History of Grazing Industry and Range Conservation Developments in the Rio Grande Basin

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IT IS PARTICULARLY appropriate that this panel discussion on "Ranges as Source Areas for Water for Downstream Use" be carried on in Albuquerque —here in the heart of the Upper Rio Grande watershed. For this area is the site of the earliest established irrigation and range agriculture in the United States; and that combination of activities remains as the most important characteristic of this watershed today. Furthermore, there is here displayed the classic example of what years of misuse and abuse of the surface resources in an upper watershed can result in for the generations that follow. I mean in terms of baffling physical problems to be solved and, more particularly, of threats to the continued economic stability of the people concerned.

In recent years the Upper Rio Grande watershed and its problems have received considerable attention from many individuals and agencies concerned with research, with planning, with action programs or combinations of all three. Quite naturally perhaps, major attention has concentrated in the main stem of the river and in certain tributaries, where the bulk of the population has attached itself to the irrigated land. It is there that the problems affecting water or created by water, which is the area's most important natural resource, become most pressing and most generally recognized. In fact nowhere in the West are the ills that plague irrigated land and the delivery of irrigation water more strongly in evidence than in that reach of the Rio Grande that lies in New Mexico. On the other hand, as most of us realize, similar situations, scarcely less aggravated, are to be found in many another watershed, large and small, in the semi-arid Western country.

Even the superficial observer of the situation here recognizes these various ills: the sedimentation of the storage reservoir that reduces its capacity and shortens its useful life; the aggradation of the main river channel and its tributaries, which not only results in actual floods but makes the flood threat yearly more severe, renders drainage systems inoperative, causes water-logging of irrigable land and increases greatly the maintenance cost of the irrigation system; and through it all, the enormous water losses that are induced in one way or another and which the agricultural economy can by no means afford.

When all these ills are analyzed I believe most students of the problem will agree that the root of our trouble here lies in the dislodgment of soil from its original site in the upper watershed and its progressive movement downstream from tributary channel to main channel and so to an ultimate resting place behind the Elephant Butte Dam. The results of this sedimentation process, that is, the outward manifestations or symptoms of the disease, are what have captured the popular imagination and attention to the

exclusion of all else. Millions of dollars have been applied in the past and many more millions in the future will be applied to highly skilled engineering efforts designed to give flood protection, to hold up sediment from entering the main channel and to reduce water losses. For such efforts all of us should have nothing but praise, for they are essential. But it should be pointed out and pounded into our consciousness again and again that such an approach limits itself to measures that are palliative at best. So long as the root of the trouble remains out on the upper watershed unattended to, just so long will these costly remedial measures in the main stem have to be continued and the equally costly rehabilitation of irrigation systems have to be repeated. To supplement and complement these necessary measures there is required a concerted effort by the responsible private, State and federal agencies to keep the soil in place on the upper watershed where it belongs or as near the original site as possible; in other words, we must attack the disease at its source. And more than the lip service that this idea has received so often must be forthcoming, if actual results are to be achieved.

And now, just where do the range and the use of the range enter the picture that we are considering? Over the years many of our most competent technicians in the land-use field have stated that misuse and abuse of the range and forest resources of the upper watershed are responsible for the marked severity of our sedimentation problem in the Rio Grande. Without attempting to assess the blame specifically, I have no doubt that they are in large measure correct. There are other equally competent technicians operating principally in the field of geology who state that larger, natural geologic forces are mainly responsible for our sedimentation problem and that unwise grazing use was merely the trigger that, when it was pulled, set those geologic forces in motion and gave them full sway.

Whatever may be the final verdict—and no doubt the truth lies somewhere between these two positions—all concerned, I think, will agree that intelligent, wise use of all the range, which in this case makes up the bulk of the upper watershed, is a prime essential if the sedimentation problem is to be tackled as effectively as it must be. And here it should be said that no sound conservationist makes extravagant claims as to what is possible in the way of holding up sediment or of restoring vegetal cover. He knows that millions of tons of sediment already dislodged and temporarily deposited in tributary and main channel will inevitably move down the country with each successive storm. He knows that it is impossible to "restore" vegetation that never occupied a given site. He is sure the cover used to be denser and of better composition in many areas but he is equally sure that an extensive area embracing various soil types and affected by various climatic factors never supported a uniformly excellent "sea of grass". Impatient with today's medieval philosophers who argue whether man or God is responsible, he maintains and proves to his own satisfaction that much indeed can be done over large areas to encourage vegetation, to hold the soil in place, to retard water runoff and to release water under control. He recognizes that this is a slow, painful, expensive process, but the course of deterioration over the years cannot be corrected over night by the waving of a magic wand.

Perhaps at this point we should consider briefly what has been the history of range use in the Upper Rio Grande watershed. Although Coronado explored this area in 1540, the Spanish made no

real colonizing effort here until 1598. They brought with them sheep, cattle and other domestic livestock—all of which were completely new to the pueblo Indians who were occupying the area and depending on irrigation agriculture for their living. From 1540 then, with certain intermissions, until the beginning of the Mexican period in 1821, Spanish occupation was practically continuous. From all accounts, until 1821 a purely subsistence economy existed in the area. No doubt livestock increased considerably in numbers but it still had to be grazed near the villages located in the main valleys for fear of attack from various Indian tribes. Accordingly, it appears that no great injury was done the very extensive range lands that lie at a distance from the river and its principal tributaries.

According to reports, during the Mexican period (1821–1846) the economy of the area remained pretty much a subsistence economy. At the same time, however, the human population was growing, and the markets for livestock on the Santa Fe trail and in Mexico became increasingly attractive. All of which resulted in building up the numbers of livestock, particularly sheep; and localized overgrazing in the vicinity of the towns and villages became more and more severe.

True enough, when the United States acquired New Mexico in 1846 the "subsistence" characteristics of the economy began to change to those of a commercial one, but until practically 10 years later it still remained unsafe to graze livestock very far from the settlements on account of marauding Indians. But from roughly 1855 onward both Spanish-American and Anglo-American operators extended their grazing farther and farther from the settlements. At the same time there occurred a great increase both in human immigration and in livestock population with all the added pressure on the land that that implies. Whereas in earlier years sheep had been the predominant class of livestock, now with the creation of army posts and the approach from the East of the railroads, cattle raising was greatly encouraged. With the actual coming of the railroad into the watershed in 1880 grazing operations developed even more rapidly and extensively, and so did irrigation agriculture and the cutting of timber. The importation of first-class breeding stock, the entry of Eastern capital in large amounts to finance the livestock industry and the commercialization of the industry identified with the Anglo-American operator deserve more space than we can give them here.

According to several researchers the all-time peak of livestock population in the Upper Rio Grande watershed was reached in 1900 with about 220,000 cattle and 1¾ million sheep. During the last sixty years there has been evident to trained observers a marked decline in plant cover with loss of the more palatable species. Runoff has become more and more uncontrolled and erosion has been enormously aggravated. True enough there have occurred severe droughts from time to time during that period but the decline in plant cover has been steady and continuous.

I suppose the first conscious move toward conservation in the Basin, that is, toward calling a halt to uncontrolled grazing and timber cutting and fire damage, was the creation of the Santa Fe National Forest in 1892. Other national forests, all occupying high mountain country in the watershed, were set up in later years. It is a fortunate fact that while those areas of 8000 feet altitude and over, practically all of which lie in the National Forests, produce 80 percent of our water in the Upper Basin, their con-

tribution of sediment is negligible. This is a tribute in considerable measure, I believe, to the insight and the foresight of the early forest officers and of those who followed them. No doubt management and control were often far from perfect, but a continuous effort to protect the watershed has gone forward to this day.

When the United States acquired what is now New Mexico under the Treaty of Guadalupe Hidalgo in 1846 it had honored the many private and community land grants that had existed here since their creation by the Crown of Spain.

The remainder of the territory consisted of unreserved, unappropriated public domain. But, little by little, large areas of public domain were carved out into national forests, into checkerboard grants to railroad companies to encourage railroad construction and into grants to the State when it evolved from territorial status in 1912. For many years until 1934, when passage of the Taylor Grazing Act placed it under control, the public domain was the only free range left. During that time it received no protection whatsoever. It lay at the mercy both of the villagers, many of whom had lost their community grants and their traditional pasturage, and of the commercial operator. Much of it in this watershed lies in the foothill areas and in the drier regions lower down. In contrast to national forest areas in general, the public domain furnishes small amounts of water and inordinately large quantities of sediment. The Rio Puerco sub-watershed is a case in point. There the public domain, Indian lands, State and private lands that make it up share the dubious distinction of furnishing about 6 percent of the water and 56 percent of the sediment that comes from the total watershed above the Elephant Butte Dam. This contrast, I submit, is one of the most appalling in any consideration of conservation problems. It is especially significant when we recall that portions of that subwatershed late in the last century were highly productive and supported many people.

Since the middle nineteen thirties all the various federal land-administering agencies, and later the landowners in the many soil conservation districts have recognized the problems in the upper watershed that we have described. They have worked through direct action, through cooperative agreement, through subsidy, through technical services in a continuous effort to achieve better land use, more effective range management and to supplement them with simple engineering structures or measures. They have left their mark on the country; and a good mark it is! While all these efforts have produced and are producing demonstrable benefits, the fact remains that they have been piecemeal. Until and unless some mechanism develops that will make possible a concerted effort on the part of all who are responsible, to inaugurate proper land use and the necessary remedial measures throughout the upper watershed, our major problems will, I fear, remain unsolved. The very commendable program prepared by the Department of Agriculture for runoff and waterflow retardation and soil erosion prevention represents the first concrete step in the desired direction. Let us hope that it receives the attention and support from Congress that it deserves.

With your permission I should like to make two brief personal observations, based on what experience I have had in the conservation field. As we have seen, much of this upper watershed is sick land. It needs protection and care. It is poor and deteriorated. Those of us who are responsible for this land, whether it is private, State or federal land, should be working steadily and aggressively to

improve its condition, to make it more productive.

I believe, however, we should be even more concerned with removing or reducing the threat that the condition of such lands constitutes to infinitely more valuable lands and improvements in the watershed below. Ultimately the accusing finger of the water users and of the general public will be pointed at us unless we have taken steps to discharge that real and heavy responsibility.

It is a curious paradox that the very people who are most aware of the perils that sedimentation holds for the downstream water user and who are trying to reduce those perils are the ones whom the water user most distrusts and criticizes. Perhaps this distrust will never disappear until demonstrable and acceptable evidence develops that will prove what are in fact the long range effects of proper land management and supplementary treatment on the net usable flow in the main stem. Many of the downstream users believe quite sincerely that more effective management and treatment on the upper watershed will diminish that flow. The conservationist is equally sincere in believing that such activity will in fact increase the volume and dependability of that flow. Here as elsewhere it is high time that research be inaugurated which will provide a convincing answer to the question.

The deterioration of many watersheds in the West and elsewhere, of which we have cited the Rio Grande as a classic example, is ordinarily attributable to many causes. There has not been a deep-dyed plot on the part of any single group to wreck the country. True enough, greed and selfishness and ignorance have played their part. But lack of continuity and of congruity in public land policies and laws throughout our history has contributed strongly. Also the kaleidoscopic pattern of land ownership, which so often exists, makes administration and the execution of a conservation program extra-ordinarily difficult. If we have been indulging in mutual recriminations I hope we will stop it. We need to concentrate all our energies in constructive effort to improve and stabilize our land and water supply and our dependence on them—both literally and figuratively speaking.

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