

Flood Capacity at Cerro Gordo Rd: Culvert Design and Flood Study Scope of Work

This scope of work details the professional services required for a flood study and engineering design for improving flood capacity under Cerro Gordo Road. The project's primary goal is to ensure adequate flood conveyance capacity, supported by a comprehensive hydrologic and hydraulic (H&H) analysis of the entire river corridor between McClure Reservoir and the Cerro Gordo Road crossing. The objective of this study is to support public safety, correct and update FEMA floodplain boundaries and design a storm flow conveyance at Cerro Gordo Road able to handle all the 100-year event based on the future Santa Fe River realignment through the predevelopment channel also referred to as the present-day Two-Mile Pond Complex.

Phase 1: H&H Analysis

- **Task 1: Data Acquisition and Site Reconnaissance**
 - Where needed for flood hydraulic analysis conduct a topographic survey of the project area, including the Cerro Gordo Road crossings for both the Santa Fe River channel, the bypass channel and the surrounding floodplains. The survey should capture all relevant topographic features, extending from McClure Reservoir to the confluence of the Santa Fe River and the bypass channel below Cerro Gordo.
 - Document location and attributes of engineered structures within the study area including but not limited to the existing Cerro Gordo culvert, the bypass channel bridge, the bypass concrete flood weir, the historic irrigation dam (concrete “check dam”, the silted-in Old Stone dam, the 2012 restoration channel, the TM pond embankment, spillway and outlet tunnel, existing buried or surface pipes, and any other remnant structures that may influence water flow and limit the final design. Provide advice on removal of obsolete or unneeded structures.
 - Inventory and document all residential properties, infrastructure, and rights-of-way potentially affected by modifications to the conveyance system crossing Cerro Gordo Road. Evaluate these findings to determine if any identified impacts represent critical path risks or project hurdles.
 - Review all available historical flood data including geotechnical reports, dam breach documents , restoration channel design studies, environmental documentation and compile relevant data.

The contractor will evaluate alternatives for using the predevelopment, natural channel instead of the bypass channel for flood conveyance, acequia deliveries and Living River flows. The evaluation will review estimates of seepage losses in the bypass channel using data previously acquired for the City by John Shomaker Associates, Inc.
 - Stakeholder Identification: Identify, categorize, and initiate direct and early communication with all targeted stakeholders (property owners, neighborhood associations, advocacy groups).
- **Task 2: Hydrologic Modeling**

- Delineate the watershed boundaries for the study area, including the Two-Mile Pond Complex and the Aztec Springs Canyon watershed.
- Calculate peak flood discharges and floodplain boundaries for the 10-, 25-, 50-, and 100-year storms including short duration and typical 24-hr events. The analysis must account for the influence of upstream reservoirs on flow regimes as well as anticipated changes in volume due to the future Santa Fe River realignment through the current Two-Mile Pond footprint.
- Task 3: Hydraulic Analysis, Sizing and FEMA Submittals
 - Develop a hydraulic model of the Santa Fe River from McClure Reservoir to the confluence below Cerro Gordo. The model should incorporate the existing terrain, the Two-Mile Pond area, and all identified remnant structures as well as anticipated changes in volume due to the future Santa Fe River realignment through the current Two-Mile Pond footprint.
 - Develop optimal conveyance design to pass the design flood event taking into consideration geomorphic and ecological function such as assessing the potential for scour and potential impacts to downstream houses and infrastructure including the existing river channel.
 - If needed, prepare and submit a Letter of Map Revision for review by city staff and FEMA
 - If needed, prepare and submit MT-2 Application forms for review by city staff and FEMA

Phase 2: Engineering Design and Public Engagement

- Task 4: Design
 - Develop the final engineering design for the new conveyance system, ensuring it meets the required hydraulic capacity and all applicable structural standards.
 - Submit engineered plans at 30%, 60% and 90% and schedule respective review meetings with relevant parties.
 - Incorporate natural channel design elements that provide geomorphic continuity, promote aquatic connectivity and maintain ecological function. Evaluate the feasibility of a pedestrian trail underpass below Cerro Gordo Rd.
 - Identify construction-related access and traffic constraints that could impact emergency evacuations from the upper watershed. Develop an Emergency Access and Traffic Management Plan to ensure unobstructed egress and maintain safe traffic flow for all areas upstream of the project site.
- Task 5: Public Engagement

- Execute a comprehensive, multi-phased public engagement and outreach program. This includes conducting public meetings, soliciting community feedback, and maintaining transparent communication with all stakeholders.
 - Conduct visioning exercises (workshops, surveys, open houses) to assess community interests, desired site functions, and gather input on aesthetic preferences for the area.
 - Host regular meetings, alternating between targeted (Working Group/Stakeholders) and public formats to ensure continuous, transparent dialogue. Ensure comprehensive meeting minutes and engagement exercises are fully documented for record keeping purposes.
 - In coordination with the City's Communications Office, implement targeted media outreach such as public notices, social media updates, and press release to broaden awareness of the project and increase community participation.
 - Design Integration: Utilize the collected community dialogue, visioning results, and functional feedback to directly inform and refine the final conceptual design
- Task 6: Environmental and Regulatory Compliance
 - Prepare and submit all necessary documentation for environmental impact assessment as required by regulatory agencies.
 - Coordinate with federal, state, and local agencies to secure all permits.
 - Coordinate with FEMA representatives, DHSEM and City Staff to perform a Benefit Cost Analysis (BCA) for future use by the City of Santa Fe to apply for construction funding.
 - Task 7: Final Design and Project Documentation
 - Prepare a complete set of construction-ready plans and specifications, including detailed drawings, material schedules, and construction timeline (including a phased approach as required by potential funding limitations).
 - Provide a comprehensive budget estimate for the construction phase(s).

Deliverables: All work must be completed no later than May 14th, 2028.

- Hydrologic and Hydraulic Study Report: A technical report detailing the model methodology, findings, and the recommended design.
- FEMA submittals including LOMR and MT-2 Application for floodplain map revision (if needed).
- Geotechnical Report: An analysis of subsurface conditions and foundation recommendations.
- Architectural Survey Report: Documentation of existing conditions and structures within the study area.

- Permitting Memo: Provide overview of permit analysis, discussion and resulting permit requirements for future improvements to river channel alignment for future flood mitigation.
- Public Engagement and Outreach Memo: Comprehensive record of engagement methods, findings, and all public-facing materials.
- Final Engineering Designs: Complete plans for the new conveyance system.
- Construction-Ready Documents: The final set of plans, specifications, and the project budget estimate.