

Pipe Maintenance and Inspection

The Rural LMA Work Group (WG) was established in late 2012 with the purpose of serving as a forum for the California Central Valley Flood Control Association to identify problems that are unique to rural areas and seek solutions for inclusion in the Regional Flood Management Plans. The Rural LMA WG identified eleven topics of interest and has prepared a paper describing each topic from the perspective of the Rural LMA WG. These papers continue to be developed by the Rural LMA WG and are therefore subject to revision.

Topic Statement

LMAs lack the enforcement authorities for inspection and maintenance of private and certain public pipe penetrations in their levees. The Central Valley Flood Protection Board (CVFPB), as the authorizing agency, has issued the encroachment permits for these facilities and holds the enforcement authority through the encroachment permits. In light of reluctance for pipe owners to properly inspect and maintain their pipes, there is a need to develop clear enforcement action and also develop other cost effective methodologies for performing the inspections that do not solely rely on video and sonar.

Description of Topic

Gravity or pressurized pipes that penetrate the levee are required to be inspected and maintained pursuant to the Code of Federal Regulations (CFR) Section 208.10 and the Standard Operations and Maintenance Manual. Those documents only provide general requirements. Current USACE guidance documents require inspection utilizing video or sonar inspection every five (5) years. Maintenance is performed as appropriate to repair or replace pipe penetrations in order to bring them into compliance with the USACE and CVFPB standards. Permitted repairs and installations must also be compliant with current California Code of Regulations, Title 23. Waters, Division 1. Central Valley Flood Protection Board.

The intent of the USACE's video inspection program is to monitor the interior of pipes through the levee every five (5) years so that pipes can be rehabilitated or replaced before damage occurs that could threaten the integrity of the levee. The inspection also provides a record of the previous condition of each pipe for comparison over time, allows an inspector to examine parts of the pipe that cannot be inspected visually from the pipe exterior or levee surface, and allows the pipe owner, DWR and /or the LMA to determine whether the condition of a pipe requires action to protect the levee. Additionally, by identifying pipes that need attention prior to failure, the repairs can be scheduled to occur outside of the typical flood season, and at a time when the pipe owner could find them more cost-effective than an emergency repair.

Video inspections are costly, and pipe owners may resist or refuse to perform them. This is problematic for LMAs as failure to perform and report the inspection results could result in unacceptable ratings by USACE and/or CVFPB. Other effective methods of inspection, such as pressure testing, may provide an acceptable level of analysis and be more cost effective and practical, and might allow for a higher level of compliance. Also, most pipes are steel, and video inspection may be limited in identifying problems as most of the corrosion occurs from the exterior of the pipe. Access to the video equipment is limited and use generally requires cutting access entrances for insertion of the devices. These access entrances can cause additional sites for corrosion to start

and can be difficult and expensive to install properly. These pipes present a very minor threat for flooding, when they cross above the floodplain or have positive closure structures on the waterside of the levee since these measures generally prevent or limit conveyance of flood waters.

While there is little or no disagreement for the inspection requirements on pipes that are located below the design water surface elevation, there are instances, particularly in the Delta, where pipes are installed on the levee slope surfaces and only penetrate the levee just below the crown above the design water surface elevation. Additionally, once the pipe inspections have been performed, and maintenance/rehabilitation actions are identified, there exist various issues regarding the necessity and expense associated with obtaining permits and the permit requirements for maintenance/rehabilitation. Many routine maintenance actions should not require costly permit application processes or expensive upgrades to the existing facility. There are also instances where a “one size fits all” regulation may not provide the most cost effective or best practice for a given situation. An example of this is positive closure devices on pipes that are located above the design water surface elevation.

In addition to the issues listed above, a majority of pipes are permitted encroachments in the flood control systems. The encroachment permits are issued through the CVFPB and only require an endorsement by the LMA. Although the existing permits themselves do not typically include requirements for video inspections, they do include a standard condition that would require the encroachment owner to remove, alter, or relocate the encroachment at their sole expense for any reasons upon written notice from the CVFPB. Because the CVFPB is the permitting agency, they hold the enforcement authority. However, they have rarely used their authority and have only recently been given legal authority to develop an enforcement process to bring encroachments into compliance with current standards.

Relevance to the RFMP

The primary issue for LMA's is that they do not own or operate many of the pipes that penetrate their levees, and therefore lack the ability to access those pipes for inspection and maintenance. Furthermore, the LMAs cannot afford to be held financially responsible for those inspections or the maintenance of the pipelines. Enforcement of the inspection and maintenance requirements is difficult and costly for the LMAs and is the responsibility of the CVFPB.

Opportunities may exist for streamlined permitting for simple repairs and rehabilitation of pipelines. In many cases a notification of the repair and a simple report may suffice provided they meet specific criteria, i.e. repairing a siphon breaker, or fixing a small leak or valve. Additionally, there needs to be some flexibility in the regulations to avoid “one size fits all” policies for construction, repair and inspection so that more cost effective solutions can be implemented that retain the overall protection desired. Finally, there needs to be outreach and education of utility owners to help them understand why compliance with the standards is important so they become willing and proactive participants.