OBJECTIVE:
- Ensuring effective system-wide preventive and predictive maintenance actions
- Ensure periodic task accomplishment
- Identify potential/actual system problems
- Ensure legal, safe, and consistent handling of hazardous materials
- Maintain canal/ditch water delivery
- Protection of adjacent property

RATIONALE / PURPOSE:
- Ensure mission capability
- Ensure system reliability
- Develop predictive maintenance programs
- Determine capital improvement budgeting
- Develop loss trend analysis
- Reduce property, liability, and injury/illness loss exposures
- Reduce revenue loss and O&M cost
- Ensure compliance with applicable governmental regulations

METHODS / PROCEDURES:
(Note: Listed procedures are intended as guidelines only, and may not be applicable for all districts or situations).

General
- Reform ditch banks periodically, to reduce rodents and weeds.
- Ripping (in canal bottom and along toe) to destroy burrows before reforming canal bank/levee.
- Control weeds to allow visual inspection of canal banks/levees. When mowing is used as an alternative to herbicide use, inspect immediately after mowing to observe rodent activity.

- Elimination of fur bearing or game animals may require debridation permits from Fish and Game (including beavers). (See Trapping Procedures Section).

- Muskrats generally do not require debridation permits for eradication (contact local Fish and Game office for questions or details).

- All pest control applicators should undergo “sensitivity training” to be able to recognize protected species (Fish and Game).

- Only persons properly trained or under direction of certified applicators (QAC) may perform pest control activities including gassing, gopher bombs, and poisoning by various means.

- Rodent barriers prevent some rodent activity where other methods are not effective. (Trench, then fill with concrete, adjacent to ditch bank).

- Owl boxes can be a cheap and effective option for rodent control. They are non-hazardous to personnel and environment.

**Inspection**

- Inspect banks and levees regularly for rodent activity.

- Do complete inspection at end of season, and set priorities for maintenance before next water season.

- Animal burrows, once identified, should be excavated, inspected, and backfilled with compacted soil similar in material to the bank or levee.

- Boils should be investigated as a burrow.

**Eradication**

**Poison/Bait**

- Use of poisons and other hazardous materials shall be documented/logged. Fill out Weed & Pest Report – mile number and amount used.
- Feed only active holes. This poison is expensive and there is no need to waste it.
- Bait station entrance cannot be larger than 3-inches in diameter.

- Poison grain-timing is critical. Follow recommended procedures for material. Must be the only source of food to be effective.

- Diphacinone Rodent bait works extremely well in rural/remote areas.

- When putting out station in early spring take pad, pencil, record mile numbers, and number of stations.
  - Example: Mi. 120.05 o/p side to 127.68 = 13 stations.

- Put in 3 - 4 cups when setting out station and should be checked every other day.
  - If it runs out of bait for three days you will have to start over again.
  - Cover fill tube with cup to keep out rain.
  - Clean up any spill, put in bucket, or bury it.

- Please weigh any partial bucket and record on top of bucket with flow pen how much is left for inventory purpose. Know the weight of a full bucket.

- Keep bait stations full. Must eat 3 - 4 days to be effective.

- When bringing in bait stations in the fall, they should be cleaned out and old bait put in container and disposed of in approved manner.

- Use proper bait for application, broadcast vs. bait station.

- Pest baiting must occur for a period of time to allow necessary feeding. Springtime works best. Rodents are hungry after birthing, there is little forage available, and can also kill young.

- Broadcasting bait sometimes works better, but some crops do not allow this practice.

- Use a seed spreader to broadcast poison bait (for scavenging squirrels).
- Broadcast bait 20-feet from hole.

**Gassing/Bombs**
- Use phosgene gas in the winter (when moisture present).
- Use smoke bombs year round.
- Do not use smoke bombs in an area if there is a potential for fire danger.

**Trapping**
- When beaver activity is observed, the beaver should be removed (trapped), and the dam and blockages removed. A debridation permit will likely be required. Notify your local Fish and Game office and follow instructions as given for obtaining a permit, trapping, or other means of eradication.
- Poisoning of ground squirrels where endangered species are present, (such as Kangaroo Rats) may be prohibited in some areas. Contact your local Fish and Game office for more details.

**INCIDENT RESPONSE:**  See Canal Failure Response SOG

**Preparation**
- A standby/on call procedure needs to be established to respond to emergencies.
- Equipment must be available to respond to and repair canal/levee failures.
- Proper fill material must be available to repair crews.

**SAFETY CONSIDERATIONS:**
An effective maintenance program can help to prevent damage to property, the environment, and injury to employees and the public, and will help to:
- Preclude system and equipment damage
- Preclude property and environmental damage
- Facilitate operations and maintenance personnel safety

Identification of safe work practices among employees should include:
- Hazardous material handling
- First Aid/CPR procedures and supplies
- Poison Control Procedures
- Eyewash and decontamination supplies
- Spill and containment equipment

- Fall protection
- Read MSDS before starting job. Have a copy in vehicle for emergency.
- Follow established safe handling and operations procedures (as specified on MSDS and informational sheet).
- Wear all safety equipment (as specified on MSDS and informational sheet). Use rubber gloves when handling bait, coveralls, dust cover, measuring cup and funnel.
- Keep all poison in a closed container
- Before smoking or eating, wash hands with detergent and water
- Only trained personnel shall handle hazardous materials.
- Watch your step on uneven ground
- Watch out for snakes
- Have contact information and communication means available onsite

COST/ BENEFIT:
- Reduce revenue losses
- Avoid costly liability, property, and injury/illness losses
- Preventive maintenance and loss trend data would reduce facility, equipment, system failures.

INSPECTION FORMS / CHECKLISTS / DOCUMENTATION:
- Training Log
- Daily Weed Control Report
- Pesticide Safety Training Record

REFERENCES:
- California Department of Pesticide Regulations website: www.cdpr.ca.gov