Irrigation Water Management Plan Criteria

Practice/Activity Code (118) (No.)

A. Definition of an Irrigation Water Management Plan

The objective of Irrigation Water Management (IWM) is to control the volume, frequency, and rate of irrigation water applications to achieve one or more of the following purposes.

- Promote desired crop response.
- Optimize the use of available water supplies.
- Improve water quality, by reducing irrigation sources of surface and ground water contamination.
- Minimize irrigation induced soil erosion.
- Improve soil environment for vegetative growth.
- Manage salts in the root zone.
- Improve air quality, by reducing movement of particulate matter.
- Provide appropriate and safe fertigation and chemigation.
- Reduce energy consumption.

The objective of an Irrigation Water Management Plan (IWMP) is to provide the producer a guide for the proper management and application of irrigation water resources. The potential benefits of IWM can be effectively determined by interviewing the producer to identify fields, soils, crops, climate, and available water supply; measuring the volumes of water withdrawn or applied; determining irrigation system uniformity, selecting a method to schedule irrigations, and then combining these components to produce an IWM Plan for the farm.

B. IWMP Criteria

This section establishes the minimum criteria to be addressed in the development of Irrigation Water Management Plans.

1. General Criteria:

   a. Irrigation Water Management Plans shall be developed by certified Technical Service Providers (TSPs). In accordance with Section 1240 (A), the Environmental Quality Incentive Program (EQIP) program provides funding support through contracts with eligible producers to obtain services of certified TSPs for development of Irrigation Water Management Plans. The specific TSP criteria required for Irrigation Water Management Plan development is located on the TSP registry (TechReg) web site at: http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/technical/tsp.

   b. The IWMP should address the resource concerns identified, and the conservation practices needed to comprise a conservation system for IWM. In addition, the IWMP should be based on the economics of water use, energy consumption and crop yield. Management may be limited by water (deficit irrigation), or limited by land (unlimited water). The two general management schemes for irrigation water conservation in agriculture are Demand Management (reducing withdrawals or reducing crop requirements), and Supply Management (increasing water storage, yield, or supplies).

Technologies available for Demand Management include:

(i) Irrigation scheduling.

(ii) Increased system uniformity.

(iii) Increased irrigation efficiency.

(iv) Reduced water evaporation.

(v) Reduced soil evaporation (utilize crop residue or mulch).

(vi) Reduced water use by non-beneficial vegetation.

(vii) Limited irrigation (applying less than maximum ET_C).

(viii) Crop selection (lower ET_C or drought resistant strains).

(ix) Decision-making models (optimize water, energy, and nutrient use).

(x) Conversion of irrigated cropland to dry land farming.

(xi) Technologies available for Supply Management include:

(xii) Increased water storage capacity.

(xiii) Groundwater recharge.

(xiv) Water harvesting.

(xv) Vegetative management for increased watershed runoff.

(xvi) Reuse of waste or drainage water.

(xvii) Water transfers

2. IWMP Technical Criteria.

The IWMP should include, but not be limited to, the following components:

a. Farm and field information:

(i) Name of producer.

(ii) Farm number.

(iii) Field and/or tract number.

(iv) Crops grown, and planned rotation by field.

(v) Name of contractor or consultant developing plan.

(vi) Date of plan development.

b. The objectives of the producer, which should involve one of the purposes listed in Conservation Practice Standard (CPS) 449, Irrigation Water Management.

c. A map that includes field boundaries, and a soils map with the predominant soils listed and area quantified. If the qualifying acres for the plan are a subset of fields, the boundaries of the IWMP acreage should also be delineated.

d. An irrigation system map that includes the size, materials, and locations of the mains, laterals, and application systems.

e. Documentation of past water withdrawals and applications, by crop.

f. The methods planned to measure or quantify future water withdrawals and irrigation applications.

g. Planned water application volumes, on a seasonal and/or annual basis, and by crop.

h. Soil tests, to include nutrient levels and salinity. Water tests, to include nutrients, pathogens, salinity, pH, and trace elements.

i. Estimates of irrigation system uniformity, based on testing, evaluation, or observation. Distribution Uniformity (DU) should be based on the ratio of the average depth infiltrated in the low one-quarter of the field, to the average depth infiltrated over the entire field.

j. Documentation of the scientific method planned for scheduling the timing and amount of irrigation applications, based on the measurement or estimation of soil moisture, and the measurement or prediction of evapotranspiration (ET_C) of the crop(s). The proposed irrigation scheduling method should include:

   (i) Estimated volume of water applied, by field, irrigation event, season, and/or year.

   (ii) Estimated frequency or timing of irrigation applications, by field.

   (iii) Estimated application rates and depths of irrigation events.

k. An Operation and Maintenance plan, to include a check list of items to eliminate non-beneficial system losses.

l. A signature page, with names, dates and signatures of all contract holders and the person who prepared the plan. The signature page should also contain a space for approval by NRCS.

m. The IWMP components shall be assembled into one complete plan.

3. Associated Practice Standards.

The IWMP should address the resource concerns identified, and the conservation practices needed to comprise a conservation system for IWM. In addition to the information required in CPS 449, Irrigation Water Management, existing irrigation systems and conveyance facilities may require modification, augmentation or replacement of components. NRCS Conservation Practice Standards to be incorporated in the IWMP could include:

Code	Practice name
449	Irrigation Water Management
441	Irrigation System, Micro
442	Irrigation System, Sprinkler
443	Irrigation System, Surface & Subsurface
430	Irrigation Pipeline
428	Irrigation Ditch Lining
388	Irrigation Field Ditch
320	Irrigation Canal or Lateral
587	Structure for Water Control
436	Irrigation Reservoir
447	Irrigation System, Tailwater Recovery
533	Pumping Plant
464	Irrigation Land Leveling
450	Anionic Polyacrylamide (PAM) Application
610	Salinity and Sodic Soil Management
590	Nutrient Management

4. References
   - USDA-NRCS, National Engineering Handbook, Part 623, Section 15, Irrigation.
   - USDA-NRCS, National Engineering Handbook, Part 652, National Irrigation Guide.

C. Deliverables for the Client – a hardcopy of the IWMP that includes:

1. Cover page – name, address, and phone number of producer and TSP; Total Acres of the Plan, signature blocks for the TSP, producer, and a signature block for the NRCS acceptance.
2. Soils map and appropriate soil descriptions.
3. Resource assessment results (wind and water erosion, water availability, soil fertility, and others that may be needed).
4. Complete Hardcopy of the client's plan (MsWord copy). Document the planned conservation practices showing the planned amount, the fields where the practice is to be applied, and the planned year of application.

D. Deliverables for the NRCS Field Office:

1. Complete Hardcopy and Electronic copy of the client's plan (MsWord and/or other appropriate digital copies).
2. Digital Conservation Plan Map with fields, features, and structural practices located.
3. Digital Soils Map.