# KEEPING IT TOGETHER IN DESTABILIZED TIMES: LOOKING PAST THE NEAR TERM

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## ABSTRACT

This extended abstract proceeds from arguments previously made in the 2008 USCID Urbanization and Irrigation meeting (proceedings; presentation at www.colorado.edu/ibs/eb/wiener/), and elsewhere (posted same place), taking a wider view of the issues facing irrigation in the urbanizing US West. Here, the purpose is to look beyond near-term stresses. Irrigation districts and ditch companies face serious hindrances to long-term planning, including re-allocation to match soils, water, farming abilities, and capitalization as well as the problems of defining the many interests affected by irrigation and acquiring their support in meaningful terms. Certainly, each district and ditch is unique, but some common problems suggest common potentials. Group action created the assets at risk, and group action is needed to sustain them. Given the increasing instability of climate as well as input and output markets within sharply increasing environmental pressures, the importance of agricultural productive capacity calls for careful self-defense. There is little help available, but a rationale for one approach is developed; "Five Capitals".

Looking at the "five kinds of capital" (natural, built, financial, individual and social/organizational) in the future, one may see the need for pro-active assessment of all of the assets of the district or ditch. In 30 years, what would you like to have? What might you grudgingly agree to have in order to stabilize what you want? How can you get that? Irrigation districts, ditch companies and their allies must be the link between land use change and water management, and they may be the leading edge of progress toward sustainability.

## EXPLANATION OF PURPOSE AND SCOPE

### Extending Previous Arguments

This argument builds on others already made. Here, some of the reasons are reviewed for supporting the approach recommended, instead of something that looks more like science and less like business. Some readers may wish to skip to "the five capitals". This is not about defeating change; the question is how to live through it and with it, which may include some choices that a lot of farmers I know think are just repulsive. The goal is to bring to bear some ideas from work not usually applied in the USCID, to show potential for re-thinking districts and ditches as management of many resources. In 2008, at the US Committee on Irrigation and Drainage meeting in Phoenix, the arguments were made that (1) many of the values created by irrigation in the Western US are being

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systematically overlooked or underappreciated, and (2) that the already serious economic pressures on irrigation are synergistic with additional pressure on water supply, from both changes in supply threatened by climate change, and also changes in demand, particularly from increased urban populations in semi-arid and arid areas (see extended abstract in the proceedings, expanded by the Powerpoint ™ presentation, which has been posted at www.colorado.edu/ibs/eb/wiener/, (" Toward Better Water Transfers In Colorado and Cumulative Cost Avoidance").

Another presentation posted at the same place ("National Security is Dirt…") addresses problems of soil erosion, and suggests that long-term loss of fertility has been masked by increasing substitutes for soil quality. The example used was nitrogen, which is problematic because it is very strongly dependent on fossil natural gas for synthetic forms, and because the US now imports a majority of its use and seems likely to increase the import share (USDA ERS; Schepers and Raun 2008). Pollution problems from excessive N use were also noted (National Research Council 2008). Problems associated with N pollution of groundwater were not mentioned. (See each state's water quality program for formal designation of problems; on responses, see the National Water Program of the USDA Cooperative State Research Education and Extension Services meeting proceedings (http://www.usawaterquality.org/conferences/2008/).)

Soil erosion problems were addressed through the leading work on both the financial and energetic costs and consequences of soil erosion (and other non-point pollution problems from high-input farming) (Pimentel and Pimentel 2008; see "national security is dirt" for additional references). News about price spikes and changes for fertilizers has become all too common; this is another problem for planning on crop choices for the coming year, coupled with commodity markets that seem also increasingly destabilized (USDA Economic Research Service 2008b). Equipment and land prices have also been unusually variable, and one could go on. Business as usual is not all cheerful.

## Resilience, Climate Destabilization, and Modeling Severe Uncertainty

Sustainability presumably includes sustaining the irrigators as well as the districts, but conventional high-input agriculture does not seem headed either toward sustainability in any useful sense, nor even toward the older and more easily considered quality of resilience. The idea of resilience – generally, ability to retain capacity to endure and take advantage of opportunities – has been fashionable in regard to natural hazards and climate change, (Intergovernmental Panel on Climate Change, <ipcc.ch>, 2009 and preceding). Regarding US farming, an early and strong case for the concept as a measure and a goal was in Kraenzel, 1955, The Great Plains in Transition. Resilience should not be mistaken for failure to adapt and respond; ignoring the environment – physical, commercial, social – is not sustainable unless there is little change.

Climate science has been clear for decades that things are changing, but the idea of "change" seems to imply a switch to something, when in fact there is no stabilized state of the atmosphere (and therefore hydrology, or the physical environment) in sight (Solomon et al. 2009). There may be no stability or stationarity involved (see Milly et al.

2008, which preceded Solomon et al. 2009). In the long term, things are not clear at all. We are going, with our children and many generations to come, into a different place.

A great deal of current work involves "down-scaling" of products like climate models, to be able to achieve some comforting sense of "precision" about how much warmer nights will be in the corn season in Nebraska in 2050. For leading examples, see the Synthesis and Assessment Products from the Climate Change Science Program (2009), and earlier work in the U.S. Global Change Research Program (same website now: <www.climatescience.gov>). Similarly, there is substantial work on parts of the big picture, such as agricultural output, sometimes using linking of best available models that represent parts of the picture in question. For leading examples, see Rosenberg and Edmonds 2005, and Barnett et al. 2004. The Intergovernmental Panel on Climate Change puts an enormous international effort into developing emission scenarios to serve as the basis for such assessments, and these are available (e.g. Fourth Assessment Report, IPCC 2007). They provide a basis for many other efforts to consider what effects the emissions of gases will have on weather and climate and other outcomes, such as those that follow on in hydrology, the biological impacts, and so forth. We should all be aware of this kind of work and its values and importance.

Unfortunately, getting from that to your district is a long stretch right now – and it may always be a long stretch, in the foreseeable future to address areas on the size scale of irrigation districts or ditches. Then there is the astounding complexity of potential changes in such outcomes as the costs (both financial and otherwise) of imported (meaning also transported) natural gas-based nitrogen where environmental costs may be recognized at some or maybe all stages, where the costs of the fuels are not only the costs of producing them but perhaps a carbon tax or other charge to account for some of the impacts of their use, and so forth. Modeling such linkages even on the large aggregate scale has always been difficult and results have been controversial for scientific and other reasons (Turner 2008).

It gets worse, looking more than a few decades ahead. The entire chain of inputs and outputs can be as complicated as one wishes to make it, and ultimately there is a great paradox. The economically efficient transformation of one resource into another is defined on the distribution of the resources, in terms of scarcity and in terms of who has control of them, and in terms of who bears what costs and who enjoys what benefits. All of the economic valuations are a moving target, and all of the parts seem to be moving faster than usual. Worse yet, the future is not only hard to value in terms of what a thing will be worth in terms of the costs of its production, clean-up, consumption, and so forth, but the math only looks useful. In 500 years, which is pretty trivial in terms of the duration of many of the more unpleasant chemicals we create and carelessly disperse, no matter how nasty the effects, the costs in present dollars look trivial when discounted to present value. In fact, almost everything looks trivial that far out, in discounting (Howarth and Norgaard 1992, and Norgaard 1994, Bromley, Ed., 1995, and see IPCC 1995 for very thorough discussion). Cost-benefit is a clear framework for comparison of complicated choices, and far better than nothing, but it has severe limitations. One classic and depressing example is that economics has little to say about extinction (Clark

1973, 1991), despite the innate human love for the world we live in (Wilson 1984). The most formal and scientific methods are not much help for 5 or 6 generations ahead, or the life of a young redwood or a grandchild black walnut tree. So, it may be good luck that people running a district or a ditch are dealing with a banker, rather than an economist or a climate scientist, since there isn't much help there.

## Another Approach from the Literature: Resource Management

The focus of this discussion is the sustainability of irrigation districts, referring to not only irrigation districts organized under the two main Federal laws, but also districts which serve as coordination mechanisms for irrigation as well as being clients of Reclamation projects, and also what Colorado calls "mutual ditch companies", and their parallels in other states. The argument is essentially this: seeking sustainability as only a water distributor is not enough, even if it were likely to work. Cities can simply charge far more for water than farmers can make from it (Woodka 2005; Western Water Policy Review Advisory Commission 1998, National Research Council 1992), so we need a higher marginal value product, to better resist the pressure to sell. Fortunately, we care about far more than the ditches – inside the district, it is the life in farming, the history, and the families, and outside the district, it is the ecosystem services provided, the open space and amenity values of the water distribution, and despite the penny-wise, dollar-foolish "market", the maintenance of high-quality soils and agricultural capacity. No farms, no food. Some of your people want to be able to stay; everyone's great-grandchildren will be very grateful if they can. The goal, then, is making these sets of resources into something that can stand up to the mess we're in.

Districts and ditches have a few things in common. They face the challenges of operating irrigation (however it was established), as a matter of engineering, accounting, and administration. For most, this also includes management to some extent of the internal changes in soils, vegetation, and land use within the district, and all of the consequences of those changes. However created, these are also social entities, which involve coordination of different individual interests, and some public interests, within and outside the district (in this large sense of the term). Dr. David Freeman has said, "Water is the most social molecule…" And, "we get what we organize for." Districts and ditches all face the conditions of external change, from local near neighbors and upstream water users, regional population growth and land use changes, and even the consequences of global change, in markets and values of inputs and outputs, and in the physical conditions of the climate and the effects of those changes on about everything else. What in the library might help?

Much of anthropology, economics and economic geography is concerned with economic development and change. Everyone has heard different explanations for why some places are better supplied with human services, have better local economies, offer more opportunities to residents, and ultimately seem to provide a better quality of life. Explanations range from ideas about character (e.g., work ethic) to geographic location (cross-roads, good farming, raw materials) to history (colonial exploitation) and so forth (Arndt 1987, So 1990, Corbridge 1995). More recently, attention has gone to individual

skills and education, summarized as "human capital" (e.g., Ireland's well-educated population explains economic success), and "social capital", which is a bit less obvious (discussed a bit below); this refers to informal social networks, as opposed to formal institutions. Different social status, wealth, and individual situations dramatically affect ability to access resources of all sorts, including those provided by groups for themselves or by other organizations, such as levels of government. Community and poverty issues in development are important (Saegert et al. 2001, Cernea Ed. 1991). There is valuable insight from looking at the ditch or district as an object of study that appears all over the world. The most important idea may be that the problems of organizing the people and defending the thing from others are usually much harder than the problem of moving the water around.

## FIVE CAPITALS (KINDS OF RESOURCES)

Working toward a practical synthesis, Tony Bebbington proposed "Five Capitals" (1999), to help consider the various resources upon which people can draw in a given place and situation. There are complications in any case, but there are knowable ways in which who gets what and how things can change are organized (see Ostrom et al. 2002, especially, on this point). For our purposes, Bebbington's cross-cultural approach is modified here; he is not to blame. The five adapted capitals are (1) Natural resources, (2) Built resources – or infrastructure in many cases, (3) Financial resources, (4) Individual human resources, and (5) Social/organizational resources, ranging from informal to governmental resources. These can be called "capital" in the sense of something that can be invested.

An academic note: in respect for the considerable efforts in defining this last category, the essential idea of "social capital" is that informal social networks (who you know and might help you) are a kind of resource that individuals can use, outside of the formally-organized groups, institutions or agencies (Field 2003). The informal networks can be distinguished for research clarity from cultural capital, as a kind of resource of knowledge and traditional obligations (Lin and Erickson 2008) or more general idea of "social structure" (Putnam 2000, Bebbington 1999). Organizational resources are those kinds of assistance to which individuals or other organizations can turn. For instance, there are formal agencies in most state governments to promote economic development (often so-named), which help in various ways (e.g. Nebraska agri-tourism information cited here), as well as less formal groups, such as Chambers of Commerce. For social science, it is important to think very carefully about the different kinds of cultural, social, informal, and formal organizational resources, but for this argument, and some other pragmatic purposes, they can be lumped together, with the warning that how one gets or demands access to the help certainly depends on the source. Another academic note is appropriate: the ability to change one kind of capital into another is a major topic. Less abstractly, it makes a big difference whether you can buy one thing using another, or transform one kind of resource into another. If there is something you need and there is no substitute, you had better find out soon. Presuming that there is "mobility of capital", as economists say, may mislead one into thinking that one can always convert money into something wanted, although the prices may change; or, to put it another way, you can

make a silk purse out of a sow's ear if you spend enough. Unfortunately, this may be false; there is no making another Iowa.

## Natural Resources

Within the district, soil quality is probably the least-supported and recognized long-term asset. Rates of soil loss are much higher than rates of soil formation (Pimentel 2008). About 90 percent of US cropland is losing soil at unsustainable rates (see Wiener 2008, for summary presentation). Erosion may be dramatically increased by impacts of climate change such as higher intensity of a larger share of precipitation (Soil and Water Conservation Society 2003), as well as heat-related increases in ET, changes in cultivation related to longer growing seasons favoring weeds as well as crops, and the possibility that some crops are nearing their heat tolerance (Schlenker et al. 2007). The cavalier treatment of topsoil is fostered by the economic valuation problems noted above. We're experiencing increased productivity by using ever-increasing inputs of varying combinations of technology, fossil fuels, and financial support (Ball 2005, Lubowksi 2006, and later USDA ERS information, annually updated). You are invited to consider how the trends in concentration of suppliers of agricultural inputs and buyers of agricultural outputs affect your future. One of the striking problems now is the vulnerability to markets that are beyond farmer control and influence (USDA 2008b). There is a bit of good news, however. One point is that the counter-trend of local food, high quality food, and organic food has been remarkably strong for several decades (Dimitri and Greene 2002, and see USDA ERS "briefing room" on organics. Those practicing diverse farming with ecological resilience and avoiding threats to monoculture and capture by suppliers of seeds, inputs, etc., may have a huge comparative advantage in economic resilience.

Each district should consider the condition and trends of the soil resources, and whether there are mismatches of farming capacity (access to other resources) with the soils, and the will to farm. Are the best soils and water held by those most interested in leaving? How about young farmers? Limits on transferability of water within ditches and districts, and problems with other land uses such as rural residential development can result in messy and inefficient patchworks of land use, with little linkage between resource quality and resource use.

Are your resources good for other crops? The long-term seems to include radical changes in the costs of fossil-fueled transportation, which may mean that the "eat local" trend is strengthened, along with organic and direct sales growth trends. Marginal commodity crop producers may face even worse challenges, along with the pressures from climate change. Rosenberg and Edmonds, 2005, and Barnett et al. 2004 offer dire forecasts for irrigation, based on water supply and demand. The synergy with crop heat tolerances is not clear. If your current crops and rotations lose feasibility, what else could you grow? Again, the best possible soils and resilience seem to be the paramount goals.

What else is in the district? The environmental qualities created by irrigation may have increasingly value, for wetlands banking or credits, and for carbon sequestration plans,

particularly if they can be increased, given the prospects for increasing pressure on the water that sustains them. There are also research efforts looking into wetlands and farming as ecologically useful sludge disposal and waste-water management; such programs may have very place-specific conditions, and may eventually involve better control of the miscellaneous "emerging contaminants" in waste-water streams. This is a regional issue as well as a national issue, and one that probably calls for consultation with co-operative extension specialists and other academic resources, and good contracting with an engineering firm and lawyers "on your side" before undertaking unknown risks. These irrigation-supported resources are not "natural" in the sense of pre-development, but what is left of such places is vanishing (Wiener et al. 2008). There may already be serious interest in conserving these resources, and that could be made tangible by deals for easements, and payment to refrain from changing activities that would result in drying up the return flows and conveyance losses that typically support these conditions. Hunters, fishers, and wildlife watchers all benefit from these resources, and many private access deals provide income to land-owners. Group programs could be combined with use of a local government or state program to provide risk management including insurance programs, and also other forms of management, to reduce the hassles for farmers and cope with the exposure to vandalism and other stupidity.

Another kind of resource in the district or ditch is the quality of life from being near water features and their vegetation and wildlife, and the open space and scenery of farming and livestock. The bad news is the risk of people moving in or nearby and deciding your activities are incompatible. But the good news is that "right to farm" ordinances and policies are a popular response. Every state has some sort of farm land preservation program (Hellerstein et al. 2002), though funding was never adequate (see also American Farmland Trust 1997). Some states favor easements; many local governments simply buy farmland to keep it in agriculture as an amenity. But the private sector makes a lot of money from the amenity value of real estate. Water features and open space increase value; see the real estate advertisements in your area. The unfortunate side of this is that isolated rural residential development can have severely adverse tax consequences on local governments (Coupal and Seidl 2003), and severe ecological consequences (Theobald 2003, Theobald et al. 2005). So far, the author has not found useful research on septic system and individual water supply problems, though agricultural impacts on water quality are a major topic. Meanwhile, ditches surrounded by development are treasured assets in the West – they are the source of trees and wildlife in places where the short-grass would otherwise be the only thing in sight more than a few yards away from the flood area of a natural watercourse (Wiener et al. 2008).

How to make use of the amenity value for the benefit of more than the seller of the land and so as to avoid adverse impacts for others is the big question. Suppose you had to locate a dozen "ranchettes" in your territory? Suppose you were thinking seriously about the long term and trends in the market and decided to look more broadly: where would you put in a higher-density planned unit development, to create value for the buyers and yourselves, and defend the agricultural capacity of the rest of the land? Suppose you included some commercial space, some public facilities, and things that your people may

already badly want, such as decent retirement living in the area they live in? Some farmers leave, but many who "sell out" stay in town (Weber 1992).

If you were a big-money real estate developer, what would you do? You would certainly not pull random plots out, here and there, and you would not put a single ranchette on the only part with a good view, if you could sell 30 condominia and some lucrative retail and services facilities, on the same land for a whole lot more money… And you would be thinking about preserving the farm option, defending the best soils and the best water access… You get the picture. One more note on this: you would have landscape architects and design resources as well as marketing specialists. If you don't, however, you could look into consulting with some to see what would be involved in getting real help on thinking about the land resources and what kind of costs and benefits might be involved in trying to develop part of the land in order to support the rest. More on that below.

Outside the district, there are plenty of negative factors – increasing population, water demands, water pollution, and even air quality problems, as well as losing the agricultural character of many communities. Hydrologic impacts from outside development may be severe, such as increased storm-water run-off with "flashier" characteristics; this can be disastrous for a ditch not properly defended throughout the planning and development process "upstream". How to get advantage from any of that? One important asset is the continuity of the water features – the value of greenways and riparian corridors for both environmental and amenity/recreation interests may be multiplied with larger areas, in regional conservation and operations planning. Despite ritualistic denouncements of "them", environment-minded people (who are your local customers, also) may be your best allies in getting political and financial support for conservation programs, and "smart growth" that conserves energy and other resources (see US EPA 2009).

Another important asset is the whole set of outsiders who want to be near open space and farming. They want you to stay and they may be willing to push their local governments to support that, with farm-friendly policies and perhaps investment in easements or other deals to put money where the interests are. And, there are people with recreational interests, notably horses and small stock, who should be your customers for feed and care, and might pay for access to trails and other facilities in the district (and their management so as to not injure farming). The "agri-tourism" movement (Nebraska, cited below) shows the love people have for some kinds of farming; notably, this does not seem to apply to concentrated animal factory operations.

## Built Resources

The district (ditch company, etc) has a set of resources which may be hard to value. The replacement cost for water conveyances can be estimated, at any given time, but the rights of way may be surprising. In Colorado, water conveyance has a prescriptive easement across the lands it traverses, but these were often unrecorded and many have become problematic. The Ditch and Reservoir Company Alliance has addressed this in several educational efforts, including the Ditch and Reservoir Company Handbook

publication. Unfortunately, there is also a body of case law in which these rights have been enforced with unfortunate expense and delay (Corbridge and Rice 1999). The right of way may have substantial value for compatible uses, and some creativity and risk management has led to very productive novelties. The USCID meeting in Phoenix in May 2008 featured a tour of recreational and development deals made to maximize the value of water conveyances in the urban setting. In peri-urban or suburban settings, there may be opportunities for utility location as well as carriage for other water. The FRICO (Farmers' Reservoir and Irrigating Company) has been surrounded by metropolitan sprawl, north and west of Denver, but the farmers left have not paid a nickel in assessments for many years, as the company has received tens of millions of dollars for conveyance of water and other uses of their rights-of-way and structures which are compatible with farming, and the company is remarkably strong (DiNatale 2009). The problem of storm-water drainage must be addressed as a threat, especially where new development is carelessly designed, but there may be opportunities for revenue and benefits from undertaking services that are needed by others. These are likely to be very place-specific, of course, but the seasonality of some kinds of needs may be helpful. Summer thunderstorm run-off may be different in water quality from spring snowmelt, and of course, the interests of the district may or may not be reflected in land use management in relevant areas. Early and persistent assertion of ditch needs and interests may help establish benefits and avoid costs. Many of the problems are addressed in similar situations, such as the wide-spread conversion of abandoned rail lines to trails (See Rails to Trails Conservancy for information). Denver's most popular park may be the Highline Canal, used for amenity and recreational values, and designated a National Landmark Trail (http://www.denverwater.org/recreation/highline.html>.

The other built resources of the district may include water storage facilities, which are a perennial problem and opportunity. Recreational and environmental interests may be allies if careful risk management is undertaken, and there might be substantial popular support for taking advantage of the amenity value of the reservoirs and ditches with adequate management. This is not a novelty; of course. Boating leases are fairly common. The open question here is whether you are better off with no access, non-motorized and perhaps otherwise limited access, or the state parks motor-boat, boat ramps, oil slicks, and all that kind of lease.

## Financial Resources

The district typically may be serving a very narrow range of functions, but as this and other conferences have shown, the expansion of roles and services is widespread. This carries with it the expansion of financial activity as well as administration. The financial capital, however, may be limited to reserves developed for paying off debt, or accumulated for replacement costs. Should that be the case for your district? It may be critical to accumulate financial ability to make changes and respond to opportunities. This would follow from the decision to use a district for more than irrigation, and that in turn opens the question of whether the district as presently constituted is a suitable entity for new purposes.

The key to a major asset management program may be establishment of an overlaying district which serves the many purposes not within the scope of permitted activity for some statutory districts. The legal mechanics are probably easier to work out than the fundamental questions of what you want to do. So, this is not a logically prior question. Meanwhile, the financial resources available to the irrigation district are probably minimal, because of the narrow purposes traditionally undertaken. But the irrigators are often land-owners, and their whole set of assets calls for care and use to help meet their goals, not just meeting the next note.

One trend with many names and terms is water sharing, as a lease, long-term lease, rotational fallow program, interruptible supply contract, or water banking operation (Clifford et al. 2004 is one survey; for references to Colorado statutes, see materials posted at <www.colorado.edu/ibs/eb/wiener/>, including progress reports. Behind all the terms and legal issues, the essential feature is shared ownership, which is different from traditional one-owner deals in important ways. First, the security of interests held by both parties is protected. Now, cities buy water rights and if the liquid is not needed, lease it back to farmers (or other cities, sometimes). The farmers who sold are not going to be able finance much on the strength of getting water maybe, sometimes, for a while. Second, the new deals are likely to be fairly complicated, with a lot of contingencies and schedules of payments to cover costs. Third, urban supply from shared water deals is likely to involve several different kinds of contracts or transfers, since urban demands are variable, though in ways that differ from agricultural demands, and so are supplies.

Most important, long-term deals, “permanent” or not, can provide, in the author’s opinion, a kind of financial security that has never been available to farming before. The deal is that you get the water or the money, perhaps with some money every year no matter what, and perhaps with different amounts depending on timing of decisions, and what costs have been incurred, and perhaps even what profits are foregone. Imagine planning facilities and investments with the long term in sight, not the year or maybe three to five years to pay-off. Similarly, imagine being able to make changes incrementally, and experimentally, knowing that you can afford different kinds of risks and trials (for some details, see website above).

## Individual Resources

Here, there is likely to be considerable untapped depth. Almost everyone irrigating for more than a hobby has a working knowledge of a great many kinds of hardware and design, and the skill to operate and repair a lot of equipment. The practical meaning for new purposes is that the need for new tools may be minimal, and the knowledge to be an informed purchaser of services and work is likely to be in the group. But, are you in a group, or just paying assessments like a water bill?

The less-appreciated knowledge accumulated over years of attention to a place may be a huge asset to rethinking and redeveloping. This ranges from knowing the soils and drainage characteristics of fields and farms, to knowing the local topography and environment around the farms and district. In foreign countries, this might be

"Traditional ecological knowledge" or "local knowledge", and it may be the key to the best design for new mixed uses of the whole set of assets available. What fields ought to be the first to go out of production? Where should new residential units be located, to minimize the loss of production? Where should new buildings and activities best be located to reduce interference to and from ongoing farming?

The horse and animal skills farmers have may also be valuable resources for recreational uses. Horses are so important to so many people, and there is so much money involved in their care, feeding, training, and use, that horse-oriented controlled and planned development may be the first thing to consider for many districts. Offering the needed services as well as the needed place may be commercially quite effective, especially for urban people who want a second residence which includes horses and might not include all the responsibility for care. With fuel prices likely to increase, long commutes would seem less and less desirable, so there may be a huge market for making the country place with the ornamental hay burner still possible, by providing stables and management in a fashion that profits the district and perhaps its young people as well. Why should real estate developers make all the profits from development?

## Social and Organizational Resources

This is a fuzzy and complicated topic, ranging from cultural traditions as a kind of resource, (the basis for acequia management, Amish barn-raising, and those long hours of 4-H work) to more concrete and visible organizational resources. All of the organizations on which a person or group can call may be considered a resources, and the district itself has a history of being a resource. What kinds of help are available? What organizations – from state and federal government agencies, to local groups – have some interest in your operations and continued viability? What can they do to hurt, hinder, or help you?

In the fairly obvious category, there is the range of assistance programs such as those administered by the USDA Farm Service Agency and Natural Resources Conservation Service, which are often narrowly targeted toward particular goals. Reduction of adverse environmental impacts or provision of benefits (EQIP, WHIP, etc programs) may be completely compatible with the goals of the district.

Less obviously, there may be programs that can help with design and investigation of alternatives and choices; these may be intended to work with local governments, such as the National Park Service's Rivers and Trails Conservation Assistance program. Local governments noted above in connection with outsider interests in the good things that districts and ditches provide may be able to offer considerable assistance in working on what is possible, and how to increase value for all by linking and cooperation.

The real missing link is deliberate creation of social resources – through organizing yourselves for your own purposes. One of the clever ways to share costs and benefits from working together is use of transferable development rights, through a special district or a set of inter-locking covenants. Instead of farms being picked off piecemeal, often secretly (Olinger and Plunkett 2005), a ditch or district can organize to do together what

individuals cannot do. The essential purpose is to create value – all the land is more valuable when the residential property has security of value because the neighborhood won't lose what the buyer wants, and the farm ground won't be encroached on, or surrounded by sprawl or creeping development. Planning has been made a dirty word in a lot of reckless pandering to people's frustrations, but it is the explanation for about everything that makes cities, towns and countries work, and it is the lifeblood of infrastructure. It is how we work together.

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