

INVENTORY AND EVALUATION
AND RESOURCE PLAN FOR THE
ESTABLISHMENT OF TILE OUTLET
TERRACES IN DES MOINES CO. SCD



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RESOURCE INVENTORY AND EVALUATION
FOR TILE OUTLET TERRACING IN DES MOINES COUNTY, IOWA

On request of the Soil Conservation District Commissioners of Des Moines County, Iowa this resource inventory and evaluation has been prepared.

PURPOSE: To determine the needs for establishing of terracing as an erosion control measure in Des Moines County, in order to help establish an orderly approach to planning and resource development.

Des Moines County Soil Conservation District

ROOM 218 — FEDERAL BLDG., P.O. BOX 637
BURLINGTON, IOWA 52601 — PHONE 754-8983

DISTRICT COMMISSIONERS:

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Mediapolis, Iowa 52637

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Mediapolis, Iowa 52637

ALBERT SCHULZ
Rt. 3, Burlington, Iowa 52601

District Conservationist
U. S. Soil Conservation Service
Burlington, Iowa

Des Moines County Soil Conservation District

requests the Soil Conservation Service to prepare
a resource inventory and evaluation and plan for
use of tile outlet terraces in Des Moines County.

ASSISTANT COMMISSIONERS:

HAROLD LINDER, Secretary
Sperry, Iowa 52650

HORACE SUTTON, JR., Treasurer
Box 953, Burlington Iowa 52601

This plan is to be used in establishing priorities
and goals in order to accelerate terrace building
in the district.

ASSISTED BY:

U. S. Soil Conservation Service
ALPH E. DEWEY
District Conservationist

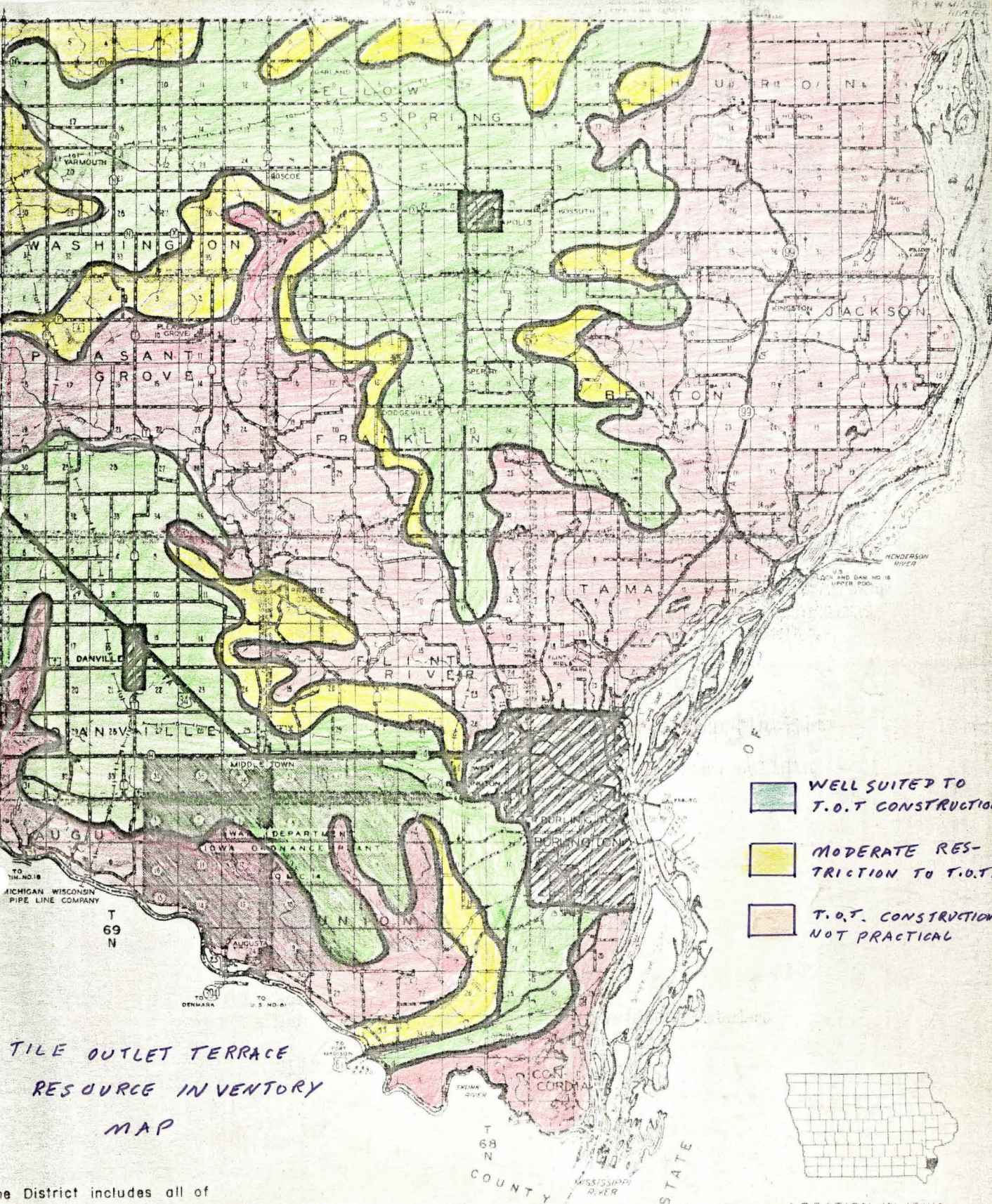
Sincerely


Henry Dockendorff, Chairman
Des Moines County Soil Conservation District

MICHIGAN WISCONSIN
PIPE LINE CO.

HENRY

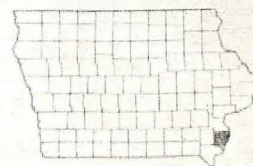
LEE



WELL SUITED TO
T.O.T. CONSTRUCTION

MODERATE RES-
TRIBUTION TO T.O.T.

T.O.T. CONSTRUCTION
NOT PRACTICAL



LOCATION IN IOWA

The District includes all of
Des Moines County ~~exclusive of~~
~~incorporated cities and towns.~~

DES MOINES COUNTY
SOIL CONSERVATION DISTRICT
IOWA

THE SOILS OF YOUR FARM

Soil Map Symbols				
Soil name	Taintor silty clay loam 0 to 1% slopes	Mahaska silt loam 1 to 3% slopes	Keomah silt loam 0 to 2% slopes	
Capability class & subclass				
Topsoil left	12-18"	8-18"	8-18"	
Organic matter	High	High	Low	
Subsoil: Texture Permeability	Heavy silty clay Loam to light silty clay Moderately slow	Heavy silty clay Loam Moderately slow	Heavy silty clay loam to light silty clay Moderately slow	
Soil formed from	Loess	Loess	Loess	
Wetness hazards	Wet (unless tiled)	Slightly wet in wet years	Slightly wet in wet years	
Erosion hazards	None	None	None	
Other soil features				
Practices that can be used	Tile	Contour Graded terrace	Contour, tile Graded terraces	
Response of corn to fertilizer*	Excellent	Excellent	Good	
Average** NPK level and soil reaction	N-medium P-low K-medium R-medium acid	N-medium P-low K-medium R-medium acid	N-low P-low K-medium R-strongly acid	
Corn yields***	90	95	75	
Acres of this soil on farm				

*Assumes adequate soil drainage, normal seasons, and corn not following a good legume or grass-legume crop.

**Estimates of average fertility levels based on test results for similar soils tested at Iowa State University Soil Testing Laboratory. A soil test is recommended. N=nitrogen, P=phosphate, K=potash, R=soil reaction

***Estimated long-time average acre yields under a high level of management and fertility. Year-to-year variations are to be expected. A few of the best farmers will exceed these estimated average yields. **Page 4**

Soil Map Symbols				
Soil name	Lindley loam 5 to 9% slopes	Given silt loam 0 to 2% slopes		
Capability class & subclass				
Topsoil left	7-11"	7-12"		
Organic matter	Medium	Medium		
Subsoil: Texture Permeability	Clay loam to clay Slow to very slow	Heavy silty clay loam to light silty clay Moderately slow		
Soil formed from	Till	Loess		
Wetness hazards	None	Slightly wet in wet years		
Erosion hazards	Moderate	None		
Other soil features	May be stony			
Practices that can be used	Contour Graded terrace	Contour, tile Graded terrace		
Response of corn to fertilizer*	Good	Excellent		
Average** NPK level and soil reaction	N-low P-very low K-medium R-strongly acid	N-low P-low K-medium R-strongly acid		
Corn yields***	55	90		
Acres of this soil on farm				

*Assumes adequate soil drainage, normal seasons, and corn not following a good legume or grass-legume crop.

**Estimates of average fertility levels based on test results for similar soils tested at Iowa State University Soil Testing Laboratory. A soil test is recommended. N=nitrogen, P=phosphate, K=potash, R=soil reaction

***Estimated long-time average acre yields under a high level of management and fertility. Year-to-year variations are to be expected. A few of the best farmers will exceed these estimated average yields. Page 5

THE SOILS OF YOUR FARM

Soil Map Symbols				
Soil name	Clinton silt loam	Otley silt loam		
	2 to 5% slopes	2 to 5% slopes		
Capability class & subclass				
Topsoil left	7-12"	7-12"		
Organic matter	Medium	High		
Subsoil: Texture Permeability	Heavy silty clay loam to light silty clay Moderately slow	Heavy silty clay loam Moderately slow		
Soil formed from	Loess	Loess		
Wetness hazards	None	None		
Erosion hazards	Slight	Slight		
Other soil features				
Practices that can be used	Contour Graded terrace	Contour Graded terrace		
Response of corn to fertilizer*	Excellent	Excellent		
Average** NPK level and soil reaction	N-low P-low K-medium R-strongly acid	N-low P-low K-medium R-medium acid		
Corn yields***	80	95		
Acres of this soil on farm				

*Assumes adequate soil drainage, normal seasons, and corn not following a good legume or grass-legume crop.

**Estimates of average fertility levels based on test results for similar soils tested at Iowa State University Soil Testing Laboratory. A soil test is recommended. N=nitrogen, P=phosphate, K=potash, R=soil reaction

***Estimated long-time average acre yields under a high level of management and fertility. Year-to-year variations are to be expected. A few of the best farmers will exceed these estimated average yields. Page 6

EVALUATION OF LAND AREA AND SOILS

Area colored green indicates level to nearly level land. Tile outlet terraces are generally feasible and practical to install. Much of this soil has a drainage problem which can be improved by the grading involved in constructing the terraces.

Although the land is nearly level, a great deal of water and silt runs off the land, contributing to flooding and siltation on lower fields. A typical tile outlet terrace system on an average 2 - 3 percent slope will control 7260 cubic feet of runoff from each acre above the terrace. For example, a 40 acre terraced field can control runoff of approximately 290,000 cubic feet of water (about 2 million gallons) and will eliminate a silt problem of from 100 to 500 tons per year.

Terraces are less costly when constructed on slopes less than six percent than on steeper areas. Their contribution to erosion control includes the retention on the land of fertilizer and other soil amendments, reducing costs of cropping in the long run.

Estimated costs of installing tile outlet terraces on suitable areas, including necessary tile systems will vary from 40¢ to about 80¢ per foot. At an average spacing of 240 feet (or 180 feet per acre), total costs will vary from \$70 to \$150 per acre to install.

Areas colored yellow indicates a moderate hazard to construction of tile outlet terraces. This is mainly due to increased slope and more defined gully situations.

Spacing of terraces will decrease to an average of 120 feet, and cost per acre will likely increase to an average of \$15 to \$20 per acre controlled.

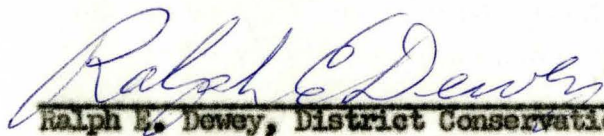
Many of these areas will normally be downhill from areas in green. In these cases control of the upland areas will need completion ahead of the steeper slopes.

Areas colored red indicate severe restricting hazards to terrace construction. Land is usually steep and suited to other types of erosion control such as dams and diversions.

In many cases, however, a single terrace below a relatively level area may be desirable to protect the steep area and improve the effect of other erosion control measures. Such terraces will normally have steep backslopes which will require immediate seeding and good maintenance.

CONCLUSIONS: About half of Des Moines County is well suited to use of tile outlet terracing to control erosion. Such terraces, in addition to erosion control have a value of surface drainage. By installing in parallel systems they are much easier for farmers to use, and are becoming well accepted.

In order to continue and increase the acceptance and use of this practice the development of a comprehensive plan, including priorities of work, group approach, a full scale information program and follow-up effort, is recommended.


Ralph E. Dewey, District Conservationist

RESOURCE PLAN - TILE OUTLET TERRACE

Program for Des Moines County SCD

Based on the resource inventory and evaluation regarding this subject, the following plan of action is proposed in accordance with the program and work plan adopted for this district.

- I. Establishment of priorities - In order to be more effective in promoting use of the tile outlet terrace as a means of erosion control and land use management, a system of priorities will be established. This will allow concentration of effort in areas of greatest need and highest potential, at the same time making more effective use of available technical help.
 - *A. Colored green areas of highest potential, considering present use of and interest in the practice.
 - *B. Colored blue areas of greatest need, where interest is not high, but prospects for influence are good.
 - *C. Colored red areas of low potential, where a greater long term effort is required to create interest and desire.
- II. General plan of action -
 - A. Completion of farm plans, including recommendations for location of terraces, cost estimates and analysis of values, both tangible and intangible. In other words - putting the farmer's problem directly before him.

Develop a job sheet for tile outlet terraces.
 - B. Continuous review by district commissioners and education of members.
 1. Quarterly review of progress
 2. Assignment of priorities
 3. Attendance at demonstrations
 4. Personal acceptance and backing of the practice
 5. Evangelism
 - C. Establish and continue a vigorous follow-up program
 1. Recognize needs to revise old plans to include terracing
 2. Follow-up after construction to assure good maintenance

* See attached map

D. Information and education.

1. Stress the group approach thru meetings and on-farm discussion.
If a neighbor is involved, get them together.
 - a. Develop meetings in conjunction with County Extension Service.
 - b. Meet with ASCS Committee to keep them sold on cost-sharing.
2. A continuous program of general and specific information to news media.
 - a. Regular accomplishment stories.
 - b. Picture.
 - c. Encourage radio and TV coverage.
3. Make each construction job a demonstration.
 - a. Send cards to surrounding farmers, particularly those with terracing in plans.
 - b. Take an interested farmer to a construction site before and after.

E. Establish sound technical standards for the practice.

1. Develop a technical data sheet for the practice, so farmer and contractor can better understand procedures.

F. Set realistic, but challenging goals.

G. Analyze progress regularly.

Prepared by:
Soil Conservation Service

Ralph E. Dewey
Ralph E. Dewey, District Conservationist

Approved by:
Des Moines County Soil Conservation District Commissioners Henry Dockendorff
Chairman: Henry Dockendorff

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MICHIGAN WISCONSIN
PIPE LINE CO.

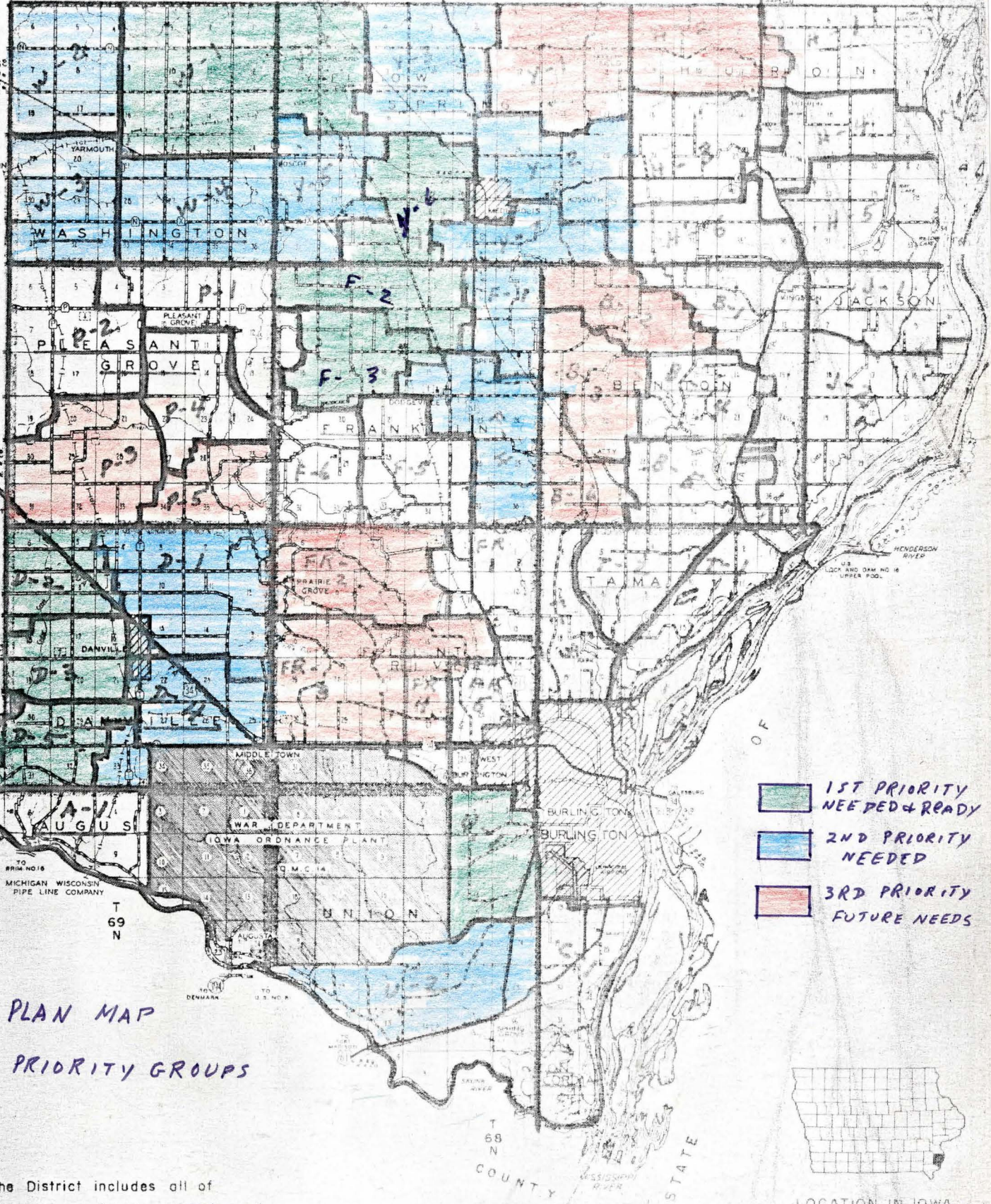
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HENRY

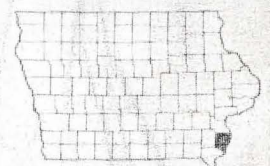
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- 1ST PRIORITY
NEEDED & READY
- 2ND PRIORITY
NEEDED
- 3RD PRIORITY
FUTURE NEEDS

PLAN MAP
PRIORITY GROUPS

The District includes all of
Des Moines County exclusive of
incorporated cities and towns.



LOCATION IN IOWA

RESOURCE PLAN

PRIORITY GROUPS

- A. (1) Groups D-2, D-3, D-5 in Danville Township will retain a continuing priority. Terracing is fairly well established as a practice here, and effort will be needed in 1970, 1971 and 1972 to complete work in accordance with the Resource Plan being developed for Geode Watershed.
- (2) Groups Y-6, F-2 and F-3 are above the Des Moines County Lake. Complete the farm plans needed in the area according to needs shown in the Resource Plan being developed for that watershed. Begin emphasis in fiscal year 1971, and continue through 1975.
- (3) Groups Y-4, W-1, Emphasize completion of farm plans in this area, bringing needs for terracing to attention of the owners. Concentrate information activities toward tile outlet terrace systems and group approach. Begin in fiscal 1972 through 1976.
- (4) Group U-1, Special emphasis on erosion control in area of the Burlington Resource Plan. Coordinate farm planning with city planning activities. Begin around 1972, or whenever, city indicates planning needs.
- B. (1) Groups D-1, D-4, Spread emphasis from Geode watershed effort as the areas from Priority "A" areas are completed.
- (2) Groups Y-2, Y-7, F-1 and F-4, spread emphasis from the Des Moines Lake watershed effort as "A" areas are completed.
- (3) Groups W-2, W-3, W-4 and Y-3, spread emphasis from effort in "A" areas as they are completed.
- (4) Group U-2 Spread emphasis from U-1 area upon completion of projects.
- C. Groups Y-1, H-2, B-2, B-3, B-6, P-3, P-5, FR-2 and FR-3: Set goals for these areas as work progresses in "A" and "B" areas. Work will consist mainly of small, individual "terracing" fields within the groups- may be worked in at any time the demand calls for it.

