

NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE STANDARD

SOIL SALINITY CONTROL

(Acre)

CODE 738 CA INTERIM

DEFINITION

Reducing or maintaining and managing soil salinity/sodicity at acceptable levels for the production of the desired crops on irrigated land.

Scope

This standard establishes the minimum acceptable requirements for planning, design, and operation for salinity management on agricultural land.

This standard does not apply to the design and installation of the various components.

PURPOSES

To maintain a desired salt/sodium balance in the root zone, to protect the soil resource, and to permit the desired crop response.

CONDITIONS WHERE PRACTICE APPLIES

This practice applies where: (a) soil salinity or sodicity is recently at a level that adversely affects crop production, or (b) soil salinity or sodicity is increasing in a manner to indicate probability or reaching adverse levels in the near future.

CRITERIA

Design for individual components shall be in accordance with the practice standard for that practice. For components not included in a practice standard, the design criteria shall be consistent with sound engineering principles.

System components shall be planned and installed in a sequence that insures each component will function properly as intended without being impaired or voided when other components are in stalled.

CONSIDERATIONS

Salinity management for a given enterprise must include the components necessary to reduce or properly

manage the salinity level for an acceptable level of production of the desired crops.

Salinity management may consist of a single component or several components. Components shall be installed in accordance with an overall salinity management system plan.

Salinity Management shall ensure that drainage effluent will not adversely effect wildlife nor surface or subsurface water. Effluent containing toxic substances must be given high priority.

Water Quantity

1. Effects on the water budget, especially on infiltration, deep percolation, and ground water recharge. Consider the variability (volume and timing) of the leaching fraction, the need for additional irrigation water, and the impact of drainage if installed as an associated practice.

Water Quality

1. Effects on irrigation induced erosion, sedimentation, and soluble and sediment-attached substances in irrigation tailwater.
2. Effects of leaching on the volume of toxic salts and soluble nutrients and pesticides removed from the root zone. Identify the ultimate residence of the chemicals and the surface and ground water impact of drainage if installed as an associated practice
3. Potential for transfer of salinity conditions to another location where surface or subsurface drains are used.
4. Effects on erosion and the movement of sediment, pathogens, and soluble and sediment-attached substances, including salts, that could be carried by runoff.

Endangered Species Considerations

Determine if installation of this practice with any others proposed will have any effect on any federal or state listed Rare, Threatened or Endangered species or their habitat. NRCS's objective is to benefit these species and others of concern or at least not have any adverse effect on a listed species. If the Environmental Evaluation indicates the action may adversely affect a listed species or result in adverse modification of habitat of listed species which has been determined to be critical habitat, NRCS will advise the land user of the requirements of the Endangered Species Act and recommend alternative conservation treatments that avoid the adverse effects. Further assistance will be provided only if the landowner selects one of the alternative conservation treatments for installation; or at the request of the landowners, NRCS may initiate consultation with the Fish and Wildlife Service, National Marine Fisheries Service and/or California Department of Fish and Game. If the Environmental Evaluation indicates the action will not affect a listed species or result in adverse modification of critical habitat, consultation generally will not apply and usually would not be initiated. Document any special considerations for endangered species in the Practice Requirements Worksheet.

Planning Procedures

Inventory: Prepare an inventory of the existing field conditions, such as: salinity levels of soils and irrigation water, drains, irrigation schedules, evapotranspiration data, and crop history.

Causes: Determine the factor or factors that appear to be contributing to the problem and that can best be modified to obtain the reduction of salt accumulation.

Soil Alteration: If water penetration needs to be improved, soil alteration by deep chiseling or other methods and practices need to be considered.

Crop Tolerance: Determine the salt levels for the tolerance of the crop to be grown.

Irrigation Water Management: Determine the rate, frequency, and duration of water application for the soil properties and the desired crop response to minimize deep percolation. This will require additional water for leaching salt through the root zone.

Soil Amendments: After obtaining the soil properties of the cultivated land and the irrigation water quality, determine if soil amendments are needed. The needed

rate and number of applications of any soil amendment shall be stated in the plan.

Drainage: In order to reduce the existing salt accumulation in the root zone, an adequate subsurface drainage system will need to be considered. The drain system shall be sized to remove the free water from the root zone including leaching at the design rate. The drain outlet may be by gravity flow to an outlet or into a pump station for delivery to an outlet or evaporation pond. The outlet must be adequate to dispose of drainage effluent without reverse flow.

Management: Prepare a management plan for the operator for effectively controlling the salt accumulation in the root zone to produce the desired crop. This plan shall address the following principles:

- a. **Inventory:** Basic inventory data such as, electrical conductivity value of soil, electrical conductivity of irrigation water, cropping history, past irrigation scheduling data, water table, soil profile data, and area evaporation data.
- b. **Analysis:** Alternative plans considered to solving the problem, any environmental issues, and analysis of inventory data.
- c. **System:** The installation plan of all conservation practices required to be installed that will control salinity levels. The plan will outline the sequence of installation of all components; such as, adding soil amendments, placing subsurface drains, and constructing evaporation ponds.
- d. **Operations:** The plan shall outline the timing of events, such as: leaching each individual field, adding of soil amendments, irrigation scheduling, pumping of subsurface drains of cultivated lands, pumping of perimeter pond drains. Transferring the water from cell to cell within the pond, and releasing of water from the pond back to the field for use as irrigation water.
- e. **Maintenance:** The plan shall outline the maintenance required to control erosion due to wave action, maintenance of shoreline vegetation, maintenance of pumping station, and any early warning devices.

PLANS AND SPECIFICATIONS

Plans and specifications shall be in keeping with this standard and standards for individual components, and

shall describe the requirements for applying the practice(s) to achieve its intended purposes.

OPERATION AND MAINTENANCE

The owner or operator will be responsible for operating and maintaining.

Should the system involve an evaporation pond constructed for a group, the management plan shall outline the operation of the pond, and contain the "named" individual who has the responsibility to speak for the group.