

Kerrville's Response
to the
July 2002 Flood
Largest Flood of Record for Quinlan Creek

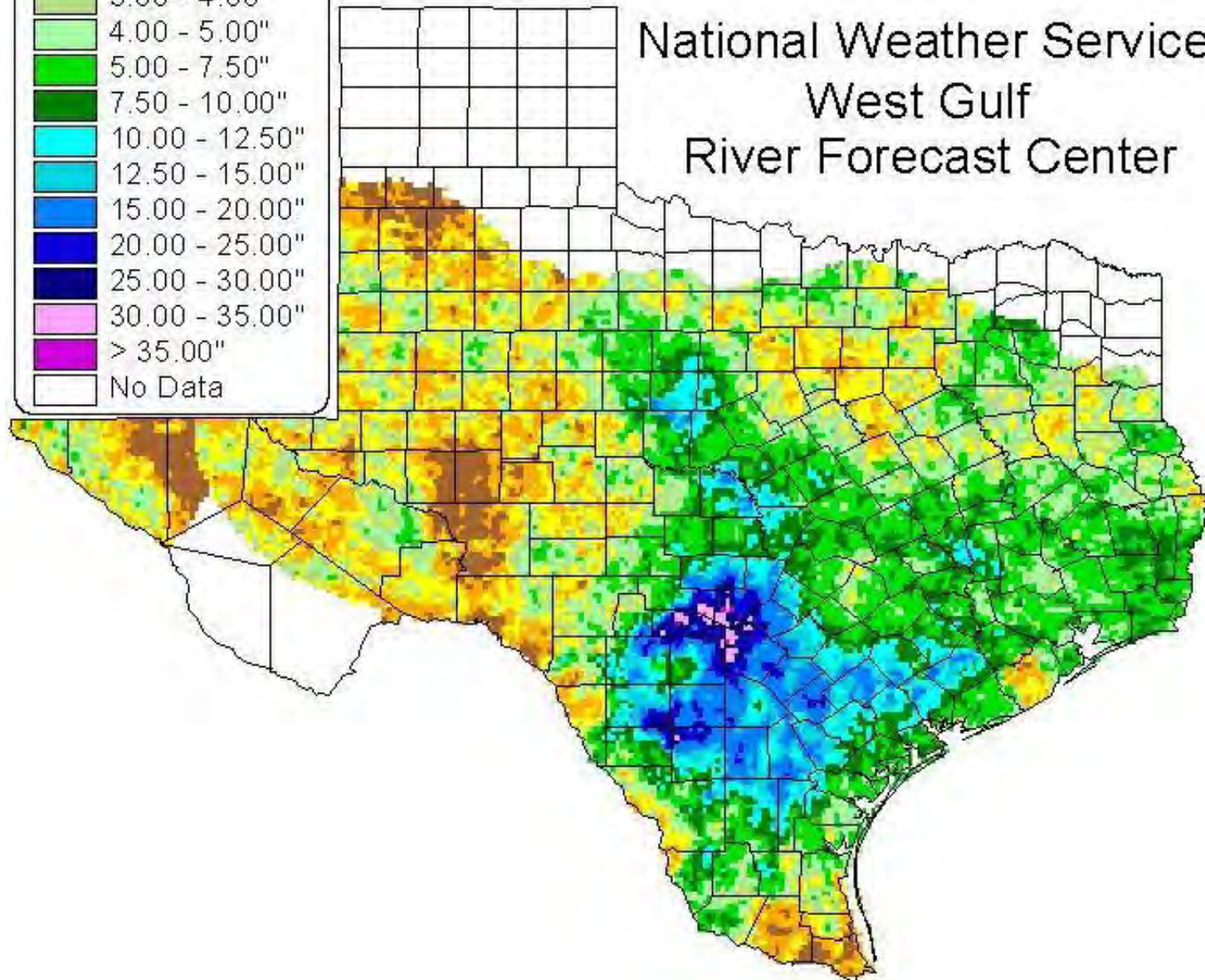
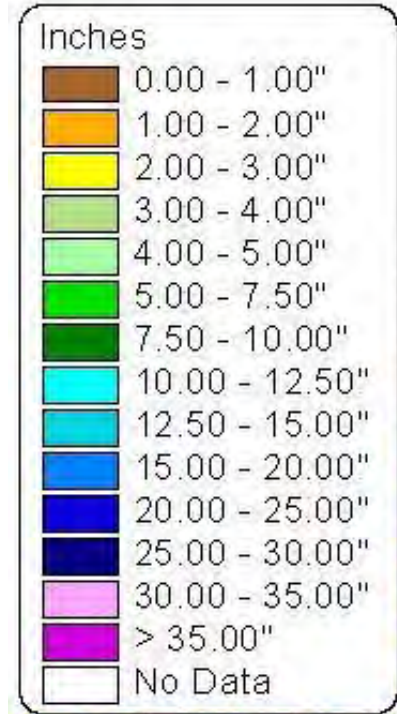
Charlie Hastings, P.E., CFM
City of Kerrville

Summary

- Storm & Emergency Response
 - Condition Assessment
 - Emergency Contracts and Purchases
 - Debris Disposal
- CIP and Federal Funds
 - Buy-Outs
 - Infrastructure Restoration
 - Final Accounting

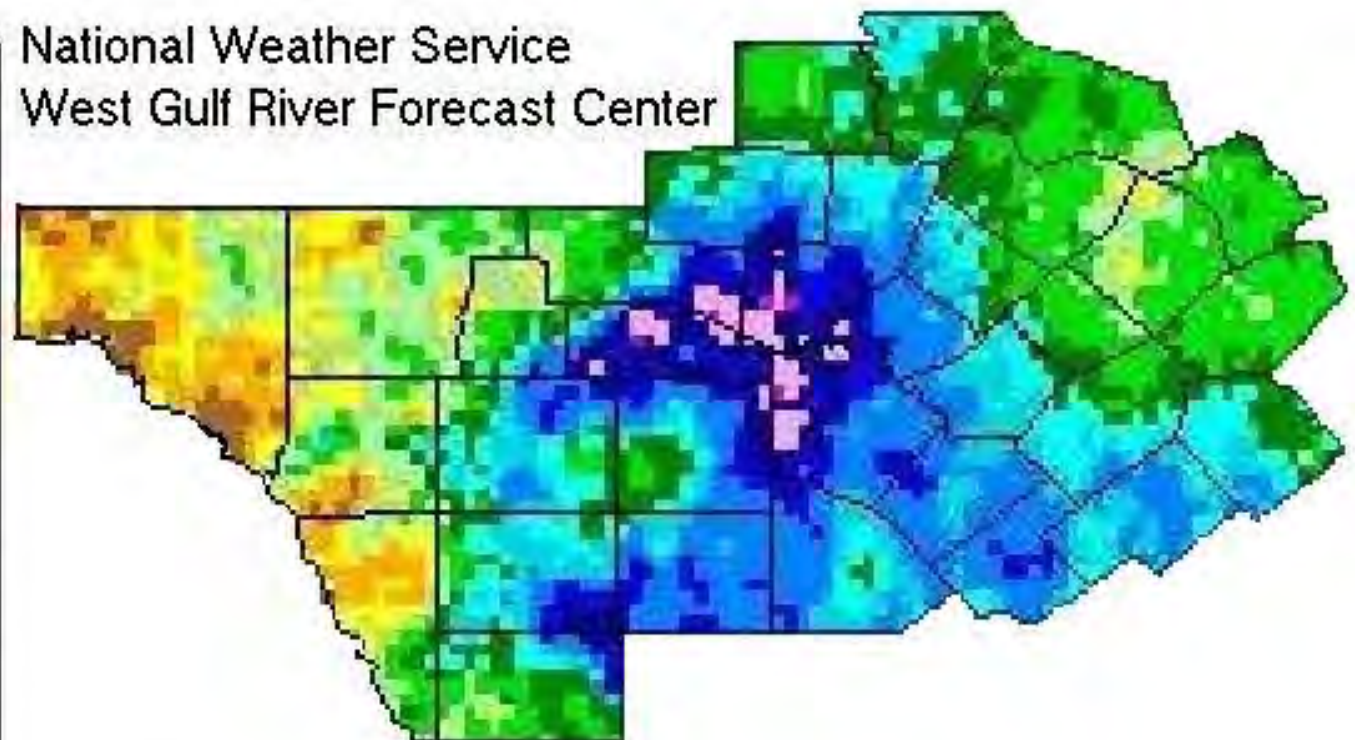
Accumulated Rainfall July 1 to 22, 2002

National Weather Service
West Gulf
River Forecast Center



Accumulated Rainfall July 1 to 22, 2002

National Weather Service
West Gulf River Forecast Center



Inches



A photograph of a flooded residential street. The water is murky brown and flows across the road. In the background, there are white houses, green trees, and a utility pole. The sky is overcast. The text "TURN AROUND DON'T DROWN!!!" is overlaid in large, orange, 3D-style letters.

**TURN AROUND
DON'T DROWN!!!**







2 10:15 AM

y into our past

ugh Time" takes KACC patrons on a
Kerr County's past with historic photos

.1C

➤ Spotlight

Meet the Deans

Meet the new Kerrville Area Chamber of
Commerce president and more in the July issue
of BusinessLink.



➤ Inside



Could it happen again?

City looks at possible flooding around

By all accounts, 2002 in Kerrville started out as a dry year. The area received just a little more than 6 inches in the first half of the year, the lowest recorded in only three months this year.

But then rain started falling on June 28, 2002, dropping 3 inches, and by July 1, 2002, the area

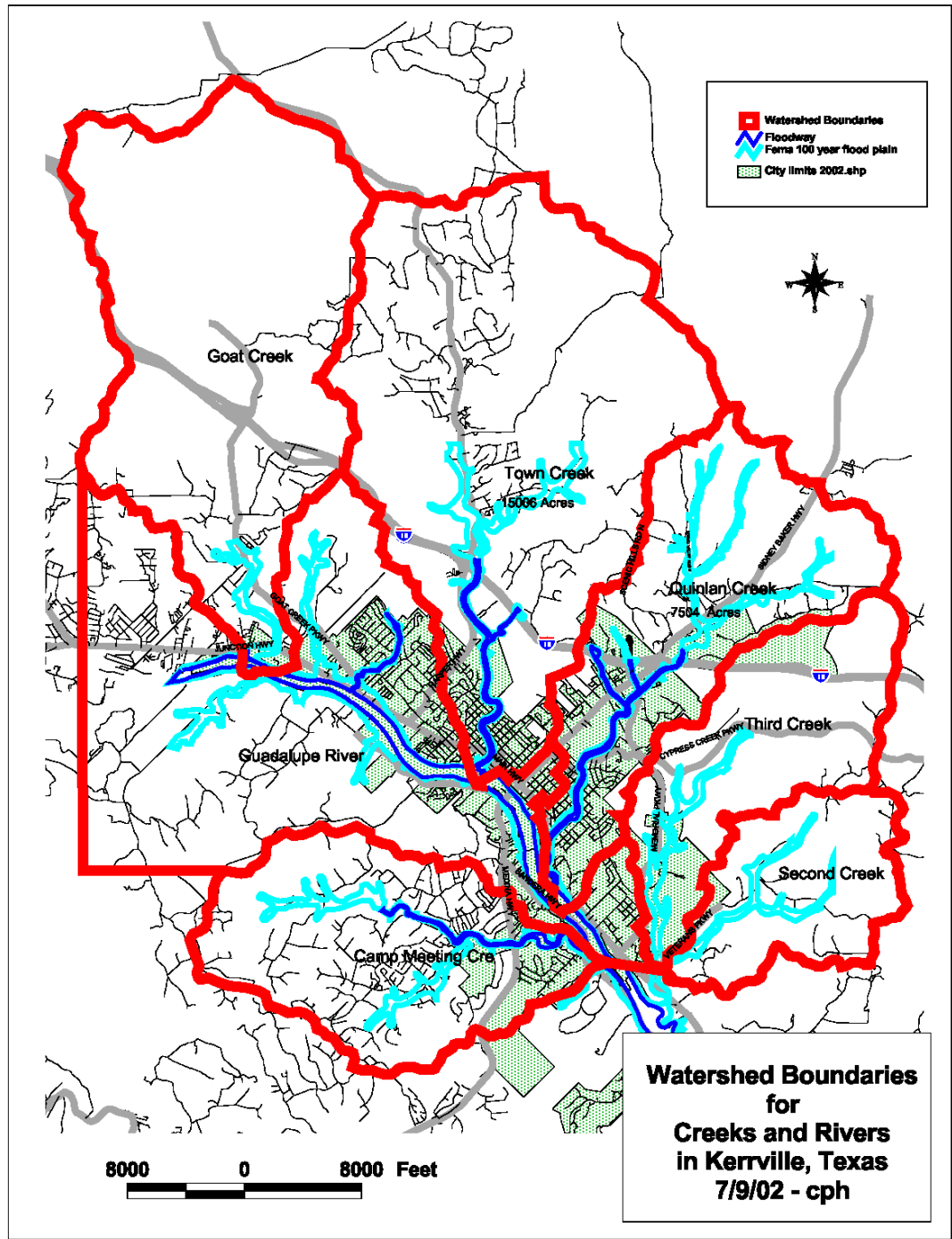
YES!!!

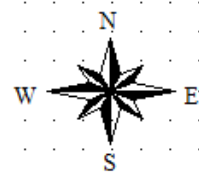
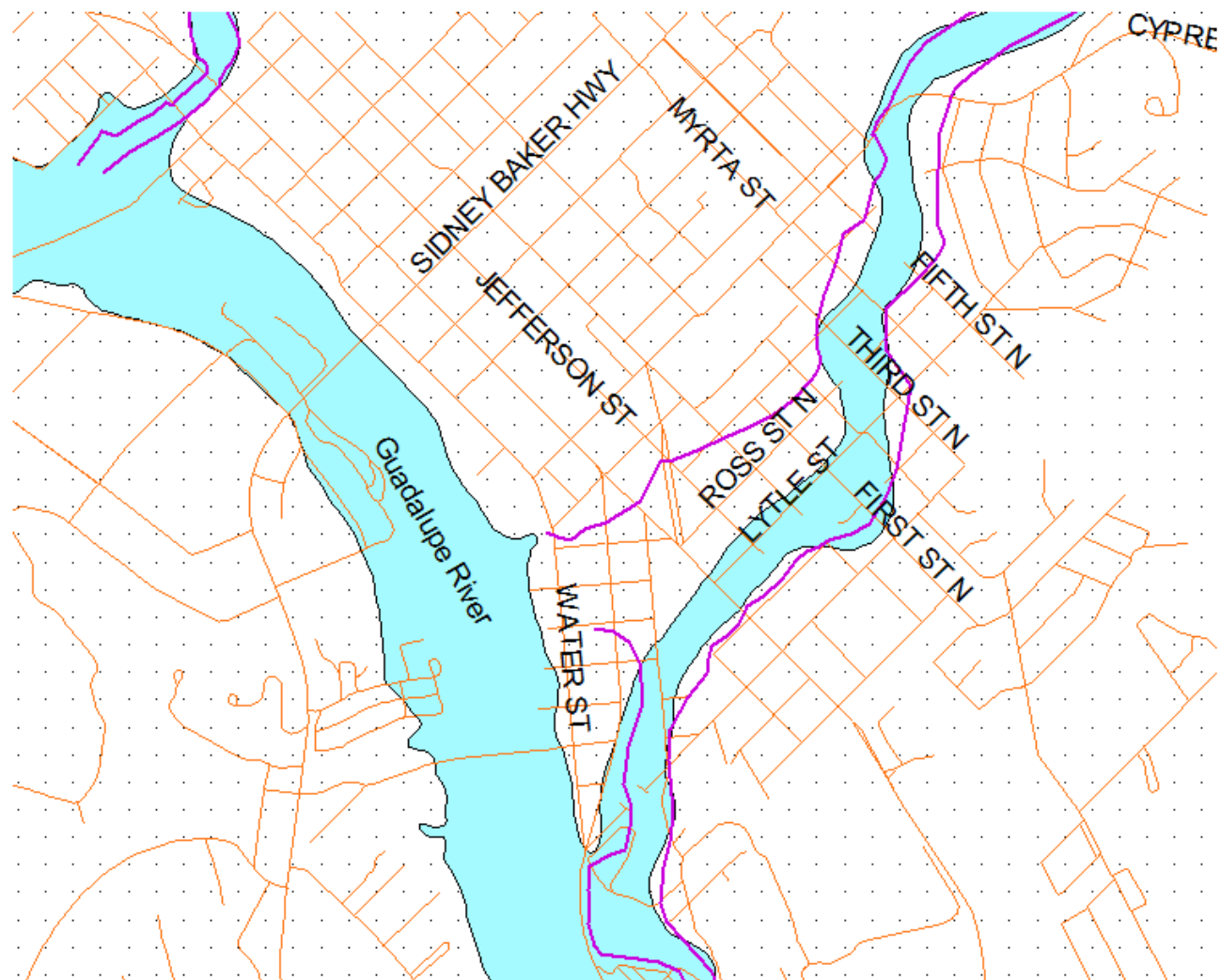
Emergency Operation Center



- Affirm/Restablish
 - Chain of Command
 - Responsibilities/Jurisdiction
 - Communication/Flow of Information
 - PRO
- Civic Groups
 - Red Cross
 - Texas Baptist Men

Condition Assessment

- Clear, Concise and Meaningful Information
 - Affirm/Restablish database and manager
 - Phone calls
 - E-mails
 - Visitors
 - Pictures, Data and Maps
 - Time and date stamped
 - GIS/GPS
- Public and Private Infrastructure
 - Floodplain Debris Mapping
 - Public Infrastructure Damage Assessment
 - Residential Substantial Damage Estimator (RSDE)





-  Debris line 2002 flood
-  Fema 100 year flood plain

NOTES:

1. Reports of up to 17 inches of rain per hour
2. Over 200 homes reported flooded
3. Chance of a storm being equal or greater is 0.1%
4. 23 homes located in floodway were purchased through FEMA and can never be used for construction again
5. One home completely destroyed and missing (Third and Ross)

July 3, 2002 Flood



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Country Clean
LAUNDROMAT



WASH

STOP



Emergency Contracts and Purchases

- Critical facilities
 - Water plant
 - Landfill
 - Water and sewer mains
 - Sewer lift stations
- In-house construction
- Local contractors
- Contract amendments
- Document, document, document





Debris Disposal

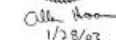
- Residential debris (immediate)
 - Schedule advertised in Newspaper (4 weeks)
 - Trash on curb
 - City collected trash with loaders and dump trucks
 - Provided dumpsters in neighborhoods
 - Rummaging
- Public and floodplain debris
 - In-house clearing at critical locations
 - Contract clearing in floodplain
- Volume too large for landfill
 - Permit from TCEQ to burn
 - Contract

CITY OF KERRVILLE
TEXAS



- [illegible]

1. TITLE SHEET
2. TOWN CREEK - REACH "A" THROUGH REACH "D"
3. QUINLAN CREEK - REACH "E" THROUGH REACH "G"
4. QUINLAN CREEK - REACH "G" THROUGH REACH "J"
5. QUINLAN CREEK - REACH "J" THROUGH REACH "L"



P.O. Box 54
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BOERNE, TEXAS 78002
PH: 830-248-0600

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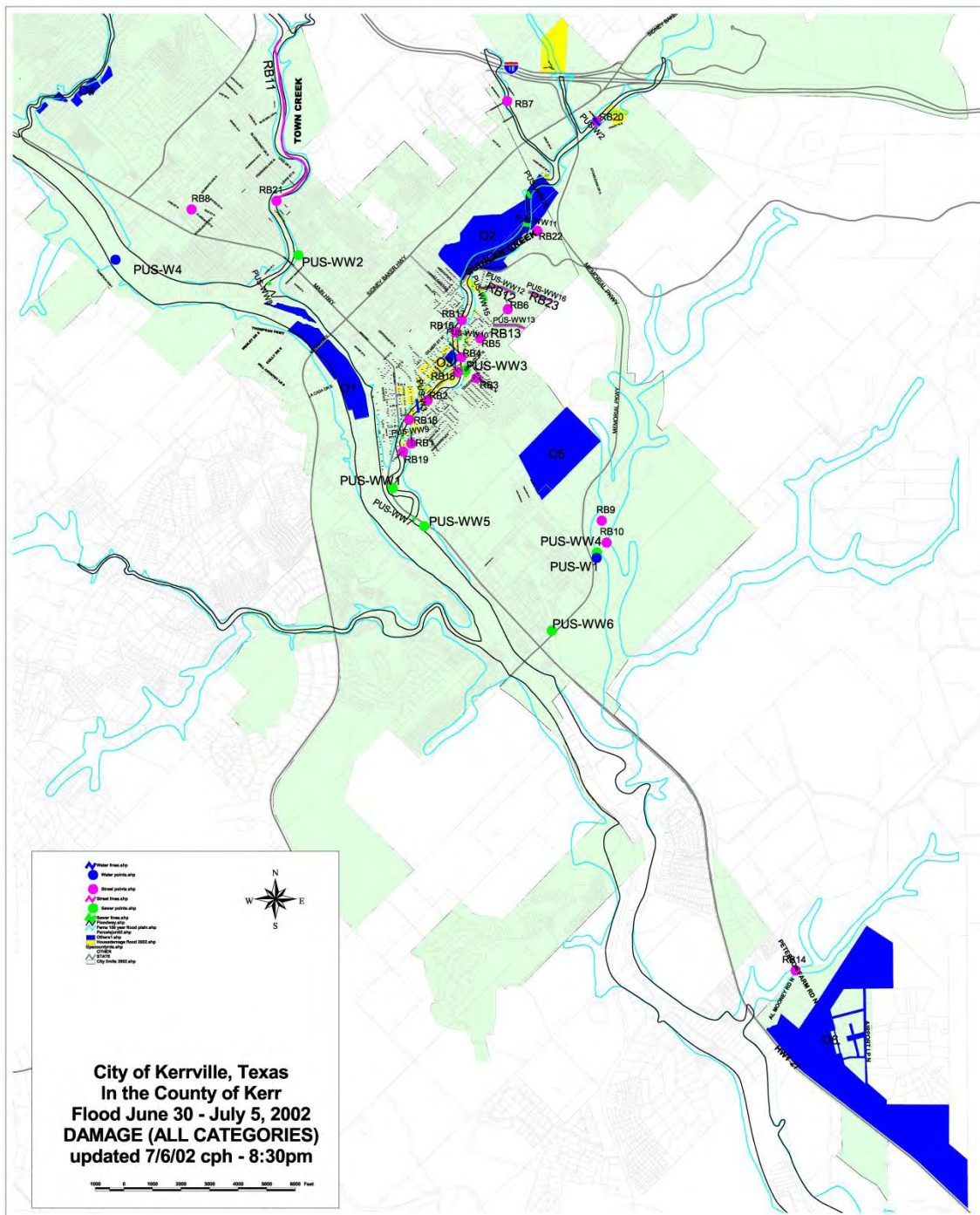
Accelerated Incineration

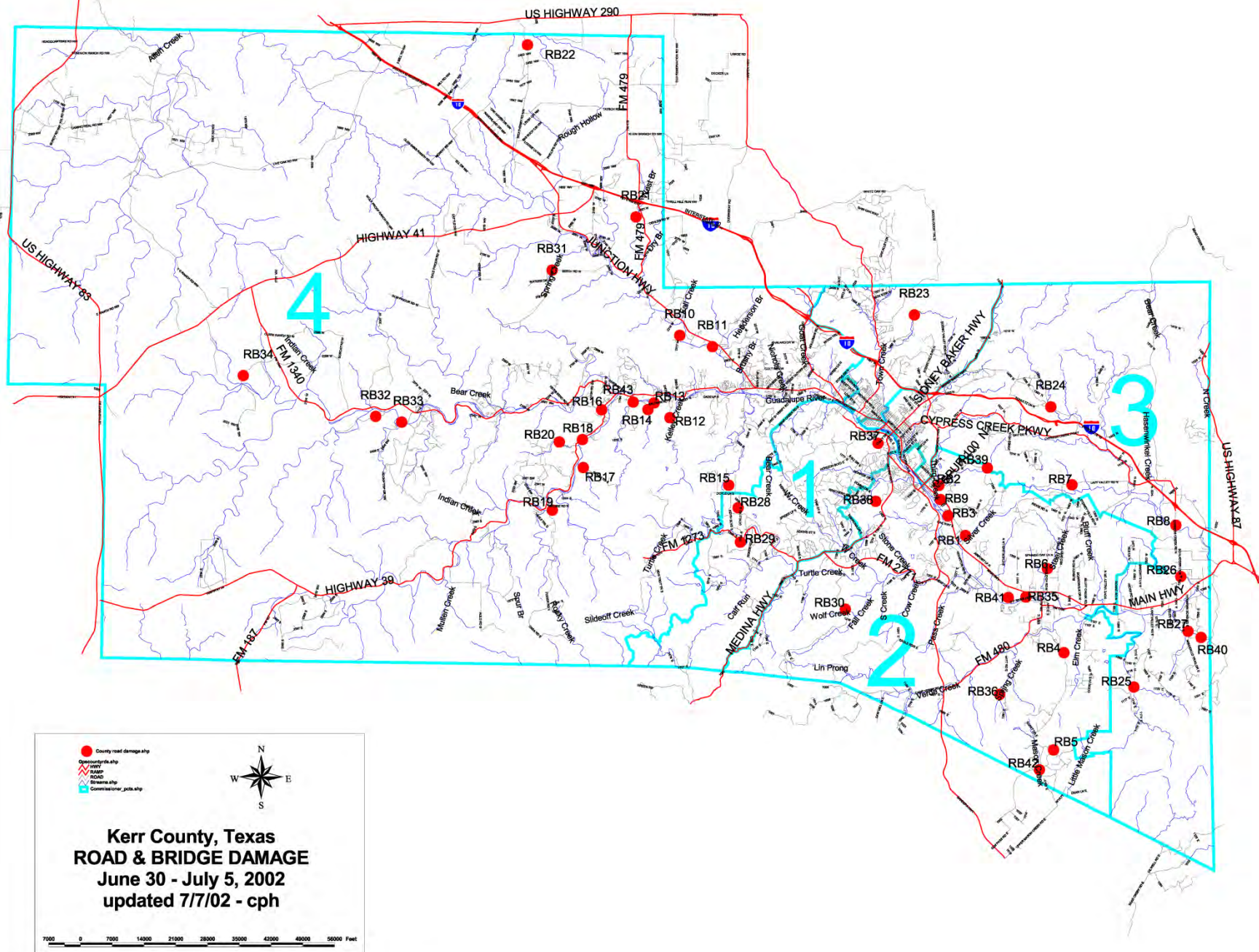


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CIP and Federal Funds

- Condition Assessment
- Engineer's Estimates (in-house)
- City and County submittal





Buy-Outs

- ORCA
- 27 homes qualified
 - Substantially damaged
 - Floodway
- 23 homes purchased and demolished
 - In-house demolition
 - Deed restriction
 - Flood control only

415

W Schreiner

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720

LITTLE

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Infrastructure Restoration

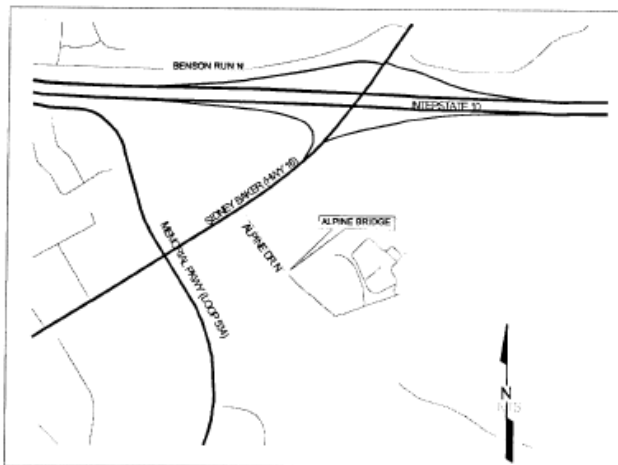
- Consolidate city funding
- In-house Construction
- In-house Engineering
- Engineering Consultants
- Contractors
 - Emergency
 - Quotes
 - Sealed bid

ALPINE BRIDGE & WATER MAIN RECONSTRUCTION

CITY OF KERRVILLE, TEXAS

GENERAL NOTES

- ALL CONSTRUCTION SHALL COMPLY WITH THE CITY OF KERRVILLE AND TNRCC ORDINANCES, CODES, AND REGULATIONS, UNLESS OTHERWISE STATED IN THE PLANS OR SPECIFICATION BOOK. ALL CONSTRUCTION SHALL CONFORM TO CITY OF KERRVILLE STANDARD SPECIFICATIONS FOR SUBDIVISION CONSTRUCTION DATED AUGUST, 2002.
- THE CONTRACTOR IS RESPONSIBLE FOR NOTIFICATION OF ALL AUTHORIZED INSPECTORS AND PERSONS IN CHARGE OF PRIVATE OR PUBLIC UTILITIES AFFECTED BY THIS PROJECT PRIOR TO COMMENCEMENT OF WORK.
- THE CONTRACTOR SHALL PROVIDE TRENCH SAFETY IN ACCORDANCE WITH OSHA SPECIFICATIONS AND PROVIDE DAILY INSPECTIONS TO ENSURE THAT THOSE REQUIREMENTS ARE BEING MET. THE CONTRACTOR IS RESPONSIBLE FOR ENSURING THE SAFETY OF THOSE PERSONS WORKING IN AND AROUND THE TRENCH.
- SHOULD THE CONTRACTOR FIND ANY DISCREPANCY OR OMISSIONS FROM THE CONSTRUCTION PLANS, HE WILL NOTIFY THE CITY ENGINEER AT ONCE TO OBTAIN CLARIFICATION PRIOR TO STARTING CONSTRUCTION.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ALL BARRICADES, WARNING SIGNS, FLASHING LIGHTS, AND TRAFFIC CONTROL DEVICES IN ACCORDANCE WITH THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES AND SHOWN ON A TRAFFIC CONTROL PLAN SUBMITTED BY THE CONTRACTOR FOR APPROVAL BY THE CITY ENGINEER.
- THE CONTRACTOR AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES TO EXISTING UTILITIES CAUSED BY HIS FAILURE TO LOCATE AND PRESERVE ANY AND ALL EXISTING UTILITIES.
- THE LOCATIONS AND DEPTHS OF EXISTING UTILITIES SHOWN IN THESE PLANS ARE APPROXIMATE. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO LOCATE UTILITY SERVICE LINES 48 HOURS PRIOR TO EXECUTION AND PROTECT THE SAME DURING CONSTRUCTION.
 - ELECTRIC LINES - KPLUB - (800) DIG-TESS
 - WATER/WASTEWATER - CITY OF KERRVILLE - (830) 792-8319
 - GAS LINES - ONCOR - (800) DIG-TESS
 - TELEPHONE - KERRVILLE TELEPHONE - (800) DIG-TESS
- CONTRACTOR IS RESPONSIBLE FOR THE REMOVAL OF ALL WASTES ASSOCIATED WITH CONSTRUCTION.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR SAFEGUARDING AND PROTECTING ALL MATERIAL AND EQUIPMENT STORED ON THE JOBSITE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE STORAGE OF MATERIALS IN A SAFE AND WORKMANLIKE MANNER TO PREVENT INJURIES, DURING AND AFTER WORK HOURS, UNTIL PROJECT COMPLETION.
- THE CONTRACTOR SHALL NOT UNLOAD ANY TRACK-TYPE CONSTRUCTION MACHINERY ON ANY EXISTING PAVEMENT OR CROSS OVER ANY EXISTING PAVEMENT OR CURB DURING THE PROJECT WITHOUT AUTHORIZATION FROM THE CITY ENGINEER WHERE APPLICABLE.
- ALL FITTINGS, VALVES, OR OTHER APPURTENANCES NECESSARY FOR TESTING OR DISINFECTION OF UTILITY LINES SHALL BE PROVIDED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.
- SANITARY PRECAUTIONS MUST BE TAKEN DURING WATERLINE CONSTRUCTION, AS CALLED FOR BY AWWA STANDARDS. PRECAUTIONS INCLUDE KEEPING PIPE CLEAN AND CAPPING OR OTHERWISE EFFECTIVELY COVERING OPEN PIPE ENDS TO EXCLUDE INSECTS, ANIMALS OR OTHER SOURCES OF CONTAMINATION FROM UNFINISHED PIPE LINES AT TIMES WHEN CONSTRUCTION IS NOT IN PROGRESS.
- DISINFECTION OF THE PROPOSED WATER TRANSMISSION MAIN SHALL BE ACCORDING TO CITY OF KERRVILLE STANDARD SPECIFICATIONS DATED AUGUST 2002.
- AVAILABLE STAGING AREAS ARE AS SHOWN ON SHEET 2.
- LOWER PORTIONS OF THE CONCRETE WINGWALL ARE CONTINUOUSLY UNDER WATER AND A COFFER DAM OR OTHER APPROVED METHOD OF CONSTRUCTION WILL BE NECESSARY (NO SEPARATE PAYMENT).



VICINITY MAP

APPROXIMATE QUANTITIES:

- DEBRIS REMOVAL, ESTIMATED 150 CY
- REINFORCED CONCRETE CLASS 'C' WINGWALL AND BOX REPAIR, 10 CY
- EMBANKMENT FILL (MATERIAL PROVIDED), 800 CY COMPACTED (1100 CY LOOSE)
- BRIDGE COMBINATION TYPE C101 TRAFFIC/PEDESTRIAN RAIL, 50 L.F.
- 12" DUCTILE IRON WATER MAIN, 255 L.F.
- 12" BOLTED WATER LINE TRANSITION COUPLINGS, SMITH-BLAIR 441, QUANTITY 2
- 12" 45° WATER LINE BENDS AND MEGA-LUGS, QUANTITY 4
- 2" APCO 140 SERIES AIR RELEASE VALVE, QUANTITY 1
- 8" PVC WATER MAIN, 45 L.F.
- 8" BOLTED WATER LINE TRANSITION COUPLINGS, SMITH-BLAIR 442, QUANTITY 1
- 8" 45° WATER LINE BENDS AND MEGA-LUGS, QUANTITY 2
- 12" X 8" TAPPING SLEEVE & VALVE (TS&V), QUANTITY 1
- PIPE SUPPORTS UNDER BRIDGE FOR 12" WATER LINE EVERY 10 FEET, QUANTITY 4
- REINFORCED CONCRETE CLASS 'B' TOE WALL, 1'X3'X200', 25 CY
- REINFORCED CONCRETE CLASS 'B' SIDE TOE WALL, 1'X1.5'X30', 2 CY
- REINFORCED CONCRETE CLASS 'B' TOE WALL, 1'X1.5'X187', 11 CY
- REINFORCED CONCRETE CLASS 'B' 6" THICK RIP-RAP, 3930 S.F., 75 CY
- REINFORCED CONCRETE CLASS 'A' CURB & GUTTER, 150 L.F.
- REINFORCED CLASS 'B' CONCRETE 4-FOOT WIDE 4" THICK SIDEWALK, 180 L.F.
- PEDESTRIAN TYPE P1 HAND RAIL, 180 L.F.
- ASPHALT PAVEMENT REPAIR (8" BLACK BASE TYPE 'C', 2" SURFACE TYPE 'D'), 80'X10', 90 S.Y.

ORDER OF CONSTRUCTION:

- REMOVE EXISTING CONCRETE RIP-RAP AND TREES AS NOTED ON SHEET 2. REMOVE OTHER DEBRIS (BROKEN PIPE, CONCRETE, VEGETATION, GRAVEL, ETC.) THAT IS IN THE WAY OF THE PROPOSED IMPROVEMENTS. HAVE CONTRACTOR'S GEOTECHNICAL LAB TEST EMBANKMENT MATERIAL TO DETERMINE COMPACTION AND OPTIMUM MOISTURE CONTENT USING THE MODIFIED PROCTOR TEST.
- REMOVE THE EXISTING HANDRAIL AS SHOWN ON SHEET 2 OF 6.
- REMOVE AND REPAIR THE CONCRETE WINGWALL AS SHOWN ON SHEET 2. LOWER PORTIONS OF THE CONCRETE WINGWALL ARE CONTINUOUSLY UNDER WATER AND A COFFER DAM OR OTHER APPROVED METHOD OF CONSTRUCTION WILL BE NECESSARY (NO SEPARATE PAYMENT). INSTALL NEW COMBINATION TRAFFIC/PEDESTRIAN RAIL.
- USING THE FILL MATERIAL AVAILABLE AS NOTED ON SHEET 2 OF 6, PREPARE EMBANKMENT COMPACTING TO 95% MODIFIED PROCTOR OR BETTER. CONTRACTOR'S GEOTECHNICAL LABORATORY SHALL TAKE DENSITY TESTS OF THE EMBANKMENT AT 50-FOOT INTERVALS EVERY 3 FEET OF FILL AT LOCATIONS TO BE DETERMINED BY THE CITY INSPECTOR.
- INSTALL 12" DUCTILE IRON WATER MAIN AND 8" PVC WATER MAIN AS SHOWN ON SHEET 3 USING PROPER EMBEDMENT AND COMPACTION PER KERRVILLE SPECIFICATIONS.
- CONSTRUCT CURB & GUTTER, SIDEWALK AND CONCRETE RIP-RAP AS NOTED ON SHEET 3. INSTALL NEW PEDESTRIAN RAIL.
- TEST AND FLUSH WATER MAIN PER KERRVILLE STANDARD SPECIFICATIONS. UPON ACCEPTANCE OF WATER MAIN, CITY WILL ABANDON TEMPORARY 12" WATER MAIN AND REMOVE.
- PERFORM ASPHALT PAVEMENT REPAIR AS NOTED ON SHEET 3.



Charles P. Hastings

1/30/2003

CITY OF KERRVILLE	
ALPINE BRIDGE REPAIR	
KERRVILLE	TEXAS
DATE: 1/24/03	COVER SHEET & CONSTRUCTION NOTES
DATE: 1/24/03	RB20
SCALE:	PUS-W2
	1 of 11





Document, Document, Document

Force Account

- Labor
 - Hours regular time
 - Hours overtime
 - Benefits
- Equipment
 - Type
 - Rented
- Materials
- Contract Work

Final Accounting

- 2002 – Storm
- 2003 - Federal Funds Available
- 2005 – Federal Funds Reimbursement
- 2007 – Fiscal recovery from storm
- 2012 – Final accounting (ORCA)