

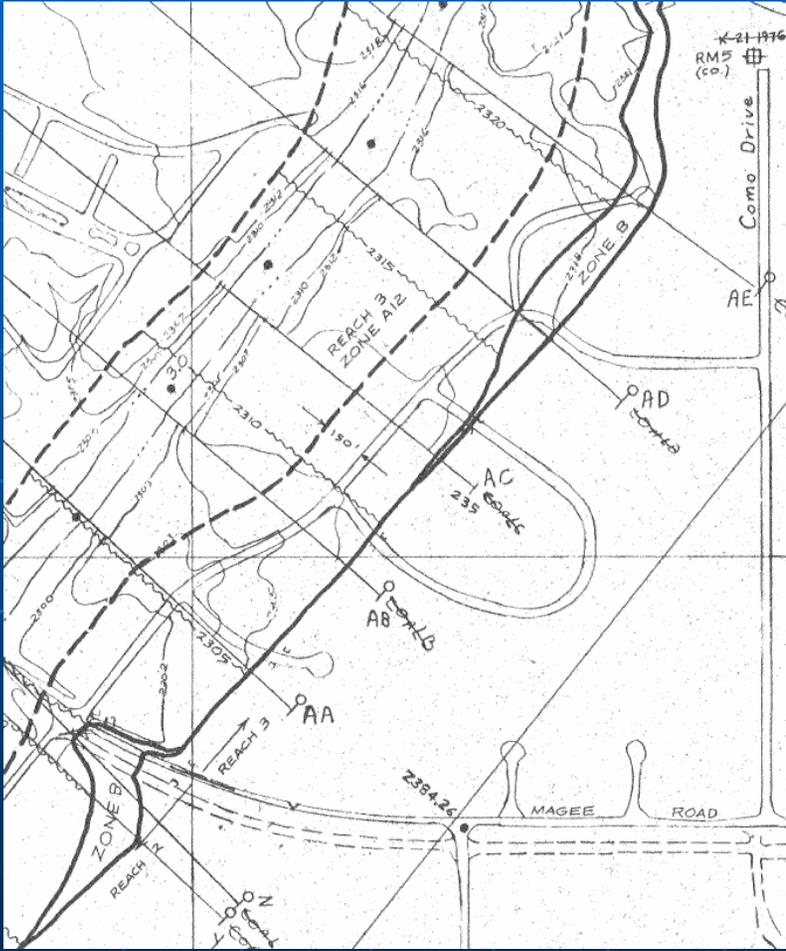
Digital Flood Insurance Rate Maps

Coordination, Digital Products and Outreach

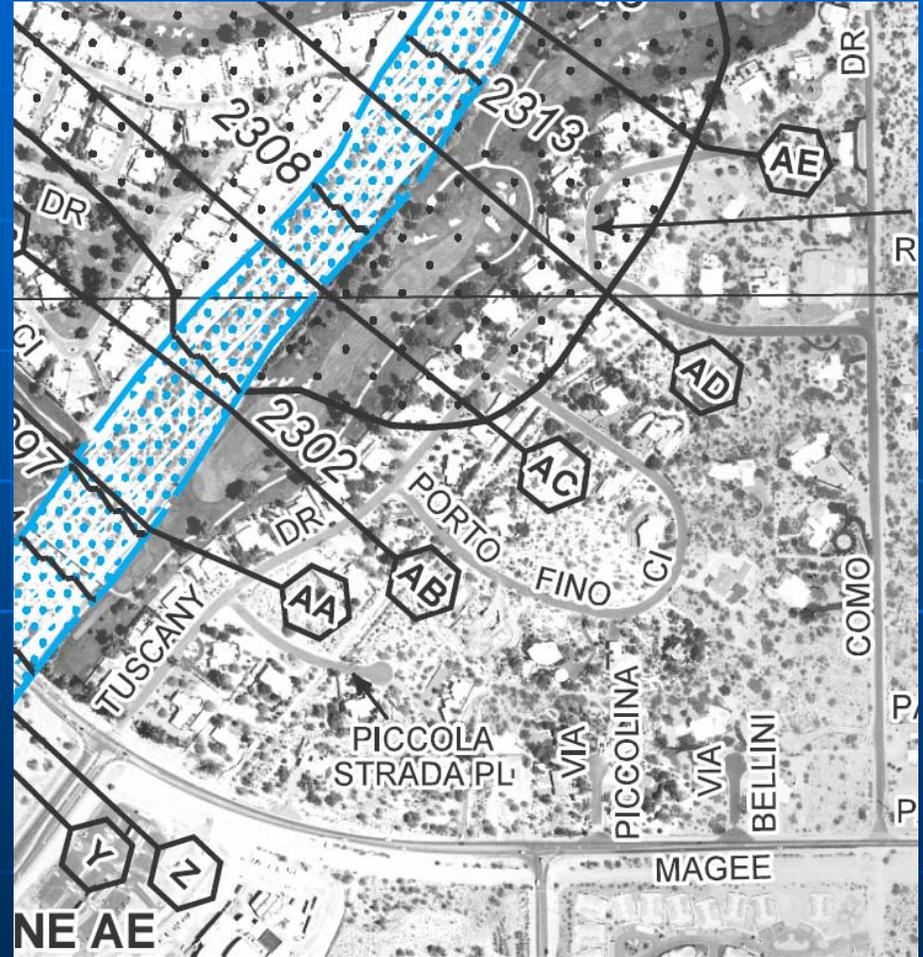
GIS Coop Meeting

8/21/2009

FEMA is transforming to GIS based mapping



FIRMs

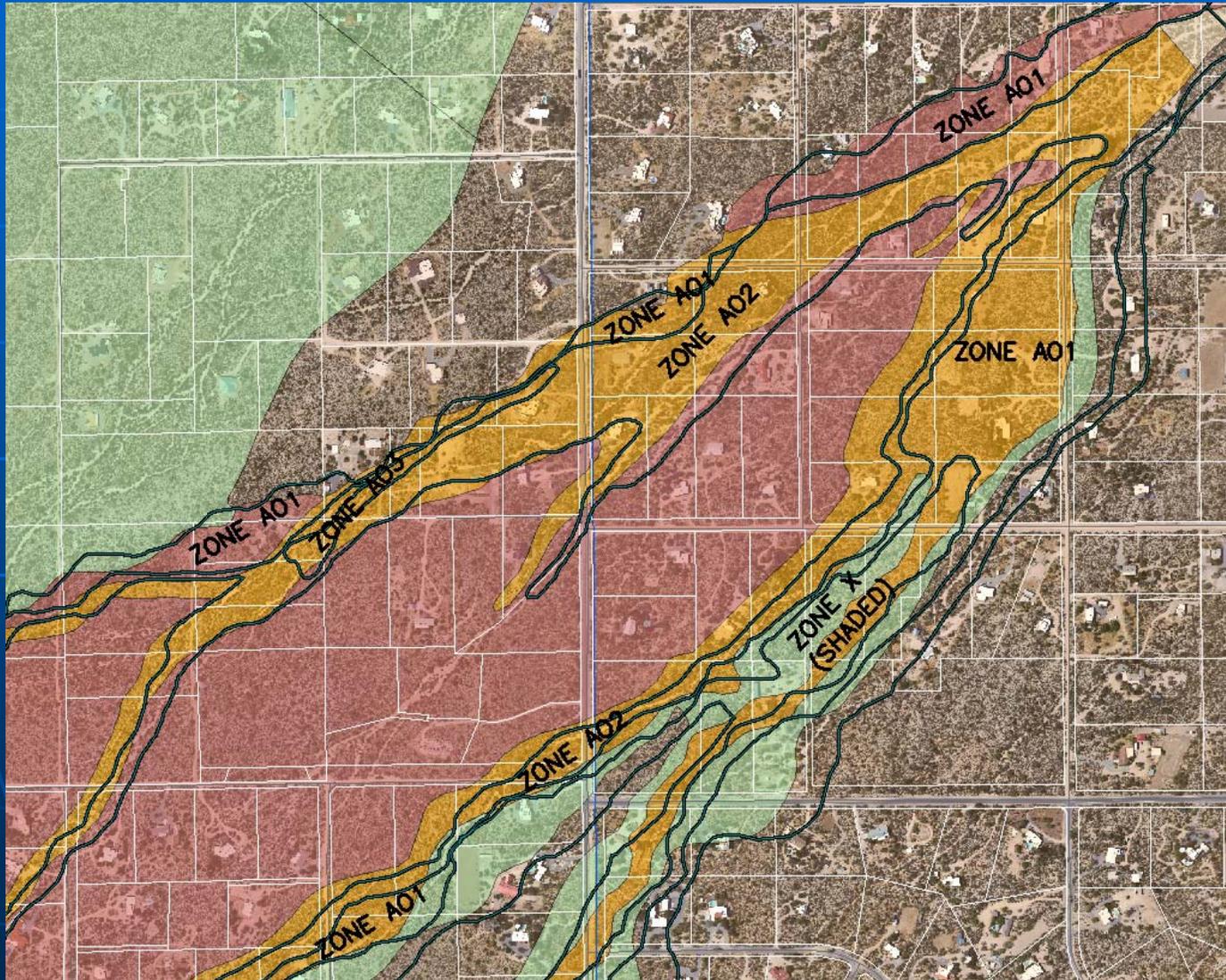


D-FIRMs

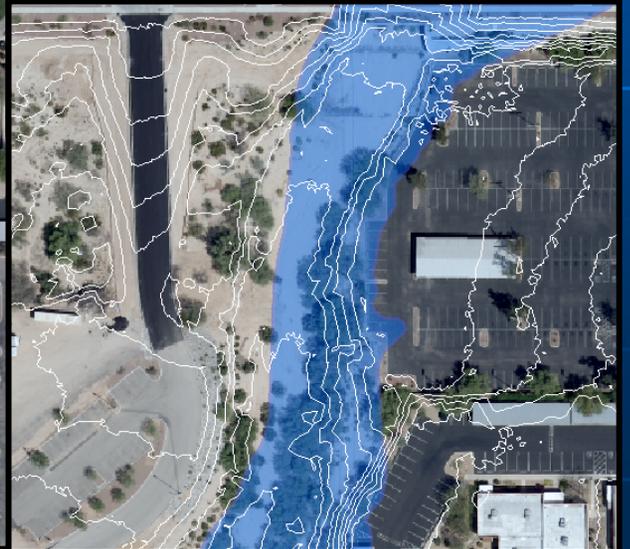
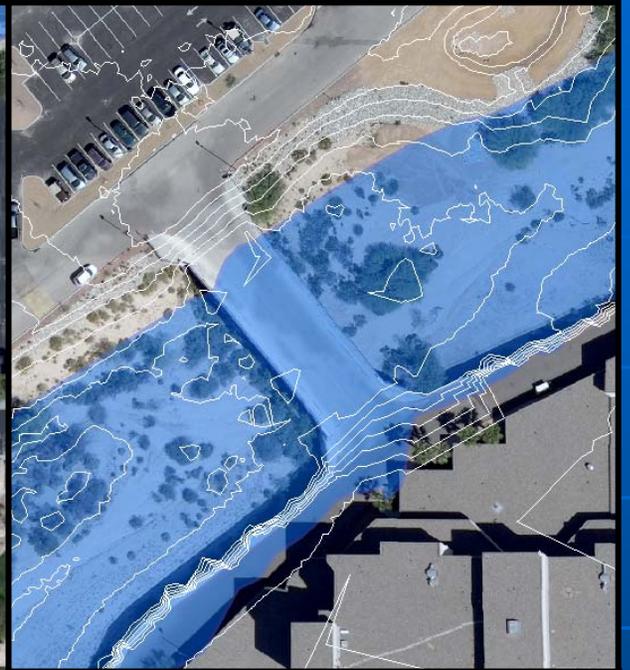
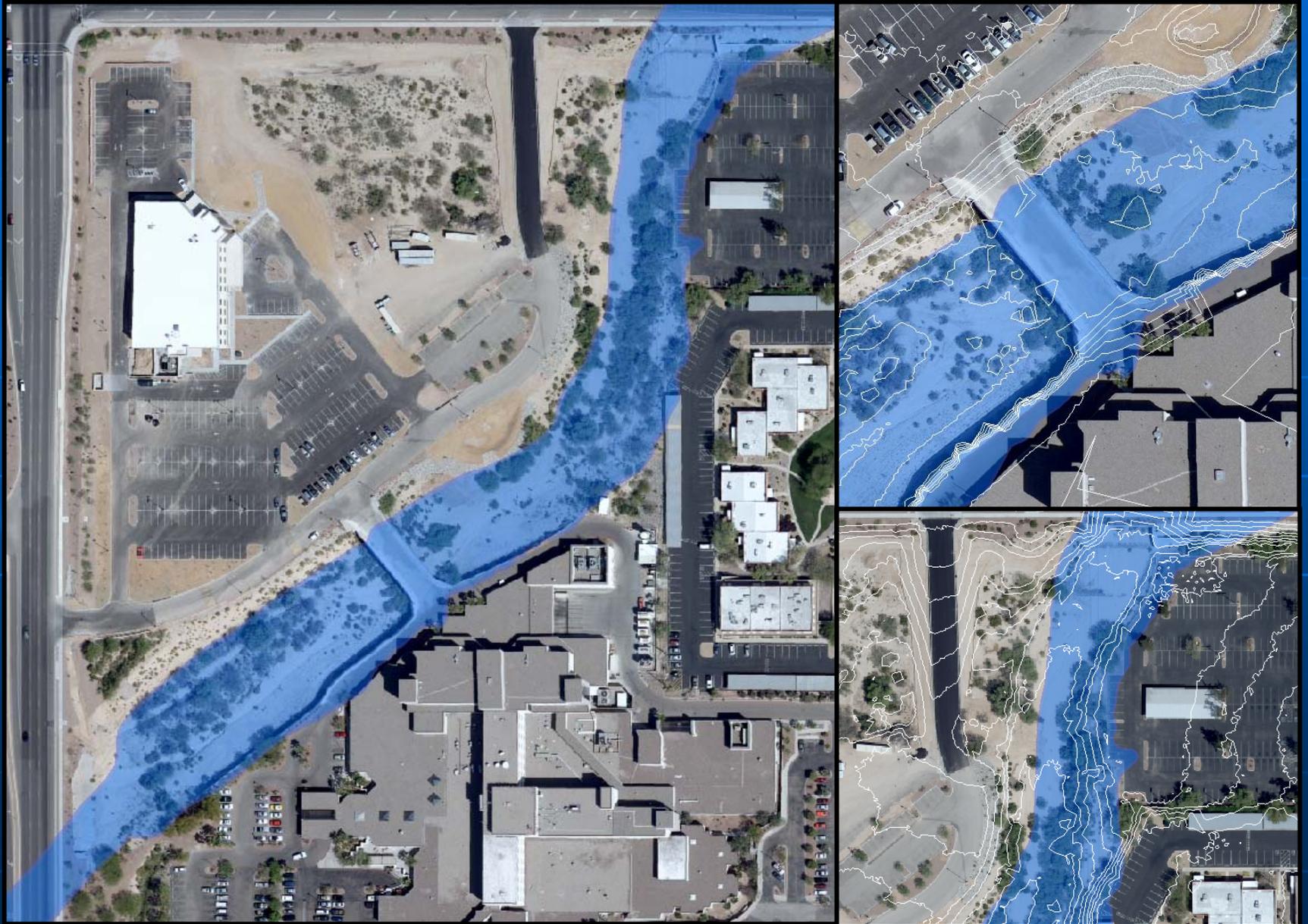
- First GIS maps were scanned paper maps.
 - Registration errors discovered



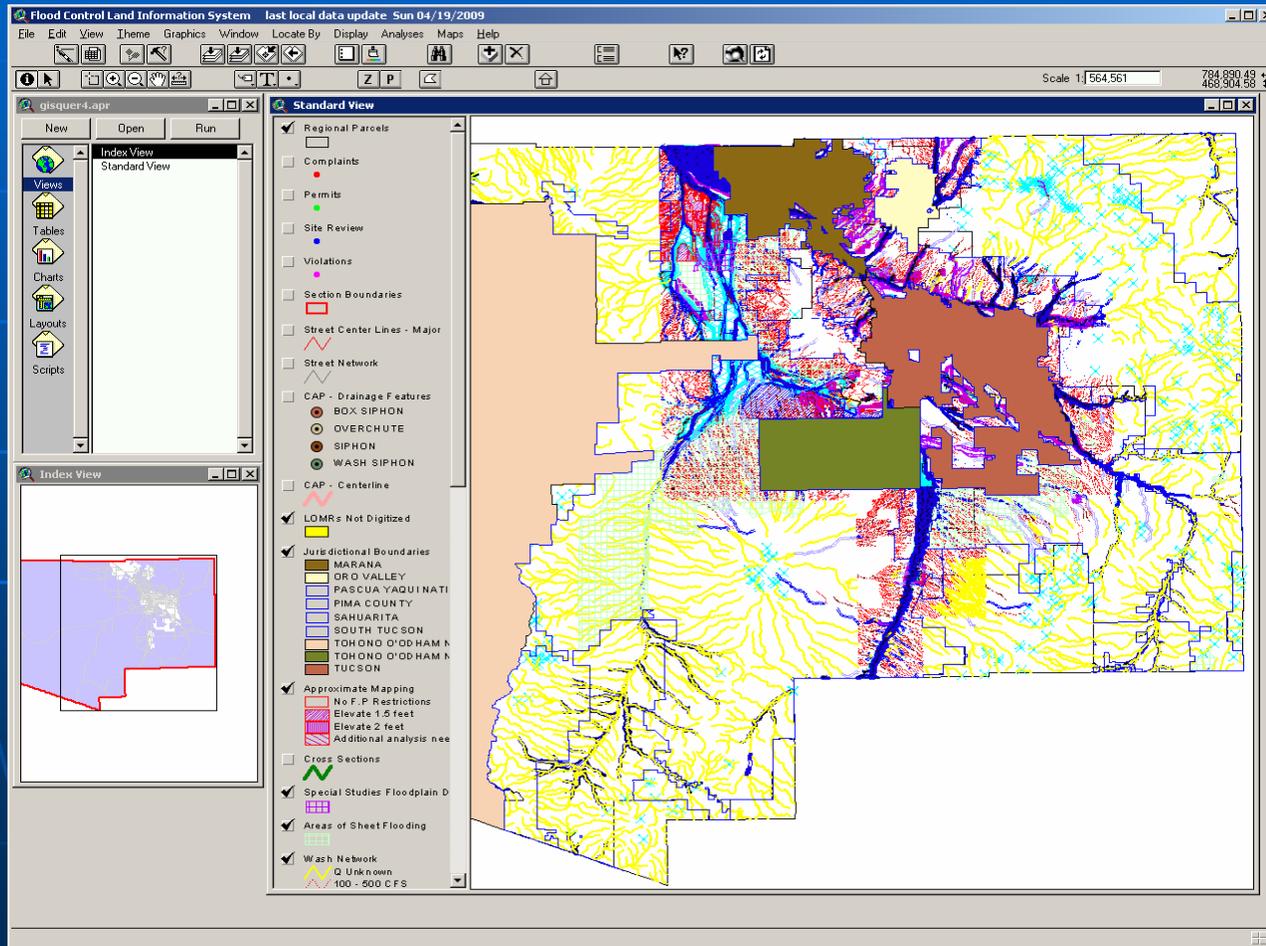
Process errors became a problem



Engineers submitted incorrect projected products



Correct GIS projected data was needed at local level



Data provided to Engineering companies in two projections



Pima County Regional Flood Control District



REQUEST FORM AND DISCLAIMER FOR DIGITAL FIRM MAPS

Revised April 27, 2008

In an effort to minimize digital floodplain boundary errors, the Pima County Regional Flood Control District (District) will provide digital copies of the Flood Insurance Rate Map (FIRM) data by panel number when requested via Email or FAX. The digital information will be in either ESRI shapefile or AutoCAD drawing format with the correct projection controls. The shapefile format is preferred. AutoCAD files will be delivered in 2004 format, unless requested otherwise upfront. The digital data will contain the FIRM panel(s) in both the Federal Emergency Management Agency (FEMA) and the District's projection schemes.

The FIRM panel data will include the following layers (Some layers may not be present in a given FIRM panel):

- FIRM Panel Boundary
- Flood Zones
- Floodways
- Base Flood Elevations -**Base Flood Elevation are on the National Geodetic Vertical Datum of 1929.**
- Cross-sections
- FEMA Stream Lines (when available)
- LOMR Boundaries
 - The District may not have complete LOMR information within the City of Tucson, Town of Oro Valley, Town of Sahuarita, and the Town of Marana.
- LOMR's not digitized (areas in which the digital data has not yet been updated)
- LOMAs (Letters of Map Amendment)
 - The District may not have complete LOMA information within the City of Tucson, Town of Oro Valley, Town of Sahuarita, and the Town of Marana.
- PLSS Section Boundaries (for reference only)
- Jurisdictional Boundaries
- Parcel Boundaries (not available in outlying areas)
- Street Network (not available in outlying areas)

Digital parcel boundaries and street network information will not be available for those areas of Pima County that have not gone through the parcel orthophoto-rectification process.

SUBMITAL REQUIREMENTS TO THE DISTRICT

The District requires all LOMR digital line work, such as cross-section locations and rounded base flood elevations be attributed with their corresponding values. The District prefers that digital data submittals showing the modifications to floodplains, floodways, and areas removed from the floodplain be closed polygons that are attributed with their corresponding values. The District prefers digital data be submitted in ESRI shapefile format. Digital LOMR/CLOMR data in AutoCAD format submitted for review by the District must be in version 2000 or earlier.

TERMS

By signing the request below, users of this information acknowledge that it is not guaranteed to be accurate, correct or complete; conclusions drawn from such information are the responsibility of the user. While every effort is made to ensure the accuracy and correctness, the District assumes no responsibility for errors or omissions, even if Pima County is advised of the possibility of such damage.

Users understand and acknowledge that the digital FIRM data is subject to constant change and its accuracy cannot be guaranteed. All data is provided AS IS, with all faults, and without warranty of any kind, either expressed or implied.

The data provided might have a number of errors, which may include, but are not limited to, the following:

- Spatial Errors:** The areas depicted are approximate, and are not necessarily accurate to surveying or engineering standards. X/Y coordinates may be in error by several hundred feet

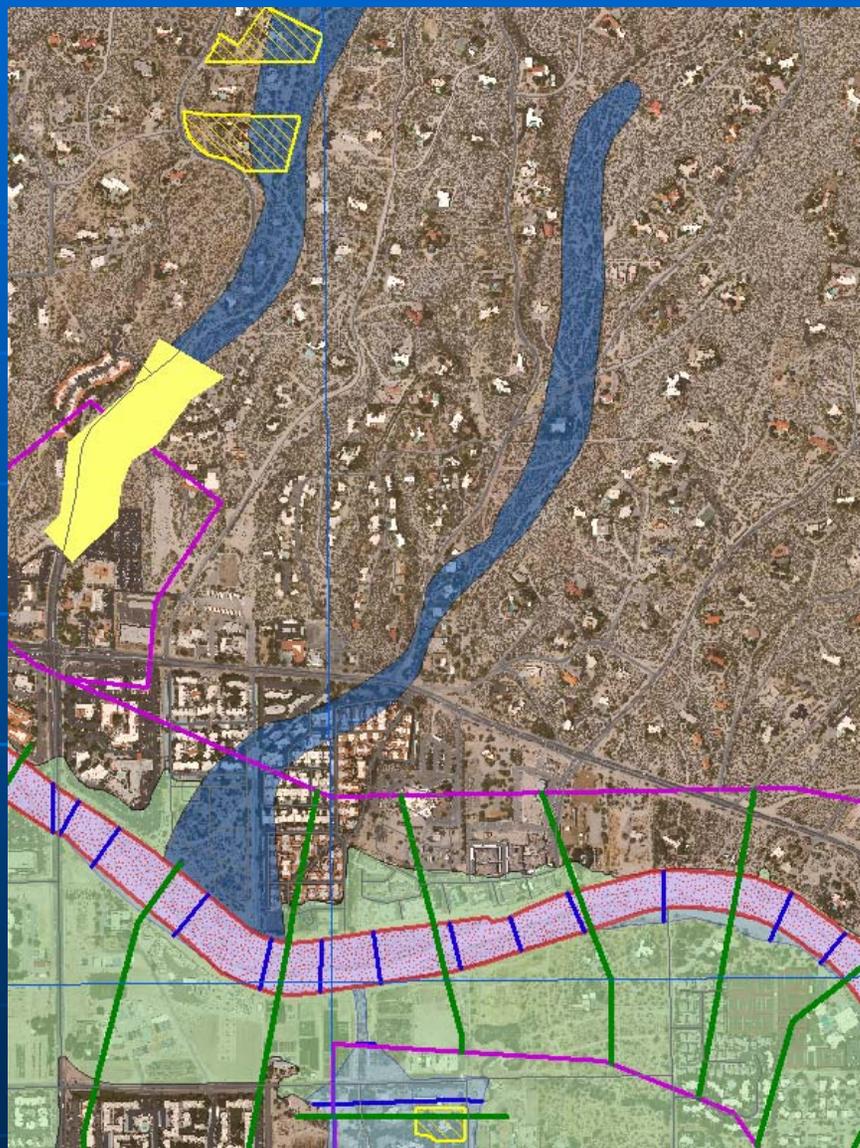
Digital files maintained for LOMR mapping

Item	File Name	Description
Section Boundaries	trs.*	Sections-Township and Range
Parcels	paregion.*	Properties
Street Center Lines - Major	stcl_maj.*	Major Roadways
Street Network	stnetall.*	All Streets
Jurisdictional Boundaries	limjuris.*	All Jurisdictions in Pima County
Cross Sections	fp_xsect.*	FEMA Lettered Cross Sections
Base Flood Elevations	fp_bfe.*	FEMA BFE's
LOMALOMC\LOMR-F	fp_lomx.*	All "Effective" LOMAs and LOMR-Fs
FIRM Panel Boundaries	fp_panel.*	All "Effective" FIRM Panels
LOMR Boundary	fp_lomxb.*	Effective LOMRs - The most recent LOMR overrides older LOMRs at overlaps
LOMRs Not Digitized	fp_lomxp.*	LOMRs that are effective that the District does not have digital LOMR data from FEMA.
Floodway	fp_flway.*	"Effective" Floodways
FEMA Floodplains	fp_dfirm.*	"Effective" Flood Zones

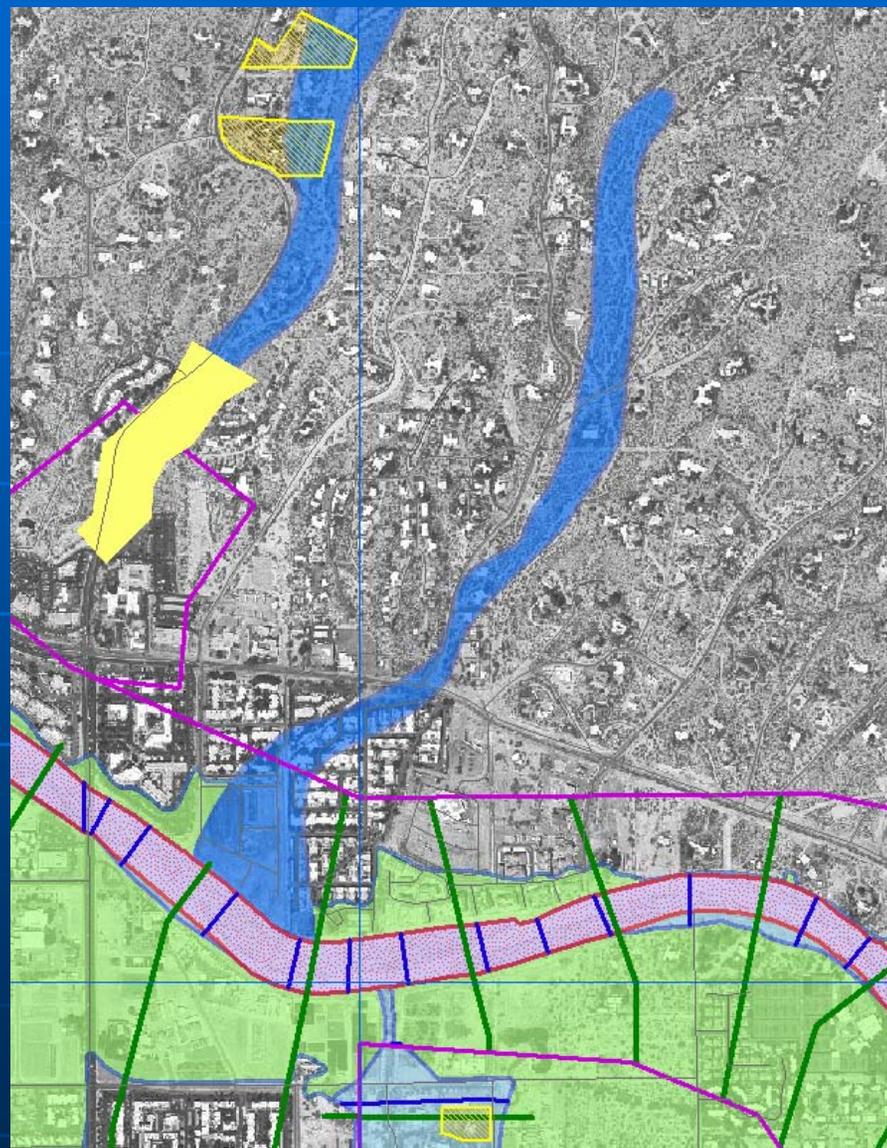
Additional D-FIRM preparation files

Item	File Name	Description
2004 Preliminary Line Work	merged_bfe.*	2004 Preliminary "Corrected" BFE's
	merged_xsec.*	2004 Preliminary "Corrected" Cross Sections
	revised_floodplains.*	2004 Preliminary "Corrected" Floodplain Boundaries
New Panels	s_firm_pan*	New Panels to be added to the next D-FIRMs
Without Levees	Pima Levee fld haz ar.*	First "without levee" flood hazard mapping (Sept. 27, 2007)

Local review of LOMR shapes going to and coming from FEMA



HARN



UTM

Need for countywide FIRM data base

- LOMRs crossed jurisdictional boundaries
- Community record keeping issues
- Frequent LOMRs and LOMR corrections
- FEMA's LOMR process did not recognize valid LOMAs
- Errors were discovered in FEMA's map services Center
- Map Clearing Houses were missing updates
- Errors were being made in permit processing

Effective LOMA LOMR inventory created

■ 155 LOMRs

■ 843 LOMAs

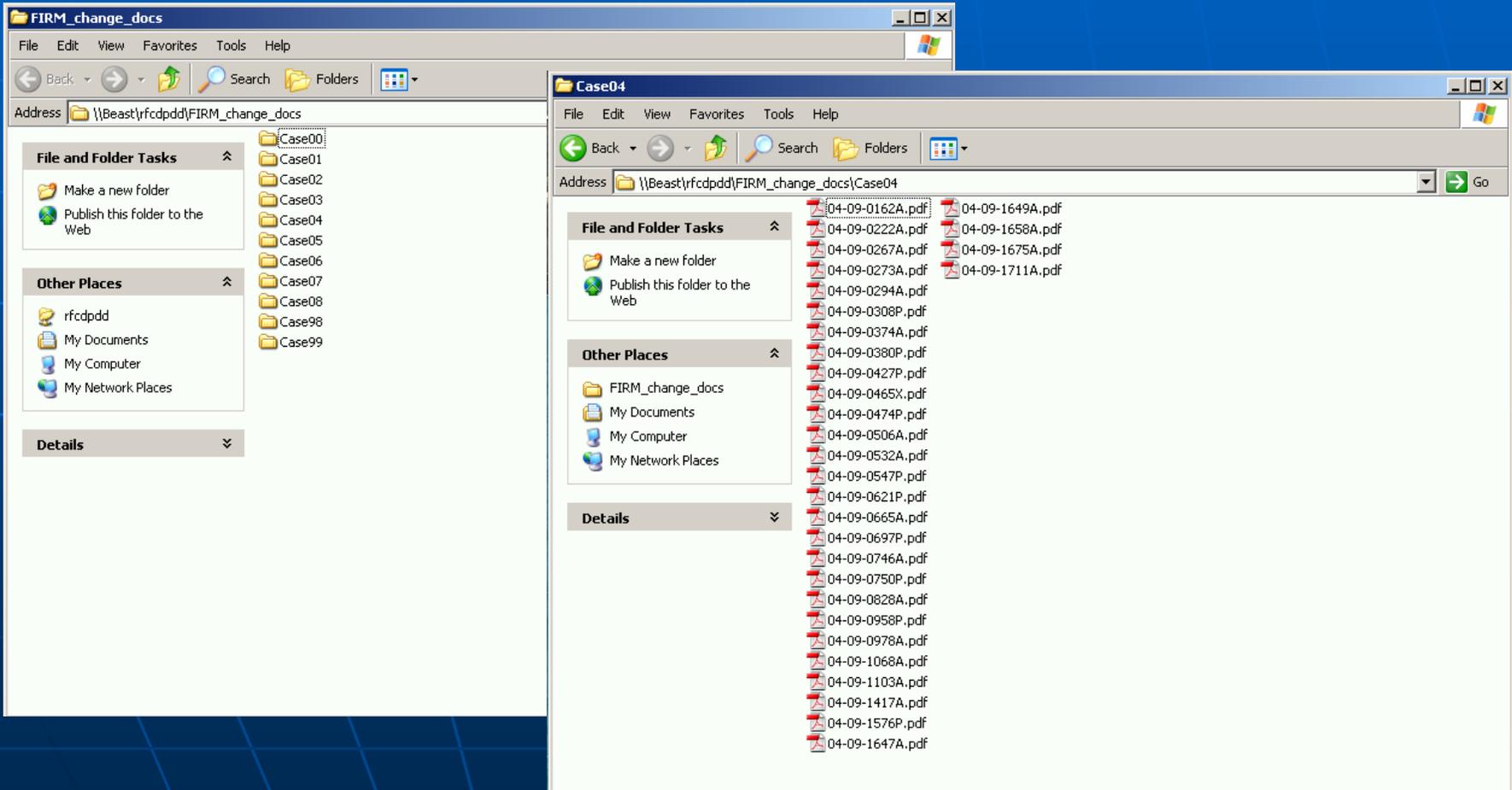
■ 109 LOMCs

■ 729 Superseded LOMAs

■ 61 LOMAs denied

	LOMR date	LOMR No.	Panel Number(s)	Affected Wash and/or Floodplain
1				
2	19-Dec-08	08-09-1616P	1610K	Pegler Wash - from Orange Grove Rd. to just upstream of LaCholla Blvd. (Friendship Villas)
3	23-Oct-08	08-09-0473P	1630K, 1636K, 1637K	Friendly Village Wash - from just upstream of Stone Loop Rd. to approx. 9700' upstream -AND- Tributary to Friendly Village Wash - from the confluence with Friendly Village Wash to approx. 4200' upstream (Pima County and City of Tucson)
4	29-Sep-08	08-09-1756X	1630K, 1636K	Pima Wash - from the mouth of Pima Wash to a point approx. 4900' upstream of Christie Dr. (Pima County & City of Tucson)
5	25-Aug-08	08-09-0540P	1610K	Nanini Wash - from just downstream of W. Lavery Dr. to just downstream of Orange Grove Rd.
6	11-Aug-08	08-09-0968P	1637K	Campbell Wash - approx. 700' upstream of River Rd to approx. 2150' upstream
7	21-Jul-08	08-09-0454P	SUPERCEDED BY 08-09-1756X (09/29/08)	Pima Wash - from the mouth of Pima Wash to a point approx. 4900' upstream of Christie Dr. (Pima County & City of Tucson)
8	23-May-08	08-09-0001P	1644K	Columbus Wash -Grant Rd. to Blacklidge Dr.
9	04-May-08	07-09-1087P	2253K	Alamo Wash - from approx. 270' downstream of Wilmot Rd. to approx. 50' upstream of Calle Betelgeux
10	26-Mar-08	08-09-0341P	2200K	Unnamed Tributary to Black Wash - approx. 700' upstream to approx. 2000' upstream of Valencia Rd. (Caddis Haley Estates Subdivision)
11	25-Mar-08	08-09-0709X	2245K, 2850K	Unnamed Tributary to Rodeo Wash - approx. 2000' upstream of Valencia Rd to approx. 6400' upstream (Rancho Valencia Phase 3)
12	25-Mar-08	08-09-0442P	2265K, 2855K	Julian Wash - from just downstream of Kolb Rd. to just upstream of Wilmot Rd. (La Estancia de Tucson)
13	28-Jan-08	07-09-1858P	2200K	Black Wash Tributary - from Valencia Rd. to approx. 2500' downstream of Valencia Rd. (Sonoran Ranch Estates II subdivision)
14	15-Jan-08	07-09-1857P	2262K	Atterbury Wash - just upstream to approx 1100' upstream of Stella Rd (Lakeside Ridge subdivision)
15	13-Dec-07	07-09-1759P	1015K, 1020K, 1605K	Canada Agua East Fan - approx 250' upstream of Frontage Rd to approx 200' upstream of Camino Del Norte (Pima County & Marana)
16	30-Oct-07	07-09-1051P	2245K, 2850K	Unnamed Tributary to Rodeo Wash - approx. 2000' downstream to approx. 6400' upstream of Valencia Rd
17	29-Oct-07	08-09-0051P	2200K, 2225K	Black Wash Tributary and Unnamed Tributaries to Black Wash - approx. 1000' downstream to approx. 300' upstream of Iberia Ave
18	27-Sep-07	07-09-0990P	1610K, 1617K	Nanini Wash - confluence to approx. 6700' upstream of Rillito Creek
19	22-Aug-07	07-09-1305P	2243K, 2239K	Rodeo Wash - approx. 375' downstream of Country Club Dr to approx. 300' upstream of Campbell Ave.
20	03-Aug-07	07-09-1088P	1020K	La Cholla Wash - approx. 3150' downstream to just upstream of Lambert Lane -AND- Wash B - confluence with the La Cholla Wash to just upstream of Lambert Ln -AND- Wash D - confluence with the La Cholla Wash to approx. 650' upstream of Owl Head Pl.
21	05-Jul-07	06-09-BA60P	1015K, 1025K	Ruelas Canyon Alluvial Fan - approx. 14,000' downstream to just downstream of Dove Mountain Blvd
22	29-Jun-07	07-09-1167P	1035K	Big Wash - approx. 5000' upstream to approx. 7200' upstream of Rancho Vistoso Blvd. (Pima County & Oro Valley)
23	04-Jun-07	07-09-0707P	2233K, 2234K	Arroyo Chico - just downstream of Alvernon Way to just downstream of Swan Rd.
24	30-Apr-07	06-09-BH08P	2225K	Unnamed Tributaries to Black Wash - just upstream to approx. 1500' upstream of S. Kinney Rd. (Desert Meadows)
25	26-Apr-07	06-09-BB43P	0960K	Santa Cruz River - approx. 5500' downstream to approx. 2050' upstream of Trico-Marana Rd
26	21-Mar-07	07-09-0603P	1020K	Unnamed Wash - approx. 1600' downstream to approx. 100' upstream of Tangerine Rd. (Sunset Canyon Estates)
27	28-Feb-07	07-09-0551P	1643K	Alvernon Wash - approx. 1200' downstream of Blacklidge Dr. to approx. 350' upstream of Flower St.
28	26-Feb-07	07-09-0762X	0980K	Santa Cruz River - 1600' upstream to approx. 10,600' upstream of Trico-Marana Rd.
29	26-Jan-07	06-09-BA36P	2262K	Kinneson Wash - approx. 1000' downstream to approx. 1300' upstream of Escalante Rd (Villa Escalante)
30	13-Dec-06	07-09-0432X	2830K	El Vado Wash - Missiondale Rd. to S. 12th Ave. (2)
31	01-Dec-06	06-09-BB18P	1610K	Unnamed Tributary to Massingale Wash - just upstream of Thornydale Rd to just downstream of Cortaro Farms Rd (Cortaro Crossing)
32	22-Nov-06	06-09-BG63P	2830K	El Vado Wash - just upstream of Corona Rd to approx. 200' upstream of 6th Ave.

The District has more data than the FEMA Website



Preliminary D-FIRMs

Work started in
2004 to
correct FIRM
floodplains





New D-FIRMs

- D-FIRMs were to become effective in 2006
- Delayed by Levee certifications
- Delayed by Marana Appeal

New D-FIRMs

Local Coordination

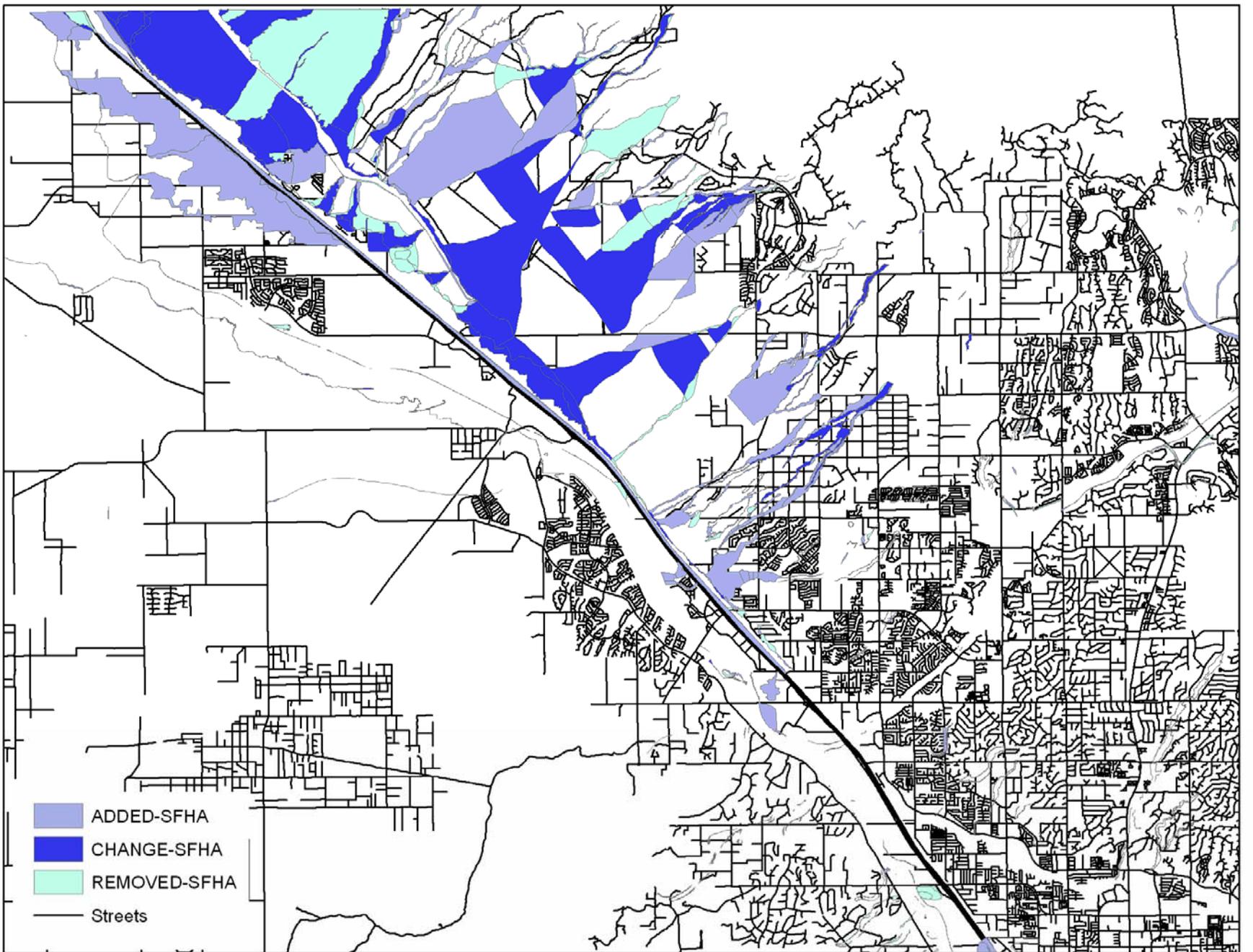
- Tight review period – 30 days plus appeal period
- Small window of opportunity for better data
- District review resources
 - GIS data
 - Scanned LOMAs and LOMRs
 - FEMA document tracking by the District

Why MapGuide?

- MapGuide is the established standard for Pima County
 - No new software requirements!
 - Existing staff expertise allowed for a quick deployment
- Pima County did not have the resources to review within other jurisdictions
- Other Jurisdictions had limited GIS capabilities

Beginnings

- Layer Themeing and Layering
 - Colors and patterns selected for visibility.
 - Larger line width on bottom Change Layer
- Change Layer
 - Union of New and Old FEMA data to show areas of change.
- Review Application
 - Detailed application for Floodplain Management professionals.
- Public Application
 - Simplified application for general public review.

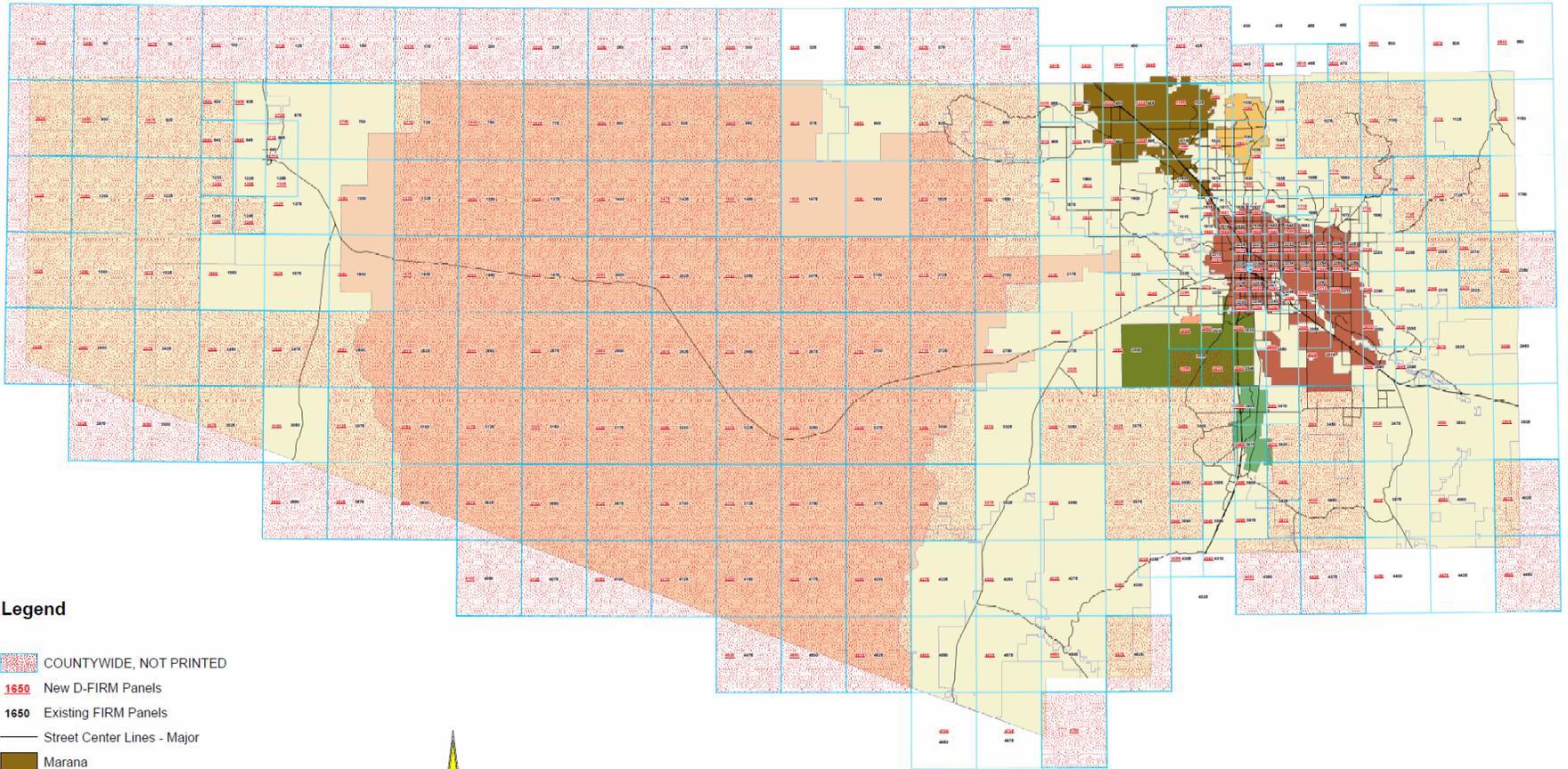


Review MapGuide

- The new maps will have the floodplain information placed on top of aerial photography. PAG 2002, USGS 2006, PAG 2005 for Ajo.
- FEMA is changing the elevation datum from NGVD-29 to NAVD-88
- Areas protected by levees.
- The floodplain limits have changed in many locations
- **ONLY 30 DAYS TO REVIEW DATA**

Features, Concerns and Issues

- Index change.
- To force correct decisions all layers off at first.
- Topo lines available despite Datum differences.
- PDFs to Panels and FIS.
- Numerous aerials (lot since PAG 2002) cause potential delays in load times.
- Hyperlinks to LOMAs and LOMRs Assist with SOMA reviews.



Legend

-  COUNTYWIDE, NOT PRINTED
-  **1650** New D-FIRM Panels
-  **1650** Existing FIRM Panels
-  Street Center Lines - Major
-  Marana
-  Oro Valley
-  Pascua Yaqui Nation
-  Sahuarita
-  South Tucson
-  Tohono O'Odham Nation
-  Tohono O'Odham Nation San Xavier District
-  Tucson
-  Pima County



- Points
- Lines
- Streets
 - Streets - Major
 - Streets - Major - With Nam
- Washes
 - Washes Greater Than 200
 - Washes - All
 - Washes Greater Than 100
 - Washes - Major
- Transparent Polygons
- Parcels
 - Parcels - RFCDC Parcels w/
 - Parcels - Issued Building F
 - Parcels - Issued Building F
 - Parcels - Taxcoded Pima (
 - Parcels - Tucson Owned
 - Parcels Larger Than 40 Ac
- Section Grid
- Townships
 - Translucent Polygons
- City Limits
 - Marana
 - South Tucson
 - Tucson
 - Oro Valley
 - Sahuarita
 - Unincorporated Pima Cour
- Flood Control Jurisdictions
 - Floodplain - FEMA Preliminary I
 - PD-FIRM Flood Insurance
 - PD-FIRM Base Flood Elev
 - PD-FIRM Base Flood Elev
 - PD-FIRM Cross Sections
 - PD-FIRM Cross Sections v
 - PD-FIRM - LDMR Revision
 - PD-FIRM FEMA Floodway
 - PD-FIRM 1% Chance Floo
 - PD-FIRM Flood Hazard Zc
- Floodplain - FEMA
 - Flood Insurance Rate Map
 - Base Flood Elevations
 - Base Flood Elevations with
 - Cross Sections
 - Cross Sections with Label
 - LDMC/LDMA/LDMR-F Ex
 - LDMR Revisions - See LD
 - LDMR Revisions - Comple
- FEMA Floodway
- Flood Hazard Zones - FEN
- Jurisdictions
- Supervisor Districts
 - Solid Polygons
 - Imagery
- All PAG Color Orthophoto Imag
 - 16 Foot Resolution - All Cc
 - 2008 Pantano Wash Color Ime
 - 08/2008 - 09/2008
 - 2008/05 Pictometry Color Orth
 - 4 Foot Resolution - Ajo
 - 4 Foot Resolution - Tucson
 - 2008/04 PAG Color Orthophot
 - 16 Foot Resolution
 - 2007/06 USDA/FSA NAIP Na
 - 06/2007
 - 2007 Rillito River Color Imagery
 - 03/20/2007
 - 2006/03 USGS (MDA) Natural



Federal Emergency Management Agency

Washington, D.C. 20472

PC RFCDC

OCT 06 2008

September 29, 2008

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

The Honorable Richard Elias
Chairman, Pima County
Board of Supervisors
130 West Congress, 11th Floor
Tucson, AZ 85701

IN REPLY REFER TO:
Case No.: 08-09-1756X
Community Name: Pima County, AZ
Community No.: 040073
Effective Date of
This Revision: September 29, 2008

Dear Mr. Elias:

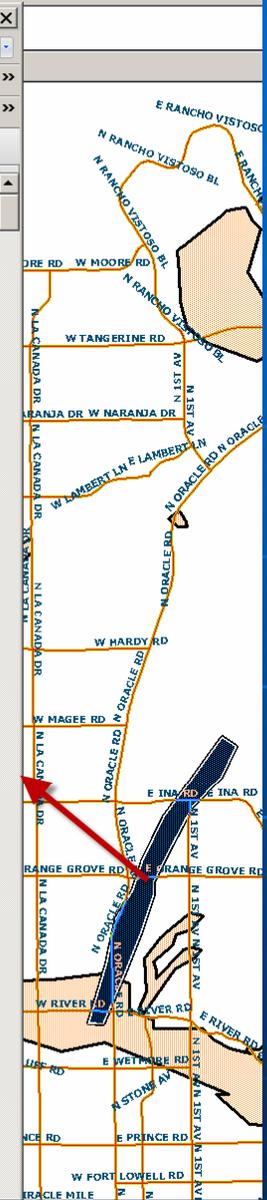
The Flood Insurance Rate Map for your community has been revised by this Letter of Map Revision (LOMR). Please use the enclosed annotated map panel(s) revised by this LOMR for floodplain management purposes and for all flood insurance policies and renewals issued in your community.

Additional documents are enclosed which provide information regarding this LOMR. Please see the List of Enclosures below to determine which documents are included. Other attachments specific to this request may be included as referenced in the Determination Document. If you have any questions regarding floodplain management regulations for your community or the National Flood Insurance Program (NFIP) in general, please contact the Consultation Coordination Officer for your community. If you have any technical questions regarding this LOMR, please contact the Director, Mitigation Division of the Department of Homeland Security's Federal Emergency Management Agency (FEMA) in Oakland, California, at (510) 627-7175, or the FEMA Map Assistance Center toll free at 1-877-336-2627 (1-877-FEMA MAP). Additional information about the NFIP is available on our website at <http://www.fema.gov/nfip>.

Sincerely,

Craig S. Kennedy, CFM, Program Specialist

For: William R. Blanton Jr., CFM, Chief



Review Mapguide Demo

- <http://dot.pima.gov/extranet/rfcdreviewmap/>

Post Review Correction

- Feedback to FEMA will facilitate more accurate changes to final maps.





Public MapGuide

- Review MapGuide Application too dense/complex for average property owner.
- Automatic on for all official data including correct aerials.
- Easy readout/search.
- Dual screen comparison more clear than overlapping data.

Public Mapguide Issues and Concerns

- Changes to display area change scale.
- Only pan and zoom on left hand side.

- Description portal
- Parcel identification
 - What does it mean
 - Insurance issues
 - Changes
 - Disclaimers
 - No local floodplains
 - Directing user to local floodplain agency
 - FEMA links

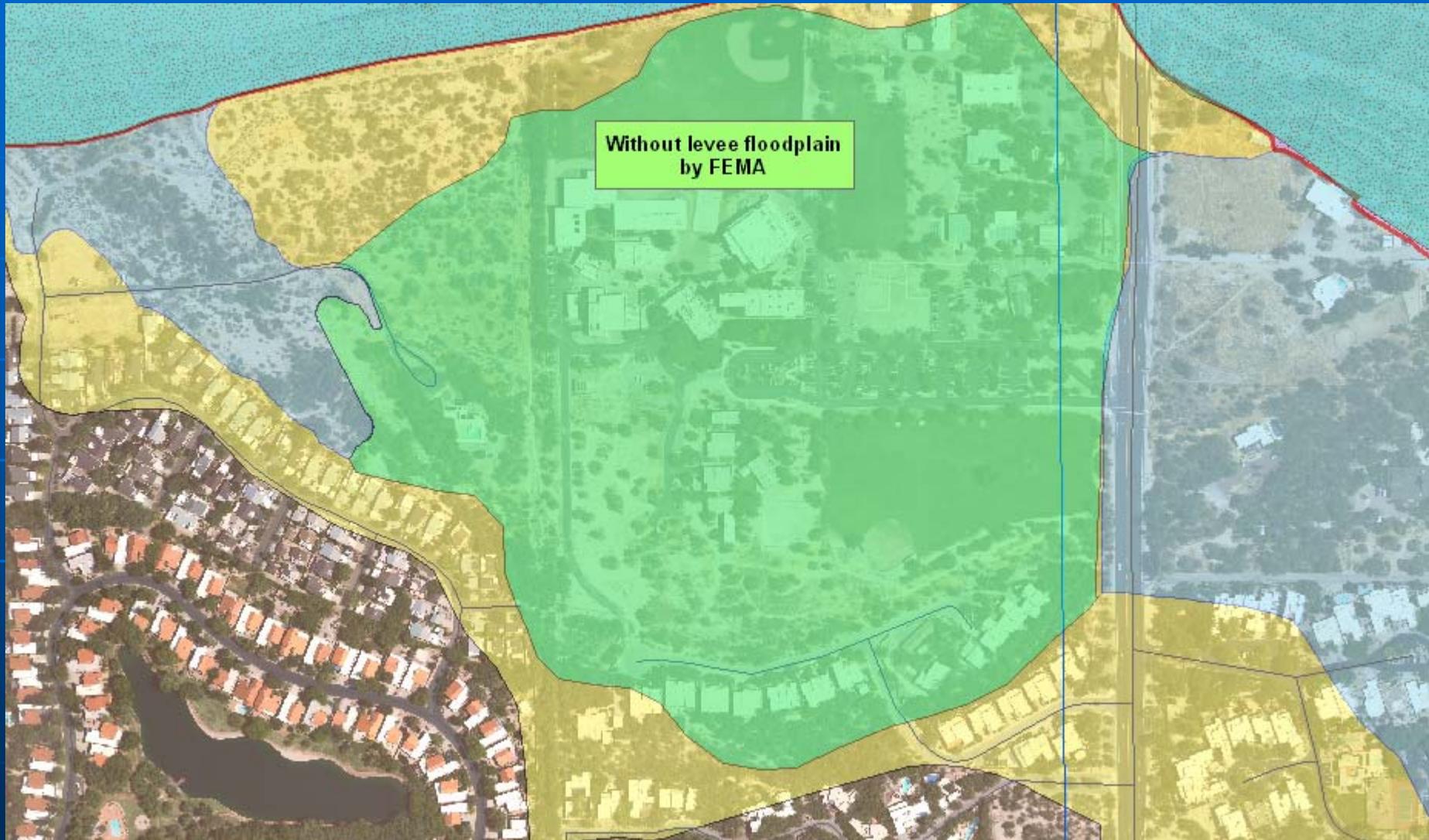
Public Mapguide Demo

- <http://dot.pima.gov/gis/maps/RFCDrviewmap/duomap.cfm>

Levee Certification

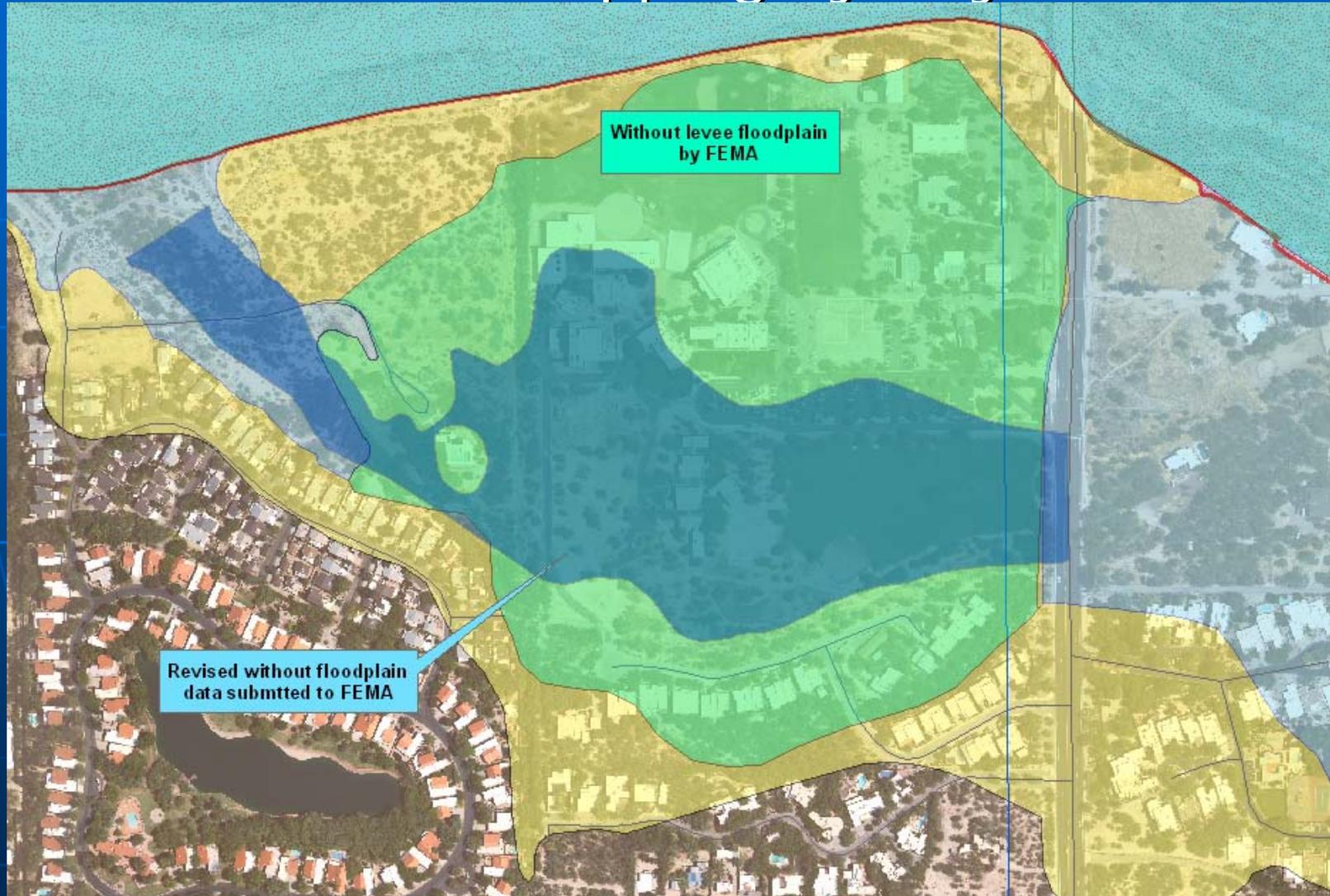
- The New FIRMs reflect levee certification and levee failure
- PAL process
- Additional floodplain modeling

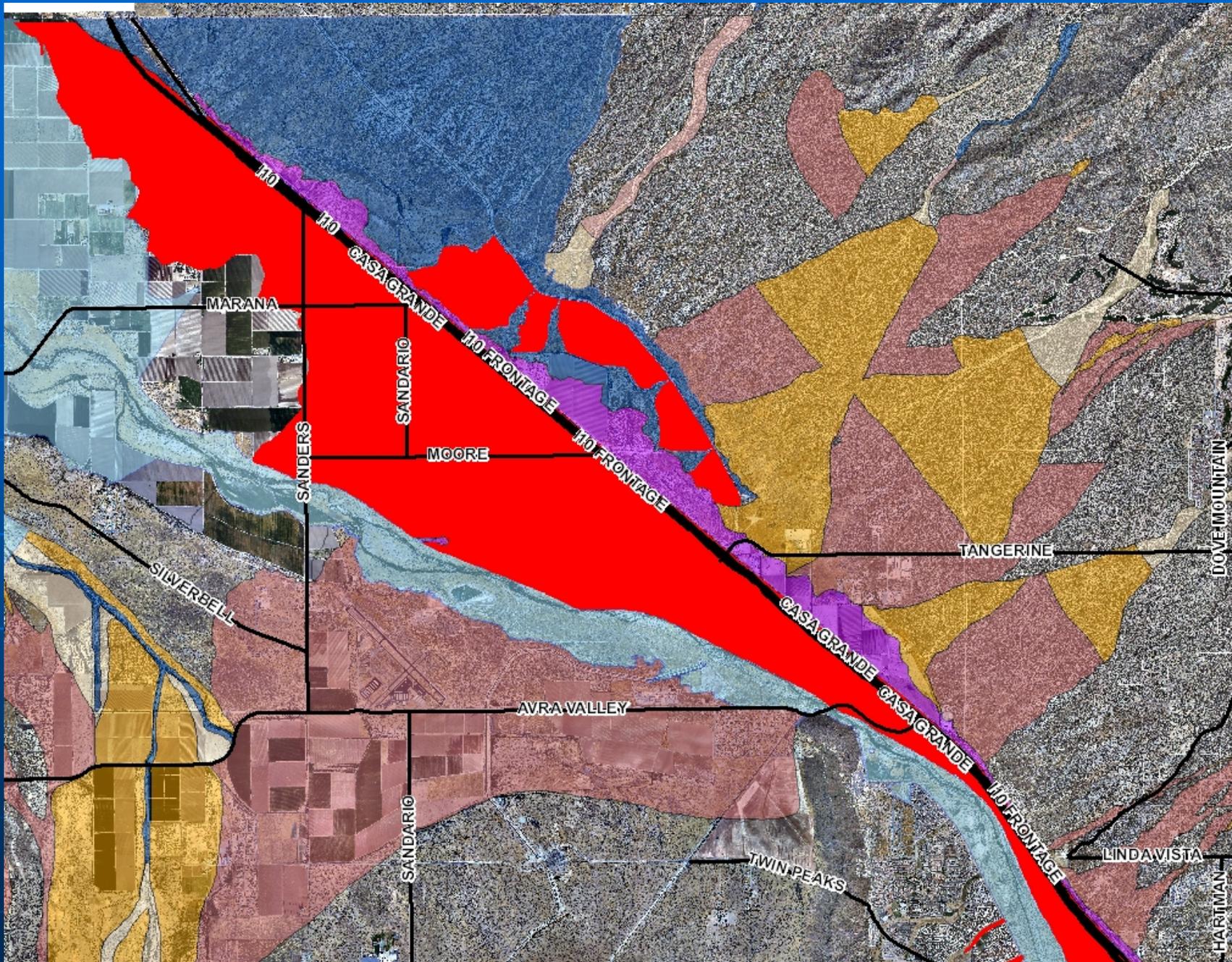
Levees

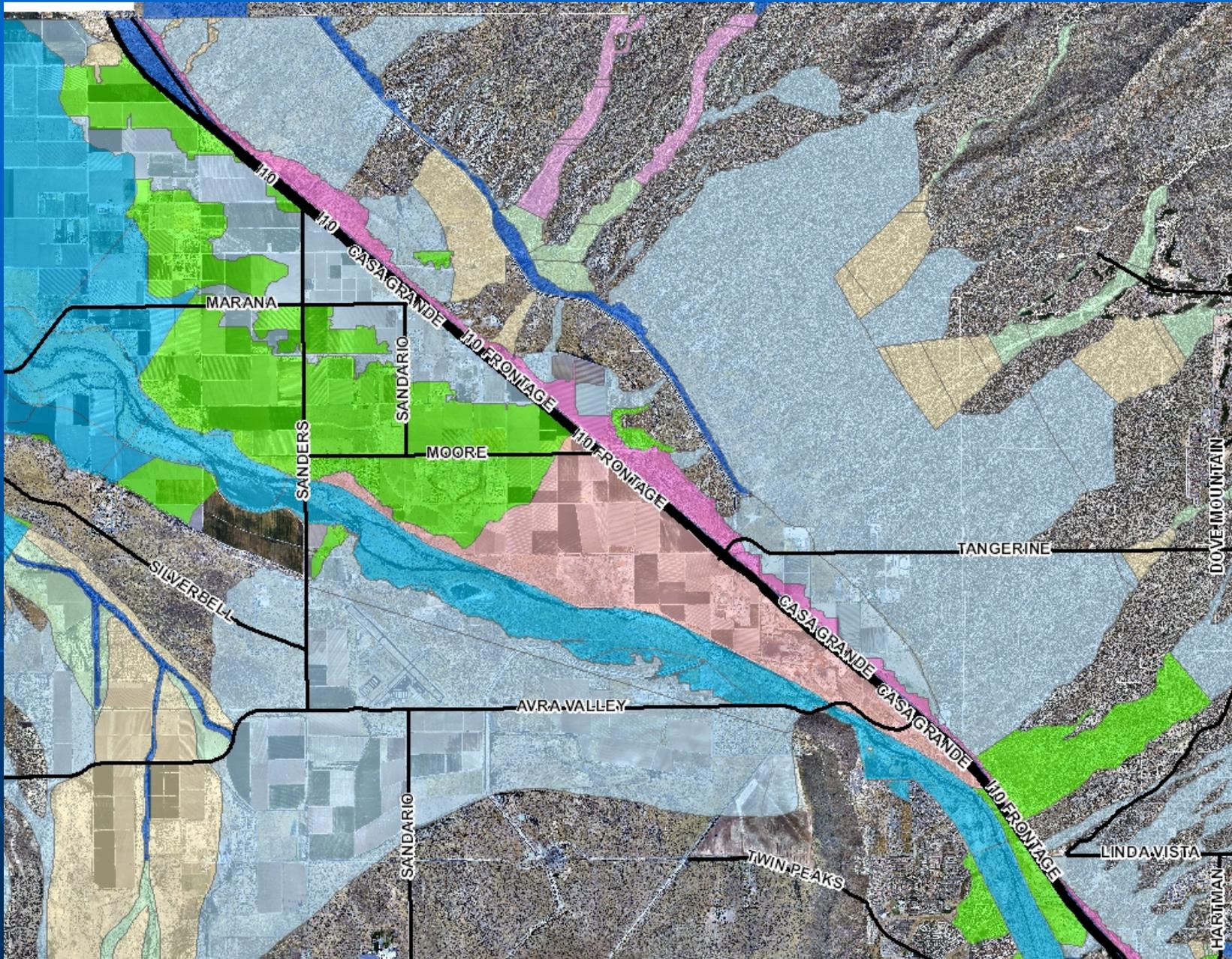


Levees

- Without levee mapping by City and District









Questions?