(c) Soil and Irrigation Parameters

It has been said that you don't irrigate a crop, you irrigate the soil. In order to understand the principles of irrigation, it is imperative that a person who works with irrigation keep the following in mind:

1. Water is first introduced to the soil surface and then to the soil profile either by snowmelt, rainfall or irrigation.
2. The crop then removes the water from the soil.

When water is to be introduced to the soil, there are two things that an irrigator is interested in:

1. How fast can the soil take the water?
2. How much water can the soil profile hold?

Intake rates (inches/hr) are used to describe or measure how fast the soil can take water. Intake rates are described in three ways:

*1. Initial Intake Rate is the rate the soil will take water when it is dry and water first contacts the surface.

*2. Basic Intake Rate is the rate the soil will take water after it is saturated.

*3. Average Intake Rate is the average rate of intake of a soil from a dry to a saturated condition.

*In these cases, this is without runoff.

Curves have been developed which show the intake rate of different soils plotted against time. The soils have been grouped together in "Intake Families."

An Intake Family of soils has the same average intake rate. Figure 2-3 (pg 2-18) & Figure 2-4 (pg. 2-19) is a plotting of the Family Intake Curves the NRCS uses.

To understand how much water can or will be introduced to a soil profile, the irrigator and technician need to become familiar with the following terms.

Wilting Point - The amount of moisture a soil profile will have when the plant is unable to obtain sufficient moisture to continue active growth.

Permanent Wilting Point - The amount of moisture a soil profile will have when the plant is unable to obtain any more moisture from the soil.

Saturation Point - The maximum amount of moisture a soil profile can hold.

Available Water Capacity (AWC) - How much water is available to the plant, the difference between the Field Capacity and the Permanent Wilting Point.

Figure 2-1 (pg 2-9) shows a graphical example of these parameters for different soil textures.

When we talk about the amount of moisture in the soil profile, it becomes evident that we are considering one specific depth.

The crop that is being grown and the stage of development it is in will dictate what depth of profile should be considered. See Nebraska supplements to Chapter 3 for root depths by crop and growth stage. Normal irrigation depths can be found in Nebraska supplements to Chapter 6, by crop, irrigation group, and slope group. It was stated earlier that the Available Water Capacity (AWC) is how much water is available to the plant. Although this water is available to the plant, in most cases the roots can't extract the moisture fast enough to keep the plant from stressing as it approaches the Permanent Wilting Point, see Figure 2-1 (pg 2-9).

If it is the irrigator's intention to irrigate before the plant is stressed, irrigation should begin before the Wilting Point. In this Irrigation Guide, we have said this will be when half of the water is used between the Field Capacity and the Permanent Wilting Point or half of the Available Water Capacity (AWC). This amount of moisture is called Management Allowable Depletion (MAD).

One half of the AWC was selected as an average for all soils. In reality, it will vary with different soils, crops, and climate. See "Consumptive Use of Selected Nebraska Crops" table in Nebraska Supplements to Chapter 4.

(d) Use of Irrigation Design Groups

The soils listed in this Irrigation Guide include the irrigable soils presently being mapped in Nebraska. Land types and soils genera1ly considered non-irrigable are not included. As additional soils are recognized, they are to be added to the appropriate irrigation design group. Some soil phases or variants suitable for irrigation are not included in the listing of soils. The design group will be assigned locally in counties where they occur.

The soils in each series were evaluated and placed into one of 14 groups called Irrigation Design Groups. Soils having approximately equal intake rates, available water capacities, and available root zone depths were placed together. Some groups include soils with minor variations in intake rate, available water capacity and permeability. If the variation is significant, it is noted in the irrigation design group where the soil is listed.

The grouping of soils is shown in the two listings that follow. The first list shows all the soils in alphabetical order by series, surface texture with the appropriate irrigation design group.

The second listing is by irrigation design groups and gives the principal soils included in each of the 14 groups. Two of these are divided into sub- groups because of minor profile differences and avai1able water capacity. This is not enough difference to justify dividing the soils into additional design groups. The intake family used in preparing the design data is included.

Included is a general description of the texture profiles. Where soils of a design group are subdivided, there is a general description for each subgroup.

The estimated available water capacity for each soil group or subgroup follows the description. The amounts of moisture are cumulative by one-foot or one-half foot increments of depth. The data used to calculate the available water capacities are in Table 2-16 that follows this grouping of soils. This table shows available water capacities by soil texture classes. It also gives the range of availab1e water capacity for each of the soil texture classes for the surface layer, subsoil, and lower horizon. With this table it is possible to make a reasonable estimate of the available water capacity of any soil profile for which the horizon thickness and texture is mown.

The most common soils and their respective field symbol are listed below the available water capacities for each design group or subgroup.

A form for listing each soil and the irrigation design group number in a county or survey area is included last in this section. Listing the mapping unit or soils in a county on one or several pages of this form simplifies the use of this guide for each area. The statewide list that follows this section will be of value in preparing the county list.

Available Water Capacity of Soils by Soil Texture Classes

In estimating available water capacity of the groups of soils in this irrigation guide, the predominant soil textures of the major soil horizons for soils in each irrigation group were used. Individual soils in the irrigation design groups vary somewhat in total available water capacity because of minor differences in texture of the soil horizons.

Table NE2-16 AVAILABLE WATER HOLDING CAPACITIES

Soil Texture Classes	Surface Soil 0 – 12 inches	Subsoil 12 – 36 inches	Lower Horizons 36 – 60 inches
	(Inches per inch of soil)[1]		
Coarse sand and gravel	.04 to .06	.03 to .05	.02 to .04
Sands	.07 to .09	.06 to .08	.05 to .07
Loamy sands	.10 to .12	.09 to .11	.08 to .10
Sandy loams	.13 to .15	.12 to .14	.11 to .13
Fine sandy loams	.16 to .18	.15 to .17	.12 to .16
Very fine sandy loam	.17 to .19	.16 to .18	.16 to .18
Loam	.20 to .22	.17 to .19	.17 to .19
Silt loams	.20 to .23	.18 to .20	.18 to .20
Silty clay loams			
(<35% clay)	.21 to .23	.18 to .20	.18 to .20
(>35% clay)	.17 to .20	.16 to .18	.16 to .18
Sandy clay loams	.18 to .20	.16 to .18	.15 to .17
Clay loams			
(<35% clay)	.19 to .22	.17 to .19	.16 to .18
(>35% clay)	.16 to .19	.15 to .17	.14 to .16
Silty clays			
(<50% clay)	.13 to .17	.11 to .16	.10 to .13
(>50% clay)	.10 to .14	.10 to .12	.08 to .12
Clays			
(<50% clay)	.12 to .16	.10 to .15	.10 to .12
(>50% clay)	.10 to .14	.08 to .12	.08 to .12

[1] The ranges of available water capacities are the adjusted water retention differences between 1/3-bar and 15-bar tension for the medium and fine textured soils, and between 1/10-bar and 15-bar for the moderately coarse and coarse textures. Undisturbed clods were used to determine the bulk densities of the soils. Readily available water capacity is influenced by soil texture, organic matter content, kind of clay, soil structure, mineralogy and other physical and chemical features. For this irrigation guide, the figures shown for available water capacity (by foot increments) are estimates determined on the basis of the data shown in the above table.

(e) Alphabetical list of irrigable soils in Nebraska and the applicable irrigation design group

SOIL NAME	IRRIGATION DESIGN GROUP
Ackmore Silt loam	6
Aksarben Silt clay loam	3
Albaton Silt loam	2
Albaton Clay	1-A
Albaton Silty clay	1-A
Albaton Silt clay loam	1-A
Albaton Variant Clay	1-A
Albinas Loam	5
Alcester Silt clay loam	3
Alcester Silt loam	6
Alda Loam	7
Alda Very fine sandy loam	7
Alda Fine sandy loam	9
Alda Sandy loam	9
Alice Fine sandy loam	8
Alice Sandy loam	8
Alice Very fine sandy loam	8
Alice Loamy fine sand	10
Alliance Loam	4
Alliance Silt loam	4
Altvan Loam	7
Altvan Sandy loam	8
Altvan Fine sandy loam	9
Angora Very fine sandy loam	6
Anselmo Fine sandy loam	8
Anselmo Loam	8
Anselmo Sandy loam	8
Anselmo Very fine sandy loam	8
Anselmo Loamy fine sand	10
Aowa Silt loam	6
Ascalon Fine sandy loam	5
Ashollow Very fine sandy loam	8
Ashollow Fine sandy loam	11
Ashollow Loamy very fine sand	11
Bahl Clay	1-B
Baltic Silty clay	1-A
Baltic Silt clay loam	1-A
Bankard Loamy fine sand	11
Bankard Loamy sand	11
Bankard Very fine sandy loam	11
Bankard Fine sand	12
Bankard Loamy course sand	12
Bankard Sand	12
Bayard Fine sandy loam	8
Bayard Loam	8

SOIL NAME	IRRIGATION DESIGN GROUP
Bayard Sandy loam	8
Bayard Very fine sandy loam	8
Bayard Loamy fine sand	10
Bazile Silt clay loam	3
Bazile Silt loam	7
Bazile Fine sandy loam	9
Bazile Loam	9
Bazile Loamy fine sand	10
Beckton Silt loam	5
Belfore Silt clay loam	3
Belfore Silt loam	4
Benfield Silt clay loam	1-C
Benkelman Very fine sandy loam	6
Betts Clay loam	3
Betts Loam	4
Bigbend Loam	6
Blackwood Loam	6
Blackwood Silt loam	6
Blake Silt clay loam	3
Blanche Fine sandy loam	9
Blanche Sandy loam	9
Blanche Very fine sandy loam	9
Blanche Loamy fine sand	11
Blanche Loamy sand	11
Blencoe Silty clay	1-A
Blencoe Silt clay loam	1-A
Blendon Fine sandy loam	8
Blendon Loam	8
Blendon Sandy loam	8
Blyburg Silt clay loam	3
Blyburg Silt loam	6
Blyburg Silty clay	1-A
Boel Silt clay loam	3
Boel Loam	8
Boel Fine sandy loam	11
Boel Loamy fine sand	11
Boel Loamy sand	11
Boelus Fine sand	10
Boelus Loamy fine sand	10
Boelus Loamy sand	10
Bolent Loam	8
Bolent Fine sand	10
Bolent Fine sandy loam	11
Bolent Loamy fine sand	11
Bolent Loamy sand	11
Boyd Silty clay	1-C
Bridget Loam	6
Bridget Silt loam	6
Bridget Very fine sandy loam	6

SOIL NAME	IRRIGATION DESIGN GROUP
Bristow Silty clay	1-C
Brocksburg Loam	7
Brocksburg Fine sandy loam	9
Brownson Loam	13
Brunswick Fine sandy loam	9
Brunswick Loamy sand	11
Buffington Silt clay loam	3
Buffington Silty clay	1-B
Bufton Clay loam	3
Bufton Silt clay loam	3
Burchard Clay loam	3
Burchard Loam	4
Burchard Silt loam	4
Busher Fine sandy loam	8
Busher Very fine sandy loam	8
Busher Loamy very fine sand	10
Bushman Very fine sandy loam	6
Butler Silt loam	2
Butler Silt clay loam	1-B
Calamus Sandy loam	9
Calamus Loamy fine sand	11
Calamus Loamy sand	11
Calamus Course sand	14-B
Calamus Fine sand	14-B
Calamus Sand	14-B
Calco Silt clay loam	4
Calco Silt loam	4
Calco Sandy loam	4
Campus Loam	7
Canlon Loam	13
Canyon Fine sandy loam	13
Canyon Fine sandy loam	13
Canyon Loam	13
Canyon Sandy loam	13
Canyon Very fine sandy loam	13
Carr Fine sandy loam	8
Carr Silt loam	8
Caruso Loam	4
Caruso variant Loam	4
Cass Fine sandy loam	8
Cass Loam	8
Cass Silt loam	8
Cass Very fine sandy loam	8
Cass variant Fine sandy loam	8
Chappell Fine sandy loam	9
Chappell Sandy loam	9
Chase Silt clay loam	1-A
Cheyenne Loam	7
Clamo Silty clay	1-A

SOIL NAME	IRRIGATION DESIGN GROUP
Clarno Loam	4
Colby Loam	6
Colby Silt loam	6
Coleridge Silt clay loam	3
Coleridge Silt loam	4
Colfer Sand	12
Colo Silt clay loam	3
Colo Silt loam	4
Coly Silt loam	6
Cooper Silt clay loam	1-A
Cortland Loam	3
Cozad Silt clay loam	3
Cozad Fine sandy loam	5
Cozad Loam	6
Cozad Silt loam	6
Cozad variant Loam	6
Cozad variant Silt loam	6
Craft Loam	6
Craft Very fine sandy loam	6
Craft Loamy very fine sand	10
Craft Sandy loam	10
Creighton Very fine sandy loam	6
Crete Silt loam	2
Crete Silt clay loam	1-B
Crete variant Silt clay loam	1-B
Crofton Silt loam	6
Dailey Loamy fine sand	11
Dailey Loamy sand	11
Dankworth Loamy sand	11
Darr Silt loam	7
Darr Fine sandy loam	9
Darr Sandy loam	9
Deroin Silt clay loam	3
Detroit Silt loam	2
Dickinson Fine sandy loam	8
Doger Loamy fine sand	11
Doger Fine sand	12
Doughboy Fine sandy loam	5
Doughboy Loamy fine sand	10
Dow Silt loam	8
Draknab Loamy fine sand	11
Duda Loamy fine sand	14-B
Duda Loamy sand	14-B
Duda Sandy loam	14-B
Dunday Fine sandy loam	8
Dunday Loamy fine sand	11
Dunday Loamy sand	11
Dunn Loamy fine sand	10
Dunn Loamy sand	10

SOIL NAME	IRRIGATION DESIGN GROUP
Duroc Loam	6
Duroc Silt loam	6
Duroc Very fine sandy loam	6
Dwyer Loamy fine sand	11
Dwyer Loamy sand	11
Dwyer Fine sand	12
Edalgo Silt clay loam	1-C
Els Loamy fine sand	11
Els Loamy sand	11
Els Fine sand	12
Els, calcareous Fine sand	12
Elsmere Fine sandy loam	11
Elsmere Loamy fine sand	11
Elsmere Fine sand	12
Eltree Silt loam	6
Epping Loam	13
Epping Silt loam	13
Epping Very fine sandy loam	13
Eudora Loam	6
Eudora Silt loam	6
Filbert Silt loam	2
Filley Fine sandy loam	8
Fillmore Silt loam	2
Fillmore Silt clay loam	1-B
Fillmore variant Silt loam	2
Fonner Loam	7
Fonner Sandy loam	9
Fonner variant Loamy sand	9
Forney Silt loam	2
Forney Silty clay	1-A
Gates Silt loam	6
Gates Very fine sandy loam	6
Gates Fine sandy loam	8
Gates Loamy fine sand	10
Gayville Loam	2
Gayville Silt clay loam	2
Gayville Silt loam	2
Gayville variant Silt clay loam	2
Gayville variant Silt loam	2
Geary Silt clay loam	3
Geary Silt loam	4
Geary variant Silt clay loam	3
Gering Loam	7
Gibbon Silt clay loam	3
Gibbon Loam	6
Gibbon Silt loam	6
Gibbon Loamy sand	10
Gibbon Variant Silt clay loam	3
Glenberg Fine sandy loam	8

SOIL NAME	IRRIGATION DESIGN GROUP
Glenberg Loam	8
Glenberg Very fine sandy loam	8
Glenberg Loamy fine sand	10
Glenberg Loamy very fine sand	10
Goshen Loam	4
Goshen Silt loam	4
Gosper Fine sandy loam	5
Gosper Loam	6
Grable Silt loam	6
Grable Very fine sandy loam	6
Grable variant Silt loam	6
Graybert Very fine sandy loam	6
Grigston Silt loam	6
Gymer Silt clay loam	3
Hadar Loamy fine sand	10
Haigler Fine sandy loam	10
Haigler Loam	10
Haigler Very fine sandy loam	10
Hall Silt clay loam	3
Hall Silt loam	4
Harney Silt loam	4
Hastings Silt clay loam	3
Hastings Silt loam	4
Hastings variant Silt clay loam	3
Hastings variant Silt loam	4
Haverson Silt clay loam	3
Haverson Fine sandy loam	5
Haverson Loam	6
Haverson Silt loam	6
Haxtun Fine sandy loam	5
Haxtun Loamy fine sand	10
Haynie Silt loam	6
Haynie Very fine sandy loam	6
Haynie Silty clay	1-A
Haynie variant Silt loam	6
Hemingford Loam	4
Hennings Fine sandy loam	5
Hennings Loamy fine sand	10
Hersh Fine sandy loam	8
Hersh Loamy fine sand	10
Hisle Loam	1-C
Hisle Silt loam	1-C
Hobbs Sandy loam	3
Hobbs Silt loam	6
Hobbs Sandy loam	6
Holder Silt clay loam	3
Holder Loam	4
Holder Silt loam	4
Holder variant Silt clay loam	3

SOIL NAME	IRRIGATION DESIGN GROUP
Holdrege Silt clay loam	3
Holdrege Silt loam	4
Holdrege Fine sandy loam	5
Holdrege variant Silt clay loam	3
Holly Springs Silt clay loam	1-A
Holt Fine sandy loam	9
Holt Variant Fine sandy loam	9
Holt Variant Loamy fine sand	10
Hord Silt clay loam	3
Hord Fine sandy loam	5
Hord Silt loam	6
Hord Very fine sandy loam	6
Humbarger Loam	4
Humbarger variant Silt loam	4
Ida Silt loam	6
Inavale Loam	8
Inavale Fine sandy loam	11
Inavale Loamy fine sand	11
Inavale Loamy sand	11
Inavale Very fine sandy loam	11
Inavale Fine sand	12
Inavale Course sand	14-B
Inavale Sand	14-B
Inglewood Loamy fine sand	11
Inglewood Fine sand	12
Interior Silty clay	2
Ipage Loamy fine sand	11
Ipage Loamy sand	11
Ipage Fine sand	12
Ipage Sand	12
Janise Loam	4
Janise Silt loam	4
Janise Loamy fine sand	10
Jansen Loam	7
Jansen Loamy sand	7
Jansen Sandy clay loam	7
Jansen Silt loam	7
Jansen Sandy loam	7
Jansen Fine sandy loam	9
Jansen Loamy fine sand	10
Jansen variant Loamy fine sand	10
Janude Loam	6
Janude Fine sandy loam	8
Janude Sandy loam	8
Jayem Fine sandy loam	8
Jayem Loamy very fine sand	8
Jayem Loamy fine sand	10
Jayem Loamy sand	10
Johnstown Loam	4

SOIL NAME	IRRIGATION DESIGN GROUP
Johnstown Fine sandy loam	5
Josburg Loam	2
Josburg Fine sandy loam	5
Josburg Loamy fine sand	10
Judson Silt clay loam	3
Judson Silt loam	4
Judson Fine sandy loam	5
Kadoka Silt loam	4
Kanorado Silt clay loam	3
Keith Loam	4
Keith Silt loam	4
Keith Fine sandy loam	5
Kenesaw Very fine sandy loam	5
Kenesaw Silt loam	6
Kennebec Silt clay loam	3
Kennebec Silt loam	6
Kenridge Silt clay loam	3
Keota Silt loam	7
Keya Loam	4
Kezan Silt loam	6
Kuma Loam	4
Kuma Silt loam	4
Kyle Silty clay	1-B
Labu Silty clay	1-C
Laird Fine sandy loam	6
Lamo Clay loam	3
Lamo Silt clay loam	3
Lamo Loam	4
Lamo Silt loam	4
Lamo Variant Loam	4
Lancaster Loam	7
Las Loam	2
Las Animas Fine sandy loam	8
Las Animas Loam	8
Las Animas Very fine sandy loam	8
Las Animas Loamy fine sand	10
Laurel Loam	2
Lawet Silt clay loam	3
Lawet Loam	4
Lawet Silt loam	4
Lawet Fine sandy loam	5
Lawet variant Loam	4
Lawet variant Fine sandy loam	5
Leisy Loam	4
Leisy Fine sandy loam	5
Leisy Sandy loam	5
Lemoyne Sand	12
Leshara Fine sandy loam	5
Leshara Silt loam	6

SOIL NAME	IRRIGATION DESIGN GROUP
Lex Clay loam	7
Lex Loam	7
Lex Silt loam	7
Lex variant Loam	7
Lexsworth Loam	7
Libory Fine sand	10
Libory Loamy fine sand	10
Lockton Loam	7
Lockton Silt loam	7
Lohmiller Silt clay loam	3
Lohmiller Silty clay	1-A
Longford Loam	2
Longford Loamy fine sand	10
Longford Silt clay loam	1-B
Longpine Fine sandy loam	13
Longpine Loamy fine sand	13
Longpine Loamy sand	13
Loretto Loam	4
Loretto Fine sandy loam	5
Loretto Sandy loam	5
Luton Silt loam	2
Luton Silty clay	1-A
Luton Silt clay loam	1-A
Lynch Silty clay	1-C
Mace Silt loam	4
Malcolm Silt loam	6
Malmo Clay	1-B
Malmo Clay loam	1-B
Malmo Silt clay loam	1-B
Manter Fine sandy loam	8
Manter Loamy fine sand	10
Manvel Silt clay loam	3
Marshall Silt clay loam	3
Marshall Silt loam	4
Maskell Loam	4
Mayberry Loam	2
Mayberry Clay loam	1-B
Mayberry Silt clay loam	1-B
McCash Very fine sandy loam	6
McCash Loamy very fine sand	10
McConaughy Loam	6
McCook Silt clay loam	3
McCook Fine sandy loam	5
McCook Very fine sandy loam	5
McCook Loam	6
McCook Silt loam	6
McCook Sand	10
McCook variant Loam	6
McGrew Loam	7

SOIL NAME	IRRIGATION DESIGN GROUP
McGrew Fine sandy loam	9
McKelvie Loamy fine sand	11
McKelvie Fine sand	12
McPaul Silt loam	6
Meadin Loam	13
Meadin Silt loam	13
Meadin Fine sandy loam	14-A
Meadin Fine sandy loam	14-A
Meadin Loamy fine sand	14-A
Meadin Loamy sand	14-A
Meadin Sandy loam	14-A
Merrick Sandy clay loam	3
Merrick Loam	6
Merrick variant Loam	6
Minatare Loam	1-A
Minnequa Silt clay loam	3
Mitchell Fine sandy loam	5
Mitchell Silt loam	6
Mitchell Very fine sandy loam	6
Mitchell variant Silt loam	6
Modale Silt loam	6
Modale Very fine sandy loam	6
Monona Silt loam	6
Monona variant Fine sandy loam	5
Moody Silt clay loam	3
Moody Loam	4
Moody Silt loam	4
Morrill Clay loam	3
Morrill Loam	6
Moville Silt loam	6
Muir Silt clay loam	3
Muir Silt loam	6
Munjor Loam	6
Munjor Fine sandy loam	8
Munjor Loamy fine sand	10
Munjor variant Fine sandy loam	8
Muscotah Silt clay loam	1-A
Napa Silt loam	1-A
Napier Silt loam	6
Nenzel Loamy fine sand	11
Nimbro Silt loam	6
Nishna Silty clay	1-A
Nodaway Silt clay loam	3
Nodaway Silt loam	6
Nodaway variant Silt loam	6
Nora Silt clay loam	3
Nora Fine sandy loam	5
Nora Silt loam	6
Nora variant Silt clay loam	3

SOIL NAME	IRRIGATION DESIGN GROUP
Nora variant Silt loam	6
Norrest Clay loam	3
Norrest Silt clay loam	3
Norrest Loam	7
Norwest Loam	6
Novina Fine sandy loam	8
Novina Sandy loam	8
Nuckolls Silt loam	4
Nuckolls variant Silt clay loam	3
Nuckolls variant Silt loam	4
Nunn Silt loam	4
Oglala Loam	6
Oglala Very fine sandy loam	6
Olbut Silt clay loam	2
Olbut Silt loam	2
Olmitz Loam	6
Olney Loam	6
Omadi Silt loam	6
Onawa Silt loam	2
Onawa Clay	1-A
Onawa Silty clay	1-A
Onawa Silt clay loam	1-A
O'Neill Loam	7
O'Neill Fine sandy loam	9
O'Neill Sandy loam	9
O'Neill Loamy fine sand	14-B
O'Neill Loamy sand	14-B
Onita Silt clay loam	3
Onita Silt loam	4
Ord Fine sandy loam	8
Ord Loam	8
Ord Very fine sandy loam	8
Ord Variant Silt loam	4
Ord Variant Fine sandy loam	8
Ord Variant Loam	8
Ord Variant Very fine sandy loam	8
Orpha Loamy fine sand	11
Ortello Fine sandy loam	8
Ortello Loam	8
Ortello Sandy loam	8
Ortello Very fine sandy loam	8
Ortello Loamy fine sand	10
Otero Fine sandy loam	8
Otero Loam	8
Otero Very fine sandy loam	8
Otero Loamy very fine sand	10
Otero variant Very fine sandy loam	8
Otoe Silt clay loam	1-B
Overlake Sand	10

SOIL NAME	IRRIGATION DESIGN GROUP
Ovina Fine sandy loam	8
Ovina Loam	8
Ovina Loamy fine sand	10
Owego Silty clay	1-A
Padonia Silt clay loam	1-C
Pahuk Loamy fine sand	11
Paka Sandy clay loam	3
Paka Loam	4
Paka Fine sandy loam	5
Paka Loamy fine sand	5
Paka Sandy loam	5
Pathfinder Loamy fine sand	11
Pawnee Loam	2
Pawnee Clay	1-B
Pawnee Clay loam	1-B
Pawnee variant Clay	1-B
Pawnee variant Clay loam	1-B
Percival Silty clay	1-A
Phiferson Loamy very fine sand	10
Pierre Clay	1-C
Pierre Silty clay	1-C
Pivot Fine sandy loam	11
Pivot Loam	11
Pivot Sandy loam	11
Pivot Loamy fine sand	14-B
Pivot Loamy sand	14-B
Platte Loam	13
Platte Silt loam	13
Platte Sandy loam	13
Platte Fine sandy loam	14-A
Pohocco Silt clay loam	3
Pohocco Silt loam	6
Ponca Silt clay loam	3
Ponca Silt loam	6
Ponderosa Very fine sandy loam	8
Ponderosa Loamy very fine sand	10
Promise Silty clay	1-B
Ralton Loam	6
Redstoe Silt loam	7
Ree Loam	4
Ree Silt loam	4
Reliance Silt clay loam	3
Reliance Silt loam	4
Richfield Loam	4
Richfield Silt loam	4
Ronson Fine sandy loam	9
Ronson Loamy fine sand	10
Rosebud Loam	7
Rosebud Silt loam	7

SOIL NAME	IRRIGATION DESIGN GROUP
Rosebud Sandy loam	7
Rosebud Fine sandy loam	9
Roxbury Silt clay loam	3
Roxbury Silt loam	6
Rusco Silt clay loam	3
Rusco Silt loam	4
Rusco variant Silt clay loam	3
Rusco variant Fine sandy loam	5
Rushcreek Loam	6
Salix Silt clay loam	3
Salix Silt loam	4
Salmo Silt clay loam	3
Salmo Silt loam	4
Saltine Silt clay loam	3
Saltine Loam	6
Saltine Silt loam	6
Sanborn Loam	8
Sandose Loamy fine sand	10
Sansarc Clay loam	1-C
Sansarc Silty clay	1-C
Sarben Fine sandy loam	8
Sarben Very fine sandy loam	8
Sarben Loamy fine sand	10
Sarben Loamy sand	10
Sarben Loamy very fine sand	10
Sardak Loamy fine sand	11
Sarpy Fine sandy loam	11
Sarpy Loamy fine sand	11
Sarpy Loamy sand	11
Sarpy Fine sand	12
Sarpy Silty clay	1-A
Satanta Loam	4
Satanta Very fine sandy loam	4
Satanta Fine sandy loam	5
Savo Silt clay loam	3
Scott, drained Silt clay loam	2
Scoville Fine sand	10
Scoville Loamy fine sand	10
Scoville Loamy sand	10
Selia Fine sand	11
Selia Loamy fine sand	11
Sharpsburg variant Silt clay loam	3
Shelby Clay loam	3
Shell Silt clay loam	3
Shell Silt loam	6
Shell Variant Silt clay loam	3
Shingle Loam	13
Sidney Loam	6
Silver Creek Silt loam	2

SOIL NAME	IRRIGATION DESIGN GROUP
Silver Creek Fine sandy loam	5
Silver Creek Silt clay loam	1-A
Simeon Fine sand	14-B
Simeon Loamy sand	14-B
Simeon Sand	14-B
Simeon Sandy loam	14-B
Skilak Silt clay loam	3
Solomon Silty clay	1-A
Steinauer Clay loam	3
Steinauer Loam	3
Sulco Fine sandy loam	5
Sulco Loam	6
Sulco Silt loam	6
Sulco Very fine sandy loam	6
Sully Loam	6
Sully Silt loam	6
Talmo Sandy loam	14-A
Thirtynine Loam	4
Thirtynine Silt loam	4
Thurman Fine sandy loam	11
Thurman Loamy fine sand	11
Thurman Loamy sand	11
Thurman Fine sand	12
Thurman Sand	12
Tomek Silt loam	4
Trent Silt clay loam	3
Trent Silt loam	6
Tripp Fine sandy loam	5
Tripp Silt loam	5
Tripp Loam	6
Tripp Very fine sandy loam	6
Tripp Loamy very fine sand	10
Tuthill Fine sandy loam	5
Tuthill Loamy fine sand	10
Uly Silt loam	6
Uly variant Silt clay loam	3
Ulysses Loam	6
Ulysses Silt loam	6
Valent Loamy fine sand	11
Valent Loamy sand	11
ValentFine sand	12
Valent Sand	12
Valentine Loamy fine sand	11
Valentine Loamy sand	11
Valentine Fine sand	12
Valentine Sand	12
Verdel Silty clay	1-B
Verdel Silt clay loam	1-B
Verdigre Loam	2

SOIL NAME	IRRIGATION DESIGN GROUP
Verdigre Fine sandy loam	5
Vetal Fine sandy loam	8
Vetal Loam	8
Vetal Very fine sandy loam	8
Vetal Loamy fine sand	10
Vetal Loamy very fine sand	10
Wabash Silt loam	2
Wabash Silty clay	1-A
Wabash Silt clay loam	1-A
Wakeen Silt loam	7
Wakeen Silt clay loam	1-C
Wakeen variant Silt clay loam	1-C
Wann Fine sandy loam	8
Wann Loam	8
Wann Silt loam	8
Wann Sandy loam	8
Wann variant Fine sandy loam	8
Wann variant Loam	8
Wathena Fine sandy loam	8
Waubonsie Very fine sandy loam	8
Wewela Loam	7
Wewela Fine sandy loam	9
Wewela Loamy fine sand	10
Whitelake Loamy fine sand	10
Wildhorse Loamy fine sand	11
Wildhorse Fine sand	12
Wildhorse Sand	12
Wood River Fine sandy loam	2
Wood River Silt loam	2
Woodbury Silty clay	1-A
Woodly Fine sandy loam	5
Woodly Loamy fine sand	10
Wymore Silty clay	1-B
Wymore Silt clay loam	1-B
Yockey Fine sandy loam	6
Yockey Loam	6
Yockey Silt loam	6
Yockey Very fine sandy loam	6
Yutan Silt clay loam	3
Zoe Silt clay loam	1-A
Zook Silt loam	2
Zook Silty clay	1-A
Zook Silt clay loam	1-A

(f) Irrigation design group description(s) including applicable soils, intake rates and water holding capacities

IRRIGATION DESIGN GROUP 1

INTAKE FAMILY 0.1

The soils in this design group are divided into three subgroups according to their available water capacity. Subgroup A mainly includes deep, fine- textured soils on bottomland. Subgroup B mainly includes deep, fine-textured soils on uplands and stream terraces. Subgroup C includes moderately deep, fine-textured soils on uplands.

SUBGROUP 1-A

Deep soils on bottomland with a clay, silty clay, or silty clay loam surface layer and slowly or very slowly permeable subsoil, underlain by clayey to sandy alluvium.

Depth	Available Water Capacity
l.0'	2.1"
2.0'	3.5"
3.0'	4.9"
4.0'	6.2"

Albaton Clay
Albaton Silty clay
Albaton Silt clay loam
Albaton Variant Clay
Baltic Silty clay
Baltic Silt clay loam
Blencoe Silty clay
Blencoe Silt clay loam
Blyburg Silty clay[1]
Chase Silt clay loam
Clamo Silty clay
Cooper Silt clay loam
Forney Silty clay
Haynie Silty clay
Holly Springs Silt clay loam
Lohmiller Silty clay
Luton Silty clay
Luton Silt clay loam
Minatare Loam
Muscotah Silt clay loam
Napa Silt loam
Nishna Silty clay
Onawa Clay[1]
Onawa Silty clay[1]
Onawa Silt clay loam[1]
Owego Silty clay
Percival Silty clay[1]
Sarpy Silty clay[1]
Silver Creek Silt clay loam
Solomon Silty clay
Wabash Silty clay
Wabash Silt clay loam
Woodbury Silty clay
Zoe Silt clay loam
Zook Silty clay
Zook Silt clay loam

[1] Blyburg and Onawa soils have moderate permeability in subsoil. Percival and Sarpy soils have rapid permeability in subsoil.

SUBGROUP 1-B

Deep soils on uplands and stream terraces with a clay, silty clay, clay loam, or silty clay loam surface layer and a slowly permeable subsoil.

Depth	Available Water Capacity
l.0'	1.9"
2.0'	3.2"
3.0'	4.5"
4.0'	5.7"

Bahl Clay
Buffington Silty clay
Butler Silt clay loam
Crete Silt clay loam
Crete variant Silt clay loam
Fillmore Silt clay loam
Kyle Silty clay
Longford Silt clay loam
Malmo Clay
Malmo Clay loam
Malmo Silt clay loam
Mayberry Clay loam
Mayberry Silt clay loam
Otoe Silt clay loam
Pawnee Clay
Pawnee Clay loam
Pawnee variant Clay
Pawnee variant Clay loam
Promise Silty clay
Verdel Silty clay
Verdel Silt clay loam
Wymore Silty clay
Wymore Silt clay loam

SUBGROUP 1-C

Moderate1y deep soils with a clay, silty clay, clay loam or silty clay loam surface layer and a slowly permeable subsoil.

Depth	Available Water Capacity
l.0'	1.9"
2.0'	3.2"
3.0'	4.5"

Benfield Silt clay loam
Boyd Silty clay
Bristow Silty clay
Edalgo Silt clay loam
Hisle Loam
Hisle Silt loam
Labu Silty clay
Lynch Silty clay
Padonia Silt clay loam
Pierre Clay
Pierre Silty clay
Sansarc Clay loam
Sansarc Silty clay
Wakeen Silt clay loam
Wakeen variant Silt clay loam

IRRIGATION DESIGN GROUP 2

INTAKE FAMILY 0.3

Deep soils with a silt loam, loam, or fine sandy loam surface layer and a slowly permeable subsoil.

Depth	Available Water Capacity
I.0'	2.6"
2.0'	3.9"
3.0'	5.2"
4.0'	7.2"
5.0’	9.3”

Albaton Silt loam[1]
Butler Silt loam
Crete Silt loam
Detroit Silt loam
Filbert Silt loam
Fillmore Silt loam
Fillmore variant Silt loam
Forney Silt loam
Gayville Loam
Gayville Silt clay loam
Gayville Silt loam
Gayville variant Silt clay loam
Gayville variant Silt loam
Interior Silty clay
Josburg Loam
Las Loam
Laurel Loam
Longford Loam
Luton Silt loam[1]
Mayberry Loam
Olbut Silt clay loam
Olbut Silt loam
Onawa Silt loam
Pawnee Loam
Scott, drained Silt clay loam
Silver Creek Silt loam
Verdigre Loam
Wabash Silt loam[1]
Wood River Fine sandy loam
Wood River Silt loam
Zook Silt loam

[1] These soils have very slowly permeable subsoils.

IRRIGATION DESIGN GROUP 3

INTAKE FAMILY 0.3

Deep soils with a clay loam, silty clay loam, or sandy clay loam surface layer and moderate or moderately slow permeability in the subsoil.

Depth	Available Water Capacity
I.0'	2.4"
2.0'	4.7"
3.0'	6.9"
4.0'	9.1"
5.0'	11.3"

Aksarben Silt clay loam
Alcester Silt clay loam
Bazile Silt clay loam[1]
Belfore Silt clay loam
Betts Clay loam
Blake Silt clay loam
Blyburg Silt clay loam
Boel Silt clay loam
Buffington Silt clay loam
Bufton Clay loam
Bufton Silt clay loam
Burchard Clay loam
Coleridge Silt clay loam
Colo Silt clay loam
Cortland Loam
Cozad Silt clay loam
Deroin Silt clay loam
Geary Silt clay loam
Geary variant Silt clay loam
Gibbon Silt clay loam
Gibbon Variant Silt clay loam
Gymer Silt clay loam
Hall Silt clay loam
Hastings Silt clay loam
Hastings variant Silt clay loam
Haverson Silt clay loam
Hobbs Sandy loam
Holder Silt clay loam
Holder variant Silt clay loam
Holdrege Silt clay loam
Holdrege variant Silt clay loam
Hord Silt clay loam
Judson Silt clay loam
Kanorado Silt clay loam
Kennebec Silt clay loam
Kenridge Silt clay loam
Lamo Clay loam
Lamo Silt clay loam
Lawet Silt clay loam
Lohmiller Silt clay loam
Manvel Silt clay loam
Marshall Silt clay loam
McCook Silt clay loam
Merrick Sandy clay loam
Minnequa Silt clay loam[2]
Moody Silt clay loam
Morrill Clay loam
Muir Silt clay loam
Nodaway Silt clay loam
Nora Silt clay loam
Nora variant Silt clay loam
Norrest Clay loam[3]
Norrest Silt clay loam[4]
Nuckolls variant Silt clay loam
Onita Silt clay loam

[1] Bazile soil has rapid permeability in underlying material.

[2] Minnequa soil is moderately deep over chalky shale.
[3] Norrest soil is moderately deep over silty or clayey shale.
[4] Norrest soil is moderately deep over silty or clayey shale.

IRRIGATION DESIGN GROUP 3

INTAKE FAMILY 0.3

(continued)

Paka Sandy clay loam
Pohocco Silt clay loam
Ponca Silt clay loam
Reliance Silt clay loam
Roxbury Silt clay loam
Rusco Silt clay loam
Rusco variant Silt clay loam
Salix Silt clay loam
Salmo Silt clay loam
Saltine Silt clay loam
Savo Silt clay loam
Sharpsburg variant Silt clay loam
Shelby Clay loam
Shell Silt clay loam
Shell Variant Silt clay loam
Skilak Silt clay loam
Steinauer Clay loam
Steinauer Loam
Trent Silt clay loam
Uly variant Silt clay loam
Yutan Silt clay loam

IRRIGATION DESIGN GROUP 4

INTAKE FAMILY 0.5

Deep soils with a silt loam or loam surface layer and moderate or moderately slow permeability in the subsoil.

Depth	Available Water Capacity
I.0'	2.6"
2.0'	4.9"
3.0'	7.1"
4.0'	9.3"
5.0'	11.5"

Alliance Loam
Alliance Silt loam
Belfore Silt loam
Betts Loam
Burchard Loam
Burchard Silt loam
Calco Silt clay loam
Calco Silt loam
Calco Sandy loam
Caruso Loam
Caruso variant Loam
Clarno Loam
Coleridge Silt loam
Colo Silt loam
Geary Silt loam
Goshen Loam
Goshen Silt loam
Hall Silt loam
Harney Silt loam
Hastings Silt loam
Hastings variant Silt loam
Hemingford Loam
Holder Loam
Holder Silt loam
Holdrege Silt loam
Humbarger Loam
Humbarger variant Silt loam
Janise Loam
Janise Silt loam
Johnstown Loam
Judson Silt loam
Kadoka Silt loam
Keith Loam
Keith Silt loam
Keya Loam
Kuma Loam
Kuma Silt loam
Lamo Loam
Lamo Silt loam
Lamo Variant Loam
Lawet Loam
Lawet Silt loam
Lawet variant Loam
Leisy Loam
Loretto Loam
Mace Silt loam
Marshall Silt loam
Maskell Loam
Moody Loam
Moody Silt loam
Nuckolls Silt loam
Nuckolls variant Silt loam
Nunn Silt loam
Onita Silt loam
Ord Variant Silt loam
Paka Loam
Ree Loam
Ree Silt loam
Reliance Silt loam
Richfield Loam
Richfield Silt loam
Rusco Silt loam
Salix Silt loam
Salmo Silt loam
Satanta Loam
Satanta Very fine sandy loam
Thirtynine Loam
Thirtynine Silt loam
Tomek Silt loam

IRRIGATION DESIGN GROUP 5

INTAKE FAMILY 1.0

Deep soils with a fine sandy loam or sandy loam surface layer and moderate or moderately slow permeability in the subsoil.

Depth	Available Water Capacity
I.0'	2.0"
2.0'	4.2"
3.0'	6.4"
4.0'	8.7"
5.0’	11.0”

Albinas Loam
Ascalon Fine sandy loam
Beckton Silt loam
Cozad Fine sandy loam
Doughboy Fine sandy loam
Gosper Fine sandy loam
Haverson Fine sandy loam
Haxtun Fine sandy loam
Hennings Fine sandy loam
Holdrege Fine sandy loam
Hord Fine sandy loam
Johnstown Fine sandy loam
Josburg Fine sandy loam
Judson Fine sandy loam
Keith Fine sandy loam
Kenesaw Very fine sandy loam
Lawet Fine sandy loam
Lawet variant Fine sandy loam
Leisy Fine sandy loam
Leisy Sandy loam
Leshara Fine sandy loam
Loretto Fine sandy loam
Loretto Sandy loam
McCook Fine sandy loam
McCook Very fine sandy loam
Mitchell Fine sandy loam
Monona variant Fine sandy loam
Nora Fine sandy loam
Paka Fine sandy loam
Paka Loamy fine sand
Paka Sandy loam
Rusco variant Fine sandy loam
Satanta Fine sandy loam
Silver Creek Fine sandy loam
Sulco Fine sandy loam
Tripp Fine sandy loam
Tripp Silt loam
Tuthill Fine sandy loam
Verdigre Fine sandy loam
Woodly Fine sandy loam

IRRIGATION DESIGN GROUP 6

INTAKE FAMILY 1.0

Deep soils with a silt loam, loam, or very fine sandy loam surface layer and a moderately permeable, medium-textured subsoil.

Depth	Available Water Capacity
I.0'	2.6"
2.0'	5.0"
3.0'	7.4"
4.0'	9.8"
5.0’	12.2”

Ackmore Silt loam
Alcester Silt loam
Angora Very fine sandy loam
Aowa Silt loam
Benkelman Very fine sandy loam
Bigbend Loam
Blackwood Loam
Blackwood Silt loam
Blyburg Silt loam
Bridget Loam
Bridget Silt loam
Bridget Very fine sandy loam
Bushman Very fine sandy loam
Colby Loam
Colby Silt loam
Coly Silt loam
Cozad Loam
Cozad Silt loam
Cozad variant Loam
Cozad variant Silt loam
Craft Loam
Craft Very fine sandy loam
Creighton Very fine sandy loam
Crofton Silt loam
Duroc Loam
Duroc Silt loam
Duroc Very fine sandy loam
Eltree Silt loam
Eudora Loam
Eudora Silt loam
Gates Silt loam
Gates Very fine sandy loam
Gibbon Loam[1]
Gibbon Silt loam[1]
Gosper Loam
Grable Silt loam
Grable Very fine sandy loam
Grable variant Silt loam
Graybert Very fine sandy loam
Grigston Silt loam
Haverson Loam
Haverson Silt loam
Haynie Silt loam
Haynie Very fine sandy loam
Haynie variant Silt loam
Hobbs Silt loam
Hobbs Sandy loam
Hord Silt loam
Hord Very fine sandy loam
Ida Silt loam
Janude Loam
Kenesaw Silt loam
Kennebec Silt loam
Kezan Silt loam
Laird Fine sandy loam[2]
Leshara Silt loam[3]
Malcolm Silt loam
McCash Very fine sandy loam
McConaughy Loam
McCook Loam

[1] Gibbon soils have moderate or moderately slow permeability, depending on texture of the subsoil.
[2] Laird soil has a fine sandy loam surface layer.
[3] Leshara soil has a fine sandy loam surface layer.

IRRIGATION DESIGN GROUP 6

INTAKE FAMILY 1.0

(continued)

McCook Silt loam
McCook variant Loam
McPaul Silt loam
Merrick Loam
Merrick variant Loam
Mitchell Silt loam
Mitchell Very fine sandy loam
Mitchell variant Silt loam
Modale Silt loam
Modale Very fine sandy loam
Monona Silt loam
Morrill Loam
Moville Silt loam
Muir Silt loam
Munjor Loam
Napier Silt loam
Nimbro Silt loam
Nodaway Silt loam
Nodaway variant Silt loam
Nora Silt loam
Nora variant Silt loam
Norwest Loam
Oglala Loam
Oglala Very fine sandy loam
Olmitz Loam
Olney Loam
Omadi Silt loam
Pohocco Silt loam
Ponca Silt loam
Ralton Loam
Roxbury Silt loam
Rushcreek Loam
Saltine Loam
Saltine Silt loam
Shell Silt loam
Sidney Loam
Sulco Loam
Sulco Silt loam
Sulco Very fine sandy loam
Sully Loam
Sully Silt loam
Trent Silt loam
Tripp Loam
Tripp Very fine sandy loam
Uly Silt loam
Ulysses Loam
Ulysses Silt loam
Yockey Fine sandy loam
Yockey Loam
Yockey Silt loam
Yockey Very fine sandy loam

IRRIGATION DESIGN GROUP 7

INTAKE FAMILY 1.0

Moderate deep soils with a silt loam, loam, or very fine sandy surface layer and moderate or moderately rapid permeability in the subsoil; underlain by bedrock or mixed sand and gravel.

Depth	Available Water Capacity
I.0'	2.6"
2.0'	5.0"
2.5'	6.7"

Alda Loam
Alda Very fine sandy loam
Altvan Loam
Bazile Silt loam[1]
Brocksburg Loam
Campus Loam
Cheyenne Loam
Darr Silt loam
Fonner Loam
Gering Loam
Jansen Loam[2]
Jansen Loamy sand[2]
Jansen Sandy clay loam[2]
Jansen Silt loam[2]
Jansen Sandy loam[2]
Keota Silt loam
Lancaster Loam
Lex Clay loam
Lex Loam
Lex Silt loam
Lex variant Loam
Lexsworth Loam
Lockton Loam
Lockton Silt loam
McGrew Loam
Norrest Loam
O'Neill Loam
Redstoe Silt loam
Rosebud Loam
Rosebud Silt loam
Rosebud Sandy loam
Wakeen Silt loam
Wewela Loam[3]

[1] Bazi1e soils are deep and have rapid permeability below the subsoil.

[2] Jansen soils have a sandy clay loam and loamy sand surface layer.

[3] Wewela loam has slow permeability below a depth of 1.0 to 1.5 feet.

IRRIGATION DESIGN GROUP 8

INTAKE FAMILY 1.5

Deep soils with fine sandy loam to loam surface layers and moderately rapid to rapidly permeable subsoils.

Depth	Available Water Capacity
I.0'	2.0"
2.0'	3.7"
3.0'	5.2"
4.0'	6.7"
5.0’	8.0”

Alice Fine sandy loam
Alice Sandy loam
Alice Very fine sandy loam
Altvan Sandy loam
Anselmo Fine sandy loam
Anselmo Loam
Anselmo Sandy loam
Anselmo Very fine sandy loam
Ashollow Very fine sandy loam
Bayard Fine sandy loam
Bayard Loam
Bayard Sandy loam
Bayard Very fine sandy loam
Blendon Fine sandy loam
Blendon Loam
Blendon Sandy loam
Boel Loam
Bolent Loam
Busher Fine sandy loam
Busher Very fine sandy loam
Carr Fine sandy loam
Carr Silt loam
Cass Fine sandy loam
Cass Loam
Cass Silt loam
Cass Very fine sandy loam
Cass variant Fine sandy loam
Dickinson Fine sandy loam
Dow Silt loam
Dunday Fine sandy loam
Filley Fine sandy loam
Gates Fine sandy loam
Glenberg Fine sandy loam
Glenberg Loam
Glenberg Very fine sandy loam
Hersh Fine sandy loam
Inavale Loam
Janude Fine sandy loam
Janude Sandy loam
Jayem Fine sandy loam
Jayem Loamy very fine sand
Las Animas Fine sandy loam
Las Animas Loam
Las Animas Very fine sandy loam
Manter Fine sandy loam
Munjor Fine sandy loam
Munjor variant Fine sandy loam
Novina Fine sandy loam
Novina Sandy loam
Ord Fine sandy loam
Ord Loam
Ord Very fine sandy loam
Ord Variant Fine sandy loam
Ord Variant Loam
Ord Variant Very fine sandy loam
Ortello Fine sandy loam
Ortello Loam
Ortello Sandy loam
Ortello Very fine sandy loam
Otero Fine sandy loam
Otero Loam
Otero Very fine sandy loam
Otero variant Very fine sandy loam
Ovina Fine sandy loam
Ovina Loam
Ponderosa Very fine sandy loam
Sanborn Loam
Sarben Fine sandy loam
Sarben Very fine sandy loam
Vetal Fine sandy loam

IRRIGATION DESIGN GROUP 8

INTAKE FAMILY 1.5

(continued)

Vetal Loam
Vetal Very fine sandy loam
Wann Fine sandy loam
Wann Loam
Wann Silt loam[1]
Wann Sandy loam
Wann variant Fine sandy loam
Wann variant Loam
Wathena Fine sandy loam
Waubonsie Very fine sandy loam[2]

[1] This soil, as mapped in Nance and Madison Counties, has a silt loam surface layer.

[2] Waubonsie soils have moderately rapid over slow permeability.

IRRIGATION DESIGN GROUP 9

INTAKE FAMILY 1.5

Moderately deep soils underlain by bedrock or moderately deep soils over sand and gravel with a fine sandy loam or sandy loam surface layer and moderately rapid or moderate permeability in the subsoil.

Depth	Available Water Capacity
I.0'	1.8"
2.0'	3.8"
2.5'	4.8"
3.0'	5.5"

Alda Fine sandy loam
Alda Sandy loam
Altvan Fine sandy loam
Bazile Fine sandy loam[1]
Bazile Loam[1]
Blanche Fine sandy loam
Blanche Sandy loam
Blanche Very fine sandy loam
Brocksburg Fine sandy loam
Brunswick Fine sandy loam
Calamus Sandy loam
Chappell Fine sandy loam
Chappell Sandy loam
Darr Fine sandy loam
Darr Sandy loam
Fonner Sandy loam
Fonner variant Loamy sand
Holt Fine sandy loam
Holt Variant Fine sandy loam
Jansen Fine sandy loam
McGrew Fine sandy loam
O'Neill Fine sandy loam
O'Neill Sandy loam
Ronson Fine sandy loam
Rosebud Fine sandy loam
Wewela Fine sandy loam[2]

[1] Bazile soil is deep and has rapid permeability in the underlying material.

[2] Wewela fine sandy loam has slow permeability below a depth of 1.0 to 1.5 feet.

IRRIGATION DESIGN GROUP 10

INTAKE FAMILY 2.0

Deep soils with a sand, fine sand, loamy sand, loamy fine sand, or loamy very fine sand surface layer and moderately rapid permeability in the subsoil. Included are a few soils with a loamy subsoil and underlying material.

Depth	Available Water Capacity
I.0'	1.3"
2.0'	2.5"
3.0'	3.8"
4.0'	4.9"
5.0’	6.0”

Alice Loamy fine sand
Anselmo Loamy fine sand
Bayard Loamy fine sand
Bazile Loamy fine sand
Boelus Fine sand[1]
Boelus Loamy fine sand[1]
Boelus Loamy sand[1]
Bolent Fine sand
Busher Loamy very fine sand
Craft Loamy very fine sand
Craft Sandy loam
Doughboy Loamy fine sand
Dunn Loamy fine sand
Dunn Loamy sand
Gates Loamy fine sand
Gibbon Loamy sand[2]
Glenberg Loamy fine sand
Glenberg Loamy very fine sand
Hadar Loamy fine sand[3]
Haigler Fine sandy loam
Haigler Loam
Haigler Very fine sandy loam
Haxtun Loamy fine sand
Hennings Loamy fine sand
Hersh Loamy fine sand
Holt Variant Loamy fine sand
Janise Loamy fine sand
Jansen Loamy fine sand
Jansen variant Loamy fine sand
Jayem Loamy fine sand
Jayem Loamy sand
Josburg Loamy fine sand
Las Animas Loamy fine sand[4]
Libory Fine sand[5]
Libory Loamy fine sand[5]
Longford Loamy fine sand
Manter Loamy fine sand
McCash Loamy very fine sand
McCook Sand
Munjor Loamy fine sand
Ortello Loamy fine sand
Otero Loamy very fine sand
Overlake Sand
Ovina Loamy fine sand
Phiferson Loamy very fine sand
Ponderosa Loamy very fine sand
Ronson Loamy fine sand
Sandose Loamy fine sand
Sarben Loamy fine sand
Sarben Loamy sand
Sarben Loamy very fine sand
Scoville Fine sand
Scoville Loamy fine sand

[1] Boe1us soils have moderate permeability in the lower part of the profile.
[2] Gibbon loamy sand, overwash, has moderate permeability in the subsoil.
[3] Hadar soils have moderately slow permeability in the lower part of the profile.
[4] Las sand, overwash, has moderately slow permeability in the subsoil.
[5] Libory soils have moderate permeability in the lower part of the profile.

IRRIGATION DESIGN GROUP 10

INTAKE FAMILY 2.0

(continued)

Scoville Loamy sand
Tripp Loamy very fine sand
Tuthill Loamy fine sand
Vetal Loamy fine sand
Vetal Loamy very fine sand
Wewela Loamy fine sand
Whitelake Loamy fine sand
Woodly Loamy fine sand

IRRIGATION DESIGN GROUP 11

INTAKE FAMILY 3.0

Deep soils with a loamy sand, loamy fine sand, or fine sandy loam surface layer and rapidly permeable subsoil.

Depth	Available Water Capacity
I.0'	1.3"
2.0'	2.5"
3.0'	3.5"
4.0'	4.4"
5.0’	5.2”

Ashollow Fine sandy loam
Ashollow Loamy very fine sand
Bankard Loamy fine sand[1]
Bankard Loamy sand[1]
Bankard Very fine sandy loam[1]
Blanche Loamy fine sand
Blanche Loamy sand
Boel Fine sandy loam
Boel Loamy fine sand
Boel Loamy sand
Bolent Fine sandy loam
Bolent Loamy fine sand
Bolent Loamy sand
Brunswick Loamy sand
Calamus Loamy fine sand
Calamus Loamy sand
Dailey Loamy fine sand
Dailey Loamy sand
Dankworth Loamy sand
Doger Loamy fine sand
Draknab Loamy fine sand
Dunday Loamy fine sand
Dunday Loamy sand
Dwyer Loamy fine sand
Dwyer Loamy sand
Els Loamy fine sand
Els Loamy sand
Elsmere Fine sandy loam
Elsmere Loamy fine sand
Inavale Fine sandy loam
Inavale Loamy fine sand
Inavale Loamy sand
Inavale Very fine sandy loam
Inglewood Loamy fine sand
Ipage Loamy fine sand
Ipage Loamy sand
McKelvie Loamy fine sand
Nenzel Loamy fine sand
Orpha Loamy fine sand
Pahuk Loamy fine sand
Pathfinder Loamy fine sand
Pivot Fine sandy loam
Pivot Loam
Pivot Sandy loam
Sardak Loamy fine sand
Sarpy Fine sandy loam
Sarpy Loamy fine sand
Sarpy Loamy sand
Selia Fine sand[2]
Selia Loamy fine sand[2]
Thurman Fine sandy loam
Thurman Loamy fine sand
Thurman Loamy sand
Valent Loamy fine sand
Valent Loamy sand
Valentine Loamy fine sand
Valentine Loamy sand
Wildhorse Loamy fine sand

[1] Bankard soil, as mapped in Box Butte County, has a very fine sandy loam surface layer.

[2] Selia soils are neutral to very strongly alkaline and contain high amounts of sodium.

IRRIGATION DESIGN GROUP 12

INTAKE FAMILY 3.0

Deep soils with a fine sand or loamy coarse sand surface layer and subsoil. Permeability is rapid.

Depth	Available Water Capacity
I.0'	1.0"
2.0'	1.8"
3.0'	2.5"
4.0'	3.2"
5.0'	3.9"

Bankard Fine sand
Bankard Loamy course sand
Bankard Sand
Colfer Sand
Doger Fine sand
Dwyer Fine sand
Els Fine sand
Els, calcareous Fine sand
Elsmere Fine sand
Inavale Fine sand
Inglewood Fine sand
Ipage Fine sand[1]
Ipage Sand[2]
Lemoyne Sand
McKelvie Fine sand
Sarpy Fine sand
Thurman Fine sand
Thurman Sand
Valent Fine sand
Valent Sand
Valentine Fine sand
Valentine Sand
Wildhorse Fine sand
Wildhorse Sand

[1] Ipage soil, as mapped in Holt County, has a sand surface layer.

[2] Ipage soil, as mapped in Holt County, has a sand surface layer.

IRRIGATION DESIGN GROUP 13

INTAKE FAMILY 0.5 to 1.0

Shallow soils, 10 inches to 20 inches thick, with a loam, silt loam, or sandy loam texture; over bedrock or mixed sand and gravel.

Depth	Available Water Capacity
I.0'	2.6"
1.5'	4.0"

Brownson Loam
Canlon Loam
Canyon Fine sandy loam
Canyon Fine sandy loam
Canyon Loam
Canyon Sandy loam
Canyon Very fine sandy loam
Epping Loam
Epping Silt loam
Epping Very fine sandy loam
Longpine Fine sandy loam
Longpine Loamy fine sand
Longpine Loamy sand
Meadin Loam
Meadin Silt loam
Platte Loam
Platte Silt loam
Platte Sandy loam
Shingle Loam

IRRIGATION DESIGN GROUP 14

INTAKE FAMILY 1.5 OR HIGHER

Soils in this design group are divided into two subgroups. Subgroup A includes shallow soils with sandy and loamy profiles. Subgroup B includes moderately deep soils with sandy and loamy profiles.

SUBGROUP 14-A

Shallow soils, 10 inches to 20 inches thick, with loamy sand, loamy fine sand, sandy loam, or fine sandy loam textures; over bedrock or mixed sand and gravel.

Depth	Available Water Capacity
I.0'	1.5"
1.5'	2.0"

Meadin Fine sandy loam
Meadin Fine sandy loam
Meadin Loamy fine sand
Meadin Loamy sand

Meadin Sandy loam
Platte Fine sandy loam
Talmo Sandy loam

SUBGROUP 14-B

Moderately deep soils, 20 inches to 40 inches thick, and deep soils, with a sand, fine sand, loamy sand, loamy fine sand, or sandy loam surface layer and a moderately rapid or rapidly permeable subsoil; over bedrock or mixed sand and gravel.

Depth	Available Water Capacity
I.0'	1.5"
2.0'	2.8"
2.5'	3.5"

Calamus Course sand
Calamus Fine sand
Calamus Sand
Duda Loamy fine sand
Duda Loamy sand
Duda Sandy loam
Inavale Course sand
Inavale Sand

O'Neill Loamy fine sand
O'Neill Loamy sand
Pivot Loamy fine sand
Pivot Loamy sand
Simeon Fine sand
Simeon Loamy sand
Simeon Sand
Simeon Sandy loam