

**Federal Flood Assessment Conference  
Recommendations and Proceedings  
September 6, 2006**

**Convened by Congressman Silvestre Reyes  
16<sup>th</sup> Congressional District of Texas**

**Organized by Peter Brock, Community Liaison,  
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**Participating Agencies and Organizations:**

**NOAA, National Weather Service**

**U.S. Geological Survey**

**U.S. International Boundary and River Commission**

**U.S. Army Corps of Engineers**

**U.S. Bureau of Reclamation**

**El Paso County Water Improvement District No. 1**

**Elephant Butte Irrigation District**

**Department of Homeland Security**

**Federal Emergency Management Agency**

**Texas Department of Transportation**

**U.S. Environmental Protection Agency**



**Texas Agricultural Experiment Station**  
THE TEXAS A&M UNIVERSITY SYSTEM

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 EPCWID#1, J. Reyes, anonymous internet photo, and TAES, Z.Sheng.



# Federal Flood Assessment Conference Recommendations and Proceedings

## Background and Purpose

Beginning in late July and continuing through mid September 2006 the Paso del Norte region, consisting of El Paso City and County, Texas, southern New Mexico and Ciudad Juarez, Mexico, experienced a number of record high precipitation events and severe localized and widespread flooding. According to the National Weather service, the July 31 to August 4 rains alone were more like a 100-150 year recurring event over the areas hardest hit. These floods that continued over a period of more than a month caused extensive and costly damage to infrastructure, homes, businesses and other property to the extent the region was declared a Federal Disaster Area. In this bi-national, three state region many different Federal agencies and other organizations have jurisdiction or roles in forecasting climate and river flows, monitoring hydrology, water management operations, flood control design and construction, security, infrastructure, communication and disaster assistance.

Congressman Silvestre Reyes convened this Federal Flood Assessment Conference to tap into the recent experiences regarding levels of coordination between federal agencies during this month's flood control operations in the Hatch/Las Cruces area of southern New Mexico and the El Paso/Juarez area of West Texas. This meeting between the federal water management agencies was foreseen as timely and important for reviewing the effects of the storm and to offer recommendations for needed changes and improvements. Valuable information was shared at the conference that will greatly assist in assessing the flood events, improving management and coordination among federal agencies and mitigating future impacts. Insight gained from the conference and the follow up summary reports contained in the proceedings will also help lay the groundwork for future planning and coordination with state and local agencies, irrigation districts and other organizations.

One of Congressman Reyes' desired outcomes from the conference is a proceedings report containing summaries of each organization's observations, responses and recommendations regarding the area's flood events. This conference proceedings and recommendation report contains a summary of priority agency and organization recommendations, conference agenda, list of participants, individual agency follow up reports identifying the agency responsibilities, flood event impacts from the agency perspective, agency actions, lessons learned, communication successes, full list of agency priority recommendations, identification of planned incident reports and agency contact information.

***Infrastructure funding, improved communication, river and levee maintenance, and the need for additional weather and gauging stations, telemetry and coordinated or centralized access to real-time monitoring data are among the highest priority recommendations.*** A summary of common priority recommendations follows this section. A more complete list of agency and organization priority recommendations is provided following the individual agency reports. The report also includes agency conference Power Point presentations and as additional background, maps showing gauging station locations and monitoring organizations.

## Recommendations and Common Priorities

Several common priority recommendations emerged from the conference discussions and individual agency reports. Complete conference report recommendations are provided with the individual agency reports. Summary highlights of common priority recommendations include:

- A comprehensive post-flood assessment is needed with inundation maps, identification of high water marks, storm discharge and hydrologic analysis, evaluation of individual and cumulative precipitation events, and economic impact assessment.
- Very little data were gathered because of the lack of recording rain gages, stage recorders, and stream gages in the watershed. This is a short- and long-term problem. Almost every agency and organization ranked the need to have additional real-time gauges, reporting and recording devices along with centralized web access to monitoring data as one of their highest priority recommendations.
- Because of the large size of the region and localized, intense nature of storms, more weather stations are needed placed in strategic places to provide timely and accurate measurements and appropriate warning of climate and precipitation events
- Better, updated knowledge of storm event severity and probable recurrence frequency is needed for planning, management, insurance and engineering applications. This will require funding support for updated calculation and analysis of precipitation events and associated hydrologic discharge and infrastructure capacity.
- Although communication was good in a number of areas, the need to improve agency coordination and communication was frequently recommended along with establishing a communications and flood warning network for response and operations agencies.
- Establish real-time flow and stage remote monitoring systems on large/wild arroyos.
- Funding is needed to rehabilitate aged and inadequate flood control (SCS) dams.
- The existing storm drain system within the city of El Paso is complicated and poorly documented, particularly in the central area of the city. A survey of the drainage facilities, and a GIS-based catalog of the facilities, would prove very useful in the preparation of flood damage reduction studies.
- IBWC alone estimated more than \$286 million is needed to repair or replace flood control gates at 12 structures, clean sediment and debris from the flood plain/channel and restore Rio Grande flood capacity to original design for water management and to reduce future damages.

## **Federal Flood Assessment Conference Agenda**

**September 6, 2006**

El Paso Agricultural Research Center  
Texas Agricultural Experiment Station  
Texas A&M University  
1380 A&M Circle, El Paso, Texas  
(915) 859-9111

Peter Brock, Community Liaison, Congressman Silvestre Reyes  
El Paso Office of the 16<sup>th</sup> Congressional District of Texas

Moderator: Dr. Ari Michelsen, director, Texas A&M University Research Center

Morning Session 8:30 a.m. to 11:45 a.m.

Proposed Focus: "Lessons Learned – August 1-4 Storm Event:  
How did the federal infrastructure fare?"

Congressman Silvestre Reyes  
Introductory remarks

National Weather Service  
Meteorology of event and observations of short term weather systems  
Review of Precipitation/Storm data (Did this exceed the 100 year event?)

US Geological Survey  
Presentation of data  
Report on Findings/Observations

IBWC  
River and Levee Observations  
Status of American & International Diversion dams  
Status of Juarez storm retention basins

Corps of Engineers  
Status of Flood Retention basins/dams  
Geotechnical observations

Environmental Protection Agency  
Contaminant issues  
Mechanisms for Emergency Response

Bureau of Reclamation  
Water Operations  
Coordination of River/Storage Releases  
American Canal diversion

Upstream diversion operation  
Continuity of Operations - COO Plan

El Paso County Water Improvement District No. 1  
24x7 Operation of American Canal System  
Real time flood monitoring  
Levee breach repair and control  
Storm water impact on agricultural drainage system

Elephant Butte Irrigation District  
Issues associated with storm event

Department of Homeland Security  
Storm-associated issues at Ports of Entry  
Security assessment  
Affects on movement of cargo

Tex DOT  
Assessment of storm effects on transportation infrastructure

FEMA  
Overview of agency coordination and response

Lunch: Noon - 1 p.m. Hosted by the Texas A&M Research Center

Afternoon Session 1:15 to adjournment  
Proposed Focus: “Lessons learned and recommendations.”  
(if necessary, continuation of Agency Reports from Morning Session)

General discussion (potential topics):  
Need for post-flood delineation/mapping  
Defining storm severity and probability (how likely is this to happen?)  
Is the Federal Infrastructure up to the Challenge of a 100-Year Event?  
Redefining flood hazards in the region?  
Infrastructure adequacy, needed improvements?  
Communication and coordination across agencies  
Planning for emergencies  
Monitoring hydrology and local weather events – adequacy and real time reporting  
Communication with media and the public (right message and timely?)  
Recommendations for Funding and Planning

## Agency and Organization Conference Reports

One of Congressman Reye's desired outcomes from this conference is a proceedings report containing brief summaries of each organization's observations, responses and recommendations regarding the flood events in our area. As agreed upon by the conference participants, proceeding reports, one-three pages maximum, were to be prepared summarizing each organization's observations, responses and recommendations regarding the flood events in our area. Agencies were requested to use the following headings and report outline guidelines for consistency.

### Individual Agency Summary Report Sections

1. Agency/organization primary role or responsibilities (one-few sentences)
2. Brief overview of flood events/impacts from agency perspective (over the month-plus of flood events)
3. Agency/organization actions/response(s)
4. Lessons learned
5. Communication successes and recommendations
6. Agency/organization priority recommendations (short- or long-term)
  - a.) Identify up to 5 priority recommendations and estimated costs.  
For example, recommendations, among many others, included: review of the Annual Recurrence Level; need for post flood assessment; installation of a crest stage network; inventory/survey of storm drain system; coordination of federal/emergency/bi-national responses; need for additional weather/arroyo/river monitoring and telemetry; dam safety analyses; improved agency, organization and bi-national communication; river channel maintenance; monitoring/retention basins on wild arroyos; greater telemetry sharing; regulation of arroyo/urban development; increase federal share of dam rehabilitation; establish central point of communication for media; and integrated, interagency assessment and management).
  - b.) Recommendations for interagency actions and/or coordination
7. List on-going or anticipated assessment or incident reports and indicate completion time-line
8. Identify agency contact information and web site addresses that may be of interest

### Conference Agencies/Organizations and Report Point Person (agenda order)

National Weather Service – Tim Brice [tim.brice@noaa.gov](mailto:tim.brice@noaa.gov)

US Geological Survey – Jim Stefanov [jestefan@usgs.gov](mailto:jestefan@usgs.gov)

International Boundary and Water Commission – Ken Rakestraw [kenrakestraw@ibwc.state.gov](mailto:kenrakestraw@ibwc.state.gov)

US Army Corps of Engineers, Albuquerque – Susan Bittick [susan.m.bittick@usace.army.mil](mailto:susan.m.bittick@usace.army.mil)

US Environmental Protection Agency, Region VI – Maria Sisneros [sisneros.maria@epa.gov](mailto:sisneros.maria@epa.gov)

US Bureau of Reclamation, El Paso Field Office – Bert Cortez [fcortez@uc.usbr.gov](mailto:fcortez@uc.usbr.gov)

El Paso County Water Improvement District No. 1 – Jesus Reyes [jreyes@epcwidl.org](mailto:jreyes@epcwidl.org)

Elephant Butte Irrigation District – Gary Esslinger [gesslinger@ebid-nm.org](mailto:gesslinger@ebid-nm.org)

Department of Homeland Security – Luis Garcia (fax 915-633-7249)

TX Department of Transportation – Chuck Berry [cberry@dot.state.tx.us](mailto:cberry@dot.state.tx.us)

FEMA – James Orwat [james.orwat@dhs.gov](mailto:james.orwat@dhs.gov)



**U.S. DEPARTMENT OF COMMERCE**  
**National Oceanic and Atmospheric Administration**  
NATIONAL WEATHER SERVICE OFFICE  
7950 Airport Road  
Santa Teresa, NM 88008

## **Summary and Recommendations from the National Weather Service Concerning the Record Flooding in the El Paso Area from July 27 – August 4 2006 as Presented to the Federal Assessment Conference on September 6, 2006 at the Texas A&M Research Center in El Paso Texas.**

### Summary:

A synoptic and climatological overview was presented showing this unusual and historic flooding event.

Synoptically, an upper level low pressure system formed and remained over southern New Mexico and Far West Texas from July 27 through Aug 4 causing an inflow and convergence of very moist saturated air from Mexico into the region over a prolonged period of time. Minor disturbances from the Low enhanced convection from an already moist and unstable air mass.

It is a very rare event to have low pressure aloft over this area during July and August during the monsoon season. Furthermore, thunderstorms that developed were slow moving and training (one after another following the same path) which dumped excessive precipitation often over the same saturated ground areas. Considerable thunderstorm activity was enhanced as it moved near and over the Franklin Mountains producing not only extremely heavy rainfall but torrential runoff from the mountains.

This was a prolonged event persisting over several days with some areas being hit more than once adding to the flooding problems. A majority of the flooding was “flash” flooding which is the most dangerous type.

Is not unusual for flash floods to occur in El Paso in August but what was unusual was the magnitude of the event. The last time something like this happened in El Paso was July 9, 1881 when 6.5 inches of rain fell at the official measuring site downtown.

Additional flooding occurred from the Rio Grande itself (9.3 feet on August 1-2) Which last exceeded its banks in September of 1958. There were 5 fairly large peaks in the Rio Grande from August 1 to September 3.

Officially at KELP (El Paso International Airport) received 6.84 inches of rain fell in the 9 day period which is 73% of the annual average (9.43 inches). Unofficially some 7 to 10 inches of rain from more than one location on both sides of the Franklin Mountains was reported. This amounted to about **a years worth of rain in 2 days** in some areas.

Below is a summary (using the best available NOAA Atlas 14 rainfall data) of the average return interval (ARI) of this precipitation to obtain return intervals.

#### ARI

48 HOUR KELP 3.52 IN - 25 YRS

9 DAYS kelp 6.84 IN ~ 100 YRS

Averaging the precipitation amounts over the city from the 48 hour period of July 31-August 1 comes out in the 4.76-5.12 inch range

Giving ~ 108-158 yrs average return interval/

Eastwood trained weather spotter 2in/30 min = 100 yrs

WSR88D reports 2.5/60min ~ 100 yrs

There were at least 5 7+ inch reports/ 48 hrs = ~200 yrs

The airport (KELP) (single point measurement which missed the brunt of the event) was basically only a 25 – 44 year event for 48 hours (July 31-Aug 1 and Aug 3-Aug 4); however, doing an average of the values obtained (using the best filtered unofficial data possible along with comparison to the Doppler Weather Radar estimates), **the event was more like a 100-150 year recurring event over the areas hardest hit.**

#### Recommendations:

NOAA Precipitation ATLAS 14 needs updating so that more recent and relevant rain return intervals can be calculated for insurance and engineering applications. The Precipitation Branch told us this cannot happen without funding from outside agencies such as the Corps of Engineers. Updated tables will lead to better flood prevention designs in the future.

Due to the spotty and intense nature of convective storms in this area, more weather stations are needed to be placed in strategic places to better obtain over the entire metropolis and surrounding areas the “true” distribution of wind and rainfall. This mesonet of stations is **BADLY NEEDED AND WE BELIEVE SHOULD BE PRIORITY ONE.**

This network of stations would not only provide a real time output of data to monitor high winds and heavy rain etc. but would at the SAME TIME provide a plethora of data for modeling the weather in the complex environment in the El Paso area divided by the Franklin Mountains.

This mesonet of weather stations would provide the exact data needed to characterize the localized storms to best fit the hourly intensity data which is critical for culvert and drainage design as well as 48 hours data which is needed to assess river stage levels as well as provide the public more meaningful real time weather they can relate to near their homes as opposed to a point measurement only at the airport.

This mesonet would be a win-win situation for the National Weather Service and the research community. While providing real time data for observations that would aid in forecasts and add to PUBLIC SAFETY, it would also be archived for future research activities and modeling to improve the forecast of local events which in turn would benefit the public safety in characterizing those local areas prone to specific hazards.

9/15/06

David J. Novlan  
Meteorologist  
Climate Focal Point  
NOAA National Weather Service  
El Paso, Texas.

**Federal Flood Assessment Conference  
USGS Summary Report**

1. The U.S. Geological Survey (USGS) is a Bureau within the Department of the Interior that serves the Nation by providing reliable scientific information to describe and understand the Earth; minimize loss of life and property from natural disasters; manage water, biological, energy, and mineral resources; and enhance and protect our quality of life.
2. No USGS facilities or equipment were impacted by this flood event.
3. Because the USGS recognized this as a significant hydrologic event, assistance was offered via telephone and/or e-mail to the City of El Paso, TXDOT, USIBWC, Fort Bliss, and the Army Corps of Engineers. The Army Corps of Engineer and Fort Bliss accepted the assistance offer and three technical staff were mobilized from the Austin and San Angelo USGS offices to assist the one USGS staff member assigned to El Paso. Two USGS teams worked August 4 through August 6 at the Sparks Arroyo and Fort Bliss. Work at Sparks Arroyo included documenting high-water marks, documenting scour, surveying cross-sections, and indirectly calculating peak discharge. At Fort Bliss, high-water marks were marked and surveyed at 8 storm-water retention ponds.
4. Lessons learned include the need for the USGS to better educate other organizations as to USGS assets and capabilities related to the measurement and documentation of flood events. Ideally, if the USGS had more staff assigned to the El Paso area, direct measurements of flooding could have been made at many locations during flooding.
5. Although communications were eventually established thru telephone calls and e-mail, pre-existing technical assistance agreements would likely have improved communications and the speed of response.
6. Top five USGS recommendations: (1) Determine if any more high-water marks can be found in multiple areas of El Paso, (2) Conduct surveys of areas with reliable high-water marks and stable channel geometries to determine peak discharge values (3) Establish a crest-stage gage network (4) Establish flood warning networks on tributaries of the Rio Grande (this would involve rain-gage networks in the upper portions of watersheds), and (5) Establish a geomorphic assessment network
7. The USGS has no requirement to prepare an assessment or incident report. The USGS is willing to provide any data it has free-of-charge to agencies requesting data. The USGS can assist on a reimbursable basis any agency requesting technical assistance to develop their reports.
8. POC: Jim Stefanov, Deputy Director, USGS Texas Water Science Center, 8027 Exchange Drive, Austin, TX 78754-4733, [jestefan@usgs.gov](mailto:jestefan@usgs.gov), 512-927-3543, <http://tx.usgs.gov>

**Federal Flood Assessment Conference  
Sept 6, 2006**

**U.S. Section, International Boundary and Water Commission  
Summary Report**

The International Boundary and Water Commission consists of a U.S. Section and a Mexican Section, with Headquarters in El Paso, Texas and Cd. Juarez, Chihuahua. The U.S. Section is charged with operation and maintenance of the Rio Grande Canalization Project (from near Percha Dam to American Diversion Dam), American Diversion Dam, International Diversion Dam, and the upper portion of the American Canal. Key functions include flood control and water deliveries and diversions to the U.S. and Mexico. The two Sections of the Commission share responsibilities for operation and maintenance of the concrete-lined portion of the Chamizal Reach and for the Rectification Reach which extends downstream to Little Box Canyon near Ft. Quitman, Texas.

Facilities operated by the U.S. Section were impacted significantly due to the high runoff volumes which occurred in the El Paso area beginning on August 1 and continuing intermittently through early September. Runoff from the August 1 storm resulted in flows that nearly reached the maximum capacity of the U.S. levee in the reach from American Dam through the upper portions of the Chamizal. Freeboard in this reach was inadequate. Flood waves from the August 1 and subsequent storms were controlled with no breaches nor overtopping of the U.S. levees. Levee and floodplain erosion was noted in some areas. Significant sediment deposition and debris accumulated on the diversion dams and in the Rio Grande floodplain, most notably in the American Dam to Chamizal reach.

Beginning on the morning of August 1, the U.S. Section began closely monitoring flow conditions along the Rio Grande and along the U.S. levees. This continued on a 24-hour basis until August 2 and on an as-needed basis during the next several days in the Rectification reach as the major flood wave proceeded downstream. Intermittent 24-hour surveillance/monitoring during the month of August was required for additional peak flow periods due to heavy rainfall runoff in southern New Mexico. The accumulation of debris and the deposition of sediment at the Diversion Dams required significant clearing operations to ensure the operability of those structures.

The U.S. Section benefited from the rainfall/runoff event in that additional data was obtained regarding flooding characteristics, levee conditions, flow peak travel times, etc. U.S. Section personnel were able to make several high flow stream flow measurements at key gaging stations to improve the accuracy of stage-discharge rating curves at those stations. The flood experience also pointed out a weak link in USIBWC's telemetry system in that the wireless leg of USIBWC's internet access proved to be vulnerable to outages during periods of rainfall and during lightning storms. This resulted in a blockage of USIBWC external email services, general internet access, and the ability to post telemetry data to the USIBWC web site.

During these events the U.S. Section was in close contact with the Mexican Section regarding the flooding situation. The U.S. Section also coordinated closely with the National Weather Service and the U.S. Bureau of Reclamation. During the flood event of August 1, the U.S. Section was unable to post its near real-time river gage data to the USIBWC website for access by other agencies and the public due to the problem with a wireless communication leg. The U.S. Section also was in close communication with the City of El Paso, the U.S. Corps of Engineers and the Mexican Section regarding the potential failure of La Montada Dike ( a detention structure on the the Arroyo Las Viboras ) in Cd. Juarez on August 4 and 5. Contacts with the local and national media were numerous during the various high water events during the month of August.

Following is a list of priority recommendations following the August flooding from the U.S. Section perspective:

- 1) Clean trash, debris and vegetation and remove sediment from Rio Grande floodplain/channel, estimated cost \$57.5 million.
- 2) Repair/replace flood control gates at 12 structures, El Paso to Fort Quitman, estimated cost \$7.3 million.
- 3) Restore Rio Grande flood capacity to original design, Riverside Dam to Little Box Canyon, estimated cost \$135 million.
- 4) Restore Rio Grande flood capacity to original design, Canutillo to American Dam, estimated cost \$13.5 million.
- 5) Canutillo Flood Wall, estimated cost \$8.4 million.
- 6) American Diversion Dam, gate replacement and new sheet piling, estimated cost \$4.9 million.
- 7) Modification of American Canal to match flood capacity of American Canal Extension, lining and mitigation, estimated cost \$60 million.
- 8) Install 2 new stream gauging stations with telemetry on the Rio Grande, estimated cost \$0.11 million.

The U.S. Section is surveying high water marks from the August 1 flooding in the river reach from Canutillo to Zaragoza Bridge. Final review is anticipated by October 31, 2006. The U.S. Section is also computing the final flow records for the river gaging stations, and will include the data in a Flood Report; a draft should be completed by October 15, 2006.

The U.S. Section web page at <http://www.ibwc.state.gov> can be accessed to learn more about the activities of the U.S. Section, as well as to access near real-time and historical flow data for gaging stations on and near the Rio Grande. Additional information can be obtained by

contacting Ms. Sally Spener (915)832-4175, Acting Secretary and Public Affairs Officer, Mr. Kenneth Rakestraw (915)832-4160, Acting Principal Engineer, Operations, and Carlos Marin(915)832-4157, Acting Commissioner.

**FEDERAL FLOOD ASSESSMENT CONFERENCE**  
**Corps of Engineers, Albuquerque District**  
**Status of Flood Retention Basins/Dams**  
**& Related Observations**

**AGENCY / ORGANIZATION ROLE AND RESPONSIBILITY**

At the request of the city of El Paso, TX, the U.S. Army Corps of Engineers, Albuquerque District (Corps), constructed the El Paso Local Protection Project, a system of detention reservoirs and diversion channels to collect, regulate, and discharge arroyo runoff into the Rio Grande to reduce flood damages within the City. Congressional authority for the project is contained in Section 204 of the Flood Control Act of 1965, PL 89-298. The city of El Paso sponsored and cost shared the project. The El Paso Local Protection Project includes three independent sub-systems which protect the Northwest Area, the Central Area, and the Southeast Area of the City. The Corps completed the project features of the Northwest Area in 1986, the Central Area in 1987, and the Southeast Area in 2002. In accordance with applicable guidance, all structures were designed to maximize net economic flood damage reduction benefits, resulting in projects of varying levels of protection.

**OVERVIEW OF FLOOD EVENT / IMPACT FROM AGENCY PERSPECTIVE**

The Northwest Project Area includes Mulberry Dam, Thorn Drive Dam, Mesa Dam, and Highway Diversion, which contribute flow to the Borderland Diversion. Borderland Diversion carries floodwater to Keystone Dam, which provides retention and an outlet to Rio Grande. Buena Vista Division collects and transports flow to Oxidation Pond Dam, and Oxidation Pond Dam releases flow to the Rio Grande. During the flood events of August 2006, the Northwest Area system operated as designed with no signs of distress. It was reported that two pressure manhole covers in the Oxidation Pond system and two pressure manhole covers in the Keystone Dam system were displaced under the heavy flows. Corps personnel will investigate the cause.

The Central Project Area consists of Range Dam, Northgate Dam, Sunrise Dam, and Mountain Park Dam. Regulated outflow from these structures travel along the Fort Bliss Diversion Channel to the Fort Bliss Sump. Controlled outflow from the Fort Bliss Sump travels through the Fort Bliss Outlet Conduit to Pershing Dam. McKelligon Dam and Van Buren Dam regulate flow into Mountain Avenue Outlet Conduit, which diverts flow to Pershing Dam. Controlled flow from Pershing Dam travels along Government Hill Ditch, a TXDOT structure, to the Rio Grande. In addition, Durazno Basin, a city of El Paso facility, contributes flow to the Rio Grande. During the flood event of August 2006, the Central Area projects performed as designed with no signs of distress. On 4 August 2006, Pershing Dam experienced an uncontrolled spillway flow. Downstream of, but unconnected to Pershing Dam, Durazno Basin also spilled. None of the dams upstream of Pershing Dam spilled. It should be noted that Pershing Dam, designed for the standard project flood (approximately a 200-year event) spilled, but none of the 100-year-design dams experienced a spill. This suggests a very localized, high intensity rainfall in the Pershing-Durazno area. Also, the storm was one in a series of storms, and some water from previous events may have remained in the facilities.

The Southeast Project Area consists of Phelps Dodge Basin and Phelps Dodge Diversion Channel, Lomaland Basin, Carolina Basin, and the Americas Basin and Bluff Channel system. Storm water is detained in the basins and released into Mesa Drain, which carries flow to Basin G for release to the Rio Grande. The existing capacity of Mesa Drain is an integral factor in the design of the Southeast Area flood control projects. All of the basins are designed with gated outlet structures that regulate discharges

up to the maximum capacity of Mesa Drain. The projects in the Southeast Area performed as designed with no evidence of distress during the flood event of August 2006.

### **AGENCY / ORGANIZATION ACTION / RESPONSE**

The Corps dispatched hydraulic engineers, geotechnical engineers, and design engineers to the city of El Paso during and after the flood event to monitor the Corps structures and to be available if emergency assistance was requested. Although the Corps inspected the structures during the event, some aspects of the facilities were not visible while water was impounded. Therefore, the Corps will conduct a comprehensive post-flood assessment of the projects during the first quarter of FY-2007. As part of this assessment, the Corps will conduct the first periodic inspections of the Lomaland and Carolina Basins in the Southeast Area. Because the structures were designed and constructed by the Corps, and are periodically inspected in accordance with Corps criteria, any damage sustained will be repaired under authority of the PL-99 program at 100% federal cost.

### **LESSONS LEARNED**

The Corps prepared operation and maintenance manuals in support of the individual flood reduction facilities and presented the manuals to the City upon project completion. However, the operation and maintenance manuals do not address a coordinated operation of the facilities. According to City officials, the gate at the Fort Bliss Sump was not closed until after Pershing Dam began to spill. Due to the intensity of storm, it may not have made a difference, but it is possible that closing the gate earlier in the event could have reduced the spill at Pershing Dam. It is anticipated that additional recommendations will be made upon completion of the comprehensive post flood assessment.

### **COMMUNICATION SUCCESSES AND RECOMMENDATIONS**

The USGS offered assistance to the Corps during the flood event

### **AGENCY / ORGANIZATION PRIORITY RECOMMENDATIONS**

1. The existing operation and maintenance manuals do not address a coordinated operation of the facilities, and the potential exists for the reduction of flood risk with the implementation of a coordinated operation. Therefore, the Corps recommends that a single operation manual be prepared that addresses systematic operation during flood events.
2. The existing storm drain system within the city of El Paso is complicated and poorly documented, particularly in the central area of the city. A survey of the drainage facilities, and a GIS-based catalog of the facilities, would prove very useful in the preparation of flood damage reduction studies.
3. During the August flood event, very little data were gathered because of the lack of recording rain gages, stage recorders, and stream gages in the watershed. The Corps recommends that additional gages and collection and recording devices be installed to gather future hydrologic data. At present, the hydrologic models developed by the Corps are uncalibrated due to the lack of coordinated rainfall-stream flow data, resulting in a high degree of uncertainty in flood prediction. Real-time data collection would benefit the city by providing information for real-time operation of the system, for allocation of emergency services during a flood, and for informed evaluation of project performance.
4. The city would benefit from the installation of a flood warning system to provide valuable advance warning time.

5. The city of El Paso reportedly obtained recent orthophotographic mapping of the area. The Corps recommends the production of quality digital topographic mapping, which, in conjunction with the orthophotographic mapping, would allow determination of drainage boundaries and the direction of contributing flow paths for hydraulic analysis.

6. Under authority of the Corps Civil Works Programs, the city of El Paso and El Paso County have requested the following studies to reduce flood damages within the city and county:

A. *Northwest El Paso Floodplain Management Plan and Feasibility Report for Arroyos 42-28.* The city of El Paso requested a Floodplain Management Plan for the northwest section of the city of El Paso. The study area is drained by a series of arroyos that convey storm runoff from the Franklin Mountains through the study area across the Rio Grande valley to the river. The feasibility study will include a floodplain management plan, and will examine structural and non-structural solutions to existing flooding problems in the study area, and determine the Federal interest for proceeding with implementation.

B. *El Paso, Texas, General Re-Evaluation Report.* The study will re-evaluate the feasibility of additional flood control features including detention dams, diversion dikes, conduits, and channels, that collect, regulate, and discharge runoff into the Rio Grande. This study will address the potential for flood damage reduction for 8,830 urban acres subject to damaging floods from arroyos on the slopes of the adjacent Franklin Mountains.

C. *Sparks Arroyo Feasibility Report.* The Sparks Colonia is adjacent to the rapidly growing east, northeast, and lower valley sections of El Paso. The Corps has evaluated a portion of the watershed, and has recommended expanding the scope of study to include a significant adjacent drainage basin. The El Paso County Commission is expected to approve expanding the existing scope of work after which the study will proceed.

D. *Northeast El Paso Feasibility Report.* On 10 August 2006, the Corps received a letter from the city of El Paso requesting that a Feasibility Study be initiated to investigate flood damage reduction measures for the northeastern area of El Paso (in the vicinity of Woodrow Bean-Trans Mountain Road and Martin Luther King Boulevard).

E. *Gage Analysis.* On 10 August 2006, the Corps received a request from the city of El Paso to analyze existing monitoring and measuring devices associated with the various flood control features in the City. The request includes examining the feasibility of automated, telemetered devices to transmit information such as water elevation, velocity, and flow rate for the central storm water system including Fort Bliss Sump, Pershing Dam, IH-10 interchange basins, Mountain Park Dam, Sunrise Dam, Northgate Dam, and the Range Dam, including the river outlet.

## **PROPOSED ASSESSMENT REPORT**

The Corps has proposed, and has received funding for, preparing a Post Flood Assessment Report to document the August 2006 flood events in the El Paso area. The report will serve as a record of the flooding as well as provide recommendations for future study and improved flood management systems. The report will include a description of the watershed and a review of past flood history and a description of the August 2006 events. An analysis of the hydrologic and hydraulic data collected and an estimate of rainfall frequency and areas of flood inundation will be included. The report will evaluate the flood damages sustained, as well as those prevented, and will describe the actions taken during the event and post-event by the City and by the various agencies involved. The document will describe the current floodplain management systems and the Corps flood control structures and provide an evaluation of their

performance, including successes and deficiencies. The report will also provide an evaluation of areas at risk and the potential for significant future damages.

#### **AGENCY CONTACT INFORMATION AND WEBSITE ADDRESS**

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**FLOOD EVENTS CONFERENCE FOLLOW-UP:  
U.S. Environmental Protection Agency**

**1. Agency/organization primary role or responsibilities:**

The U.S. Environmental Protection Agency's mission is to protect human health and the environment. In October of 1994, the U.S. Environmental Protection Agency established the "El Paso Border Liaison Office" to lead EPA's outreach efforts in border communities of the New Mexico – Texas and the four Mexican states across the border. The EPA Border office encourages border and / or tribal communities in the New Mexico and Texas region in conjunction with officials and leaders of the four Mexican border states and communities across the border to take an active role in improving their environment and their health; providing information and facilitating communities' efforts to address high - priority environmental and environmentally related health issues.

In addition, the Border Office works closely with regional programs including the Chemical Emergency Preparedness and Prevention Office under the Superfund Division in Dallas, Texas. This Office is responsible for emergency response to oil and chemical spills in the six U.S. states that EPA Region 6 is responsible for. Federal on-scene coordinators are the personnel in these emergencies that help coordinate the response, when activated or called upon.

**2. Brief overview of flood events/impacts from agency perspective (over month-plus events):**

None, other than having coordination with TCEQ, Bureau of Reclamation and IBWC with regards to exchanging communication on the Juarez Holding Dam event (see Item#3b).

**3. Agency/organization actions/response(s):**

*A) Chemical Emergency Preparedness and Prevention Office Actions/response(s):*

To date, EPA Chemical Emergency Preparedness and Prevention Office or any other Regional Program Office, has not officially been contacted or involved with the flood events with the exception a minor incident that took place on September 4, 2006, due to more rainstorms in the area, at Asarco's plant. This incident has been resolved with coordination between ASARCO, TCEQ and other agencies.

However in most incidences that involve an emergency chemical or oil spill due to an accident or natural event that is beyond the local abilities to respond to the incident, authorized personnel would notify the National Response Center (NRC). Once a report is made, the NRC immediately notifies a pre-designated EPA On-Scene Coordinator (OSC), based on the location of the spill. The OSC is the federal official responsible for monitoring or directing responses to all oil spills and hazardous substance releases reported to the federal government. In general, the OSC has the following key responsibilities during and after a response to a hazardous substance release or an oil spill: (1) assessment; (2) monitoring; (3) response assistance; and (4) evaluation. The procedure for determining the lead agency is clearly defined so there is no confusion about

who is in charge during a response. The OSC determines the status of the local response and monitors the situation to determine whether, or how much, federal involvement is necessary. It is the OSC's job to ensure that the cleanup, whether accomplished by industry, local, state, or federal officials, is appropriate, timely, and minimizes human and environmental damage.

The OSC may determine that the local action is sufficient and that no additional federal action is required. If the incident is large or complex, the federal OSC may remain on the scene to monitor the response and advise on the deployment of personnel and equipment. However, the federal OSC will take command of the response in the following situations:

- If the party responsible for the chemical release or oil spill is unknown or not cooperative;
- If the OSC determines that the spill or release is beyond the capacity of the company, local, or state responders to manage; or
- For oil spills, if the incident is determined to present a substantial threat to public health or welfare due to the size or character of the spill.

The OSC may request additional support to respond to a release or spill, such as additional contractors, technical support from [EPA's Environmental Response Team \(ERT\)](#), or Scientific Support Coordinators from EPA . The OSC also may seek support from the [Regional Response Team \(RRT\)](#) to access special expertise or to provide additional logistical support. In addition, the [National Response Team \(NRT\)](#) stands ready to provide backup policy and logistical support to the OSC and the RRT during an incident. The federal government will remain involved at the oil spill site following response actions to undertake a number of activities, including assessing damages, supporting restoration efforts, recovering response costs from the parties responsible for the spill, and, if necessary, enforcing the liability and penalty provisions of the Clean Water Act, as amended by the Oil Pollution Act of 1990.

**It is important for future incidences such as the flooding events that took place from July-September, that if local officials need assistance responding or coordinating agencies, they can notify the NRC to get this assistance, especially if there is a potential that there is an environmental threat that may impact public health.**

*B) EPA Border Office Actions/response(s):*

EPA Border Office personnel did have several conversations with Bureau of Reclamation and IBWC personnel concerning certain events that took place during the floods.

Currently, EPA Border Office is working closely with city officials to establish a bi-national emergency communication mechanism.

#### **4. Lessons learned:**

These flood events have indicated that natural disasters or even emergency events do not have borders. It is important to recognize that in border communities, a good and effective bi-national emergency response mechanism is needed. In addition, considering the unique situation of El

Paso, Texas, Las Cruces, New Mexico and Cd. Juarez, Mexico, improved communication is also needed between local, state and federal agencies within this region. For example, events that may take place in Southern New Mexico, can affect the west Texas region and/or Northern Chihuahua region. It is important that the region as a whole work on an emergency communication notification mechanism and potential response system that will alert agencies in this region of potential threats to communities, in order to work together effectively and respond to such emergency or extraordinary events.

## **5. Communication successes and recommendations:**

The EPA Border Office has strong relations with federal agencies located in the region and was in communication with these agencies as it relates to water issues.

It is important that local officials are aware that if Federal Assistance or coordination is needed during an emergency where there is a potential threat to public health to a local community this can be quickly accomplished by notifying the National Response Center.

*Recommendation: See Item#4 – Lessons Learned.*

## **6. Agency/organization priority recommendations (short- or long-term):**

### **a.) Identify up to 5 priority recommendations and estimated costs.**

(For example, recommendations, among many others, included: review of the Annual Recurrence Level; need for post flood assessment; installation of a crest stage network ;inventory/survey of storm drain system; coordination of federal/emergency/bi-national responses; need for additional weather/arroyo/river monitoring and telemetry; dam safety analyses; improved agency, organization and bi-national communication; river channel maintenance; monitoring/retention basins on wild arroyos; greater telemetry sharing; regulation of arroyo/urban development; increase federal share of dam rehabilitation; establish central point of communication for media; and integrated, interagency assessment and management):.

Recommendation 1: See Item #4-Lessons Learned: Official Binational emergency communication mechanism for emergency events. A regional emergency communication mechanism (Southern New Mexico, West Texas & Northern Chihuahua). In addition, establish an “extraordinary events” binational committee.

*Recommendation 2: Extraordinary events such as recent floods have been included in the 10 Border States Governor’s Conference (BGC) Water Work-Table. Information from lessons learned and findings from the Floods Conference should be exchanged and coordinated with appropriate institutions across the border.*

### **b.) Recommendations for interagency actions and/or coordination:**

See Item#6a.

**7. List on-going or anticipated assessment or incident reports and indicate completion timeline:**

None

**8. Identify agency contact information and web site addresses that may be of interest.:**

a) To report oil and chemical spills and radiation emergencies, call the National Response Center: 1-800-424-8802

b) Local EPA Office Contacts

U.S. EPA Region 6 Border Office

Carlos Rincon, Director ([rincon.carlos@epa.gov](mailto:rincon.carlos@epa.gov)) or

Maria Sisneros, Environmental Engineer ([sisneros.maria@epa.gov](mailto:sisneros.maria@epa.gov))

4050 Rio Bravo Suite 100

El Paso, Texas 79902

Phone: (915) 533-7273

Fax: (915) 544-6026

c) Website:

Main: [www.epa.gov](http://www.epa.gov)

Environmental Emergencies Information: [www.epa.gov/epahome/emergenc.htm](http://www.epa.gov/epahome/emergenc.htm)

Border Office Programs: [www.epa.gov/usmexicoborder](http://www.epa.gov/usmexicoborder)

# RECLAMATION

*Managing Water in the West*

## Reclamation Summary Report: Rio Grande Project Flood Events of August 1-4, El Paso, Texas

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## **I. Organization**

The Bureau of Reclamation is an agency under the U.S. Department of Interior. We are responsible for the operation and maintenance of the Federal Rio Grande Project (Project). In this capacity the El Paso field Office (EPFD) is responsible for storage and delivery of Rio Grande Project water for use by the users in Southern New Mexico & West Texas. (Elephant Butte Irrigation District in Southern New Mexico, El Paso County Water Improvement District #1 in West Texas and the City of El Paso) Water is also delivered to the Republic of Mexico through the International Boundary & Water Commission (IBWC) under the “Convention of 1906.”

## **II. Role and Responsibility**

The Rio Grande Project furnishes irrigation water supply for about 178,000 acres of land and electric power for communities and industries in the area. Drainage water from project lands provides a supplemental supply for about 18,000 acres in Hudspeth County, Texas. Project lands occupy the river bottom land of the Rio Grande Valley in south-central New Mexico and west Texas. Water is also provided for diversion to Mexico by the International Boundary and Water Commission-United States Section to irrigate about 18,000 acres in the Juarez Valley.

Physical features of the project include Elephant Butte and Caballo Dams, 6 diversion dams, 139 miles of canals, 457 miles of laterals, 465 miles of drains, and a hydroelectric power plant. The project is operated as two divisions: The Water and Land Division, and the Power and Storage Division.

## **III. Agency Flood Impact and Response**

During the monsoon season of August 2006, the EPFD coordinated “water operations” with the irrigation districts and the IBWC to minimize flood impacts to the federal levees, diversion dams, canals and drains. The project was severely impacted starting with the storm event of

August 1, 2006. The release gates at Caballo Reservoir were operated in close coordination with the IBWC and water users per the following:

- Aug 1, 2006 Gates Closed /Shut Down
- Aug 7 Gates Opened / Release started at 170 cfs
- Aug 9 Release increased to 900 cfs
- Aug 15 Gates Closed /Shut Down
- Aug 17 Gates Opened / Release started at 240 cfs
- Aug 19 Gates Closed /Shut Down
- Aug 24 Gates Opened / Release started at 250 cfs
- Aug 27 Release increased
- Sept 4 Gates Closed /Shut Down

While the storm events caused flooding, there was a benefit to the water users in that the Project Reservoirs “captured” over 250,000 acre-feet (af) of storm/monsoon water. The projected August release from storage was scheduled to be approximately 100,000 AF. The actual release was 26,000 AF. In addition the inflow into Elephant Butte Reservoir was projected to be 32,000 AF but 147,000 AF was captured. In summary the project storage increased by a total of 302,000 AF over the anticipated reservoir storage levels.

On August 3, EPFD responded to a request from the water users to provide high capacity pumps to protect project facilities and adjacent infrastructure due to floods. EPFD provided pumping equipment from the Elephant Butte, Socorro and Chama Field Division offices. These pumps remain in use as of September 7 in the Hatch, New Mexico and Esperanza, Texas areas.

A river monitoring team periodically observes the flows of the river and monitors the “peak” flows for impacts and possible over bank flooding. (*Attach flood pictures*)

#### **IV. Lessons Learned**

The majority of flooding and storms impacted at nonfederal infrastructure, such as municipal streets and storm drains. The areas where urban development has occurred and encroached on natural washes and arroyos experienced the most damage. Many of these arroyos are not rip rapped, armored or lined in any manner. The dikes or levees are constructed of sandy erodable material. There are many arroyos which do not have a retention dam/basin to detain the flood

flows. This is the case with the Placitas arroyo at Hatch, New Mexico (see photo #0255 attach), Rincon Arroyo, Canutillo Arroyo, Guayuco canyon., and at Faulkner canyon which discharges into the Rio Grande one mile upstream of Leasburg Diversion Dam. The discharge caused damage to the railroad on the opposite bank and moved railroad cars off the tracks. (See photo 0278 attach).

Further downstream the series of storm retention basins constructed by the Corps of Engineers known as the Keystone project performed as designed. These retention dams detained a flood peak and kept additional water from reaching the main channel of the Rio Grande.

As the storm water reached the Rio Grande a “flood peak” of 9,992 cfs was measured at “Rio Grande below American dam” at 3:15 pm on August 1. This storm event flow caused a peak flow at Ft. Quitman of 8,000 cfs 36 hours later.

Approximately 3.5 miles upstream of Ft. Quitman gauge the Guayuco Arroyo discharges into the Rio Grande. This arroyo has carried a large amount of sediment which has deposited in the main channel causing aggradation, resulting in flooding and a high water table to adjacent irrigable lands in the Esperanza Texas area. **The irrigation districts continue to utilize Reclamation pumps at this location.**

## **V. Communication Successes and Recommendations:**

The Bureau of Reclamation (Reclamation) requires its offices and facilities to have Continuity of Operations Plans (COO Plans). The purpose of the COO Plan is to maintain operations of Reclamation’s offices and facilities during emergencies by providing detailed steps for physically moving the office out of danger to a location where normal or near normal functions can be resumed. In the El Paso Field Division, the COO Plan will allow continued management of the operations of the releases from Elephant Butte Dam and provide some assistance for flood operations of Caballo Dam (International Boundary and Water Commission takes over the operations of Caballo Dam under flood conditions which is in excess of 230,000 acre-feet).

A bright spot during the recent flooding was that the communication plan, as stated in the Continuity of Operations Plan (COO Plan), worked. Since the City of El Paso had evacuated

some of the residences near the El Paso Field Division, the COO Plan was on stand-by. (Fortunately, the El Paso Field Office did not have to be evacuated). This stand by status required notifying all employees of the EPFD of the threat to the office with the possibility of moving the office. Reclamation had no problems reaching any of its employees and other entities and agencies.

The initial action requiring Reclamation and other federal entities to develop COO Plan is Federal Response Planning Guidance (FRPG) 01-04, Continuity of Operations, dated December 4, 1994. Some of the other authorizations which covers not only the COO Plan but other emergency actions are as follows: The Homeland Security Act of 2002, PL 107-296, enacted on November 25, 2002; the National Security Act of 1947, 50 U.S.C. 401; Executive Order 12472, Assignment of National Security and Emergency Preparedness Telecommunications Functions, dated April 3, 1984, and Presidential Decision Directive (PDD) 62, Combating Terrorism—Homeland Defense, dated May 22, 1998, and Presidential Decision Directive (PDD) 67, Enduring Constitutional Government and Continuity of Government Operations, dated October 21, 1998.

***Successes:***

***Communication network established by RGBFCC set up by Congressman Reyes.***

***Cooperation exhibited by all agencies in responding to the emergency.***

***Assistance from locations in New Mexico and Texas that were not affected.***

***Recommendations:***

***Inventory of available equipment which can be used during emergencies.***

## **VI. AGENCY PRIORITY RECOMMENDATIONS**

### **a. SHORT TERM:**

- i. Improve Rio Grande remote monitoring system***
- ii. Establish flow monitoring system on the larger arroyos***

### **b. LONG TERM**

- i. *Improve Rio Grande to state of the art monitoring and remote operations for storage dams and reservoirs and diversion dams*

c. **RECOMMENDATIONS FOR INTERAGENCY COORDINATION**

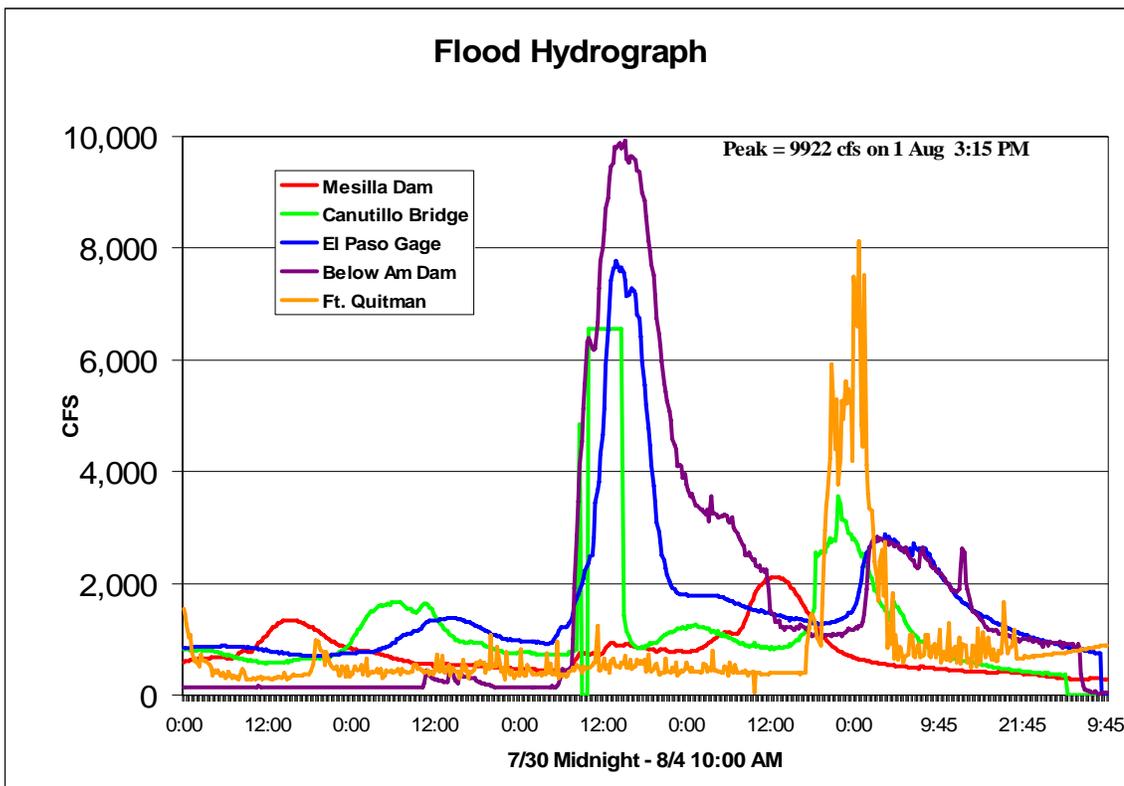
- i. *Establish communications network for response and operations agencies.*
- ii. *Centralize web access to flow data.*

**VII. . List on-going or anticipated assessment or incident reports and indicate completion time-line**

**VII. Identify agency contact information and web site addresses that may be of interest**

<http://www.usbr.gov/uc/elpaso/water/index.html>

<http://www.usbr.gov/uc/elpaso/water/RioGrandeProject/CurrentData/WFlow/daily.html>









EL PASO COUNTY WATER IMPROVEMENT DISTRICT No. 1  
294 CANDELARIA • EL PASO, TEXAS 79907-5599 • (915) 859-4186 • FAX (915) 858-4183

TAX OFFICE (915) 859-0819 • DISPATCHER (915) 859-9128

September 14, 2006

Congressman Silvestre Reyes  
16<sup>th</sup> District  
310 N. Mesa  
El Paso, Texas 79901

Re: Flood 2006

Dear Congressman Reyes,

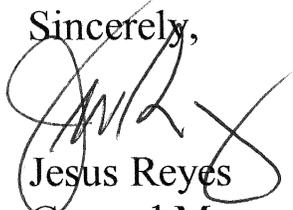
On behalf of the community in El Paso County, Texas we would like to thank you for all of the assistance that you and your staff provided during the flooding events in the past two months. The Federal Flood Assessment Conference was very beneficial and informative to everyone who attended and will hopefully bring positive results for future emergency situations. As we had discussed with you and IBWC staff, the El Paso County Water Improvement District No.1's key issues are clean up which include digging out the Rio Grande River where it can handle capacities as the project was designed to do and repair or replacement of gates located on the waste way channels which connect to the river. Also, adding and upgrading telemetry equipment remains a top priority to monitor the river from New Mexico to Hudspeth County, to include canals and drains. As you are aware the City of El Paso utilizes our drains to capture storm water and during the

flooding events monitoring the capacity of these drains becomes important to everyone in the El Paso area. To some it is about being able to discharge water into our drains to keep from flooding homes and streets. The El Paso Water Utilities was able to drain water from the Robert Bustamante Treatment Plant into our drain which helped them with all the storm water that went into the sewer lines which could have caused them a major problem at the plant. Due to all of the water in our drains we then created a problem further down the irrigation system where all the water gathered and caused flooding problems for farmers in El Paso County and Hudspeth County because of the assistance we provided to the City of El Paso. Therefore, because of all the mentioned events it is imperative that this be a priority and that funding be appropriated. I think everyone in our community has realized how important the irrigation project and drains have been during the flooding events.

Dr. Al Blair and I have been working on an idea of creating a drainage district, which by law could be set up to be a taxing entity. This would have to be an El Paso County project that would cover from the New Mexico State line to the Hudspeth County line. The Irrigation District would have to play a major role because we have a lot of the infrastructure already in place to handle storm events. This would be the creation of a new Board of Directors, General Manager and staff, plus equipment to upgrade and maintain such a project. We are preparing a power point presentation which will emphasize on some of our ideas. I will notify you and your staff once we are ready.

In conclusion, thank you, again for everything you do  
and all your help in the flooding events.

Sincerely,

A handwritten signature in black ink, appearing to read 'JR', written over the printed name 'Jesus Reyes'.

Jesus Reyes

General Manager

El Paso County Water Improvement District No. 1

**Gary Esslinger, Treasurer Manager  
Elephant Butte Irrigation District  
and Doña Ana County Flood Commissioner**

**Flood Threats in Southern New Mexico's Rio Grande Area  
September 6, 2006**

First, my intention is to speak plainly, and I must issue a disclaimer: the opinions I express here are my own, and do not necessarily reflect the position of Elephant Butte Irrigation District (EBID) or Doña Ana County. Wearing the two hats of Manager of Elephant Butte Irrigation District and Doña Ana County Flood Commissioner, many people are pointing their fingers at each other, and me, for responsibility for the recent flooding our area has endured. The worst flooding was in Hatch, where three floods occurred on August 14, 21, and 28. The Leasburg area north of Las Cruces sustained flooding damage on September 1 and 2. In fact, the current state of the area's flood control is the result of many factors that conspire to leave us unprepared for events such as July 2006 through the present.

We are playing a game of Russian roulette with our flood control and planning in our area. The gun has six chambers, loaded as follows:

The first bullet is river and levy maintenance. When it was designed and built in about 1938, one of the primary functions of the Canalization Project was to provide flood control for the river reach between Percha Dam and Courchesne Bridge. The Canalization Project has not been maintained for the past ten years. Accumulation of sediment in the main channel and no-mow zones have raised the stage of a given flood; meanwhile, the levees have been largely neglected. In fact, FEMA has just decertified the levee system, which will cost our area millions of dollars in flood insurance for property that is supposed to be protected by the Canalization Project.

The second bullet is the more than 50 wild arroyos that discharge into the river or irrigation system below Caballo without retention or proper channel stabilization. In the recent flooding in Hatch, the Placitas Arroyo peaked at about 10,000 cfs, in a 100-foot wide channel. The sleeping giant is the Rincon Arroyo.

The third bullet is the aged and inadequate flood control dams in the reach. There are 33 SCS (now NRCS) built under PL 566 programs about 50 years ago to protect farmland. Their design life is typically 50 years. Five of these discharge directly into the river, while the other 28 discharge into EBID canals, laterals, and drains. These dams are at the end of their design lives and under-designed for the high hazard protection they now perform. In addition, many of the over 25 private dams, originally built by farmers to protect their fields, now have residential development below them. Funding to rehabilitate and upgrade these dams is not available.

The fourth bullet is the irrigation system that serves as flood conveyance to the Rio Grande, but during the monsoon season when flood conveyance is most critical, irrigation demand is high. The system simply lacks capacity to perform both functions simultaneously.

The fifth bullet is the increasing public demand for access to the river. Recreational facilities and environmental restoration activities between the levees affect both the flood stage with no corresponding improvements to the levees and increase the security hazard associated with the federal diversion structures that supply EBID's constituents. An attack on Mesilla Dam in 2004 was quickly mitigated, but it illustrates the increasing exposure these facilities face.

With the sixth bullet, the gun is fully loaded, and this is no longer Russian Roulette. The uncontrolled and unrestricted development of the alluvial fans below 50 year-old dams with a 50-year design life and a 50-year design flood, and private dams that were not engineered create an environment that will result in fatality when the is trigger pulled.

We are not without solutions. EBID and New Mexico State University (NMSU) are partnering to establish a Flood Safety Center that will provide comprehensive solutions to the web of hydrologic, hydraulic, geotechnical, cultural, financial, and jurisdictional problems that has brought us to our current situation. It is our intention to involve many of your agencies in this effort.

**Re: Fw: Federal Flood Assessment  
Conference summary from DHS  
(Document link: LUIS DFO GARCIA)  
(submitted as e-mail message)**

Mr. Garcia - John Rivera, MSO Facilities, sat in on the meeting for us. There was little in the discussion that directly pertained to CBP or the Field Office. The presentations and discussions were more involved for the emergency response agencies. We did not make any presentations or participate significantly in the conference.

Primarily, the following points were what could be distilled from the meeting:

- \* The need to improve communication between agencies.
- \* Drainage reservoirs need to be larger.
- \* Gates for drains need to be maintained and serviced regularly, many of the gates could not be opened because they were rusted shut.
- \*The canal on border highway needs to be wider to accommodate more water to prevent water overflow.
- \* U.S. needs to work with Mexico Officials on upgrading the dams in Juarez

CBP-OFO did not experience any significant issues pertaining directly to our facilities or operations. The impact of the recent rains and flooding on us stemmed from the issues that other entities, i.e. Mexican transportation, International Water Boundary Commission, etc., experienced as a result of the rains, such as impaired border crossing operations due to closures on the Mexican side, flooding around our port footprints due to poor flood control, and miscommunication by city officials concerning bridge operations.

BR

## **Texas Department of Transportation El Paso Flood 2006 Conference Report**

On August 1<sup>st</sup> the District Disaster Committee (DDC) was called into operation by the Department of Public Safety (DPS) Committee chair LT. Luis Najera. His instructions were to assist with state forces areas that were flooded due to the constant rain that the El Paso area had received. From August 1, 2006 to August 13, 2006, TxDOT was operating 24 hours a day. Two 12 hour shifts were being worked by TxDOT personnel. Twenty maintenance workers from areas such as Dell City, Marfa, Van Horn, Ft. Davis, Alpine, Terlingua and Presidio were brought in to assist. Also, 40 workers with equipment were brought in from Lubbock, Odessa and San Angelo. Along with our 50 personnel from our local maintenance sections, the group responded to multiple locations on and off the state highway system. TxDOT also contracted out through the Association of General Contractors, contractors to assist in pumping water and restoring drainage ditches. Areas of response were prioritized by the DDC.

TxDOT and its contractors responded to various sites that were inundated with flood waters. Response locations included IH-10, Loop 375, Village of Vinton, Community of Canutillo, Mowad Street, Thunder Rd. in City of Socorro, and the Clint Landfill. Severe flooding occurred at IH-10 at Piedras, IH-10 at Reynolds Street, US54 at Pershing, Loop 375 and IH-10 at Goodyear Drive.

The state freeway system is designed for a 50 year flood event. Many of the areas experienced floods that exceeded the 50 year criteria. The City of El Paso will be developing a study of the Cebada Street storm system that discharges storm water from Interstate 10 to the Rio Grande. TxDOT has been informed by City of El Paso sources that consideration will include increasing storage capacity upstream of I10 versus the pressurized pumping of more water to the Rio Grande. Other options may also be evaluated in the proposed study.

Noteworthy are some of the successes that occurred. The local emergency declaration by the DPS was on August 1<sup>st</sup> at approximately 1:00 PM. The DDC was kept operational for 24 hours a day until the immediate emergency was addressed. Within 48 hours TxDOT brought in 60 personnel from TxDOT offices outside El Paso. Additionally, TxDOT issued emergency contracts that included 200 workers with over 200 pieces of equipment that were used to assist State, County and City forces. Also noteworthy is the assistance and coordination with International Boundary and Water commission (IBWC) and the Rogelio Sanchez State Jail. IBWC provided pumps to TxDOT to remove flood waters and the State Jail inmates filled sandbags to assist the locals.

TxDOT expended approximately \$3 million dollars with their personnel and their contractors within the first 4 days of emergency response. Since that time TxDOT has also awarded over \$17 million dollars in additional contracts for cleanup on state highways such as IH-10, US54, Loop 375, SH20 and other highways. Approximately 200 TxDOT personnel and 200 contracted personnel with equipment were activated for the emergency response.

TxDOT personnel response was immediate. TxDOT and contracted crews were even asking where else they could assist. TxDOT will be preparing an After Incident Report over the next several months in order to identify strengths and areas of needed improvement. TxDOT is very proud of the efforts of their employees and contracted personnel.

**Summary Report  
FEMA Region VI Mitigation's  
Response to  
Federal Flood Assessment Meeting  
Held September 6, 2006**

| Summary Report Request Item                                       | Response                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|-------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. Agency/organization primary role or responsibilities           | <p>FEMA Region VI Mitigation Division's role in a post disaster situation is:</p> <ul style="list-style-type: none"> <li>• To establish a local office to coordinate data collection, response activities, and mitigation activities.</li> <li>• To assist the local governing bodies in recording and assessing the location and extent of damages from the extreme weather event in the declared disaster area(s).</li> <li>• To identify actions to be taken by the local entities to make the area less vulnerable to damages from severe storms, related flooding and other natural hazards.</li> <li>• To assist in identifying and implementing methods, practices, and programs that will help citizens of El Paso to avoid and/or minimize damages from future disasters.</li> </ul> |
| 2. Brief overview of flood events/impacts from agency perspective | <p>On July 31, 2006 and subsequently throughout August and early September 2006, severe thunderstorms struck the incorporated and unincorporated areas of El Paso County. As a result of these rainfall events, widespread flash flooding occurred throughout the City of El Paso and especially in the northwestern and the north central portions of the City/County. Also, some riverine type flooding occurred along portions of the Rio Grande. Damage to homes, businesses, transportation features and stormwater/drainage systems was of such severity that the State of Texas requested and was granted a Federal "major" disaster declaration on August 15, 2006.</p>                                                                                                               |
| 3. Agency/organization actions /response                          | <p>On August 31, 2006, the El Paso FEMA JFO staff and FEMA Region VI staff met with representatives from the City of El Paso, El Paso County, the Texas Department of Transportation (TxDOT), the International Boundary and Water Commission (IBWC), a Congressional representative and MAP 6, an IDIQ Contractor for FEMA. The meeting, which took place at the City of El Paso offices, was held to discuss the ways, means and need to collect and develop Flood Recovery Data from these storms. At this meeting preliminary damage center location information was provided</p>                                                                                                                                                                                                         |

|                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|--------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                                  | by the City of El Paso, El Paso County, and JFO staff, and preliminary High Water Mark locations were provided by the City of El Paso. The representative from TxDOT also indicated a portion of Interstate Hwy 10 was inundated and therefore closed for a period of time.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| 4. Lessons learned                                                                               | Although the area may receive only ten inches (+/-) of rain in a year, many times the rain comes in large doses on just a few days of the year. Stormwater and floodplain management should therefore be a very high priority in the local areas.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| 5. Communication successes and recommendations                                                   | Recommend that all Federal Agencies that are having disaster coordinate fully with their local government counterparts. We have successfully communicated with the City of El Paso and El Paso County regarding the proposal of the development of flood recovery data.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| 6. Agency/organization priority recommendations (short- or long-term)                            | FEMA Region VI's Assessment Team has determined that there is a need and associated benefit(s) in collecting flood recovery data as a result of the recent storms and have recommended the following:<br>Short-Term Action <ul style="list-style-type: none"> <li>• That horizontal vertical control data be gathered and compiled for identified high water mark locations</li> <li>• That a flood inundation map or a map indicating the areas that received flood damage be developed;</li> <li>• That areas that received severe flooding damage, and especially areas that are experiencing growth and development and/or re-development, be studied using technical hydrology and hydraulic floodplain analysis to determine appropriate velocities, potential flooding problem locations and flooding depths</li> <li>• That flood frequencies be determined by damage center location or drainage basin for approximately 10 locations, based on the most intense storm of that area.</li> </ul> |
| 7. List on-going or anticipated assessment or incident reports and indicate completion time-line | After meeting with local officials, FEMA Regional staff prepared an assessment report which contained the above recommendations.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 8. Identify agency contact information and web site addresses that may be of interest            | <a href="http://www.fema.gov">www.fema.gov</a>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |

## FULL LIST OF ORGANIZATION PRIORITY RECOMMENDATIONS

(extracted from agency follow up reports)

### **NWS Recommendations:**

NOAA Precipitation ATLAS 14 needs updating so that more recent and relevant rain return intervals can be calculated for insurance and engineering applications. The Precipitation Branch told us this cannot happen without funding from outside agencies such as the Corps of Engineers. Updated tables will lead to better flood prevention designs in the future.

Due to the spotty and intense nature of convective storms in this area, more weather stations are needed to be placed in strategic places to better obtain over the entire metropolis and surrounding areas the “true” distribution of wind and rainfall. This mesonet of stations is **BADLY NEEDED AND WE BELIEVE SHOULD BE PRIORITY**

This network of stations would not only provide a real time output of data to monitor high winds and heavy rain etc. but would at the SAME TIME provide a plethora of data for modeling the weather in the complex environment in the El Paso area divided by the Franklin Mountains.

This mesonet of weather stations would provide the exact data needed to characterize the localized storms to best fit the hourly intensity data which is critical for culvert and drainage design as well as 48 hours data which is need to assess river stage levels as well as provide the public more meaningful real time weather they can relate to near their homes as opposed to a point measurement only at the airport.

This mesonet would be a win-win situation for the National Weather Service and the research community. While providing real time data for observations that would aid in forecasts and add to PUBLIC SAFETY, it would also be archived for future research activities and modeling to improve the forecast of local events which in turn would benefit the public safety in characterizing those local areas prone to specific hazards.

### **USGS Recommendations**

Top five USGS recommendations: (1) Determine if any more high-water marks can be found in multiple areas of El Paso, (2) Conduct surveys of areas with reliable high-water marks and stable channel geometries to determine peak discharge values (3) Establish a crest-stage gage network (4) Establish flood warning networks on tributaries of the Rio Grande (this would involve rain-gage networks in the upper portions of watersheds), and (5) Establish a geomorphic assessment network

### **USIBWC Recommendations**

Following is a list of 5 priority recommendations following the August flooding from the U.S. Section perspective:

- 1) Clean trash, debris and vegetation and remove sediment from Rio Grande floodplain/channel, estimated cost \$57.5 million.
- 2) Repair/replace flood control gates at 12 structures, El Paso to Fort Quitman, estimated cost \$7.3 million.
- 3) Restore Rio Grande flood capacity to original design, Riverside Dam to Little Box Canyon, estimated cost \$135 million.
- 4) Restore Rio Grande flood capacity to original design, Canutillo to American Dam, estimated cost \$13.5 million.
- 5) Canutillo Flood Wall, estimated cost \$8.4 million.
- 6) American Diversion Dam, gate replacement and new sheet piling, estimated cost \$4.9 million.
- 7) Modification of American Canal to match flood capacity of American Canal Extension, lining and mitigation, estimated cost \$60 million.
- 8) Install 2 new stream gauging stations with telemetry on the Rio Grande, estimated cost \$0.11 million.

## **USCOE PRIORITY RECOMMENDATIONS**

1. The existing operation and maintenance manuals do not address a coordinated operation of the facilities, and the potential exists for the reduction of flood risk with the implementation of a coordinated operation. Therefore, the Corps recommends that a single operation manual be prepared that addresses systematic operation during flood events.
2. The existing storm drain system within the city of El Paso is complicated and poorly documented, particularly in the central area of the city. A survey of the drainage facilities, and a GIS-based catalog of the facilities, would prove very useful in the preparation of flood damage reduction studies.
3. During the August flood event, very little data were gathered because of the lack of recording rain gages, stage recorders, and stream gages in the watershed. The Corps recommends that additional gages and collection and recording devices be installed to gather future hydrologic data. At present, the hydrologic models developed by the Corps are uncalibrated due to the lack of coordinated rainfall-stream flow data, resulting in a high degree of uncertainty in flood prediction. Real-time data collection would benefit the city by providing information for real-time operation of the system, for allocation of emergency services during a flood, and for informed evaluation of project performance.
5. The city would benefit from the installation of a flood warning system to provide valuable advance warning time.
5. The city of El Paso reportedly obtained recent orthophotographic mapping of the area. The Corps recommends the production of quality digital topographic mapping, which, in conjunction with the orthophotographic mapping, would allow determination of drainage boundaries and the direction of contributing flow paths for hydraulic analysis.

6. Under authority of the Corps Civil Works Programs, the city of El Paso and El Paso County have requested the following studies to reduce flood damages within the city and county:

**USEPA Organization priority recommendations (short- or long-term):**

Recommendation 1: It is important that the region as a whole work on an emergency communication notification mechanism and potential response system that will alert agencies in this region of potential threats to communities, in order to work together effectively and respond to such emergency or extraordinary events.

Establish a regional emergency communication mechanism (Southern New Mexico, West Texas & Northern Chihuahua). In addition, establish an “extraordinary events” binational committee.

Recommendation 2: Extraordinary events such as recent floods have been included in the 10 Border States Governor’s Conference (BGC) Water Work-Table. Information from lessons learned and findings from the Floods Conference should be exchanged and coordinated with appropriate institutions across the border.

**USBR Recommendations-**

a. SHORT TERM:

- i. Improve Rio Grande remote monitoring system
- ii. Establish flow monitoring system on the larger arroyos

b. LONG TERM

- i. Improve Rio Grande to state of the art monitoring and remote operations for storage dams and reservoirs and diversion dams

c. RECOMMENDATIONS FOR INTERAGENCY CORDINATION

- i. Establish communications network for response and operations agencies.
- ii. Centralize web access to flow data.

**EPCWID#1 Comments and Recommendations (from presentation and report)**

Recommend creation of a “drainage district”

System almost had catastrophic failure

Actual flow during the flood events was much less than design flow

Without Agricultural Drains damage to City would have been much greater

Telemetry system needs upgrading

Communications need improvement

**EBID (Gary Esslinger with disclaimer)**

Russian roulette with six chambers:

- 1 Need maintenance of Canalization project levees and channel
- 2 50 wild arroyos – monitoring, channel stabilization/retention needed
- 3 Aged and inadequate flood control (old SCS) dams – funding needed to rehabilitate
- 4 Irrigation system also used as flood conveyance, irrigation system not designed for both

- 5 Increasing public demand for river access – security needs to be addressed
  - 6 Need to plan and control development of alluvial fans – only 50 year flood design
- Recommend and working on establishing a Flood Safety Center. Federal agency involvement.

### **FEMA Recommendations**

FEMA Region VI's Assessment Team has determined that there is a need and associated benefit(s) in collecting flood recovery data as a result of the recent storms and have recommended the following:

#### Short-Term Action

- That horizontal vertical control data be gathered and compiled for identified high water mark locations
- That a flood inundation map or a map indicating the areas that received flood damage be developed;
- That areas that received severe flooding damage, and especially areas that are experiencing growth and development and/or re-development, be studied using technical hydrology and hydraulic floodplain analysis to determine appropriate velocities, potential flooding problem locations and flooding depths
- That flood frequencies be determined by damage center location or drainage basin for approximately 10 locations, based on the most intense storm of that area.

# Federal Flood Assessment Conference, Sept. 6, 2006

## Participant List



Texas Agricultural Experiment Station

The Texas A&M University System

Agricultural Research and Extension Center, El Paso  
1380 A&M Circle • El Paso, TX 79927-5020 • 915/859-9111 • FAX 915/859-1078

| Name                 | Title                                                  | Organization                                                | E-Mail                                                                               | Phone #                            |
|----------------------|--------------------------------------------------------|-------------------------------------------------------------|--------------------------------------------------------------------------------------|------------------------------------|
| Hon. Silvestre Reyes | Congressman, TX 16 <sup>th</sup> District              | U.S. House of Representatives                               | co: <a href="mailto:Peter.Brock@mail.house.gov">Peter.Brock@mail.house.gov</a>       | 915-534-4400                       |
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| Phil King            | Assc. Prof                                             | New Mexico State University                                 | <a href="mailto:jpkking@nmsu.edu">jpkking@nmsu.edu</a>                               | 505-646-5377                       |
| Gary Esslinger       | Manager                                                | Elephant Butte Irrigation District                          | <a href="mailto:gesslinger@ebid-nm.org">gesslinger@ebid-nm.org</a>                   | 505-526-6671                       |
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| Scott Harris         | On-Scene Coordinator                                   | U.S. EPA-Region 6                                           | <a href="mailto:harris.scott@epa.gov">harris.scott@epa.gov</a>                       | 214-665-7114<br>Cell: 214-789-9656 |
| Philip LoPiccolo     | Senior Field Representative                            | Congressman Reyes                                           | <a href="mailto:philip.lopiccolo@mail.house.gov">philip.lopiccolo@mail.house.gov</a> | 915-534-4400                       |
| John Rivera          | Mission Support                                        | Custom & Border Protection                                  | <a href="mailto:John.Rivera@dhs.gov">John.Rivera@dhs.gov</a>                         |                                    |
| James Orwat          | Civil Engineer                                         | FEMA Region VI                                              | <a href="mailto:james.orwat@dhs.gov">james.orwat@dhs.gov</a>                         |                                    |
| Billy Ziverschke     | Hazard Mitigation                                      | FEMA Region VI                                              | <a href="mailto:Billy.Zwerschke@dhs.gov">Billy.Zwerschke@dhs.gov</a>                 | 915-594-6312                       |
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| Darrell W. Walker    | Hazard Mitigation                                      | FEMA Region VI                                              | <a href="mailto:DarrellW.Walker@dhs.gov">DarrellW.Walker@dhs.gov</a>                 |                                    |

|                |                                       |                                                            |                                                                                          |              |
|----------------|---------------------------------------|------------------------------------------------------------|------------------------------------------------------------------------------------------|--------------|
| Bet Lotosky    | H&H Chief                             | Corps of Engineers, Albuquerque                            | <a href="mailto:Joan.e.lotosky@usace.army.mil">Joan.e.lotosky@usace.army.mil</a>         | 505-342-3323 |
| Susan Bittick  | Project Manager                       | Corps of Engineers, Albuquerque                            | <a href="mailto:susan.m.bittick@usace.army.mil">susan.m.bittick@usace.army.mil</a>       | 505-342-3397 |
| Daryl W. Cole  | Director-Street                       | City of El Paso                                            | <a href="mailto:coledw@elpasotexas.gov">coledw@elpasotexas.gov</a>                       |              |
| Peter Brock    | Community Liaison                     | Congress District 16                                       | <a href="mailto:Peter.Brock@mail.house.gov">Peter.Brock@mail.house.gov</a>               | 915-534-4400 |
| Mike Landis    | Planning Engineer                     | US Bureau of Reclamation                                   | <a href="mailto:mlandis@uc.usbr.gov">mlandis@uc.usbr.gov</a>                             | 915-534-6307 |
| Jesus Reyes    | General Manager                       | El Paso County Water Improvement District #1               | <a href="mailto:jreyes@epcwidl.org">jreyes@epcwidl.org</a>                               | 915-589-4186 |
| Joe Rogash     | Meteorologist                         | National Weather Service                                   | <a href="mailto:joseph.rogash@noaa.gov">joseph.rogash@noaa.gov</a>                       | 505-589-4088 |
| Alan Shubert   | Flood Plain Admin Director-Dev. Serv. | City of El Paso                                            | <a href="mailto:shubertar@elpasotexas.gov">shubertar@elpasotexas.gov</a>                 |              |
| Cindy Wirz     | Congressional Affairs                 | FEMA                                                       | <a href="mailto:cynthia.wirz@dhs.gov">cynthia.wirz@dhs.gov</a>                           |              |
| Bill Alexander | Meteorologist-in-Charge               | National Weather Service-WFO                               | <a href="mailto:bill.alexander@noaa.gov">bill.alexander@noaa.gov</a>                     | 505-589-4088 |
| Tim Brice      | Meteorologist                         | National Weather Service                                   | <a href="mailto:tim.brice@noaa.gov">tim.brice@noaa.gov</a>                               | 505-589-4088 |
| David Novlar   | Meteorologist                         | National Weather Service                                   | <a href="mailto:Dave.novlar@noaa.gov">Dave.novlar@noaa.gov</a>                           | 505-589-4088 |
| Leo Betancourt | Director of Maintenance               | Texas Department of Transportation                         | <a href="mailto:lbetanc@dot.state.tx.us">lbetanc@dot.state.tx.us</a>                     |              |
| Chuck Berry    | District Engineer                     | Texas Department of Transportation                         | <a href="mailto:cberry@dot.state.tx.us">cberry@dot.state.tx.us</a>                       | 915-790-4320 |
| Zhuping Sheng  | Hydrogeologist                        | El Paso Agricultural Research Center, Texas A&M University | <a href="mailto:z-sheng@tamu.edu">z-sheng@tamu.edu</a>                                   | 915-859-9111 |
| Ray Resendez   | Regional Liaison                      | Gov. Div. Emergency Mgt                                    | <a href="mailto:ray.resendez@txdps.state.tx.us">ray.resendez@txdps.state.tx.us</a>       |              |
| Woody Irving   | Planner                               | U.S. Bureau of Reclamation                                 | <a href="mailto:wirving@uc.usbr.gov">wirving@uc.usbr.gov</a>                             | 915-534-6325 |
| Ken Rakestraw  | Acting Principal Engineer             | U.S. International Boundary & Water Commission             | <a href="mailto:kenrakestraw@ibwc.state.gov">kenrakestraw@ibwc.state.gov</a>             | 915-832-4160 |
| Callie Gibson  | Field Representative                  | Senator Pete V. Domenici                                   | <a href="mailto:callie_gibson@domenici.senate.gov">callie_gibson@domenici.senate.gov</a> | 505-346-6731 |

## **Gauge Station Locations and Operating Organizations**

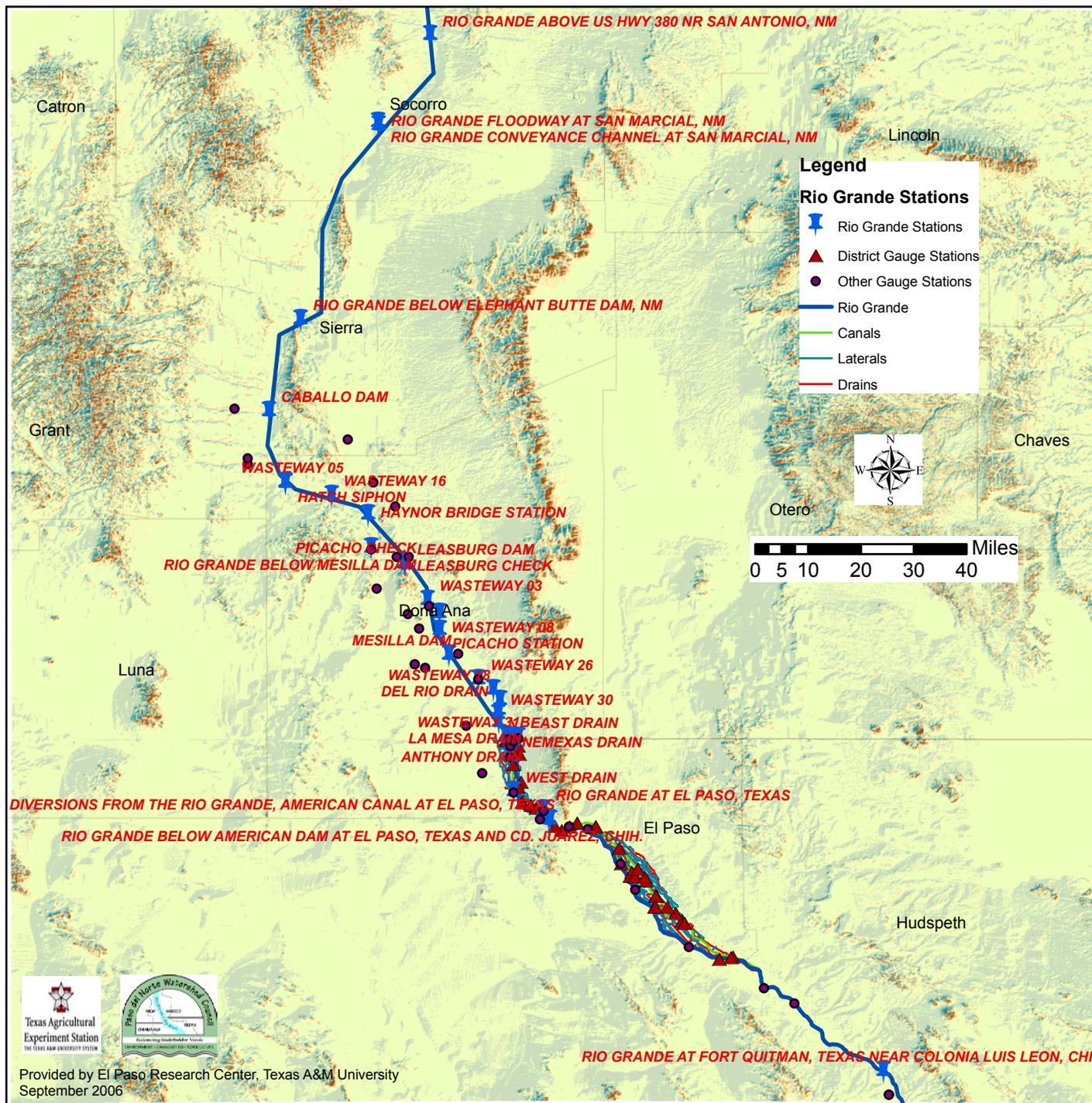
Two maps of gauge station locations and operating organizations were provided to conference participants, Gauge Stations Along the Rio Grande, from above Elephant Butte to Fort Quitman and Gauge Stations in El Paso County. These were provided to facilitate flood assessment discussions at the conference by Dr. Zhuping Sheng's Geohydrology Research Project team at the Texas A&M El Paso Agricultural Research Center in collaboration with the Paso del Norte Watershed Council's Coordinated Water Resources Database and GIS and with support from the USDA-CSREES Rio Grande Basin Initiative.

The Coordinated Water Resources Database and GIS is a collaborative large scale phased effort to identify and provide web based access to the myriad of different and independent agency's water resources monitoring and reporting systems. The Coordinated Water Resources Database and GIS can be accessed at: <http://river.nmsu.edu/website/pdnwc4/> and a one-page fact sheet summary is available at: <http://elpaso.tamu.edu/Research/Fact Sheets 04-28-06/Sheng Coordinated Water 4-28-06.pdf>.

Support for the Coordinated Database and GIS has been provided by the U.S. Army Corps of Engineers, Albuquerque Office, El Paso Water Utilities, U.S. Bureau of Reclamation, USDA Rio Grande Basin Initiative, New Mexico State Water Resources Research Institute and Texas Agricultural Experiment Station, Texas A&M University.

Although the Coordinated Database provides web access to information, the actual gauge monitoring data is retained and reported separately by each individual agency. As reiterated in many of the conference comments and agency recommendations, substantial additional gauges, telemetry and real-time monitoring, as well as improved coordination or centralized access to monitoring data is needed to better manage water resources and to prepare for and avoid future hazardous events such as the 2006 floods in the region.

# Gauge Stations Along The Rio Grande





## **Federal Flood Assessment Conference Power Point Presentations**

National Weather Service

Rogash

Novlan

U.S. Geological Survey

U.S. International Boundary and River Commission

U.S. Environmental Protection Agency

Sisneros, El Paso Office

Harris, District 6

U.S. Bureau of Reclamation

El Paso County Water Improvement District No. 1

**The Historic Floods of 2006**  
 Between July 27 and August 4 from 7 to 16 Inches of rain fell around the El Paso Texas Vicinity III





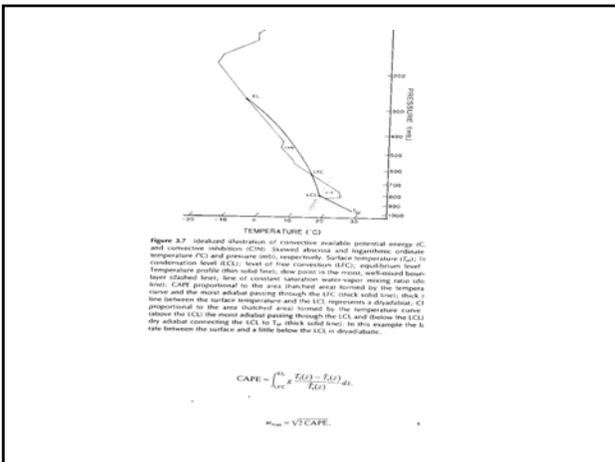
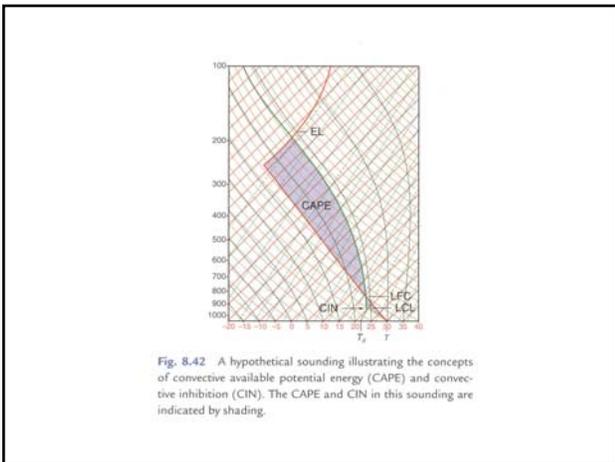
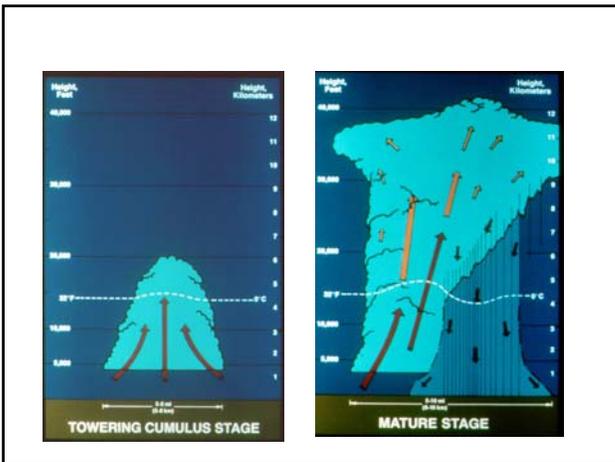
**"Heaviest precipitation occurs where the rainfall rate is highest for the longest time." ( Noah et al. 4000 BC )**



Canutillo Rescue Boat

# Thunderstorm Ingredients

- Moisture
- Unstable Air
- Lift



$$C_r = - \int_{CB}^{CT} \rho W \frac{\partial r_s}{\partial Z} \Delta Z$$

W<sub>max</sub> = √2 CAPE.

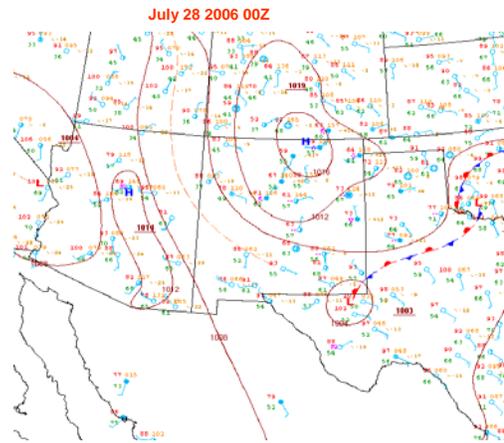
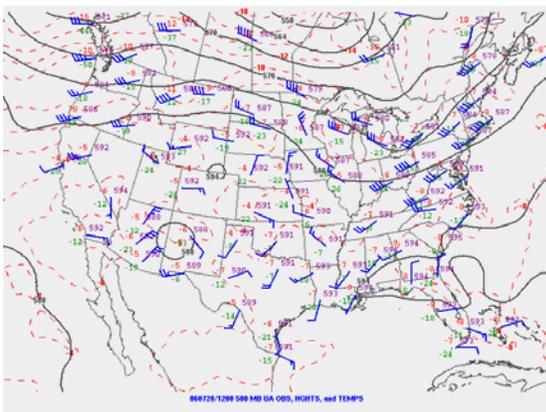
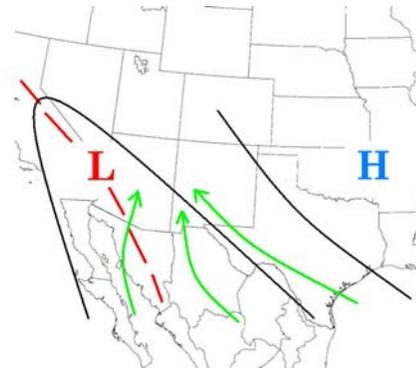
$\rho$  = AIR DENSITY

W = UPDRAFT SPEED

$r_s$  = SATURATION MIXING RATIO

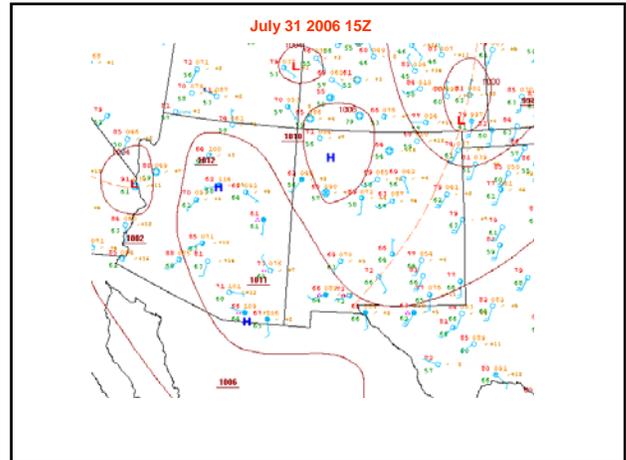
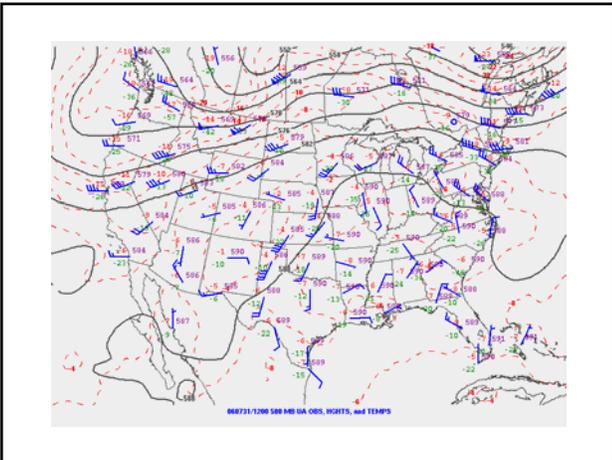
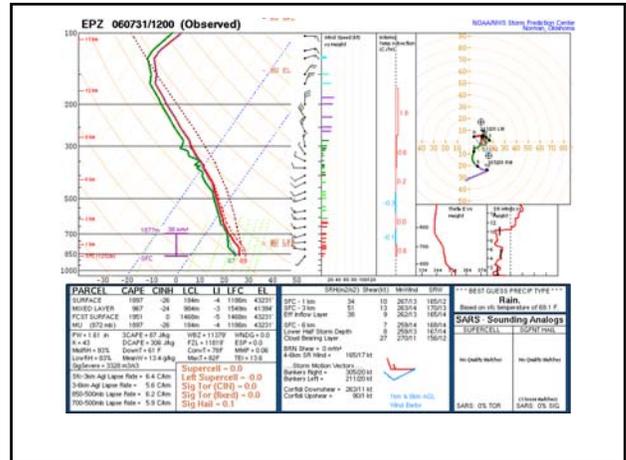
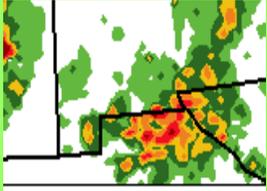
$\Delta Z$  = CLOUD DEPTH OF LAYER

$C_r$  = RATE OF CONDENSATE PRODUCTION  
COLUMN OF UNIT AREA



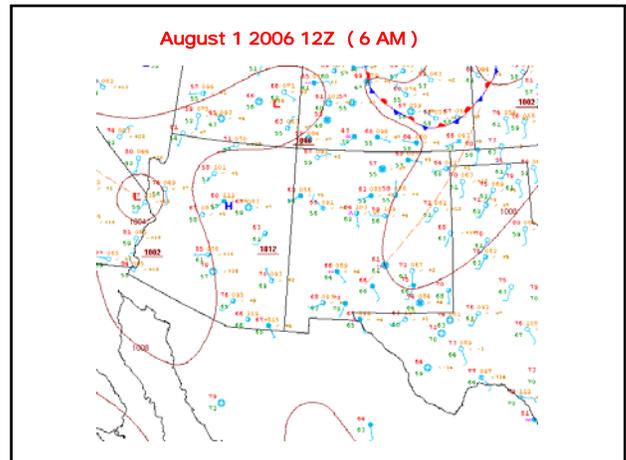
Mudslides Over Clint from July 27-28 rains

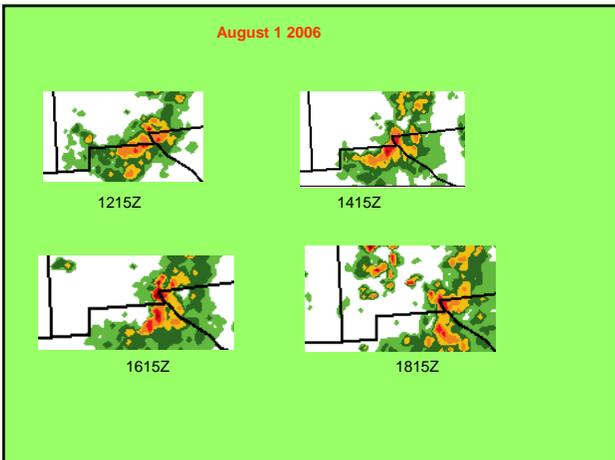
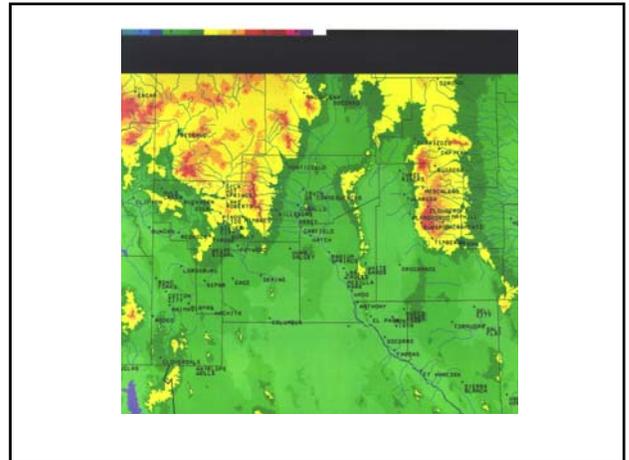
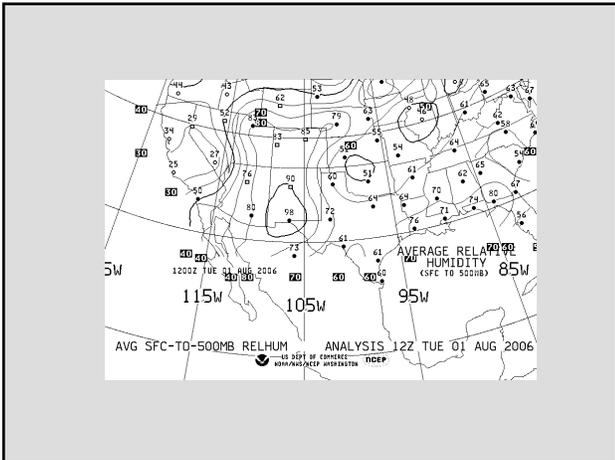
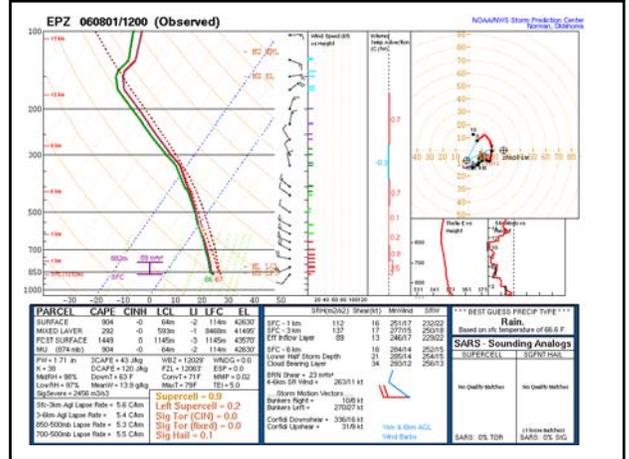
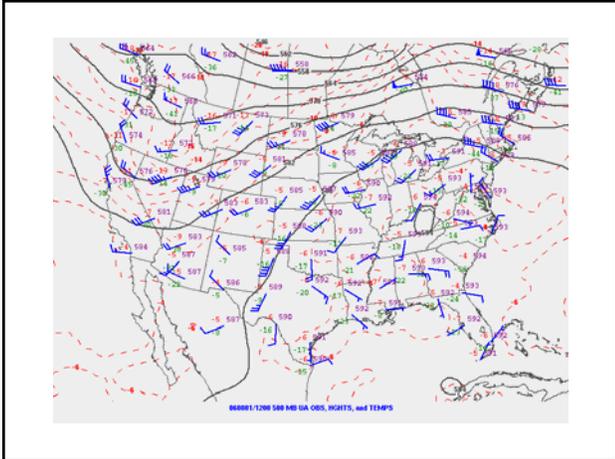
July 28 2006 0715Z



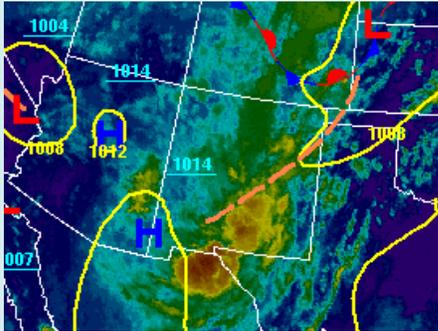
July 31 2006 1615Z

**Storm ravages region**  
Heavy rains create disaster around EPZ  
Damage to cars, insurance claims, road work





Aug 1 2006 1515Z Infrared Satellite image



Emory Road West El Paso

Doniphan St. near Frontera



Water damage to Blockbuster Video Mesa St.



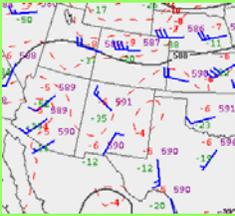
Rio Grande Flooding Along Country Club Road



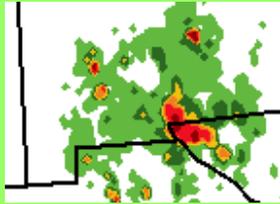
Northern Doniphan St.



Thunderbird and Mesa



Aug 3 2006 00Z 500 mb



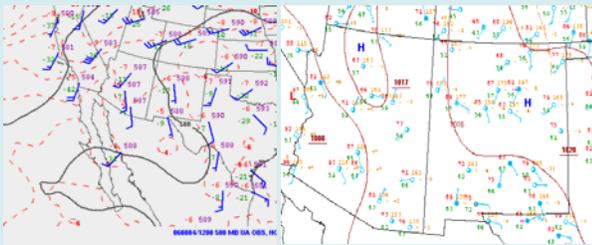
Aug 3 2006 0715Z



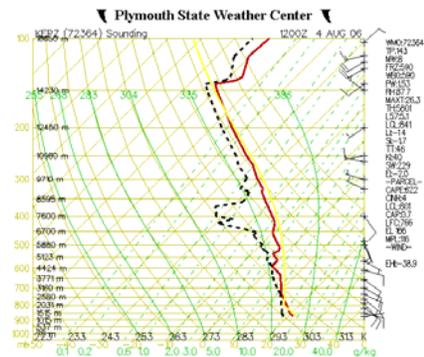
Mulberry St

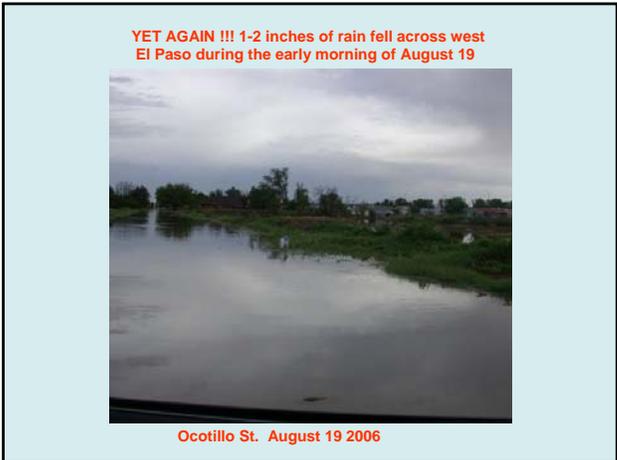
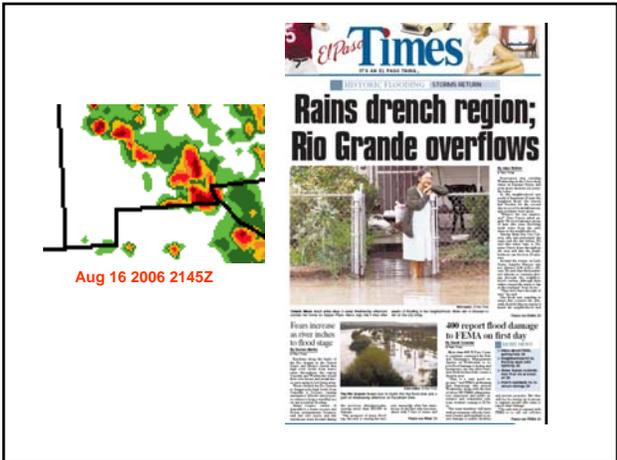
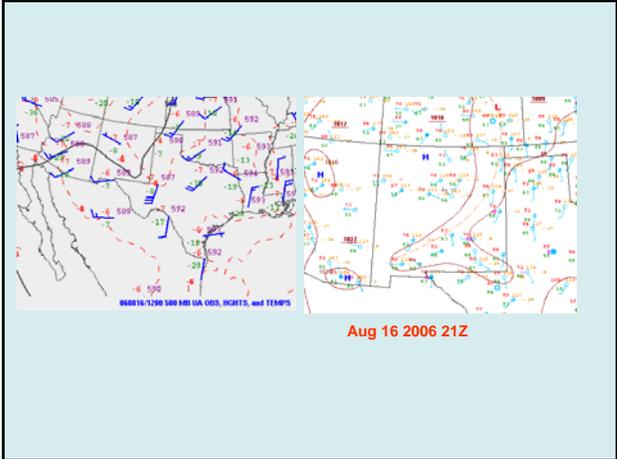
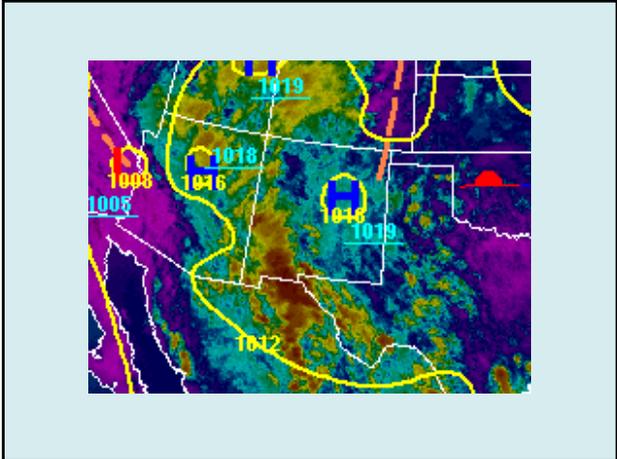


Emory and Sunland Park



Aug 04 2006 18Z







**A CLIMATOLOGICAL PERSPECTIVE OF THE HISTORIC  
FLOODING IN EL PASO TEXAS  
LATE JULY EARLY AUGUST 2006  
DAVID J. NOVLAN  
CLIMATE FOCAL POINT KEPZ**



**FROM 07/27/06 – 08/04/06 EL PASO**

**OFFICALLY RECEIVED  
(at KERP)**

**6.84 in**

**= .725 OF  $\bar{R}$  (ANNUAL AVERAGE 9.43 in)**



**UNOFFICIALLY SOME SITES AROUND THE AREA  
RECEIVED**

**5 - 6 IN / 24 HR**

**7 - 10 IN / 48 HR**

**UNCONFIRMED REPORTS OF UP TO 12 - 16 IN / 9 DAYS**



**THIS RESULTED IN CONSIDERABLE**

**FLASH FLOODING**

**AND EVEN**

**ADDITIONAL FLOODING BY THE RIO GRANDE ITSELF  
(9.3 FEET)**

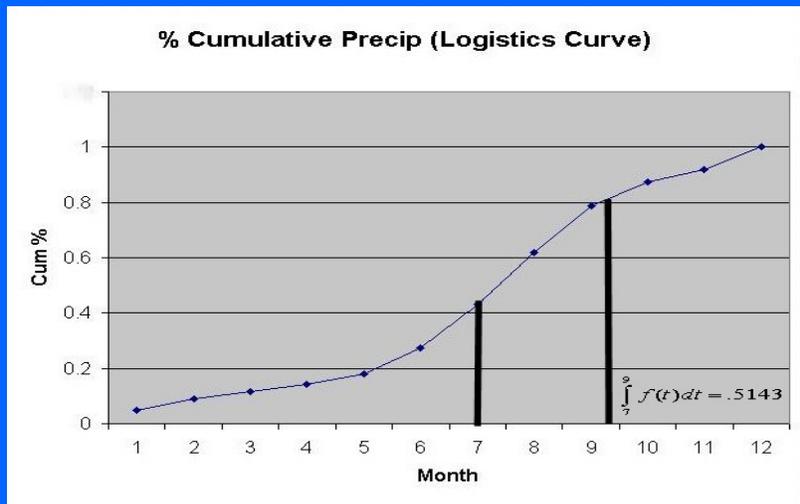
**(WHICH LAST EXCEEDED ITS BANKS  
IN THE LATE SUMMER OF 1958 - 6.29in rain)  
(1744, 1829, 1868, 1897, 1925, 1958, 2006)**

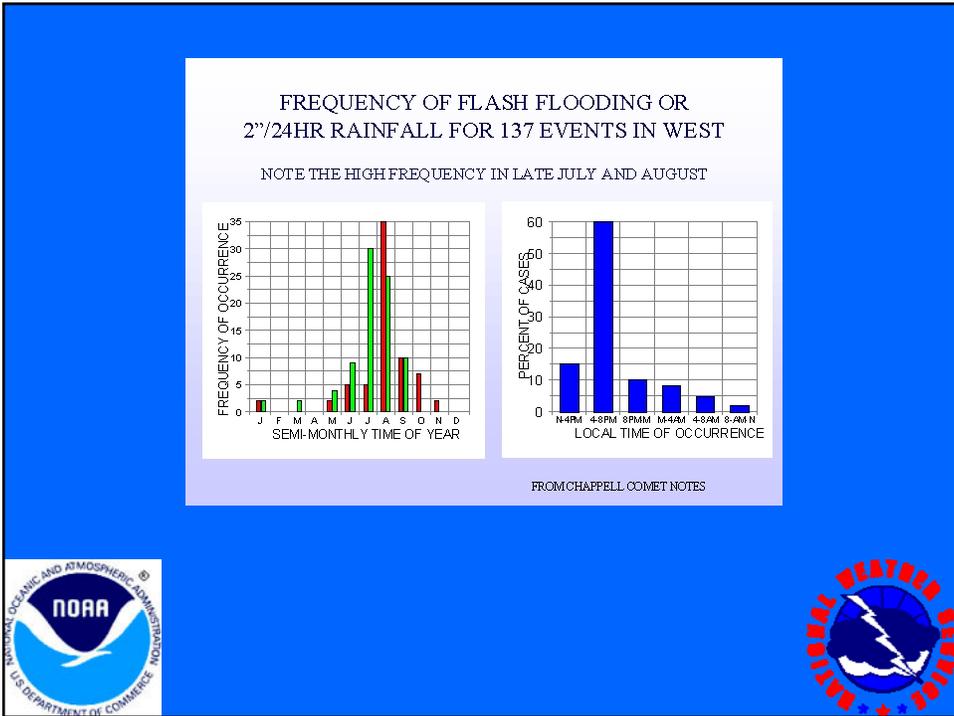
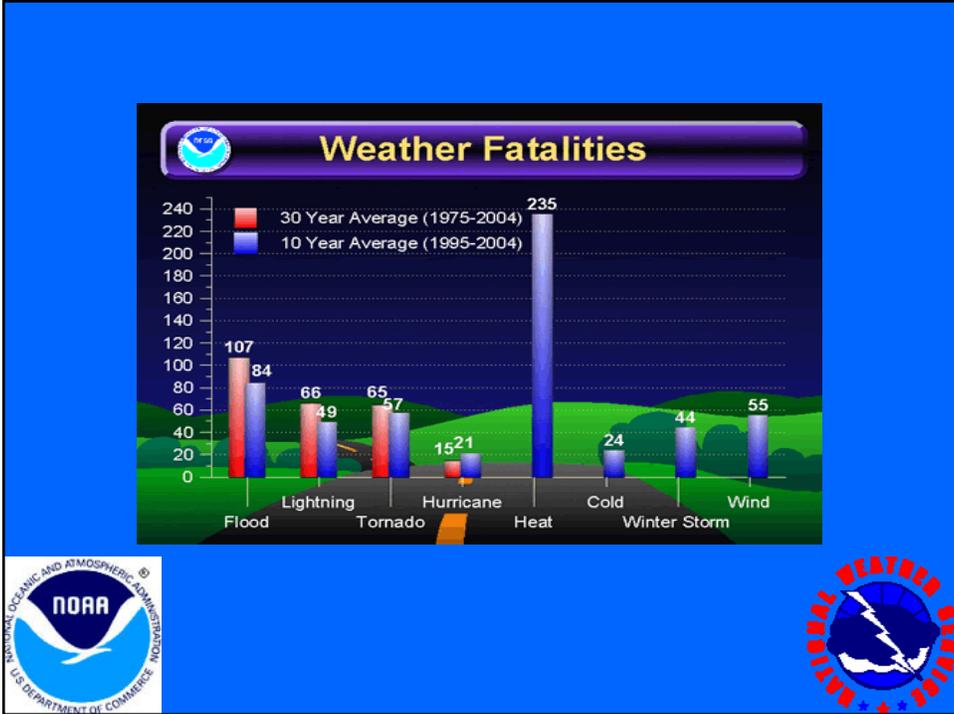
**~~44 year periodicity**



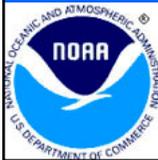


**PUTTING THIS IN PERSPECTIVE:  
FIRST SOME METRO/CLIMO BACKGROUND**





**FACT:  
THE DESERT IS A REGION OF  
EXTREMES...DIVERSITY...CONTRAST  
METEOROLOGY IS NO EXCEPTION!  
YES YOU CAN HAVE A FLASH FLOOD  
IN THE MIDDLE OF A  
DROUGHT**



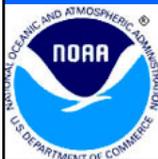
**THESE EVENTS ARE **NOT** UNPRECEDENTED!**

**5 Killed in 1978  
AT WHITE SANDS MISSILE RANGE**

On Saturday, Aug. 19, 1978, a huge thunderstorm (55k) formed over and around the Organ Mtns. Over a period of **five** hours this storm dumped a record **10** inches of rain on the area.

Del (precip) = 9.5in/5mi

$$R(t) = C_1 * e^{(-C_2 * t)} + C_3$$



**ARI OF ~ 100 YR  
Near repeat Aug 1981**



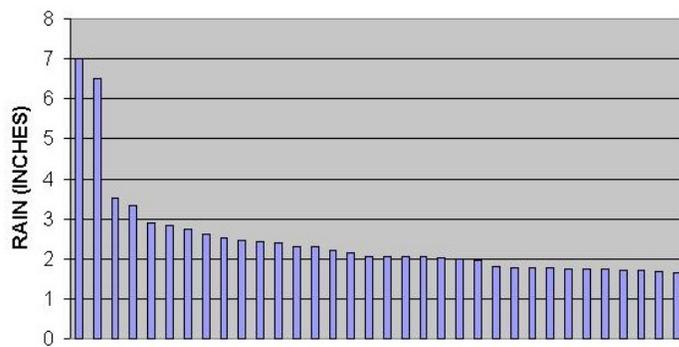
**CONVECTIVE PRECIPITATION IN THE DESERT IS**

**SUDDEN  
INTENSE  
DYNAMIC (NON LINEAR—FEEDBACK OUTFLOWS)  
VERY LOCALIZED  
VIOLENT AND EVEN DEADLY**

**WIND...LIGHTNING...RUNOFF EFFECTS  
CAN EXTEND 10+ MILES AWAY FROM THE  
STORM!**



**ALL TIME HEAVY RAIN EVENTS ELP 1880-2006**

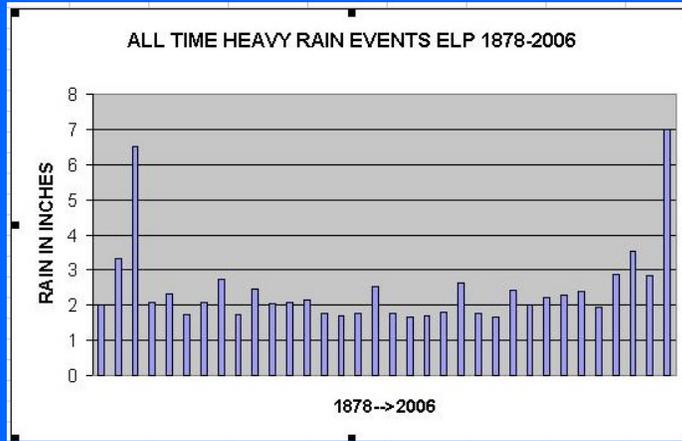


**RANKED IN DECREASING ORDER OF MAGNITUDE**

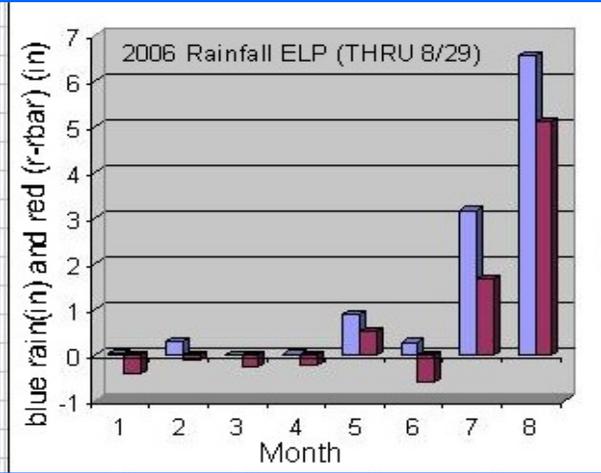


**START 7/1878  
XBAR = 2.46 INCHES  
 $\Delta t < 48$  hr**



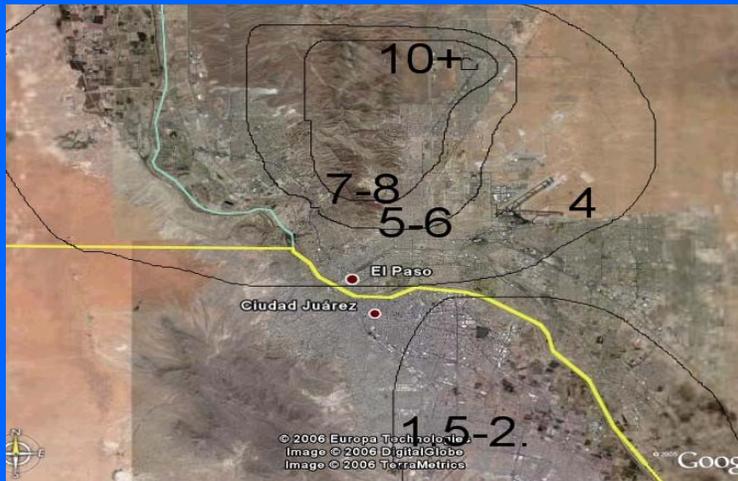


**JULY 9 1881 benchmark**  
**NOTE: ~symmetry**



|   |      |      |
|---|------|------|
| 1 | 0.45 | 0.02 |
| 2 | 0.39 | 0.28 |
| 3 | 0.26 | 0    |
| 4 | 0.23 | 0.01 |
| 5 | 0.38 | 0.89 |
| 6 | 0.87 | 0.27 |
| 7 | 1.49 | 3.17 |
| 8 | 1.75 | 6.57 |





Orographic enhancement  
 ~1.5-2 X  
 NE ELP rbar ~ 1.6 x KELP



- >>
- >> El Paso 6.3WNW.....7.90"
- >> El Paso 5.4W.....7.78"
- >> El Paso 1.6NW.....5.97"
- >>

Def of Heavy rain (FMH #2)  $dr/dt \geq .3/hr$



Aug rainfall at KERP 6.85 in  
A record daily amt Aug 1 2.84 in  
A Record Aug rainfall since 1878

3<sup>rd</sup> wettest month ever  
2 = 7.54 Jul 1880  
1 = 8.18 Jul 1881

3 events in the El Paso/WSMR area since 1881  
3/26 yrs= 2.28% prob/yr

Extreme precipitation data for Monsoon 2006 at El Paso airport:

0.76" in 1 hour- August 3<sup>rd</sup>  
0.92" in 2 Hours- August 3<sup>rd</sup>  
1.05" in 3 Hours- August 1<sup>st</sup> and August 3<sup>rd</sup>  
2.66 inches in 12 hours- August 1  
2.84 inches in 24 hours- August 1  
3.98 inches in 48 hours- 3AM August 1 through 3AM August 3<sup>rd</sup>  
4.95 inches in 96 hours- August 1 through August 4  
5.84 inches in 7 days- July 28<sup>th</sup> through August 3<sup>rd</sup>  
6.79 inches in 10 days- July 28<sup>th</sup> through August 6<sup>th</sup>  
7.19 inches in 20 days- July 28<sup>th</sup> through August 16<sup>th</sup>  
8.31 inches in 30 days- July 21<sup>st</sup> through August 19<sup>th</sup>  
9.51 inches in 45 days- July 17<sup>th</sup> through August 30<sup>th</sup>  
12.11 inches in 60 days- July 5<sup>th</sup> through September 3<sup>rd</sup>

POINT PRECIPITATION  
FREQUENCY ESTIMATES  
FROM NOAA ATLAS 14

**32.017 N 106.595 W 3907 feet**  
from "Precipitation-Frequency Atlas of the United States" NOAA  
Atlas 14, Volume 1, Version 4



Precipitation Frequency Estimates (inches)

| ARI**<br>(years) | 5<br>min | 10<br>min | 15<br>min | 30<br>min | 60<br>min | 120<br>min | 3<br>hr | 6<br>hr | 12<br>hr | 24<br>hr | 48<br>hr | 4<br>day | 7<br>day | 10<br>day | 20<br>day | 30<br>day | 45<br>day | 60<br>day |
|------------------|----------|-----------|-----------|-----------|-----------|------------|---------|---------|----------|----------|----------|----------|----------|-----------|-----------|-----------|-----------|-----------|
| 1                | 0.25     | 0.38      | 0.47      | 0.63      | 0.78      | 0.89       | 0.94    | 1.06    | 1.15     | 1.33     | 1.43     | 1.62     | 1.83     | 2.02      | 2.53      | 2.99      | 3.54      | 4.03      |
| 2                | 0.32     | 0.49      | 0.61      | 0.82      | 1.01      | 1.16       | 1.22    | 1.36    | 1.47     | 1.70     | 1.82     | 2.08     | 2.35     | 2.60      | 3.25      | 3.83      | 4.52      | 5.16      |
| 5                | 0.43     | 0.66      | 0.81      | 1.10      | 1.36      | 1.57       | 1.63    | 1.78    | 1.92     | 2.23     | 2.39     | 2.73     | 3.10     | 3.45      | 4.28      | 4.99      | 5.84      | 6.65      |
| 10               | 0.52     | 0.79      | 0.98      | 1.31      | 1.63      | 1.89       | 1.94    | 2.11    | 2.25     | 2.64     | 2.85     | 3.25     | 3.71     | 4.14      | 5.08      | 5.86      | 6.82      | 7.74      |
| 25               | 0.63     | 0.96      | 1.19      | 1.61      | 1.99      | 2.32       | 2.38    | 2.55    | 2.70     | 3.22     | 3.52     | 3.98     | 4.56     | 5.12      | 6.16      | 7.05      | 8.10      | 9.15      |
| 50               | 0.73     | 1.10      | 1.37      | 1.84      | 2.28      | 2.67       | 2.73    | 2.90    | 3.04     | 3.69     | 4.07     | 4.58     | 5.28     | 5.92      | 7.02      | 7.99      | 9.08      | 10.23     |
| 100              | 0.82     | 1.25      | 1.55      | 2.09      | 2.58      | 3.03       | 3.10    | 3.26    | 3.40     | 4.21     | 4.70     | 5.23     | 6.06     | 6.83      | 7.94      | 8.96      | 10.11     | 11.31     |
| 200              | 0.92     | 1.41      | 1.74      | 2.35      | 2.90      | 3.42       | 3.49    | 3.65    | 3.77     | 4.76     | 5.39     | 5.94     | 6.90     | 7.80      | 8.90      | 9.98      | 11.14     | 12.43     |
| 500              | 1.06     | 1.62      | 2.01      | 2.70      | 3.34      | 3.96       | 4.04    | 4.18    | 4.27     | 5.59     | 6.42     | 7.01     | 8.17     | 9.22      | 10.37     | 11.39     | 12.57     | 13.95     |
| 1000             | 1.18     | 1.79      | 2.22      | 3.00      | 3.71      | 4.39       | 4.49    | 4.60    | 4.68     | 6.29     | 7.35     | 7.92     | 9.25     | 10.45     | 11.57     | 12.61     | 13.65     | 15.09     |

ARI = 1/probability

$$\log_{10}(\text{ARI}_{0.99, 90.91}) = -1.1037 + (1.7578)P_{0.99} - (1.0423)(P_{0.99})^2$$



**ARI**

**48 HOUR KELP 3.52 IN - 25 YRS**

**9 DAYS kelp 6.84 IN ~ 100 YRS**

**PRECIP AVE 48 HRS 4.76-5.12  
~ 108-158 yrs**

**Eastwood spotter 2in/30 min = 100 yrs**

**WSR88D reports 2.5/60min ~ 100 yrs**

**5 ~ 7 in reports/ 48 hrs = ~200 yrs**



**Precipitation Frequency Estimates (inches)**

| ARI**<br>(years) | 5<br>min | 10<br>min | 15<br>min | 30<br>min | 60<br>min | 120<br>min | 3<br>hr | 6<br>hr | 12<br>hr | 24<br>hr | 48<br>hr | 4<br>day | 7<br>day | 10<br>day | 20<br>day | 30<br>day | 45<br>day | 60<br>day |
|------------------|----------|-----------|-----------|-----------|-----------|------------|---------|---------|----------|----------|----------|----------|----------|-----------|-----------|-----------|-----------|-----------|
| 1                | 0.25     | 0.38      | 0.47      | 0.63      | 0.78      | 0.89       | 0.94    | 1.06    | 1.15     | 1.33     | 1.43     | 1.62     | 1.83     | 2.02      | 2.53      | 2.99      | 3.54      | 4.03      |
| 2                | 0.32     | 0.49      | 0.61      | 0.82      | 1.01      | 1.16       | 1.22    | 1.36    | 1.47     | 1.70     | 1.82     | 2.08     | 2.35     | 2.60      | 3.25      | 3.83      | 4.52      | 5.16      |
| 5                | 0.43     | 0.66      | 0.81      | 1.10      | 1.36      | 1.57       | 1.63    | 1.78    | 1.92     | 2.23     | 2.39     | 2.73     | 3.10     | 3.45      | 4.28      | 4.99      | 5.84      | 6.65      |
| 10               | 0.52     | 0.79      | 0.98      | 1.31      | 1.63      | 1.89       | 1.94    | 2.11    | 2.25     | 2.64     | 2.85     | 3.25     | 3.71     | 4.14      | 5.08      | 5.86      | 6.82      | 7.74      |
| 25               | 0.63     | 0.96      | 1.19      | 1.61      | 1.99      | 2.32       | 2.38    | 2.55    | 2.70     | 3.22     | 3.52     | 3.98     | 4.56     | 5.12      | 6.16      | 7.05      | 8.10      | 9.15      |
| 50               | 0.73     | 1.10      | 1.37      | 1.84      | 2.28      | 2.67       | 2.73    | 2.90    | 3.04     | 3.69     | 4.07     | 4.58     | 5.28     | 5.92      | 7.02      | 7.99      | 9.08      | 10.23     |
| 100              | 0.82     | 1.25      | 1.55      | 2.09      | 2.58      | 3.03       | 3.10    | 3.26    | 3.40     | 4.21     | 4.70     | 5.23     | 6.00     | 6.83      | 7.94      | 8.96      | 10.11     | 11.31     |
| 200              | 0.92     | 1.41      | 1.74      | 2.35      | 2.90      | 3.42       | 3.49    | 3.65    | 3.77     | 4.76     | 5.39     | 5.94     | 6.90     | 7.80      | 8.90      | 9.98      | 11.14     | 12.43     |
| 500              | 1.06     | 1.62      | 2.01      | 2.70      | 3.34      | 3.96       | 4.04    | 4.18    | 4.27     | 5.59     | 6.42     | 7.01     | 8.17     | 9.22      | 10.37     | 11.39     | 12.57     | 13.95     |
| 1000             | 1.18     | 1.79      | 2.22      | 3.00      | 3.71      | 4.39       | 4.49    | 4.60    | 4.68     | 6.29     | 7.35     | 7.92     | 9.25     | 10.45     | 11.57     | 12.61     | 13.65     | 15.09     |

**Brown- airport data**

**Green- maximum unofficial reports/ estimates**

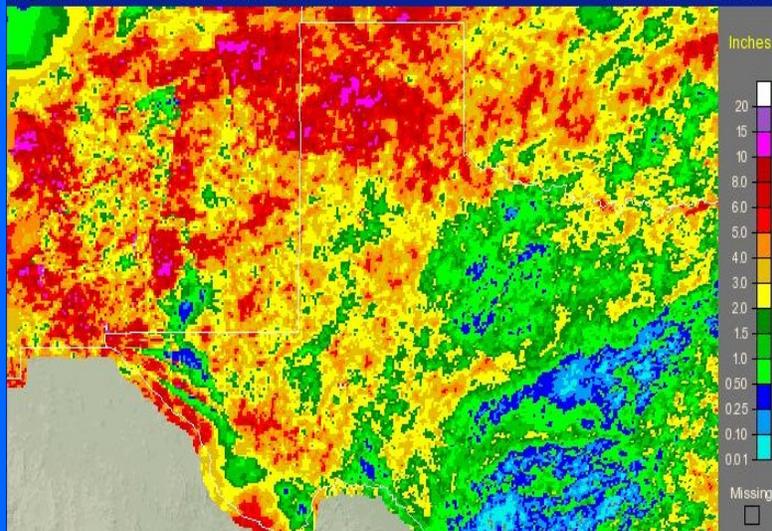
**If we include unofficial data, the average recurrence intervals are far more impressive.  
(Consider the OFFICIAL coop observer with almost 8" in 2 days: red oval: > 1000 yr event!)**

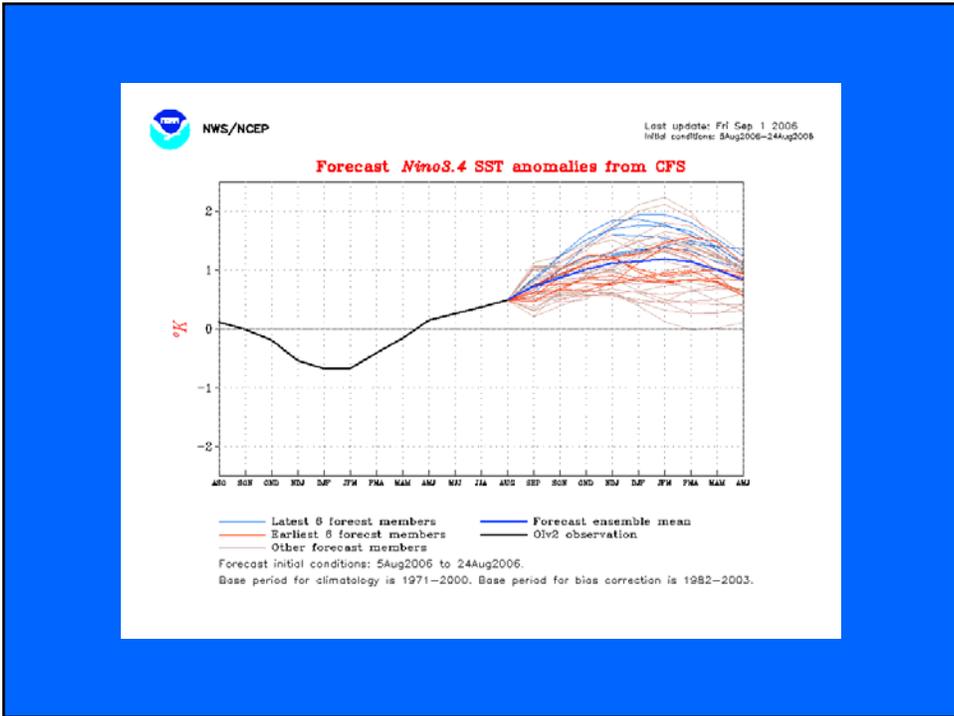
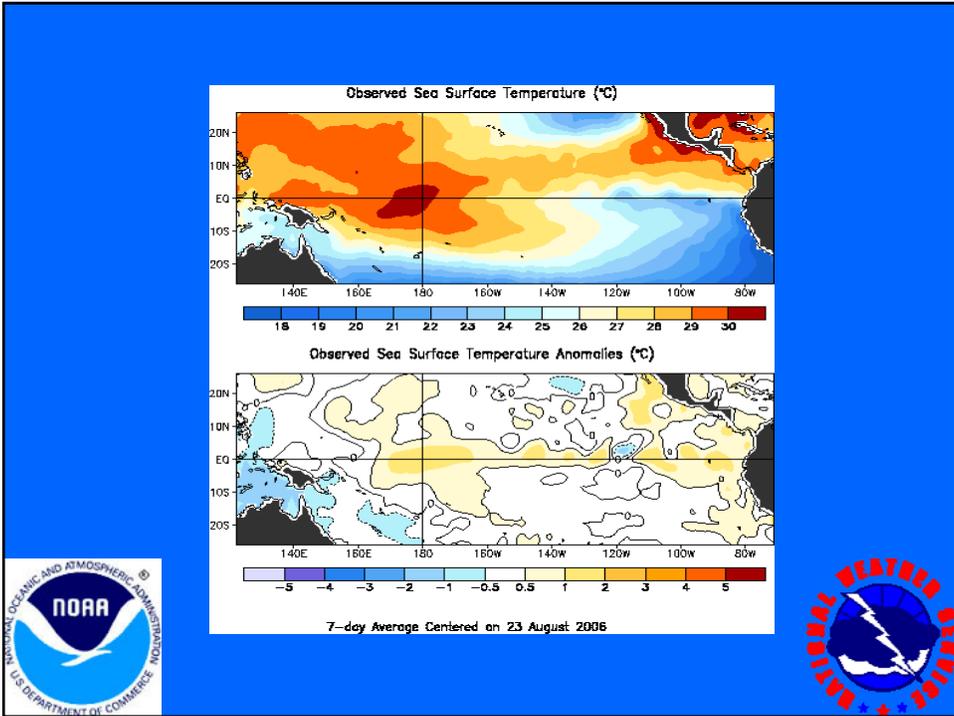
Discussions with Dept of Civil Engineering UTEP  
(Dr. John Walton):

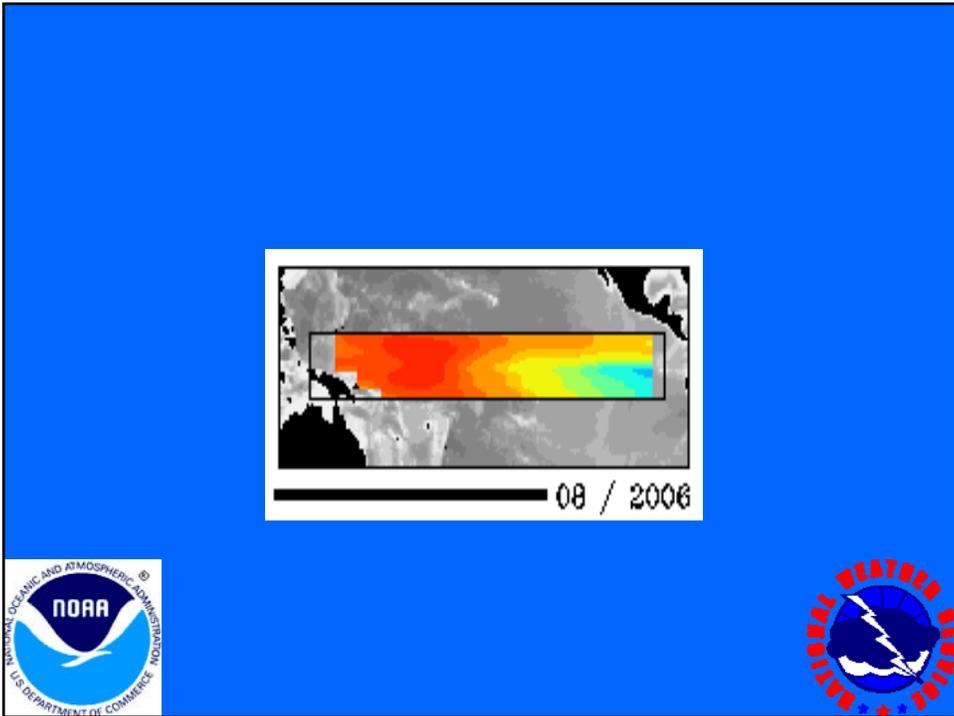
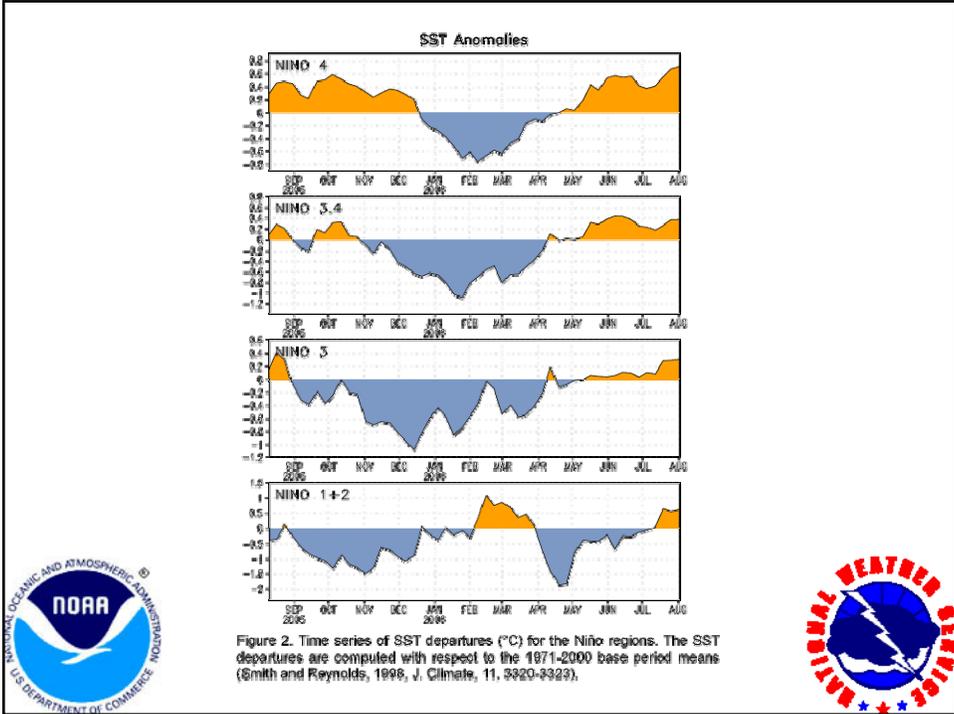
- \* Better application of Annual Recurrence Interval concepts
- \* AREAL/TEMPORAL AVERAGING AND INTEGRATION OF RAINFALL RECURRENCE INTERVALS INSTEAD OF SINGLE POINTS (i.e. airport data ) ARE **MORE REPRESENTATIVE**
- \*WE NEED TO RECONSIDER AND UPDATE RECURRENCE INTERVAL DATA
- \* ARI = f( scale, time, area [all representative of the event])
- \* NOT ENOUGH WEATHER STATION DENSITY IN THE MTN WEST
- \* SPOTTY, INTENSE NATURE OF CONVECTIVE STORMS
- \*Flood insurance awareness
- \*Mesonet (network of weather stations over the El Paso metroplex) needed **BADLY** for official archives

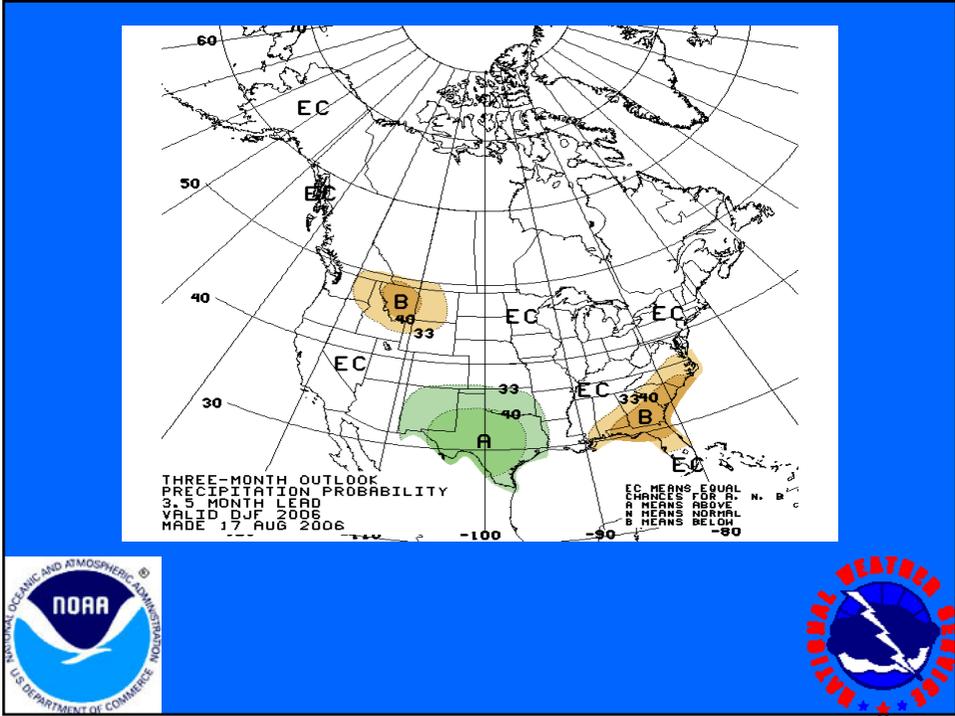
West Texas  
August, 2006 Monthly Observed Precipitation

*Click on the image to zoom in*  
*Click on "States" to zoom out*









## USGS Data Collection Effort for the El Paso Flooding Event of August 1-4, 2006



### Primary Objectives

- Survey high-water marks and cross-sections for Sparks Arroyo (east side of El Paso) to determine peak discharge.
- Survey high-water marks and water levels of retention ponds on Fort Bliss.



# Sparks Arroyo

## Differences of Channel Geometry between the two events (August 1 and 4, 2006)



Top Photos = Post August 1 event



Bottom Photos = Post August 4 event



Approximately 10-20 feet wider and two feet of deposition!

## High-Water Marks from August 4, 2006 Event found in Sparks Arroyo



The primary high-water marks found were debris lines where the channel widened out.



Difference between the high-water marks from the August 1 event and the August 4 event (higher in elevation but not necessarily in discharge).



## Survey of Sparks Arroyo using Real-Time Kinematic GPS

- 1.8 mile reach of Sparks Arroyo surveyed
- 13 cross-sections
- 24 high-water marks



## Slope-Area Calculations for Sparks Arroyo for August 4, 2006 Event

- 5.7 square mile drainage area
- Approximate peak discharge estimate = 2000 cfs
- Assumption was made that channel bottom was two feet deeper than surveyed channel because deposition most likely occurred on the falling limb of the hydrograph
- Peak discharge is difficult to determine because of rapidly changing channel geometry.



## Scour Documentation for Sparks Arroyo



Same site:  
Top Photo taken August 4, 2006.  
Bottom Photo taken August 5, 2006



## Fort Bliss Survey of Retention Ponds

- Surveyed, using Real-Time Kinematic GPS, high-water marks for eight retention structures on Fort Bliss.
- Assisted staff on Fort Bliss to better understand the drainage situation for the Fort.



## Additional Work Needed

- Determine if any more high-water marks can be found in multiple areas of El Paso.
- Conduct surveys of areas with reliable high-water marks and stable channel geometries to determine peak discharge values.
- Use existing topography maps to determine the extent of channel changes from the storm events.
- Crest-stage gage network
- Early flood warning network
- Geomorphic assessment network

## Questions?



El Paso on August 4, 2006

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# UPPER RIO GRANDE FLOOD CONTROL PROJECT

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Carlos Marin, Acting Commissioner  
United States Section, International Boundary and  
Water Commission  
September 6, 2006



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## AUGUST 1 STORM

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- ◆ No breaches or overtopping of U.S. levees
- ◆ Levee patrols and monitoring began early morning on August 1
- ◆ Above American Dam, water levels were contained with adequate freeboard
- ◆ Below American Dam through upper Chamizal reach, freeboard was not adequate
- ◆ Flood wave was contained by the U.S. levee in the Rectification Project reach

# AUGUST 1 STORM



# AUGUST 1 STORM



# AUGUST 1 STORM



# AUGUST 1 STORM



# AUGUST 1 STORM



Wasteway #1



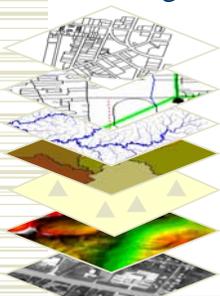
levee erosion

near downtown

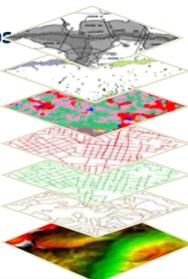
# Condition Assessment of USIBWC Levees



The USIBWC contracted the U.S. Army Engineer Research Development Center (ERDC) to perform an integrated condition assessment of the USIBWC Canalization and Rectification projects using airborne geophysics, geologic studies, ground truth investigations and enterprise Geographic Information System.



- Topographic Maps
- Transportation
- Surface Waters
- Boundaries
- Engr. Borings
- Elevation
- Aerial Photos



- Geology
- Segments
- Borrow pits
- Utilities
- Levee drains
- Soils
- LiDAR, EM data





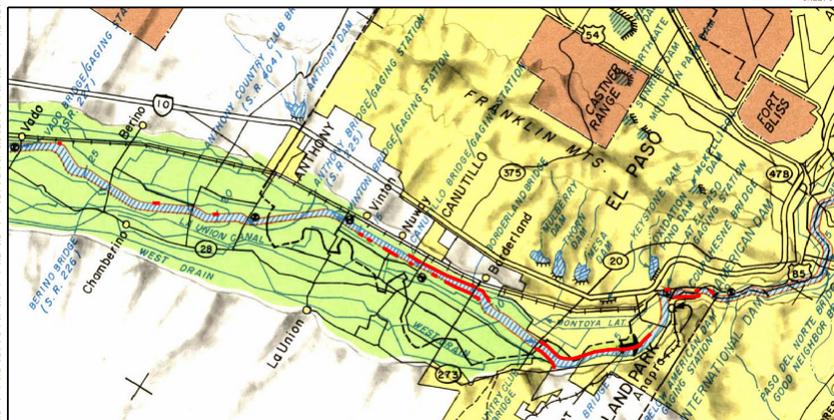
## Levee Deficiencies

- ◆ The following maps identify levee segments in the Canalization and Rectification Projects in the El Paso area subject to freeboard encroachment or overtopping
- ◆ Segments marked in **red** show less than 2 feet of freeboard



## Levee Deficiencies

SHEET 3 of 3



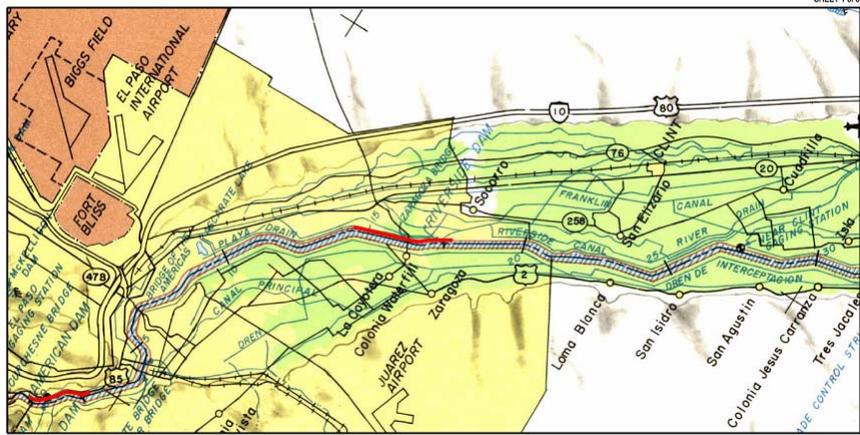
CANALIZATION

LEVEE WITH LESS THAN 2' FREEBOARD

# Levee Deficiencies



SHEET 1 of 3



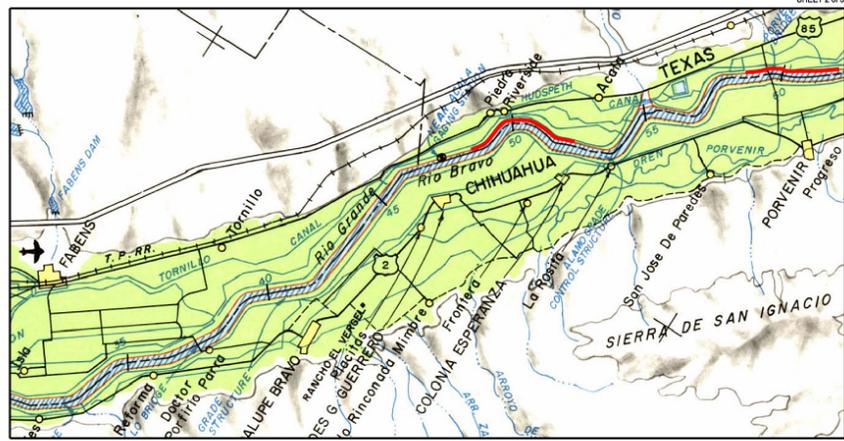
RECTIFICATION

LEVEE WITH LESS THAN 2' FREEBOARD

# Levee Deficiencies



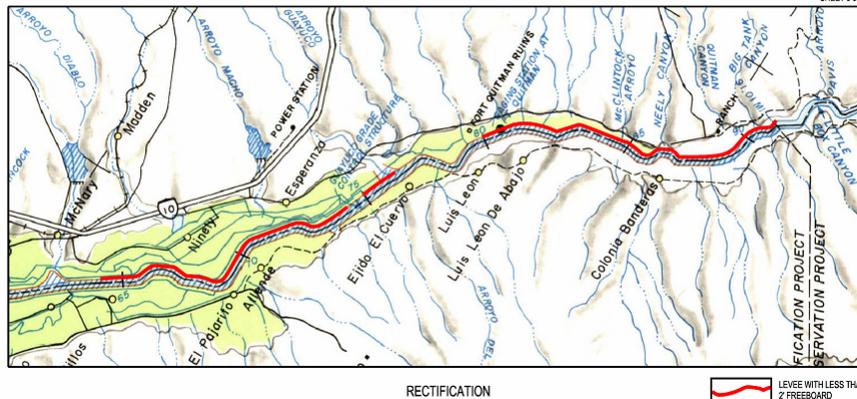
SHEET 2 of 3



RECTIFICATION

LEVEE WITH LESS THAN 2' FREEBOARD

# Levee Deficiencies



# Damage Repair & Mitigation USIBWC Estimates



- ◆ Clean trash, debris, and vegetation - \$19.5 M
- ◆ Rio Grande sediment removal - \$38 M
- ◆ Repair flood control gates - \$7.3 M
- ◆ Restore Rio Grande flood capacity to original design, Riverside to Little Box Canyon - \$135 M
- ◆ Restore Rio Grande flood capacity to original design, Canutillo to American Dam - \$13.5 M
- ◆ Canutillo Flood Wall - \$8.4 M

## Damage Repair & Mitigation USIBWC Estimates



- ◆ American Diversion Dam, gate replacement and new sheet piling - \$4.9 M
- ◆ Modification of American Canal to match flood capacity of American Canal Extension, lining and mitigation - \$60 M
- ◆ Install 2 flow measurement stations with telemetry on the Rio Grande \$ 0.11 M
- ◆ **USIBWC TOTAL - \$286.7 M**

## Communications & Coordination



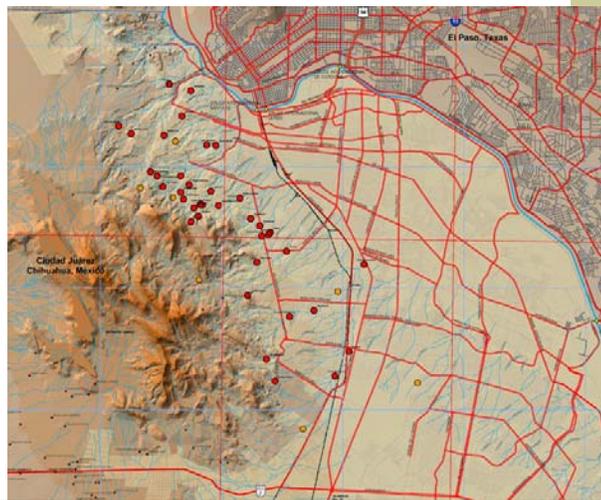
- ◆ USIBWC web site provides the public with near real-time data about gage height and river flow volume
- ◆ Severe weather caused USIBWC to lose its wireless connection with the Internet Service Provider (ISP), disrupting USIBWC ability to post updated data
- ◆ ISP will provide a secondary line with its own router to act as a backup solution
- ◆ USIBWC will change to a more reliable wired solution

## Communications & Coordination



- ◆ Need to improve coordination with local entities to ensure proper operation of structures that drain into the river
- ◆ Standard USIBWC license/MOU requires the licensee to operate and maintain these structures
- ◆ Mexican canals perpendicular to the the river cause flow to be concentrated on the U.S. floodplain
- ◆ Need to consider installation of an additional flood warning station downstream of American Dam
- ◆ Sediment removal in Chamizal to continue contingent upon funding

## Cd. Juarez Dikes



# La Montada Dike



# La Montada Dike



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## La Montada Dike

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## Contact Information

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United States Section  
International Boundary and Water Commission  
4171 N. Mesa, C-100  
El Paso, TX 79902  
915-832-4100  
[www.ibwc.state.gov](http://www.ibwc.state.gov)



## U.S. EPA REGION 6 Border Office

**Maria A. Sisneros, E.I.T.**  
**El Paso Border Office**

## EPA Region 6 Border Office Mission

- **Mission:** Encourage border and / or tribal communities in the New Mexico and Texas region in conjunction with officials and leaders of the four Mexican border states and communities across the border to take an active role in improving their environment and their health; providing information and facilitating communities' efforts to address high - priority environmental and environmentally related health issues



## EPA Region 6 Border Office

- Region 6 Border Office Resources:
  - Staff knowledgeable with regards to Air, Water, Waste and Import & Export Programs, as well as, other environmental programs.
  - Bi-national mechanisms in place to work closely with Mexican Environmental Counterparts:
    - Office is a good resource for obtaining participation on bi-national level
  - Staff works in conjunction with Regional (Dallas) Program Staff to address local issues that may arise.

## Border Staff

- Dr. Carlos Rincon – Director & Air Contact
- Maria A. Sisneros – Water Contact
- Debra Tellez – Waste Contact
- Ed. Makarewicz – Import & Export Program Contact
- Staff addresses a variety of other environmental issues

## Contaminant Issues

- Stormwater Runoff – monitoring programs and enforcement actions delegated to State Agency or local agencies. In some case where NPDES has not been delegated to state, EPA will oversee permits, monitoring and enforcement actions.
- Drinking Water – Locally, Public Service Board for monitoring. Comply with drinking water standards. If for some reasons, water can not be treated and needs to by-pass plant, again state agency or EPA will get involved. EPA Dallas NPDES Program Office will be involved.
- River/Streams – IBWC monitors, discharges handled by state agency and/or EPA. If there are illegal discharges to river(s) state agency or EPA would be involved.

## Contact Information

**El Paso Border Office**  
**(915) 533-7273**  
**4050 Rio Bravo Suite 100**  
**El Paso, Texas 79902**

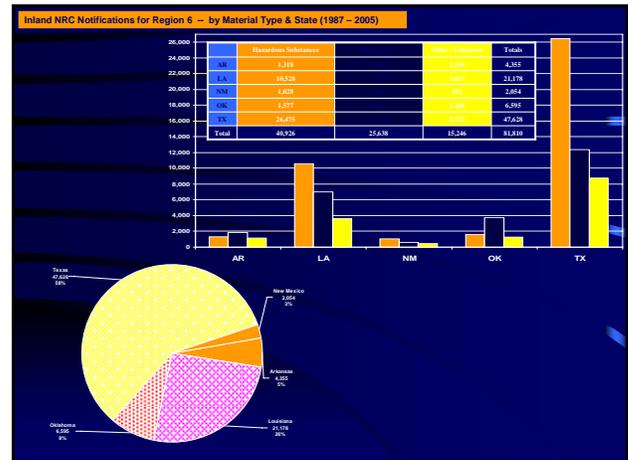
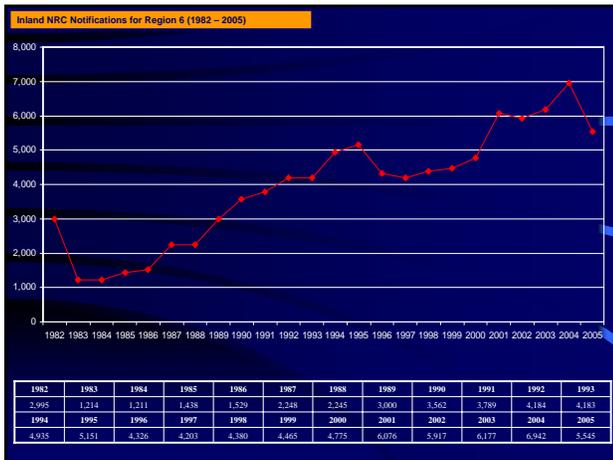
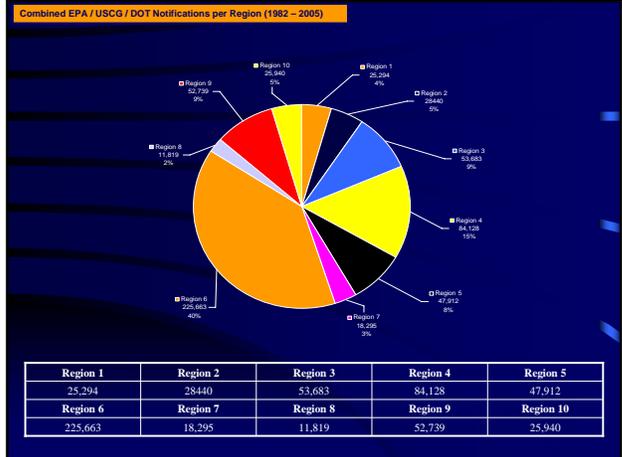
## *Emergency Response: Federal Involvement*

- Once a report is made, the NRC immediately notifies a pre-designated EPA [On-Scene Coordinator \(OSC\)](#).
- The OSC determines the status of the local response and monitors the situation to determine whether, or how much, federal involvement is necessary. It is the OSC's job to:
  - ensure that the cleanup, whether accomplished by industry, local, state, or federal officials, is appropriate, timely, and minimizes human and environmental damage.
  - The OSC may determine that the local action is sufficient and that no additional federal action is required. If the incident is large or complex, the federal OSC may remain on the scene to monitor the response and advise on the deployment of personnel and equipment. The OSC may take command of a situation in certain events.
  - The OSC may request additional support to respond to a release or spill, such as additional contractors, technical support from EPA's [Environmental Response Team](#), or Scientific Support Coordinators from EPA, [Regional Response Team](#) to access special expertise or to provide additional logistical support.
- In addition, the [National Response Team](#) stands ready to provide backup policy and logistical support to the OSC and the RRT during an incident.

# Coordination With Federal Assets

## EPA Emergency Response Activities

Scott Harris, Ph.D.  
Federal On-Scene Coordinator  
USEPA Region 6



# Construction of the NRP

Guiding Policy: Homeland Security Act & HSPD-5

### Supersedes

- FRP
- CONPLAN
- FRERP
- INRP

### Integrates

- NCP
- Other national-level contingency plans



### Key Concepts

- NIMS
- HSOC
- IIMG
- PFO
- JFO
- ESFs

# National Incident Management System

- Provides national standard for incident management
- Based on the National Interagency Incident Management System (NIIMS) Incident Command System (ICS)
- Concept of INS
  - Incident of National Significance

## Incidents of National Significance

Incidents which require DHS operational coordination and/or resource coordination:

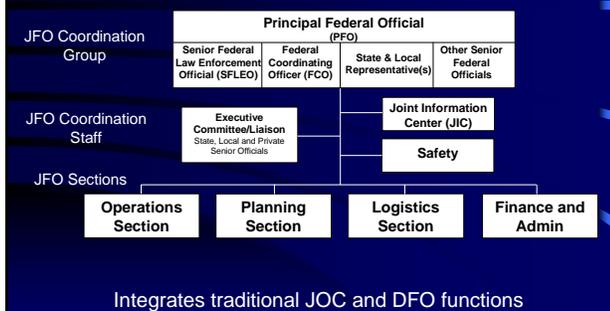
- Credible threats, indications or acts of terrorism within the United States
- Major disasters or emergencies (Stafford Act)
- Catastrophic incidents
- Unique situations that may require DHS to aid in coordination of incident management...

## Incidents of National Significance

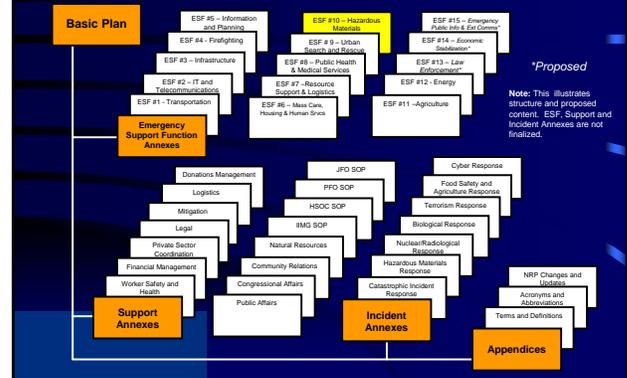
• Unique situations that may require DHS to aid in coordination:

- Federal department or agency acting under its own authority requests the assistance of the Secretary
- The Secretary has been directed by the President to assume responsibility for managing the incident
- Events exceed the purview of other Federal plans
- Events of regional or national importance involving one or more Federal agencies (at the discretion of the Secretary of DHS)
- National Special Security Events

## Joint Field Office



## Organization of the NRP



## The National Contingency Plan

- 40 Code of Federal Regulations (CFR) Part 300
- The NCP is the blueprint which:
  - outlines the structure of the National Response System (NRS)
  - defines the responsibilities for each component of the NRS
  - provides the mechanism for successful responses to oil and hazardous substance releases

## The National Contingency Plan

- Applies to:
  - discharges of oil into navigable waters
  - releases into the environment of hazardous substances, pollutants or contaminants
- Provides for efficient, coordinated and effective response



## The National Contingency Plan

Requires three fundamental activities:

- preparedness, planning and coordination for response
- notification and communication
- response operations



## National Response Team



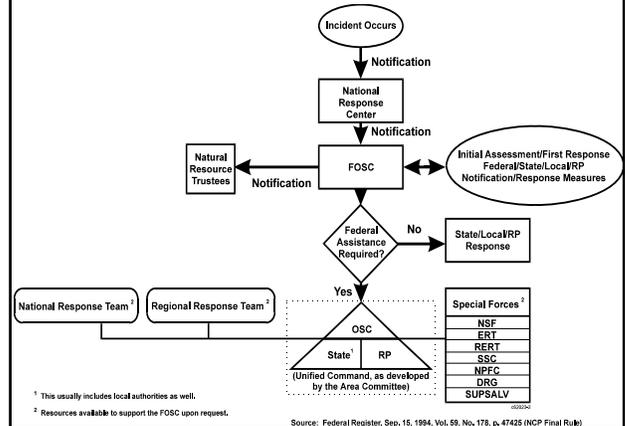
- Consists of 16 Federal agencies: EPA, USCG, FEMA, HHS, GSA, DOD, DOE, DOI, DOT, USDA, DOJ, DOS, NRC, DOT, DOA, NOAA
- EPA chair, USCG vice-chair
- Primary responsibilities are planning and preparedness
- May participate in large, multi-region responses

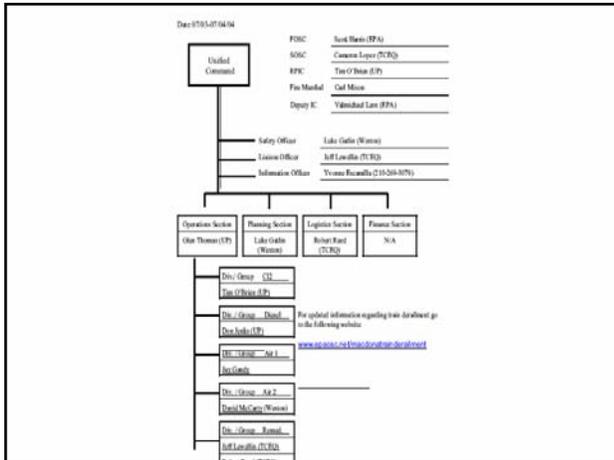
## Regional Response Teams



- Consists of State and 15 Federal agencies of the National Response Team
- Co-Chaired by United States Coast Guard (USCG) and EPA
- Primary responsibilities are planning and preparedness
- Provide response support as requested by FOSC

## National Response System Concept of Operations





## Federal On-Scene Coordinator

- Only EPA, USCG, DOD and DOE provide FOSCs for responses
- ~225 EPA FOSCs at 17 U.S locations
- 46 USCG Marine Safety Offices across 9 USCG Districts, each headed by a Captain of the Port (COTP), who acts as an FOSC

## FOSC

- Planning responsibilities include:
  - Regional Contingency Plans (RCPs)
  - Area Contingency Plans (ACPs)
- Preparedness responsibilities include:
  - exercises (industry, LEPC, RRT and NRT, other)
- Directs and/or coordinates response activities, resources

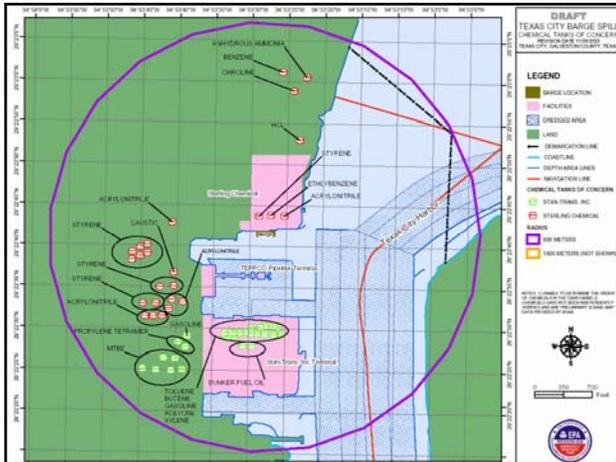
## FOSC Authorities

- National Contingency Plan
- Clean Water Act
  - Oil Pollution Act of 1990
- CERCLA (aka Superfund)
  - Emergency Planning and Community RTK Act
- Resource Conservation and Recovery Act
  - Hazardous wastes and USTs
- Enforcement to promote RP action
- SUPERFUND and Oil Spill Liability Trust Fund
- Emergency spending to \$200K / 2M
  - Federal Contracting Officers

## FOSC Authorities

- Remove or arrange for the removal of a discharge, and mitigate or prevent a substantial threat of a discharge at any time
- Direct or monitor all federal, state, and private actions to remove a discharge
- Remove and, if necessary, destroy a vessel discharging, or threatening to discharge by whatever means are available





## Assess RP Response

- The OSC may allow the responsible party to voluntarily and promptly perform removal actions, provided the OSC determines such actions will ensure an effective and immediate removal of the discharge or mitigation or prevention of a substantial threat of a discharge



## Plan B

- If effective actions are not being taken to eliminate the threat, or if removal is not being properly done, the OSC should, to the extent practicable under the circumstances, so advise the responsible party
- If the responsible party does not respond properly the OSC shall take appropriate response actions and should notify the responsible party of the potential liability for federal response costs incurred by the OSC pursuant to the OPA and CWA

**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY**  
REGION 6  
1445 ROSS AVENUE, SUITE 1200  
DALLAS, TX 75202-2733

October 28, 2005

Rod Pullen, Central West General Manager  
Valero L.P.  
P.O. Box 23057  
Coppus Creek, TX 75043

Re: Notice of Federal Interest in an Oil Pollution Incident, Neacox County, Texas

Dear Mr. Pullen:

This letter is to inform you that a discharge and substantial threat of a discharge of oil from a Valero pipeline were discovered in a drainage adjacent to the Valero Refinery in Neacox County, Texas. The discharge of a prohibited quantity of oil or a hazardous substance is a violation of the Clean Water Act, as amended by the Oil Pollution Act of 1990 (OPA). Under the OPA, the responsible party is liable for clean-up costs and damages resulting from the incident. A responsible party is the owner, operator, or person in charge of a facility or vessel from which the oil is discharged or poses a threat of discharge.

If you are a responsible party, you should clean up the discharged oil and/or take other actions to prevent or mitigate or minimize the threat of a discharge of oil. If you are a responsible party and do not act, the United States may respond for you and take such actions that are necessary to remove the discharged oil or to minimize or mitigate the threat. **The U.S. costs to respond to this incident will be billed to, and recovered from, the responsible party.**

You are advised that a responsible party may lose the opportunity to limit their liability for cleanup under OPA if the responsible party fails or refuses to provide all reasonable cooperation and assistance requested by a responsible official in connection with response activities. A responsible party who fails to comply with the order of a Federal On-Scene Coordinator (FOSC) to remove the discharge or to an administrative order to protect the public health and welfare may be subject to additional penalties under the Federal Water Pollution Control Act (FWPCA), a civil penalty can amount up to \$27,500 per day of violation or up to three times the costs incurred by the Oil Spill Liability Trust Fund to conduct removal actions.

If a responsible party takes adequate removal actions in this matter, federal removal actions will typically be limited to monitoring the progress of your actions and providing guidance as necessary. It is not to be done properly if it is done in accordance with federal and state statutes and regulations and in accordance with the terms of the National Oil and Hazardous Substance Pollution Contingency Plan (NCP). If you undertake the removal action, the adequacy of such actions shall be evaluated by the FOSC. Under the FWPCA, a responsible party's actions may be taken into account in determining the amount of any penalty assessed as a result of the incident. I am the FOSC for this incident, and can be reached at 214-695-7114 (office), or 214-769-9650 (cell). Please contact me immediately regarding this incident.

Respectfully,  
**Scott Harris, Ph.D.**  
Scott Harris, Ph.D.  
Federal On-Scene Coordinator  
U.S. EPA Region 6

## Start / ERRS Contractors

### Superfund Technical Assessment and Response Team (START)

- Emergency Response
- Planning/Prevention
- Site Characterization
- Removal Action Support



### Emergency Response and Removal Services

- Rapid Deployment
- Removal and Remediation



## Requesting Support

- Call NRC
  - 800.424.8802
  - Request EPA callback and support
- Call R6 Hotline
  - 866.372.7745 (866.EPA SPIL)
- No costs to requesting parties
- Response role may vary

Discussion?

214-665-7114  
[harris.scott@epa.gov](mailto:harris.scott@epa.gov)



EL PASO COUNTY WATER IMPROVEMENT DISTRICT No. 1  
 294 CANDELARIA • EL PASO, TEXAS 79907-5599 • (915) 859-4186 • FAX (915) 858-4183  
 TAX OFFICE (915) 859-0819 • DISPATCHER (915) 859-9128

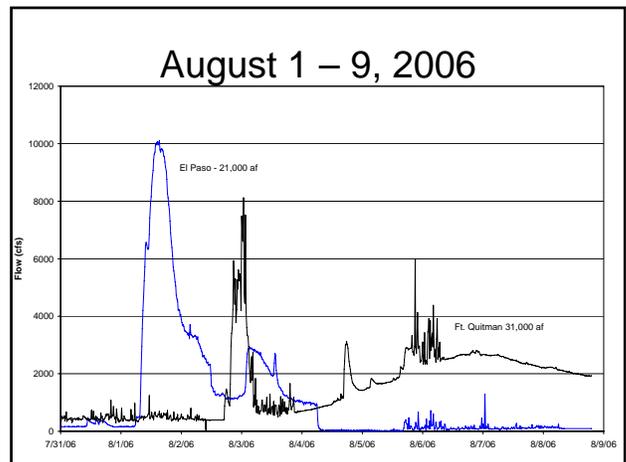
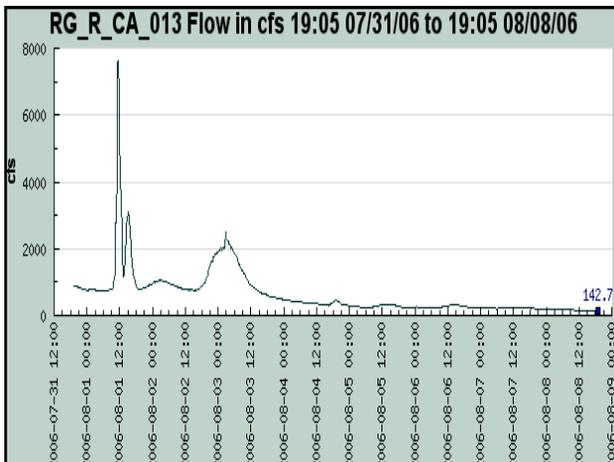
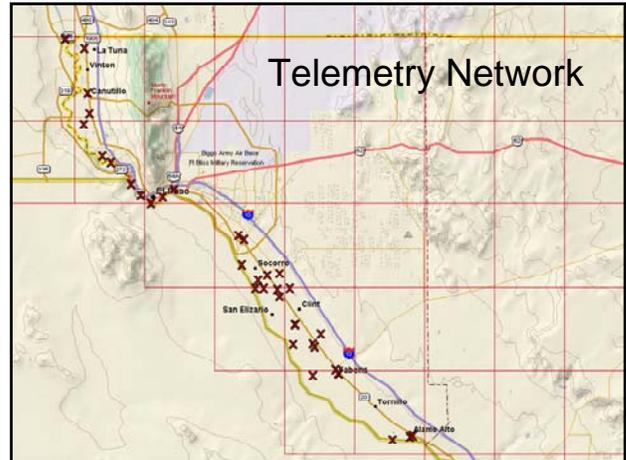
## Flood of Aug. 2006

1. 24x7 Operation of American Canal System
2. Real Time Flood Flow Monitoring
3. Levee Breach Repair and Control
4. Storm Water Impact on Agricultural Drainage System



## Flood Flow Monitoring

- Real Time Telemetry (<15 minute latency)
- Rio Grande and Drainage System
- Internet Access and VPN Access
- Aerial Survey (Jobe Concrete)
- Boots on the Ground via cell phone
- Extensive Contact List (employees, farmers, etc.)



## Aerial Survey



## Levee Breach and Control

- 3 Levee Problems
  - Ascarate Waste Way
  - Faben's Waste Channel
  - El Paso – Hudspeth County Line
- Control with Excavators and RipRap
- Minimum of 12 Locations need repairs
- Overtopping of American Canal possible









## Agricultural Drainage System

- Extensive system of over 200 miles of drains
- Provides Drainage for Upper and Lower Valley
- Several Arroyos flow directly into drains or canals
- Used by City to Relieve Feather Lake and Local Flooding at Bustamante WWTP
- Used by 100's of sites to dispose of ponded water
- No tax or fee funds available for disposal of non-agricultural storm water

## Summary

- System almost had catastrophic failure
- Actual flow much less than design flow
- Without Agricultural Drains damage to City would have been much greater
- American Canal is between River and Downtown El Paso
- Telemetry system needs upgrading
- Communications need improvement

## What Worked Right

- US IBWC, TXDOT, Hudspeth County
  - Excavator, dump trucks, material
- USBR
  - provide critically needed pumps
- Private Entities
  - Aerial survey, dump trucks, material