



Natural Resources Conservation Service  
101 SW Main Street; Suite 1300  
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Phone: (503) 414-3247 Fax: (503) 414-3277

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## Irrigation System Planning

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### Introduction

- The material provided in this section is intended to serve as a framework for conservation irrigation system planning.
- Training emphasizes the basic steps in the irrigation planning process in development of ecosystem based management systems.
- Trainers should modify the training material referenced as necessary to achieve the planned skill level for the trainees
- Trainer are encouraged to include locally developed training materials to complement and/or supplement the referenced material.
- As new training materials are developed by trainers, they are encouraged to furnish copies to the National Employee Development Center for inclusion in future versions of the assembled material.

### Suggested Objectives

1. Plan irrigation systems using processes included in the National Resource Planning Handbook.

### Suggested Outline

- I. Introduction
- II. Body
  - A. Planning
    1. Identify resources of concern.
    2. Determine irrigator objectives.
    3. Inventory resources.
    4. Analyze resource data.
    5. Formulate irrigation alternatives.
    6. Evaluate alternatives.
    7. Document decisions.
    8. Water user implements irrigation plan
    9. Follow-up.
- III. Summary



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### Irrigation Methods That Will Be Covered

1. Sprinkler Irrigation Systems
2. Surface Irrigation Systems
3. Trickle Irrigation Systems
4. Subsurface Irrigation Systems
5. Fertigation/Chemigation Systems

### 1. Sprinkler Irrigation Systems

#### Reference Material

- Irrigation Guide, Chapter 10, 15.
- NEH 15, Chapters 3, 11.
- Applicable State Irrigation Guides.
- "Management of Farm Irrigation Systems", ASAE Monograph, 1990. Field Office Technical Guide, Section 3 and 5.
- National Conservation Planning Handbook.

#### Toolbox Material

- Publication "Planning for an Irrigation System", Irrigation Association
- Video "Best Management Practices For Sediment Reduction Within Western Stanislaus County", NRCS, CA
- Video "Conservation Irrigation for New Employees", NRCS, Module 7.3, Parts A, B and C
- Video "LEPA - Saving Water for Future Producers", Texas Agricultural Extension Service/Texas A&M University
- Video "No Water - No Future, Key to Effective Water Management", Irrigation Association.



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### 2. Surface Irrigation Systems

#### Reference Material

- Irrigation Guide, Chapter 10, 15.
- NEH 15, Chapters 3, 4, 5, 6.
- Applicable State Irrigation Guides .
- “Management of Farm Irrigation Systems”, ASAE Monograph, 1990.
- Field Office Technical Guide, Section 3 and 5.
- National Conservation Planning Handbook.

#### Toolbox Material

- Publication “Planning for an Irrigation System”, AAVIM Manual,
- Publication “The Surface Irrigation Manual, A Comprehensive Guide to Design and Operation of Surface Irrigation Systems”, 1995 (Located in Irrigation System Design Section).
- Video “Best Management Practices For Sediment Reduction Within Western Stanislaus County”, NRCS, CA.
- Videos “Conservation Irrigation Planning for New Employees” (3 videos, NRCS), Module 7.3, Parts A,B,C.
- Video “No Water -No Future, Key to Effective Water Management”, Irrigation Association.



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### 3. Trickle Irrigation Systems

#### Reference Material

- Irrigation Guide, Chapter 10, 15.
- NEH 15, Chapters 3, 7.
- Applicable State Irrigation Guides .
- “Management of Farm Irrigation Systems”, ASAE Monograph, 1990.
- Field Office Technical Guide, Section 3 and 5.
- National Conservation Planning Handbook.

#### Toolbox Material

Publication	“Drip and Microirrigation for Trees , Vines, and Row Crops”, ITRC, Cal-Poly , Located in Irrigation System Design Section).
Publication	“Planning for an Irrigation System”, AAVIM Manual.
Video	“Best Management Practices for Sediment Reduction Within Western Stanislaus County”, NRCS, California.
Videos	Conservation Irrigation Planning for New Employees (3 videos, NRCS), Module 7.3, Parts A,B,C.
Video	“General Filtration for Drip and Microirrigation” ITRC, Cal-Poly, 1995 (Located in Irr. System Design Section).
Video	“No Water -No Future, Key to Effective Water Management”, Irrigation Association.
Video	“Sand Media Filtration for Drip and Microirrigation” , ITRC, Cal-Poly,- (Located in Irrig. System Design Section).



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### 4. Subsurface Irrigation Systems

#### Reference Material:

- Irrigation Guide, Chapter 10, 15.
- NEH 16, Drainage (Will be replaced by NEH Part 624, Water Table Control).
- NEH Part 624, Water Table Control (Draft).
- NEH 15, Irrigation, Chapter 3.
- Applicable State Irrigation Guides .
- “Management of Farm Irrigation Systems”, ASAE Monograph, 1990.
- Field Office Technical Guide, Section 3 and 5.
- National Conservation Planning Handbook.

#### Toolbox Material

- Publication “Planning for an Irrigation System”, AAVIM Manual.
- Video “Best Management Practices for Sediment Reduction Within Western Stanislaus County”, NRCS, California.
- Videos “Conservation Irrigation Planning for New Employees” (3 videos, NRCS), Module 7.3, Parts A,B,C.
- Video “No Water -No Future, Key to Effective Water Management”, Irrigation Association.



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### 5. Fertigation/Chemigation Planning

#### Reference Material

- Irrigation Guide, Chapter 7, 10, 15.
- NEH 15, Chapters 7, 11.
- Applicable State Irrigation Guides.
- Applicable State Chemigation/Fertigation Guides.
- “Management of Farm Irrigation Systems”, ASAE Monograph, 1990.
- Field Office Technical Guide, Section 3 and 5.
- National Conservation Planning Handbook.
- “General Chemigation/Product Combination”, (Video), Agri Inject Inc.
- “Fertigation”, (Video), International Irrigation Center, Israel.

#### Toolbox material

- Publication “Drip and Microirrigation for Trees, Vines, and Row Crops”, ITRC, Cal-Poly, Chapter 15, (Located in the Irrigation System Design Toolbox).
- Publication “Fertigation”, Irrigation Training and Research Center, (Located in the Irrigation System Design Toolbox).
- Publication “The Surface Irrigation Manual, A Comprehensive Guide to Design and Operation of Surface Irrigation Systems”, Chapter 22, 1995 (Located in the Irrigation System Design Toolbox).

#### Facilitation Options

- Self-paced,
- Facilitator guided, or
- Formal training course.

#### Evaluation



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Each state should develop an evaluation procedure which addresses the level of competence before and after training.