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by

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Introduction

This paper explores the general setting for funding state and local activities for the protection of groundwater quality. The attempt is to apply some of the concepts of public finance to the problems of natural resource management, a neglected branch of the institutional side of resource economics. It thus identifies some concepts for the evaluation of policy for federal and state programs intended to encourage more effective local action.

Groundwater protection is in an early stage of policy development. Superfund toxic waste sites, nutrient and pesticide contamination, petroleum spills, and other chemical leaks have received increasing media coverage. Testing of groundwater, while surprisingly expensive, is expanding. So far, only a small part of the national resource is directly implicated. Existing public management programs are being retooled to address groundwater protection; new programs are being added. Nebraska is an example at one end of the spectrum. It expects to spend over $300,000 over three years to study how to restructure its water quality managment activities. Wisconsin, at the other end, initiated a $2.4 million operating program (Horvath, 1985). Both are working with EPA funding, and with general and special revenue sources, including new fees for water users.

Whether for start-up costs or for program costs, using a variety of revenue sources fits the diversity of activity. Funds must be found for research to set new standards, to identify existing and potential sources of contaminants, to inspect potential sources of contaminants and provide technical assistance, to invest in risk reduction measures, for clean up and water source replacement, zoning changes, toxic chemical collection and disposal, septage treatment, monitoring wells, recharge zone mapping, aquifer modeling, . . .the list can be made quite long.

Several characteristics of these expenditures are worth noting. First is the traditional division between capital and operating costs. Large one-time expenditures suggest an examination of borrowing and the bond market. Changes in the use of taxation and inter-governmental transfers are relevant. The context for such funding is important to the choices for specific policies -- general changes condition what specific programs need to address. Also, conditions that affect capital investment can influence operating results and vice versa. Policies and programs need to be sensitive to the options of influencing results through either capital or annual expenditures.

State and federal financing for programs for community water supply, however, have been inhibited by the perceptions that a water supply can pay its way from user fees (Vaidya and Allee; also see Francis, et.al.). Distressed rural and central city systems have been something of an exception. Also, financing measures have been used to encourage municipal participation in multi-purpose storage projects. Groundwater protection, while related to community water supply, should not be allowed to suffer from this inhibition. This is not to say that more innovative use of fees should be ignored. The Wisconsin program cited above and the program of the Delaware River Basin Commission are examples.

Second, the activities and services involved are divided between several different parts of the inter-governmental system, and have different orientations and capabilities based upon past roles and activities. These will need to change to meet the new challenges. Financial policy can be an effective tool for policy makers to bring about new roles and relationships.

Many municipal water supply agencies obviously have a large stake in groundwater protection that is only partly matched by their role in protection. Contamination can threaten large investments in wells and treatment facilities, as well as the welfare and confidence of their customers. But the orientation of water suppliers is usually toward treatment and monitoring of the finished product, toward distribution and reliability. For example, they may <u>not</u> try to influence land use decisions in the recharge areas that would reduce risk. Responsibility for contaminant control is usually seen by water suppliers as the traditional role of others, expect perhaps in the immediate area of well heads and storage facilities. This varies somewhat from system to system and by region. The Northeast and Northwest, for example, have had a tradition of more extensive source protection by the supply agency, but this tradition was much weakened by the success of chlorine in combating bacterial contaminants.

Public health agencies at local, state, and federal levels divide the protection role with the resource management agencies (Booth and Bronson, 1984). All are heavily involved in regulatory approaches in public management and the related technically oriented bargaining that results. The health network tends to include fewer programs that plan and fund projects. Health programs tend to reinforce the product orientation of the water supplier. Resource management agencies tend to have more orientation to the water resource and its management.

Direct impact on the financing of state and local groundwater activities can be expected to be primarily

through the Environmental Protection Agency. But programs of the Farmer's Home Administration, Housing and Urban Development, even the Corps of Engineers and the other water agencies, cannot be overlooked.

Financing of Groundwater Programs is Restricted by Changes in Public Financial Policy

Finance policy has many direct implications for groundwater policy. Groundwater protection programs at all levels will have to find ways to cope with some massive changes in local and state finance that are in progress. More change is in prospect. Those of us concerned with water management and the inter-governmental structure should identify our concerns and make them known.

Water supply investments are a part of the larger public sector infrastructure and debt structure. In 1970, municipal debt service for all purposes was $24 billion with the interest portion at about $5 billion. By 1981, the total in nominal dollars had doubled to $52 billion, but the interest cost had tripled to $17 billion. In constant dollars, however, investment fell. New investment peaked in 1968 at $36 billion and had fallen to $27 billion by 1978, $21 billion by 1982, and was continuing to decline. On a net basis the nation has been disinvesting in infrastructure. The depreciated value of capital investments by local governments on a per capita basis rose from $1,900 to $2,500 between 1960 and 1968, peaked in 1978 at $2,900 and has been falling since. (See Hulten and Peterson, 1984, Sbragia, 1983.)

The tax exempt bond market was originally dominated on the buyer side by insurance companies, banks and the wealthy who could utilize tax sheltered income. Purposes for the funds were conventional public "hard" investments - water, sewer, roads, and bridges, along with a few schools and hospitals. After World War II, the market exploded and both sides of the market changed significantly. Banks found more attractive investments, such as equipment lease financing, as did insurance companies. Brokers found ways to make the bonds attractive to the small investors and now, individuals investing smaller amounts dominate the market. Public housing debt expanded greatly as did the rather massive subsidies to employers through industrial development bonds. Besides making capital more expensive, these changes compounded the uncertainty in the bond market. The market moves more in a day than it once did in six months. Policy changes, particularly federal tax rules, are much more of a factor in bond prices and yields. Privatization, state and federal credit enhancement devices, state bond funds and proposals for federal infrastructure banks are now more

relevant areas of concern to us here partly as a result of these changes. Examples will be discussed.

Potentially, an important factor in the political economy of local public investments is the position of the U.S. Treasury on tax reform (one of the many current reviews in Wrightson, 1986). For many years, staff at Treasury have pointed out that the tax break enjoyed by most tax exempt bond holders denies to the Federal tax collector more than is saved by the localities from the difference in interest rates between taxable and non-taxable bonds. In other words, if the Congress would, it could save money by directly subsidizing localities. However, based upon interviews with agency and congressional staff, it seems that a package of funding and tax policy changes that would leave state and local governments in the same relative position as currently, is quite unlikely. More likely is phased withdrawal of some part of the tax exempt privilege with existing exempt securities remaining untaxed for their lifetimes. At the least, tax exemption would be restricted to funding a core of public services in which water supply and environmental services, such as waste disposal, may or may not fit. One concept is to exclude from the tax exempt status any expenditure that has significant direct private beneficiaries, particularly commercial and fee paying users.

Increases in interest expense of from one-quarter to one-third would surely add to the already considerable reluctance of officials to invest (Hulten and Peterson, 1984, p. 170). These higher interest charges come on top of federal aid cuts that have reduced the pool of funds available for water related expenses. Revenue sharing has ended although there is some talk of revival. Many urban development grants have been reduced or eliminated. Farmer's Home Administration has been drastically cut back.

Indeed, local and state governments haven't worked out of the impact of the wave of tax resistance that was epitomized in California's Proposition 13 and Massachusetts' Proposition 2 1/2 (Pfiffner, 1983). Dependence on state funds from sales and income taxes has increased as has the use of non-property tax revenue arrangements by local governments. Hollister, California for example, recently raised its fees on new housing units for sewer, water and roads from $3,500 to $7,000 per unit. Winter Park, Colorado raised a similar fee to $10,000 per unit. Instead of the municipality financing the improvements through property taxes and general obligation bonds, the homeowner is financing through his mortgage with interest tax deductible.

A greater receptivity for fees has allowed pollution control agencies to consider funding new initiatives from such fees. An example is the Wisconsin program referred to

above (Horvath, 1985). An appeal of such fees is that they eiher link benefit to payment or culprit to payment.

But the prospects for change would not be complete if we didn't mention the effects of removal of federal income deductability for state and local taxes which has been proposed by the U.S. Treasury, endorsed by the President, and vigorously opposed by governors such as Cuomo of New York and others. Note that the House of Representatives' version of tax reform does not contain this provision. The Senate, as this is being written, has not acted. While this may end up applying only to the sales tax deduction, any such change would increase tax resistance, particularly in the high tax, high deduction, high service states, and reduce local and state capacity.

Another federal tax change of note has made financing easier. The tax amendments of 1981 made the concept of privatization of public services much more viable. In some cases, private providers are able through specialized roles and management skills to perform a function more cheaply than a public body. Some have estimated that a private firm can build a water or sewer plant at 20 to 40 percent less cost (Goldman, 1983). But in many cases, it is not clear that a specialized private organization is necessarily any more efficient than a specialized public organization of comparable scale (Fisk, et al., 1978 and AFSCME, 1984). It is clear, however, that the tax laws of 1981 made it possible to confer depreciation and other tax advantages from public facilities to the private investor. This can mean that the locality can get its service more cheaply in part by sharing in these federal tax advantages. While these tax provisions were restricted in 1984, enough scope still exists to make the concept of interest to investment bankers and consulting firms. It is possible that tax reforms would be adopted that would reduce the appeal of tax exempt financing, while at the same time, retain or even expand the appeal of privatization.

Again on the positive side for the supply of credit, enhancement of local credit by state policy and programs can have surprising results. Utah set up a fund to make partial loans subordinated to the usual tax exempt instruments (Findlinson, 1984). General obligation bonds were sold for $50 million with the expectation of a leveraging rate of 8:1 in order to achieve preferred lower cost loan status for the local share. As it turned out, the guarantees implied were achieved with a 31:1 ratio in water quality and 38:1 in water supply. In general, some feel a 20 percent savings in the present value of interest cost is possible (Moses, 1984). When rates were at 10.5 percent, guarantees were felt to achieve 8 to 9 percent. A North Carolina simulation study found credit enhancement steps that cut rates by two points had the potential to reduce future revenue needs by

6.4 percent (Moreau, 1985). By comparison, the continuation or withdrawal of existing federal and state grant programs represented a 4 percent difference in revenue. Moreau indicated that this was contingent upon working in the context of a well-structured financial planning program; not a common capability in many cases.

Snyder, Whittington, and Hillstrom issued a report in 1984 which reviews loan guarantees and similar programs in the 50 states. Six states have established bond banks that purchase local bonds. Five provide guarantees. 31 make grants and loans. New Jersey has proposed a bank that would combine federal grants, state appropriations, and bond proceeds. The state of California provides rigorous reviews and considerable technical assistance to make its many districts less risky to the bond market.

Questions come to mind. Should federal inducement for such steps be considered? What would they be? For example, could grants for groundwater protection programs include funds for the study and start-up costs of credit enhancement programs? Several proposals have been made for federal financing innovations, but to date, they have not received extensive consideration.

Expanding the Role of Local Government in Groundwater Protection

The local government role deserves more emphasis in the design of national and state programs. Local governments deliver many services and carry out many functions that with embellishment can solve problems that extend beyond their borders (Huffmire and Frankel, 1982). Shaping those activities is a constitutional responsibility of the states, and in practical terms, an important arena for federal government. Many of the national problems, such as toxic chemical management, can only be partially addressed by the federal agencies directly or through the states alone. But how to achieve a three level integrative program? Fiscal arrangements will be a most important tool. The advantages to greater local capacity are many.

Loose or tight federations of local governments can be organized to fit the boundaries of a problem and reorganized when the perception of the problem changes (Ostrum & Ostrum, 1977). Outside resources will be required to overcome the tendency for local governments to under-invest when the benefits extend beyond their boundaries. Organizational and investment changes can be made together.

Local officials may find it easier to coordinate federal and state agencies than organizational mechanisms intended for that purpose. The coordination is specific to

problems that they understand; indeed, often understand better. Packaging multiple agency program measures is notoriously hard to do at the top levels of the agencies and probably more easily done in the field, although still difficult. Local officials can sometimes communicate to both the relevant legislative and administrative units more easily than those units can to each other across agency lines. Not the least important of the steps needed have to do with money. If local governments are to share in those monies, the incentive to perform these integrative roles is greater.

But effectively using inter-governmental transfers and other financial devices, such as credit enhancement to achieve federal policy objectives through state and local governments, suggests implementing a better understanding of the difference between financial analysis and economic analysis (Allee, 1985). The two are too often assumed to be the same.

Financial analysis implies working with cash flows. Revenues have to be generated to equal expenditures and their timing has to match exactly, or at least cash balances must be positive even if credit accounts aren't. Economic analysis should be quite different. Benefits are compared to costs; interest rates are used to obtain comparability over time. Not all benefits and costs are equally easy to monetize. A benefit that is easily unitized, like cubic feet of water, and easily denied upon non-payment and whose use value is exclusive to the purchaser, is easy to monetize; it is easily vendable. Water delivered to a home or factory by a municipal supplier has these private benefit characteristics. But let the value be conjectural, diffused over many recipients, not easily denied once in place and not exclusive to the purchaser; then vendability is not likely to capture much of the real value. An inspection to lower the risk of contamination of groundwater is an example of such a collective benefit. In such a case, economists expect the service to be underprovided.

Many of the actions needed to protect groundwater suffer from a kind of market failure (Allee, 1977). The incentives to undertake them do not match the costs for all of the participants as presently organized. If one of many municipal users of an aquifer undertakes an inspection and advisory program -- the old sanitary survey approach -- who else would benefit? If the benefit is enough to justify the effort to that municipality, it still may do it, but politically it would be more acceptable if everyone who benefited chipped in. Will a voluntary arrangement work? Or would a modest amount of bribery and/or coersion from a higher level of government be useful to deal with the uneven perceptions of need? And would they deal with the hope that maybe if we ignore it, it will go away. Note that bribery

and coersion trade off to some degree. Thus, regulatory approaches without cost-sharing should not be as effective as both together.

Groundwater programs of this sort will be slower in coming about in many states and localities without federal help. But it is less clear how that help should be structured. We face a period where new policies are called for to reflect changed attitudes about proper roles and expectations. It is possible that an acceptable set of principles for new federal relationships, may in part, be drawn from the application of a market failure approach. In other words, funding from the individual through fees, from the community, state and federal government, should reflect more of the stakes and self interest that each has in the activity.

Some groundwater examples may clarify the concept of failure in the public market. Consider the relationship between land use decisions and the risk of contamination. Groundwater is not as easily recharged by rainfall everywhere in the community; in other words, not every site is equally vulnerable. A toxic spill in some places would drain into surface water or be easier to contain. A few sources of pollution may be a negligible risk. A few septic tanks and lawn fertilization may not be able to raise nitrate levels near the drinking water standard of 10 parts per million. But the cumulative effect of growth can be substantial. It can be years before it is detected. Many uncertainties can exist even at the vulnerable site. Then, can we depend upon one municipality to take into account the stake of other municipalities that share the aquifer?

The same argument for land use controls within a jurisdiction applies to between several jurisdictions. Cumulative effects over space and over time provide opportunities for failures to adequately consider impacts. Larger governments may find it easier to take a long range view and to represent interests of future generations. Just as a group may have a lower discount rate than an individual, so a large group may have a lower rate than a smaller group.

The trick is surely to discover how much encouragement is just enough and to convince everyone involved that the principle has been applied in an acceptable and reasonable way. Giving everyone the same amount of funding or the same percentage of a circumscribed total cost may seem like treating everyone equally, but almost guarantees that the results will not be equal, nor viewed as equitable. The place to start is with an evaluation of the local ability and interest to pay. In other words, start with an analysis of the revenue generation potential from fees and taxes following conventional guidelines for acceptability and

reasonableness. Then add state and federal funding necessary to obtain the performance characteristics that each is seeking to achieve across its sub-jurisdictions. State and federal funds would be sought to make up for the spillovers and inadequacies left when local interests have made a reasonable level of effort.

Most states have developed measures of fiscal capacity, tax effort and need as a basis for evaluating state aid formulae and other tools of local fiscal policy. Some work is proceeding on the identification of service levels and incorporating these into the analysis. These data can identify a basis for what is acceptable and reasonable. In addition, indicators of fiscal risk have been developed (MacManus, 1983 and Rossi, 1986). Many larger communities have completed the steps necessary to obtain a rating from one of the bond rating services. But most small governments have not because they know the ratings would not be favorable, or because at their level of financing, a rating would not be useful. These fiscal risk indicators probably must be developed state by state because the states differ greatly in the framework that they establish for local finance.

But it is one thing to have the general information on financial measures and quite another to apply the insights they provide to the development of state and federal programs to achieve certain goals. This is an art form that is not well developed. However, the pressures for new approaches and roles in inter-governmental affairs may be producing more development rapidly.

In sum, the need is to get away from mechanical "fair" shares in inter-governmental funding that give some more than they need and others not enough. The emphasis should be on the identification of self-interest and bargaining constrained by analysis.

Some Tentative Examples

Local and state governments will continue to be squeezed by taxpayer resistance, a less generous bond market, and reduced federal largess. Tax changes may or may not increase taxpayer resistance and raise borrowing costs. Even with credit enhancement programs, more privatization, acceptance of innovative fee structures, and favorable tax changes, the pressure should be more than adequate to encourage more cost-effective use of the federal and state funds that are available.

Modest changes to link distribution of funds to agreed-upon objectives may be quite easy to achieve -- given the political will. Achieving that political will probably

depends upon an educational process and rule development politics that goes well beyond the scope of this paper. To suggest such reforms can be achieved quickly is to misread our history. But it may be useful to identify some specific directions for change, recognizing that some may appear a bit "off the wall" at this time.

How might we offer more effective bribes to local officials to carry out activities that are partly in the interest of their constituents and partly in the interest of others? This question will first be addressed with respect to facilitating capital generation for those who are disadvantaged by low income, small scale on the supply side, unusual indirect effects and the impact of our history of problem discovery in groundwater contamination. Then the question is asked why we put the emphasis on capital subsidies when we might get more for our money by a subsidy for operation and maintenance expenses. It is here that we can impact management more directly. Finally, some comments on problems due to results we didn't intend to produce.

A longstanding concern is with the problem of income equity -- the communities that can't come up to the standards the nation sets for itself because they are too poor. Programs start, separately for rural and urban clients, then they are usually broadened to include more than the original target group. Then, in times of stringency they may be cut back to the original target, or just cut back. The Farmer's Home Administration is a good example (Vaidya and Allee, 1982; and see Friedland and Wong, 1983). It now offers favorable interest rates only to communities whose families have incomes that are well below the median family incomes for rural areas. Another approach -- recently proposed for the Small Reclamation Project Loan Act -- is to use such criteria to waive a proposed front end local cost-sharing requirement.

Another concern should be that poorer communities often have other limitations that prevent their timely response to a new problem; for example, less management capacity. Given the irreversibility and high clean-up cost of groundwater problems, this is particularly pertinent. Thus, particular attention should be given to the use of funding to enhance management capacity (Jacobs and Weimer, 1986).

The Farmer's Home Administration program is restricted by the size of the community. Presumably, small communities cannot enjoy the economies of scale in production of services (Vaidya and Allee, 1984). That is easy to see in the bricks and mortar of a water system, but it also operates in the use of skilled personnel, such as those required for effective sanitary surveys or groundwater modeling. Small communities, on the other hand, have their principle advantage in the effectiveness with which they

identify constituent demands (Ostrum and Ostrum, 1977). Perhaps that is why one finds so many persisting around an urban center.

Competition and rivalry are difficult to overcome. The trick is to induce communities to federate on the supply side while retaining their independence on the demand side -- in other words, be able to differentiate the level of service for those who choose to pay for it. The benefits of such federations would seem to justify capacity to facilitate them by higher levels of government.

Problems include the fact that not everyone will be ready to join at the same time. And those who are ready don't want to front-end the financing for those that aren't ready. Setting up the rules so that everyone is encouraged to join and so that it doesn't pay to hold out and still have a multi-jurisdictional approach is challenging, but probbably worth the effort in the case of aquifer protection. Integration of land use controls into water supply strategy may be a major potential. All those independent communities will continue to manage land use controls and water supply provision whatever the groundwater protection strategy. Other things being equal, the strategy should be more effective if those controls and provisions were integrated into the strategy.

Are we approaching a level of political sophistication that can accept the need for state and federal funding to facilitate regional cooperation and organization? We have gone through a period of retrenchment on that score in water resources (Allee and Dworsky, 1982). Perhaps an effort that accommodates the so-called "bottoms-up" approach to federation is timely and aquifer protection a reasonable tyest vehicle. The inter-local, intra-state level may be more functional and fruitful than the large river basin level.

Many communities fail to act because the <u>indirect effects</u> of what they should do appears to stymie them. Often it is the effect on a major employer, either present or in prospect. Job blackmail is practiced by some employers and given into by more than a few local officials. In part, it comes from the perception that state and federal officials cannot backstop properly and particularly can't insure evenhandedness in competing locations. Often any environmental protection program at hand is the lightening rod that draws the accumulated result of other forces for change, such as new technology or labor costs. Perhaps it is time to package job creation programs with the assistance for environmental protection. Again, two kinds of resources are needed. First, more players in the game mean more time is needed for coaching, i.e. more manpower to facilitate

change. Second, complex deals require extra flexibility and cost-sharing.

Changing the rules requires resources for adjustment if that adjustment is to take place in a reasonable length of time. New knowledge and new problem recognition always result in new rules and expectations. Superfund is a good example, but clean up is not only the result needed. The water plan for the North Fork of Long Island is a case in point (Rossi, 1986). Some 8,000 wells were tested in a 26 square mile area for the pesticide Aldicarb and about one in ten were found to have it at a significant level. After some study, deeper wells, new lines and connections, and more treatment were suggested, for a cost of $21 million for 833 new connections. The nine sub-regions vary in cost per new connection by a factor of four. Some of this could be shared with existing system customers; some might come from local general revenues. These are circumstances where unusual assistance can be justified. But what is the plan to protect the remaining resources from other contaminants. Should that be a factor in such assistance?

Is there a case for cost sharing operating costs? The traditional way for state and federal governments to participate in local investments for water resources is in the capital needed. They then can share in the decision of what to build; indeed, they may determine most of its features. Once built, it is usually the local responsibility to see that it is maintained and operated. The result can be an imbalance between investment and management. A rather well documented result in some sewage treatment grants is either construction specifications that uneconomically reduce future maintenance costs, or more commonly, plants more sophisticated and expensive to operate than the local people could manage (U.S. House of Representatives, 1984).

A subsidy that equally cost shares both capital and maintenance, or that only subsidizes maintenance, has some advantages over capital alone. Influence on design and location may be reduced but leverage with respect to performance may increase. Fail to meet performance standards and no money. The inspection burden should be no greater, especially if it were integrated with technical assistance and training. Over time it could mean lower federal/state expenditures and even better results than capital subsidies alone.

Perhaps more to the point, annual payments weld in place the iron triangle of inter-governmental finance. The clients, the agency, and the legislators assigned to the program have a way of reinforcing each other if there is an annual need to do so. Capital grants provoke more occasional and disjointed attention. Client groups, when

they need the capital, may rally around the program, but once the capital grant is made, all you hear are complaints. In order to get and keep legislative attention, groundwater protection programs in particular, may be in need of a modicum of interest spread out over all of the aquifers every year. Only asking for attention when a spill or other specific event calls for sympathy may not have the lasting power of a long term shared function.

New York has several programs that bear further study. In one, eligible operating and maintenance costs are cost shared for sewage treatment plants that meet performance standards. The experience should be relevant to other waste disposal facilities, and monitoring and inspection programs as well. Further, New York health programs are delegated by activity to counties where capability is demonstrated and then that function is cost shared. The mix of functions delegated varies from county to county. Any functions not taken are serviced from state regional offices.

Local inspections to support water supply source protection does not now fit within that system of delegated public health functions in New York (Allee and Powell, 1985; Hennigan, 1981). But for the some 200 community systems that are so protected, a different state-local partnership arrangement exists. A move to modernize these locally requested sets of rules and regulations is underway. Schenectady, New York is providing the focus for the development of model rules suited to the toxics era. But many questions remain as to how the old sanitary survey approach might be made more effective as a risk management tool. Unlike zoning, it gives inspectors from one jurisdiction authority over activities in other jurisdictions. Also, it assumes a more continuous inspection function unlike most zoning processes, and thus, complements zoning. Zoning is often only active at the time of a use change or of new construction. Reducing the risk of contamination when toxics are ubiquitous in small quantities over time and space is probably better served by a more continuous process. But having both zoning and site inspections reinforce each other is probably best of all.

Unintended Results from Fiscal Policy

The urge to broaden the fiscal base for public activities can inhibit us from recognizing the consequences of these changes. Decisions are easier to make if the set of alternatives and consequences can be reduced. But in some cases, these ignored or unintended results can come back to haunt a program.

A relevant example is the possible counter-productive effect of user fees by providing an incentive for improper

and extra legal disposal of wastes. Enforcement activities at their best depend upon self-policing. If fees are viewed as unreasonable by those paying them and those charged with enforcement, the result can be a mess. Higher fees for use of land fills, septage treatment, incinerations, small lot toxic disposal, crankcase oil disposal, etc., can be suggested as a revenue measure. But without increased expenditures for education and enforcement they may encourage cheating and reduce the effectiveness of the services in protecting the environment.

Incentives can be perverse in another way. Aid from federal and state sources displaces local spending. In the case of sewage treatment, one estimate is that for each dollar of federal expenditure, municipal expenditure is reduced by two-thirds of $1 (Jondrow and Levy, 1984). The reduction in external effects that result from meeting federal standards may make this well worthwhile. Currently, massive expenditures are being made to clean up the results of past ignorance in the use of toxic chemicals. Will this bailout make local officials less vigilant in preventing future problems than if the cost-sharing were less generous? Whatever may be the truth about the extent of the disincentives in "federal bailouts", the infusion of funds and the anxieties produced by airing of the risks from the sites provides a situation conducive to building local capacity to manage the remaining hazards in the community.

A similar concern and opportunity exists in the potential to rebuild community water systems as part of the general concern for infrastructure. If water systems have been allowed to deteriorate because of insufficient maintenance, the time of rebuilding is a time to consider how to avoid a repetition of the under-maintenance syndrome (Rossi, 1986). This is pertinent to the groundwater protection problem. If a community is assisted in developing capacity to insure water system maintenance, it can be a step toward developing the capacity to protect the water source. Who else should care as much as water purveyors?

Conclusions

Groundwater protection requires new activities and new roles. State and federal programs will use a variety of fiscal devices to influence risk management. They must become a part of the trend toward innovative financing. New use of fees, credit enhancement devices, and targeted cost-sharing must be explored because of the major shifts that are occurring in public finance, especially as local governments are affected. Local governments have a strategic potential in increasing the nation's capacity to reduce the risk of groundwater contamination. They supply

most of the drinking water provided in community systems, and have a virtual monopoly on landuse controls. They have many other advantages in closing the gaps in federal and state efforts.

Groundwater protection is only one of many areas where the nation is evolving its working definition of federalism. Newly recognized problems, such as the threat of toxics, provide an opportunity for innovation that not only builds upon the old relationships, but identifies ways in which those relationships can be more effective in dealing with long recognized problems.

Indeed, the approach of this paper may seem to be in contrast to current trends (Wrightson, 1986). Much denationalization of domestic policy has occurred, much of it revenue driven. Inter-governmental programs have been especially hard hit. Regulatory policy has seen less withdrawal of the federal role. The challenge for the future is how to restructure the use of that considerable capacity of the federal government to raise and spend funds. This paper is a step in that direction.

References

Allee, David J., "Failure of the Public Market -- A Framework for Cost Sharing Policy Research," Water Resources Finance and Cost Sharing Workshop. Athens, GA: University of Georgia, Institute of Natural Resources, 1977.

_____, "Financial and Economic Analysis of Water Projects," Proceedings of the Conference on Water Project Financing Workshops, sponsored by the U.S. Army Corps of Engineers and Interstate Conference on Water Problems at Seattle, Washington on December 6-7, 1984. Staff Paper No. 85-7, Department of Agricultural Economics, Cornell University, Ithaca, NY, 19 pp. Proceedings in press.

_____, Leonard B Dworsky, and Ronald M North, "Unified River Basin Management -- Stage II," Symposium Proceedings of the American Water Resources Association, Atlanta, Georgia, October 4-8, 1981.

_____, and John Powell, "Local Government and Groundwater Quality Management," Proceedings of the Engineering Foundation Conference on the Management of Groundwater Contamination, Santa Barbara, CA, October 1984. Staff Paper No. 85-19, Department of Agricultural Economics, Cornell University, Ithaca, NY, 13 pp. Proceedings in press.

American Federation of State, County, and Municipal Employees, "Passing the Bucks: The Contracting Out of Public Services," 1984. AFSCME, AFL-CIO, 116 pp.

Booth, Richard and Albert Bronson, Major Institutional Arrangements Affecting Groundwater in New York State. Ithaca, NY: Center for Environmental Research, Cornell University, 1984.

Fisk, Donald, Herbert Kiesling, and Thomas Muller, "Private Provision of Public Services: An Overview," May 1978. Urban Institute, Washington, DC, 106 pp.

Francis, Joe E., Bruce L. Brower, and W.F. Graham, "National Statistical Assessment of Rural Water Conditions," Report prepared for Office of Drinking Water of U.S. Environmental Protection Agency, 1982.

Findlinson, Fred, Utah State Water Resources Agency, personal communication, November 1984.

Friedland, Robert and Herbert Wong, "Congressional Politics, Federal Grants, and Local Needs: Who Gets What and Why?" The Municipal Money Chase: The Politics of Local Government Finance. Edited by Alberta Sbragia. Boulder, CO: Westview Press, 1983.

Goldman, Harvey, "Privatization," Stretching Dollars to Strengthen Infrastructure. Speeches from a conference sponsored by the Eastern Regional Conference of the Council of State Governments, New York, New York, on April 29-30, 1983.

Hennigan, Robert D., Water Supply Source Protection Rules and Regulations. Syracuse, NY: SUNY College of Environmental Science and Forestry, 1981.

Horvath, William J., "The Politics of Ground Water Production," in Proceedings of a Symposium on Groundwater Contamination and Reclamation, sponsored by the American Water Resources Association, held in Tuscon, Arizona on August 14-15, 1985.

Huffmire, Madelyn M. and Larry Frankel, "Regulation of Land Use Practices for Areas Surrounding Aquifers," The Impact of Waste Storage and Disposal on Groundwater Resources. A Northeast Conference at Cornell University, Ithaca, NY, 1982. Sponsored by USGS and Center for Environmental Research, Cornell. Co-sponsored by EPA, New York State Department of Environmental Conservation and Department of Health.

Hulten, Charles and George E. Peterson, "Is the United States Underinvesting in Public Capital? The Public Capital Stock: Needs, Trends, and Performance." May 1984.

"Implementation of the Federal Clean Water Act," Hearings before the Subcommittee on Investigations and Oversight of the Committee on Public Works and Transportation, U.S. House of Representatives, March 7, 8: September 19, 1984.

Jacobs, Bruce and David Leo Weimer, "Inducing Capacity Building: The Role of the External Change Agent," Perspectives on Management Capacity Building. Edited by Beth Walter Honadle and Arnold M. Howitt. Albany, NY: State University of New York Press, 1986.

Jondrow, James and Robert A. Levy, "The Displacement of Local Spending for Pollution Control by Federal Construction Grants," American Economic Association Papers and Proceedings, May 1984.

MacManus, Susan A., "State Government: The Overseer of Municipal Finance," The Municipal Money Chase: The Politics of Local Government Finance. Edited by Alberta Sbragia. Boulder, CO: Westview Press, 1983.

Moreau, David H., "Evaluating Alternative Financing Strategies for Water and Sewer Services," Occasional Paper for Water Resources Research Institute, University of North Carolina, Chapel Hill, NC, 1985.

Moses, Ray, Bondmarket Consultant, personal communication, November 1984.

Ostrum, Vincent and Elinor Ostrum, "A Theory for Institutional Analysis of Common Pool Problems," Managing the Commons. Edited by Garrett Hardin and John Baden. San Francisco, CA: W.H. Freeman and Co., 1977.

Pfiffner, James P., "Inflexible Budgets, Fiscal Stress, and the Tax Revolt," The Municipal Money Chase: The Politics of Local Government Finance. Edited by Alberta Sbragia. Boulder, CO: Westview Press, 1983.

Rossi, Clifford Victor, An Institutional and Economic Analysis of Rural Water Supply Infrastructure Deterioration in New York State. Ph.D. thesis, Department of Agricultural Economics, Cornell University, Ithaca, NY, 1986.

Sbragia, Alberta M., "Politics, Local Government, and the Municipal Bond Market," The Municipal Money Chase: The Politics of Local Government Finance. Boulder, CO: Westview Press, 1983.

Snyder, Thomas, Dale Whittington and Douglas Hillstrom, Financing Water Projects in North Carolina: The State Role, Publication No. 220, Water Research Institute of the University of North Carolina, Chapel Hill, NC, August 1984.

Vaidya, Ramesh and David J. Allee, "Scale Economies in Rural Water Supply Systems and Water Quality Standards of the U.S. Environmental Protection Agency," Staff Paper No. 82-25, Department of Agricultural Economics, Cornell University, Ithaca, NY, 1982.

_____, _____, "Stated Financing Policies of Government Agencies and the Experience of Rural Water Supply Systems." Prepared for the Office of Water Research and Technology, U.S. Department of the Interior. Research Paper No. 83-21, Department of Agricultural Economics, Cornell University, Ithaca, NY, 1982.

Wrightson, Margaret, "From Cooperative to Regulatory Federalism?" SIAM Intergovernmental News, 9:3(1), Spring 1986.