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Impacts on Property Taxes of Reclassifying Flood-Prone Cropland in the South Delta Area of Mississippi

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Abstract

Current tax appraisal procedures for cropland in Mississippi do not account for any negative impacts caused by frequent flooding in some areas of the South Delta. If flood-prone cropland values are significantly below average, the current tax system could generate inequitable tax burdens on owners of flood-prone cropland. A modified system of appraisal may be desirable to produce a more equitable tax structure. The purpose of this study was to evaluate different methods of reclassifying flood-prone cropland in the South Delta and to determine subsequent tax impacts on landowners and county tax revenue. Cropland tax data for Sharkey and Issaquena Counties were collected and different permanent reclassification schemes were proposed. Reclassification schemes were defined by lowering a parcel's capability class assignment by 1, 2, 3, or 4 classes if its elevation was below a specified trigger level. The impact that each reclassification scheme would have on landowners' taxes and the tax base in the affected counties was then estimated. In order to show the impact on tax shifts that would keep the county's tax base from declining, a new, higher millage rate was computed for selected reclassification schemes. After applying the adjusted millage rate to all properties in the county, changes in cropland taxes were reduced. Among the permanent reclassification schemes evaluated in this study, a trigger elevation level of 90 feet appears to offer reasonable tax impacts. Cropland parcels below 90 feet could be reassigned to the lowest capability class if the residents desired to provide the largest tax relief to these property owners. A more conservative reassignment scheme could be selected if desired. A temporary (year-to-year) reclassification system may provide more equitable tax distributions over time but would probably require more administrative costs to implement.

Keywords: Cropland appraisal, property taxes, flood-prone cropland

Impacts on Property Taxes of Reclassifying Flood-Prone Cropland in the South Delta Area of Mississippi

Executive Summary

Current tax appraisal procedures for cropland in Mississippi do not account for any negative impacts caused by frequent flooding in some areas of the South Delta. If flood-prone cropland values are significantly below average, the current tax system could generate inequitable tax burdens on owners of flood-prone cropland. A modified system of appraisal may be desirable to produce a more equitable tax structure.

The purpose of this study was to evaluate different methods of reclassifying flood-prone cropland in the South Delta and to determine subsequent tax impacts on landowners and county tax revenue. Previous research about the reclassification of flood-prone cropland in Mississippi does not exist. However, Louisiana and Arkansas have systems that allow tax relief for owners of flood-prone cropland. Approaches used in these neighboring states involve assigning tracts of flood-prone cropland to a low-valued land class, either permanently or on a year-by-year basis. For this study, cropland tax data for Sharkey and Issaquena Counties were collected. Different permanent reclassification schemes were proposed, and tax implications were estimated for each scheme.

To evaluate different reclassification schemes, the amount of cropland currently assigned to each land capability class at different elevation levels in the county was estimated. Reclassification schemes were defined by lowering a parcel's capability class assignment by 1, 2, 3, or 4 classes if its elevation was below a specified trigger level. The impact that each reclassification scheme would have on landowners' taxes and the tax base in the affected counties was then estimated.

The elevation and number of classes dropped determined the change in cropland tax revenue from the current situation. As expected, cropland tax revenue was impacted more the greater the number of classes dropped. However, there was not much difference

in tax impacts from schemes that dropped the classifications by 2, 3, or 4 classes. Also as expected, the higher the elevation trigger level, the greater the tax impacts.

In order to show the impact on tax shifts that would keep the county's tax base from declining, a new, higher millage rate was computed for selected reclassification schemes. After applying the adjusted millage rate to all properties in the county, changes in cropland taxes were reduced. Among the permanent reclassification schemes evaluated in this study, a trigger elevation level of 90 feet appears to offer reasonable tax impacts. Cropland parcels below 90 feet could be reassigned to the lowest capability class if the residents desired to provide the largest tax relief to these property owners. A more conservative reassignment scheme could be selected if desired. A temporary (year-to-year) reclassification system may provide more equitable tax distributions over time but would probably require more administrative costs to implement.

The information obtained in this study should be useful to policy makers such as state legislators, the State Tax Commission, and tax assessors in understanding how different reclassification methods might impact the tax environment in the South Delta. Various landowners, individuals, and groups within the South Delta will also find this study useful in helping them evaluate alternative tax procedures.

Acknowledgements

The authors would like to thank the South Delta producers who provided relevant, first-hand information to us. Also, the tax assessors in Issaquena and Sharkey Counties were very cooperative in providing assistance. Mr. Bart Freeland with the Weather/GIS Data Center at the Delta Research and Extension Center provided the necessary land elevation data. Personnel at the Vicksburg District of the U.S. Army Corps of Engineers were always willing and able to provide information related to flood stages in the South Delta. The following reviewers made several helpful comments: Ms. Gail Gillis, Drs. Barry Barnett, Patrick Gerard, David Laughlin, John Lee, and Ian Munn. This study was funded in part by a special grant from the Director of the Mississippi Agricultural and Forestry Experiment Station, Dr. Vance Watson. His assistance was very much appreciated.

Impacts on Property Taxes of Reclassifying Flood-Prone Cropland in the South Delta Area of Mississippi

Introduction

Cropland property taxes in Mississippi are designated by legislation to be based on the productivity of the land. The current appraisal system should result in appraised values that reflect the land's capacity to generate economic returns from the commercial production of agricultural products. Frequent flooding in the South Delta has had negative impacts on the return to flood-prone cropland. However, current tax appraisal procedures do not account for any negative economic impacts that may have been incurred on flood-damaged tracts of cropland.

Section 27-35-50 of the Mississippi Code of 1972, as amended, explains many of the details governing agricultural land taxation (see Appendix A). The productivity of the land mentioned in this law implies that "normal" environmental conditions are being assumed in the income capitalization approach that is used to estimate value. Currently, the State Tax Commission Appraisal Manual does not allow the tax appraiser to use premiums or discounts for above- or below-normal conditions that might affect a tract's value. For instance, crop failures or low yields on a specific field due to uncontrollable factors such as insects, droughts, or floods are not accounted for in the appraisal procedures.

Tracts of cropland in Mississippi are assigned to capability classes that indicate their general suitability for most agricultural uses. This classification system is based on permanent physical limitations of soils when used for field crops, the risk of erosion damage when they are farmed, and their response to soil conservation treatments. All cropland assigned to a given capability class is currently appraised at the same value, regardless of its potential to be flooded. It could be argued that the current tax system results in an inaccurate representation of the appraised value of flood-prone cropland. Thus, owners of flood-prone cropland may be paying property taxes that are higher than necessary.

The South Delta is an area in which flood control legislation and activities have been ongoing for many years. However, this area continues to be plagued by floods. Installation of the Yazoo Backwater Area Levee and the floodgates at Steele Bayou and Little Sunflower River was completed in 1978. These projects were designed to help control the backwater flooding from the Mississippi River. Before these projects were put in place, the South Delta was prone to frequent and severe flooding during high Mississippi River stages. The floodgates are closed when the Mississippi River is high to prevent backwater flooding, but then it is possible for water from inside the basin to pool and flood the area. The U.S. Army Corps of Engineers in the Vicksburg District is currently undertaking new studies to evaluate alternatives aimed at relieving the area of flooding. One alternative is to install pumps at Steele Bayou to be used whenever the gates are closed. The pumps would help reduce floods by pumping pooled water over the levee and into the Mississippi River whenever the floodgates are closed. But if flood control efforts such as these are not implemented, landowners will continue to be faced with uncertain flood conditions.

The counties located in the South Delta are Issaquena, Sharkey, and portions of Humphreys, Washington, Warren, and Yazoo (see Figure 1). Although most of these counties have experienced floods over the years, the more frequent floods occur in Issaquena and Sharkey Counties. This study will focus on these two counties. This area is nearly level, which is typical of large floodplains, but elevation tends to decline from north to south. Elevation levels for this area range from about 50 to 140 feet. Old natural levees, abandoned stream meanders, and oxbow lakes are commonly found in the South Delta. The soils are very fertile due to the rich alluvium of the Mississippi River and its tributaries. Therefore, most Delta soils have high natural fertility, and except for nitrogen, contain adequate plant nutrients for most crops. The climate in the South Delta is influenced by the Gulf of Mexico and has warmer temperatures and higher rainfall than the North Delta. Heavy rainfall in this area commonly occurs during winter and early spring (Anderson and Pettry). It is the rainfall within the basin that leads to spring floods whenever the floodgates are closed.

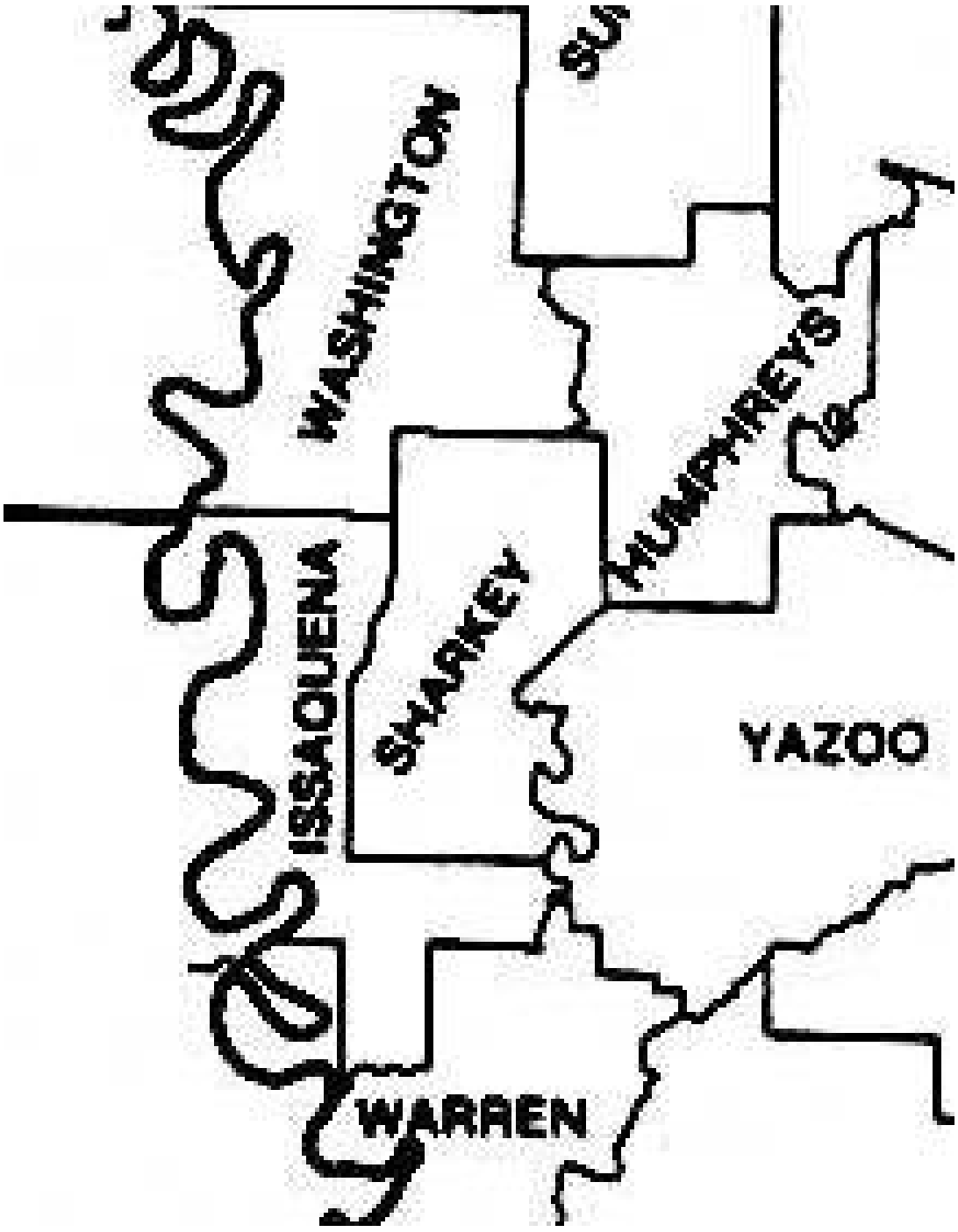

Figure 1. Map of counties in the South Delta Area of Mississippi

In 1999, the total resident population was 1,635 in Issaquena County and 6,543 in Sharkey County (U.S. Census Bureau). Like almost all Delta counties, Issaquena and Sharkey Counties are heavily dependent on agricultural enterprises. In 1997 there were 110 farms in Sharkey County and 82 farms in Issaquena County. The average farm size was 1,375 acres in Issaquena County and 1,505 acres in Sharkey County (National Agricultural Statistics Service). Over ninety percent of the cropland is used to produce soybeans, cotton, and corn. Commercial farm-raised catfish production is also an important enterprise in both counties. In 1997, there were five catfish farms in Issaquena County and seven in Sharkey County. There were 1,000 catfish water surface acres in Issaquena County and 4,000 in Sharkey County. There are very few livestock and poultry operations in either county.

Flood stages and inundated acres of all types of land (including cropland and forestland) are presented for various frequencies in Table 1. About 216,200 acres within the South Delta region are expected to be flooded at some time during any year. As expected, less frequent floods inundate more land. In one out of 10 years, almost 490,000 acres are expected to be flooded. A 100-year flood would inundate about 630,000 acres. The area inundated at a flood stage of 90.6 feet elevation at the Steel Bayou floodgate is shown as the shaded area in Figure 2. The lower portion of Issaquena County and much of Sharkey County are normally inundated once every two years.

Table 1. Frequency of floods in the South Delta Area of Mississippi

Frequency	Stage†	Land Flooded
Year	Feet	Acres
1	87.0	216,200
2	91.0	317,500
5	94.6	431,000
10	96.3	488,100
20	97.6	535,000
25	98.0	551,300
50	99.2	592,900
100	100.3	630,000

† The interior ponding elevation level measured at the Steel Bayou floodgate.

Source: U.S. Army Corps of Engineers, Vicksburg District

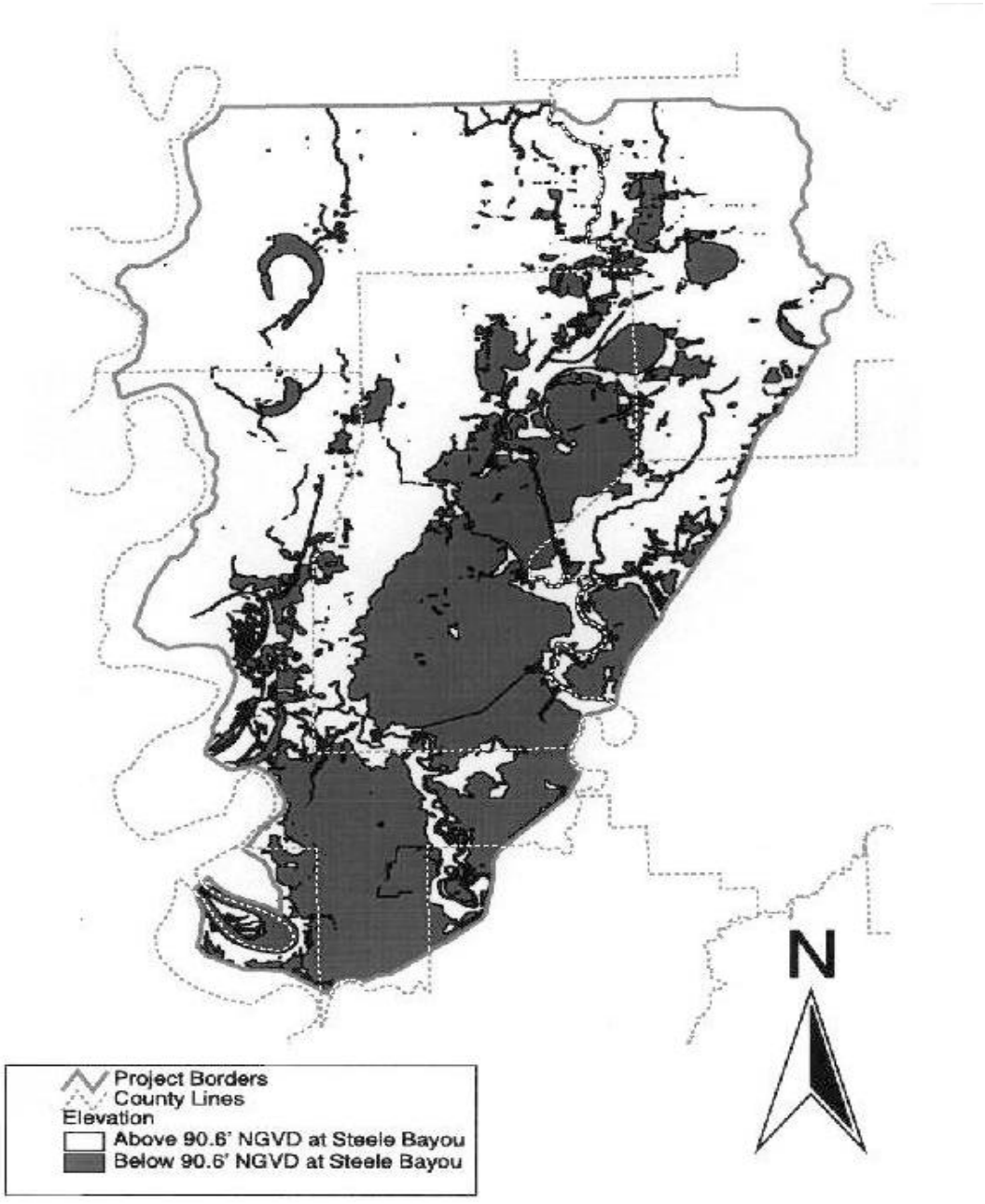

Figure 2. Land inundated in the South Delta Area at a flood stage of 90.6 feet measured at the Steel Bayou floodgate

Source: U.S. Army Corps of Engineers, Vicksburg District

Currently, much of the land in the South Delta is used for crop production. Five out of the six counties located in the South Delta have over 60 percent of their total land in farmland (U.S. Census Bureau). Because most of the land in this area is used for farming, agriculture has a large impact on the local economy. In an interview, Buddie Newman, a South Delta farmer, stated, "The flooding affects the whole area. It affects the income of the farmer, the implement dealers, the hardware dealers, and the entire business community" (Newman). Because flooding usually occurs in the winter and spring (and sometimes into the summer months), crop production activities are adversely affected, initiating detrimental ripple effects throughout the region's economy.

Farmers must wait until floodwaters recede in the spring before they can begin field operations, thus forcing a late planting season which often is associated with lower yields. Even if only a portion of a field is inundated, access to the field may be prevented by floodwater, causing a delay in land preparation and planting activities. A low-yielding, late-planted soybean crop may be the only option farmers have in years with moderate to severe floods. In today's environment of low profit margins, farmers must be able to produce a variety of crops that produce high yields in order to offset the risk of low prices. The combination of lower crop yields and a limited crop mix due to late planting decreases the returns to farmers which, in turn, puts downward pressure on the market value of flood-prone cropland. In an interview, local farmer Charles Burt Darden, Sr. asserted that land in the South Delta that is now worth $300 or $400 per acre would be worth $2,000 to $2,500 per acre if the floods did not occur (Darden). If market values of flood-prone cropland are affected by this magnitude, then possibly use values of this land should be altered to reflect a similar relationship.

Cropland owners in flood-prone areas also face higher crop insurance rates to reflect the increased risk of crop production. The high-risk areas in the South Delta are determined by identifying all cropland with an elevation level of 90 feet or less. Rate adjustment factors are applied to determine the crop insurance rates for farms in those areas. The high-risk areas for Sharkey and Issaquena Counties are shown in Figures 3 and 4.

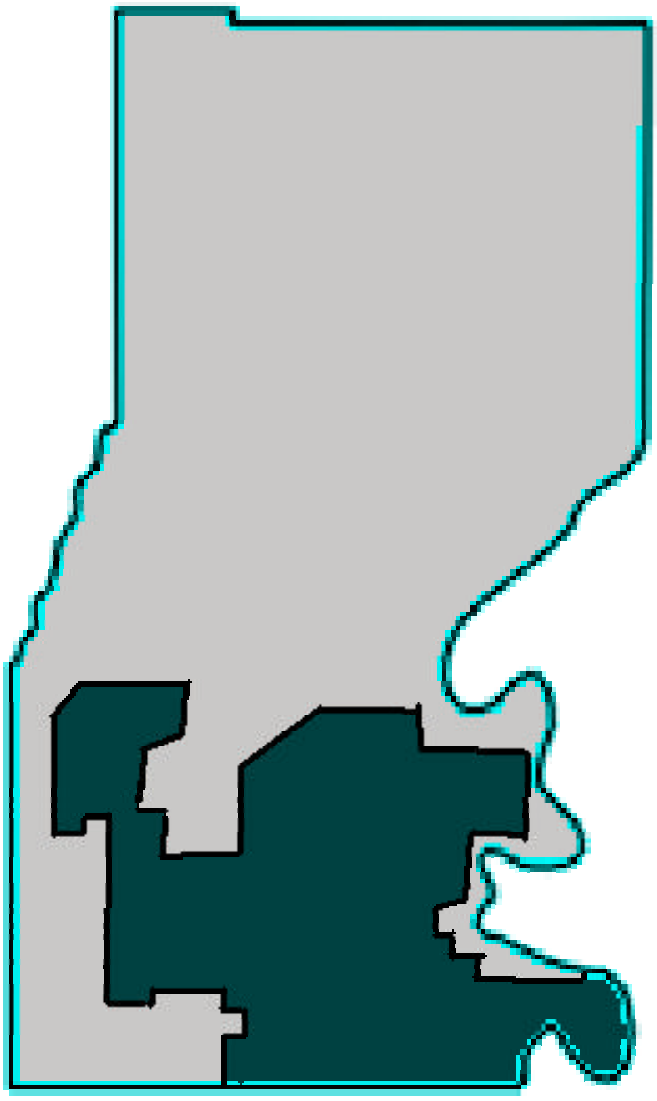

Figure 3. Location of high-risk crop insurance areas in Sharkey County

Source: Mississippi Counties, formerly Mississippi web sites by county and Crop Insurance Actuarial Map FCI 33

Figure 4. Location of high-risk crop insurance areas in Issaquena County

Source: Mississippi Counties, formerly Mississippi web sites by county and Crop Insurance Actuarial Map FCI 33

Louisiana and Arkansas have allowances for flood-prone land (See Appendix B for a brief description of the taxation procedures used in these states.). A modified system of appraisal may be needed to incorporate the impacts of flooding in the South Delta. One possible reclassification method would adjust the capability class based on the elevation level of a field. The elevation level referred to here is the mean sea level of the field, which is inversely related to its flood frequency. By including elevation levels in the appraisal procedures, the effects of periodic flooding on the value of cropland can be accounted for. Appraised values will be more closely related to actual market values of flood-prone land if elevation and capability class are both used in the appraisal process. Under the current classification system, some South Delta fields that are prone to frequent flooding are classified into capability classes such as I, II, and III, where class I represents the highest quality. A reclassification system that accounts for flooding would shift these fields to lower capability classes.

Temporary and permanent reclassification systems may be used to reclassify flood-prone cropland. A permanent reclassification system would reclassify all cropland at or below a certain elevation level, regardless of actual flood damages in any given year. A temporary reclassification system would reclassify all cropland damaged by floodwater in any given year, regardless of elevation level. The analysis conducted in this study is for a permanent reclassification system. The alternative reclassification schemes are based on the elevation level and the number of capability classes to be reduced. For example, class I cropland with an elevation level of 85 feet or below could be reassigned to class III.

Reclassification of flood-prone cropland may have positive impacts for some landowners, but it may also bring about negative effects as well. This study is concerned with two groups of taxpayers: (1) cropland owners who receive a reclassification and (2) owners of all other properties such as forestland, real property, and cropland that was not reclassified. Property taxes are the traditional major source of revenue for local governments in the United States. As mentioned earlier, the majority of the land in the South Delta is used for agricultural purposes, and the tax base in these counties is heavily dependent upon cropland for tax revenue. Therefore, reclassification of flood-prone cropland may have a negative impact on the tax base of a county. Reclassifying flood-

prone cropland will cause its appraised value to decrease, which will lead to a decline in a county's tax revenue. To offset this loss, the county would have to increase its millage rate enough to recoup property tax revenue from the rest of the tax base. This will result in increased taxes to the owners of all other properties. A landowner would receive a tax decrease on parcels of flood-prone cropland but would pay higher taxes on other parcels of cropland and forestland.

Objectives of the Study

The primary objective of this study was to analyze different methods of reclassifying cropland in flood-prone areas and to determine subsequent impacts on landowners and county tax revenue. Specific objectives were to:

1. Determine the amount of cropland classified in each capability class at different elevation levels in Issaquena and Sharkey Counties.
2. Determine different methods for reclassifying cropland in flood-prone areas of the South Delta.
3. Estimate the impact on taxes that each reclassification method will have on landowners and the tax base in the affected counties.

Mississippi Cropland Appraisal Methods

Section 27-35-50 of the Mississippi Code states that cropland appraisal shall be made according to the land's current use. The tax assessor shall use soil types, productivity, and other criteria set forth in the appraisal manual of the State Tax Commission (see Appendix A). A system termed mass appraisal is used for agricultural land in Mississippi. Mass appraisal is the process of using a uniform method to appraise all similar parcels of land within a particular geographic area rather than appraising each parcel on an individual basis. Use of sub-state geographic areas allows the appraisal system to better incorporate regional differences such as soil, climate, cropping patterns, and other features that influence agricultural productivity. Currently, Mississippi is divided into seven soil resource areas for appraisal purposes (see Figure 5).

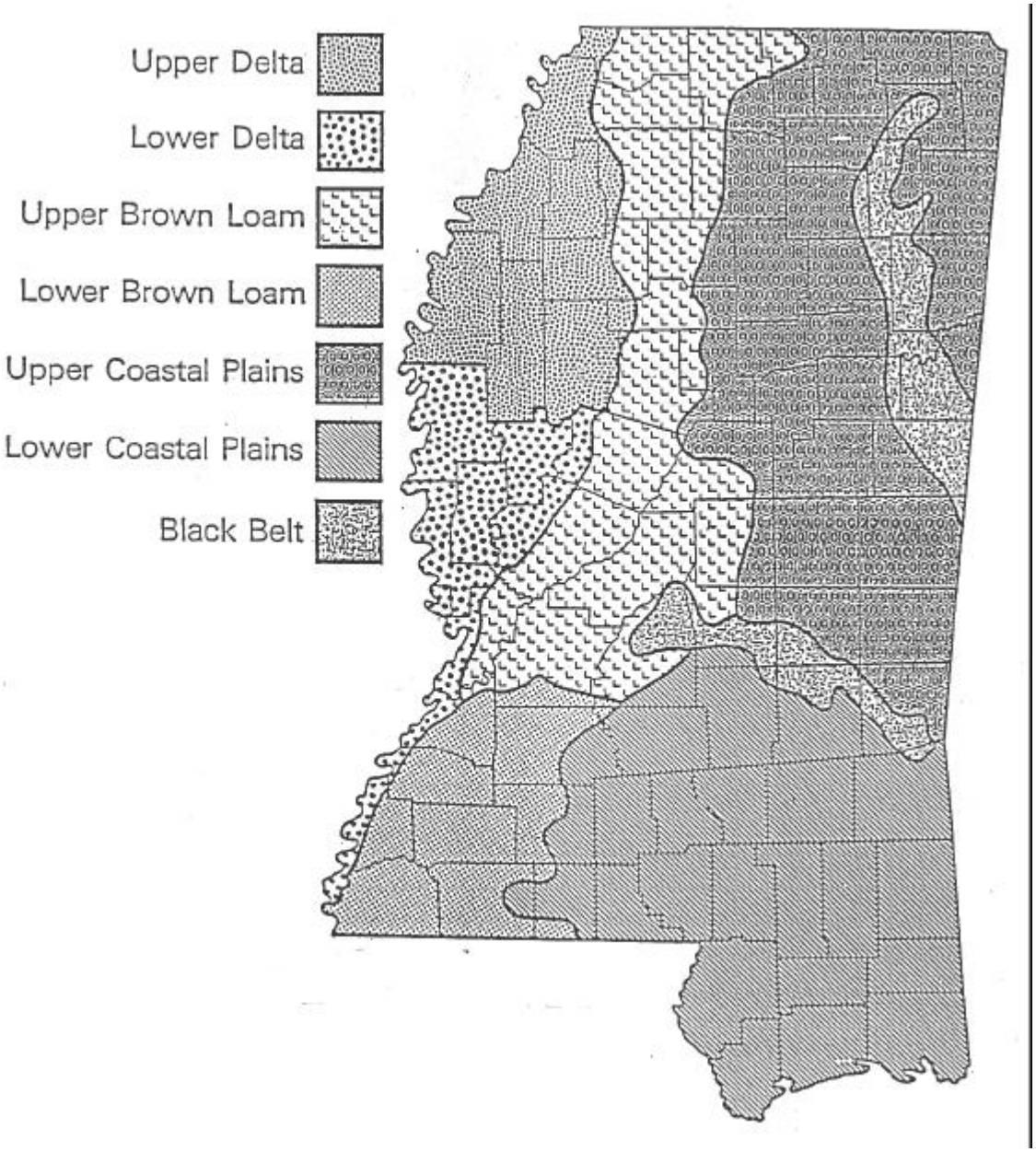

Figure 5. Soil resource areas in Mississippi

Source: State of Mississippi Appraisal Manual

The Lower Delta soil resource area is the primary area of interest in this study because it corresponds closely to the South Delta flood-prone region. Productivity differences in tracts of cropland within a soil resource area are accounted for by identifying the land capability classes present on the tract. Soils are designated as class I, the most productive land, through class VIII, the least productive land (State of Mississippi Appraisal Manual). Soils suited for cultivated crops are placed in classes I, II, and III. Class IV land can be used for crops, but only if appropriate rotations and conservation practices are used. Soils that are not suited for cultivation but are suited for pasture, range forage, trees, certain special crops, or wildlife habitat are classified in classes V, VI, and VII. Soils limited to recreation, wildlife habitat, or water supply uses are classified as class VIII. For tax purposes, classes V through VIII are grouped together and classified as "Other."

The appraisal system attempts to determine the use value of cropland rather than its market value. Market value of cropland may be influenced by non-farm factors, but use value should represent only the economic return to land from the production of agricultural commodities. There are two major steps in the income capitalization approach to estimating use value. First, the average annual return to land of a given capability class is computed by deducting estimated non-land variable, fixed, overhead, and management costs from the land's estimated income. The term "average" in this case represents an average over a long time period as well as an average over the whole soil resource area. That is, all cropland of a given capability class within a soil resource area is grouped together when determining the use value for that class. Second, the average net return is capitalized at a specified discount rate.

There are four steps that must be followed in order to estimate cropland use values that represent as closely as possible the typical agricultural conditions within the specific soil resource area. Step one determines the representative crop mix in the area. County-level crop acreage data published by the Mississippi Agricultural Statistics Service is used to determine the average crop mix. Step two estimates the income, production cost, and the net return to land for each of the major crops in the crop mix for capability classes I, II, III, and IV. The use value of the "Other" category (classes V through VIII) is set at one-half the use value of class IV cropland. Step three computes

the “geographical” average return to cropland by weighting the specified crop enterprise returns by the acreage of those crops identified in step 1. Again, this is done for each of the classes I through IV. Step four computes the “temporal” average net return to land for each capability class by averaging the most recent 10 years of historical net returns.

Income from a crop enterprise is derived from the crop’s yield multiplied by a market price. This market income is added to any government payments. To differentiate income derived from each capability class, an average crop yield for each class needs to be determined. Since published county yield estimates refer to all cropland with no distinction as to capability class, a productivity index is developed to account for productivity differences among classes. Crop yield estimates from the most current Soil Survey Interpretation Records (commonly called “blue sheets” which are published and periodically updated by the Natural Resources Conservation Service) are used in developing a productivity index for each capability class for each of the major crops produced within each soil resource area. The actual reported average yield is then adjusted according to the estimated index value of each capability class. In this way, estimates of actual crop yields for each capability class are obtained on an annual basis.

In addition to cropland use values, a statewide assessment rate and a county-level millage rate are also included in the calculation of cropland property taxes. One mill, which is equal to one-tenth of a cent, produces one dollar of tax revenue for every $1,000 of assessed value. A millage rate may be expressed as a percentage; for example, 96 mills would be stated as 9.6 percent, which is equivalent numerically to 0.096. A county’s average millage rate is calculated by dividing the county’s annual budget requirements by its total assessed values. The total assessed values within a county consist of the following: real property land and buildings, business personal property, personal property mobile homes (individual owns the home but does not own the land), auto car tags, and public utilities. An assessment rate of 15 percent is applied to the appraised (use) value of the parcel of cropland to determine its assessed value. This assessed value is then multiplied by the county’s millage rate to find the total tax due on the parcel. For example, the per-acre taxes due for a parcel of cropland with a use value of $800 per acre and with 96 mills would be: $11.52/acre = $800/acre $\times$ 0.15 $\times$ 0.096.

Methods and Procedures

Cropland Elevation Estimates

As stated previously, the first objective of this study was to determine the amount of cropland classified in each capability class at different elevation levels in Issaquena and Sharkey Counties. In order to estimate the different capability classes of cropland in different elevation levels, two data sets were obtained: data set one contained the general location of cropland parcels (identified by township, range, and section number), the assigned capability class, and the number of acres in each parcel; data set two contained the area of land (in acres) within various elevation categories in each section. If data set one had identified the elevation of the parcels, then data set two would not have been necessary.

Information about individual tracts of cropland was in the first data set. This information was obtained through the tax assessor's office in Issaquena County. The Sharkey County data were obtained through Delta Computers Systems, an information technology-based business located in Biloxi, Mississippi. Data were entered into a Microsoft Excel spreadsheet. Each row contained information on a parcel of cropland, with columns representing the variables mentioned previously.

The elevation level of each parcel of cropland was then estimated by using information from data set two, which contained the different elevations of land in each section (recall that a section is 640 acres, or one square mile, and that a township is comprised of 36 sections). The Weather/GIS Data Center located at the Delta Research and Extension Center in Stoneville, Mississippi, provided this data set. Each row in this spreadsheet represented a section of land (identified by township, range, and section number) in the county. The elevation categories were specified in several five-foot increments, beginning with 55 to 60 feet, in the columns of the spreadsheet. The total land area (in acres) in each elevation interval was recorded for each section.

The distribution of the land by elevation category in a given section was used to estimate the elevation of all cropland parcels in that section. For instance, if 60 percent of the land in a section was in the 85-90 foot category, then 60 percent of a parcel was assigned to the 85-90 foot interval. This assignment was done for each parcel of cropland

in data set one. The total amount of cropland in each capability class in each of the elevation levels in Issaquena and Sharkey Counties was then tabulated.

Reclassification Schemes

The second objective of this study was to determine different methods for reclassifying cropland in flood-prone areas of the South Delta. The classification of flood-prone land according to its elevation level, which is inversely related to its frequency of flooding, was used to develop various reclassification schemes. Once the amount of cropland classified in each capability class at different elevations was determined (as explained above), reclassification schemes dependent on the elevation level of the cropland were developed.

First, the current situation, called the baseline, was used as the starting point from which changes in capability class assignments were made. A reclassification scheme was defined as the number of capability classes to drop if the cropland was located below a specified elevation level, called the trigger level. The class assignments were lowered from one to four classes at one of six elevation trigger levels. The trigger levels started at 75 feet and increased to 100 feet in 5-foot increments. Each trigger level included all cropland in each class with an elevation level less than or equal to the specified elevation. For instance, the 80-foot trigger level included all cropland with an elevation level of 80 feet or less. A separate reclassification scheme was developed from each of the six trigger levels in combination with each of the four classes to be dropped. Therefore, twenty-four reclassification schemes were developed for each county.

Impact on Taxes

The third objective of this study was to estimate the impact on taxes that each reclassification scheme will have on landowners and the tax base in the affected counties. The total cropland tax revenue for each class-elevation category in the baseline was needed in order to determine changes in taxes from the current situation. First, the use value per acre was multiplied by the 15 percent assessment rate for agriculture land and then by the county's average millage rate to obtain the tax rate per acre for each capability class. Then the acreage in each class-elevation category was multiplied by its

tax rate per acre to provide an estimate of the annual tax revenue that would be generated by the county's cropland.

The per-acre use values and tax rates for each class in Issaquena and Sharkey Counties for 1998 are shown in Table 2. The use values in each class were the same for both counties since they are located in the same soil resource area. The tax rates differ slightly between the two counties because the average millage rate in Issaquena County was 96.39, and the average millage rate in Sharkey County was 96.31.

Table 2. Use values and tax rates, by capability class, for Issaquena and Sharkey Counties, 1998

Item	Class I	Class II	Class III	Class IV	Other
	----------$/acre----------				
Use Value	863	783	311	137	125
Issaquena Tax Rate	12.48	11.32	4.50	1.98	1.81
Sharkey Tax rate	12.47	11.31	4.49	1.98	1.81

The tax rates in Table 2 were also used to estimate cropland tax revenues for each reclassification scheme. Given the new acreage values after cropland had been reclassified, the same computations mentioned above were made to estimate tax revenues for each of the twenty-four schemes. Differences in tax revenues from the baseline scenario were also computed. These computations assumed no change in the county's millage rate. If the millage rate remained constant, the county would lose tax revenues since some of the cropland would have been assigned a lower appraisal value. To offset potential losses, the county would have to raise its millage rate. The new millage rate would then be applied to all property in the county.

To compute the adjusted millage rate, several computations must be made. These computations will be explained by presenting a numerical example for Issaquena County in which the scheme is to drop 4 classes at a trigger level of 90 feet. First, the assessed

value of all property other than cropland needs to be estimated. Starting with the total tax base of the county, $1,655,353 (Harmon), the tax revenue from non-cropland properties is found by subtracting the cropland tax revenue ($678,162, which was estimated from the baseline scenario as presented in Table 6) from the tax base: $977,191 = $1,655,353 - $678,162. Dividing this by the current millage rate (0.09639) provides an estimate of the assessed value of non-cropland properties: $10,137,888 = $977,191 ÷ 0.09639. Similarly, the tax base for Sharkey County was $2,334,755 (Brown), and the assessed value of non-cropland properties was estimated to be $14,394,872.

The next item needed is the assessed value of cropland expected to be generated by the new reclassification scheme. This value is found by dividing the cropland tax revenue generated by the scheme ($577,421 in Table 6) by the current millage rate (0.09639): $5,990,466 = $577,421 ÷ 0.09639. Finally, the adjusted millage rate was computed by dividing the total tax revenue desired by the sum of the new assessed cropland and current assessed non-cropland values: 0.10264 = $1,655,353 ÷ ($5,990,466 + $10,137,888). To express this in mills, simply multiply the millage rate by 1,000 to obtain 102.64.

The tax on all cropland after the millage rate adjustment was computed by multiplying the assessed cropland value generated by the reclassification scheme by the adjusted millage rate. This cropland tax revenue was subtracted from the baseline cropland tax revenue to obtain the change in taxes derived from cropland properties in the county under the condition that the county's tax base remained constant. These results are reported in Tables 9 and 10 for selected reclassification schemes.

Results are presented and discussed next. Magnitudes of initial and final tax changes from flood-prone cropland owners to others were of particular importance. The same reclassification scheme was found to have slightly different impacts in the two counties.

Results

The current distribution of cropland by class and elevation level was estimated for each county and is presented in Tables 3 and 4. Over one-half of all cropland is in class III, followed by class II. The 95-100 feet elevation category contained the most acreage in both counties, followed by the 90-95 feet category. The percent of total cropland at or below the 85-foot level is greater in Issaquena County (12 percent) than in Sharkey County (5 percent).

Tax Impacts Without Millage Rate Adjustments

The results from the twenty-four different reclassification schemes developed for Issaquena and Sharkey Counties are presented in four tables, two for each county. The total cropland acres, by class, for each reclassification scheme are presented first. The changes in cropland tax revenue, by class and reclassification method, are presented next. The impacts that selected reclassification methods have on the tax base, cropland owners who were reclassified, and owners of all other properties in the affected counties were then determined.

The amount of cropland in each class resulting from each reclassification scheme for Issaquena County is shown in Table 5. Higher elevation trigger levels include more cropland than lower trigger levels; therefore, the higher the trigger level, the larger the increase or decrease in cropland acreage from the baseline in each class. For instance, the schemes at the 75-foot trigger level cause acreage to change less than any of the other trigger levels.

The number of classes dropped also influences the amount of change in acreage from the baseline. The more classes that cropland is dropped, the larger the impact. Dropping the classification of cropland simply means that the cropland is reclassified into a lower productivity class. For example, dropping 3 classes reclassifies class I cropland into class IV cropland, and class II, III, IV cropland into class “Other.”

With a drop of 1 class, acreage in classes I through III decreases, and acreage in classes IV and “Other” increases. With a drop of 2 classes, acreage in classes I through III decreases. Class IV cropland acres decrease in the two schemes that include trigger levels of 75 and 80 feet. The remaining 4 schemes in class IV and all the schemes in the

Table 3. Estimated cropland in elevation categories, by capability class, in Issaquena County, 1998

Elevation	Class I	Class II	Class III	Class IV	Other	Total
	----------acres----------					
55-60	0	2	14	0	0	16
60-65	0	1	6	0	0	7
65-70	16	36	55	17	15	138
70-75	14	153	539	401	15	1,123
75-80	10	259	1,164	45	95	1,573
80-85	41	1,027	6,633	284	3,205	11,190
85-90	67	2,235	15,205	1,113	3,770	22,390
90-95	556	5,219	17,848	2,488	844	26,955
95-100	1,419	8,569	17,498	3,880	37	31,403
100-105	724	6,072	10,297	2,663	10	19,766
105-110	140	1,430	934	566	14	3,084
110-115	10	118	110	152	3	393
115-120	12	46	52	68	1	178
120-125	10	61	54	22	0	148
125-130	1	39	27	20	0	87
130-135	0	0	2	0	0	2
Total	3,021	25,267	70,438	11,720	8,008	118,454
% of Total	2.55%	21.33%	59.46%	9.89%	6.76%	

Source: Compiled from data provided by the Issaquena County Tax Assessor and the Weather/GIS Data Center at the Delta Research and Extension Center

Table 4. Estimated cropland in elevation categories, by capability class, in Sharkey County, 1998

Elevation	Class I	Class II	Class III	Class IV	Other	Total
	----------acres----------					
60-65	0	0	0	0	2	2
65-70	0	21	44	0	2	67
70-75	0	106	529	46	223	904
75-80	4	140	784	81	213	1,222
80-85	1	361	2,433	175	2,449	5,418
85-90	5	1,652	6,799	561	7,029	16,045
90-95	17	5,923	25,465	3,590	8,014	43,009
95-100	109	16,859	39,404	2,973	2,456	61,801
100-105	116	13,237	9,405	351	155	23,264
105-110	56	6,206	1,299	50	56	7,666
110-115	1	83	48	1	1	133
115-120	0	8	2	0	0	10
120-125	0	5	1	0	0	6
125-130	0	1	0	0	0	1
130-140	0	1	0	0	0	1
Total	309	44,601	86,212	7,828	20,601	159,550
% of Total	0.19%	27.95%	54.03%	4.91%	12.91%	

Source: Compiled from data provided by Delta Computers Systems and the Weather/GIS Data Center at the Delta Research and Extension Center

Table 5. Cropland in capability classes, by reclassification scheme, Issaquena County, 1998

Class	Baseline	Elevation Trigger Level 75 feet	80 feet	85 feet	90 feet	95 feet	100 feet
	acres						
				Drop 1 Class			
I	3,021	2,991	2,981	2,940	2,873	2,317	897
II	25,267	25,105	24,856	23,870	21,702	17,039	9,890
III	70,438	70,016	69,111	63,505	50,535	37,906	28,977
IV	11,720	11,916	13,035	19,384	33,476	48,836	62,453
Other	8,008	8,426	8,471	8,755	9,868	12,356	16,237
				Drop 2 Classes			
I	3,021	2,991	2,981	2,940	2,873	2,317	897
II	25,267	25,075	24,816	23,789	21,554	16,335	7,766
III	70,438	69,854	68,700	62,108	46,970	29,678	13,600
IV	11,720	11,494	11,708	12,451	13,573	16,304	20,992
Other	8,008	9,040	10,250	17,166	33,485	53,820	75,198
				Drop 3 Classes			
I	3,021	2,991	2,981	2,940	2,873	2,317	897
II	25,267	25,075	24,816	23,789	21,554	16,335	7,766
III	70,438	69,824	68,660	62,027	46,822	28,974	11,476
IV	11,720	11,332	11,297	11,054	10,008	8,076	5,615
Other	8,008	9,232	10,701	18,644	37,198	62,753	92,699
				Drop 4 Classes			
I	3,021	2,991	2,981	2,940	2,873	2,317	897
II	25,267	25,075	24,816	23,789	21,554	16,335	7,766
III	70,438	69,824	68,660	62,027	46,822	28,974	11,476
IV	11,720	11,302	11,257	10,973	9,860	7,372	3,491
Other	8,008	9,262	10,741	18,726	37,346	63,457	94,823

class “Other” increase with a drop of 2 classes. With a drop of 3 and 4 classes, cropland acres in classes I through IV decrease, and cropland acres in the class “Other” increase.

Cropland tax revenue in each class resulting from each reclassification scheme for Issaquena County, assuming a constant millage rate, is presented in Table 6. The total cropland tax revenue, the change in cropland tax revenue, and the percentage change in cropland tax revenue are also included in Table 6. The baseline in this table is the current cropland tax revenue estimated for each class. As with cropland acres, the amount of the change in cropland tax revenue is determined by classification and elevation trigger levels assigned to each reclassification scheme. The more classes the cropland is dropped and the higher the trigger levels included in the scheme, the larger the change in cropland tax revenue.

The total cropland tax revenue is the sum of all cropland tax revenue in each class. The total cropland tax revenue in each reclassification scheme was subtracted from the total cropland tax revenue in the baseline to determine the change in revenue. The change and percent change in revenue show the amount of the change in cropland tax revenue resulting from each scheme. From these figures the impact of each method was determined and compared. In each scheme in Table 6 these figures are negative, which means that each reclassification method decreases cropland tax revenue. Each scheme decreases the amount of total cropland tax revenue because less cropland acres are included in the higher productivity classes, such as I, II, and III, which generate more tax revenue per acre than lower productivity classes. By comparing these figures in Table 6, it was determined that the total cropland tax revenue in each scheme decreases as higher elevation levels are included in the schemes. It was also determined that the total cropland tax revenue decreases as the number of classes the cropland is dropped increases.

As the schemes move to the right and down the page in Table 6, cropland tax revenue decreases. Cropland tax revenue is decreased by more than 40 percent when schemes are used that include cropland with a trigger level less than or equal to 100 feet. The decrease in cropland tax revenue is much less when schemes are used that include lower trigger levels. The percent change in cropland tax revenue is less than one percent in schemes that include a trigger level of 75 feet. In each of these types of schemes, the

Table 6. Cropland tax revenue in capability classes, by reclassification scheme, Issaquena County, 1998

Class	Baseline	Elevation Trigger level 75 feet	80 feet	85 feet	90 feet	95 feet	100 feet
	----------$----------						
				Drop 1 Class			
I	37,695	37,316	37,196	36,681	35,844	28,906	11,196
II	286,048	284,218	281,393	270,236	245,693	192,900	111,963
III	316,731	314,833	310,764	285,554	227,234	170,449	130,299
IV	23,215	23,604	25,820	38,397	66,310	96,735	123,708
Other	14,473	15,228	15,310	15,823	17,835	22,332	29,345
Cropland Tax Rev.	678,162	675,200	670,483	646,691	592,915	511,321	406,510
Change in Revenue		-2,962	-7,679	-31,471	-85,247	-166,841	-271,652
% Change in Rev.		-0.44%	-1.13%	-4.64%	-12.57%	-24.60%	-40.06%
				Drop 2 Classes			
I	37,695	37,316	37,196	36,681	35,844	28,906	11,196
II	286,048	283,875	280,940	269,316	244,013	184,926	87,920
III	316,731	314,106	308,915	279,274	211,205	133,451	61,154
IV	23,215	22,768	23,191	24,663	26,885	32,295	41,582
Other	14,473	16,338	18,524	31,025	60,517	97,270	135,907
Cropland Tax Rev.	678,162	674,403	668,767	640,959	578,464	476,849	337,759
Change in Revenue		-3,759	-9,395	-37,203	-99,698	-201,313	-340,403
% Change in Rev.		-0.55%	-1.39%	-5.49%	-14.70%	-29.69%	-50.19%
				Drop 3 Classes			
I	37,695	37,316	37,196	36,681	35,844	28,906	11,196
II	286,048	283,875	280,940	269,316	244,013	184,926	87,920
III	316,731	313,970	308,735	278,908	210,538	130,284	51,605
IV	23,215	22,448	22,376	21,897	19,824	15,997	11,123
Other	14,473	16,685	19,340	33,696	67,228	113,413	167,536
Cropland Tax Rev.	678,162	674,294	668,588	640,498	577,447	473,527	329,379
Change in Revenue		-3,868	-9,574	-37,664	-100,715	-204,635	-348,783
% Change in Rev.		-0.57%	-1.41%	-5.55%	-14.85%	-30.17%	-51.43%
				Drop 4 Classes			
I	37,695	37,316	37,196	36,681	35,844	28,906	11,196
II	286,048	283,875	280,940	269,316	244,013	184,926	87,920
III	316,731	313,970	308,735	278,908	210,538	130,284	51,605
IV	23,215	22,387	22,297	21,736	19,530	14,602	6,916
Other	14,473	16,740	19,412	33,843	67,496	114,686	171,374
Cropland Tax Rev.	678,162	674,288	668,581	640,484	577,421	473,405	329,011
Change in Revenue		-3,874	-9,581	-37,678	-100,741	-204,757	-349,151
% Change in Rev.		-0.57%	-1.41%	-5.56%	-14.86%	-30.19%	-51.48%

decrease in cropland tax revenue is less than $4,000. Moderate reductions in tax revenues occur for reclassifications of land at the 85-foot trigger level.

The decrease in cropland tax revenue is affected to a lesser degree by the classification assigned to the scheme. For example, reclassifying cropland with a trigger level of 90 feet by 1 class decreases cropland tax revenue 12.57 percent, while reclassifying cropland with the same elevation by 4 classes decreases cropland tax revenue 14.86 percent. Marginal impacts on tax changes from dropping 2, 3, or 4 classes are relatively minor. The trigger level appears to have the most impact on tax revenue changes.

Cropland acres in each class resulting from each reclassification scheme for Sharkey County are presented in Table 7. Because the baseline (current situation) for Sharkey County is somewhat different from that of Issaquena County, cropland acres in each scheme also differ. The impact of each reclassification scheme can also be determined by comparing the amount of cropland in each scheme to the baseline.

When cropland is dropped 1 and 2 classes, cropland acres in classes I through III decrease, and the cropland acres in classes IV and "Other" increase. When cropland is dropped 3 and 4 classes, cropland acres in classes I through IV decrease, and cropland acres in class "Other" increase.

Impacts on cropland tax revenue (assuming a constant millage rate) in each class resulting from each reclassification scheme for Sharkey County are shown in Table 8. Cropland tax revenue also decreases by larger magnitudes as the schemes move to the right and down the page. Relatively large decreases in cropland tax revenue occur in schemes that include high elevation trigger levels. These types of schemes include more cropland acres than schemes with lower elevation levels; therefore, more cropland is reclassified to lower productivity classes resulting in less tax revenue. For example, schemes that include cropland with a trigger level of 100 feet decrease cropland tax revenue from 38 to 47 percent, depending on the number of classes dropped. The lower the elevation level included in the scheme, the less cropland tax revenue is decreased. Schemes that include cropland with a trigger level of 80 feet decrease cropland tax revenue by less than one percent.

Table 7. Cropland in capability classes, by reclassification scheme, Sharkey County, 1998

Class	Baseline	Elevation Trigger Level 75 feet	80 feet	85 feet	90 feet	95 feet	100 feet
	acres						
				Drop 1 Class			
I	309	308	304	304	299	282	173
II	44,601	44,474	44,338	43,978	42,331	36,425	19,676
III	86,212	85,766	85,122	83,049	77,902	58,360	35,816
IV	7,828	8,354	9,057	11,315	17,553	39,428	75,859
Other	20,601	20,647	20,728	20,903	21,464	25,054	28,027
				Drop 2 Classes			
I	309	308	304	304	299	282	173
II	44,601	44,474	44,334	43,973	42,322	36,399	19,540
III	86,212	85,639	84,859	82,427	75,632	50,185	10,891
IV	7,828	7,908	7,967	8,152	9,244	11,576	25,462
Other	20,601	21,220	22,085	24,693	32,053	61,108	103,484
				Drop 3 Classes			
I	309	308	304	304	299	282	173
II	44,601	44,474	44,334	43,973	42,322	36,399	19,540
III	86,212	85,639	84,855	82,422	75,623	50,158	10,755
IV	7,828	7,781	7,704	7,530	6,974	3,401	537
Other	20,601	21,347	22,352	25,321	34,332	69,309	128,544
				Drop 4 Classes			
I	309	308	304	304	299	282	173
II	44,601	44,474	44,334	43,973	42,322	36,399	19,540
III	86,212	85,639	84,855	82,422	75,623	50,158	10,755
IV	7,828	7,781	7,700	7,525	6,964	3,374	402
Other	20,601	21,347	22,356	25,325	34,341	69,336	128,680

Table 8. Cropland tax revenue in capability classes, by reclassification scheme, Sharkey County, 1998

Class	Baseline	Elevation Trigger Level 75 feet	80 feet	85 feet	90 feet	95 feet	100 feet
	----------$----------						
				Drop 1 Class			
I	3,846	3,846	3,796	3,789	3,732	3,519	2,154
II	504,506	503,073	501,536	497,463	478,828	412,028	222,565
III	387,339	385,334	382,439	373,129	350,005	262,204	160,914
IV	15,492	16,534	17,926	22,395	34,741	78,035	150,138
Other	37,201	37,285	37,431	37,747	38,760	45,242	50,611
Cropland Tax Rev.	948,385	946,072	943,123	934,523	906,066	801,029	586,382
Change in Revenue		-2,313	-5,262	-13,862	-42,319	-147,356	-362,003
% Change in Rev.		-0.24%	-0.55%	-1.46%	-4.46%	-15.54%	-38.17%
				Drop 2 Classes			
I	3,846	3,846	3,796	3,789	3,732	3,519	2,154
II	504,506	503,073	501,490	497,411	478,725	411,731	221,030
III	387,339	384,765	381,259	370,331	339,805	225,473	48,930
IV	15,492	15,651	15,768	16,135	18,295	22,911	50,394
Other	37,201	38,320	39,882	44,591	57,881	110,349	186,872
Cropland Tax Rev.	948,385	945,654	942,195	932,258	898,438	773,983	509,381
Change in Revenue		-2,731	-6,190	-16,127	-49,947	-174,402	-439,004
% Change in Rev.		-0.29%	-0.65%	-1.70%	-5.27%	-18.39%	-46.29%
				Drop 3 Classes			
I	3,846	3,846	3,796	3,789	3,732	3,519	2,154
II	504,506	503,073	501,490	497,411	478,725	411,731	221,030
III	387,339	384,764	381,241	370,311	339,764	225,355	48,320
IV	15,492	15,400	15,248	14,903	13,802	6,731	1,064
Other	37,201	38,549	40,364	45,724	61,997	125,160	232,127
Cropland Tax Rev.	948,385	945,632	942,139	932,137	898,020	772,495	504,695
Change in Revenue		-2,753	-6,246	-16,248	-50,365	-175,890	-443,690
% Change in Rev.		-0.29%	-0.66%	-1.71%	-5.31%	-18.55%	-46.78%
				Drop 4 Classes			
I	3,846	3,846	3,796	3,789	3,732	3,519	2,154
II	504,506	503,073	501,490	497,411	478,725	411,731	221,030
III	387,339	384,764	381,241	370,311	339,764	225,355	48,320
IV	15,492	15,400	15,240	14,894	13,784	6,679	795
Other	37,201	38,549	40,371	45,732	62,014	125,207	232,372
Cropland Tax Rev.	948,385	945,632	942,138	932,137	898,019	772,491	504,672
Change in Revenue		-2,753	-6,247	-16,248	-50,366	-175,894	-443,713
% Change in Rev.		-0.29%	-0.66%	-1.71%	-5.31%	-18.55%	-46.79%

The number of classes to drop affects cropland tax revenue less than the assigned elevation levels. For example, in the schemes that include cropland with an elevation of 90 feet or less, the difference between dropping cropland 1 and 4 classes is 0.85 percent, and the difference between dropping cropland 2 and 4 classes is 0.04 percent.

As mentioned earlier, the distributions of cropland by elevation and class in Issaquena and Sharkey Counties are different; therefore, cropland tax revenue changes are different. By comparing Tables 6 and 8, the impact of each scheme on cropland tax revenue in both counties was determined. From this comparison, it was determined that the percentage decrease in cropland tax revenue is greater in each reclassification scheme in Issaquena County than in Sharkey County. For example, a scheme that drops cropland 2 classes if the elevation is less than or equal to 90 feet decreases cropland tax revenue in Sharkey County by 5.27 percent. However, the same scheme in Issaquena County decreases cropland tax revenue by 14.70 percent.

Tax Impacts With Millage Rate Adjustments

The schemes developed in this study can possibly be used to determine an acceptable reclassification scheme for each county by evaluating the impact of each scheme on tax revenues. The reduction in cropland tax revenue is important when arriving at an acceptable scheme for each county. Schemes that reduce cropland tax revenue by 20 percent or more would most likely be infeasible. These types of schemes would cause the county's tax base to decrease by more than $100,000. If the county desired to offset these tax losses by increasing taxes on owners of all other properties, the county would have to raise the millage rate. The increase in the millage rate would also increase the taxes owed by the owners of reclassified cropland. Thus, the cropland tax changes discussed in the previous section would not be as great after the required adjustment in the millage rate. Evaluation of reclassification schemes after a millage rate adjustment would provide a more accurate estimate of tax revenue changes to the various property owners in the county.

The initial change in taxes and final tax shift resulting from selected reclassification schemes, the millage rate required to maintain the county's tax base at status quo, and the increase in the millage rate resulting from each scheme are presented

in Tables 9 and 10. The decreases in cropland tax revenue without changing the millage rate are taken from Tables 6 and 8. The final tax shift was computed after adjusting the millage rate in order to keep the tax base constant. The millage rate must be increased more as higher trigger levels are included. However, there is not much difference in dropping 1 class or 4 classes. The millage rate increases more in each scheme in Issaquena County because more cropland is shifted, causing a larger decrease in the county's tax revenue.

The impact of each scheme varied between the two counties included in the study because the amount of cropland acres in each class in the baseline is different in both counties. The amount of cropland acres in each class determines the amount of the impact. The more highly productive cropland included in the baseline, the more cropland tax revenue is impacted in each scheme. The reclassification schemes for Issaquena County result in a larger decrease in cropland tax revenue because the baseline in Issaquena County includes more class I cropland acres than the baseline in Sharkey County.

Since the adjusted millage rate is higher than the original millage rate, owners of properties that were not reclassified will be faced with a higher tax bill. Owners of reclassified cropland will receive a lower assessed value but will also be confronted with a higher millage rate. It is unclear whether a specific landowner would have an increased tax bill on reclassified cropland. If the cropland owner also had other properties in the county, the increased tax bill from non-cropland may outweigh any reduced tax bills on cropland.

Temporary Reclassification

The previous estimates have presumed that flood-prone cropland would be permanently reclassified. However, a temporary reclassification system could be used to adjust tax rates only in years in which floodwaters adversely affect crop production. The administration of this type of reclassification system could follow the procedures used in Arkansas (see Appendix B). Cropland placed in this type of classification could be reclassified on an annual basis, depending on the severity of flood damages each year.

Table 9. Taxes resulting from different reclassification schemes in Issaquena County, 1998

Reclassification Scheme	Cropland Tax Revenue Decrease†	Final Tax Shift	Required Millage Rate	Increase in Millage Rate
	$	$	Mill	Mill
Drop 1 class below 85 feet	31,471	18,938	98.26	1.87
Drop 4 classes below 85 feet	37,678	22,760	98.64	2.25
Drop 1 class below 90 feet	85,247	53,055	101.62	5.23
Drop 4 classes below 90 feet	100,741	63,323	102.64	6.25
Drop 1 class below 95 feet	166,841	109,529	107.19	10.80
Drop 4 classes below 95 feet	204,757	137,934	110.00	13.61

† Cropland tax revenue decrease for reclassified property owners, from Table 6

Table 10. Taxes resulting from different reclassification schemes in Sharkey County, 1998

Reclassification Scheme	Cropland Tax Revenue Decrease†	Final Tax Shift	Required Millage Rate	Increase in Millage Rate
	$	$	Mill	Mill
Drop 1 class below 85 feet	13,862	8,280	96.89	0.58
Drop 4 classes below 85 feet	16,248	9,716	96.98	0.67
Drop 1 class below 90 feet	42,319	25,593	98.09	1.78
Drop 4 classes below 90 feet	50,366	30,567	98.43	2.12
Drop 1 class below 95 feet	147,356	93,394	102.80	6.49
Drop 4 classes below 95 feet	175,894	112,955	104.16	7.85

† Cropland tax revenue decrease for reclassified property owners, from Table 8

Cropland owners would have to provide proof to their tax assessor that flooding during the growing season damaged their crops. The amount of damage would determine the number of classes to drop. The assessor would decide whether or not to place a field into a lower classification category for that particular year. Cropland owners would have to reapply each year their cropland becomes flooded in order to receive a tax reduction for that particular year.

Administrative Burdens

The administrative process associated with implementing a reclassification scheme will cause an increase in work for county tax assessors. Reclassifying flood-prone land either temporarily or permanently will increase the duties of the tax assessors within these counties. The temporary reclassification will require extensive administrative procedures because decisions about individual parcels would have to be made each year. Determining the extent to which a parcel has been damaged and reclassifying that parcel will be two major additional duties the tax assessors will be required to perform. Farmers within the area will also have to provide the assessor with detailed records about crop yields and flooding on their cropland in order to receive the tax reduction.

The administrative process is important in implementing a successful reclassification scheme. The North Dakota Farm Bureau stated that the implementation of a new classification system for inundated land had created a number of problems for certain counties and the State Tax Department. The bureau also mentioned that representatives from within the counties claimed that there was very little time to research and set up policy guidelines on how to implement the program. One specific problem arose when a landowner applied for tax relief for small tracts of land. In implementing a reclassification scheme for the South Delta area, time should be given to conduct research and set up guidelines. A minimum size tract of cropland that is eligible for tax relief should also be set.

Conclusions

Damages to crop production from floods in the South Delta are highly variable from one year to another. Current tax rate procedures do not account for below-average net returns to individual tracts of land because a mass appraisal approach is used. The mass appraisal approach computes the average net return from all tracts of land that have been assigned the same productivity. In Mississippi, the productivity class assignments are unrelated to actual or potential flood events. Landowners of flood-prone cropland that generates below-average net returns on a consistent basis must pay the same tax rates as other landowners who are receiving above-average net returns. It could be argued that providing tax relief for flood-prone cropland owners is more equitable than the current system. If tax relief for these property owners is desired, modifications to the current system need to be proposed and evaluated.

One possibility is to lower the productivity classification assigned to individual tracts of flood-prone cropland. Two factors that must be determined are (1) the capability class that best represents the actual productivity of flood-prone cropland and (2) the geographic area that will be used to identify flood-prone parcels. Once these factors are determined, the impact on the county's tax revenues must be estimated. If a county desired to keep its tax revenues constant after reclassifying flood-prone cropland, it would have to increase its millage rate. Owners of other properties would have to pay more taxes to offset the tax reductions on reclassified flood-prone cropland.

Based on the reclassification schemes analyzed for Issaquena and Sharkey Counties, it appears that the more land that is reclassified (by setting a higher elevation trigger level), the greater the required adjustment in millage rates. The number of classes to drop does not appear to play a major role in the adjusted millage rate. Thus, a trigger level that is acceptable to a majority of property owners must be established first. Results were presented for trigger levels of 85, 90, and 95 feet. The 90-foot trigger level would also coincide with the definition of high-risk crop production used in the crop insurance industry. About 15 percent of the cropland in Sharkey County and about 30 percent of the cropland in Issaquena County are included in this elevation level. If the new system permanently reclassifies cropland under 90 feet, property owners would need to determine an acceptable number of classes to drop. Results show that there is not much

difference in the required millage rate adjustments when dropping 1 class or 4 classes. Thus, the final choice might depend on how much of an economic disadvantage flood-prone cropland has relative to other cropland.

There are advantages and disadvantages for both temporary and permanent reclassification schemes. The use of a temporary reclassification scheme might provide a more accurate representation of the adverse effects of floodwaters. This type of reclassification would benefit cropland owners in years in which crop production was damaged by lowering taxes on damaged parcels of land. One disadvantage associated with the use of temporary reclassification is the administrative process involved. Parcels would have to be evaluated each year, possibly adding a significant burden to the tax assessor.

A permanent scheme would reclassify all cropland below a specified elevation level, regardless of actual flood damages in any given year. Some cropland owners would receive a tax reduction every year even though their flood damage is not constant from one year to the next. However, there are fewer administrative burdens associated with permanent reclassification because a parcel has to be reclassified only once. One disadvantage associated with permanent reclassification is that a mild flood would damage fewer acres than are receiving a tax benefit, while a severe flood would damage more acres than have been reclassified. Thus, some cropland above the trigger level could be flooded in a given year, and those owners would not be able to receive any tax relief.

Limitations and Suggestions for Future Research

This study focused on the impacts on property taxes of permanently reclassifying flood-prone cropland in the South Delta area of Mississippi. Estimates of changes in Sharkey and Issaquena Counties were made. Impacts in other counties in the South Delta were not formulated, but it is expected that there would be far less need to reclassify cropland in the other counties because the flood frequency is much lower in the higher elevations found in the rest of the region. The impacts on property taxes of reclassifying flood-prone cropland throughout the rest of Mississippi were not considered in this study.

Future research is needed in order to determine the extent of potential problems related to flood-prone cropland in other sections of Mississippi.

Further research should also be conducted to determine how much crop damage floods cause and how to quantify economic damages to crop production over a long time period. A method to identify the capability class that reflects the amount of average flood damage needs to be developed. This is needed for either temporary or permanent reclassification.

It is also important to note that specific administrative and implementation efforts required by any new reclassification scheme were not addressed in this study. Without more precise knowledge of potential administrative burdens, decision makers should be cautious when implementing a particular reclassification scheme.

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Appendix A

Section 27-35-50 of the Mississippi Code of 1972, As Amended

Determination of True Value for Purposes of Assessment

(1) True value shall mean and include, but shall not be limited to, market value, cash value, actual cash value, proper value and value for the purposes of appraisal for ad valorem taxation.

(2) With respect to each and every parcel of property subject to assessment, the tax assessor shall, in ascertaining true value, consider whenever possible the income capitalization approach to value, the cost approach to value and the market data approach to value, as such approaches are determined by the State Tax Commission. For differing types of categories of property, differing approaches may be appropriate. The choice of the particular valuation approach or approaches to be used should be made by the assessor upon a consideration of the category or nature of the property, the approaches to value for which the highest quality data is available, and the current use of the property.

(3) Except as otherwise provided in subsection (4) of this section, in determining the true value of land and improvements thereon, factors to be taken into consideration are the proximity to navigation; to a highway; to a railroad; to a city, town, village or road; and any other circumstances that tend to affect its value, and not what it might bring at a forced sale but what the owner would be willing to accept and would expect to receive for it if he were disposed to sell it to another able and willing to buy.

(4) In arriving at the true value of all Class I and Class II property and improvements, the appraisal shall be made according to current use, regardless of location.

In arriving at the true value of any land used for agricultural purposes, the appraisal shall be made according to its current use, regardless of its location; in making the appraisal, the assessor shall use soil types, productivity and other criteria set forth in the land appraisal manuals of the State Tax Commission, which criteria shall include, but not be limited to, an income capitalization approach with a capitalization rate of not less than ten percent (10%) and a moving average of not more than ten (10) years. However, for the year 1990, the moving average shall not be more than five (5) years; for the year 1991, not more than six (6) years; for the year 1992, not more than seven (7) years; for the year 1993, not more than eight (8) years; and for the year 1994, not more than nine (9) years; and for the year 1990, the variation up or down from the previous year shall not exceed twenty percent (20%) and thereafter, the variation, up or down, from a previous year shall not exceed ten percent (10%). The land shall be deemed to be used for agricultural purposes when it is devoted to the commercial production of crops and other commercial products of the soil, including but not limited to the production of fruits and timber or the raising of livestock and poultry; provided, however, enrollment in the federal Conservation Reserve Program or in any other United States Department of Agriculture conservation program shall not preclude land being deemed to be used for agricultural

purposes solely on the ground that the land is not being devoted to the production of commercial products of the soil, and income derived from participation in the federal program may be used in combination with other relevant criteria to determine the true value of such land.

In determining the true value based upon current use, no consideration shall be taken of the prospective value such property might have if it were put to some other possible use.

(5) The true value of each class of property shall be determined annually.

(6) The State Tax Commission shall have the power to adopt, amend or repeal such rules or regulations in a manner consistent with the Constitution of the State of Mississippi to implement the duties assigned to the commission in this section.

SOURCES: Laws, 1980, ch. 505, Sec. 9; 1986, ch. 447; 1987, ch. 507, Sec. 3; 1990, ch. 560, Sec. 1, eff from and after passage (approved April 4, 1990).

Appendix B

Flood-prone Cropland Classification Methods in Louisiana and Arkansas

Louisiana has developed a procedure to appraise flood-prone cropland differently from other cropland (Louisiana Tax Code). Its system classifies agricultural and horticultural lands into class I, II, III, and IV lands. The average assessed values per acre for each class are as follows: class I $36.91, class II $27.21, class III $23.44, class IV $14.82. The exception is that all lands subject to regular and periodic flooding may be classified as class IV. In order for cropland owners in Louisiana to receive this classification, they must prove to the county assessor that regular and periodic flooding occurs on their cropland. From this information, the assessor determines whether or not to classify the cropland as class IV.

Arkansas appraises flood-prone cropland differently by accounting for flooding in the valuation of cropland. Initially, the valuation of cropland in Arkansas is based on the productivity of the soil. The cropland is placed into land capability classes based on the typical or most probable use of the soils. The Assessment Coordination Division of the Arkansas Public Service Commission devises and develops methods of assessing and levying the use value taxes on cropland. The Assessment Coordination Division also develops and publishes tables and other data for assessors to use in the assessment of cropland (Assessment Coordination Department).

Cropland that has been proven to flood often during the crop season is permanently placed into the lowest classification category. Before cropland can be placed into this category, the cropland owner must provide historical proof to the assessor that flooding prevents the production of crops during the growing season on a regular basis. The assessor then determines whether to place the cropland into the lowest classification category permanently. Cropland that is prone to less frequent flooding is temporarily valued at the lowest capability class. This type of cropland can move in and out of the lowest capability category depending on whether it becomes flooded in a particular crop year or not. Cropland owners must provide proof to the assessor that flooding in a particular growing season prevented the production of crops. The assessor then determines whether or not to place the cropland into the lowest classification category for that particular year.

Cropland that is permanently placed into the lowest capability category is given a use value rate of $100 per acre each year. Cropland that is placed into the lowest capability category temporarily is given a use value rate of $100 per acre for one year. The cropland owner must reapply each year the cropland becomes flooded in order to receive this classification. The use value rate of $100 per acre is the lowest cropland use value rate in Arkansas.