

**Engineering Review Requirements
For Pipeline Crossings of Streams/Rivers (bed and banks) owned by SARA**

1. The overall goal of these requirements is for the applicant to design and construct pipeline infrastructure projects with minimal disruption to the bed and banks of the stream, the public and the environment during construction as well as the long-term operation.
2. Streams are naturally dynamic systems and profile designs should expect streams to move vertically and laterally over time. Pipe line minimum depth is 20' and may also be dependent on stream order as identified by SARA using TCEQ methodology.
3. An on the ground centerline profile will be submitted for the proposed crossing. The ground shots will be based on NAVD 1988 datum. There will be enough points to describe and capture the significant features for the creek/river at the crossing. Provide an ascii file of the point data used to create the profile based on the same datum submitted. Format for the ascii file comma (delimited) northing, easting, elevation, description (N,E,Z,D).
4. Typically, only horizontal directional drilling or bore and jack construction methods will be considered for approval. Bore & jack sending and receiving pits must be located outside of the 10 year frequency storm limits and/or the required clearance distances from the thalweg, whichever is greater and must have the approval of the FEMA Floodplain Administrator if within the 1% chance annual storm as noted below. Directional drilling pits shall be constructed well beyond the top of bank.
5. Provide SARA with a map showing no activities within the 1% annual chance floodplain (100-yr) or a permit from the local floodplain administrator for proposed activities.
6. Any modifications to the channel or floodplain should include hydrology and hydraulics modeling for review and comment that assure no downstream impacts from the proposed temporary or permanent activities. In addition, a permit from the local floodplain administrator should be included.
7. The consultant designing the crossing should assure proper depth of utility to prevent exposure from localized scouring caused by improvements, if present, in the stream corridor. In such cases, applicant shall coordinate with local floodplain administrator to determine appropriate scour protection depths.
8. The minimum cover requirements required by SARA do not release the Owner from responsibility to remove and replace sections of pipe if exposed in future years. The Owner shall provide periodic inspections of the pipe alignment in future years to anticipate and communicate any potential problems to SARA in advance of pipe exposure. Exposed pipelines are considered a potential safety and environmental hazard risk that remain the responsibility of the pipe Owner to correct in a timely manner.

9. The river crossing easement instrument will contain provisions that require the removal of all improvements upon termination or abandonment of the river crossing.
10. Contact the San Antonio River Authority (SARA) Environmental Investigations Specialist at least 72 hours prior to any drilling activities. Contact must be made person to person and not thru email or phone messages. A site meeting to discuss the crossing must include a representative from the pipeline and boring companies. A review of site vegetation and topography will be conducted prior to beginning work.
11. Best management practices for environmental and safety contingency plans must be in place prior to any activities. Typical items include but are not limited to silt fencing, hay bales, plastic sheeting, pumps and hoses, and vacuum truck.
12. A fracture mitigation plan (FMP) must be prepared and posted on-site in the event of a leakage of drilling mud to the surface or stream bed (frac-out). All work will stop and the frac-out will be contained. SARA will determine if and when the drilling operations can resume. The on-site foreman must be competent in all aspects of the drilling activity. Drilling under Ecleto Creek will have some type of leakage based on history. Contractor will need to be prepared to contain any lost drilling fluid.
13. All equipment listed in the FMP shall be on site when drilling within 100 feet of the stream.
14. No drilling activities within the bed and banks of any river or stream will be allowed without the River Authority being on-site.
15. No water from any river or stream will be used in any activity without prior permit approval from TCEQ.
16. The site will be properly cleaned up and all debris removed. Restore site to original or better condition.
17. Provide SARA with the following within 30 days of completion: Test result of the line, air or water pressure; MSDS sheets of all chemicals and products used on-site; and documentation of the actual pipeline elevations under the river (as-builts). Failure to produce close-out documentation may prohibit any and all future crossings for that company.
18. SARA is not responsible for any damages, property or personal, related to the crossing.
19. SARA's review is based upon general compliance with the contract documents only and does not infer approval of the proposed design or construction operations. Sole responsibility for correctness and safety of the design and construction operations remains with the applicant.

20. This document is subject to revisions at any time and is provided for informational purposes only.

Revised February 23, 2012