



US Army Corps  
of Engineers®

# PLANNINGahead

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## OROVILLE DAM EMERGENCY RESPONSE

pg. 2



## SHERIDAN ECOSYSTEM RESTORATION STUDY

pg.6



\*  
PCoP  
News  
Flashes  
pg. 5  
\*

## COASTAL TEXAS FEASIBILITY STUDY

pg. 8



## PCoP Q&A: DRAFT REPORT RELEASE FOR CONCURRENT REVIEW

pg. 10





# USACE DELIVERS EMERGENCY RESPONSE AND RECOVERY PLANNING ASSISTANCE IN THE OROVILLE DAM & FEATHER RIVER WATERSHED



ON FEBRUARY 12, EROSION TO THE HILLSIDE BELOW THE OROVILLE DAM EMERGENCY SPILLWAY WAS DETERMINED TO THREATEN PUBLIC SAFETY, RESULTING IN THE EVACUATION OF 180,000 RESIDENTS FROM THE FEATHER RIVER FLOODPLAIN. (SOURCE: DALE KOLKE/CALIFORNIA DEPARTMENT OF WATER RESOURCES)

A series of storms sweeping across California in early 2017 resulted in damage to the State of California's Oroville Dam facility. Significant damage to the main spillway and heavy rainfall in the Feather River watershed led the California Department of Water Resources (DWR) to operate the emergency spillway for the first time in the dam's history.

On February 8, 2017, DWR requested technical

assistance from Sacramento District under Public Law 84-99, Flood Control and Coastal Emergencies (33 U.S.C. 701n), which authorizes the Corps to provide technical review, advice, and/or recommendations to non-Federal flood control works that are in imminent danger of structural failure to ensure the stability, integrity, and safety of such projects.

On February 12, erosion to the hillside below the emergency spillway was determined to threaten

public safety, and the Butte County Sheriff issued a mandatory evacuation order, evacuating more than 180,000 residents from the Feather River floodplain. The potential failure of the emergency spillway was declared a Federal Emergency on February 14. Under the PL 84-99 request for technical assistance, Sacramento District Emergency Operations provided the state with liaisons and technical experts – including engineers, geologists, and hydraulic engineers – to assist

and provide engineering expertise to augment local and state resources during the emergency situation. DWR also requested technical services under the Flood Plain Management Services (FPMS) Program for immediate and mid-term recovery planning for the Oroville Dam spillway and the Feather River watershed floodplain. Within five days of the evacuation, Federal FPMS funds were provided by HQUSACE; and within 25 days, the Sacramento



THE CALIFORNIA DEPARTMENT OF WATER RESOURCES SUSPENDED FLOWS FROM THE LAKE OROVILLE FLOOD CONTROL SPILLWAY AFTER A CONCRETE SECTION ERODED ON THE MIDDLE SECTION OF THE SPILLWAY. (SOURCE: KELLY M. GROW/CALIFORNIA DEPARTMENT OF WATER RESOURCES)

District had executed a letter of agreement (LOA) to accept \$3 million in voluntary contributed funds.

With an agile vertical team, USACE did not lose any continuity of service to DWR between the end of the PL 84-99 funded activities and the initiation of the FPMS technical services. USACE coordination through the interagency California Silver Jackets team in general, and USACE Planners, specifically, was instrumental in expedited execution of the LOA. Established relationships with state and local leaders through USACE participation on the Silver Jackets team made for productive conversations,

and allowed USACE Planners to quickly form the “connective tissue” between highly technical elements of the team that had not previously worked together.

## THE OROVILLE DAM SPILLWAY RECEIVED NATIONAL INTEREST AND CAN CONTINUE TO SERVE AS A TALKING POINT FOR FAILING WATER RESOURCE INFRASTRUCTURE.

The Oroville Dam and Feather River watershed FPMS project demonstrates the range and responsiveness of the FPMS program and USACE in working on a failing water resources

infrastructure project at an enterprise level. The USACE team was able to recognize how we could serve in this infrastructure and flooding crisis, and quickly

responded to state and local governmental concerns. To date, state-contributed funds have been used to provide advice and technical support, including from

senior dam safety specialists, planners, geologists, hydraulic engineers, and structural engineers. USACE has reviewed and provided comments on technical documents, such as hydraulic design of the spillway, plans and specs, and constructability documents using expertise from the RMC, the Dam Safety Modification Mandatory Center of Expertise, and the Sacramento District. The RMC also led a semi-quantitative risk assessment to identify a number of risks and to analyze primary potential failure modes. The Omaha District provided drill rigs and operators for rock core drilling.



USACE DAM SAFETY PROGRAM ENGINEERS PROVIDE A BRIEFING TO CA DWR ON THE RESULTS OF THE SEMI-QUANTITATIVE RISK ASSESSMENT ON THE OROVILLE FACILITY. (SOURCE: USACE)

Key players that made this project a success include: Ms. Jessica McCaffrey, Senior Dam Safety Planner during PL 84-99 event and on FPMS project; Ms. Kim Carsell, Sacramento District's Chief of Flood Risk Reduction Section and Flood Risk Management Program; Mr. Derek Morley, South Pacific Division (SPD) Dam Safety Production Center's Chief of Geosciences Branch; Ms. Cindy Tejada, SPD Watershed and Floodplain Program Manager; Ms. Alarice Hansberry, SPD Counsel; and Ms. Beverly

Hayes, HQUSACE FPMS Program Manager. This project allows USACE to assist with short- and mid-term recovery planning of the Oroville Dam facility as well as the downstream Feather River floodplain. Over the next several years, the Sacramento District will bring in resources from the District itself, the SPD Dam Safety Production Center, the USACE Risk Management Center (RMC), and others regionally and nationally, as needed, to support this project.



**SILVER JACKETS** teams are collaborative state-led interagency teams, continuously working together to reduce state identified flood risk priorities. The teams provide a forum where partners come together with the state

to collaboratively plan and implement interagency solutions. Through partnerships, teams optimize the multi-agency utilization of federal resources by leveraging state, local, and tribal resources - including information, talent, and funding - while preventing duplication of effort.

Although each state Silver Jackets team is unique, common agency participants include state agencies with mission areas of hazard mitigation, emergency management, floodplain management, or natural resources conservation. In addition to USACE, federal participation typically includes the Federal Emergency Management Agency, National Weather Service, U.S. Geological Survey, as well as the Natural Resource Conservation Service, Department of Housing and Urban Development, and Environmental Protection Agency, among others. Some teams include membership from tribes and academic, local government, and non-government organizations.

## Feature News Items

# PCoP NEWS FLASHES

## PLANNING COMMUNITY NEWS

### Meanwhile, at HQ...

Mr. Tab Brown has taken his position as the Regional Business Director for the South Atlantic Division. Thank you, Tab, for all you have done as the HQ Chief of Planning and Policy for the last nine years. Ms. Noel Clay, currently the Chief of Planning and Policy Division in the Great Lakes and Ohio River Division, has been selected by the Director of Civil Works, Mr. James Dalton, to serve as Acting Chief, Planning and Policy Division at HQUSACE for the next four months. She has also served in the same position in Southwestern Division, as well as Chief of Planning in Seattle District. Mr. Joe Redican has been named as the new HQUSACE Deputy Chief of Planning and Policy. Joe is coming to this position from being the Deputy Chief of the Mississippi Valley Division Regional Integration Team. Prior to being in DC, Joe worked in Jacksonville District and New York District for 12 years, mostly as a planner. Mr. Wilbert Paynes rejoined the ranks of the retired. Thank you, Wilbert, for all you have done for Planning!

### 2018 Class of Planning Associates Underway

The 2018 Planning Associates (PA) class will be visiting a District near you in upcoming months. The PAs will take in-depth courses in each of the business lines during the course of the one-year program: deep draft navigation and small boat harbors; flood risk management; coastal storm risk management; the Endangered Species Act; hydropower, recreation and water supply; inland navigation; ecosystem restoration; and watershed planning. Please welcome the 2018 class members when you see them: Anastasiya Hernandez (Baltimore District); Gwyn Jarrett (Omaha District); Gregory Kryz (Sacramento District); Ramune Matuliauskaite-Morales (Nashville District); Jesse Ray (Los Angeles District); Mike Riccio (New England District); and Dan Vogler (Jacksonville District).

### Consolidation of Studies Annual Report

The Office of the Assistant Secretary of the Army (Civil Works) has provided the FY17 Report to Congress on

feasibility study schedules and milestones, as required by Section 1002 of the Water Resources Reform and Development Act of 2014. Under Section 1002, all Districts are required to maintain a current schedule and notify the study sponsor of that schedule, as well as any schedule changes greater than thirty days. Note: Districts are not required to notify their sponsors about the discontinuation of the Civil Works Review Board (CWRB) nor update their schedules to remove the CWRB under Section 1002. Nevertheless, Districts are encouraged to communicate this change during regular sponsor coordination.

### PCoP Hot Topics

Can't wait for the next edition of Planning Ahead? Get the scoop on People, Process, Projects, and Program key initiatives and information from Headquarters in the monthly Hot Topics. Find the latest in your email inbox or on the Planning and Policy SharePoint. To be added to the newsletter email distribution list, email us at [hqplanning@usace.army.mil](mailto:hqplanning@usace.army.mil).

Planning Ahead is a quarterly publication of the Army Corps of Engineers Planning Community of Practice. Views and opinions expressed herein are not necessarily those of the Army Corps of Engineers or the Department of Defense.

Previous issues of Planning Ahead can be found on the Planning Community Toolbox: [www.corpsplanning.us](http://www.corpsplanning.us).



## Planning Community Webinars

The Planning Community of Practice (PCoP) webinar series offers planners and their colleagues an opportunity to share information and learn more about trending topics in Civil Works Planning and water resources development policy, guidance, processes, and tools.

Recent webinar topics include: incorporating natural and nature-based features in plan formulation, operationalizing

risk in planning, integrating dam safety into planning studies, an update on the Institute for Water Resources (IWR)-Assistance to Planning Teams suite of tools, incorporating climate change impacts into inland hydrologic analyses - and more.

Webinars are held the first and third Thursday of each month from 2-3 pm Eastern. Presentations and the

Question and Answer sessions from each webinar are archived on the Planning Community Toolbox, and recent webinars are always on the front page of the Toolbox: [www.corpsplanning.us](http://www.corpsplanning.us).

If there is a webinar topic you believe the PCoP would benefit from, please email your ideas to [hqplanning@usace.army.mil](mailto:hqplanning@usace.army.mil).

### FIND MORE WEBINARS AT:

<http://planning.usace.army.mil/toolbox/resources.cfm?ld=0&Option=Planning%20Webinars>



# KEYS TO SUCCESS FOR THE SHERIDAN ECOSYSTEM RESTORATION STUDY: ENGAGING EARLY & COLLABORATING OFTEN

Jennifer Salak, Outreach Specialist, and Eric Laux, Environmental Resources Chief, share best practices used by Omaha District to effectively engage with the sponsor and key stakeholders of a Wyoming ecosystem restoration study.



UNDER THE TENTATIVE PLAN, THE FOUR CURRENT DROP STRUCTURES ON BIG GOOSE CREEK, WHICH ARE CURRENTLY FISH PASSAGE BARRIERS, WILL BE REPLACED WITH A SERIES OF APPROXIMATELY 25 STRUCTURES SPREAD OUT FURTHER ALONG THE RIVER WITH A SMALLER VERTICAL DROP TO FACILITATE INCREASED PASSAGE FOR NATIVE COLD WATER FISH SPECIES SUCH AS THE CUTTHROAT TROUT. (SOURCE: USACE)

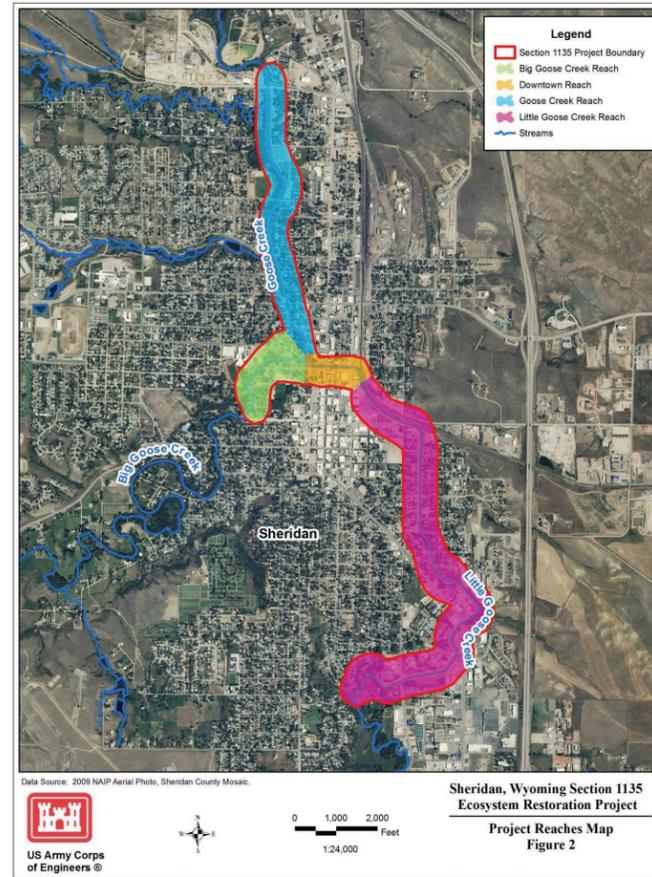
In 1963, USACE constructed a flood risk management (FRM) project consisting of creek channelization, levees, a concrete drop structure, and a concrete chute to reduce flooding along four miles of creeks in and around downtown Sheridan,

Wyoming. While the project has met established FRM objectives for more than 50 years, it has led to degraded and fragmented wetland and riparian habitat, and is a fish passage barrier for native cold water fish species such as trout.

In September 2014, the City of Sheridan partnered with the USACE Omaha District to evaluate project modifications for improvement of the environment under Section 1135 of the 1986 Water Resources Development Act (Public Law 99-662,

as amended).

Collaboration with the sponsor and local resource agencies throughout the entire study was critical to formulating and evaluating effective ecosystem restoration alternatives.



SHERIDAN PROJECT MAP (SOURCE: USACE)

With help from the local sponsor early on, the project delivery team (PDT) identified appropriate stakeholders to involve in the study process including resource agencies, environmental consultants, academic professionals, and members of local environmental and recreation organizations.

Multiple engagement techniques were used by Jeff Greenwald, Lead Planner, and John Shelman, Lead Biologist, throughout the study. A charette was held at the project site early in the study to allow stakeholders the opportunity to assist the

PDT in identifying degraded environmental resources and discuss site-specific restoration opportunities. Stakeholders were also given a questionnaire to provide input on potential restoration measures along with associated benefits. Teleconference and face-to-face meetings were included in the process to refine various ecosystem restoration measures and conceptual designs. Collaboration efforts between the USACE Omaha team and the local resource experts in Sheridan were critical to developing a plan that was effective in addressing ecosystem

restoration objectives that were consistent with protecting the Nation's environment and acceptable to the sponsor and public.

Local Wyoming natural resource experts provided valuable input into planning and engineering decisions related to local fisheries, floodplain management, and recreation. Local biologists' knowledge of the aquatic ecosystem, and particularly the limiting environmental factors affecting native trout populations, was critical to the success of the PDT's development of restoration measures. State and local natural resource managers also helped to develop a comprehensive summary of the water resource issues in the basin, which contributed to clear delineation of environmental problems that were appropriate to consider under the Section 1135 authority, and those that could be addressed by other means at the state and local level.

The ongoing study identifies a tentative plan for various riparian and in-stream habitat restoration measures, modification of a drop structure to allow for fish passage, and construction of ancillary recreation features, such as trails and educational signage, that complement the ecosystem restoration components of the project.

**John Shelman,** the project's lead Biologist, stated that the keys to success on this study included early engagement, collaborating often, and leveraging local expertise to help formulate better solutions. Early engagement with the Wyoming Game and Fish Department biologists resulted in them sharing stream data they normally collect as part of their job for use in the habitat modeling at no cost to the study, along with their added involvement in review and comment on interim results to assist in model refinements.

John also stressed the importance of picking up the phone and calling people. "At the end of the day, talking to people was much more effective than sending an email and allowed me to build a great rapport with the technical experts and other local stakeholders in Wyoming."

For more information on the project, visit [www.nwo.usace.army.mil/Missions/Civil-Works/Planning/Planning-Projects/Sheridan-WY/](http://www.nwo.usace.army.mil/Missions/Civil-Works/Planning/Planning-Projects/Sheridan-WY/).

# COASTAL TEXAS ECOSYSTEM PROTECTION AND RESTORATION FEASIBILITY STUDY: REVISITING PLANNING ASSUMPTIONS AFTER A MAJOR NATURAL DISASTER

*Travis Creel, Lead Planner, and Carrie McCabe from Galveston District discuss how the District is adapting an ongoing feasibility study to the impacts of record-setting rainfall during Hurricane Harvey*

8



MEMBER OF THE SOUTH CAROLINA ARMY NATIONAL GUARD CAPTURED POST-HARVEY FLOODING IN PORT ARTHUR, TEXAS, AUGUST 31, 2017. (SOURCE: SC NATIONAL GUARD)

Coastal Texas Ecosystem Protection and Restoration, Texas is a Galveston District feasibility study developing an array of alternatives to address both ecosystem restoration and coastal storm risk management (CSRM) opportunities along the Texas coast.

Storm surge was identified as the largest risk to the Galveston Bay and barrier

island system study area teeming with residents and tourists, which also hosts 40 percent of the nation's petrochemical industry, 25 percent of national petroleum-refining capacity, eight deep-draft ports, and 750 miles of shallow-draft channels (including 400 miles of the Gulf Intracoastal Waterway).

When Hurricane Harvey made landfall on the Texas

coast on August 25, 2017 and again on August 29, the Project Delivery Team (PDT) had already documented problems and opportunities, formulated an array of alternatives, and identified the criteria to evaluate and compare alternatives for a Tentatively Selected Plan milestone in May 2018.

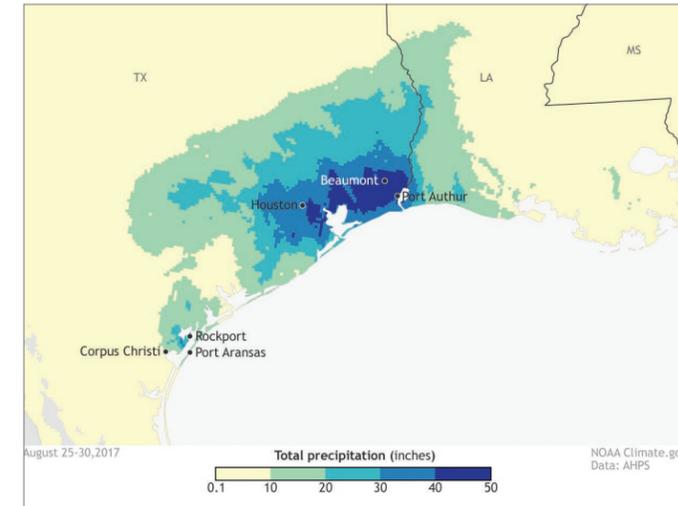
Hurricane Harvey was a destructive event for the region, but its impacts were

primarily a result of the long duration of rainfall over the Houston area. Coastal impacts from wind and surge which were felt in Rockport, Corpus Christi, and Galveston County were small in comparison to the inundation caused by 40 to 61 inches of rain over a period of four days.

As a result of the hurricane, the PDT revisited risk mechanisms and compared

the structure inventory to storm-impacted areas to identify areas of overlap, and considered how the CSRM measures and the proven rainfall impacts might overlap in the planning process. The team incorporated the scenario of an extreme rainfall event for two purposes:

**1** To ensure that CSRM measures formulated and modeled with a default rainfall amount do not exacerbate flooding in extreme events; and



RAINFALL TOTALS DURING HURRICANE HARVEY. (SOURCE: NOAA)

**2** To identify additional risk reduction components that could be added as part of the optimization process to buy down flood risk at small incremental costs, such as increased pumping capacity.

The PDT reacted effectively to the changed conditions, even as PDT members were deployed to hurricane response. Due to the Harvey impacts, some of the risk mechanisms had to be carefully reassessed and articulated in the study process. In coastal and inter-tidal zones such as Galveston Bay, high tides and extreme tidal surge events can occur simultaneously with extreme precipitation events and high river flows, leading to increased flood severity, duration, or frequency. These interactions are generally referred to as coincident or compound events. Various approaches are available for the assessment of coincident events, ranging

from simple desk study assessments to full joint probabilistic analytical solutions. To determine the coincident flooding risk in coastal and inter-tidal areas during the Harvey event, the PDT conducted simple desk study assessments using data from sources such as CorpsMap, the U.S. Geological Survey (USGS) Emergency Response portal, and the National Aeronautics and Space Administration's (NASA's) Dartmouth Flood Observatory. These data sources were key to quickly understanding and evaluating the interaction between the different physical factors in Galveston Bay, which included precipitation, river flow, storm surge, astronomical tides, wind, and wave setup. The desktop evaluation showed that some areas were more susceptible to combined surge and rainfall impacts than others.

The locations identified in the desktop evaluation are now key focus areas where the PDT is continuing to evaluate its initial assumptions. Understanding the risk and the impacts from significant events such as Harvey is key to successfully addressing changes to previously made existing condition assumptions in any feasibility study.

## DATA SOURCES

The study team used a variety of data sources to quickly understand and evaluate the interaction between the different physical factors in Galveston Bay, making use of data and analyses beyond the Corps: the U.S. Geological Survey (USGS) Emergency Response portal (<https://hdds.usgs.gov/>); the National Aeronautics and Space Administration's (NASA's) Dartmouth Flood Observatory (<http://floodobservatory.colorado.edu/index.html>); and CorpsMap (<http://geoplatform.usace.army.mil/home/>).

9



### Who “pulls the trigger” for releasing a Draft Integrated Feasibility Report (IFR) for concurrent review, and how does that person know when the report is ready?

Under SMART Planning, the IFR is circulated for concurrent public, technical, policy and legal review (and Independent External Peer Review, as applicable). Through scoping and plan formulation, USACE has defined the purpose and needs (why is this action/project being considered?), considered a reasonable range of alternatives that can accomplish the purpose and need, and identified a Tentatively Selected Plan (TSP).

After the TSP milestone meeting, the District Commander decides when to release the draft report for concurrent review. That decision should, of course, follow District Quality Control and Division Quality Assurance processes. In addition, the District Commander will rely on the District Counsel’s review and assessment that the Draft IFR – that includes draft National Environmental Policy Act (NEPA) documentation (environmental assessment or environmental impact statement) – is legally sufficient prior to release. A more thorough legal review of the Draft IFR occurs during concurrent review to assist the Project Delivery Team in considering decisions and

actions needed to address the future legal requirements of the Final IFR.

The draft report must be released within 60 days of the TSP milestone (or resolution of outstanding conditions from the milestone meeting). After 60 days, the District Deputy for Project Management and/or the District Commander, the District Chief of Planning, and the Division Chief of Planning and Policy must meet via phone with the HQUSACE Chief of Planning and Policy Division to revalidate the TSP, the schedule, and secure re-approval of the release of the draft report.

The TSP described in the Draft IFR is so named because it is “tentative.” The TSP may change if new information emerges during public, technical, and policy review. This will be a key discussion point at the Agency Decision Milestone meeting. If the TSP changes significantly, it may be necessary to re-circulate a revised IFR for public review.

## WE WANT TO HEAR FROM YOU

**QUESTIONS, COMMENTS, CONCERNS, ANXIETIES — IF YOUR QUESTION CAN HELP FELLOW PLANNERS, EMAIL US AT HQPLANNING@USACE.ARMY.MIL AND MAYBE YOU’LL SEE IT HERE.**

## > What’s New on the Planning Community Toolbox

The Planning Community Toolbox is the “go to” website for current Planning policy and guidance and links to the tools that can support planners and planning decision making.

Did you know the Toolbox contains resources useful for planners who are working with non-Federal sponsors, stakeholders, and other Corps colleagues that may not be familiar with planning? In the Planner’s Library, a collection

of Fact Sheets provides an introduction to many programs and authorities Corps planners use. The Project Delivery Tab has recently been completely revised to gather the key guidance – and other resources – useful for understanding how and why the Corps is the leader in planning, designing, and constructing water resources infrastructure needed by the Nation.

Planners work in transdisciplinary teams – the

Toolbox also includes links to other communities’ webinar series on the Training page, and newsletters on the People page.

New policies and guidance applicable to planning are available on the front page under Policy and Guidance Updates. Recent additions to the Toolbox include newly signed implementation guidance for provisions of WRRDA 2014 and WRDA 2016, a memo delegating one-time approval of planning

models to the PCXes, and an Engineering and Construction Bulletin on standardization of navigation structures and components.

Looking to spread your wings? Job openings across Planning are frequently posted on the Toolbox’s home page under Notices.

Visit the Toolbox online at [www.corpsplanning.us](http://www.corpsplanning.us).