, and tank farms. By the end of the war, Corps forest engineers were operating 107 sawmills that produced some 200 million board feet of lumber, 4 million railroad ties, and thousands of piles (8:5).

The Corps became the Army's Military design and construction agent in 1941 during World War II when all military construction was turned over to the Corps. The Corps constructed the Pentagon in two years and the 1,500-mile long ALCAN Highway in just 8 months (15:19). During WWII the 700,000 officers and enlisted men of the Corps saw service and completed a multitude of projects. The total war-building program eventually included more

than 27,000 projects. When the Air Force was established in 1947, replacing the Army Air Corps, the Corps of Engineers continued as the Air Force's design and construction agent.

The Corps of Engineers provided logistical and construction support to United States and NATO peacekeepers, and humanitarian support for the citizens of Bosnia and Kosovo throughout the 1990s and will continue to do so into the 21st century. Suggested additional readings in this area include Bowman (3), Heavey (7), and Fine and Remington (4). For fiscal year 2000, the Military Program was $7.1 Billion or about 60% of the Corps' total program of $11.4 billion.

The Military Program is made up of 5 missions – Military Construction, Installation Support, Environmental Restoration, Military Support For Others and Contingency Support. Each mission is further discussed below.

Specific Military Missions

Military Construction Mission -

This mission is the major engineering and construction program for the Corps of Engineers and represented 52% of the Corps fiscal year 2000 military program of $7.1 billion. It includes construction of barrack complexes for the Army, dormitories for the Air Force, Army family housing, tank and small arm ranges, infrastructure projects such as airfields, roads and utilities, and other facilities that support the daily lives of the Nations soldiers. A major emergency response in the amount of $118 million is also underway overseas for Army installations in Korea to repair 11 facilities damaged by flood waters, including troop barracks, bachelor officer quarters, warehouses and other administrative and support facilities.

Installation Support Mission -

For this mission, the Corps of Engineers is increasing its level of on-the-ground support to Army installations. Each Army installation has a facility engineering office called the Directorate of Public Works, which provides those services to support the maintenance of the installation and its facilities. The Corps support for this mission includes the co-location of Corps field construction personnel with the Directorate of Public Works and the placement of Corps project managers in the Directorate of Public Works to act as a liaison between the installation and the Corps district. In addition, the Corps has recently established Installation Support Offices at each Division headquarters that has a military program mission to provide focused expertise to solving maintenance and other installation issues for the Directorate of Public Works.

Environmental Restoration Mission -

This mission has seen a gradual and steadily increasing workload as the nation begins to clean up environmental pollution that has occurred across the nation over a period of many years. Projects occur at Army sites as well as from other federal agencies such as the Environmental Protection Agency and the Department of Energy. For the Army, the environmental restoration mission includes providing services for installation restoration by removing hazardous, toxic and radioactive waste from Army installations and from formerly used defense sites. The environmental restoration mission also oversees the cleanup of radioactive contamination of a number of sites throughout the United States under the Department of Energy's Formerly Utilized Sites Remedial Action Program (FUSRAP). In 1998 the Corps was given this mission which calls for the cleanup of radioactive contamination from areas where the Atomic Energy Commission had stored uranium and thorium during the 1940s, 50s, and 1960s.

Military Support For Others Mission -

Like its Civil Works counterpart, the military support for others mission provides planning, design, contract management, and construction support to Department of Defense agencies, other United States agencies and foreign governments on a reimbursable basis. Agencies the Corps has provided services to under this mission include the Federal Aviation Administration, Federal Emergency Management Agency, American Battle Monuments Commission, District of Columbia Public Schools, State Governments and foreign governments. Services provided to foreign governments include security assistance, science and technology exchange and research contracts. The Corps also performs work mandated by international treaties, like the Chemical Demilitarization program. For this program the Corps is designing and constructing a destruction facility to destroy chemical munitions and agents at 9 sites throughout the continental United States.

Contingency Support Mission -

While we are budgeted for peacetime operations, the capabilities of the Corps are available to support military operations when needed. Requests by the military services of Corps expertise have been on the rise in recent years. Some of the first Army personnel to arrive in Saudi Arabia as part of Desert Shield were Corps of Engineers real estate and contracting experts. During the Haitian deployment of 'Uphold Democracy', the Mobile District provided contract management and construction oversight of various contracts. Corps personnel are in Bosnia and Kosovo providing real estate, engineering and environmental services.

The Engineer Research Program

The Engineer Research Program – Overall Purpose and Mission

Research laboratories have been established for the purpose of conducting applied research and providing technical assistance in direct support of the Military and Civil Works programs and activities. A complex set of labs and support centers were established over the years to fulfill this purpose. They recently have been placed under a unified organizational structure and re-designated the Engineer Research and Development Center. Existing mission statements are presented below, however, new ones are in the process of being developed as the various organizational units are being consolidated into a total of eight laboratories. The research capability of the Corps labs for successfully solving applied engineering and construction problems is internationally renown.

Specific Laboratories and their Missions

Army Waterways Experiment Station Labs -

The mission of the five labs comprising the Waterways Experiment Station (WES) is to conceive, plan, and execute engineering and scientific investigations, and research and development studies and to provide consulting services in support of the civil and military missions of the Chief of Engineers, other Federal agencies, state and local governments, foreign governments, and private firms.

The Vicksburg, Mississippi, laboratory (now part of the Engineering Research and Development Center – ERDC), was established in 1929. The broad fields of work undertaken at the WES laboratories include hydraulics, soil and rock mechanics, earthquake engineering, coastal engineering and near shore oceanography, concrete, expedient construction, nuclear and

conventional weapons effects, nuclear and chemical explosives, excavation, vehicle mobility, environmental relationships, recreation management, environmental stewardship, engineering geology, pavements, protective structures, camouflage, aquatic plants, water quality, dredging material, mine/counter-mine technology, and military related combat and logistical engineering studies.

Army Cold Regions Research and Engineering Laboratory (CREL) -

The mission of the U.S. Army Cold Regions Research and Engineering Laboratory, located at Hanover, New Hampshire, is to coordinate and conduct research, investigations, and engineering studies pertaining to the development of new and improved techniques, materials, and criteria for planning, design, construction, operation, and maintenance of permanent and expedient military and civil works facilities in the cold regions of the world and the effects of low temperatures on materials, materiel, and operations. Research and studies are also undertaken to influence Army doctrine and operations in cold regions to enhance mobility, survivability, and operational readiness.

U.S. Army Construction Engineering Research Laboratories (CERL) -

The mission of the U.S. Army Construction Engineering Research Laboratories, located in Champaign, Illinois, is to perform infrastructure and environmental sustainment research, development, studies, and technical assistance to maintain a quality trained and ready Army; set the standard in preserving and protecting Army lands, waters, and natural and cultural resources; and repair, maintain, and rehabilitate civil works facilities. Research and development is also

carried out to enhance engineer capability to deploy rapidly and sustain a full range of military operations.

U.S. Army Topographic Engineering Center -

The mission of the U.S. Army Topographic Engineering Center, located at Ft. Belvoir, Virginia, is to provide soldiers and their commanders with superior knowledge of the battlefield and to apply relevant technology to solve civil problems of the Nation. This is accomplished by maintaining and operating the Army's tactical terrain, water resources, and climatic information repository, and by coordinating and validating Army tactical digital topographic data (DTD) management requirements, recommending hardware and validating software to maximize DTD cost effectiveness.

Organizational Structure of the Corps of Engineers

The Corps of Engineers is organized in the traditional hierarchy of authority (5:518) of the Military Chain of Command. The Corps organization reflects both a tall and matrix form of organizational design (5:522,527) with its subordinate commands organized geographically. The reason for this organizational design mixture reflects the complexity and diversity of the world's largest public engineering, design and construction management agency providing quality, responsive engineering services and products worldwide.

In its simplest form as shown in Figure 1, the Corps organization is made up of Divisions, Districts, Centers, Labs and Field Operating Activities (FOAs). The headquarters level of the Corps of Engineers consists of 25 offices as shown in Appendix B-1. As Commander of an Army Major Command, the Chief of Engineers also has an office in the Pentagon. The 249th

Battalion is under the command and control of the Chief of Engineers and provides prime electrical power in support of war fighting, disaster relief, and support operations worldwide. The 249th also maintains Army power generation and distribution of war reserves.

As previously stated, the Corps is geographically organized throughout the United States, Asia and Europe. Within the United States, the 8 Divisions that oversee the work performed by 41 Districts are organized by watershed boundaries, not by states. Figure 2 shows the boundaries of the 8 Divisions within the Continental United States.

Appendix B-2 shows a typical organization chart for a Division office. Each division of the Military and Technical Directorate and the Civil Works & Management Directorate are supported by teams made up of program management and technical staff reflecting a basic organization.

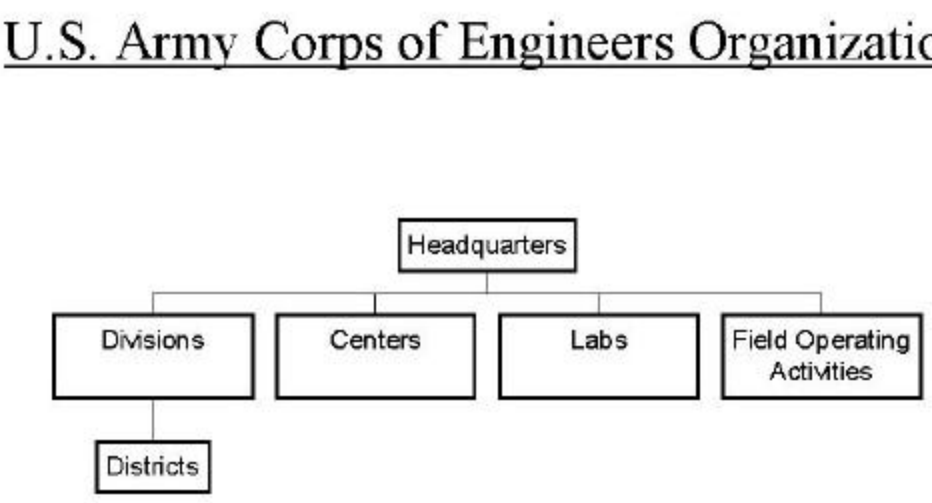


Figure 1

A typical district organization chart is shown in Appendix B-3. Although not shown, all projects, products and services are accomplished by delivery teams made up of the functional offices reflecting an advance form of a matrix organization to deliver goods and services to customers. Appendices B-4 and B-5 provide a complete list of Divisions, Districts, Centers, Laboratories and Field Operating Activities.

There are 2 Centers, the U.S. Army Engineering and Support Center at Huntsville, AL which provide engineering and technical services, program and project management, construction management, and innovative contracting initiatives, for programs that are national or broad in scope or not normally provided by other Corps' offices. The second center is the Transatlantic Programs Center at Winchester, VA, which supports U.S. Government programs and policies overseas.

Appendix B-5 lists the 8 laboratories under the command of the Engineer Research and Development Center. They were discussed in the earlier "Engineer Research Program Mission" section.

In addition to the 249th Battalion, there are 4 other field-operating activities. The Finance Center supports the operating finance and accounting functions throughout the U.S. Army Corps of Engineers (USACE). The Humphreys Engineer Center Support Activity provides administrative and operational support for elements of the Corps organization. The Marine Design Center provides total project management including planning, engineering, and shipbuilding contract management in support of Corps, Army, and national water resource projects in peacetime, and augments the military construction capacity in time of national emergency or mobilization. The Water Resources Support Center supports navigation data collection; an institute for water resources that provides policy and program support in the area

of water resources management, hydrographic engineering center, and actively represents the United States as a member of the International Navigation Association.

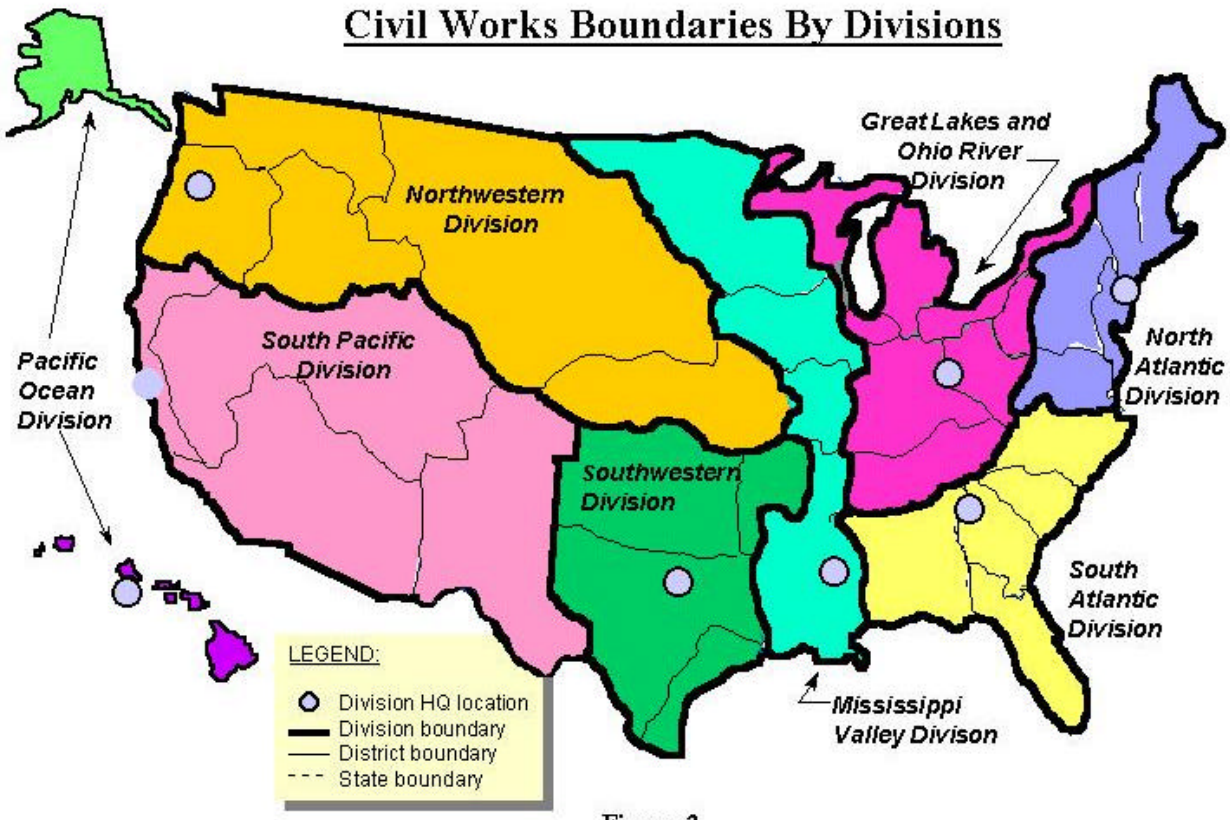


Figure 2

Corps Vision - The Past and Present

Kotter (9:68) defines vision as a picture of the future with some implicit or explicit commentary on why people should strive to create that future. Mission, on the other hand, describes an organization's overall direction and general goals for accomplishing that movement.

Successful mission accomplishment moves the organization and creates a reality mirroring the picture.

An effective mission statement that is known throughout the organization is essential to a large (34,000 employees), organization such as the Corps because it can, according to Kotter (9:69-70): (1) clarify general direction for change, (2) serve to facilitate major changes by motivating action that is not necessarily in people's short-term interest, and (3) help align individuals, thus coordinating the actions of motivated people in a remarkably efficient manner without constant direction from management.

A number of Chiefs of Engineers have developed visions that characterize a conceptual picture of where the organization was to go during their tenures of leadership. Five visions, spanning a period of nearly a quarter of a century, have been analyzed to determine the course that senior leadership has set for the Corps as it enters the 21st century. The visions developed during the Commands of Generals Morris, Heiberg, Hatch, Ballard and Flowers are analyzed below.

The General Morris (1976-1980) Vision - A Bicentennial Vision

The vision of General J.W. Morris was titled, "The Corps in Perspective Since 1775." This 36-page pamphlet was published during the year of the Nation's bicentennial, and stressed historical continuity as the basis for present and future organizational success. Little specific discussion was devoted to the present or future, except to say that future success would be dependent upon executing programs in the same fashion as had been done during the past. Little discussion of change was provided, as the 1970s were still part of the "big dam" construction era where the Corps was constructing large multi-purpose projects, numerous recreation areas, and

participating in multi-billion dollar construction efforts in Saudi Arabia. This is the traditional Corps in its truest sense, the Corps that many older employees refer to as the good old days.

The General Heiberg (1984-1988) Vision

The vision document during of leadership tenure of General E.R. Heiberg, III, was titled, "To Form a More Perfect Union. The vision theme during the General Heiberg era was "Leaders in Customer Care". Highest priority was given to providing high quality engineering services to the Nation. Customer focus and caring leadership were to assure the continued strength of the U.S. Army Corps of Engineers. Significant emphasis was placed upon maintaining and strengthening the traditional Corps values of integrity, professionalism, quality, and Esprit de Corps as important ingredients in coping with environmental uncertainty and maintaining organizational purpose. The terms Corps family, Esprit de Corps, and Essayons, all terms that have a long historical tradition, were used in the vision document. Nearly 90% of the document was devoted to a discussion and articulation of values as part of the Corps culture.

The General Hatch (1988-1992) Vision

Two documents titled, "Nation Builder" and "Essayons (Let Us Try)," formed a sort of vision statement, although neither was actually labeled as such. "Essayons" provided a brief history of the Corps and a discussion of the contemporary Corps, circa 1988. This document describes past accomplishments and presents a general overview of the various missions and tasks currently being undertaken. The "Nation Builders" discussed the Corps in terms of tradition, capabilities, and Challenges. Challenges discussed include construction productivity, deteriorating national infrastructure, energy, disaster response and preparedness, waste

management, and assorted water management problems. With each challenge several suggestions were made as to how the Corps could meet those challenges. The vision of Chief Hatch was "to achieve a vibrant, competent, energetic, respected Corps team--inspired by our tasks and proud of our accomplishments, yet humbled by the honor we share in serving our Nation...a Nation at Peace."

The General Ballard (1996 - 2000) Vision

The vision created during the tenure of General Ballard's is titled, "Strategic Vision." The vision is that of a bold, vibrant organization that has a worldwide reputation for excellence and mission accomplishment. It is to be "the world's premier engineering organization, trained and ready to provide support anytime, anyplace. A full spectrum Engineer Force of high quality, dedicated soldiers and civilians: a vital part of the Army; The Engineer team of choice-responding to our Nation's needs in peace and war; a values-based organization - Respected, Responsive and Reliable."

This document is quite different from earlier vision statements as most of the text is devoted to laying out a strategic plan for realizing the vision. The theme of the vision is to transform the Corps so that it is able to successfully cope with a rapidly and significantly changing external environment. It appears that the "Corps Plus" strategy of revolutionizing effectiveness, seeking growth opportunities, and investing in people is the means by which the Corps will better serve the Army and Nation in traditional Corps mission areas and provide enhanced service through an expanded role in strategically targeted Army military and civil mission areas. More emphasis was placed upon supporting the Army than in previous similar documents. Traditional terms such as Esprit De Corps, the Corps family, and Essayons were

replaced with new terms such as "One door to the Corps," "Invest in People," "Revolutionize Effectiveness," "One Corps," "One Team," "One Regiment," and "Unified Team" so that the new organizational picture may be painted with a different palette.

In the Commander's Intent Section, an attempt was made to create a sense of urgency and to stress the need for all Corps employees to embrace this single vision. Creating a sense of urgency corresponds with the first step in Kotter's eight-stage process of making major change (9:21). Other portions of the "Strategic Vision", such as reshape culture, building the team, and building a strategic commitment also correspond very closely with several of the other steps in the Kotter model. It appears that necessary urgent change was the theme of the General Ballard era, and that the Kotter model of implementing change was the method of realizing that change vision. While many employees bought into the vision, others did not. Some employees were not sure how they fit into the vision.

The General Flowers (2000 - Present) Vision

This "Strategic Vision" continues many of the underlying themes of General Ballard's vision, with some modification. Its stated purpose is to serve the Army and the Nation and convey the Corps mission as a spectrum of operations that span peacetime and wartime support. Synergy is emphasized and defined in this vision and as: "Synergy is the fruit of thinking win-win and seeking first to understand… It's not a compromise… It's the creation of third alternatives that are genuinely better than solutions individuals could ever come up with on their own". In this vision, the former "Corps Plus" strategy of Revolutionizing Effectiveness, Seeking Growth Opportunities, and Investing in People has been replaced with "Strategic Goals" of People, Process and Communication. These goals stress the need to function as teams in

delivering projects and services, use the Corps processes to operate as "One Corps" regionally, and to build synergistic relationships through effective communication. The overall goal of this vision is stated in its Vision Statement": "The world's premier public engineering organization responding to our nation's needs in peace and war."

Vision for the 21st Century

Generals Ballard and Flowers have defined the foreseeable future for the Corps of Engineers through their vision statements of serving the Army and the Nation by being the world's premier public engineering organization responding to the nation's needs in peace and war, trained and ready, vital part of the Army, dedicated to public service and an Army values-based organization. An organization that acts and operates as one, building effective synergistic relationships that serve the nation. The Recommendations section of this paper proposes a team developed vision statement and justification.

Corps Cultural Structure

The Corps Culture

R. Wayne Moody, [et al], in "Management and Organizational Behavior", defines corporate culture as " the system of shared values, beliefs, and habits within an organization that interacts with formal structure to produce behavioral norms." Symbols and images also are a component of this culture. Corporate culture, or organizational culture, as it is sometimes referred to, has an effect on job performance and employee satisfaction. The history, purpose, and missions of the Corps of Engineers have all contributed to the creation of its present culture.

Culture determines how an organization will face external threats and opportunities. The external environment is now the primary driver of cultural change.

In its report “Leading People in Change,” the National Academy of Public Administration discusses the challenges besetting organizations today. According to the report, both economic and social factors are significantly affecting organizations. These factors include: a) growing global competition, b) negative public attitudes about government efficiency, c) the technology and information revolutions, and d) the fast pace that change is occurring in workforce demographics. The Corps of Engineers is not exempt from these factors. External factors impact the Corps corporate culture, which in turn, impacts mission accomplishment.

The Traditional Corps

The mission accomplishments of the Corps, which span a period of 226 years and largely parallel the development of the United States west of the Appalachian Mountains, have been key factors in the formation of the traditional Corps culture. The traditional Corps prided itself on its engineering performance. The traditional work force consisted mostly of engineers and other scientists, both military and civilian, and was mainly white male. The shared experiences of this group created a close-knit group that became known as the "Corps Family". The origin of the term is unknown, however, the term epitomizes the traditional Corps culture. The culture of the past was very task oriented but not overly customer-friendly. There was an appreciation for the customer; however, the organization's cultural perspective was such that the Corps believed it knew what was best for the customer.

The traditional culture was one of decentralized management with 12 divisions and 41districts operating in a fairly independent fashion. Little concern was given to how decisions

and operations in one district could affect other districts, either positively or negatively. Each district made decisions based primarily upon self-interest, with little regard being given for the Corps as a whole.

Decision-making was a closed process with limited input from outside the organization or the inner circle of senior military and civilian leaders. A directive style of decision-making was the typical model. Characteristically with this decision-making model, formal communication tended to be rigid and based on the organizational structure. Communication flowed upward and downward within traditional stovepipes such as those that existed within Planning, Engineering, or the Operations elements. Employees communicated with immediate supervisors but typically did not talk with the boss' boss because they would be criticized for stepping outside the chain of command. Horizontal communication occurred between similar-level employees within a given stovepipe, but was much less frequent between similar level employees from different stovepipes.

The hierarchical stovepipe communication and decision-making model created a tightly knit sort of "old-boys network." These highest-level inner circles of employees, who had almost exclusive access to the organization's most important information, often excluded others in the organization from knowledge of what was going on behind the scenes and from participation in making important decisions.

As indicated earlier, symbols are an important component of culture. Symbolism is a significant component of traditional Corps culture, although the number of symbols is small. An important symbol of the traditional Corps culture is the Corps Castle. Although its design has changed numerous times, the castle since its inception has remained the distinctive symbol of the Corps of Engineers. The Corps' web site states that the "appropriateness of the turreted castle is

apparent. The medieval castle is inseparably connected with strong fortification and architecture." It relates to some of the earliest Corps achievements such as the Castle Pickney in Charleston, South Carolina and Castle Clinton in New York Harbor. The castle first appeared on uniform epaulettes and belt plates in 1840. Both the modern castle and the traditional castle became registered trademarks of the Corps in November 1993. The castle can be seen today on employees' baseball caps or golf shirts.

The Essayons Button is the oldest insignia of the Corps. Unlike the castle, its design has not changed since its inception during the War of 1812. On the Corps web site, the button is described as "an eagle holding in his beak a scroll with the word, 'Essayons,' a bastion with embrasures in the distance, surrounded by water, and a rising sun; the figures to be of dead gold upon a bright field." In 1902 the Army disallowed all other service buttons when it designed one button to represent the Army. The Corps was the only Army organization allowed to keep its Button in recognition of the distinguished traditions that it symbolizes. Other attributes of the traditional Corps culture include the values of professional excellence, commitment to mission, dedication to service, integrity and Esprit de Corps.

The Contemporary Corps Culture

The Corps is presently experiencing one of its historically rare periods of major change that is changing its basic philosophy and mission emphasis. Senior leadership originating from outside the Corps is reshaping the traditional culture of the organization by dismantling traditional stovepipes and modifying business processes. Three major restructuring efforts are currently under way: headquarters restructuring, division restructuring, and reorganization of the research laboratories. All three of these change efforts have already reached, or are very close to

their planned end state. The changing demographics of the Corps work force as well as the addition of new employees with non-engineering backgrounds brought into the organization to execute new missions were factors in the initiation of this organizational change.

It appears that most of the positive values and attitudes of the traditional Corps have carried over to the present organization and are being nurtured. A sub-strategy of the current strategic vision is to 'reshape culture' by integrating the new concepts of corporateness, teamwork, customer service, the Project Management Business Process (PMBP), and investing in people with traditional values such as product quality and caring. For example, the planning, design, and construction of projects are now accomplished by an official project team. This team consists of professionals from numerous elements and may include team members physically located at different sites. These teams reinforce the team oriented approach and the desire to create a virtual organization while using the PMBP in the planning and execution of work.

Another powerful illustration of the new corporateness of the Division is the application of a business center concept. The Divisions, which have five to seven subordinate districts, are sanctioned to operate and make decisions as one corporate entity. This contrasts with the traditional culture of Divisions and Districts where each operated as an individual entity. Early in 1998, approval was given for the establishment of Regional Business Centers so that all of the resources within each Division's Area of Responsibility could be better integrated to more efficiently execute customers' programs and projects. Significant progress has been made in the establishment of regional teams during the past two years. A specific initiative in this arena is the Mississippi Valley Division's Regional Center Business Plan, which is the first attempt in an integrated document to treat a Corps Division and its component districts as a single business-like organization.

One emerging attitude of the new culture is to be truly customer-focused. Customers and stakeholders have now been made integral parts of the Corps team. No longer does the Corps explain to the customer what is best. The Corps now solicits information and feedback to continually monitor customer satisfaction. Problems are solved jointly with a proactive approach being taken. Official partnerships are now the norm and ongoing communication with the customer is expected. Candidates for positions within the Corps are now routinely questioned regarding their customer orientation during the interview process.

The goal of promoting open, two-way communication is being pursued through the use of matrix teams drawn from the entire spectrum of elements and levels within the organization. An application of this concept is the Great Lakes and Ohio River Division's recent effort to develop a plan to redesign the physical office space in its headquarters' office. The team formed to do this was extremely diverse in its makeup and all employees were welcomed to provide input. The matrix team approach described represents a significant deviation from traditional methods of accomplishing tasks and implementing change.

Corps Organizational Processes

Mission Establishment and Evolution

Civil Works Program

Virtually all Corps Civil Works missions have been established through statutory authorization by Congress. The Executive Branch, including OMB, the public, and the private sector all play a significant role in mission execution, but Congress is the great enabler with regard to mission establishment. It has added missions as it has seen fit for almost 180 years. Civil Works as a mission was established simultaneously with the

beginning of the great western expansion of America across the North American Continent. Congress established an authority in 1824 that enabled the President to utilize the design, engineering, and construction expertise of the Corps to perform virtually any service that would improve the defense and transportation systems of the nation.

New missions were added by Congress in the late 1800s and during the first third of the 20th century as the western frontier was tamed and the nation turned attention to the development of its infrastructure. Congress called upon the Corps to utilize its engineering, construction, and contracting skills to design, construct, and operate colossal public works projects such as locks, dams, levees, waterways, harbors, groins, and jetties. These federal investments were critical in building the industrial might of the nation and uniting it commercially. Virtually all of these missions were established through legislation known as Rivers and Harbors Acts, later Flood Control Acts, and still later as Water Resource Development Acts (WRDA). New missions were added to meet the new challenges faced by the nation as it matured in terms of development.

As the era of colossal public works project construction came to a close, Congress again called upon the Corps to address a new set of pressing national problems, particularly those in the area of the environment. Authorities were provided for the Corps to become involved in environmental cleanup, environmental restoration remediation, prevention and mitigation of wetland destruction, environmental stewardship, and outdoor recreation. The missions of environmental stewardship and outdoor recreation arose unexpectedly as the nation placed increasing value on its natural resources and as people turned to the outdoors for water oriented recreation. The Corps had become a major public landowner and facility operator in the Eastern and South

Central United States as a result of its earlier program of extensive flood control reservoir construction.

A series of authorities have also been added during the last 20 to 25 years, known as the Continuing Authorities Program, that authorize the Corps to become involved in a multitude of small scale engineering and planning projects primarily aimed at protecting infrastructure from flooding and erosion damage. These authorities were established by Congress as a method to provide engineering assistance to states, counties, and municipalities for a variety of infrastructure related problems.

Congress also established a Work For Others Program, which authorizes the Corps to provide design, engineering, and construction assistance with other Federal non-Department of Defense agencies, states and political subdivisions of states, and emerging nations who lack that capability on a reimbursable basis.

Congress has consistently looked to the Corps and assigned missions to meet various infrastructure needs as they have arisen during the development of this nation. Today emphasis has shifted to the operation and maintenance of existing constructed facilities and to the Continuing Authorities and Work For Others Program. It can be anticipated that Congress will add new missions as the needs of the nation change and new problems requiring innovative engineering and environmental solutions arise. The recent trend has been to establish missions to accomplish smaller projects and those types of effort that require substantial partner participation.

Already established mission areas have evolved simultaneously with the creation of new mission areas. Mission areas have actually developed a sort of life cycle that, in some cases, has evolved through several generations. Most missions, such as navigation,

hydropower, recreation, and flood damage reduction started with a design and construction phase (new birth) that was driven by Congress. Once projects are constructed and the number of potential projects is more or less built out, an operations and maintenance phase is entered (teenage through middle age). The agency and Executive Branch of Government (OMB) tend to be the drivers during this phase as it is a management and execution phase. As the projects age and begin to deteriorate, virtually no new projects are constructed, and many years of operational experience accumulate. A major rehabilitation or replacement phase (rebirth) then develops. The Congress and the Executive Branch are both key drivers during this part of the cycle, but Congress tends to dominate because of the very large sums of revenue needed to overhaul and modernize existing colossal public works structures. However, the Executive Branch through OMB, plays an important role as the modernization need greatly exceeds available resources and prioritization issues become critical.

Because of the extreme age of certain mission areas within the Civil Works Program, for example, navigation structures have been constructed and operated since the 1830's; several mission areas have actually passed through several generations of the mission cycle. It is noteworthy that each succeeding generation is different than earlier ones as the process is impacted by customs, practices, and the changing needs and priorities of American society.

Military Programs

Congress establish the Corps of Engineers on June 16, 1775 under the command of General George Washington in response to the need for a corps of Army engineers to

build strategy placed fortifications in support of the newly created Continental Army (14:17). The first Chief of Engineers was Colonel Richard Gridley. The current and 50th Chief of Engineers is LTG Robert B. Flowers.

Since all of the early Army engineers were European trained the need for a military engineering school was also recognized, and in 1802, the U.S. Military Academy at West Point was established by an Act of Congress and placed under the supervision of the Corps of Engineers which continued until 1866 when Congress placed the Military Academy under the direct control of the Secretary of War (14:27). In addition, the 1802 Act reestablished a separate Corps of Engineers.

Throughout it's 226 year history, the Corps of Engineers has constructed Army forts, railroads, roads, coastal batteries, Army Air Corps and Air Force bases, airfields and countless other facilities to support the military construction requirements of the Army and Air Force to meet peacetime and wartime mission needs. The Corps of Engineers' military mission is based upon various Department of Defense (DoD) directives such as DoD directive 4270.5 (20) which establishes the policy and responsibilities for the use of the Corps of Engineers (as well as the Naval Facilities Engineering Command, NAVFAC) by the U.S. Army, U.S. Air Force, U.S. Navy, National Guard, Reserve components and Defense Agencies for all military construction projects that are authorized and funded in the annual military construction authorization and appropriations acts. The Corps of Engineers military mission over the years has essentially remained unchanged which is to provide combat and service engineering and construction support to the Army. These services are also provided to the U.S. Air Force

as well, and by request to the U.S. Navy and other DoD components. Figure 3 below provides a schematic of whom the Corps works for.

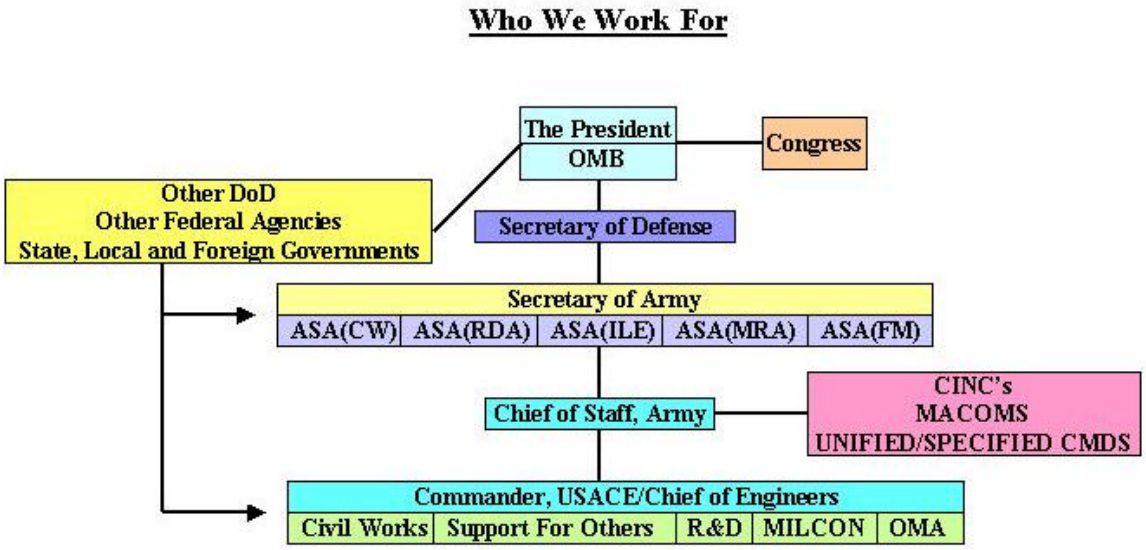


Figure 3

Establishment and Evolution of Corps Organizational Structure

Civil Works Program

The current organizational structure of the Corps was described in some detail in an earlier section of this paper. The present hierarchical structure is a reflection of the organization's complexity and recognition of its military leadership chain of command.

Present Civil Works boundaries of the individual divisions and districts were determined through a melding of watershed boundaries, the balancing of workload and missions, and political considerations.

During the pioneer times after 1824, the Chief of Engineers established offices to direct a variety of improvements known as civil works. Prior to the Civil War, specific Army Engineer officers were directly assigned to a mission by the Chief of Engineers. The officer went to the field, undertook and completed his project, closed the field office, and returned to Washington for another assignment. Few of these projects required continuing operation and maintenance so there was seldom a need for a permanent Corps office. The Corps organization was a very flat centrally controlled one (8a: 32 - 33).

The structure of the organization changed to a decentralized administration after the Civil War as the Corps began building navigation locks, canals, and dams. These completed projects required continuing operation, maintenance, and supervision. Some of the field offices assumed a permanent character and become known as Districts. More than 30 of these Districts opened across the country during the late 19th century. Within the Ohio River Basin, District offices appeared in Cincinnati in 1871, Chattanooga in 1873, Louisville in 1886, Nashville in 1888, Pittsburgh in 1894, and Wheeling (later Huntington) in 1901 (8a: 33). The Districts developed staffs of professionals and technicians to operate and maintain completed projects, prepare surveys, and supervise construction within their geographic areas. Decisions regarding the organizational structures of the districts were driven directly by the Chief of Engineers in an effort to more effectively execute his mission responsibilities. It appears that there was little input or influence from outside of the agency.

The decision by the Chief of Engineers to establish Division Offices in 1888 was, in contrast, driven by external constraints impacting the Corps as well as political considerations. During 1879 the Congress adopted a preference for the regional management of waterway projects. Congress proceeded to create a number of river basin commissions designed to plan

and improve large river basins. These commissions were headed by civilians with District Engineers working directly for the commissions and not for the Chief of Engineers. When Congress considered a bill to transfer Corps civil works to a civilian agency that would administer them through regional departments in 1888, the Chief of Engineers extended the regional Division Engineer concept across the entire United States through the issuance of General Order 93 (with approval of the Commanding General of the Army and the Secretary of War). The concept was being utilized in several locations based on an earlier trial that was first initiated in Baltimore during 1874. Lt. Colonel William P. Craighill had been acting as the "Supervising Engineer" for Districts contiguous and convenient to his headquarters (8a: 35). The shortage of Engineer Officers also forced the Chief of Engineers to make this change because it was necessary to provide supervision to the large number of junior officers who had to be appointed as District Engineers (8a: 33).

During 1888, a total of five Divisions were created by the Chief of Engineers with their working titles being changed from "Supervisory Engineer" to "Division Engineer". Customarily, Division Engineers doubled as District Engineers. As a result of this, Division Engineers did not supervisor District Engineers above the rank of major. Those District Engineers were under the direct supervisory control of the Chief of Engineers. Additionally, Division Engineer positions were personal appointments and moved along with the individual (8a: 40).

Impending Congressional action to remove public works from the supervision of the Chief of Engineers, as a result of scandal and failure to create a sufficient number of divisions to handle the steadily increasing workload, served as a catalyst to the Chief to issue General Orders 7 and 9 in 1901. These orders increased the number of divisions from five to eight, authorized the creation of division staffs (previously staff consisted of the Division Engineer and one clerk),

significantly increased the oversight responsibilities of the Division Engineer, and created the Central Division headquarters in Cincinnati (8a: 45).

In subsequent years, from 1901 - 1915, the situation was chaotic from an organizational perspective. Problems relating to officer shortages, a moving division office location, the creation of additional districts, political intrigue, and struggles over control from competing organizations. Finally, in 1915, Chief of Engineers, BG Kingman took several steps that strengthened the division and created a modern organization. Several of the more important actions taken included the creation of a location based division headquarters with a full-time Commander, and an organization that included a clerical staff and an engineering division. The boundaries of the division and districts were also arranged along watershed boundaries. For a short period of time during WWI all Districts within the Division were headed by civilians.

The Division was reorganized during the 1920s, as a result of pressure to reduce costs and to resume civil works construction that had been delayed during the war. A number of sub-office closures occurred with the major action being the consolidation of the Second Cincinnati and Wheeling District Offices to form the Huntington District Office.

A decreasing workload and implementation of an organizational structure favored by President Herbert Hoover resulted in the closure of the Central Division in 1929, a week before a steamboat pageant left Pittsburgh to celebrate the completion of the Ohio River locks and dams. Official records were transferred to St. Louis and the employees transferred to District offices, retired, or resigned (8a: 116).

President Hoover supported the placing of civilians in charge of civil works. Corps allies, including the Ohio River Improvement Association, defeated bills in Congress during 1932 that would have established a civilian Department of Public Works. An executive order

transferring civil works from the Corps to the Department of the Interior that was signed by President Hoover after his defeat by Franklin Roosevelt was rescinded by Congress before it took effect (8a: 129).

In 1933 President Roosevelt, through the support of Congress, established legislation that created the Tennessee Valley Authority. The closure of the Chattanooga District and the transfer of most of its personnel to TVA shocked the Corps. Executive Branch support for the creation of other independent basin commissions prompted the Chief of Engineers to break up the eight mega-divisions and create, among things, a division office in Cincinnati known as the Ohio River Division. The new division structure was organized by major watershed to provide regional planning, design, and construction and counter the independent basin commission concept favored by the President. Through his skillful action the Chief of Engineers was able to retain the civil works program and restore the prestige of the organization.

In the years of 1936 and 1937 catastrophic floods in the Ohio River Basin set about a chain of events that significantly impacted the organizational structure of the newly created Ohio River Division for more than 50 years. Policies regarding requirements for the construction of flood control projects and a very large increase in individual project authorizations assured a large workload for the Division and its Districts well into the 1960s and 1970s. During the late 1930s the Division Engineer developed review boards and division protocols for planning and design that imposed discipline and standardization to the process that could, at best, be described as piecemeal.

Just as the Division and its districts became mobilized for the monumental civil works projects to be undertaken, the arrival of World War II placed the civil program in a holding

pattern. The War brought many changes in organizational structure and mission execution. These events will be discussed in the Military Programs section.

As the war ended, the Division office was moved from Columbus back to Cincinnati and plans were made to resume civil projects suspended during the war and initiate new work necessary to modernize navigational structures on the Ohio, Monongahela, and, Cumberland Rivers. However, Truman administration directives declared a moratorium on civil works projects and later a severely limited restriction in expenditures as it instituted a demobilization of the war effort. The organizational impacts were profound across the Corps with the Ohio River Division being severely impacted. The Cincinnati District was closed and many work crews, repair facilities and shops within the Ohio River districts were eliminated. By 1955, the last of the Ohio River Division Corps operated dredges were eliminated. This set of events forever changed the way the Corps conducted its business and structured its organization. Subsequent to these events, most construction and maintenance would be conducted by contracts that utilized the private sector. The organization adjusted by increasing its contracting and quality assurance capabilities.

During ensuing years the workload and mission emphasis fluctuated wildly as the Division mobilized for the Korean War, demobilized, and then went through another retrenchment phase. Gradually, the organization ramped back up to resume the civil works program. Few organizational changes were made within the Division until the mid-1960s, when Division Data Processing Center, a Planning Division, and Appalachian Studies components were added. These changes were initiated as internal management improvements by both the Division Engineer and the Chief of Engineers (8a: 267).

During the late 1960s widespread public criticism of the Corps' planning process (lack of environmental sensitivity and fixation on engineering efficiency) eroded public and Congressional support for the civil works program to the point that environmental groups began taking the Corps to court over a number of proposed projects. The Division responded by increasing its planning staff, by hiring professionals in areas such as recreation, economics, and environmental studies, and by increasing its use of architect-engineering firms. The Division Commander convinced his District Commanders to take similar actions (8a: 275 – 277).

The Corps went through another period of severe retrenchment in 1969 and 1970 when President Nixon impounded civil works construction funds appropriated by Congress (8a: 282). The Division Engineer instituted a number organizational changes in an attempt to conserve funds, improve public acceptance of the Corps program, and to avoid a rumored administration plan to transfer the civil works program to the newly created Environmental Protection Agency. A number of changes were made across the Corps. Actions specifically taken within the Ohio River Division included the closing of the Appalachian Studies Office, movement of the comprehensive research lab to Campaign, Illinois, and making the division office the operating agency for audit and internal review, finance and accounting, and other functions (8a: 275). Actions taken to shore up public support for the program included the construction of ample recreation facilities at operating Corps lakes, the hiring of a variety of environmental professionals, the combining of Construction and Operations Division, and the creation of a Recreation Resource Management Branch in Operations Division. These and other organizational changes were the most significant since WWII and prepared the Corps for the next 20 years.

The last great organizational change within the Corps was initiated from within the Corps by the Chief of Engineers to improve efficiency of operation. Several reorganization attempts in the early 1990s that would have drastically reduced the number of divisions, eliminated some districts, and re-allocated thousands of Corps technical employees to regional design centers were thwarted by Congress. One was stopped less than two weeks prior to planned implementation. In 1997, Chief of Engineers Ballard successfully negotiated a deal with key members of Congress to reorganize the composition, number, and structure of Division offices. Although the changes were not nearly as profound as originally proposed in 1990, they did significantly alter the structure of the Corps as well as the way business is conducted. The present organizational structure of the Corps is a product of the changes initiated by General Ballard.

In summary, the previous analysis indicates that the process of determining Corps organizational structure as well as the forces that shape its evolution have varied from Congress to the public, and from internal agency management initiatives to chains of events initiated by natural disasters and world events. Few districts and divisions have a statutory basis, and therefore exist only long as they serve the needs of the Chief of Engineers and the nation. It can be anticipated that organizational structures will continue to change as new missions are added, old missions are modified, and events external to the Corps occur that impact is operation.

Military Programs

Unlike Civil Works boundaries, which are primarily based on watersheds basins, the Military Programs boundaries are organized by state boundaries. Currently, the Great Lakes & Ohio River Division Military Programs boundaries consist of five states: Illinois, Indiana,

Kentucky, Ohio and Michigan. With the advent of World War II (WWII), many changes in organizational structure and mission execution occurred within the Corps of Engineers as it took over the entire military real estate and construction program from the Quartermaster Corps on December 16, 1941 (8a: 177). As an example, the Ohio River Division grew from five to eight districts to manage the growing military mission which included not only airfield construction, but construction of facilities to train, house and arm the troops for combat. During the period of 1941 – 1945, the Ohio River Division (as Service Command Engineer of the 5th Service Command) oversaw the construction or expansion of 110 Army and Army Air Corps installations, including ordnance plants that produced the most powerful super-explosives known at that time (8a: 175). In 1942, the Ohio River Division relocated from Cincinnati, OH to Columbus, OH to join with the 5th Service Commander, Army Service Forces. The Division Engineer role and responsibility expanded to be the Service Command Engineer for the 5th Service Command. This action also took on the responsibility of not only designing and constructing facilities but maintaining them as well as providing equipment and materials to support the combat engineers. The equipment and materials provided included such items as portable bridges, pipeline, storage tanks, and other metal fabricated items. In addition, Engineer Supply Depots also came under the control and authority of the Service Command Engineer

During WWII, there were constant realignments of the Division and it's departments. For example, at the outset of WWII, the size of the Ohio River Division Office staff was 72 personnel. In 1942, with joining the 5th Service Command in Columbus, OH, the Division Office grew to nearly 1800 personnel and with eight districts, the Division commanded more than 11,000 military and civilian personnel by 1945. This required the Division to expand its organizational structure to add offices for personnel management, public affairs, safety, real

estate, supply, legal, contracts and claims, program control, and related activities. Other changes included changing from a 5-day workweek to a 6-day workweek and from a 40-hour workweek to a 54-hour workweek

These Division internal organization realignments were evident throughout the Corps of Engineers. In addition, the number of Division Offices grew from the 5 Divisions that existed prior to WWII to eleven Divisions: New England, North Atlantic, Middle Atlantic, South Atlantic, Great Lakes, Ohio River, Upper Mississippi, Lower Mississippi, Missouri River, Southwestern and Pacific (8a: 178).

As WWII drew to an end in 1945, another reorganization of the Corps of Engineers was being contemplated by the Chief of Engineers that included applying a standard organizational structure to all Divisions and Districts. In 1946, the Ohio River Division was relocated back to Cincinnati, OH. With the demobilization of the war effort and the moratorium on Civil Works projects by the Truman administration, the Cincinnati District was closed in 1947. The transition back to executing Civil Works projects did not resume its pre-WWII pace until 1948.

Establishment and Evolution of Policy

Introduction

The term policy is used in many different ways to refer to highly diverse sets of activities and decisions. In keeping with Jones (8b: 5) and Anderson (1: 3), policy as used in this discussion is considered courses or patterns of action, or inaction, taken by government officials to deal with problems or matters of concern. This definition specifically differentiates patterns of action from specific decisions or action taken by an individual or group in an isolated situation. Components of policy consist of goals, plans, programs, and effects. Legal

documents, which express policy, include legislation, laws, statutes, executive orders, regulations, and legal opinions. Additional documents utilized by the Corps of Engineers that seek to promote behavioral and interpretive consistency and a certain repetitiveness by decision makers in specific mission or program areas include policy guidance letters and Chief's policy letters. Policies as they pertain to day-to-day business operations are really sets of prescriptions or "standing decisions" that are applied when a certain range of conditions exist.

Development of Civil Works and Military Programs Policy

Subsequent to the acquisition of the Louisiana Purchase in 1803, which doubled the size of the United States and opened up vast areas of territory to settlement, a unique set of problems were created for the United States. The great westward expansion and war with Great Britain in 1812 created a set of policy demands expressed by both private and public officials. The response of the political system was passage of legislation on April 30, 1824 whereby Congress gave the President and this executive Branch broad authority to assess the scope of problems associated with roads, canals, and waterways relating to military and commercial considerations and develop recommendations for their solution. Less than one month later the Congress appropriated money for specific projects as well as laid out a set of actions and procedures the President and the Corps of Engineers should take in administering the program.

As the Nation grew and problems increased in both number and complexity, a number of mission areas were added. A description of these missions along with their specific historic evolutions were included in earlier Mission Sections. Each of the Civil Works mission areas was created only after policy demands were developed, raised to a level where they received serious consideration, policy decisions were made, and policy statements were developed by Congress.

The legislation created policy that was then executed by the Executive Branch through the action of the Corps of Engineers. In most cases an incremental model of policy followed whereby adjustments were made to basic authorities, processes, and procedures to fine-tune the response to public problems as they changed with the passage of time.

Until the latter half of the 20th Century, it appeared that the Rational-Comprehensive Theory of decision-making applied to the development of Civil Works and Military Program mission policy. Typically, a natural event or a problem would arise, such as the catastrophic floods of 1936 and 1937 or the threat by private interests to impair navigation as they constructed private hydropower generating facilities that created specific problem sets. The problems were subsequently analyzed, alternatives developed and analyzed, and then decision makers selected an alternative that met the public need and was generally the best from an engineering perspective. Typically, there was broad public consensus about threats or problems, clear solutions or missions were evident, there were strong interest groups in favor of solutions, there were relatively few resource limits, and there was a central core of authority.

Civil Works and Military policy began to become more complex as the Corps grew in size and complexity. It was not until the 1870s that Corps district offices were created and 1888 until divisions were established. Prior to that time the Corps had been an absolutely flat organization under strong central control. Corps engineers were typically assigned a mission directly by the Chief of Engineers, who then left for the field, established offices, executed the work, closed the offices, and then returned to Washington, DC for new assignments.

In later years the development of policy became immensely more complex as the size of the federal government and the Department of Defense (War Department) grew and the environmental movement developed. Competing societal interests with differing values

regarding the environment and project development replaced earlier widespread public consensus regarding infrastructure investment. Fundamental decision-making and macro-politics tended to be first replaced with micro-politics, and then later by a mix of policy subsystems and power networks. A process characterized by interaction and struggle among the various parties and stakeholders involved became a central fact of political life.

The number of players in the development of Corps policy increased significantly with the creation of the Bureau of the Budget in 1921 (OMB), the creation of the Secretary of Defense and Army in 1947 and the Defense Department in 1949, and the creation of the Office of the Secretary of the Army in 1986 (with an Assistant Secretary of the Army for Civil Works and an Assistant Secretary of the Army for Installations and the Environment). The situation was further complicated as Congressional and Committee staffs grew in size, a powerful industrial defense complex grew, and powerful lobbying groups such as political action committees (PACs) organized. Added to this mix was a rising tide of grass roots environmentalism that organized into powerful public interest groups (PIGs).

In a period of less than 30 years the number of policy players drastically increased, most became well organized and resourced, and all became politically astute in working the system. The end result is that virtually any proposal for substantive change in Civil Works or Military Programs policy or missions (growth, deletion, or establishment of new ones) is closely scrutinized and usually brings about controversy or intense political debate. By the end of the mid-1970's and 1980s, the macro-political model of Corps policy development was being replaced by a primarily micro-political model.

The micro-political era was characterized by strong individuals and/or groups seeking immediate benefits from the political system through irregular intervention, backdoor spending

and authorization appeared, and lawsuits based upon procedural matters were brought by competing interest groups during the development of policy and project authorization. Corps management activities and internal policy development were also micromanaged by the Congress.

The present situation can be accurately described as chaotic as Congress, the Executive Branch, and sometimes the Judicial Branch all struggle for ascendancy in the policy arena, particularly with regard to major policy issues. A perception of chaos and conflict is promoted by a specialized media that is ratings driven. Immediate prospects for developing solutions to problems such as the elimination of the major maintenance backlog at operating projects, reduction of the backlog of authorized but not constructed projects, the need to grow certain mission areas such as water supply, and the expansion of navigational system capacity appear dim. Policy development in both of the Corps' major program arenas will remain difficult because there is generally little consensus about threats or problems, there is even less consensus about mission areas or solutions to problems, and all sides of most issues or problem areas have entrenched special interest proponents and opponents. Resources are constrained and there is also a lack of party leadership to impose discipline among their members. In some cases micro-politics and micro-management combine to more or less paralyze the system until a crisis develops.

The inability of the branches of government, and even the houses of Congress, to develop consensus on Corps Civil Works and Military Program policy, but particularly Civil Works Policy, will continue to insure the dominance of the Congressional budget process as the primary mechanism for short-term policy creation. It is likely that a major structural failure with an accompanying loss of life or an extended navigational waterway closure or some sort of other

catastrophic event, will have to occur in order to create the shock required to focus the attention of the public and Congress upon problems of deteriorating infrastructure, authorized but un-built projects, and inadequate navigation capacity.

Budget Preparation Process

Introduction

The federal government budget process is not a single process, but rather, a number of processes that evolved separately and which occur with varying degrees of coordination. Its purpose is to allocate scarce resources among competing public demands. The Federal Budget has the following three main phases:

a. Executive budget formulation and transmission;

b. Congressional Budget Review and Enactment; and

c. Budget execution and control.

The Constitution grants the "power of the purse" to Congress, but does not establish any specific procedure for budgetary legislation. The Budget and Accounting Act of 1921 established the basis for an executive budget process and created the Bureau of the Budget – OMB since 1970 – to assist the President in carrying out his responsibilities as well as the General Accounting Office (GAO). The GAO assists Congress as the principle-auditing agency of the federal government. The Act requires the President to submit a proposed budget to Congress by the first Monday in February. Although this budget does not have the force of law, it constitutes a comprehensive assessment of proposed government revenue and spending and is the start of an extensive dialogue with Congress.

The Congress can act to approve, modify or disapprove the President's budget proposal. However, virtually all Congressional budget activities that take place throughout the process utilize the President's budget as a starting point for debate. The Congressional process can be divided into four phases:

a. The Concurrent Budget Resolution (CBR)

b. Authorization

c. Appropriation

d. Sequestration (if necessary)

The Congressional Budget and Impoundment Act of 1974 (P.L. 93-344) established the mechanisms for facilitating this four-step congressional budgetary decision-making process as well as created the Congressional Budget Office (CBO). The overall appropriations process provides funding for discretionary programs through 13 appropriation bills. Congress must enact these measures prior to the start of each fiscal year on October 1 or provide for a continuing resolution. The House of Representatives initiates all appropriations measures, although the Senate may amend them. The House and Senate Appropriations Committees each have 13 subcommittees, which are each responsible for reporting one of these measures.

The President's role is an informal one after the budget is submitted to Congress, until budgetary legislation is passed by Congress and presented for signature. The President may either sign or veto any measure presented to him in its entirety. A schematic of the overall budget process and timeline is provided in Figure 4.

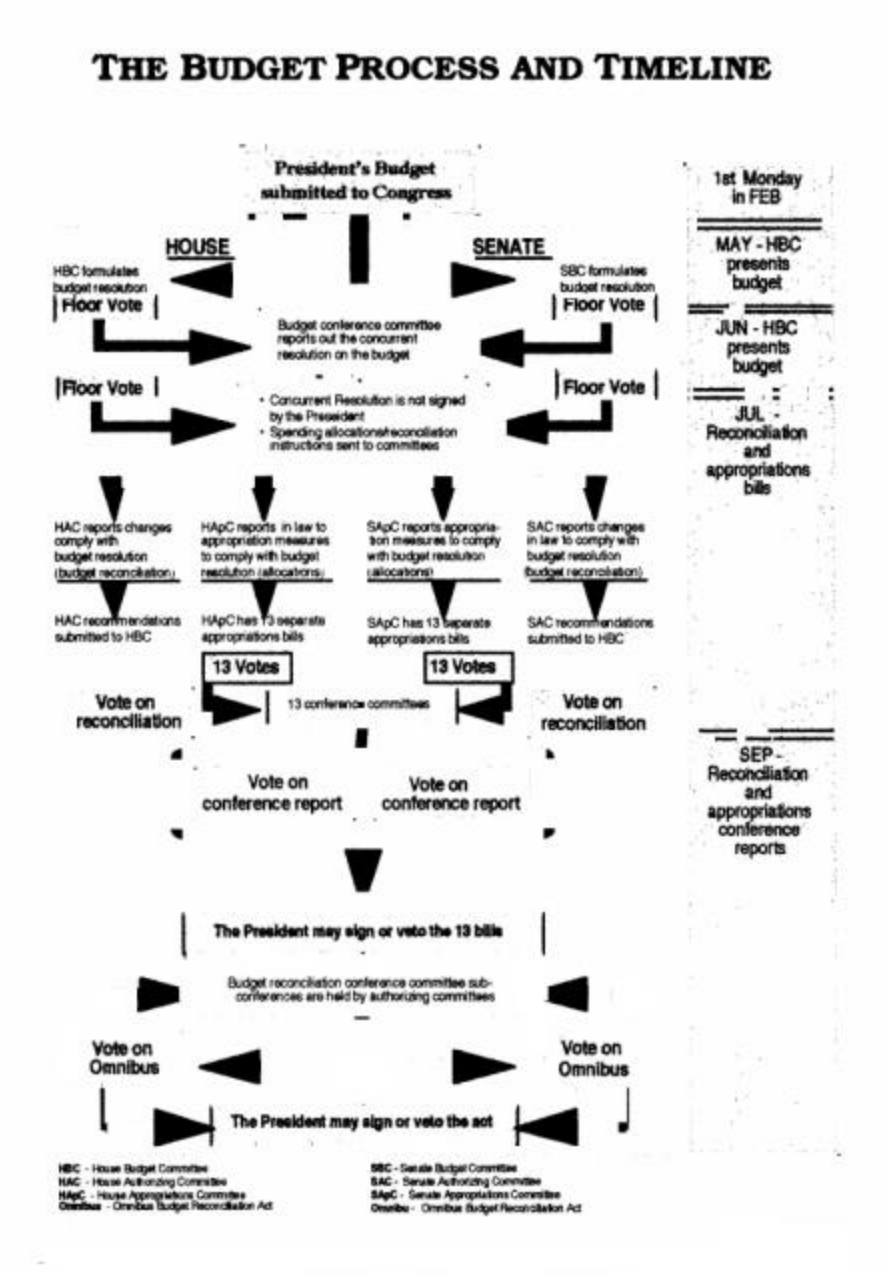


Figure 4

Civil Works

The budget cycle for any targeted budget year (BY) comprises two years beginning about January BY-2 with a cost estimate of individual tasks, drawn up at the project site or appropriate organizational element within the District Office. Budget preparation personnel at this level are

provided with guidance contained in the Budget Engineer Circular. The Budget EC, which is revised each year, incorporates the views and priorities of the President as assembled in budget preparation policy by the Office of Management and Budget and the Office of the Assistant Secretary of the Army for Civil Works.

Project managers prepare several budgets in the Civil Works Program, including: Operations and Maintenance, General (O&M); Regulatory General; General Investigations; Construction General; Flood Control, Mississippi River and Tributaries, and; Formerly Utilized Remedial Action Program (FUSRAP). The O&M Budget will be used as an example to discuss the Corps budget process.

O&M project managers identify all operations and maintenance work items or tasks that need to be performed during the budget year. Project budget line items are prepared with each having a brief item description, a funding argument, a budget feature cost code, a project, and a funding level designation. Typically, thousands of work items or work functions are developed that must be evaluated and ranked.

All work functions from all projects in a given district are then assigned a relative rank priority against all other work functions. Ranks are assigned at the District, Division, and Headquarters. Each work function gets three ranks, one for each organizational level. At the Headquarters level, all work functions across the Corps are assigned a rank. These ranks become the basis for the specific budget requests provided to OMB for the Corps. Typically, approximately 20,000 separate O&M work functions are submitted annually to Congress for annual fiscal appropriations.

The actual quantity of funds that will be provided is unknown at this stage of the process and is ultimately determined by the political climate and the amount and type of work contained in the Corps proposal. OMB provides the Corps with target guidelines that represent the administration's budget priorities and the total amount they believe is appropriate for investment in the Corps Civil Works Program. Cut lines are then worked out for individual divisions by headquarters. The Divisions (MSCs) then adjust and pass specific cut lines to the Districts. The cut line is determined by ordering the work functions in rank order, highest priority to lowest, lowest funding level to highest, lowest rank to highest, and doing down the list and selecting work functions for funding until the money runs out. All work functions above the cut are funded, and all work functions below the cut line are not funded. Customarily, some adjustments in priority are made at the margin, after the impact of the exact location of the cut line is evaluated.

When the final Corps budget proposal is completed by HQUSACE, it is provided to the Assistant Secretary of the Army for Civil Works (CW) for review. Headquarters makes adjustments based upon guidance provided by the ASA (CW). Once this process has been completed, the budget is provided to the OMB in September of BY–2.

OMB conducts its review from September to late November in BY-2 and sends the results back (pass back) to the Corps at the end of the review. The pass back tells the Corps the specific level of funding approved and provides broad policy guidance on where cuts and/or additions to the program should be made. When the Corps and the ASA (CW) disagree about pass back guidance, the Corps sends back a Reclama objecting to the specifics of the pass back and makes alternative suggestions. Once OMB approves or disapproves the Reclama, the appropriations proposal is submitted to Congress as the President's budget.

The Congressional appropriations process usually begins in February with the receipt of the President's budget during BY-1. Early in this process, staff from the ASA (CW) office, headquarters and the division offices are called upon to provide testimony to the appropriations committees of both houses of Congress. During this period Division and District personnel prepare many fact sheets and large testimony books to assist those providing testimony.

Once Congress receives the President's budget, it is marked up by appropriations subcommittee staffs, presented to full subcommittees for approval, and passed on to the full appropriations committees for approval. The Corps budget becomes part of one of the 13 appropriations bills that are voted upon by each house of Congress. After each house of Congress passes its respective bill, the differing bills are provided to a Joint Conference Committee. The committee is comprised of members from the appropriations committees of both houses of Congress and meets in late summer of BY-1 to work out the differences between the two bills. After the resulting bill is passed by both houses, it is forwarded to the President for signature into law.

The Joint Conference Committee issues a report, generally in the August time frame, which details the various adjustments that were made to the original Congressional appropriations bills. Headquarters then requests division offices to prepare their recommended work allowances. As this occurs, the districts make adjustments to their original budget submissions to more accurately reflect changes that have occurred in the year and one-half since budget submissions were made and subsequent changes made by Congress. Sometimes these adjustments differ from the project levels shown in the report. Reprogramming adjustments of this type are allowable as long as they are consistent with criteria established by HQUSACE.

When the districts have completed their work allowances, the divisions consolidate and rank the work functions into division recommended work allowances that are submitted to HQUSACE. Once the President signs the appropriations bill into law, headquarters then issues actual work allowances (FADS) to the districts. The initial work allowances consist of the division recommended work allowances, minus funds withheld for large contracts.

Military Programs

Unlike the Civil Works program where the Corps of Engineers is responsible for programming and budget preparation, the Corps of Engineers does not program or do budget preparation for military projects. Each individual military department or agency is responsible for its own programming and budget preparation. The Corps of Engineers does provide cost data and certification services for budget documents for the Army, which is in support of the preparation of the Army's budget to the Secretary of Defense (SECDEF).

The following is the typical processes followed by the Army to prepare the budget book that is submitted to SECDEF for inclusion with the DoD budget submission to Congress.

DoD has instituted a process called the Planning, Programming and Budgeting System (PPBS), which considers national security objectives, missions, requirements, programs and budgets.

The Department of Army has employed the Planning, Programming, Budgeting and Execution System (PPBES) as its primary management system that ties strategy, program and budget together to ensure effective use of resources to establish and maintain the Army's capabilities to accomplish its roles and missions. The Army's PPBES responds to both the DoD PPBS and Joint Strategic Planning System. The Joint Strategic Planning System includes all

DoD services, SECDEF and the Joint Chiefs of Staff who together develop policy, strategy, and force objectives which defines the missions, requirements, programs and budgets needed to meet national security objectives. It builds a comprehensive plan in which budget flows from programs, programs flow from requirements, requirements flow from missions and missions flow from national security objectives. PPBES identifies and accounts for all resources programmed by the Army and allocates by fiscal year totals for manpower and dollars. It supports budget preparation from Installation to Major Command (MACOM) to Headquarters, Department of the Army (HQDA). It covers total obligation authority (TOA) and manpower totals four years beyond the end (second year) of the biennial budget, a total of six years.

The Military Construction (MILCON) program process involves a sequence of reviews by the Office of the Secretary of the Army, Office of the Secretary of Defense (OSD), Office of Management and Budget (OMB), and the Congress. Changes to the MILCON program continue throughout these reviews until the MILCON program becomes law. DoD requires the design of all construction projects be at least 15% when submitted to the Congress. This allows for submission of an accurate budget estimate based on a minimum level of design effort. There is a deliberate one-year lag between the normal biennial programming and budgeting system and the MILCON process to account for a one year of design effort for MILCON projects. This requires that MACOMs identify projects for the first year of their Program Objective Memorandum (POM) a year before it is submitted to HQDA. The MACOM POM reflects specific programming requirements of the MACOM to manage mission essential requirements.

MILCON projects contained in the POM are also entered into the Construction Appropriation Programming Control and Execution System (CAPCES) via the 1391 Processor. This system is used by the Corps of Engineers to provide updated cost data for specific projects

and to certify the DD1391, Military Construction Project Data. All updated cost data and certification is submitted through the 1391 processor of CAPCES. Each MACOM must also certify the DD1391 via the 1391 Processor.

The military construction programming process consists of 4 distinct programming years:

- Guidance Year (GY)
- Design Year (DY)
- Budget Year (BY)
- Program Year (PY)

The Guidance Year is when HQDA publishes The Army Plan (TAP) and the Army Planning and Programming Guidance Memorandum (PPGM) that incorporate general instructions, current policy, and resource guidance for facilities from the latest Program Budget Guidance published by SECDEF. The PPGM presents HQDA policy regarding military construction programs and the program dollar guidance each MACOM has for development of its program to be presented in the MACOM's POM. The POM is reviewed, validated, and recommended for design by the HQDA Construction Requirements Review Committee (CRRC) during the annual project review board (PRB).

The Design Year is when HQDA builds its POM for submission to OSD and the first year project designs proceed to Project Definition (PD) design development level. PD must be completed in order to establish the full definition of project scope and costs prior to submission to Congress. At mid DY, the CRRC at the PRB will review, validate, and authorize design of the MACOM's second year projects programmed for the second year of the biennial budget. Following the OSD Program Decision Memorandum (PDM), both first and second year projects will be included in the Army's Budget Estimate Submission (BES) to OSD in September.

The Budget Year is when HQDA presents each project in the MILCON program before OSD, OMB, and the Congress. OSD reviews the construction projects contained in the Army's BES early in budget year through the Program Budget Decision (PBD) process. OSD directed revisions to the program are made by the Army before submission of the President's Budget (PB) to the Congress in January. OMB reviews focuses on proper pricing, reasonableness, ability to execute and validity of requirements. During BY, the final design of the first year projects is completed.

After completion of all reviews, the Army's program is than included in OSD's submission to OMB for inclusion into the President's Budget that is submitted to Congress for enactment into law.

The Program Year or execution year as it is sometimes called, is the year funds are made available for construction of first year projects. During the PY, final design of the second year projects is completed.

The final step in the MILCON programming process is that during even years, HQDA, DoD and the President submit a two-year MILCON budget to the Congress. Normally, Congress authorizes and appropriates funds for only the first year of that budget. To update and adjust the second year budget, as necessary, an amended budget review is conducted in the odd year.

Using Figure 4 and Appendix A-1 provides a pictorial view of the Military programming process outlined above.

Program and Budget Execution

Once initial work allowances are received, the Resource Management Office matches work allowances with budget requests and records the receipt of budget allocations in

appropriation accounts. Funds are then allocated to projects, directorates, and offices within CEFMS (Corps of Engineers Financial Management System). Various directorates & offices at the project, district, and division levels monitor monthly execution of the budget as scheduled in Form 2101s. Should budget execution fall behind schedule, action may be taken by any one of several offices to inquire as to the reason for low execution. Adjustments are made as needed, particularly at quarterly and mid-year reviews. Funds are often re-programmed from District to District within a given division or excess funds are obtained from HQUSACE at the time of the mid-year review or during August or early September, prior to end-of-year closeout. The current target for O&M program managers, for example, is to expend 99% of the work allowance and any additional supplemental funds prior to the close of the fiscal year on 30 September. Unexpended and un-obligated funds are returned. Districts are encouraged to identify funds that cannot be expended in a given fiscal year as soon as this becomes evident so that the funds can be re-programmed within the division or offered back to HQUSACE for reprogramming to a district within another division where the funds can be expended.

OMB exercises significant control over the entire Corps program and guides its course through the instructions, hearings, reviews, budget drafting, justifications and policy guidance it gives throughout the entire budget process. For example, OMB guidance for FY 2002 specifies that the Civil Works request will total approximately $3.9 billion, with an estimated FY2002 outlay of $4.327 billion. Given the large backlog of work needed to complete construction already under way, the budget focuses on completing ongoing projects, rather than starting new projects that would add to this backlog. Budget preparation also redirects funds from projects added by Congress in FY 2001 that are not consistent with established policies. The budget includes funds to continue construction of important commercial navigation projects. It also

includes funds to continue construction of flood damage reduction projects for communities across the Nation and to restore the Florida Everglades. High priority is to be given to harbor and inland water activities that support high commercial navigation use and it redirects funds from lower-priority activities, such as recreational harbors and low commercial-use inland waterway segments. The budget also proposes to phase in increases to Corps of Engineers recreation user fees, with the entire increase being made available to the Corps to spend on the improvement of its recreation facilities. As illustrated by the FY 2002 example, OMB utilizes the budget process to mandate strong policy and program direction to the Corps of Engineers.

The Office of Federal Financial Management (a statutory office within OMB) provides direction to all federal agencies, including the Corps, on the implementation of financial management policies and systems. OMB plays a central role in providing leadership in the development, oversight and coordination of the Federal government's procurement, financial management, information, and regulatory policies as well as in their execution. Key statutory provisions carried out by OMB that provide financial guidance for the Corps in the execution of its budget and program management responsibilities include the Budget and Accounting Act, the Anti deficiency Act, the Impoundment Control Act, the Government Performance and Results Act, the Chief Financial Officers Act (CFOs Act), the Office of Federal Procurement Policy Act, and the Paperwork Reduction Act.

Within the Department of Defense the Assistant Secretary of the Army (CW), through statutory provisions enacted by Congress, General Order 10 from the Secretary of the Army and internal Department of the Army regulation, is assigned responsibility for overall supervision of all aspects of the civil works program within the Department of the Army. The ASA (CW) provides guidance and direction to the Chief of Engineers to assure that the Civil Works Program

is managed for conservation and development of the nation's water resources, including flood control, navigation, shoreline protection, and related purposes, including:

(1) Developing, defending, and executing the Army Civil Works legislative and financial program and budget;

(2) Administering the general regulatory program to protect, restore, and maintain the waters of the United States in the interest of the environment, navigation, and national defense;

(3) Serving as Congressional liaison on civil works matters and as the Department of the Army point of contact for House and Senate Authorization and Appropriations Committees charged with oversight of the DA Army civil works program, and;

(4) Ensuring the U.S. Army Corps of Engineers civil works program supports other Federal agencies.

The Assistant Secretary of the Army's Office, thus not only provides oversight, but it is also a program advocate that assists the Corps in obtaining needed authorities and resources, in executing its programs, and in dealing with Congress.

The Office of the Chief of Engineers at HQUSACE integrates the various directives and policy guidance provided by the Office of Management and Budget and the Secretary of the Army's Office through the various Assistant Secretaries of the Army, and then combines this with its personal vision and that of the senior Corps leadership and develops a vision statement and strategic plan. This plan sets the organization's course during his tenure as Chief of Engineers, customarily three years to four years. These broad philosophical statements are then quantified into more specific goals and objectives in the Corps Campaign Plan. The overall organizational campaign plan often indicates Commander intent, operating principles, values,

and provides direction on how the organization can best achieve its goals. For example, the current National Campaign indicates that we seek to attract and retain a world-class workforce, create a culture of learning and empowerment, develop leaders at all levels, etc. The Plan doesn't lay out actual mission work objectives but provides a rather specific roadmap designed to enable the organization to successfully achieve its technical mission objectives.

The Division Offices (MSCs) digest the overall campaign plan and tailor four-year Division Campaign Plans that narrow the scope of the larger plan and define campaign plan initiatives. These initiatives are command emphasis areas where the division and its districts will focus commitment, energy, and resources to strengthen mission execution across division program areas through investments in people, process, and communication.

Corps Districts utilize the Division Campaign Plan to develop and District Operations or Business Plans that identify the specific actions that will be taken to support the overall vision and implement the division initiatives.

District Commanders provide periodic quarterly progress reviews of their district accomplishments relative to Division Plan initiatives during quarterly Board of Commander meetings and quarterly reviews. Reviews are subsequently rolled up to the Division level and then on to the Chief of Engineers levels during quarterly USACE Strategic Management Reviews (SMR). The Division Regional Management Board (RMB) and the Regional Business Center (RBC) combine to assist the Districts in achieving Command initiatives by coordinating, instituting, and managing these initiatives and the allocation resources across the region. Functional Boards within the division take more specific actions within their technical program areas that contribute to progress within the region relative to the Division Campaign Plan Command Initiatives.

Work items are actually executed through a Project Management Business Process approach of work execution that makes use of project managers, project delivery teams, project and program management plans. Actual technical guidance in performing specific work tasks and decision making regarding mission requirements related to the achievement of Division Command Initiatives and mission work accomplishment is provided by a myriad of laws, statutes, executive orders, regulations, policy letters, technical manuals, Engineer pamphlets, and SOPs. These various documents provide day-to-day guidance to the project manager, subject matter technical expert, field manager, staff officer, project delivery team and each employee in the performance of their individual job duties. Most of these guidelines, aside from laws and statutes, are developed internally by the Corps of Engineers or the Department of the Army.

SWOT ANALYSIS

STRENGTH, WEAKNESS, OPPORTUNITIES, THREAT ASSESSMENT (SWOT)

Introduction

As indicated earlier in the Corps Culture Section, corporate culture provides the basic capabilities and strengths that an organization utilizes to face external threats and opportunities. Preceding sections of this paper illustrated how, and to what extent, Congress, the Office of Management and Budget, other federal agencies, the private sector, and the public impact the formation and evolution of Corps missions and policies as well as the role they play in determining the resources that are made available for the Corps to execute its programs. An analysis follows that was assembled from SWOT analysis data contained in National Customer Account Plans for the Bureau of Prisons, the U.S. Forest Service, the Natural Resources Conservation Service, and the U.S. Environmental Protection Agency. The results of a brief

internal and external SWOT analysis are presented below to provide an assessment of the present status of the organization as viewed by Corps employees, outside federal agencies, and a number of our customers. Data from the three plans has been combined into a single table to form a snapshot view of the Corps as viewed from outside the agency (See Table One). Data regarding the perceptions of Corps employees who support these programs is provided in Table Two.

Comparison of Internal and External Evaluations of The Corps

There is significant agreement between both Corps team members and "customers" regarding the strengths of the COE (see tables One and Two). Both perceived the Corps as being large, having a nation-wide services delivery network, technically proficient, and having the capability to provide a full range of services. However, customers perceived Corps additional strengths such as environmental expertise, flood protection, emergency management expertise, cost-sharing authority, and multi-agency coordination capabilities were not evident to Corps team members.

A comparison of perceived weaknesses indicated very high agreement between both groups regarding Corps weaknesses. This would indicate that Corps team members are aware of the organization's shortcomings with regard to project delivery. Corps team members were apparently unaware that they were perceived to be unwilling to listen to customers and that they were not willing to take what customers perceived as acceptable risks.

Table 1. -Strengths, weaknesses, opportunities, and threats of/affecting the Corps as perceived by Bureau of Prisons, Natural Resource Conservation Service, US Environmental Protection Agency, and US Forest Service.

STRENGTHS	
Expertise (professional, technical, engineering	Contracting and contract management expertise
Environmental Knowledge	Full service organization
Regulations (CERCLA & RCRA)	Nation-wide presence
Restoration	Large professional organization
Wetlands expertise	Flood protection
Regulatory permit expertise	Emergency/FEMA response expertise
Quantity of hydrologic data	Multi-agency coordinator
Can share training opportunities	Employees have a "can do" attitude
Capability for cost sharing	Project management method of doing businesses
WEAKNESSES	
CEFMS billing process incompatibilities	Bureaucratic (red tape)
Large focus-difficult to scale back to small projects	Perceived as being expensive
Slow to learn/accommodate customer processes	Design standards overdone
Corps arrogance - "take it or leave it," "we are in charge here," lack of "customer is right" attitude	Unwillingness to take risks
	COE doesn't listen
OPPORTUNITIES	
Participate with Corps on studies and surveys	Joint project studies with Corps
Contract with Corps for environmental assessments and technical staffs have occurred	Support agency where downsizing of engineering
Corps can assist with abandoned mine land cleanups	Corps can provide infrastructure support
Corps can provide GIS support	Corps can use IDIQ (Indefinite Delivery Indefinite Quantities) contracts to do O&M
Can leverage declining resources through partnering with COE	
THREATS	
"We Know Best" attitude when Corps takes over staffs	COE viewed as competitor by agency in-house
Monster Agency - destroyer of agencies by taking their work	Have different political ties & processes
Conducting military exercises on US Forest Service lands	Permitting organization as a work showstopper
Lack of information on what COE can do for them	CEFMS impacting other agency funds control systems
Corps downsizing	
An expensive Architecture and engineering Organization role in COE	Architecture-Engineering firms having greater

Data extracted from four National Customer Account Plans (CAP) for four Federal agency customers (US EPA, US Forest Service, USDA Natural Resources Conservation Service, and the Federal Bureau of Prisons).

Table 2. -Strengths, weaknesses, opportunities, and Threats of/to Corps of Engineers as perceived by those within the Corps who support Bureau of Prisons, Natural Resource Conservation Service, US Environmental Protection Agency and US Forest Service customers.

STRENGTHS	
Strong research and development support available	Agency with strong technical foundation
Can do it all	Agency has a heavy workload
Can call on other Department of Defense resources for assistance	In-house contracting capability
Problem solving capability	Project development & scoping expertise
Can perform reimbursable work	Nationwide large-scale management team
Project teams relationships with private A-E firms	Rapid response and execution to Operations and Maintenance programs
Full service provided on construction projects	Have a multitude of contract types and capabilities
Corps has a lot of experience	
WEAKNESSES	
Costly	Bureaucratic, RED TAPE and constraints of regulations
Arrogant	
Lack of Partnership funding	Large project focus
Always reorganizing and having personnel shifts	Corps boundaries do not align with 10 standard Federal regional boundaries
Lack of initial development funding	CEFMS is a difficult cost tracking system
Corps is slow to learn/accommodate customer processes	Inability to execute small design projects efficiently
Corps needs to improve design cost and time	
OPPORTUNITIES	
Corps can execute O&M service contracts	Corps can provide indefinite quantities contracts
Corps can provide job order contracts (JOC)	Corps can perform environmental assessments
Other agencies are cutting back	Corps has natural resources management skills to provide
Corps has innovative contracting skills	Can build "virtual" project teams to use "state of art" technologies
Build "one door to the Corps" to reduce inter-District competition	Technical engineering knowledge to share with agencies
With other agencies eliminating engineering technical programs staffs, this is an opportunity for the Corps to support	Can use FTEs offered by OMB for support
THREATS	
Downsizing of Corps - USACE becoming "one deep"	Losing technical edge by being "spread to thin"
Corps is often called in to situations when to late to "clean up"	Seems to be a lack of concern for organizations future
Internal reluctance to change	Decline in workforce with experience
Design/Construct solution order contracts	Pressure on Corps to outsource technical capabilities
Decreasing budgets	

Data extracted from four National Customer Account Plans (CAP) for four Federal agency customers (US EPA, US Forest Service, USDA Natural Resources Conservation Service, and the Federal Bureau of Prisons).

Corps team members tended to overlook several opportunities to support customers such as providing GIS support, assisting with abandoned mine cleanup, and supplying infrastructure support. Customers also perceived opportunities to cooperate with the Corps on joint studies, surveys, and authorizations related studies.

There was absolutely no overlap in the perceptions of Corps team members and customers regarding threats to the Corps. Most customers perceived threats to the Corps involved arrogant attitudes being displayed by Corps employees and the Corps being viewed as a threat by their own technical staffs. This would suggest that the Corps should stress its role of supporting existing agency staffs during times when peak work loads exceed existing capacities and consider adopting a team approach whereby the Corps integrates its teams with that of the customer (matrix team).

Internal SWOT Analysis of the Overall Corps Organization

An internal SWOT analysis of the overall organization of the Corps was conducted from data drawn from Division, District Office, and field office staffs within the Great Lakes and Ohio River Division (see Table 3). The wide range of organizational perspectives represented by team members provides a broad view of the current organization's status. The data was gathered during calendar year 2000 as part of a project associated with Course H507.

Table 3. -Strengths, weaknesses, opportunities, and threats of/affecting the Corps as perceived by members of Team Two. E = externally driven factor; I = internal to organization

STRENGTHS

Wide geographic distribution of customer contact offices (I)	Large worldwide project delivery system (I)
Wide range of missions and technical expertise (I)	Highly educated and trained staff (I)
Wide range of research facilities and capabilities (I)	Extensive worldwide ADP and communication capabilities (I)
Extensive environmental expertise in areas of management, compliance, cleanup, and restoration (I)	Extensive practical problem solving experience by staff (I)
Extensive expertise in contract management (I)	Extensive network with A-E firms (I)
Extensive expertise in CADD and GIS (I)	Extensive legislative authorities for supporting others (E)
Extensive legislative mission authorities (E)	Full range of construction management skills (I)
Extensive expertise in land and resource management (I)	Extensive capabilities to cost share (E)
Extensive physical plant (rolling and floating) (I)	Largest generator of hydropower & 4th largest electric utility (E)
Project management project delivery system (I)	"Can do" attitude (I)
Disciplined, professional, and self-motivated workforce (I)	Strong network with Congress, states, and local governments
Extensive experience in partnering (I)	Significant resources allocated to employee training (I)

WEAKNESSES

Workforce reduced by 29% in less than a decade (E)	Research arm, major subordinate commands & headquarters all reorganized in less than a year - turmoil (I)
Inability to optimally place people where work is (I)	Desire for "full service" at all districts reduces Productivity (I)
Corps not managing for successional problems - large cohort approaching retirement with no succession planning (I)	Large percentage of District Commanders now no prior COE experience prior to assuming command (E)
Many performance measures have no tie to customers or products - process oriented (I)	Regionalization of support functions-still turmoil from re-organization, re-location, and reductions (I & E)
Less than optimum work environments (Crowding, etc.) (I)	Too many managers and not enough leaders (I)
Rising transaction costs from forced contracting out directives resulting in decreased productivity	"Tall" organizational structure hasn't been adjusted to meet increased volatility of external environment (I)
Many programs have no meaningful mission statement (I)	Flexibility reduced by some DOD regulations (E)
Closed environment for decision making (I)	"Pooled interdependence" problems in Districts with Support for Others Program (I)
Lack of diversity in work force (I)	

OPPORTUNITIES

Other Federal agencies are downsizing technical staffs (E)	Many local entities do not have technical expertise (E)

Table 3. -Strengths, weaknesses, opportunities, and threats of/affecting the Corps as perceived by members of Team Two. E = externally driven factor; I = internal to organization (Continued)

OPPORTUNITIES (Continued)

"One door to the Corps", if fully implemented, can deal with pooled interdependence issues (E)

Restructuring of MSCs could put people where work is (1)

Demand for support of environmentally oriented projects (E)

Preference for non-structural solutions to flood damage (E)

Reduction/avoidance (E)

THREATS

Downsizing of Corps staff diminishes ability to execute present wide array of missions (E)
Downsizing of Corps staff diminishes "full service" capabilities (E)
Closed style of decision-making impact on trust (I)
Loss of institutional knowledge - massive retirements in 5 - 10 years (I)
Disappearance of present Corps culture - massive retirements with in 5 - 10 years (I)
No succession planning (I)
Cutbacks in GE Funding - Inability of MSCs and HQ to execute program (E)
Extreme age of much of infrastructure & lack of maintenance funding from Congress threatens mission execution & safety - potential for project structural failure (E)

Significant Issues Discovered in SWOT Analysis

Corporate Diversity

One of the more significant and challenging issues revealed by the SWOT Analysis is that of corporate diversity. The Civil Service Reform Act of 1978 established a Federal policy to achieve a "productive Federal workforce reflective of the Nation's diversity…" The National Performance Review reinforces this commitment by stressing that a diverse workforce is inherently more productive and encourages strategies to encourage diversity.

In today's work environment, public and private sector employers have recognized that to maintain a competitive edge and maximize productivity, a workplace must be created that recruits, hires, and retains a bright, well-trained and diverse workforce. There is considerable under-representation of minorities and women within the Corps at the senior management level. The Corps strategic vision expounds the expectation that the organization will search for and

create a workforce with diverse attributes and talents. The Corps has developed a two-year old corporate selection process that has brought progress in overcoming barriers identified in the Merit Systems Protection Board report to the President entitled, "Fair and Equitable Treatment". The new process requires that a panel, instead of a single person, make selections for the highest graded positions.

This is an area that should receive additional attention and review. If the Corps is to continue its present successes, the present organizational metamorphosis must be continued and pursued. Such major changes, according to Kotter, customarily take from 3 to 10 years to become part of the corporate culture.

A second element of the diversity issue, that of professional diversity, was raised during the SWOT analysis. As a result of the widespread organizational downsizing that has occurred within the Corps during the past 5 – 7 years, anecdotal evidence suggests that the percentage of non-engineering professionals comprising the Corps workforce has significantly decreased, as has the number of certain engineering specialties. This, of course, could negatively impact an organization such as the Corps that has a diverse and ever increasing list of mission areas. This issue requires additional study and immediate attention if substantiated.

Organizational Succession

The SWOT analysis identified a potentially profound threat to the Corps regarding the succession of its aging work force. A very high percentage of the present middle and upper level management of the Corps of Engineers will be eligible to retire in approximately five years. Potentially, some offices may lose as many as 70 percent of their employees within a very short period of time. The potential impact upon the organization with regard to institutional

knowledge and corporate cultural values could be catastrophic. The Northwest Division pilot study could be amended to include "aging" and recruitment issues. It is imperative that the Corps be proactive regarding this issue as its very survival depends upon obtaining and retaining a highly professional work force. The problem is widespread across the Federal government and must be addressed promptly as changes to meet this challenge may require significant changes to existing personnel policies and practices. The Corps is particularly vulnerable, as a very high percentage of its current work force consists of engineers, scientists, biologists, and information management specialists. The federal government, including the Corps, has been largely unsuccessful in competing with the private sector for this select group of professionals.

Deterioration of Corps Infrastructure

The Corps operates and maintains a massive infrastructure valued in the hundreds of billions of dollars. This infrastructure is reaching an advanced age and is deteriorating at an increasing rate. Within the Great Lakes and Ohio River Division alone, more than 75% of the infrastructure is more than 30 years old and more than one-half is more than 50 years old. There is a need for massive rehabilitation and facility replacement; however, the agency is currently being funded primarily for operations and routine maintenance. Until recently, leadership has attempted to make due with currently available resources and diverted operational funds to perform major maintenance and replacement. This policy has only resulted in a steady accumulating amount of backlog and increasingly unhappy customers (deterioration of services because of operational cutbacks). As conditions continue to deteriorate the probability for catastrophic structural failure increases. Attempts are being made to address this issue but the

agency continues to lose ground and there is a critical need for major maintenance funding. It would appear that this issue requires significant additional senior Corps leadership involvement.

OBSERVATIONS AND RECOMMENDATIONS

Observations

USACE Strategic Planning

USACE has been engaged in the strategic planning process since 1996. Several of the weaknesses and threats identified in the SWOT analysis have been addressed in this process. The organization has progressed from initiatives-based strategic planning through to scenario-based strategic planning (SBSP). The three major restructuring efforts currently underway by the Corps (discussed in earlier section), are nearing completion with team members at various stages of DeCoster's change transition model. The organization attempted to utilize the eight-step Kotter change process model prescribed in "Leading Change"; however, several steps were either omitted or given insufficient emphasis. The new Chief of Engineers, Lieutenant General Flowers, has been placing additional focus on Kotter's step # 5, "Empowering Broad Based Action," through his use of the "just do it" card. The new vision statement attempts to consolidate the gains produced thus far, producing more change, and anchoring these approaches within the new culture.

Capable Workforce Development

The Northwestern Division (NWD) is testing a pilot project designed to guide USACE in ensuring that the Corps will have a capable and sustainable workforce in the future. The work involves looking at the NWD workforce, workload, and culture. This analysis will be utilized to

develop relevant questions in order to gather key data, to gather the requisite data, and to create a plan for using the data to aid in decision-making.

Information Technology (IT)

Information technology is an enabler for the mission work of the organization and strength of the current organization. Corps strengths in the areas of Computer Aided Drafting and Design (CADD), Geographic Information Systems (GIS), and its extensive worldwide ADP and communications capabilities are being enhanced through this effort. During 1999 and 2000, USACE made several major decisions regarding how to better leverage IT and to strengthen this asset. The following initiatives have been started or completed: (1) Division level information managers will be changing their focus from an operational view to a Regional Chief Information Officer perspective, (2) Corporate Lessons Learned (CLL) – Within existing automation systems, USACE will be adopting a systemic approach to capturing, evaluating, and using "lessons learned" across many functional areas, and (3) Knowledge Management (KM) – The USACE Strategic Management Board adopted a corporate Knowledge Management pilot program that will be focused on providing more capabilities to Installation Support personnel at the Divisions/Districts.

Regional Management Boards

In 1998, LTG Ballard approved the establishment of Regional Business Centers so that all resources within each Division's area of responsibility could be better integrated to more efficiently execute our customer's projects and programs. The Corps is now much more able to work as a single corporate entity than previously, when major subordinate commands functioned

as a multitude of independent entities. This initiative also addresses the SWOT identified weakness of "pooled interdependence" currently encountered by Corps Districts.

Contracting

Today USACE operates in an environment of increasing demand for services and declining resources. As a result, the current priority for USACE acquisition and contracting stresses innovation to increase efficiency and save funds. Practices such as updating the Engineer Federal Acquisition Regulations to institutionalize the appropriate use of advanced acquisition planning and integrated product teams, the development of more effective competition through greater small business utilization, and the implementation of longer-term contracts to reduce the workload will enhance the Corps organizational strengths in contract management.

Outreach/Customer Relationships

This effort is designed to reach out to our existing and perspective customers and develop key opportunities for contained mission growth. This initiative addresses existing strengths and weaknesses, as well as opportunities and threats identified in the SWOT analysis. Several key efforts are planned for execution beginning in FY 2001: (1) refinement of corporate outreach plans to align field level plans for the enhancement of customer relationships, (2) development of a corporate portfolio for customer development and enhancement, and (3) a revision of the corporate outreach training curriculum.

Role of The Corps With The Private Sector

Four significant historical events have forever shaped the relationship between the private sector and the Corps of Engineers and determined the role the private sector will play in assisting the Corps of Engineers execute its various missions: (1) The military demobilization at the conclusion of World War II, (2) the impoundment of funds by the Nixon administration, (3) the deficit reduction initiative of the Reagan administration, and (4) the Clinton downsizing of the Department of Defense.

Prior to the nation's mobilization for WWII, most design, operations, and a significant portion of construction work was performed by Corps of Engineers hired labor employees. During WWII, the organization ramped up to handle the wartime effort and the number of employees significantly increased. At the conclusion of WWII, the civil works effort, which had been put on hold during hostilities, was not resumed. Instead, the Truman administration declared a moratorium on civil works projects and later severely limited expenditures as it instituted a general demobilization of the war effort. The impact was profound upon the Corps with a number of districts being closed, and many work crews, repair facilities, and shops eliminated. By 1955, thousands of employees across the Corps had lost their jobs and the last of the Corps operated dredges within the Ohio River Division was eliminated. Subsequent to this chain of events, as funds became available later, the Corps came to rely upon the private sector through contracts to execute much of its routine maintenance work.

The Corps went through another severe period of retrenchment in 1969 and 1970 when the Nixon administration, while involved in a constitutional battle with Congress, impounded civil works construction funds appropriated by the Congress. As indicated earlier in this paper, the Chief of Engineers then instituted a number of profound changes to streamline the

organization and to avoid having the civil works program transferred to the then newly created Environmental Protection Agency. The changes further reduced the overall size of the organization and placed increasing emphasis upon the utilization of the private sector to execute Corps work.

The third major event occurred in the early 1980s during the various deficit reduction initiatives undertaken by the Reagan administration. The political philosophy that swept that administration into political power during the election of 1980, was to reduce the size of government. "Bureaucratic bashing" became a popular sport and government employees became viewed by the administration, Congress, and the public as substandard, unmotivated, and unproductive. The political decision was made to significantly reduce the size of the civilian work force and "privatize" as much as possible. Decisions were made to privatize regardless of the expense to the American taxpayer. Much of this was done under the Circular A-76 Program where the Corps had to compete with the private sector for the work the Corps was already performing. In a number of cases the private sector bide below the level of reasonable profitability in order to win the contract so that Corps employees currently performing the work would be eliminated along with the government's capability to perform that work. Within a year or two of the elimination of Corps employees, the cost of such work, through the contract biding process rose significantly, as much as several times higher than it was when performed by the Corps hired labor force. By that time "the horse was out of the barn" and no one in Congress or the administration would reverse the trend. Through time the Corps workforce was severely reduced by early retirements, buyouts, eventually reductions in force (RIFs). With this series of events the Corps came to depend even more heavily on the private sector. In many cases, the Corps lost a significant amount of its design and engineering capabilities as well as operational

staff. The end result was inefficiency and situations commonly arose where the cost of executing some Corps work was significantly higher than when it was executed by Corps hired labor. To compensate, contract specifications had to become massive to handle all potential contingencies and emergency situations that, at one time, could be efficiently and easily handled by having a minimal in-house capability. All of this raised the price of doing business, which persists to this day.

The Corps of Engineers, along with much of the civilian component of the Department of Defense, was further reduced during the Clinton administration's downsizing of the Department of Defense DoD). This downsizing, which totaled from 15 – 20% across the DoD, was the cause for the last major Corps re-organization that eliminated three divisions, reduced the size of all remaining divisions, and reduced the size of HQUSACE. The sizes of various District staffs have also been reduced. The end product of this occurrence is that the in-house technical capability of the Corps has been further reduced, often to the point where full-service engineering services can no longer be provided by a single district.

Presently, the Corps performs almost all of its operations and maintenance work all by private sector contract and virtually 100% of its construction work (except for quality assurance and construction management). In addition, private sector A-Es design 75% of the military program and 40% of the Civil Works program. With the loss of in-house technical capability, the Corps is relying more upon full-service Architectural-Engineering firms to perform basic design work. These firms have exerted significant pressure upon the administration and Congress, with the result being that Corp districts are directed to contract certain percentages of their work out to A-E firms. New types of contracts such as design-build contracts and indefinite delivery indefinite quantities contracts, to mention just a few, are being developed by the Corps

to enable the organization to accomplish its various missions. The private sector is a critical partner that is essential in enabling the Corps to accomplish its various missions. The Corps and the private sector will continue to be tied closely together for the foreseeable future. It is likely that the role of the private sector will continue to grow, particularly when Congress finally decides (or is forced by events) to make the massive investments necessary to replace and renovate the Corps' massive aged and deteriorating infrastructure.

Recommendations

Potential Mission Areas

Civil Works

Given the inability of Congress to make major policy changes, it is difficult to visualize the Corps obtaining any new mission or major shift in current missions without some sort of catastrophic natural event or serious social problem first arising. Such events will have to occur in order to mobilize public opinion and create a demand for timely and decisive action by Congress and the administration. Four potential mission areas are possible:

1. Water Supply - As water continues to be a more scarce commodity in the Eastern half of the United States, it is likely that the Corps may be called upon to construct a number of mid and large reservoirs specifically to provide a source of water for large urban areas. It is likely that water will be pumped around the Eastern United States as oil and natural gas presently is in large pipelines. It is also quite likely that domestic water supply will usurp existing project purposes at already existing reservoirs located in the Eastern United States.

2. Regulation of the Surface Coal Mining Industry – It appears that the Corps may soon be regulating permits associated with mountain top removal for the purpose of the surface

mining of coal. Current legal action indicates that this mission may be given to the Corps of Engineers.

3. Reconstruction of the Midwest After the New Madrid Earthquake – There is an increasing probability that an earthquake of enormous proportions will occur as time passes. The widespread devastation associated with this event upon the infrastructure of the Midwestern United States will require a massive construction effort coordinated by a public agency with extensive engineering capabilities. When this event occurs, it is likely that the Corps will not only get the call for disaster relief and debris cleanup, but it will also receive the mission of leading the Federal effort at rebuilding.

4. Generation of Solar Energy – As the world's supply of oil and natural gas continues to dwindle, the United States will face an ever-increasing energy crisis. In order to sustain the current life style of the nation alternative sources of power will have to be obtained. It is likely that the Corps will become involved in the construction of large scale power projects such as the widespread development of wind turbines on western public lands, the construction of hydropower plants that utilize daily and monthly tide fluctuations to power generators, and take the Federal lead in constructing initial fusion powered generation plants.

5. Environmental Restoration – Currently the Corps of Engineers has been environmentally restoring formerly used defense sites (FUDS) across the country and with the potential for another round of base closures, this program should substantially increase in program value. In addition, the need to environmentally reclaim the nations rivers, lakes and other aquatic resources most likely will require the Corps to play a significant role in the programming of restoring these ecosystems similar to the massive project underway in the Florida Everglades.

Military Programs

The Corps will continue its military mission of providing engineering and construction support to the Army and Air Force. In addition, the following potential missions are possible:

1. Army Transformation – The ongoing transformation of the future army force will create additional opportunities for the Corps to support the Army in its endeavor to reshape itself for the future battlefield. This will include construction of new installations termed "Fort Future".

2. Space Colonization – As we continue to explore the universe, opportunities will present itself to the Corps to support the establishment of colonies on distant planets. This would be expected to be a huge program that undoubtedly requires the invention of new construction techniques and building materials.

Vision

Vision Statement for the 21st Century

The world's premier public engineering, water resources-based planning, development, and management organization responding to the needs of our nation in times of peace and war.

A full spectrum Engineering, Planning, and Operational Force of high quality, dedicated soldiers and civilians:

- Dedicated to public service,
- A vital part of the Army,
- A highly motivated task-oriented problem solving organization,
- An enabler of sustainable environmentally sensitive development,

- A leader in the management of our Nation's water resources,
- Trained and ready,
- An Army values-based organization.

Rationale for the Vision

In an earlier section of this paper the visions of five past and present Chiefs of Engineers were discussed. The current strategic vision statement is good, but too restrictive in scope. The traditional engineering strengths of the Corps of Engineers have been expanded to include awesome planning, program management and operations capabilities, as well as a reputation for successfully meeting virtually any challenge it is tasked with. This combination of capabilities is unparalleled in the public or private sector. The track record of success this organization has accumulated over its 226-year history has led to its being authorized a number and range of missions that is unprecedented within the Federal government. The existing vision should be modified to reflect the immense capabilities of the Corps' 34,000 employees and its unique ability to "accomplish high quality work, on time, and within budget, " particularly in the areas of water resources development and environmental management.

The first sentence of the current strategic vision statement is expanded to include the extremely strong planning and operational capabilities that the Corps has developed in the area of water resources development and management since the end of WWII. The Corps' planning assistance programs and wide range of planning authorities is without equal in the public sector and has no counterpart in the private sector. The wide range of technical expertise within the organization and its rational systematic planning approach allow it to provide water resources related planning assistance to virtually any public agency in the United States or nation in the

world. The capability of the Corps workforce to manage, operate, and maintain a wide variety water resource development projects that number in the thousands in an extremely cost effective fashion make it a Federal leader in quality and efficiency. These capabilities are included to show prospective customers and partners that the Corps can provide much more than just excellent public engineering services.

The second sentence is expanded to include the items from the first changed sentence. Three additional bullets have been added to the four in the current vision statement, the first to indicate that the Corps strives to be a results and performance driven organization. Such a vision component would tend to attract hard-working task oriented employees and serve as an indicator to prospective customers and partners that the Corps will deliver a quality product on time and within budget. Inclusion of this phrase would send a strong message to existing employees that this item is key to the future success of the organization.

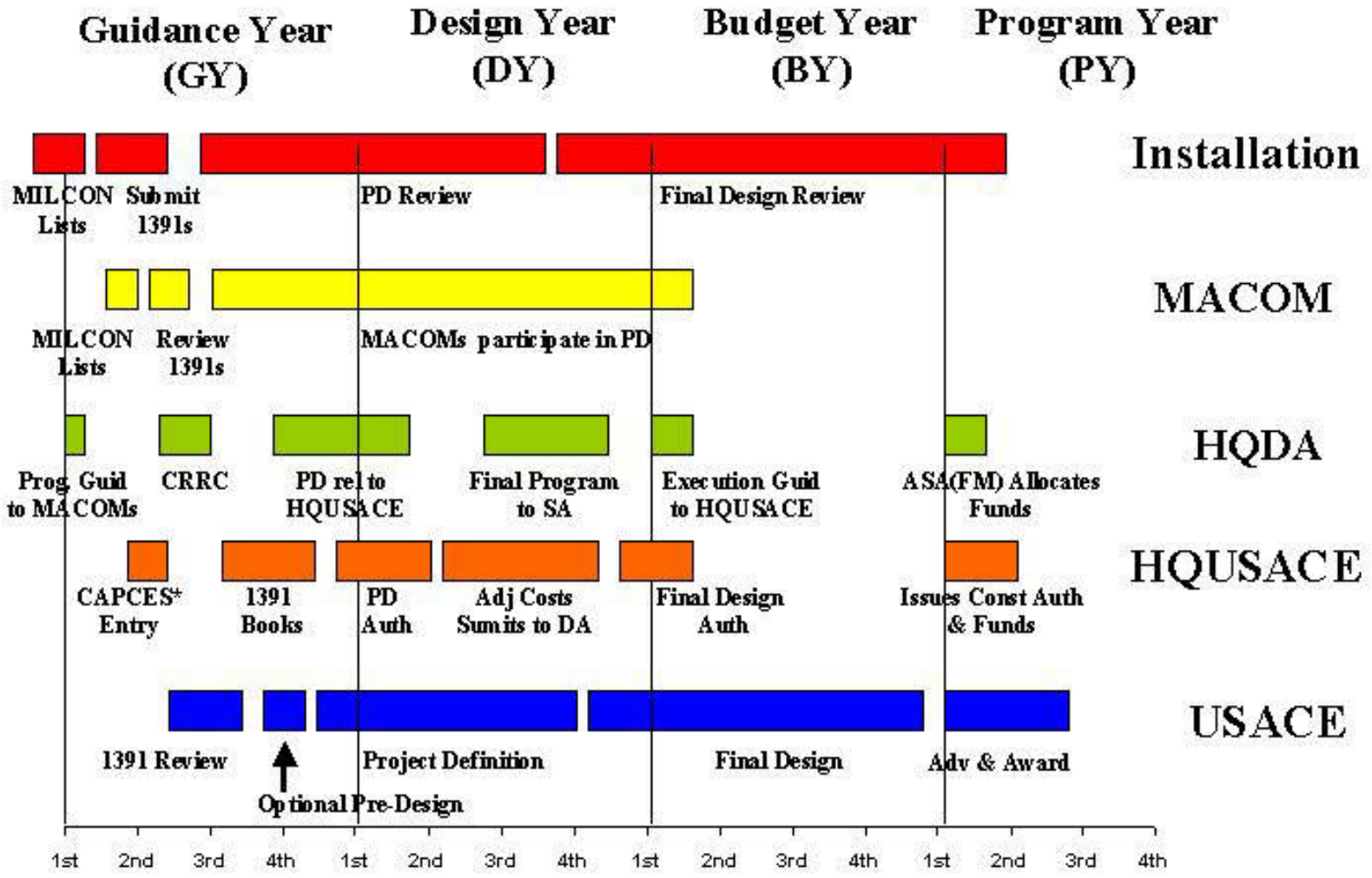
The second and third added bullets highlight specific areas where the Corps has world-class expertise. The Corps can add significant value in the area of water resource project engineering and design, planning, construction, and operation. The Corps is without an equal in this area.

The third bullet has been added to indicate that the technical composition and experience of the Corps staff allows it to be a very strong enabler of sustainable environmentally sensitive development. Because the Corps has major responsibility in the areas of both development as well as protecting the nation's wetlands through the general regulatory program, it has had extensive experience in balancing environmental considerations with development. The ability to promote sustainable, yet environmentally sensitive, development is an ability that is highly sought after by a wide range of local and state agencies as well as federal agencies and foreign

governments. The Corps has unique skills in this area. In summary, the three additional bullets that appear in the above vision statement provide a stronger emphasis to the vision that should appeal to both employees and prospective customers and partners.

APPENDIX A

Military Construction Programming Process

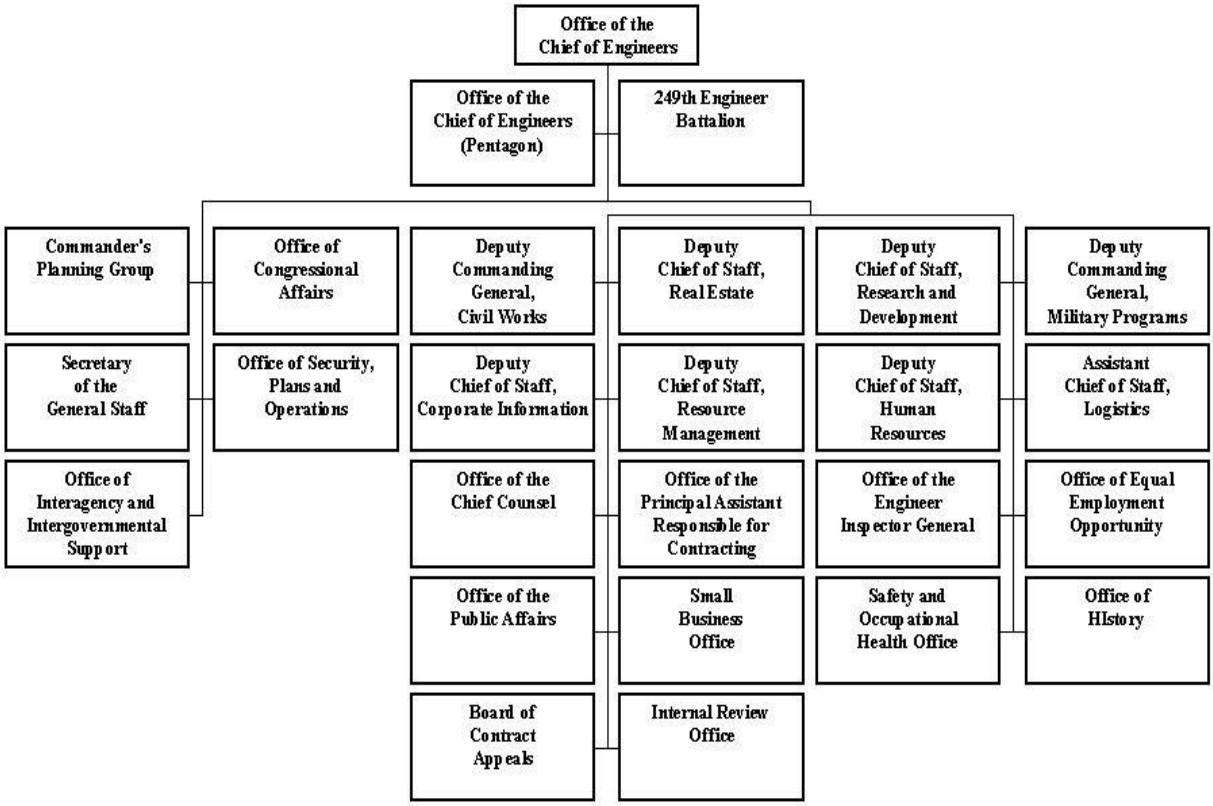


CAPCES - Construction Appropriation, Programming, Control and Execution System

Appendix A-1

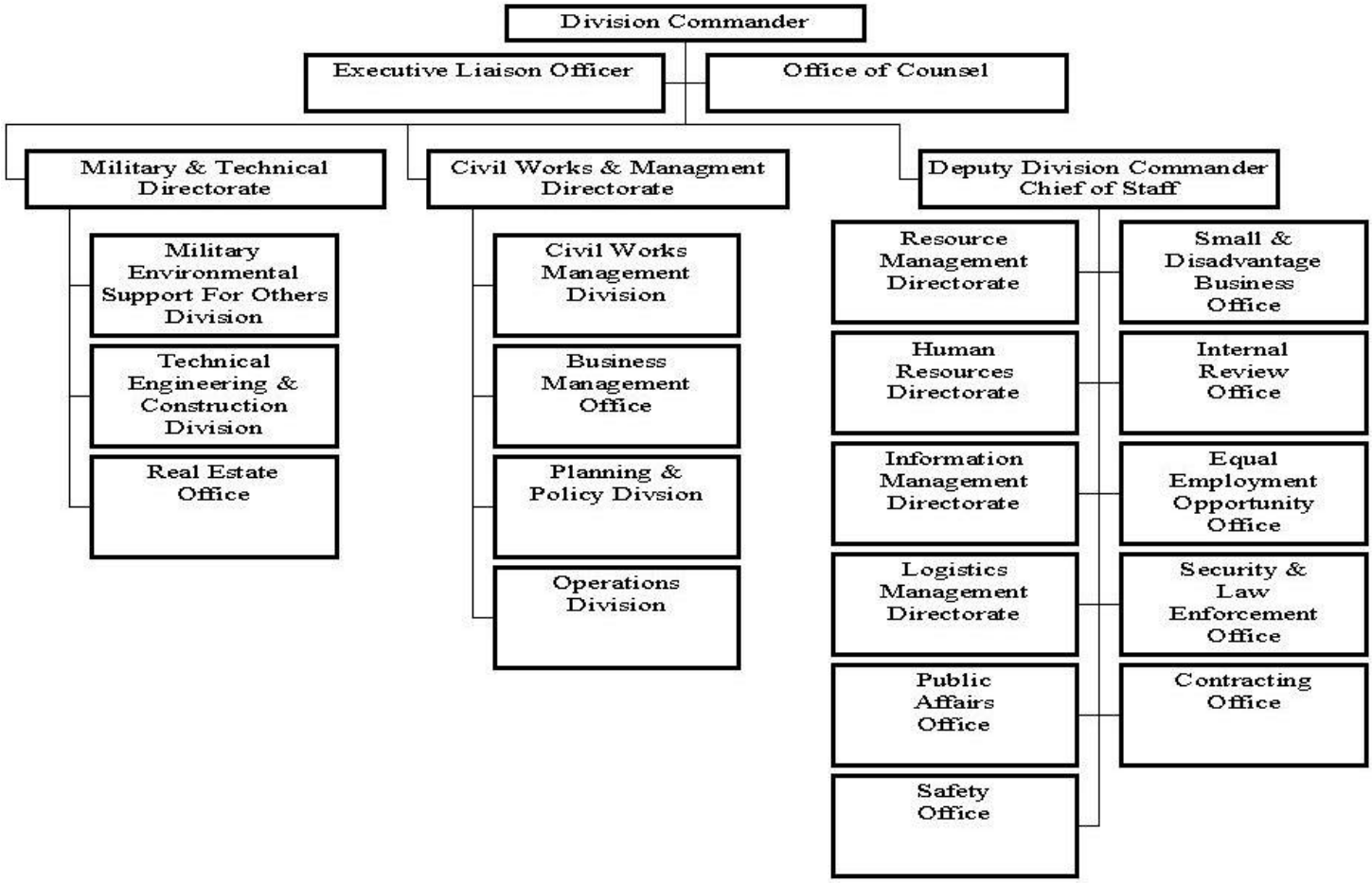
APPENDIX B

Headquarters Organization Chart



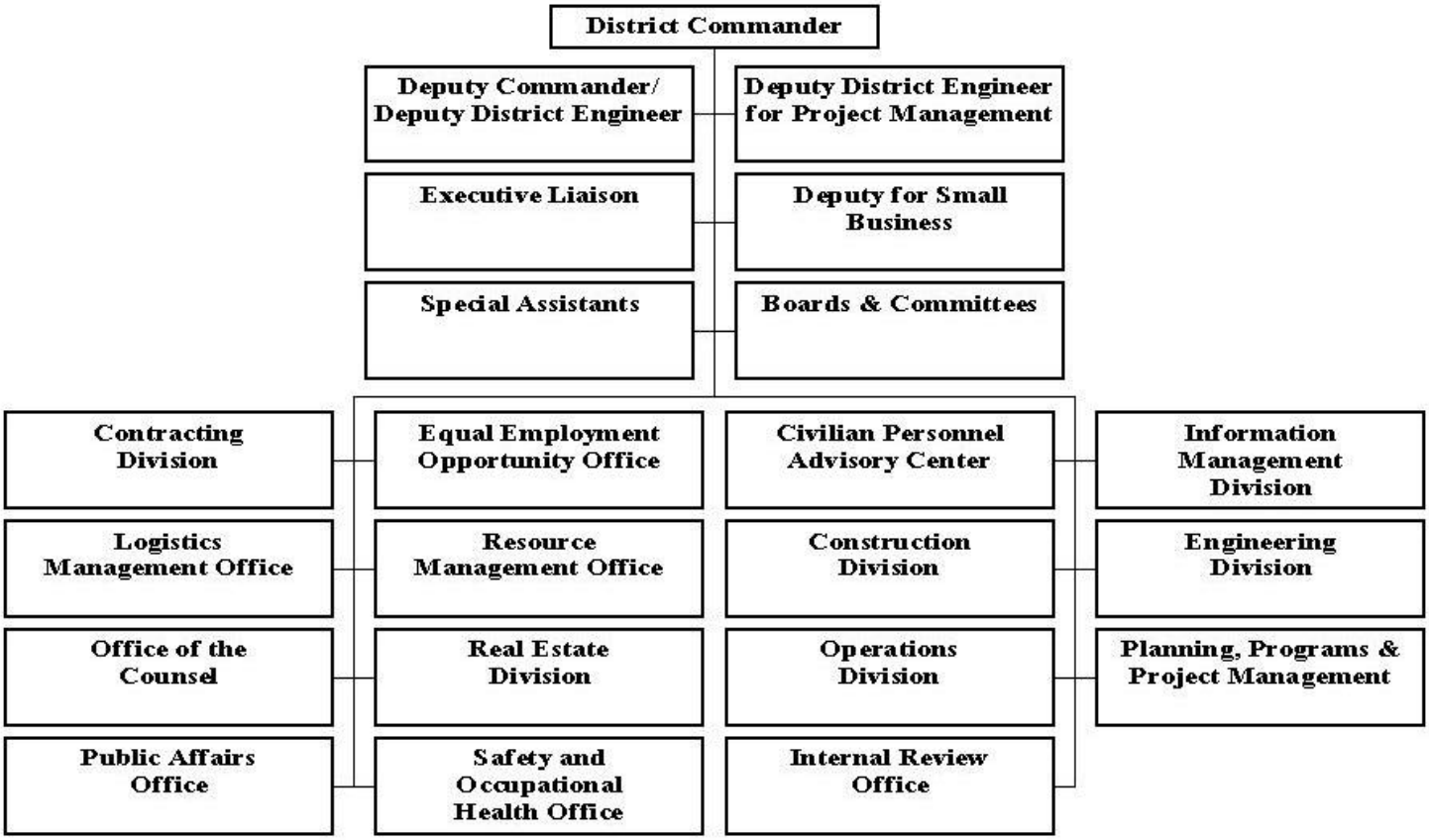
Appendix B-1

Typical Division Organization Chart



Appendix B-2

Typical District Organization Chart



Appendix B-3

US Army Corps of Engineers

List of Divisions, Districts, Laboratories, Centers and Field Operating Activities

Great Lakes and Ohio River Division, Cincinnati, OH
Great Lakes Center, Chicago, IL

District Offices

- Buffalo District
- Chicago District
- Detroit District
- Huntington District
- Louisville District
- Nashville District
- Pittsburgh District

Mississippi Valley Division, Vicksburg, MS

- Memphis District
- New Orleans District
- Rock Island District
- St. Louis District
- St. Paul District
- Vicksburg District

North Atlantic Division, New York, NY

District Offices

- Baltimore District
- Europe District
- New England District
- New York District
- Norfolk District
- Philadelphia District

Northwestern Division, Portland, OR
Missouri River Center, Omaha, NE

District Offices

- Kansas City District
- Omaha District
- Portland District
- Seattle District
- Walla Walla District

Pacific Ocean Division, Fort Shafter, HI

District Offices

- Alaska District
- Far East District
- Honolulu District
- Japan Engineer District

South Atlantic Division, Atlanta, GA

District Offices

- Charleston District
- Jacksonville District
- Mobile District
- Savannah District
- Wilmington District

South Pacific Division, San Francisco, CA

District Offices

- Albuquerque District
- Los Angeles District
- Sacramento District
- San Francisco District

Southwestern Division, Dallas, TX

District Offices

- Fort Worth District
- Galveston District
- Little Rock District
- Tulsa District

Laboratories

Engineer Research and Development Center, Vicksburg, MS

Sub-Offices

- Coastal and Hydraulics Laboratory, Vicksburg, Miss.
- Cold Regions Research and Engineering Laboratory, Hanover, NH
- Construction Engineering Research Laboratory, Champaign, IL
- Environmental Laboratory, Vicksburg, MS
- Geotechnical Laboratory, Vicksburg, MS

- Information Technology Laboratory, Vicksburg, MS
- Structures Laboratory, Vicksburg, MS
- Topographic Engineering Center, Alexandria, VA

Centers

- U.S. Army Engineering and Support Center, Huntsville, AL
- Transatlantic Programs Center, Winchester, VA

Field Operating Activities

- 249th Engineer Battalion
- Finance Center, USACE
- Humphreys Engineer Center Support Activity
- Marine Design Center

Water Resources Support Center

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