COLORADO
Colorado Water Conservation Board
Department of Natural Resources

MEETING MINUTES

Project Name:	Las Animas Countywide Risk Mapping Assessment and Planning (Risk MAP)
Meeting:	Las Animas County Phase 1 / BLE Review Meeting
Date & Time:	July 15, 2021 from 10:30 AM - 12:00 PM
Place:	**Commissioner's Chambers** (Las Animas County Courthouse) 200 E First Street #201, Trinidad CO 81082 Remote: https://us02web.zoom.us/j/8717668202

1. Welcome & Introductions

Terri Fead facilitated introductions for all attendees and then went through the outline for the meeting agenda.

Entity	Attended?	Name	Role
City of Trinidad	Yes	Bob Just	Public Works Director
	Yes	Georgi Ann Clark	Planning Administrator
	Yes	Mike Valentine	City Administrator
	Yes	Jeni Jackson	GIS/Survey Project Manager
	Yes	Sky Tallman	Planning Director
	Yes	Nate Eden	Engineering Tech
County of Las Animas	Yes	Kim Chavez	County Emergency Manager
	Yes	Robert Lucero	Land Use Officer (County Planner)
	Yes	Phil Dorenkamp	County Administrator
	Remote	Felix Lopez	County Commissioner
Purgatoire Watershed Partnership	Yes	Julie Knudson	District Board Member
Town of Aguilar	No	Marc Piano	Town Mayor
	No	Tyra Avila	Town Clerk/Administrator
	No	Virgil Birkenfeld	Code Enforcer/FPA
Town of Cokedale	No	John Gilmore	Mayor
	No	Kathy Kumm	Town Clerk
Town of Starkville	No	Rose Holman	Town Clerk
USACE	Remote	Devon Aldridge	Albuquerque Flood Risk Program Manager
CWCB	Yes	Marta Blanco Castaño	Flood Mapping Program Assistant
	Remote	Terri Fead	Floodplain Mapping Program Coordinator
	Remote	Doug Mahan	Community Assistance Coordinator
FEMA	No	Matthew Buddie	Floodplain Mgmt. and Insurance Specialist
	Remote	Chris Gaynes	Mapping Lead for CO - Civil Engineer
	No	Jamie Prochno	2D/Levee Lead - Senior Civil Engineer
Michael Baker Int. (Baker)	Yes	Geoff Uhlemann	Project Manager
	Remote	Julian Pecce	Project Engineer

2. Program Goals & NFIP Background

Terri covered the program goals, which in general included updating flood risk information and helping communities implement mitigation actions.

Marta then provided a refresher on the National Flood Insurance Program (NFIP).

- Voluntary program overseen by FEMA

- Requirements for participation include mandatory purchase of flood insurance for properties with a federally backed mortgage that are mapped within a special flood hazard area.
- Engineers determine risk across flood hazard areas, leading to discounted rates in lower risk areas
- Federal program is overseen by FEMA and partners, but managed by Communities and enforced by lenders

3. **Roles and Responsibilities**

Marta gave an overview of roles and responsibilities as-follows:

- Community Officials: manage local program, partner in study.
- State (CWCB): oversee flood risk analysis, support the community throughout the process, and partner in outreach.
- FEMA: provides grant funding, as well as project oversight and technical support.
- Michael Baker: contractor to CWCB providing technical support and performing flood study updates.

4. **Risk MAP Process & Objective**

Marta discussed Risk Mapping, Assessment and Planning (Risk MAP) background and the anticipated timeline for the Las Animas County flood study.

1. Discovery [concluding Summer 2021] – Review data and help identify scope
2. Data Development [Summer 2021- mid/late 2022] – review data and provide concurrence
3. Preliminary Maps & Appeals [Late 2022/ Early 2023] – Communicate results to public and receive appeals
4. Adoption [Mid/Late 2023] – Adopt maps and prepare to incorporate into code/ordinances
5. Effective Flood Insurance Rate Maps (FIRMs) [Late 2023/Early 2024] – Manage new FIRMs

Geoff emphasized the importance of finalizing the study scope at this current phase and then discussed the Phase 1 project objectives:

- Initiating a flood study update, using better data, accounting for changing conditions and improved modeling techniques.
- Performing semi-automated, watershed wide Base Level Engineering (BLE) to produce approximate floodplains
- Identifying hazards posed and potential mitigation actions

Question: Mike Valentine noted that the county just had a recent FEMA update in 2019 – inquired why do this study now?
Answer: Geoff explained that the 2019 update was a digital conversion, going from paper maps to digital format, but that the data was merely carried over from former study (often done in 1970s-1980s) and that the streams had not been restudied/remodeled. This project will actually update and generate new stream information with updated hydrology, hydraulics, and floodplain mapping.

Question: Julie Knudson inquired how this is different from the fluvial erosion zone mapping effort.
Answer: Marta explained that CWCB is evaluating fluvial hazard zone mapping (FHZ) in select portions of the state, which is a separate effort for a different purpose than floodplain study updates. The fluvial erosion hazard products are not for regulatory purposes, whereas this flood study outcome will have a regulatory impact. We also can create non-regulatory products to help assist communities in their role, providing useful data that is separate from FEMA's regulatory uses. We will need to coordinate more on this aspect if it is of interest to the community. Our current FHZ program lead, Chris Sturm with CWCB, can provide further information if desired.

ACTION: communities to consider what additional products this project could create that would assist them in their day-to-day roles as it relates to flood risk aside from insurance (e.g., stormwater planning, local nuisance flooding, post-fire predictions, FHZ-related issues, etc.).

ACTION: Kim Chavez stated that the county is currently updating their Hazard Mitigation Plan (HMP) which is set to expire May 2022. A fair amount of the information that we are producing can be used to help inform the HMP. Kim to review the data with an eye for HMP-integration and to connect with CWCB and Baker for input as appropriate in the HMP. Chris Gaynes noted that if specific projects or goals are documented in the HMP that it makes it easier for communities to receive hazard mitigation grants and assistance later down the road.

5. **2D BLE Overview**

- *Methodology*: Automated and approximate identification of flood risk.
  2D rain-on-mesh (unsteady state analysis):
  - Build terrain and Digital Elevation Models (DEMs), using Light Detection and Ranging (LiDAR) with vertical accuracy at several centimeters (i.e., high resolution) – collected across the county between 2017-2019
  - Develop domains and hydrology (statistical rainfall depths for the 10%, 4%, 2%, 1%, 1%+, and 0.2% annual chance events)
  - Mesh creation & refinements (reflecting features in underlying terrain, as well as land use characteristics)
  - Apply rainfall and calibrate to historical events and other hydrologic sources – matching modeled to observed conditions
  - Simulations and mapping
- *Benefits:* Improved delineations (LiDAR vs 10/30 meter DEM), improved technology, countywide coverage, and includes 6 profiles as well as additional data from models. Typically, FEMA projects want to map reaches only where drainage area is greater than 1 square mile.
- *Study area:* We are not doing the full county, as there is no effective portion in the northern or eastern sides. The eastern portion will be mapped during a future effort along with Baca County (likely starting in late 2021 or early 2022). The area studied during this current effort has been broken up into 5 different model domains. Reaches shown on the "Effective Study vs 2D BLE" slide (slide 14) in blue are effective Zone AE (detailed) and will be restudied during Phase 2. Those in red are effective Zone A (approximate) and will be superseded by 2D BLE results generated through this Phase 1 effort – and could be upgraded to detailed if requested. Those in gray are currently unmapped but are streams with drainage areas greater than 1 square mile and could be newly mapped as Zone A or Zone AE with community concurrence.
- *Results:* The effective mapping reflects low level of detail due to the age of the previous studies, and our updated results will have much higher resolution due to LiDAR-based terrain and new engineering methods. The BLE results vary compared to effective, sometimes showing an expansion and other times showing a reduction compared to the effective floodplain mapping. Please remember that these BLE results can only be applied to unmapped areas or effective Zone A (approximate reaches), but cannot supersede mapping along detailed Zone AE reaches.
- *Report:* Our results will be documented in a summary report, which includes background information, documentation for community correspondence, an overview of BLE and uses, detailed documentation for our methodology, and recommendations for next steps.
  ACTION: communities to review report, specifically Section 3, for awareness on how BLE can be used. This report will be shared over the next few weeks

Question: Julie Knudson asked when we would have an effective model for the Purgatoire River.
Answer: Geoff noted that it would be part of Phase 2 since it is scoped for an enhanced study (detailed Zone AE), and would therefore not be covered in this portion, which is all approximate. The Phase 2 model will likely be available in draft format mid-2022 and perhaps approved in late 2022, but will not be effective until 2023/2024.

ACTION: Connect with Julie and consultant (Dane at s2o) about Baca-Picketwire Dam – they are seeking the most current version of the effective model. Also need to coordinate with the Greenway Foundation (Jeff Shoemaker). Even though the hydraulic model may not be updated for some time, it would be beneficial to still coordinate now as the 2D BLE provided additional insight into updated discharges.

6. **Community Options & Future Mapping**

Use of BLE:

- Facilitate discussions for additional studies and identifying mitigation actions
- Select reaches to be mapped as regulatory vs. best available information (BAI)
- Longer-term update of Flood Insurance Rate Maps (FIRMs)

ACTION: communities to consider the options for use of BLE and how to proceed with mapping:

- Creating new Zone A
- Retaining as unmapped but BAI
- Requesting new detailed study (Zone AE).

7. **Expectations & Next Steps**

Marta overviewing the expectations for partnership, reviews, and outreach in this study.

ACTION: CWCB/Baker to distribute data upon receipt of signed memorandum of agreement (MOA) concerning draft data. Team will provide BLE results and report, and then will submit to FEMA for their Quality Assurance/Quality Check
ACTION: Community to review within 30 days and provide comments. Upon incorporation of comments, Baker will submit to FEMA and initiate Phase 2 kickoff.

Marta emphasized that we are working in a partnership; CWCB is looking for agreement and/or feedback on the process from the communities. Communities will lead outreach at the local level, while CWCB can help with presentations, resources, training, and materials. This study will result in updated flood risk. This will impact local homeowners when included on FIRMs. No community funding is necessary unless a further partnership opportunity is requested by communities. Asking communities to provide any data now and for continued coordination before the flood risk review meeting (in case you know of any Letters of Map Revision, or LOMRs we should know about, any other ongoing flood risk projects, etc.).

- Future items for CWCB and Baker – Plan Phase 2 kickoff meeting & survey acquisition shortly after
- Future items for Communities- Communicate the project to community leaders and to the public later on (in 2022).
- Identify mitigation actions. Conduct additional requested training. Engage in Phase 2 scoping/planning.

ACTION: Community to notify CWCB and Baker if there are known ongoing study efforts or planned changes (Conditional Letter of Map Revision [CLOMR]) or LOMRs.

8. **Discussion / BLE On-Screen Review**

Geoff recapped the approximate timeline and indicated the Community & FEMA Review is planned for July/August 2021 and Kickoff Phase 2 in September 2021.

Question: Geoff asked what file format the communities would prefer to receive data in.
Answer: shapefiles (.shp) work for the County, City of Trinidad, as well as the watershed partnership.

Question: Sky Tallman asked if we had data on stormwater systems.
Answer: Geoff said we're interested in it, but for these larger flooding events (e.g., 1% event) we assume that the stormwater systems are overwhelmed/full and not conveying. We do not account for local drainage. Reiterated that we *do* look at hydraulic structures and crossings throughout study area/reaches, and we collect survey information from these locations for the Zone AE (detailed) reaches.

Question: Sky asked about accounting for impervious areas in communities.
Answer: Geoff said it is included in our land use data. Higher curve numbers are used for roads/paved areas and indicate higher rates of runoff.

Question: Mike Valentine asked if the flood study update will reflect flood control from the Trinidad Dam.
Answer: Geoff confirmed that yes, we account for post-regulation conditions and have obtained the water control manual from the USACE to provide that information.

- Mike noted that there are prescribed release thresholds assuming Purgatoire River capacity of 5,000 cfs through Trinidad. Geoff explained this is discussed in the Water Control Manual and that there is a question about the actual current capacity of the Purgatoire River going through Trinidad. Also, there is a secondary threshold of attempting to not exceed 3,000 cfs due to potential agricultural damage.

ACTION: Julie Knudson noted that Kevin Pilgrim's assessment evaluated flow capacities through structures. Baker to review. Devon Aldridge noted that USACE also evaluated flow capacities.
ACTION: Talk with Kim Falen (Project Office Manager for Trinidad Lake) about reservoir releases. Include Nabil Shafike (USACE) in that discussion. Julie and/or Devon to provide contact information for Kim to CWCB and Baker.

ACTION: Mike Valentine noted two LOMR's for La Puerta Hotel (Hilton Gardens) and Toyota. These may have already been completed and effective – need to look into.

Question: Mike asked if during survey we recommend dredging/excavating to allow more conveyance.
Answer: Geoff indicated that our updates must reflect existing conditions. We can discuss mitigation with communities. We try to be objective in assessing risk without providing judgements on what communities should do. But we can discuss with communities what options may be available for things that they want to do (e.g., if they want to remove structures that we have assessed as being at risk in the floodplain, we can discuss options to achieve that). The community could make a request, but we do not make these recommendations. Doug indicated that grants may be available through hazard mitigation or via CWCB stream restoration but that it would be circumstantial.

For Phase 2, we will develop a Study Memorandum of Agreement (MOA) to identify what areas we agree to study. This does not indicate agreement with study results, but with the scoped reaches and study methodology.

ACTION: CWCB will distribute meeting materials (minutes, PowerPoint, Zoom recording) and a MOA concerning draft data that acknowledges the nature of draft data (subject to change) and considerations with sharing externally. Communities are to sign this MOA prior to receiving BLE draft floodplains.

Question: Robert Lucero indicated that many gas companies discharge into streams and asked if we take that into account in our studies as it may influence base flows.
Answer: Geoff said that we do not as it would be minor compared to the studied large and infrequent/rare events (such as storms). Stream restoration modeling might take into account low discharges like those, but we do not for our purposes as we simulate extreme events with large flows.
ACTION: However, we can look at the information if provided to determine whether it would affect the modeling approach. Robert or Julie to share this information to see if we would alter our initial conditions for modeling.

Geoff reviewed community-specific study areas (last slides of PowerPoint). Blue = 2D BLE produced 1% floodplain. Green = effective Zone A.

- Aguilar – currently Zone A with effective depiction being outdated (outside of current channel delineation). Will be superseded by 2D BLE, but recommend that the community consider a detailed reach (Zone AE) here.
- Cokedale – currently detailed, won't be superseded by 2D BLE. Will be studied by detailed methods in Phase 2.
- Starkville – currently detailed, won't be superseded by 2D BLE. Will be studied by detailed methods in Phase 2. Discussing with them on Monday (7/19).
- Trinidad – has a mix of approximate (Zone A) and detailed (Zone AE) effective mapping. Zone A would be replaced by BLE, Zone AE will be restudied in Phase 2.
  Caution against using 2D BLE results in highly developed areas as stormwater infrastructure is not included in this analysis at the Zone A level.

Question: Question came up about whether we would use the new vertical datum from 2020. City is mostly on the National Geodetic Vertical Datum of 1929 (NGVD 29) but converting at times to newer datum from the '80s.
Answer: Geoff responded that nobody is currently using it as it's not officially out yet. Phase 2 will be done using the North American Vertical Datum of 1988 (NAVD 88), even if the new datum comes out towards the end of the phase. Uncertain what would be used for the effective/Physical Map Revision update.

Question: Phil asked if the Town of Aguilar wanted additional study, who would pay for that?
Answer: CWCB would apply for additional funding through FEMA – it would not be at the Community's expense.

Question: Phil Dorenkamp asked if we are having follow ups with communities that did not attend today?

Answer: Geoff indicated that we will send out meeting minutes, recording, PowerPoint, etc. and connect with Aguilar and Cokedale again. Already have a meeting with Starkville lined up on Monday.

Question: If the 100 year event is the 1%, do we have something for the 500 year?
Answer: Geoff reiterated that we study six recurrence intervals. 10%, 4%, 2%, 1%, 1%+, and 0.2%, with the 0.2% annual chance event being synonymous with the 500 year event Also reiterated that when he calls something a "100-yr" event it means that each year, there is a 1% (1 in 100) chance or more of a storm of that size occurring, thus the "1%" profile. Not that it occurs only once every 100 years necessarily (they could happen two years back to back, or once in a 500 year period). See conversion table below, where each year's annual exceedance probability is calculated from dividing 1 out of each 'x' number of years, so that 1 / 100 = 1%, etc.

Recurrence interval, years	Annual exceedance probability, percent
10	10%
25	4%
50	2%
100	1%
100-plus	1%+
500	0.2%

We can project how the 1% events will change over time, possibly due to climate change, but none of that will go on any FIRM maps and instead can be more of a non-regulatory BAI product.

Question: Phil Dorenkamp asked whether climate change projections are accounted for in this study.
Answer: Not in this study. Historically FEMA requires studies based on current conditions, not future projections. However, this is currently being discussed among the administration and may change for future studies, but could be several years out. If communities would like insight into how future climate conditions might impact results, we can discuss providing this information as a non-regulatory product.

ACTION: Julie noted a high flow event in late May and has photos that can be shared. Geoff said it would be valuable for us to look at that, and to simulate that storm for the purpose of comparing to our flow rates that we intend to use in modeling. Get in touch with Julie and Aubrey Harris (USACE) to get data from that flood event – collected measurements at bridges post-event are available.

Question: Phil asked how far downstream we are studying with detailed methods? Interested in a specific bridge.
Answer: we have to study the current effective detailed study, but can consider extending the reach if it is useful to the communities. Geoff later confirmed that the effective detailed reach extends just downstream of the bridge of interest (751) – so we will include that structure (which had been realigned).

Geoff concludes the meeting sharing that the recording, notes, and products will be provided to all communities as follow-up. Including soft deadlines, expectations, etc. Feel free to contact our project team with questions.