Section III – Nutrient, Pest and IWM Planning

IWM Planning and Reporting Requirements

Minimum IWM Planning Requirements

1. When installing components of a system for a given field, the complete system shall be planned in accordance with FOTG standards. This will insure the system applied adequately meets the conservation needs of the field.

For example, when planning a pipeline from the well to a center pivot for conversion from gravity irrigation to sprinkler irrigation the complete system shall be planned not just the pipeline component. The field shall be evaluated for the suitability for center pivot irrigation and the proper sprinkler selection (i.e. wetted diameter) for the given soil and slope conditions planned. The same would apply for components of surface irrigation systems and micro-irrigation systems (subsurface drip irrigation).

2. In order to achieve proper irrigation water management, a method to determine the gross irrigation depth applied to each field shall be planned.

The method(s) used to determine gross irrigation depth applied to each field could be very simple, or more sophisticated. Several methods may be used to determine the flow per furrow. This can include; furrow flumes, orifice plates or siphon tubes. Then by multiplying the individual furrow flow by the number of furrows irrigation flow rate can be determined. Weirs at field turnout or at headgates; measurement of well output by portable measurement device (at least once or twice a year during pumping season), flow meters with totalizers; weirs with staff gauge recorders, and other appropriate methods can be used to determine flow rate.

Rain gauges or equivalent catchments placed under a center pivots in appropriate areas can be used to directly determine depth applied.

A water supply that is not divided could be measured at the source. If water is divided (split) between two or more fields or landowners (i.e. group system) a method should be planned to determine the amount of water delivered to each field.

IWM Plans

IWM Planning is required for ALL irrigation water management practices, components and systems. For example flow measurement /flow meter assistance, irrigation scheduling assistance, land leveling, surge valves, pipelines, reuse systems, etc. These minimum requirements apply to both cost share and non-cost share assistance, program and non-program assistance.

The IWM plan shall be given to the cooperator with a copy of the complete plan kept in the cooperator's file.

Minimum IWM Plan Contents

1) Statement of Purpose or Goal

2) Conservation Plan Map
   a) Irrigation Distribution System,
   b) Irrigation Application System;

3) Soils
   a) Soils Map,
   b) NASIS Soil Description or equivalent,
   c) Available Water Holding Capacity (AWC) of the irrigated area (for each field assisted);

4) Description of Scheduling

5) Crop Data
   a) Description of Evapotranspiration,
   b) Seasonal Crop Water Use (for type of crop);

6) Gross Application Determination
   a) Gross Irrigation Application determination for each field where assistance is given;

7) IWM Record Keeping
   a) Copy of NE-ENG-80, NE-ENG-79A or other similar IWM record keeping tools and instructions;

Nebraska Conservation Planning Sheet No. 17 meets 1 and 3c through 6a if soil type and crop information highlighted for each field and gross application table is completed for each field.

Optional Content Information for IWM Plan

The following is an example of optional information which may included in IWM plans. Other information not listed may also be included in these plans.

7) Evaluation and Recommendations
   a) Engineering forms plus design data,
   b) Computer model documentation detailing application depth, efficiency, uniformity, deep percolation, runoff potential (e.g. SRFR, CPED, FIRS, etc.),
   c) Supporting information,
   d) Listing of System Planning Alternatives,
   e) Evaluation results;

6. References:
   a) Neb-Guides
      - Neb-Guide G84-690-A “Estimating Soil Moisture by Appearance and Feel”,
      - Neb-Guide G90-964-A “How Soil Holds Water”,
      - Neb-Guide G85-753-A “Irrigation Scheduling Using Crop Water Use Data”,
      - Neb-Guide G97-1338-A “Managing Furrow Irrigation Systems”,
      - Neb-Guide G91-1017-A “Application of Surge Irrigation”,
   b) Other references, as appropriate;

8) Additional soils information
   a) Detailed soil AWC by soil families,
   b) Infiltration information,
   c) Erosion computation ,
   d) Maximum non erosive flow “Qmax”,
   e) PAM information,
   f) Leaching Requirements (Saline / Sodic soils),
   g) Organic Matter information;

9) Optional information for crops
   a) Irrigation Water Requirements (IWR) Output,
   b) Rooting depth of crop,
   c) Maximum crop water needs by crop and/or crop stage,
   d) Recommended Management Allowed Depletion (MAD),
   e) Actual & predicted ET information,
   f) Deficit irrigation information,
   g) Salinity and Sodicity Effects;

10) Scheduling:

a) Description or written agreement of agronomist responsibilities,
b) General Definition of QT=DA, where:
    i) Q = flow rate (ft^3/s),
    ii) T = time (hr),
    iii) D = depth (in.), and
    iv) A = area (acres);
c) Irrigation Scheduling Methods,
d) Description of soil moisture monitoring techniques and equipment;

11) Water Supply
    a) Water measurement techniques and equipment,
    b) Quality of water supply,
    c) Source Location,
    d) Water Delivery Schedule;

12) Physical Features (Description)
    a) Topographic information,
    b) Access roads, aboveground utilities, buried utilities, etc.,
    c) Drainage system,
    d) Presence of water table;

13) Irrigation System:
    a) Discussion of application methods,
    b) Farm Distribution Components,
    c) Operator Desires/Concerns,
    d) Design Alternatives,
    e) Pumping plant information,
    f) Energy Use and Conservation,
    g) O & M,
    h) System Capacity,
    i) Expected Efficiencies.

Case File Documentation Required for Applied IWM

Cooperator records shall be adequate to ensure that the irrigation water management practice is applied. Adequate follow-up with the producer is necessary to ensure the producer has implemented the practice. Appropriate conservation assistance notes and producers records to verify that the irrigation water management practice has been applied according to the 449 Standard shall be included in the case file.

NRCS will provide cooperator a NE-ENG-79A, NE-ENG- 80, or equivalent; and provide assistance on irrigation water management record keeping according to the 449 Standard.