

ADMINISTRATIVE COORDINATION IN THE IMPLEMENTATION  
OF AGRICULTURAL NONPOINT POLLUTION CONTROLS

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Final Report  
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August 1982

Research Report No. 171

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Abstract

Control strategies for nonpoint source agricultural pollutants rely heavily on federal and state soil conservation agencies. Difficulties in accomplishing pollution control goals result from long standing administrative problems within conservation agencies and from the imposition of new goals that are unfamiliar, sometimes unpopular, difficult to detect, and mandated to soil conservation administrators.

Difficulty in detection has caused most states to shy away from major nonpoint control programs. Soil loss has become a major proxy indicator for pollution problems. As a result, soil conservation districts bear the burden of abatement responsibilities. Decreases in federal funding and lack of additional state and local support in many areas raise doubts about district capabilities to carry out these responsibilities.

Few states have gone beyond identification and planning activities for abating agricultural nonpoint pollutants. An idealized strategy can be envisioned. A multi-purpose resource management agency would exercise broad authority over land and water problems. State and federal funds would be allocated according to indicators of the severity of local problems. The management agency could require pollution control actions by landowners, with suitable compensation.

Keywords: Agriculture, Water Quality, Soil Conservation, Program  
Administration

## TABLE OF CONTENTS

Acknowledgements	ii
I. Introduction	1
II. Nonpoint Source Pollution and Agriculture's Role	2
III. Soil Conservation Programs of the U.S. Department of Agriculture	3
IV. Areawide Planning for Nonpoint Pollution Control	12
V. Implementation of Water Quality Plans	19
VI. Economic and Legal Analysis of Administering Agricultural Pollution Control	25
VII. Summary and Conclusions	44
Footnotes	48
Appendix: Publications Associated with Project No. 00-65-03-300-85 of the Illinois Water Resources Center	72

## ACKNOWLEDGEMENTS

This is the Final Report under Project No. 00-65-03-300-85, Analysis of Problems Coordinating Institutions for Conserving and Allocating Rural Water and Land Resources, of the Illinois Water Resources Center, University of Illinois at Urbana-Champaign. The authors acknowledge the research assistance of Keith Parr, Patricia Pokorski, and David Reidenbach. The support of the Illinois Water Resources Center and its Director, Dr. Glenn Stout, is appreciated. Richard Clarke of the Illinois Environmental Protection Agency, James E. Lake of the National Association of Conservation Districts, Michael MacMullen of Region V, U.S. Environmental Protection Agency, Robert Walker of the Cooperative Extension Service at the University of Illinois and Gary Wood of the Illinois Department of Agriculture generously responded to our questions and directed us to relevant information. Findings here do not necessarily represent the views of any of these individuals, their organizations, or the Illinois Water Resources Center. A portion (pp. 25-30) of Chapter VI is taken from an American Journal of Agricultural Economics article noted on page 72. The authors appreciate AJAE's permission to reprint slightly modified portions of this article.

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I. Introduction

The Federal Water Pollution Control Act Amendments of 1972<sup>1</sup> set off a vigorous, comprehensive effort to restore and maintain the quality of the nation's waters. In so doing, this legislation created a jumble of new administrative arrangements. This paper reviews and evaluates these administrative arrangements insofar as they relate to nonpoint source pollution control. Part II of this paper defines nonpoint source pollution and describes the important role of agriculture in the nonpoint pollution problem. Part II also describes the pivotal role played by the United States Department of Agriculture (USDA) in controlling agricultural nonpoint pollution. Part III examines the administrative arrangements used in two important soil conservation programs of the USDA, the Conservation Operations Program (COP) and the Agricultural Conservation Program (ACP). Part IV examines the administrative arrangements mandated by the 1972 amendments. Congress provided for nonpoint source pollution control primarily in Section 208<sup>2</sup> of these amendments. Accordingly, Part IV of the paper focuses on the planning process and federal actions stemming from that section. Part V examines the agricultural nonpoint pollution control portions of state water quality management plans, highlighting Illinois'. Section 208 essentially allows the states to design their own administrative arrangements for nonpoint pollution control. State water quality management plans provide the legal framework for these administrative arrangements. Part VI analyzes legal and economic issues presented by implementation of the administrative arrangements used in USDA soil conservation programs and water quality management plans. Part VII draws conclusions.

## II. Nonpoint Source Pollution and Agriculture's Role

Nonpoint source pollution is pollution from dispersed sources, as opposed to pollution from point sources such as pipelines or smokestacks. Agriculture is a heavy contributor to nonpoint pollution. Modern farming practices rely heavily upon synthetic fertilizers and pesticides, row crops, large machinery, fence-row to fence-row cultivation and highly concentrated animal agriculture. These practices can add greatly to sediments, nutrients, organic materials and toxic chemicals in water bodies. Accordingly, nonpoint pollution control efforts in most areas have placed high priority on agricultural sources.

Nonpoint pollution sources are difficult to monitor. The physical and biological processes that connect land activities to water quality are complex and poorly understood. This poor understanding makes it difficult to establish cause and effect relationships that are essential to enforcement. The connection between point sources of pollution and water quality is easier to establish, for instance, where dead fish accumulate at the mouth of an industrial waste pipe.

The difficulties of monitoring and tracing nonpoint pollutants forced environmental protection authorities to seek control measures which would be cheaper to monitor and enforce than the regulatory approaches used for most point sources. The most widely adopted approach has been to encourage voluntary abatement by farmers. The USDA, through its soil conservation programs, has a long history of cooperating with landowners to conserve and protect natural resources. In almost every county, USDA personnel carry on soil and water conservation and development programs. It was natural, then, that the U.S. Environmental Protection Agency came to rely on the USDA to control nonpoint pollution.

### III. Soil Conservation Program of the U.S. Department of Agriculture

For many years, various divisions of the U.S. Department of Agriculture have conducted programs for soil erosion control and watershed management.<sup>3</sup> The two most important divisions are the Soil Conservation Service (SCS) and the Agricultural Stabilization and Conservation Service (ASCS). Concerted efforts to conserve agricultural soils began in the 1930's with the Soil Erosion Act of 1935<sup>4</sup> and the Soil Conservation and Domestic Allotment Act of 1936.<sup>5</sup> The Soil Erosion Act provides mainly for technical conservation assistance to land occupiers while the Soil Conservation Act primarily provides for financial assistance to land occupiers for costly conservation practices.

#### A. The Soil Erosion Act

The Soil Erosion Act authorizes the Secretary of Agriculture to undertake a wide range of measures to prevent soil erosion, including engineering operations, new methods of cultivation, revegetation and changes in land use, as well as to enter into agreements with or furnish aid to any agency or person to further the purposes of the Act.<sup>6</sup> The Secretary of Agriculture formed the Conservation Operation Program (COP) to implement the Act. The Secretary can buy or condemn lands to implement the Act.<sup>7</sup> Assistance provided by the Act may be conditioned on the enactment of state and local laws that impose suitable permanent restrictions on land use and otherwise provide for erosion prevention.<sup>8</sup> In addition, reasonable safeguards for the enforcement of such laws may be required. Further, agreements with individuals regarding land use and contributions of money services and materials may be required for extension of benefits under the Soil Erosion Act. Congress formed the Soil Conservation Service (SCS) to administer the Act.<sup>10</sup>

## 1. Soil Conservation Districts

In the early years of the SCS it was determined that "successful operation of the COP would require some kind of local organization...."<sup>11</sup> to study local needs, develop plans for SCS local activities and provide support for local, state and national conservation programs.<sup>12</sup> In 1936, the USDA released a Model Standard State Soil Conservation Districts Law.<sup>13</sup> The model law provided support for special, governmental units so-called "soil conservation districts." The districts were designed to carry on projects for soil erosion control and to administer land use regulations relating to soil conservation.<sup>14</sup> By 1947, all states and the territories of Alaska and Hawaii had authorized the formation of soil conservation districts.<sup>15</sup>

Most state laws diverge from the model law in two especially noteworthy ways.<sup>16</sup> First, they define districts to coincide with counties, instead of watersheds, as recommended by the SCS.<sup>17</sup> Second, power to regulate land use either has not been granted to districts or has been subject to onerous procedural requirements.<sup>18</sup> Where districts possess regulatory power it has been seldom used.<sup>19</sup>

In many states, districts cannot tax or incur indebtedness to raise funds.<sup>20</sup> Most districts have relied on appropriations from county and state governments, fees for use of district equipment, service fees for consulting on private conservation plans, and contributions.<sup>21</sup> Districts use the funds to reimburse district supervisors for expenses incurred in discharging their duties, to employ executives, clerks and aids, to support education and communications activities, and occasionally to purchase supplies and equipment.<sup>22</sup>

Procedures for selecting district supervisors<sup>23</sup> vary by state. In general, however, supervisors have direct links to agriculture.<sup>24</sup> Close



ties to agriculture also characterize most members of state committees.<sup>25</sup> District elections often are not conducted jointly with state or national elections.<sup>26</sup>

## 2. Relations Between SCS, State Conservation Committees, and Soil Conservation Districts

Districts are so intimately connected with the Soil Conservation Service that their activities tend to be indistinguishable, except in a very formal way. This fact minimizes their effectiveness as multiple-purpose units capable of coordinating the work of all relevant agencies.<sup>27</sup>

To receive technical assistance from the SCS, a conservation district must enter into a memorandum of understanding with the U.S. Secretary of Agriculture.<sup>28</sup> This memorandum contains a description of the district's soil erosion problems, the district's objectives in responding to those problems, and procedures for achieving the objective.<sup>29</sup> The district must supplement this memorandum with annual district work plans.<sup>30</sup>

The SCS provides technical assistance through the district to local land occupiers. This assistance includes classifying soils, developing farm conservation plans and executing these plans.

In general, districts are "independent units of local government which should function with aid, but no 'dictation', from their state committees."<sup>31</sup> Most state committees help inform and train district supervisors, and assist with district administrative procedures and relations with non-USDA federal and state agencies.

The effectiveness of administrative arrangements within the Conservation Operations Program is limited in several ways. First, districts have been forced to rely on external sources of funds that, in many states, have been meager. Chronically short of money and expertise, some SCDs have been ineffective in establishing local conservation sentiments or priorities.<sup>32</sup> In many cases, SCS officials have been forced to take on the leadership and administrative roles expected of district boards.<sup>33</sup> Second, with some exceptions, regulatory or innovative programs to raise conservation incentives have been eschewed. Financial constraints, statutory limits, and onerous procedural requirements have prevented most districts from vigorously overseeing technical assistance efforts or initiating other conservation measures. Third, most states have treated soil conservation programs as federal initiatives and have been slow to give added impetus to conservation efforts. This state posture has left many districts vulnerable to federal political tides and SCS shortcomings.<sup>34</sup> Fortunately, some states now appear to be getting involved more vigorously with conservation programs.

#### B. The Soil Conservation and Domestic Allotment Act

In 1936, Congress enacted the Soil Conservation and Domestic Allotment Act. The Act primarily provides money to farmers for growing crops which promote conservation.<sup>36</sup> The Secretary of Agriculture formed the Agricultural Conservation Program (ACP) to implement the Act. The Act's originally stated purposes include:

"(1) preservation and improvement of soil fertility; (2) promotion of economic use and conservation of land; (3) diminution of exploitation and wasteful and unscientific use of national soil resources; (4) the protection of rivers and harbors against the results of soil erosion in aid of maintaining...navigability...and in aid of flood control; and (5) reestablishment of parity between per capita incomes on farms and elsewhere in the economy as existed between 1909 and 1914.<sup>37</sup>

In 1972, Congress added "prevention and abatement of agricultural-related pollution" as a sixth purpose.<sup>38</sup> These purposes are to be achieved without discouraging adequate and stable production of food and fibers for domestic human consumption and with due regard to maintaining fair prices.<sup>39</sup>

The ACP is implemented through payments to farmers. ACP funds will pay up to 90 percent of the costs of conservation measures.<sup>40</sup> Most costs are shared in the 50 to 75 percent range.

#### 1. ACP Administration

The Agricultural Stabilization and Conservation Service (ASCS) of the USDA administers the ACP.<sup>41</sup> The ASCS has offices in all states and most counties. Agricultural stabilization and conservation committees and program development groups direct the program at the state and local levels.<sup>42</sup> The county ASC committee consults with the county program development group, and develops annually a county conservation program to guide the county ASCS office in expending funds.<sup>43</sup> The program lists practices that will be eligible for cost-sharing and sets priorities for expending funds in a given year. The county programs must be in accord with policies and guidelines set by the state program development group and must be approved by the state ASC committee and the Secretary of Agriculture.<sup>44</sup> State programs are established after considering recommendations by county

ASC committees.<sup>45</sup> A national program development group recommends changes concerning administrative procedures and policy guidelines to national ASCS officials and evaluating program effectiveness.<sup>46</sup>

## 2. Links to Other Conservation Agencies

The ASCS has several formal links to the Soil Conservation Service and to soil conservation districts.<sup>47</sup> SCS personnel are members of the program development groups and help to set policy and administrative guidelines for the ACP.<sup>48</sup> Applicants for ACP long-term agreements are required to base those agreements on conservation plans that have been approved by the SCS.<sup>49</sup> ACP participants need not be cooperators in a soil conservation district to receive SCS assistance.<sup>50</sup> State and local ASC committees are authorized to transfer up to five percent of their annual program funds to reimburse SCS offices for technical assistance on ACP practices.<sup>51</sup>

## C. Accomplishments of the Conservation Operations and Agricultural Conservation Programs

### 1. Control of Soil Erosion and Water Pollution

The U.S. Department of Agriculture has amassed some seemingly impressive statistics in its battle against soil and water degradation.<sup>52</sup> For example, through September 1980, the Soil Conservation Service had provided conservation plans covering 601,993,000 acres of land.<sup>53</sup>

In fiscal 1980, almost 46 million acres of land were "adequately protected by conservation practices" with assistance of the SCS.<sup>54</sup> Unfortunately, these figures provide little insight into issues central to evaluating the Department's erosion control programs.<sup>55</sup> According to USDA

figures as of 1977, erosion exceeded long-term tolerance levels on 23 percent of U.S. cropland, 11 percent of pastureland and native pasture, 12 percent of rangeland, and four percent of forest land.<sup>56</sup> "Excess sheet and rill erosion tends to be concentrated on lands eroding at rates in excess of 14 tons per acre annually. Over 82 percent of the excess sheet and rill erosion is concentrated on the four percent of agricultural land eroding at this level."<sup>57</sup> Further, a 1977 random survey of cropland by the General Accounting Office revealed that about 84 percent of the farms investigated were losing soil at rates that would reduce the productivity of the land involved if allowed to persist.<sup>58</sup> The GAO investigators also found that "soil losses of cooperators in the Conservation Operations Program were not consistently better than those of noncooperators in the same areas."<sup>59</sup> Only 45 percent of the conservation district cooperators interviewed by the GAO were actually implementing the plans prepared for them by the SCS.<sup>60</sup>

In a recent special study<sup>61</sup> the ASCS evaluated the effectiveness of ACP cost-sharing in reducing soil erosion.<sup>62</sup> The erosion control practices included in the study sample cost \$20.3 million in 1978 dollars.<sup>63</sup> The study concluded that the practices reduced sheet and rill erosion by 4.1 million tons annually.<sup>64</sup> However, 52 percent of the erosion control practices were undertaken on lands which were not threatened by long-term losses in productivity.<sup>65</sup> Twenty-seven percent of the practices were applied to land which was threatened by moderate losses in productivity, and 21 percent were applied to severely eroding land.<sup>66</sup> Hence, the four percent of all farmland which is responsible for over 80 percent of all excess erosion from agricultural land in the U.S.<sup>67</sup> was the target of only 21 percent of the erosion control practices for which costs were shared in the years of the study.<sup>68</sup>

The ASCS study also evaluated nine management practices that were eligible for cost-sharing during the study period and that can be demonstrated to significantly reduce sheet and rill erosion.<sup>69</sup> The practices varied widely in their cost per ton of erosion reduced.<sup>70</sup> In general, costs per ton of erosion reduced were substantially higher at low pre-practice rates of erosion than at high rates. Therefore, erosion can be reduced most cheaply by focusing on critical, high-loss areas.

Little of a conclusive nature can be said about improvements in water quality stemming from erosion control programs.<sup>71</sup> Hydrologists, fresh water biologists, ecologists, toxicologists, and soil scientists have only very rudimentary insights into processes by which soil and agricultural chemicals become water pollutants.<sup>72</sup> In addition, most water pollution standards relate to periods of low stream flow, when dilution is at a minimum, while most agricultural pollutants enter watercourses after rains, and generally, during high-flow periods in spring and fall. Further, reducing the movement of soil on land is different from preventing deposition into waterbodies.<sup>73</sup> From the latter perspective, it is more beneficial to stabilize soil near streams than upland soils if they are equally erosive. USDA statistics do not draw such distinctions.

Improvements may take many years to become evident. It would take a long time to flush accumulations of migrating soils and undesirable chemicals out of waterbodies even if nonpoint pollution were stopped altogether. Because monitoring of water quality has come only very recently, and because the push to abate agricultural pollution is also recent, it is perhaps too soon to expect progress to be widely evident.

## 2. Policy Review and Evaluation

Congress is aware that USDA resource conservation programs have not accomplished as much as they expected. In 1976, for example, farm-state senators Talmadge (Georgia) and Dole (Kansas) requested the USDA to show that conservation programs were being effective,<sup>74</sup> the GAO initiated the study which culminated in the 1977 report,<sup>75</sup> and the Council on Agricultural Sciences and Technology issued an oversight report.<sup>76</sup>

Under the watchful eyes of evaluators and critics, Congress authorized a systematic review of soil and water conservation programs by passing the Soil and Water Resource Conservation Act, known widely as the RCA.<sup>77</sup> This Act required the USDA: (1) to appraise on a continuing basis the soil, water, and related resources on the nonfederal land of the nation, (2) to develop a program for furthering the conservation, protection and enhancement of these resources, and (3) to evaluate annually conservation achievements.<sup>78</sup> The Act instructed the USDA to recommend program changes to Congress by the end of 1980 and to repeat the appraisal and policy development process at five year intervals.<sup>79</sup>

The initial run through the RCA process yielded copious appraisal documents,<sup>80</sup> but a dearth of programmatic changes. The RCA Coordinating Committee<sup>81</sup> identified seven strategies for upgrading soil and water conservation programs.<sup>82</sup> The alternatives were not thoroughly analyzed and the more extreme departures from past programs were given little consideration in narrowing the list to three options noted in the revised RCA Program Report.<sup>83</sup> The end result of the RCA process has been greater attention to targeting the USDA soil and water conservation assistance but no fundamental changes in the delivery mechanism.<sup>84</sup> This approach will not resolve ambiguities in the goals of those programs, but Congress and entrenched

interest groups may not want it otherwise.<sup>85</sup> Also remaining unresolved is the fundamental quandary of the voluntary approach, which forces the USDA to operate its conservation programs so that they will be attractive. This approach does not translate into effectiveness.

As the RCA process was in mid-course, Congress made a significant change in the Agricultural Conservation Program. The USDA's 1980 appropriation bill<sup>86</sup> directed that cost-sharing not be used for measures or practices aimed primarily at crop production with little or no conservation or pollution abatement benefits.<sup>87</sup> In addition the bill required approval of county ASC programs by State committees and the Secretary of Agriculture.<sup>88</sup>

The political base for conservation programs has consisted of agricultural interests who stress farm production and profitability. As long as the goal of conserving resource quality was not coequal with production and income, it was overlooked in selecting projects for USDA assistance or identifying problem areas within conservation districts. Water quality has emerged as an important goal for these agencies mainly in response to external pressures from the U.S. Environmental Protection Agency.

#### IV. Areawide Planning for Nonpoint Pollution Control

##### A. Objectives of the 1972 Clean Water Act<sup>89</sup>

During the early 1970s Congress conducted extensive public hearings concerning water pollution control.<sup>90</sup> They found that water pollution control was "inadequate in every vital aspect."<sup>91</sup> The states were lagging in their efforts to establish water quality standards as required by the 1965 Federal Water Pollution Control Act<sup>92</sup> and there was almost a total



lack of enforcement, information, research, demonstration projects and funding.<sup>93</sup> Moreover, many of the nation's waters were severely polluted, lakes were aging rapidly and the public's health was endangered.<sup>94</sup> Congress responded to this mammoth problem by enacting the Federal Water Pollution Control Act Amendments of 1972, more popularly known as Public Law 92-500, or the 1972 amendments.

The ultimate goals of the legislation are to eliminate all pollutant discharges by 1985<sup>95</sup> and to restore and maintain the chemical, physical and biological integrity of the nation's waters.<sup>96</sup> Although the primary focus is on point source pollution, Congress recognized that to achieve the ultimate goals nonpoint source pollution would also need to be controlled.<sup>97</sup> Congress declared a national policy of controlling all water pollution sources through the development of areawide management processes.<sup>98</sup> Section 208 is the pivotal statutory provision of this areawide approach.

#### B. Objectives of Section 208

Section 208 is titled "Areawide Waste Treatment Management" and emphasizes the most important aspects of the present Congressional approach; the planning process and coordination of control programs.<sup>99</sup> Congress designed the implementation of Section 208 to provide an identification of the problems, a strategy of solutions, implementation of the strategy and an evaluation of its effectiveness.<sup>100</sup> Congress envisioned the planning process as "a management concept to coordinate the many separate requirements of this legislation in an effective attack for restoring our waters."<sup>101</sup> Congress intended Section 208 to be the mechanism through which the states would establish coherent, integrated and comprehensive approaches to water quality management.<sup>102</sup>

In addition to this broad planning and management function Congress designed Section 208 to be the principal control provision for nonpoint sources of pollution.<sup>103</sup> Congress found that "the nation's waters cannot be restored and their quality maintained unless the very complex and difficult problem of nonpoint sources is addressed."<sup>104</sup> Further, little had been done to control this major source of pollution.<sup>105</sup> Upon implementation of Section 208, nonpoint source activities would be identified and methods and procedures would be developed to control them to the extent technologically possible.<sup>106</sup>

#### C. The Section 208 Areawide Planning Process

Section 208 requires that: (1) each state divide itself into areas;<sup>107</sup> (2) a planning agency be designated for each area;<sup>108</sup> (3) a management plan be developed for each area;<sup>109</sup> and (4) a managing agency (or agencies) be designated for each area.<sup>110</sup>

Following the publication of EPA guidelines,<sup>111</sup> Section 208 directed all state governors to identify each area within their state that had substantial water quality control problems.<sup>112</sup> If such an area was located in more than one state, Section 208 directed the governors of the respective states to cooperate in carrying out the provisions of Section 208.<sup>113</sup> The governors were then required to designate a single, representative organization capable of developing effective management plans for each area.<sup>114</sup> The state was to act as planning agency for all non-designated areas.<sup>115</sup>

Congress gave the planning agencies one year to have a planning process in operation<sup>116</sup> and two years from the date the process began to operate to have an initial plan certified by the governor and submitted to the EPA.<sup>117</sup> The plan was to apply to all wastes generated in the area involved<sup>118</sup> and

contain alternatives for waste treatment management.<sup>119</sup> In addition, the plan was to contain eleven essential elements including; an identification of the agencies and measures necessary to implement the plan,<sup>120</sup> a process to identify agriculturally related nonpoint sources of pollution and methods and procedures, including land use requirement, to control to the extent feasible such sources.<sup>121</sup> According to the EPA regulations, the management plan should be a dynamic management tool which identifies the water quality control problems of a particular planning area and sets forth an effective management program to alleviate those problems.<sup>122</sup> Its value lies in providing a basis for making sound water quality management decisions and in establishing and implementing effective control programs.<sup>123</sup>

Each management plan was to be implemented by one or more management agencies designated by the governor after consulting with the affected planning agency.<sup>123</sup> Section 208 permitted the governors to designate existing or newly created local, regional or state agencies or political subdivisions.<sup>124</sup> To be approved by the EPA, Section 208 required the designated agencies to have adequate authority:

1. To carry out their assigned portions of the plan;
2. To manage effectively treatment works and related point and nonpoint source facilities and practices serving the area;
3. To cause to be designed and constructed new works as required by the plan;
4. To accept and utilize grants and funds from other sources for waste treatment management or nonpoint source control purposes;
5. To raise revenue and incur short and long-term indebtedness;
6. To assure that each participating community pays its proportionate share of the costs;

7. To refuse to accept wastes from any community or private entity that does not comply with the plan; and
8. To accept for treatment industrial wastes.<sup>125</sup>

D. The Sluggish Initial Implementation of Section 208

Areawide waste treatment management had a sputtering start at best. EPA did not issue guidelines for the identification of areas with substantial water quality control problems until September, 1973.<sup>126</sup> EPA concentrated during these early years on issuance of permits to point source dischargers, awarding construction grants to meet the 1977 technological performance standard and river basin plans.<sup>127</sup> Also, EPA originally interpreted Section 208 as requiring management plans only in those areas with substantial water quality control problems.<sup>128</sup> This interpretation resulted in 95% of the country not being covered by a management plan.<sup>129</sup> It took until September 1977 for the D.C. Circuit Court of Appeals to interpret Section 208 as requiring management plans for all areas of the country.<sup>130</sup> Congress responded in the Clean Water Act of 1977 by extending the timetable for certification of management plans covering those areas of the country not covered under the prior EPA interpretation.<sup>131</sup>

Various other reasons have been suggested for the poor record of initial Section 208 implementation. Some of these include:

1. Lack of enforcement provisions in the legislation;<sup>132</sup>
2. Lack of a timetable for implementation of plans with regard to nonpoint sources;<sup>133</sup>
3. Local resistance to federally-imposed regionalism;<sup>134</sup>
4. A paucity of information concerning the effectiveness of nonpoint pollution control techniques;<sup>135</sup>

5. Inadequate commitment among high EPA officials;<sup>136</sup>
6. Insufficient length of the planning period;<sup>137</sup> and
7. Considerable confusion as to the real purpose of the program.<sup>138</sup>

#### E. Information on Nonpoint Sources

Lack of information concerning nonpoint pollution and its control has been a particularly large stumbling block with many adverse ramifications. Development of a data base has taken various forms, both at the state and federal level.

In 1976, the USDA and EPA agreed to form the Model Implementation Program (MIP).<sup>139</sup> The program's objective was to accelerate the installation of agricultural nonpoint pollution control measures in selected project areas.<sup>140</sup> Seven watersheds were selected<sup>141</sup> and it was expected that about \$25.8 million would be spent by 1981 when the program expires.<sup>142</sup> Necessary information is being gathered on the relationship between water quality and various nonpoint pollution control techniques, the effectiveness of federal, state and local agencies interrelationships and response of landowners to various incentives to improve water quality.<sup>143</sup> Although no additional MIPs are planned,<sup>144</sup> farmer participation has been strong<sup>145</sup> and observers believe the program has been successful from an institutional standpoint.<sup>146</sup>

In the Clean Water Act of 1977, Congress added Subsection 208(j) which authorized the Secretary of Agriculture to develop a cost-share program aimed at installation of best management practices on farmlands.<sup>147</sup> \$200 million was authorized to fund this program in 1979<sup>148</sup> and \$400 million in 1980.<sup>149</sup> The program developed by the Secretary of Agriculture was called the Rural Clean Water Program (RCWP) and provided for financial and

technical assistance in selected areas that had agricultural nonpoint pollution problems and were covered by an approved agricultural portion of a water quality management plan.<sup>150</sup> Governors were to submit applications for assistance and the SCS in conjunction with the EPA would determine which areas to fund.<sup>151</sup> The original RCWP program was not implemented primarily because of a political battle over whether the SCS or the ASCS would administer the program.<sup>152</sup>

The ASCS took the initiative in 1979 and formed a Special Agricultural Conservation Program (ACP).<sup>152</sup> Twenty-one special water quality projects were established by the ASCS under this program and 259 projects were voluntarily established by the states using their own ACP funds.<sup>154</sup> The ASCS projects were modeled after the MIPs, planned by state and county ASCS committees and submitted for national approval.<sup>155</sup> Almost \$8 million was spent in 1979 and 1980 on the ASCS's 21 special projects.<sup>156</sup>

The RCWP resurfaced in the agricultural appropriation for 1980 which designated \$50 million for an experimental RCWP to be carried out by the ASCS.<sup>157</sup> The Secretary of Agriculture issued final regulations outlining the program in March, 1980.<sup>158</sup> The program provides assistance to farmers through cost-share contracts requiring the installation of best management practices in areas with critical agricultural nonpoint pollution problems.<sup>159</sup> Thirteen such areas have been selected for initial implementation of the program<sup>160</sup> and the plans for those areas were approved in May, 1980.<sup>161</sup>

## V. Implementation of Water Quality Plans<sup>162</sup>

### A. Status of Plan Approvals

As of mid-1980, the EPA had approved the agricultural portions of non-point pollution control plans of 47 states.<sup>163</sup> However, only 39 states indicated that measures to implement the programs were in effect.<sup>164</sup> By April 1982, 209<sup>165</sup> of 222 possible<sup>166</sup> areawide management plans had gained conditional or final EPA approval.

### B. General Outlines of Management Plans

#### 1. Management Agencies

According to an EPA-commissioned survey of state implementation programs, 48 states had designated management agencies for agricultural nonpoint pollution by mid-1980.<sup>167</sup> In 29 states, state agencies are the sole management agencies.<sup>168</sup> In 10 states, soil conservation districts are the sole management agencies.<sup>169</sup> In 9 states, state agencies and soil conservation districts have been jointly designated.<sup>170</sup>

Although soil conservation districts and various state agencies have been designated as the lead management agencies, many other entities contribute to the implementation of the plans. The Wisconsin and Illinois plans illustrate this diversity.

Wisconsin has 22 separate areawide management plans.<sup>171</sup> Wisconsin's Department of Natural Resources oversees the nonpoint pollution control program and disburses related funds.<sup>172</sup> Soil and water conservation districts are designated management agencies in rural areas while municipal governments manage programs in major urban areas.<sup>173</sup> Other agencies playing

explicit roles in Wisconsin's program are county boards, regional planning commissions, the University of Wisconsin-Extension, the State Board of Soil and Water Conservation Districts, the ASCS, and the SCS.<sup>174</sup>

Illinois divided itself into four areas for purposes of areawide planning.<sup>175</sup> A state-developed plan covers by far the largest area.<sup>176</sup> The Illinois EPA has overall responsibility to monitor the progress of the Section 208 program.<sup>177</sup> The following agencies are involved in implementing the soil erosion and sedimentation portion of the management plan: The Illinois Department of Agriculture (lead agency), ASCS, SCS, Farmers Home Administration, Agricultural Research Service (USDA), Cooperative Extension Service, the Illinois Institute of Natural Resources, the Illinois Department of Conservation, soil and water conservation districts, and state universities, colleges, and high schools.<sup>178</sup>

## 2. Management Strategies<sup>179</sup>

### a. Encouragements for Voluntary Abatement

All states but one (Alaska) offer technical assistance to landowners or users wishing to plan or undertake conservation and pollution abatement measures.<sup>180</sup> However, most states have no mechanisms for delivering such assistance outside of the ongoing federal and state conservation programs. According to the 1980 EPA survey, "less than half of the states using any of the principal voluntary or regulatory methods have increased implementation of those methods since certification of their Section 208 plans."<sup>181</sup> Nineteen states indicated expanded technical assistance.<sup>182</sup> Forty-eight states rely on conservation districts to provide program leadership, technical



assistance, or both, but few have moved to increase district capabilities to administer this assistance.<sup>183</sup>

Expanded technical assistance may not be fruitful unless landowners and users are moved to take advantage of it. To this end, twelve states have authorized cost-sharing programs to supplement the financial assistance available from the ASCS.<sup>184</sup> By 1981, 11 of these states had appropriated funds for cost-sharing ranging from \$30,000 annually in Connecticut to \$6 million per year in Iowa.<sup>185</sup> However, appropriations for these programs have lagged behind expected amounts in some states.<sup>186</sup>

Education, exhortation, and demonstration are additional sources of incentives to conserve soil and abate agricultural pollution. In 1980, twenty-eight states reported increases in support for education activities.<sup>187</sup> Conservation districts and extension services are expected in most states to conduct the education programs.<sup>188</sup> Forty-one demonstrations were reported.<sup>189</sup>

Overall, 27 states rely exclusively on voluntary programs of technical and educational assistance to implement their programs.<sup>190</sup> Twelve other states have adopted various mandatory policies, but even these states "rely on voluntary action in the first instance, and informal resolution of agricultural nonpoint pollution problems" as the most important implementation approaches.<sup>191</sup>

Illinois is representative of the states combining voluntary and regulatory measures. Illinois' emphasis is clearly on voluntary compliance. The Illinois Soil and Water Conservation District Act was amended in 1977 to provide for state guidelines for erosion and sediment control for use by soil and water conservation districts in formulating erosion and sediment control programs required in the amended law.<sup>192</sup> Published in 1980, the

state guidelines<sup>193</sup> require adherence to soil loss tolerance values on all agricultural land in the state by January 1, 2000.<sup>194</sup> In the interim, erosion losses are limited to declining multiples of T-values, beginning with four times T-values from January 1, 1983 until January 1, 1988.<sup>195</sup> Conservation districts must adopt soil erosion and sediment control programs by April 18, 1982 or have the Department of Agriculture develop such programs in their stead.<sup>196</sup> District programs may adopt standards more ambitious than the state minimum requirements.<sup>197</sup>

Illinois has increased education and information programs relating to soil erosion and sediment control<sup>198</sup> and established a cost-sharing program for "enduring erosion and sediment control devices, structures and practices."<sup>199</sup> These measures are aimed at encouraging voluntary compliance. In the event that they prove inadequate, however, Illinois also established a process through which violations of state standards could prompt enforcement actions based on the State's pollution control authority. A formal complaint filed by a district or other party would be subjected to district inspection.<sup>200</sup> Upon verification, a formal notice of violation would be issued.<sup>201</sup> The Department of Agriculture is required to prescribe specific procedures for resolving the violations and provide cost-sharing assistance for the needed practices and explain cost-sharing arrangements for the needed practices.<sup>202</sup> If, within a year of the notice, compliance has not been achieved, the Department must conduct a formal administrative hearing to determine the reasons for non-compliance.<sup>203</sup> The consequences of a finding adverse to the alleged violator are not specified in the law. Thus, while Illinois' law assumes a "carrot and stick" posture, the enforcement stick has not been unveiled, much less tested.

b. Regulation

Forty-six states have pollution control laws that extend to agricultural nonpoint sources.<sup>204</sup> However, by mid-1980, only 16 states had exercised or enforced that authority against agricultural pollution.<sup>205</sup> Few of the remaining states indicated intentions to exercise such authority in the future.<sup>206</sup> Insufficient information to establish clear cause and effect relationships for nonpoint pollution and low political acceptance of such enforcement actions are the main reasons that pollution control authority has been little used by most states for agricultural nonpoint pollution control.<sup>207</sup>

The twelve states<sup>208</sup> that have regulatory provisions in their Section 208 programs focus, for the most part, on losses of potential pollutants rather than actual pollution per se. The Illinois program again is representative in its focus on soil loss rates as opposed to water quality implications. For some states, the existence of and adherence to a district-approved farm conservation plan is sufficient to exempt land users from further regulations.<sup>209</sup> This approach avoids leaving the state open to charges of arbitrariness in basing enforcement actions on not-unimpeachable T-values.

Iowa's program is unique for its readiness to enforce soil loss limits for all agricultural tillage operations.<sup>210</sup> "Farm unit soil conservation plans," specifying best management practices, must be developed for all agricultural land in the state.<sup>211</sup> Thereafter, all land must meet erosion standards adopted by conservation districts.<sup>212</sup> Non-complying users about

whom complaints are filed may face administrative orders specifying BMPs<sup>213</sup> and are eligible for enhanced cost-sharing assistance.<sup>214</sup> Failure to comply can lead to court enforcement actions.<sup>215</sup>

The Iowa program was upheld by the State's Supreme Court in 1979.<sup>216</sup> Significantly, the court reasoned that "...the state has a vital interest in protecting the soil...and it has the right to do so."<sup>217</sup> Thus, the program was upheld on the grounds of the public interest in maintaining productive soils, not because of damages stemming from agricultural nonpoint pollution.

### 3. Complexity

The administrative arrangements surrounding agricultural nonpoint pollution control have achieved great complexity, if little else. A program controlled by one federal agency (the EPA) deals with substantive concerns of a second federal agency (the USDA) in which 34 programs under seven administrative divisions have a bearing on the chief source of pollutants. The controlling agency directs state pollution control authorities to plan for and implement nonpoint pollution control programs at the state level. Yet, the state pollution control authorities must rely on separate state agricultural or conservation agencies to conduct these activities. These state agencies have historically leaned heavily on subdivisions of the USDA for the kinds of activities needed to stem agricultural pollution. The USDA programs exhibit redundancy, cross-purposes, and a history of inefficiency when measured against the yardstick of costs of soil erosion control. The current patchwork system is a product of convenience and political intransigence rather than careful implementation strategy.

## VI. Economic and Legal Analysis of Administering Agricultural Pollution Control

### A. A Property Rights Framework

A more precise understanding of the nature and importance of property rights will help to explain the design of nonpoint pollution control programs. The framework developed by Calabresi and Melamed<sup>218</sup> is helpful.

#### 1. Ownership and Exchange

In their framework, a right ("entitlement") confers favor among individuals or groups making competing claims to an object or privilege. It clarifies the relationships among the competitors. Rights are the basic institutional ingredient in the allocation of scarce resources. In defining rights, two matters must be decided: (a) initial ownership (allocation) of rights; and (b) rules under which they may be exchanged. Collective enforcement of both the initial allocation and the conditions for exchange is required if a legal system is to have meaning.

The allocation decision, according to Calabresi and Melamed,<sup>219</sup> must reflect accepted tenets of social relations, including distributional equity and judicial consistency. Within these constraints, an entitlement should be made to the party best able to evaluate its social worth or, secondarily, to the party who can act most cheaply to correct errors in its initial allocation (i.e., evaluate and initiate exchange). Where competing parties are equally able to evaluate an entitlement and initiate exchange, where transactions are costless, and where income effects are negligible, the exchange equilibrium is invariant to the initial allocation of rights.<sup>220</sup> In reality, income effects often are not negligible, and competing parties

are not equally equipped to trade.<sup>221</sup> An important case of unequal trading abilities arises when an object or privilege has a collective dimension-- many individuals have interests in its use. A farmer whose soil losses contribute to siltation of nearby streams and water supply reservoirs cannot contact all persons who use the streams or drink the water. Nor is he or she able to look beyond productivity losses to evaluate the social costs of the lost soil. On the other hand, a government acting on behalf of the citizenry may evaluate the external social cost and initiate transactions with the farmer.

The second matter in assigning rights is the conditions of their exchange. Three options were noted by Calabresi and Melamed: (a) property rules, (b) liability rules, and (c) inalienability.<sup>222</sup> With property rules, consent to an exchange must be given in advance by all parties at an acceptable price, like market transactions. Beyond the government's presence in setting and enforcing rules of fair exchange, neither the price nor the willingness to exchange is subject to direct government control.

Under liability rules, prior consent to an exchange is not required, and prices are set by an objective third party, such as a court. Damage claims following an auto accident illustrate transactions suited to liability rules. Government involvement is increased here, relative to property rules, because affected individuals are not likely to agree to a rate of compensation without the threat of arbitration. In other situations, liability rules may be appropriate because many individuals with interests in a transaction are not efficiently represented in the market. Assessment and representation of those interests by an objective authority (government) may be cheaper than negotiating separately with each one. This logic is

behind eminent domain condemnation of property for public uses and in the levying of effluent charges.

Finally, inalienability disallows exchange of specified rights under some or all circumstances. The state controls both transactions (by prohibitions) and prices (e.g., fines and prison terms). For example, free speech, bodily integrity, and freedom from peonage are protected in this way in the United States.

In general, property rules are well-suited to exchanges for which social values are easily established and holdouts or freeloaders do not make evaluation unduly complicated. Liability rules are appropriate where many individuals are affected by a transaction and incentives to distort preferences are present. Finally, where collective values are so high that few individuals will want to pay the cost of a transaction, inalienability is suitable. Inalienability also may be invoked in cases of overwhelming moral or ethical interests.

## 2. Property Rights and Characteristics of Interactions

Property rights must reflect relevant human values and characteristics of specific human interactions. Bromley<sup>223</sup> identified six "attributes of human interdependence" which might be crucial in allocating and protecting rights: (a) the nature (e.g., irritating or life-threatening) of the impact; (b) the frequency of the impact; (c) third-party effects; (d) transaction costs; (e) whether or not a unique damage function exists; and (f) whether or not the impact is reversible. For example, interactions posing irreversible health risks to many individuals, such as the release of toxic pollutants into watercourses, are not amenable to private negotiation yet have high costs to society. Providing liability or inalienable protection

to the general public against such transactions is likely to be the least costly solution. Sediment losses, while involving many "victims," do not pose the significant and immediate risks associated with toxic pollutants. In most states, farmers are now protected with property rules under which erosion control may be "purchased" through state or federal technical and cost-sharing aid. Iowa's requirements for erosion control depart from the norm only by using liability rules; even there, the farmer is protected.

### 3. Implications for the Economics of Program Design

Programs to reduce agricultural nonpoint pollution involve several aspects of land use rights. Within the general structure of federal water pollution control statutes, states vary widely in their approaches to nonpoint pollution.

One element of nonpoint pollution consists of agricultural chemical products. Rights to use some products, such as DDT, have been severely curbed. In effect, collective ownership has been asserted and exchange disallowed. These rights may be monitored at points of chemical production and distribution with modest transaction costs.

A second aspect concerns soil and land management--tillage practices, contouring, crop rotation, etc. This is the main focus of Section 208 rules and guidelines. Transactions with individual farmers over rights to make these decisions would be quite costly. Each parcel of land has a unique potential for contributing to pollution. A reallocation of rights away from landowners would be exceedingly costly to enforce. Most states have steered away from such a course, choosing to reemphasize and reinforce voluntary programs.



Most state water quality programs emphasize sedimentation relative to other kinds of agricultural pollutants. Too little is known about many other agricultural pollutants (e.g., nutrients and organics) to allow a careful assessment of associated social costs and benefits. In such cases, states are understandably reluctant to generate costly additional information or to redefine rights without compelling evidence. The federal government has played a major role in gathering additional information on agricultural pollutants. As it becomes available, states will be able to extend the refinement of farmland use rights as they affect pollution. Some refinements may involve nonproperty rules for exchange. However, where rights can be exercised only by individual landowners (as opposed, say, to chemical producers) the presumption toward individual ownership will remain.

Upgrading existing voluntary conservation programs entails no fundamental change in the allocation or protection of rights. Iowa's regulatory approach to soil erosion has changed the method of exchanging erosion rights but not their allocation. Owners or occupiers of Iowa's land can be required to take steps to reduce erosion, but financial and technical assistance must be provided by the state in such cases. The landholder remains entitled and is protected by liability rules under which partial compensation must follow interference with individual rights. Precedents exist, in a few soil conservation districts and counties, for more stringent government controls on rights to lose soil. However, these precedents do not appear to be affecting current changes in state and federal policies.

A new generation of soil conservation policies is not likely to shift rights in agricultural land dramatically. In most cases, they are likely to involve refinements in the definition of rights to lose soil and, in more

extreme cases, to govern exchanges of those rights with liability rules rather than property rules. A reallocation of rights away from landowners would entail prohibitively high costs of enforcement on every parcel of affected land. Individual landowners can more easily initiate transactions over soil loss rights than governments. On the other hand, private values of erosion are now significantly divorced from social values. At a minimum, the disparity is cause to increase the private value of erosion. This could be achieved through cross-compliance<sup>224</sup> or contractual payments based on implementation and long-term maintenance of BMPs. These options entail no fundamental changes in the allocation or protection of rights. In practice they may require federal involvement, especially in cross-compliance. Another way of injecting a greater public interest in erosion rights is to shift to liability exchange protection, as Iowa has. This approach has the advantage of allowing the government to take actions where voluntary cooperation is not forthcoming and, hence, to effectively target agricultural pollution control efforts. Federal participation is not needed. Yet, compensation is paid for state actions that curb individuals' soil erosion rights.

#### B. Coordination of Soil Conservation and Pollution Control Programs

The defining characteristic of economics is the notion of allocating scarce resources to competing uses. Individuals or firms are usually assumed to control the resources and to have goals for their uses. Price signals set in the market place bring the actions of economic units in line. The market is the coordinating institution.

The problem of coordination arises explicitly in instances where markets are unavailable or unreliable. More fundamental causes are insecure

property rights in scarce resources, technologies which allow declining costs of production, or the existence of "public goods" from which consumers cannot be excluded. Government action of some kind typically is needed to neutralize these fundamental causes of market failure. A government may be able to clarify property rights and make them more secure. Economies of size, and the police powers of the state, make governments uniquely able to provide and finance public goods.

#### 1. Dimensions of Administrative Coordination

When viewed as a matter of combining governmental leadership and management with actions of private individuals, two dimensions of the coordination problem become apparent. First, there is a vertical dimension in which needs and concerns of private agents filter upward in the government hierarchy and policies formed by government to meet those concerns filter downwards to the level of affecting individuals' actions. Perfect vertical coordination should mean three things: (1) that messages are accurately fed into and processed within the government hierarchy; (2) that policy responses are formulated at levels which can deal with specific concerns most efficiently and equitably; and (3) that those responses evoke actions at other levels of the hierarchy and among private agents which precisely reflect the intent of the policies. Efficient vertical coordination would require that benefits and costs should be balanced (at the margin) as policy institutions are improved toward perfection, thus acknowledging the costs of coordination.

The second dimension of the coordination problem is horizontal. Where several institutions are brought to bear on a specific problem, the working relationship between them may give rise to problems of role uncertainty,

competition, and/or poor communication. Horizontal coordination involves procedures for melding specialized institutions into a smoothly and efficiently functioning coalition to deal with a specific problem. Major techniques of improving horizontal coordination may involve: (1) clarifying and limiting the roles (jurisdictions) and responsibilities of the respective agencies; (2) establishing a clear cut decision procedure (perhaps a decision hierarchy) to control their interactions; and (3) specifying responsibilities for information generation and sharing among the agencies. Efficient horizontal coordination involves equating the marginal benefits and costs of such improvements.

Several features of this paradigm of extra-market coordination should be noted. First, it has obvious parallels in the economic theory of industrial organization; vertical integration in that theory is the joining in a single firm of different stages in production and marketing; horizontal integration is the joining in a single unit of firms engaged in the same type of economic activity. Second, it will be very difficult in most cases to quantitatively assess the efficiency of coordinating measures. Market values often are unavailable. Property rights may be subject to change. And institutional arrangements may be discontinuous, allowing choices only among discrete alternatives. All these factors suggest that choices between approaches to coordination will be based for the most part on qualitative criteria. Finally, those qualitative judgments will be heavily laced with political judgments and pressures. An economic theory of coordination tells us how institutions might operate ideally. A political theory might suggest how they are fashioned and operated in reality.

In following sections, only the output side of institutional coordination will be discussed. Little will be said of the processes by which

social concerns filter through government channels or political judgments and pressures are brought to bear on policy choices.

## 2. Vertical Coordination of Agricultural Nonpoint Pollution

### Control Programs

Soil conservation and rural water quality programs confront similar issues of vertical cohesion. In each case, broad national goals must be implemented at local levels due to the localized natures of the respective problems. However, water pollution problems have more obvious and immediate off-site impacts than does declining soil fertility. The obvious non-agricultural impacts provide a compelling rationale for including non-farm groups in the administration of the 208 program.<sup>225</sup> The EPA represents a spectrum of such interests at the national level. State rural clean water coordinating committees may also include such groups, though this may vary from state to state. At the local level, however, the widespread assignment of authority to soil conservation districts suggests that non-farm groups may be excluded from setting local priorities. Rural Clean Water Program regulations are carefully formulated to exclude assistance for practices aimed primarily at production goals. Nevertheless, individuals closely tied to farming might identify critical pollution problems and priority solutions different from those that would be chosen by persons interested in city water supplies and water-based recreation.

The 208 plans formulated in Illinois, as in other states, considerably upgrade the role of conservation districts. Administrative and decision-making authority are added to their former advisory tasks.<sup>226</sup> Board members who formerly had little exposure to liability actions may be considerably more vulnerable given the new responsibilities. For example, if practices

recommended by a district in 1980 fail to bring a land occupier in compliance with 1983 standards, are board members liable for costs incurred if the occupier is coerced at that time to undertake additional measures? Are board members subject to defamation suits for publicizing non-compliance? These questions indicate that effective implementation of the 208 program will depend in part on protecting board members from possible tort actions.<sup>227</sup>

SWCDs must be equipped to strike an efficient balance between new pollution control measures and encouraging the maintenance of existing practices. Added monitoring of existing practices would contribute to this end. So would reporting requirements which emphasized projects in effect rather than total projects implemented or number of participants. Of course, changes in water quality will reflect the overall effectiveness of these projects and, by comparison to expenditures, the efficiency with which the changes have been achieved. Additional incentives for maintaining BMPs beyond time intervals typically written into ASCS, RCWP, or state cost-sharing contracts may be needed.<sup>228</sup>

### 3. Horizontal Coordination of Administrative Agencies

Horizontal coordination between 208 efforts and related programs presents very considerable problems. First, the EPA has worked mainly in a regulatory mode while USDA programs have been mainly voluntary. These approaches may be difficult to integrate in a program featuring joint administration at the national level.

Second, there is the matter of distinguishing nonpoint pollution control standards from soil conservation standards. In areas where sediment

erosion and sediment-born pollutants are the major culprits in both problems, a single standard such as attaining "T"-levels of soil loss may suit both purposes to a reasonable approximation. In other instances, standards may have to be extended to cover fertilizer use, irrigation practices, etc. A multiplicity of standards may confuse lightly staffed SCS offices and district boards. Trade-offs among the standards may have to be specified. The problem may be exacerbated by the fact that district board members are accustomed to dealing with soil losses and may be inclined to think of pollution primarily in those terms. To correct this bias may take time and extensive education efforts from SCS or other personnel trained in matters of nonpoint source pollution.

Third, on-farm pollution control practices need to be coordinated with "in-stream" alternatives which may be more cost-effective. This may involve joint planning with state and federal agencies not directly involved in soil conservation or water pollution programs, e.g., the U.S. Army Corps of Engineers or various flood control and resource development agencies.

An unusually deliberate and comprehensive approach to horizontal administrative coordination of joint land and water problem was taken in 1969 in Nebraska.<sup>229</sup> Soil and water conservation districts and a variety of watershed districts in that state were consolidated into 24 Natural Resource Districts.<sup>230</sup> The districts (NRDs) conform generally to river basins. They have responsibilities for "erosion control, flood control, soil conservation, water supply, ground and surface water conservation, pollution control, drainage, wildlife habitat management, recreation, and forestry and range management. In addition, NRDs have the sole authority to initiate

ground water controls under the (Nebraska) Ground Water Management Act."<sup>231</sup>  
The Nebraska NRDs have taxing powers and authority to hire staff.

To be sure, the NRDs of the Nebraska type have limits and liabilities. Their success in Nebraska in dealing with a multiplicity of issues is not clear. Their adoption might require painful reshuffling of the powers exercised by various local units of government--a reshuffling which might be fought vigorously.<sup>232</sup> Without powers to raise funds and to offer incentives or impose requirements, an NRD would be just another planning agency.

NRDs also have significant advantages. First their multiple responsibilities force horizontal coordination of objectives, and setting of priorities, to occur. Second, efforts can be concentrated on pressing problems as they emerge locally.<sup>233</sup> Resources may be reallocated more easily within a single agency than among agencies. Third, with larger territories and responsibilities and powers to raise revenues, better staff support is possible. As a result, an NRD may be able to represent itself more strongly to state and federal officials, thereby improving vertical communications. Presumably, non-rural interests would be included in electing NRD boards. The local constituency would then reflect a broad subset of the viewpoints which influence state and federal policies.

Natural resource districts would have advantages in setting comprehensive plans and policies for resource units. Programs might be formulated in response to local initiatives. In addition, NRDs would be logical agencies for implementing and administering a number of state and federal programs relating to resource management--programs which presently are conducted in a patchwork fashion. Most importantly, NRDs would provide local leadership,



of a highly visible nature, in devising strategies for responding to resource problems. This should reduce problems of resentment for programs mandated and administered from distant levels of government.

### C. Section 208 Legal Considerations

Roughly four categories of legal issues arise from the implementation of Section 208 programs. They are: (1) federalism, involving the allocation of power between the federal and state governments; (2) tort liability, chiefly involving the Section 208 management agencies; (3) voting, involving the applicability of the Reynolds v. Sims<sup>233</sup> one person/one vote principle to elections of management agency directors; and (4) taking, involving the Fifth Amendment's guarantee that private property will not be taken for public use without just compensation.

#### 1. Federalism

The present structure of Section 208 does not require mandatory regulation and although the EPA has indicated that it will not approve certain nonpoint source control programs that do not include regulations, the only effect of this disapproval is withholding of federal funds. The validity of this form of federal regulation is essentially unquestioned.<sup>234</sup> Furthermore, regulations voluntarily imposed by states under their Section 208 programs do not raise substantial federalism issues.<sup>235</sup> Federalism will only become an important issue should Congress impose federal mandates for areawide planning and regulation.<sup>236</sup>

## 2. Tort Liability

A Section 208 management agency may be required to defend itself in an almost endless variety of tort suits. The ambitious role played by some management agencies in helping landowners plan, install and maintain land management practices invites the possibility of claims for, among other things, property damage, trespass and personal injury.<sup>237</sup> Another interesting claim might arise should a landowner be found to have violated state soil loss limits notwithstanding the fact that he had applied management practices suggested by the management agencies. A discussion of the range of possible claims is beyond the scope of this paper, but it is worth mentioning that various protection strategies may be available to the agencies. Insurance, state tort claims acts, indemnity funds, legislation exempting agencies from liability, and sovereign immunity are the most common forms of liability protection.<sup>238</sup> The availability of these alternatives to a particular agency depends upon their relative costs<sup>239</sup> and state law.<sup>240</sup>

## 3. Voting

The Supreme Court of the United States in Reynolds v. Sims<sup>241</sup> declared that in elections for state legislatures the principle of one person/one vote must be strictly adhered to. The Court struck down Alabama's apportionment scheme which had the effect of diluting the votes of persons in certain voting districts. Subsequent to this decision, the one person/one vote principle was extended to cover elections for county commissioners<sup>242</sup> and school board members.<sup>243</sup> In Salyer Land Co. v. Tulare Water District,<sup>244</sup> however, the Court ruled that the one person/one vote principle would not apply to elections for Tulare Water District directors and that

voting could legitimately be limited to landowners. This decision was recently expanded, rather significantly, in Ball v. James.<sup>245</sup> Whether the one person/one vote principle would be applied to elections for conservation district supervisors or other Section 208 management agencies is a difficult question to answer.

The answer is to be found, if at all, in Salyer Land Co. and Ball. Salyer Land Co. involved the Tulare Lake Basin Water District which basically stored and distributed water to landowners. The district encompassed 193,000 acres, 85% of which was farmed by four corporations. The costs of the project were assessed against each landowner according to the water benefits the landowner received. Only landowners could vote for district supervisors and voting power was apportioned according to property value. In upholding this voting scheme, the Court said that "by reason of its special limited purpose and of the disproportionate effect of its activities on landowners as a group" the water district was not subject to the one person/one vote principle.

Ball involved the Salt River Project Agricultural Improvement and Power District which stored and delivered water similar to the Tulare Water District. In contrast to the sparsely populated area involved in Salyer Land Co., however, this district included most of Phoenix, Arizona, and in addition was the second largest supplier of electricity in Arizona. Further, the district had the power to issue tax-exempt bonds and to exercise eminent domain. Voting for district supervisors was limited to landowners and voting power was apportioned according to the number of acres owned. The Court framed the issues to be "whether the purpose of the District is sufficiently specialized and narrow and whether its activities bear on landowners so disproportionately as to distinguish the District from

those public entities where more general governmental functions demand application of the Reynolds principle." The Court answered "yes" to both issues and upheld the voting scheme.

The issues as framed by the Court in Ball would be essentially the identical issues presented in a case involving elections of water quality management agency directors should voting be limited to landowners.<sup>246</sup> A strong argument can be made that landowners are disproportionately affected to a significant degree by the activities of water quality management agencies. After all, the basic thrust of most management plans involves application of land-use practices. The more difficult question is whether the management agencies exercise "general governmental functions" which "demand the application of the Reynolds principle."

The Supreme Court in Ball listed some of the governmental powers that if exercised would invoke the Reynolds principle. These include enacting "any laws governing the conduct of citizens," and administering "such normal functions of government as the maintenance of streets, the operation of schools, or sanitation, health or welfare services." Section 208(c)(2) requires that a management agency have authority, among other things, to carry out the management plan, to assure that each participating community pays its proportionate share of treatment and to raise revenues. Some of this authority could very well be construed to include "general governmental functions," such as sanitation, health and governing the conduct of citizens, particularly if the agency has significant regulatory authority. Neither of the districts involved in Salyer Land Co. and Ball exercised any regulatory powers.

There are two major reasons why accurate speculation concerning the application of the Reynolds principle to elections for management agency

directors is difficult. First, the Supreme Court in Salyer Land Co. and Ball relied heavily upon the facts of those cases. Both cases involved water districts which had substantially different functions and authority than water quality management agencies have. Ball, however, can be viewed as an expansion of Salyer Land Co. in that the district involved in Ball had a much greater impact on non-voters and exercised broader powers than the district involved in Salyer Land Co. Whether the Court will continue expanding in this area, i.e., restricting the scope of the Reynolds principle to include other entities beyond water districts, is yet to be seen, but much of the Court's language in Ball would indicate this.

Second, the Supreme Court was sharply divided in Ball. Five justices comprised the majority; however, Justice Powell in his concurring opinion said that the decisive fact for him was the state legislature's control over voting requirements for the water district and the actual exercise of that control. The state legislature had reformed the voting scheme to allow owners of less than one acre to cast fractional votes and provided for some of the directors to be elected at large. Powell's rationale was that "we should expect that a legislature elected on the rule of one person, one vote will be vigilant to prevent undue concentration in the hands of undemocratic bodies." Presumably, if the legislature had not made the voting reforms Justice Powell would have joined the four dissenters and the case would have been decided differently. Furthermore, the author of the majority opinion, Justice Stewart, is no longer on the bench.

#### 4. Taking

The Fifth Amendment to the United States Constitution guarantees that the federal government will not take private property for public use without

justly compensating the owner. The Fourteenth Amendment provides a similar guarantee against state governments.<sup>247</sup> In legal terms property is not a thing, but rather a concept. Property refers to all the rights an owner has in a particular thing. A taking occurs when the government restricts the property rights of an owner to an extent that requires compensation. The point at which a restriction becomes a taking is difficult to determine. Courts apply no clear-cut rules. Normally they will balance the public and private interests involved to reach a fair result. The United States Supreme Court has said, "The determination that governmental action constitutes a taking is, in essence, a determination that the public at large, rather than a single owner, must bear the burden of an exercise of state power in the public interest."<sup>248</sup>

The taking issue arises in connection with Section 208 where the state requires landowners to install certain land-use practices or to refrain from carrying on certain activities. Most state 208 programs, however, are completely voluntary. Restrictions voluntarily assumed by landowners do not raise taking issues. As noted earlier, involuntary regulation is imposed by some states, primarily in the form of soil erosion control. These regulations do raise taking issues.

In 1979 the Iowa Supreme Court was presented with the question whether a taking occurred where a soil conservation district ordered two farmers to install certain land management practices designed to lower soil erosion below permissible soil loss limits.<sup>249</sup> The farmers were given the option of seeding their land to pasture or terracing it. The Iowa Supreme Court held that there was no taking. Basically, the court balanced the public and private interests involved. The public interest involved was the state's interest in protecting its soil. The private interest involved was

primarily the money required to install the practices. Terracing would have cost one farmer \$12,000 and the other \$1,500. In addition, terracing would render a portion of each farm untillable. Seeding would have been less expensive but would have also removed a portion of each farm from active production. Although the court emphasized that taking issues are determined on the facts and circumstances of each case and that the point at which regulation becomes a taking is impossible of general definition, the court stated that, "A law does not become unconstitutional because it works a hardship," and, "The argument that one must make substantial expenditures to comply with regulatory statutes does not raise constitutional barriers."<sup>250</sup> These statements suggest that a landowner cannot claim a taking on the ground that the state has required him to spend money on land-use practices, no matter what the amount. Other language in the court's opinion and several United States Supreme Court decisions compel a different conclusion.

Prior to making the statements noted above, the Iowa Supreme Court said that in determining whether a taking has occurred factors of particular importance include the economic impact of the regulation on the landowner and the extent to which the regulation has interfered with distinct investment backed expectations.<sup>251</sup> The United States Supreme Court recently said that property regulations effect a taking if they deny an owner economically viable use of his land.<sup>252</sup> Economic impact arguments, however, have not been very successful. Courts primarily focus on the landowner's rate of return given the application of the regulation. If this return is reasonable and the regulation has a valid governmental purpose, courts will ordinarily not find a taking. Courts do not attach much importance to the rate of return a landowner could realize without the burdens of the regulation, i.e., the opportunity cost to the landowner of the regulation.<sup>253</sup>

Soil erosion and water pollution control are firmly established state interests. Reasonable regulations designed to further these interests will almost always be upheld as valid exercises of state power and not as takings.<sup>254</sup> Taking issues, however, are decided on the unique facts and circumstances of each case. Therefore, under some circumstances the burden imposed on a landowner may outweigh the state's interest in soil erosion and water pollution control. In such a case the landowner would be entitled to compensation.

#### VII. Summary and Conclusions

The arrangements that have evolved for implementing agricultural non-point pollution control programs reflect a number of difficulties that surround agricultural nonpoint pollution. Most significantly, the physical processes resulting in sediment, plant residue, and chemical pollution from field operations are not thoroughly understood. The lack of a firm evidence base has caused most states to shy away from major political or financial commitments to agricultural nonpoint pollution control. Most states have backed away from exercising existing pollution control authority to this end because, without convincing evidence of culpability, enforcement would be very difficult. Soil loss has become a proxy indicator for agricultural nonpoint pollution. This represents a trade-off between the high costs of establishing true pollution relationships and inefficiencies stemming from the use of an imprecise performance indicator. In the near term, as research into pollutant delivery mechanisms continues, reliance on soil loss as a proxy for pollution appears to be a reasonable compromise.

A direct consequence of the focus on soil loss has been reliance on soil conservation districts for primary implementation of agricultural



nonpoint pollution control programs. However, this transfer of responsibilities from pollution control authorities has not been accompanied in most instances with sufficient technical or administrative resources to sustain the implementation effort. Federal funding under Section 208, which most states relied on for areawide planning and program design, has been discontinued. A few states have appropriated funds for additional staff and other district expenses relating to agricultural pollution control, but this is by no means the norm.

The current implementation trade-offs point to the importance of continued research into nonpoint pollution mechanisms and remedial strategies. It is highly significant that the major remaining federal financial commitment to agricultural pollution control, the Rural Clean Water Program, has exactly this aim. It is to be hoped that the research and demonstration activities under the RCWP will be extended as they constitute a critical link in the scientific underpinnings of effective control programs.

Another difficulty in implementing agricultural nonpoint pollution programs concerns functional and strategic differences between pollution control authorities and soil conservation agencies. The former have the authority but do not have an appropriate organizational infrastructure. Conservation agencies have a suitable infrastructure, but have goals that are not always consistent with pollution control and constituents whose interests may be directly opposed to it. The two bureaucracies represent very different strategic philosophies: conservation agencies are steeped in voluntary programs and uneasy with regulation while pollution control authorities have the opposite experience. For conservation district board members, even subtle shifts toward a regulatory role may increase their

exposure to tort liability. Uncertainty about possible defenses may discourage them from carrying out new responsibilities.

A third difficulty with agricultural nonpoint pollution is that it varies widely in composition and severity within and among states. This creates needs for targeting control efforts. It also presents a need for criteria according to which abatement efforts can be allocated among locales and tactics. The tactical aspect has been partially addressed through the identification of best management practices. States that have cost-sharing programs are meticulous in limiting funding to BMPs. USDA conservation agencies have increasingly directed their technical and financial support away from non-soil-conserving practices and projects. These are positive signs. Yet, in-stream management alternatives, by and large, have been given little notice. Furthermore, criteria for directing program dollars and efforts toward critical areas are poorly developed. Those that do exist have not been systematically built into the allocation of funds for conservation districts and SCS and ASCS offices.

The overriding objectives in implementing agricultural nonpoint pollution abatement programs should be effectiveness and cost-efficiency. Only a few state programs give much hope for major effects. Most have not gone much beyond the identification and planning stages. Cost-efficiency has been hampered by lack of information and unwillingness to make significant administrative adjustments. However, the outlines of an idealized implementation effort can be discerned. First, it would entail multi-purpose resource management agencies equipped to address a wide range of land and water use issues at a local (or regional) level. This would mean consolidating the roles of a number of separate agencies, for example conservation districts, sanitary districts, park districts, drainage

districts, etc., that operate independently in most states. Appropriate changes in statutory authorities would be required. Second, state funds for implementing nonpoint pollution control programs would be allocated to the resource management agencies according to the severity of local problems. Third, a mechanism for assuring the attention of all landowners and the active participation of selected landowners would be required. Existing education and technical assistance programs can be adapted to the former challenge. For the latter, a complaint-triggered subsidy program seems promising. Here, the bulk of program efforts and funds would be directed to areas having problems significant enough to warrant complaints. Such a program must be devised carefully so as not to reward violators unduly (perhaps giving rise to "friendly" complaints) or to be overly inclusive such that selectivity is lost. Subsidized investments would be conditioned on long-term maintenance. Finally, an enforcement mechanism would stand behind the program in the event that voluntary inducements are inadequate to achieve compliance. Though mandatory measures should be used only as a last resort, and they may be tied to public subsidies, there is no other means for assuring that the most serious nonpoint pollution problems will be addressed. Concentrating assistance on best management practices in critical problem areas is the key to efficiency and effectiveness in the administration of agricultural nonpoint pollution programs.

Footnotes

1. 33 U.S.C. § 1251 et seq. (1972 and Supp. III 1980).
2. 33 U.S.C. § 1258 et seq. (1972 and Supp. III 1980).
3. Thirty four U.S. Department of Agriculture programs relate to soil erosion control. See USDA, Soil and Water Resources Conservation Act Summary of Appraisal Parts I and II and Program Report: Review Draft I (1980) (hereinafter RCA Program Report Review Draft). See also, C. L. Williams, Soil Conservation and Water Pollution Control: The Muddy Record of the United States Department of Agriculture 7 B. C. ENV'T'L. AFF. L. REV. 365 (hereinafter cited as Williams); R. J. Morgan, Governing Soil Conservation (1965) (hereinafter cited as Morgan); R. B. Held and M. Clawsen, Soil Conservation in Perspective (1965) (hereinafter cited as Held and Clawsen); and R. S. Dallavalle and L. V. Mayer, Soil Conservation in the United States: The Federal Role (Cong. Res. Ser., QE 80, 1980).
4. Pub. L. No. 74-76, 49 Stat. 163 (1935). Current version at 16 U.S.C. § 590(a-f) (1976 and Supp. IV 1980). This Act empowered the Secretary of Agriculture to control erosion in various manners.
5. Pub. L. No. 74-461, 49 Stat. 1148 (1936). Current version at 16 U.S.C. § 590(g-q) (1976 and Supp. IV 1980).
6. 16 U.S.C. § 590a (1976) provides that:

It is recognized that the wastage of soil and moisture resources on farm, grazing, and forest lands of the Nation, resulting from soil erosion, is a menace to the national welfare and that it is declared to be the policy of Congress to provide permanently for the control and prevention of soil erosion and thereby to preserve natural resources, control floods, prevent impairment of reservoirs, and maintain the navigability of rivers and harbors, protect public health, public lands and relieve unemployment, and the Secretary of Agriculture, from now on, shall coordinate and direct all activities with relation to soil erosion and in order to effectuate this policy is authorized, from time to time--

(1) To conduct surveys, investigations, and research relating to the character of soil erosion and the preventive measures needed, to publish the results of any such surveys, investigations, or research, to disseminate information concerning such methods, and to conduct demonstrational projects in areas subject to erosion by wind or water;

(2) To carry out preventive measures, including, but not limited to, engineering operations, methods of cultivation, the growing of vegetation, and changes in use of land;

(3) To acquire lands, or rights or interests therein, by purchase, gift, condemnation, or otherwise, whenever necessary for the purposes of this chapter.

7. 16 U.S.C. § 590a(4) (1976).

8. 16 U.S.C. § 590c (1976) provides that:

As a condition to the extending of any benefits under this chapter to any lands not owned or controlled by the United States or any of its agencies, the Secretary of Agriculture may, insofar as he may deem necessary for the purposes of this chapter, require--

(1) The enactment and reasonable safeguards for the enforcement of State and local laws imposing suitable permanent restrictions on the use of such lands and otherwise providing for the prevention of soil erosion;

(2) Agreements or covenants as to the permanent use of such lands; and

(3) Contributions in money, services, materials, or otherwise, to any operations conferring such benefits.

9. Id. at 16 U.S.C. § 590c(3) (1976).

10. 16 U.S.C. § 590e (1976) provides, among other things, that "The Secretary of Agriculture shall establish an agency to be known as the 'Soil Conservation Service,' to exercise the powers conferred on him by this chapter..."

11. D. H. Simms, The Soil Conservation Service 74 (1970) (hereinafter cited as Simms). See also: Morgan, supra note 3, at 37.

12. Id.

13. Soil Conservation Service, U.S. Department of Agriculture, A Standard State Soil Conservation District Law (1936).

14. Simms, supra note 11, at 74; Morgan, supra note 3, at 37. The "soil conservation district" concept was not universally favored within the USDA. The Extension Service and the Land Grant Universities viewed it as a competing channel for federal relations with farmers and, hence, took particular issue with it. See D. H. Simms, supra note 11, at 74 and Morgan, supra note 3, at 58-64.

15. Simms, supra note 11, at 77-8: "The State laws varied somewhat but generally included...five provisions:

1. Creation of a state soil conservation committee as an agency of the state, whose job is to assist in the formation of conservation districts and to coordinate the affairs of districts as local subdivisions of state government...

2. A petition-and-referendum procedure for the formation of a district... All occupiers of lands within the boundaries outlined by the [state] committee are eligible to vote...
  3. Appointment by the [state] committee of two supervisors (in some states called directors or commissioners) and the subsequent election of additional supervisors-usually three-from within the district to form a governing body for the district.
  4. Authority for the district to conduct surveys, investigations; and research relating to soil erosion and its prevention; to develop comprehensive plans for conservation within the district; to conduct demonstrations and disseminate information; to enter into contracts or agreements with landowners and operators to carry out conservation programs; to enter into agreements with government agencies; to purchase, lease, or otherwise acquire or dispose of land and equipment.
  5. Procedures for taking in additional land and...for dissolving the district."
16. Williams, *supra* note 3, at 378. For a survey of provisions of state conservation district laws as of January 1, 1975, see USDA, Soil and Water Resources Conservation Act 1980 Appraisal, Part II 244-53 (1981) (hereinafter cited as RCA Study Part II).
  17. There are 3,209 counties and 2,925 conservation districts. U.S. Department of Agriculture, Soil and Water Resources Conservation Act 1980 Appraisal Review Draft Part II 7-26 (1980) (hereinafter cited as RCA Review Draft Part II); National Association of Conservation Districts, Nonpoint Notes on 208 Implementation (February 20, 1981). By contrast, the United States has been subdivided into 246 major "hydrologic basins." M. Rupert Cutler, "Taking it to the Farms," WATER QUALITY MANAGEMENT BULL. U.S. Environmental Protection Agency 18 (March 1980).
  18. W. R. Parks, Soil Conservation Districts in Action 148-51 (1952). See also note 16 *supra*. Twenty-seven states permitted districts to regulate land as of January 1, 1975. Some states required as much as a 90 percent majority to approve land use regulations.
  19. Simms, *supra* note 11, at 79.
  20. National Association of Conservation Districts, NACD-208 (May 20, 1977). As of January 1, 1975, sixteen states allowed districts or subdistricts to levy taxes. Sixteen states, including most of those which allowed taxation, also allowed districts or subdistricts to issue bonds. Thirty-one states allowed districts to borrow funds.
  21. In fiscal year 1980, funds and services totalling \$255,804,000 was allocated from non-federal sources to soil and water conservation districts in states and territories of the U.S. Of this total, \$77,341,492 (30%) came from state and territorial governments,

\$89,267,357 (35%) came from local governments, and \$89,195,406 (35%) came from private individuals and organizations. The total non-federal funding grew by 169% between 1968 (\$95,235,000) and 1980 and, in the process, more than offset general price inflation of (115%). However, the state and territorial governments' proportionate share of district support was larger (32%) in 1968 than in 1980. The non-federal support for conservation activities varies dramatically by state. In 1980, programs in California, Illinois, Iowa, Nebraska, and Texas received more than \$12,000,000 while contributions amounted to less than \$2,000,000 in 10 states. U.S. Department of Agriculture, Soil Conservation Service, National Summary Estimates -- Non-Federal Contributions of Funds and Services to Soil and Water Conservation District Programs Fiscal Year 1980 (1981). See also: USDA, RCA Study Part II, supra note 16, at 277. A 1961-2 survey of district finances is reported by Morgan, supra note 3, at 240-7 and App. B.

22. Morgan, supra note 3, at 247-50. In January 1981, state and local funds supported 508 district executives (429 full-time), 2,452 secretaries or clerk typists (1129 full-time), 979 technicians (636 full-time), and 624 equipment operators (155 full-time) in the 52 states and territories. Ohio's districts employed the largest number (with state and local funds) with 290 (230 full-time) employees while New Mexico, Puerto Rico, and the Virgin Islands supported no district employed with state or local monies. National Association of Conservation Districts, Nonpoint Notes on 208 Implementation No. 43 (February 20, 1981).
23. Board members are called supervisors in 36 states, directors in 13 states, and commissioners in 3 states. (States, here, encompass Puerto Rico and the Virgin Islands.) USDA, RCA Study Part II, see supra note 16 at 250-1. The term "supervisor" is used inclusively in this paper.
24. Morgan, supra note 3, at 214. Only seven states required representation of urban or non-farm interests on district boards at the beginning of 1977. Twenty-three states required that some or all supervisors own or occupy land in the district while four states reserved positions for representatives of specially designated areas. USDA, RCA Study Part II, supra note 16, at 250-1. Appointed supervisors are usually selected by state soil conservation committees or other state officials with close ties to agriculture.
25. As of January 1, 1975, four state committees were composed exclusively of district supervisors, 18 state committees (excluding the four just mentioned) were required to have a majority of farmers or supervisors, three state committees required equal representation of supervisors and state agency personnel, and state agency personnel hold a majority of the positions on the state committee in two states. In the remaining 25 states, laws do not specify that district or state agency personnel must be elected or appointed to a majority of seats on the state committee. USDA, RCA Study Part II, supra note 16, at 244-45. Even where majority membership of farmers or supervisors is not legally required, it has been the usual practice to select farmers, supervisors, or state agency personnel to state committees. The heavy reliance in appointments or special elections to select state committee

members helps assure this outcome. See generally Morgan, *supra* note 3, at 205-14.

26. USDA, RCA Study Part II, *supra* note 16, at 250-1. Some or all supervisors were elected at general elections in only 11 states as of January 1, 1977. Special elections were used to elect some or all supervisors in 30 states. All supervisors were appointed in eight states.
27. Morgan, *supra* note 3, at viii.
28. 7 C.F.R § 660.3 (1977).
29. Simms, *supra* note 11, at 82.
30. 7 C.F.R. § 660.3(b) (1977). The SCS often assists and guides the district supervisors in the formation of their general programs and annual plans. Parks, *supra* note 18, at 30-1.
31. Morgan, *supra* note 3, at 232-8. Also, interview with J. E. Lake, Water Quality Specialist, National Association of Conservation Districts, April 15, 1981.
32. Id.
33. Id.
34. A 1977 GAO study identified a number of flaws in SCS procedures, including: (1) passive responses to the initiatives of farmers as opposed to aggressively seeking out severe erosion problems; (2) development of over-elaborate conservation plans; (3) lack of followup visits on implementation of conservation plans, and (4) advice conflicting with that given by other USDA agencies. To Protect Tomorrow's Food Supply, Soil Conservation Needs Priority Attention. Report to the Congress by the Comptroller General of the United States ii (February 14, 1977) (hereinafter cited as 1977 GAO Report).
35. USDA, RCA Study Part II, *supra* note 16, at 262. Levels of state and local support have increased to more than offset decreased federal commitments to soil conservation programs. Sixty-one percent of all state laws to 1978 affecting soil and water resources were passed between 1965 and 1978. Local laws dealing with soil and water resource also surged during this period. By 1981, eleven states had appropriated funds for conservation cost-sharing to supplement federal funds available through the ACP. In addition, Missouri has funded a cost-sharing program with \$200,000 from a non-recurring federal grant under Section 208. USDA, RCA Study Part II, *supra* note 16, at 255-6 and 287-8 and telephone interview with J. Howland, supervisor of Missouri's nonpoint pollution control program, April 13, 1982.
36. Pub. L. 74-461. See also note 5 *supra*. A predecessor to the Soil Conservation and Domestic Allotment Act of 1936, the Agricultural Adjustment Act of 1933 (Pub. L. No. 73-10, 48 Stat. 31 (1933)),



provided in part for direct federal payments to farmers who reduced acreages planted to specific surplus crops. The goal was to support crop prices and farm incomes by reducing supplies. This scheme was declared unconstitutional in United States V. Butler 297 U.S. 1 (1936). Generally, soil depleting crops were also the row crops which were in oversupply, so the ACP accomplished the same aims as the 1933 legislation.

37. 16 U.S.C. § 590g(a) (1976).
38. 16 U.S.C. § 590g(a)(6) (1976). This change followed by a year a major overhaul of the ACP, during which it was renamed the Rural Environmental Assistance Program. The program was redirected to emphasize abating agricultural pollution, improving environmental quality, and obtaining lasting conservation benefits. The original name was restored in 1974.
39. 16 U.S.C. § 590g(a) (1976).
40. The USDA publishes each year a list of specific practices approved for cost-sharing under the ACP. The practices should accomplish one or more of the following: "(a) Establish long-lasting protective cover. (b) Improve or sustain existing protective cover. (c) Conserve or safely dispose of water. (d) Benefit wildlife. (e) Establish or improve stands of forest trees. (f) Give protection against soil erosion. (g) Prevent or abate agricultural-related pollution of water, land, and air. (h) Meet special state or county conservation needs." 7 C.F.R. § 701.9. Two types of cost-sharing agreements with farmers are available: (1) annual agreements; and (2) long term agreements. The annual agreements usually involve the initial implementation of a conservation measure for which long-term expenses or adjustments in the farm operation are not necessary. Up to 90 percent of the cost of such measures may be paid with ACP funds, up to a maximum of \$3,500 per participant. However, "the maximum level of cost-sharing for each practice shall be the percentage of the average cost...considered necessary to obtain the needed performance" 7 C.F.R. § 701.13(a). Usual cost share rates are around 50 percent. Low income farmers may receive up to 90 percent. Long term agreements may be appropriate where costs or adjustments over several years will be required. Fifty to 75 percent of such costs may be shared for three to ten years 7 C.F.R. § 701.13(c), 701.16(a). Up to \$3,500 per year may be paid to a single participant under the long-term agreement. Planning and technical services for long term measures must be provided by the SCS and soil conservation districts 7 C.F.R. § 701.15(b).
41. ACP administrative arrangements are described briefly in Phase 1 Evaluation, note 52 infra, at 11-2.
42. States are divided into local administrative areas no larger than one county in size. Farmers within each area who participate in ASCS programs are eligible to participate in electing a three-member local ASC committee each year. The local committee members, in turn, join in an annual county convention to select a county committee composed of three farmers residing in that county. County committee members hold

three-year, staggered terms. The county extension agency may serve as the secretary to local and county committees, in which case the agent becomes a non-voting member. The state committee is composed of three to five farmers who reside in the specific state and who are appointed by the Secretary of Agriculture. The State Extension Director is an ex officio member of the state committee.

The "program development groups" set guidelines and policies for certain ASCS programs, including the ACP. 7 C.F.R. § 701.10 (1980). The county program development group includes the county ASC committee, representatives of the SCS, Forest Service, Farmers Home Administration, Extension, and the state forest agency. 7 C.F.R. § 701.2(a) (1980). The state program development group includes the state ASC committee, the State Extension Director, the State Soil Conservationist, representatives of the Forest Service, Farmers Home Administration, state forestry agency, state water quality agency, and state Soil Conservation Committee. 7 C.F.R. § 701.2(f) (1980). The national program development group includes representatives of the ASCS, SCS, Forest Service, Science and Education Administration (Extension), Economics, Statistics and Cooperative Service, Farmers Home Administration, Office of the General Counsel (USDA), Office of Budget Planning and Evaluation (USDA), Environmental Protection Agency, and Office of Management and Budget. 7 C.F.R. § 701.2(c) (1980).

43. 7 C.F.R. § 701.10 (1980).
44. Id. The requirement that county policies and procedures must be approved by the state ASC Committee resulted from a legislative change in 1980. Pub. L. No. 96-108, 93 Stat. 836.
45. 7 C.F.R. § 701.11(b) (1980).
46. 7 C.F.R. § 701.2(c) (1980).
47. See generally Morgan, *supra* note 3, at 286-319.
48. See note 42, *supra*.
49. 7 C.F.R. § 701.16(b) (1980).
50. Simms, *supra* note 11, at 98. "Most district cooperators take advantage of ACP payments. Some ACP participants, however, are interested in getting help on just one practice and see no advantage in becoming district cooperators.  
"Through the years, ACP referrals have made up a growing part of the SCS work load. In recent years, an average of 1 million farmers and ranchers annually have taken advantage of ACP cost-sharing help. About one-fourth of these involved some technical assistance from the SCS." Id.
51. The transfers are made at the discretion of ASC committees. The SCS has complained that the transfers "fail, by a wide margin, to cover the actual cost of servicing the cost-sharing program." Simms, *supra* note 11, at 99.

52. Accomplishments of the Conservation Operations Program are reported in: USDA, Soil Conservation Service, Conservation Highlights (annual); USDA, Soil Conservation Service, Status of Progress Items for Fiscal Year 1980 and Cumulative as of September 30, 1980 (1981) (hereinafter cited as 1980 Progress Items); and USDA, Land and Water Conservation Task Force, Impact and Capability of Soil and Water Conservation Practices 3 Vols. (1979). Summaries of activities under the Agricultural Conservation Program are in: USDA, Agricultural Stabilization and Conservation Service, Agricultural Conservation Program, 1979 Fiscal Year Statistical Summary (1980) (hereinafter cited as 1979 ACP Summary); USDA, Agricultural Stabilization and Conservation Service, Agricultural Conservation Program Practice Accomplishments by States, 40 Year Summary (1936-1975) (1976) (hereinafter cited as ACP 49 Year Summary); and USDA, Agricultural Stabilization and Conservation Service, National Summary Evaluation of the Agricultural Conservation Program, Phase I (1980) (hereinafter cited as Phase I Evaluation). General Statistics on soil and water problems and trends are available in RCA Study Part II, supra note 16, and USDA, Soil and Water Resources Conservation Act 1980 Appraisal Part I (1981) (hereinafter cited as RCA Study Part I). The most recent comprehensive surveys of U.S. land and water resources are contained in USDA, Soil Conservation Service, 1977 National Resource Inventories (1978) and U.S. Water Resource Council, Second National Water Assessment (1978). Criticisms of the USDA's conservation programs are contained in the 1977 GAO Report, supra note 34. See also Williams, supra note 3.
53. 1980 Progress Items, supra note 52, at 1. About 1.5 billion acres of the U.S. (excluding territories) is privately owned. Ninety percent (1.36 billion acres) of the non-federal land is available for agriculture. In 1977, 413 million acres were used for crops, 133 million acres were used for pasture, 414 million acres were used for grazing, 376 million acres were forested, and 22 million acres were used for farmsteads and other uses. See National Agricultural Lands Study, Agricultural Land Data Sheet (1980). Cumulative SCS statistics to 1980 suggest that somewhat less than 46 percent of non-federal land has been subject to conservation planning; the exact percentage is indeterminant due to the inclusion of Puerto Rico and the Virgin Islands in SCS reports. Many plans have never been fully implemented. USDA, Soil Conservation Service, Conservation Highlights 1980, supra note 52, at 14.
54. Id. This total included 10,783,285 acres of cropland, 5,307,587 acres of pasture and hayland, 23,837,684 acres of range and native pasture, 2,014,604 acres of forest land, 2,840,096 acres of wildlife land, 152,438 acres of recreation land, and 684,684 acres of land in other uses.
- "Adequate protection," for purposes of erosion from rainfall ("sheet and rill" erosion) is defined in terms of "soil tolerance levels" or "T-values." This is the average annual loss of soil per acre which will not seriously impair the long-term productivity of land for agricultural uses. For crop, pasture, and forest lands, the accepted "T-value" is five tons/acre/year. For more fragile rangeland,

two tons/acre/year is the accepted limit. For example, a 1979 study estimated that soil losses averaging 16 to 19 tons/acre/year over 50 years in two areas of the Corn Belt could reduce corn and soybean yields by about 15 percent in the year 2030. If soil losses continued at 1977 levels for the next half-century, erosion would cause yield losses by 2030 equivalent to taking eight percent of the cropland base out of agriculture. The problem is somewhat worse than average in the Corn Belt, where 43 percent of land used for row crops is highly erodible. There, if 1977 losses are allowed to persist, corn and soybean yields could decline by 15 to 30 percent by the year 2030. National Agricultural Lands Study, Soil Degradation: Effects on Agricultural Productivity, at 26-8 (1981) (hereinafter cited as NALS Interim Study 4). See also W. D. Shrader and G. S. Langdale, Effect of Soil Erosion on Soil Productivity (1981).

55. Tracing the consequences of soil conservation or pollution control measures requires knowledge of complicated physical processes and, in some cases, costly monitoring of soil or water conditions. Knowledge of soil loss mechanics is reasonably advanced. The "universal soil loss equation" relates soil types, topography, rainfall, management practices, etc. to the rate of sheet and rill erosion on a wide variety of soils (especially those of the Corn Belt) with reasonable accuracy. See generally W. H. Wischmeier and D. D. Smith, Predicting Rainfall Erosion Losses: A Guide to Conservation Planning, USDA, Agriculture Handbook No. 537 (1978). The equation's limitations are reviewed in Wischmeier, "Use and Misuse of the Universal Soil Loss Equation." 31 J. SOIL & WATER CONSERVATION 5 (1976) and NALS Interim Study 4, supra note 54. For wind erosion, a "Wind Erosion Equation" was developed to relate soil losses to climate, soil, vegetative cover, and other conditions. See generally E. L. Skidmore and N. P. Woodruff, Wind Erosion Forces in the United States and Their Use in Predicting Soil Loss, USDA, Agriculture Handbook No. 346 (1968). The Wind Erosion Equation is suited mainly to the 10 Great Plains States.

Extrapolating land (soil, agricultural chemicals, animal wastes, etc.) management practices to water quality is quite a bit more complicated than is soil loss measurement as the transport process must be traced and physical and chemical dynamics of waterbodies must be modelled. Only recently have studies been mounted to provide comprehensive insight into these relationships. See, for examples: W. C. Sonzogni, T. J. Manteith, T. M. Heidtke, and R. A. C. Sullivan, A Management Technique for Choosing Among Point and Nonpoint Control Strategies, Great Lakes Basin Commission (1980); U.S. Environmental Protection Agency, Environmental Research Laboratory, User's Manual for Agricultural Runoff Management (ARM) Model, EPA-600/3-78-080 (1978); U.S. Environmental Protection Agency, Region V, Environmental Impact of Land Use on Water Quality: Final Report on the Black Creek Project, EPA-905/9-77-007; U.S. Environmental Protection Agency, Modeling Nonpoint Pollution from the Land Surface, EPA-600/3-76-083 (1976). See also Walter, Steenhuis, and Haith, "Nonpoint Source Pollution Control by Soil and Water Conservation Practices," TRANSACTIONS AM. SOC. AGR. ENG. 834 (1979).

56. USDA, Soil and Water Resources Conservation Act 1980 Appraisal Review Draft Part I, 2-30 to 2-33 (1980) (hereinafter cited as RCA Review

Draft Part I). Overall, 13 percent of farmland was subject to excessive erosion. Average annual erosion above 2 tons/acre/year is usually considered excessive on rangeland. Twenty-five percent of all U.S. grazing land (101,000,000 acres) sustained such losses in 1977. See also notes 55, supra, National Resource Inventories (1978), supra note 52, and RCA Study Part I, supra note 52, at 82-101.

57. Phase I Evaluation, supra note 52, at 18. Furthermore: "Approximately 19 percent (455 million tons) of all excess sheet and rill erosion on agricultural land occurs at rates in excess of 100 tons per acre per year. Erosion takes place at these rates on about 4.8 million acres or about 0.3 percent of the agricultural land base." Id., at 16.
58. 1977 GAO Report, supra note 34, at 5.
59. Id., at 16.
60. Id., at 14. Many of the plans quickly became outdated as farming patterns or ownership changed. There is no mechanism in SCS or district procedures to update or periodically review conservation plans. Exceptions to the periodic review of conservation plans exist in the Great Plains Conservation (Pub. L. No. 84-1021, 70 Stat. 1115 (1956)) and Small Watershed (Pub. L. No. 83-566, 68 Stat. 666 (1954)) programs of the SCS, and the long-term agreements under the Agricultural Conservation Program (7 C.F.R. 701.13 (1980) and note 40 supra) in which practices must be maintained for periods specified in contracts signed by cooperators or cost-share recipients.
61. Phase I Evaluation, supra note 52. Information for almost 61,000 cost-shared measures undertaken during program years 1975 through mid-1978 was collected and analyzed. Almost 40 percent of the measures included in this sample were aimed primarily to reduce erosion. Id. at vii-viii.
62. "Phase I of the evaluation concentrated on the following subjects:
  - impact of cost-shared practices on sheet and rill erosion by water,
  - impact of cost-shared practices on irrigation water use,
  - acres served and capacity of water impoundment reservoirs,
  - impact of forestry practices,
  - size of farms receiving assistance, and
  - type of farms receiving assistance..."Phase I of the evaluation does not address the impacts of the program or assisted practices on...wind erosion, water quality, changes in productivity capacity, wildlife habitat, and off-site impacts.  
"In addition, the study does not address the impacts of the program on the farmer's cost of production." Id., at vii. A second phase of the ACP evaluation will include "an assessment of the impact of assisted practices on wind erosion and water quality." Id., at xiii.
63. Id., at viii.
64. Id.

65. Id. These measures were installed on some of the 87 percent of U.S. land which erodes at average rates less than five tons per acre annually.
66. Id. Moderate losses would arise from sustained soil losses averaging five to 14 tons per acre per year. Severe losses are those in excess of 14 tons per acre annually.
67. See text accompanying note 57 *supra*.
68. Phase 1 Evaluation, *supra* note 52, at viii. Explanations given for this imbalance include: (1) a lack of information available to program managers regarding areas of critical needs; (2) the concentration of crop production on less erosive land; (3) farmers' decisions about where to implement practices on their land are largely conditioned by income and production concerns; and (4) the tendency to view highly erosive lands as crop production areas only in times of high demand, in which case cover crops are relied on to resolve erosion problems in lower price years. Id., at 20.
69. Phase 1 Evaluation, *supra* note 52, at 18-34.
70. Id.
71. J. E. Lake, *supra* note 31. Mr. Lake supervised what is perhaps the most exhaustive applied study to date of water quality in relationship to agricultural land use practices. This study of the 12,000 acre Black Creek watershed in Allen County, Indiana began in 1973 with a grant from the U.S. Environmental Protection Agency and is scheduled for termination in 1982. See generally U.S. Environmental Protection Agency, Region V, *supra* note 55. Little of a general nature linking land management practices to water quality in Black Creek can be concluded from the project. According to Mr. Lake, the most definitive water quality improvements resulted when completion of a nearby sewage plant ended the use of septic systems in a portion of the basin. See also M. F. Walter, T. S. Steenhuis, and D. A. Haith, *supra* note 55.
72. Id. See also note 55, *supra*.
73. See note 55, *supra*.
74. L. W. Libby and J. L. Okay. "National Soil and Water Conservation Policy: An Economic Perspective." 8 J. NORTHEAST AGR. ECON. COUNCIL 313 (1979).
75. 1977 GAO Report, *supra* note 34.
76. Council on Agricultural Sciences and Technology. Soil and Water Conservation Oversight. Report No. 60 (1976). The Council is a non-profit organization headquartered in Ames, Iowa that conducts independent research and evaluations on issues relevant to agriculture.
77. Pub. L. No. 95-192, 91 Stat. 1407 (1977), 16 U.S.C. § 2001-9 (Supp. IV 1980). See also L. W. Libby and J. L. Okay, *supra* note 74 and C.

Leman, "Political Dilemmas in Evaluating and Budgeting Soil Conservation Programs: The RCA Process," Soil Conservation Policies, Institutions and Incentives, Eds. H. G. Halcrow, E. O. Heady, and M. L. Cotner 47 (1981).

78. 16 U.S.C. § 2203(c) (Supp. IV 1980).
79. 16 U.S.C. § 2006(a) (Supp. IV 1980).
80. RCA Study Part I, supra note 52, RCA Study Part II, supra note 16, and USDA, Soil and Water Resources Conservation Act Program Report and Environmental Impact Statement, Revised Draft (1981) (hereinafter cited as RCA Program Report Revised Draft). The latter document was to be further refined in preparation for submitting recommendations to Congress in April 1982. G. Leman, supra note 77, at 61. RCA Review Draft Part I, supra note 56, RCA Review Draft Part II, supra note 17, RCA Program Report Review Draft, supra note 3, and USDA, Soil and Water Resources Conservation Act Environmental Impact Statement (Draft) (1980) were preliminary reports of the RCA process.
81. "Once RCA had been enacted, Agriculture Secretary Bob Bergland issued a December 1977 memo giving 'leadership responsibility' to Rupert Cutler, the assistant secretary for conservation, research and education and delegating to SCS the 'authority to administer' the effort (Table 2). The memo, probably drafted by SCS, directed that only SCS activities be discussed. Departmental officials who oversaw USDA policy analysis unsuccessfully objected that this arrangement would give SCS too much freedom to use the process for its own purposes. Their fears were soon vindicated. SCS assembled an RCA manual containing little guidance on data management and analysis...Instead, the manual orchestrated a series of 9,000 public meetings, at which the public was invited to 'discuss our soil and water resources and how to conserve them.' By late 1978, more than 164,000 people had participated...  
"Opposition to this initial SCS approach to RCA developed quickly in OMB, GAO, ASCS, and the Senate Agricultural Committee...  
"These pressures became overwhelming, and as recorded in an October 1978 memo, Secretary Bergland acted to prevent RCA from seeming 'essentially an SCS product, biased toward that agency's point of view'...The scope of RCA was expanded from the 15 soil and water programs in SCS to also include 19 others throughout USDA...Most importantly, Bergland relieved SCS of primary control of RCA, retaining for it a 'major role,' but giving operational authority to an interagency Coordinating Committee.  
"The RCA Coordinating Committee had 10 members, 7 from USDA agencies and 3 from various policy offices. The 7 USDA agencies represented were ASCS; Economics, Statistics, and Cooperatives Service (ESCS); FmHA; Forest Service; Rural Electrification Administration (REA); SCS, and Science and Education Administration (SEA). The policy offices represented were the secretary's own Office of Budget, Planning, and Evaluation (OBPE), OMB, and the Council on Environmental Quality (CEQ). (Since then, ESCS, SEA, and OBPE have all been reorganized and renamed.) The Coordinating Committee was chaired by the

deputy assistant secretary for conservation, research, and education. C. Leman, *supra* note 77, at 60-2.

82. The seven strategies were: (1) to redirect present programs; (2) to purchase conservation practices using "natural resource contracts"; (3) to offer "conservation bonuses" along with payments from conventional commodity support programs; (4) to force participants in USDA farm income programs to comply with conservation standards ("cross compliance"); (5) to concentrate federal efforts on urgent and chronic conservation problems; (6) to set standards with which state conservation programs must comply; and (7) to use regulatory authority to supplement assistance. RCA Program Report Review Draft, *supra* note 3, at 31-5.
83. C. Leman, *supra* note 77, at 64-8. The three alternatives identified in the revised draft of the Program Report were: "(1) continuation of current program trends; (2) redirection of federal programs toward agricultural resource problems with emphasis on targeting to critical problem areas, especially agricultural soil erosion; and (3) expanded emphasis on state and local roles and leadership redirection in federal programs as described in alternative 2." RCA Program Report Revised Draft, *supra* note 80, at 6-3.
84. Id. Among the recommendation stemming from the RCA process were the assignment of 25 percent of federal conservation program funds to critical areas within five years and an increase from 29 to 36 percent of the USDA budget for conservation programs. Id., page 68. See also RCA Program Report Revised Draft, *supra* note 80, at chapters 6 and 7, in which it is acknowledged that integration of soil conservation programs has "potential for improved services and increased effectiveness...However, the institutional and political implications are complex and far-reaching enough to require additional evaluation" (pages 6-48).
85. For a compelling critique of the RCA process, see C. Leman, *supra* note 77, at 68-85. See also: D. J. Allee, "Implementation of RCA: A Problem Accomodating Economics in Soil and Water Conservation" and L. W. Libby, "Interaction of RCA with State and Local Conservation Programs," both in H. G. Halcrow, E. O. Heady, and M. L. Cotner, *supra* note 77.
86. Pub. L. No. 96-108, 93 Stat. 836.
87. Id.
88. 7 C.F.R. § 701.10(b) (1980).
89. Federal Water Pollution Control Act Amendments of 1972, 33 U.S.C. § 1251 et seq. (1972 and Supp. I, 1981).
90. S. Rep. No. 92-414, 92nd Cong., 2nd Sess., 2, reprinted in [1972] U.S. Code Cong. & Ad. News 3668. This Senate report discusses the history of federal water pollution control legislation, including the 1970 and 1971 House and Senate hearings. The Senate hearings were conducted by



the Subcommittee on Air and Water Pollution and the House hearings were conducted by the Committee on Public Works.

91. Id. at [1972] U.S. Code Cong. & Ad. News 3674.
92. Id.
93. S. Rep. No. 92-414, 92nd Cong., 2nd Sess., reprinted in [1972] U.S. Code Cong. & Ad. News 3671-3674.
94. Id. at [1972] U.S. Code Cong. & Ad. News 3674.
95. 33 U.S.C. § 1251(a)(1) (1972 and Supp. I, 1981).
96. 33 U.S.C. § 1251(a) (1972 and Supp. I, 1981).
97. S. Rep. No. 92-414, 92nd Cong., 2nd Sess., 2, reprinted in [1972] U.S. Code Cong. & Ad. News 3705.
98. 33 U.S.C. § 1251(a)(5) (Supp. I, 1981).
99. H. Rep. No. 92-911, 92nd Cong., 2nd Sess. Two other provisions of the 1972 law are directly relevant to agricultural nonpoint pollution controls. Section 106 (33 U.S.C. § 1256 (1976) and Supp. III 1979)) authorized grants to support state program administration. Some funds under this section have been used to devise nonpoint pollution control programs. The Clean Lakes Program, authorized in Section 314 (33 U.S.C. § 1324 (1976 and Supp. III 1979)), provided assistance to states for protecting and restoring freshwater lakes that are accessible to the public. This has been used as part of watershed-wide strategems for reducing releases of sediments, nutrients, and other chemicals into lakes. Agricultural nonpoint pollutants often are key contributors to lake degradation. See generally W. Fletcher, "The Role of Conservation Districts and the Agricultural Community in Cleaning Up America's Lakes," 46 Nonpoint Notes on 208 Implementation (July 15, 1981) (National Association of Conservation Districts).
100. Id.
101. Id.
102. S. Rep. No. 92-414, 92nd Cong., 2nd Sess., 2, reprinted in [1972] U.S. Code Cong. & Ad. News 3703.
103. Id. at [1972] U.S. Code Cong. & Ad. News 3706.
104. Id. at [1972] U.S. Code Cong. & Ad. News 3705.
105. Id.
106. Id. at [1972] U.S. Code Cong. & Ad. News 3706.
107. 33 U.S.C. § 1288(a)(2) (Supp. I, 1981).

108. Id.
109. 33 U.S.C. § 1288(b)(1) (Supp. III, 1979).
110. 33 U.S.C. § 1288(b)(2)(D) (Supp. III, 1979).
111. 33 U.S.C. § 1288(a)(1) (1976).
112. 33 U.S.C. § 1288(a)(2) (1976).
113. 33 U.S.C. § 1288(a)(3) (1976).
114. 33 U.S.C. § 1288(a)(2)(B) (1976).
115. 33 U.S.C. § 1288(a)(6) (1976).
116. 33 U.S.C. § 1288(b)(1) (Supp. III, 1979).
117. Id.
118. Id.
119. Id.
120. 33 U.S.C. § 1288(b)(2)(D) & (E) (Supp. III, 1980).
121. 33 U.S.C. § 1288(b)(2)(F) (Supp. III, 1980).
122. Preparation of Water Quality Management Plans, 40 C.F.R. § 131.1(c) (1973).
123. Id.
124. 33 U.S.C. § 1288(c)(1) (1976).
125. 33 U.S.C. § 1288(c)(2)(A)-(I) (1976).
126. 40 C.F.R., Part 126 (1973).
127. Id.
128. 40 C.F.R., Part 126 (1973).
129. Id.
130. Natural Resources Defense Council v. Train, 564 F.2d 573 (1977).
131. 33 U.S.C. § 1251 et seq. (1976).
132. Goldfarb, Water Quality Management Planning: The Fate of Section 208, 8 U. TOL. L. REV. 105 (1976).
133. Id.

134. H. Rep. No. 96-71, 96th Cong., 2nd Sess. 25 (1980). This report is titled, Implementation of the Federal Water Pollution Control Act.
135. Id. at page 20.
136. Id. at page 24.
137. Id. at page 26.
138. Id. at page 25.
139. Under the terms of the agreement, SCS, ABCS, and the Cooperative Extension Service were to collaborate with EPA providing cost-share funds, manpower, technical expertise, scientific research, public information and education. Water Quality Management Bulletin, USEPA, March 1980 at 7. ASCS invested \$1.5 million in 1978 and \$1.6 million in 1979 for cost-share funds. EPA provided over \$1 million for monitoring. SCS contributed technical assistance for nearly the same amount. 31 Nonpoint Notes on 208 Implementation, NACD, April 20, 1980, at 9.
140. Id.
141. The seven watersheds were located in South Carolina, South Dakota, Indiana, Nebraska, New York, Oklahoma, and Washington. Water Quality Management Bulletin, USEPA, March 1980 at 7 and 31 Nonpoint Notes on 208 Implementation, NACD, April 20, 1980, at 9.
142. Water Quality Management Bulletin, USEPA, March 1980 at 7.
143. Id.
144. 31 Nonpoint Notes on 208 Implementation, NACD, April 20, 1980.
145. Water Quality Management Bulletin, USEPA, March 1980 at 7.
146. J. E. Lake, supra note 31.
147. 33 U.S.C. § 1251 et seq. (1976).
148. 33 U.S.C. § 1288(j)(9) (1976).
149. Id.
150. 7 C.F.R. § 634.1(a) (1978).
151. 7 C.F.R. § 634.3 (1978).
152. J. Risser, Bureaucratic Wrangle Kills RCWP, 33 J. SOIL & WATER CONSERVATION 252 (Sept. 1978).
153. 9 Environment Reporter 2395 (1978-79).

154. G. Protasel, Interorganizational Policy Making and Interagency Relations, delivered at the Western Political Science Association annual meeting at the Denver Hilton, March 27, 1981.
155. Id.
156. 31 Nonpoint Notes on 208 Implementation, April 20, 1980, at 10.
157. P. L. 96-108, 93 Stat. 835 (1979). See also G. Protasel, *supra* note 154.
158. 7 C.F.R. § 700 (1980).
159. Id.
160. The areas selected were Lake Tholocco, Alabama; New Castle County, Delaware; Rock Creek, Idaho; Highland Silver Lake, Illinois; Prairies Rose Lake, Iowa; Upper Wakarusa, Kansas; Bonne Idee, Louisiana; Double Pipe Creek, Maryland; Saline Valley, Michigan; Reelfoot Lake, Tennessee; Snake Creek, Utah; St. Albans Bay, Vermont; and Lower Manitowic, Wisconsin.
161. J. E. Lake, *supra* note 31.
162. See generally: United States Environmental Protection Agency, Office of Water and Waste Management, Water Planning Division, Implementation Status of State 208 Agricultural Programs (Draft), (1980) (hereinafter cited as 208 Implementation Status, Draft) and R. E. Beck, "Agricultural Water Pollution Control Law" in 2 Agricultural Law 212-37 (1981) (J. Davidson, ed.).
163. 208 Implementation Status, Draft, *supra* note 162, at 2. This report was compiled in mid-1980. The EPA has made no systematic attempt to update the summary data on state program implementation status, so more recent data is generally unavailable. Telephone interview with R. Thronson, Acting Chief, Water Planning Division, U.S. Environmental Protection Agency, April 14, 1982.
164. Id.
165. R. Thronson, *supra* note 163.
166. R. E. Beck, *supra* note 162, at 222.
167. 208 Implementation Status, Draft, *supra* note 162, at 5. Oregon and Alaska were the only states that had not designated lead agencies. A list of state statutory provisions relating to nonpoint pollution control agencies is in R. E. Beck, *supra* note 162, at 223 (note 362).
168. Id. These include state soil conservation agencies, departments of agriculture, health, and local affairs, water commissions, etc.
169. Id.

170. Id.
171. Telephone interview with J. Cain, Chief, Water Quality Planning Section, Wisconsin Department of Natural Resources, June 9, 1982.
172. Wisconsin Department of Natural Resources. The Wisconsin Nonpoint Source Water Pollution Abatement Program: A Report to the Governor and Legislature 10 (1982).
173. Id., at 11.
174. Id.
175. Illinois Environmental Protection Agency, Continuing Planning Process for Water Quality Standards Implementation (1977). Three regions were declared "designated water quality management planning regions" and placed under regional management authorities: the Southwestern Illinois Regional Planning Commission is the designated management agency for three counties around St. Louis along the Mississippi River; the Greater Egypt and Southeastern Illinois Regional Planning Commissions are responsible for 10 southern counties; and the Northeastern Illinois Planning Commission oversees program implementation in the six-county Chicago metropolitan area. All other counties in the state are in a "non-designated" area under state government supervision for water quality purposes.
176. The plan for the non-designated portion of the state is in Illinois Environmental Protection Agency, I-VI Water Quality Management Plan (1979).
177. Illinois Environmental Protection Agency, III Water Quality Management Plan 9 (1979).
178. Id. at 8-9. A Soil Erosion and Water Quality Advisory Committee consisting of representatives of most of these agencies serves in an advisory capacity to the Illinois Department of Agriculture.
179. See generally: Uchtmann and Seitz, "Options for Controlling Non-Point Source Water Pollution: A Legal Perspective," 19 NAT. RES. J. 587 (1979); R. E. Beck, *supra* note 162, at 224-9; U.S. Environmental Protection Agency, Environmental Research Laboratory, Alternative Policies for Controlling Nonpoint Agricultural Sources of Water Pollution (1978); and T. J. Mierzwa, "Planning and Implementation Frameworks for Soil Conservation and Water Quality Management," 47 Nonpoint Notes on 208 Implementation (1981) (National Association of Conservation Districts).
180. 208 Implementation Status, Draft, *supra* note 162, at Appendix B.
181. Id., at 2.
182. Id., at 9.
183. Id., at 3.

184. RCA Study Part II, supra note 16, at 287-8.
185. Id. Missouri's legislature has not appropriated funds for cost-sharing despite persistent requests by the Department of Natural Resources. The state's cost-sharing program has been funded temporarily out of a \$200,000 non-recurring federal grant under Section 208. Telephone interview with J. Howland, 208 Program Coordinator, Missouri Department of Natural Resources, April 13, 1982.
186. For example, an initial appropriation of \$500,000 for Illinois' cost-sharing program has been followed by two years in which no additional funds were included in the state budget.
187. 208 Implementation Status, Draft, supra note 162, at Chart 1.
188. Id. Contracts with the SCS, conservation clubs, private consultants, and the League of Women Voters are among the other avenues for increased educational programming.
189. Id. These are projects conducted under the MIP, Special ACP, and RCWP programs. See notes 139-161 supra and accompanying text.
190. 208 Implementation Status, Draft, supra note 162, at 2.
191. Id., at 4. The twelve states are: California, Hawaii, Illinois, Iowa, Maine, Massachusetts, Michigan, Montana, New York, Ohio, Pennsylvania, and South Dakota. Id., at Chart 1.
192. P. A. 80-159 § 1 (1977), Ill. Rev. Stat. Ch. 5 §§ 138.3-138.10.
193. Illinois Department of Agriculture, Rules and Regulations Relating to the Soil and Water Conservation Districts Act, Art. I Regs. I-XIII (April 18, 1980).
194. Id., at Rule 4.1.
195. Id.
196. Ninety-six of 98 districts met the deadline. G. Wood, Chief, Soil Conservation Bureau, Illinois Department of Agriculture, telephone interview, April 13, 1982.
197. Illinois Department of Agriculture, supra note 193, at Rules 2.1 and 4.1. Fourteen of 98 soil conservation districts in Illinois have adopted standards more stringent than the state program. Most of these districts have accelerated the timetable for meeting T-value benchmarks on all agricultural land. G. Wood, supra note 195.
198. Illinois Department of Agriculture, Division of Natural Resources, Progress Report, September 30, 1979-December 30, 1980 (1981). In total, educational contacts were made with over 231,000 people and numerous newsletters, news articles, and presentations in other media were issued during the period covered by this report. Id., at 10-11.

199. Ill. Rev. Stat. Ch. 5 § 138.6 (1979). For FY 1981, \$500,000 was appropriated for the cost-sharing program. P. A. 81-1307 § 17. The funds were distributed among 48 of the 98 soil and water conservation districts based on needs and administrative capabilities. Payments were for reduced tillage cultivation practices and range from \$10 to \$25 per acre based on the percentage of residues remaining on the soil surface after planting. The FY 1981 funds were distributed to 863 recipients. No single contractor can receive cost-share payments for more than three years or more than 50 acres per year. Illinois Department of Agriculture, Division of Natural Resources, *supra* note 198, at 12-3. The statutory cost-share program includes considerably more eligible BMPs and limits payments to 75 percent of the practice cost or lower limits set by the Department of Agriculture or a soil conservation district. No state funds were appropriated for cost-sharing for FY 1982 and none have been proposed by the Governor for FY 1983.
200. Ill. Rev. Stat. Ch. 5 § 138.8 (1979), Illinois Department of Agriculture, *supra* note 193, at Regs. XII-XIII.
201. Id.
202. Illinois Department of Agriculture, *supra* note 193, at Rule 12.5.
203. Ill. Rev. Stat. Ch. 5 § 138.8 (1979).
204. 208 Implementation Status, Draft, *supra* note 162, at Appendix B.
205. Id., p. 5.
206. Id.
207. Id.
208. See note 191, *supra*.
209. Maine, Massachusetts, New York, Pennsylvania, Ohio, and Hawaii take this approach. 208 Implementation Status, Draft, *supra* note 162, at Appendix A.
210. Iowa Code Ann. §§ 467A.1-467A.66 (1971 and 1981-2 Cum. Pocket Part). A discussion of early efforts to implement nonpoint source pollution controls in Iowa is in "Procedural Framework for Implementing Nonpoint Source Water Pollution Controls in Iowa," 63 Iowa L. Rev. 184 (1977). Enforcement under Iowa's program can arise in several ways: (1) private citizens may complain about land management practices that give rise to offsite damages; (2) districts may issue notices of depletive management practices; and (3) landowners may fail to meet a six-year deadline (after being informed of their specific erosion problems) for entering into a conservation agreement with a district. The first two sources give rise to administrative implementation plan and the state must provide cost-sharing for 75 percent of related costs if requested, (Cost-sharing is normally limited to 50 percent.) The landowner must implement the plan. The third source can result in a landowner being

declared ineligible to receive state cost-sharing assistance. In all cases, repeated failure to act on notices of non-compliance with soil erosion limits set by soil conservation districts is cause for a court order mandating that measures necessary for compliance be implemented.

211. Iowa Code Ann. § 467A.62 (1981-2 Cum. Pocket Part). This provision was added in 1980. Previously, enforcement actions could be generated only in response to complaints relating to offsite damages. "Conservation folders" serve to inform landowners of potential erosion problems on their farms. Such folders are to be prepared for all Iowa farms by 1985. Thereafter, "farm unit soil conservation plans" must be established for all farms. Once this has been accomplished, farmers are given a limited period to correct erosion problems. Districts can serve notices on landowners who fail to correct depletive practices. Failure to respond to annual notices for three years is cause for court enforcement proceedings. Administrative rules for the folder program will be completed in mid-1982 and a pilot program for preparing folders is planned for summer 1982. D. Lindquist, Iowa Department of Soil Conservation, telephone interview, April 29, 1982.
212. Iowa Code Ann. § 467A.44 (1971 and 1981-2 Cum. Pocket Part).
213. Eligible practices are listed in Iowa Admin. Code Ch. 5 § 5.82. Procedures for serving notice are in Iowa Code Ann. § 467A.61 (1981-2 Cum. Pocket Part).
214. Iowa Code Ann. § 467A.48 (1971 and 1981-2 Cum. Pocket Part). See also note 210, supra.
215. Iowa Code Ann. § 467A.61(2) (1981-2 Cum. Pocket Part).
216. Woodbury County Soil Conservation District v. Ortner, 279 N.W. 2d 276, 278-9, Iowa 1979. See also text accompanying notes 249-51 infra.
217. Id.
218. Calabresi and Melamed, "Property Rules, Liability Rules, and Inalienability: One View of the Cathedral," 85 Harvard Law Review 1089 (1972).
219. Id., at 1093-1105.
220. R. E. Coase, "The Problem of Social Cost," 3 J. L. ECON. 1 (1960).
221. See Samuels, "The Coase Theorem and the Study of Law and Economics" 14 Natural Resources Journal 1 (1974) and Mishan, "The Folklore of the Market: An Inquiry into the Economic Doctrines of the Chicago School," 9 Journal of Economic Issues 681 (1975).
222. Calabresi and Melamed, supra note 218, at 1105-15.
223. Bromley, "Property Rules, Liability Rules, and Environmental Economics," 12 J. ECON. ISSUES 43 (1978).



224. Cross-compliance refers to conditioning access to federal agricultural support and loan programs on participation in conservation programs. This was one strategy considered in the RCA process. See Benbrook, "Integrating Soil Conservation and Commodity Programs: A Policy Proposal," 34 J. SOIL & WATER CONSERVATION 150 (1979).
225. C. Osteen, W. D. Seitz, and J. B. Stall, Toward Instream Water Quality Management, Report to the EPA Environmental Research Laboratory (1980). See also T. J. Mierzwa, supra note 179.
226. Ill. Rev. Stat. Ch. 5 §§ 138.3-138.9. The upgraded responsibilities stem in part from the widespread adoption of state sediment control laws. A 1973 "Model State Act for Soil Erosion and Sediment Control" (Council of State Governments, 32 Suggested State Legislation 11-19 (1973)) proposed significantly enhanced district responsibilities and authority. The model act appears to have had significant influence on many of the 15 states (plus the District of Columbia and the Virgin Islands) now having sediment control laws. See generally RCA Study Part II, supra note 16, at 237-9.
227. For example, Illinois revised its Soil and Water Conservation Districts Act in 1981 providing for representation of districts by the State Attorney General in the event of tort actions by or against district boards. P.A. 82-245 § 22.08, revises Ill. Rev. Stat. Ch. 5 § 127.8 (1979).
228. Special long-term agreement (LTA) under the Agricultural Conservation Program requires that cost-shared practices be maintained for up to ten years. Such provisions might be adapted for use in BMP cost-sharing programs (state or RCWP), perhaps with payback penalties for premature abandonment of the subsidized practices.
229. Neb. Rev. Stat. § 2-3203 (1977). See also R. Marlette and C. Williams, "Nebraska Multi-Purpose Resource Districts" in Legal, Institutional and Social Aspects of Irrigation and Drainage and Water Resources Planning and Management 266 (1979).
230. R. Marlette and C. Williams, supra note 229. See also Aiken and Supalla, "Ground Water Mining and Western Water Rights Law: The Nebraska Experience," 24 S. DAK. L. REV. 619-20 (1979).
231. Aiken and Supalla, supra note 230, at 620.
232. Ditwiler, "Water Problems and Property Rights: An Economic Perspective," 15 NAT. RES. J. 663 (1975).
233. 377 U.S. 533 (1967).
234. In Natural Resources Defense Council, Inc. v. Train, 564 F. 2d 573 (1977), plaintiffs argued that Section 208 violated the Tenth Amendment by compelling the states to expend their own funds and to exercise their own sovereign powers in carrying out a federal regulatory program. The D.C. Court of Appeals disposed of this argument as

follows: "In the absence of any provision for sanctions the EPA may of course employ the accepted and traditional means of gaining state compliance by withholding funds under § 208(f), but that method would not violate the Tenth Amendment."

235. Friends of the Earth v. Carey, 552 F. 2d 25, cert. denied, 434 U.S. 902 (1977), involved New York's implementation plan adopted pursuant to the Federal Clean Air Act. New York had voluntarily obligated itself to implement the plan. In a suit by New York City citizens against the city seeking enforcement of the plan, the city argued that an enforcement order would violate the Tenth Amendment. The D.C. Court of Appeals held against the city finding that "the plan effects state and city policy decisions to be carried out by them according to their own dictates rather than those of the federal government."
236. Although the federal government undoubtedly has the power to regulate many pollution-causing activities under the Commerce Clause, e.g., see District of Columbia v. Train, 521 F. 2d 971 (1975), and Friends of the Earth v. Carey, supra note 235, the crucial issue ordinarily involves the extent to which the federal government can require state and local governments to implement the regulations, e.g., see District of Columbia v. Train, supra this note.
237. Liability concerns are particularly acute in those states with erosion and sediment control laws requiring, among other things, review and approval of control plans for land-disturbing activities and enforcement functions.
238. For a good summary of the various state approaches to management agency liability protection see the National Association of Conservation Districts Nonpoint Note No. 30 (April, 1980).
239. For example, Iowa has determined that insurance companies are reluctant to issue liability insurance covering Section 208 management agencies and insurance premiums would be exorbitant; however, in Kansas many SWCDs have taken out liability insurance with an approximate cost of \$200/district/year.
240. State laws vary, particularly as to the application of state tort claims laws. The application of such laws typically depends upon whether a management agency has the status of a "state agency." Some states, such as Indiana, have amended their laws to expressly include SWCDs. These laws ordinarily provide for defense by the Attorney General and payment of any judgment out of the State Fund. Sovereign immunity has been asserted in only Pennsylvania and Virginia in the form of an Attorney General opinion letter, while some other states assume that such assertion would not be upheld in court (NACD Nonpoint Note No. 30, April, 1980, information compiled through correspondence with administrative officers of state soil conservation agencies).
241. Supra note 233. The one person/one vote principle is grounded in the Equal Protection Clause of the Fourteenth Amendment.
242. Avery v. Midland County, 390 U.S. 474 (1968).

243. Kramer v. Union Free School District, 395 U.S. 626 (1969).
244. 410 U.S. 719 (1973).
245. 100 S. Ct. 1811 (1981)
246. The question is complicated by the fact that the power exercised by each management agency varies significantly. In most states authority to implement the water quality management plans is spread over many different agencies. Apparently, the greater the number of management agencies the less the authority each agency exercises and, hence, the harder it would be to establish the applicability of the Reynolds principle.
247. The Fourteenth Amendment does not contain the Fifth Amendment language that private property shall not be taken for public use without just compensation. The Fourteenth Amendment provides that no state shall deprive any person of property without due process of law. Some cases and commentators have interpreted several supreme court decisions as incorporating the Fifth Amendment compensation clause into the Fourteenth Amendment through the due process clause. The better interpretation is that these decisions have found independent public use and just compensation requirements within the definition of due process. Nowak, Constitutional Law 440 (1977).
248. Agins v. City of Tiburon, 100 S. Ct. 2138, 2141 (1980).
249. Woodbury County Soil Conservation District v. Ortner, 279 N.W. 2d 276 (1979). See also notes 216-7 supra and accompanying text.
250. 279 N.W. 2d 276, 279 (1979).
251. 279 N.W. 2d 276, 278 (1979).
252. Agins v. City of Tiburon, 100 S. Ct. 2138, 2141 (1980), citing Penn Central Transp. Corp. v. New York City, 438 U.S. 104, n. 36 (1978).
253. Id. These two cases are good examples of judicial reluctance to consider the landowner's opportunity costs. In both cases, the landowners argued that they would make considerable amounts of money without the regulations. The Court replied to these arguments by noting the reasonable, although lesser, returns available with the regulations.
254. State v. Dexter, 202 P. 2d 906 (Wash. 1949), involved Washington's forest practice law. This law required a landowner to secure a cutting permit prior to cutting timber on his land and to leave uncut all ponderosa pine less than sixteen inches in diameter. The Washington Supreme Court held that there was no taking, although the landowner was economically burdened by the law. The United States Supreme Court affirmed this decision without opinion. Dexter v. Washington, 338 U.S. 863 (1949).

Appendix: Publications Associated With Project No. 00-65-03-300-85 of  
the Illinois Water Resources Center

Braden, John B. 1980. "Coordinating Programs for Rural Water and Land Problems." Paper presented at 1980 Meeting of the American Water Resource Association, Minneapolis, MN. Department of Agricultural Economics Staff Paper 80-E-139, pp. 24.

Braden, John B. 1982. "Some Emerging Rights in Agricultural Land."  
American Journal of Agricultural Economics 64 (1982):19-27.