



# United States Department of the Interior



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IN REPLY REFER TO:

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## Memorandum

To: All Superintendents

From: Assistant to the Director for Science and Technology

Subject: THE YELLOWSTONE FIRES: AN ASSESSMENT OF ECONOMIC IMPACTS

Dr. Clynn Phillips, Department of Economics, University of Wyoming, recently completed for the WASO Social Science Program a study designed to assess the economic consequences of the 1988 Yellowstone fires. I have prepared a brief summary of the study findings (attached). This represents the third in a series of WASO social science reports distributed to field personnel this fiscal year.

The need for this particular study was dictated, to large extent, by the sheer magnitude of the estimated \$115-150 million of fire suppression costs associated with the Yellowstone fires. It seemed important that we document as best we could how those monies were spent. This would help in future planning and training activities and in providing data for internal cost accounting and for responding to Congressional inquiries. A second important reason for the study was to determine how both local and multi-state economies were impacted by the large Yellowstone fire-suppression expenditures. It was predicted widely, for example, that reduced tourism resulting from the Yellowstone fires would cause serious adverse consequences to the overall economy of the Greater Yellowstone Region. The data we were interested in acquiring would help to confirm or refute that prediction. We also were interested in determining whether existing cost accounting systems can be expected to provide reasonably accurate and comprehensive cost data in situations where multiple Federal, state and local agencies are engaged in cooperative large-scale fire-fighting activities under crisis conditions.

The results of this study deal with all of these questions and additionally provide valuable insight regarding our capabilities to measure the impacts of park-based expenditures on tourist sensitive economies.

*Richard H. Bruceland*

Attachment

R. H. Briceland  
January 3, 1990

## THE YELLOWSTONE FIRES:

### AN ASSESSMENT OF ECONOMIC IMPACTS

Much has been written about the ecological effects of the Yellowstone fire. But what about the economic impacts. There was early speculation that the fires would cause economic devastation. It was predicted, for example, that Montana tourism losses alone would exceed 70 million dollars. Yet, clearly there had to be significant compensating effects associated with the more than \$100 million of fire suppression expenditures. Stories circulated about local businesses that sold five-year supplies of fire boots and other backcountry equipment in an afternoon, and about small-town restaurants that were called on to prepare 1000 box lunches a day for fire crews. Economically those businesses probably did very well. But what about motel owners, the food industry, the auto services industry, concessionaires, and the many others who support, and in turn are supported by, a travel, tourism and recreation industry that represents a major source of revenue and employment in the area? How did the fire affect them economically?

In an attempt to answer such questions, I asked Dr. Clynn Phillips, Professor of Economics at the University of Wyoming, to collect and to evaluate fire expenditure data from Federal, state and local government agencies and from individual businesses and community groups. It was recognized at the outset that expenditure records likely would be incomplete, sometimes non-existent, and of varying degrees of accuracy. Yet, with all of the talk about an economic disaster, it seemed that we at least should try to determine as best we could how various economic sectors were impacted by the fire. It seemed to me also that it would be valuable to learn what we could about the utility and the effectiveness of the different cost-accounting techniques and procedures used by the various fire-fighting organizations to maintain expenditure records. And finally, it seemed reasonable to assume that our capability to recover out-of-pocket fire-fighting costs through supplemental funding requests would be influenced to some extent by how well we were able to document and track expenditures. All of these factors suggested that there would be value in undertaking an economic assessment of the Yellowstone fires. The results of Dr. Phillips' study are included in a 60 page report prepared for the National Park Service: "An Assessment of 1988 Fire Suppression Expenditure

Impacts on the Greater Yellowstone Region Economy," November 1989. I have summarized briefly below what I believe are the major findings and limitations of that report. Those who are interested in reviewing the study in detail should secure a copy of the final report.

Limitations. In reviewing the results that follow, it needs to be emphasized again that expenditure data from the Yellowstone fires often were incomplete, and that sometimes it was hard to determine which economic sectors and which geographic areas benefitted from those expenditures. Major decisions were made on-scene by fire managers, and costs frequently were shared among Agencies on an ad-hoc basis as necessary to respond quickly to crisis conditions. Different groups and cost centers used different techniques for authorizing charges and for tracking expenditures. Monies spent for local services and supplies sometimes were commingled with out-of-region expenditures in accounting systems, making it difficult to isolate the economic impacts on the area of primary interest in this study, namely the Greater Yellowstone Region (GYR). Cross-checking data from different sources helped to resolve some differences and helped to improve confidence in the results, but the reader should bear in mind that significant inconsistencies and data voids exist in some areas.

### Study Results

1. Fire suppression expenditures related to the Yellowstone fires have been estimated by various sources to be in the \$115-150 million range. The current study has documented roughly \$70 million of those costs and additionally has developed a rationale covering another \$20-30 million. This is not to suggest that the \$115-150 million estimate is incorrect. On the contrary, it simply means that this project focussed primarily on those expenditures that likely would contribute in a substantial way to the economy of the GYR; the study did not deal in a detailed way with activities and costs that would result primarily in expenditures outside the region----for example, the costs associated with 5500 military personnel or the costs of special fire fighting units, both of whose wages would be spent when those personnel returned to their home bases. Similarly, the study did not attempt to develop detailed information on the regular wages of local non-military Federal personnel assigned to the fire, since their wages would have been spent in the GYR, irrespective of whether there was or was not a fire episode, and should not be thought of as contributing to the effects of the fire on the GYR economy. A partial listing of fire expenditure data is given in Table 1. This chart also indicates what portion of the fire related expenditures were spent within the Greater Yellowstone Region.

2. Aircraft services constituted the most costly component of the fire suppression effort. Documented DOI expenditures for aircraft services amounted to \$20.1 million; cost data for Forest Service aircraft services were not available but have been estimated to be in the \$20-40 million range. Of the total \$40-60 million spent on aircraft services, only an estimated \$4-5 million (say 10%) was spent in the GYR. Similarly, of the documented \$19.4 million of expenditures for catering supplies and services, only an estimated \$1-3 million (say 10%) was spent in the GYR.
3. Documented expenditures to vendors for materials and equipment rental totaled \$23.1 million, and documented expenditures for wages for casual (local) fire fighters totaled \$4.9 million. Of these \$28 million in expenditures, roughly 50 percent (\$14.3 million) were spent within the GYR, representing the single largest fire-related contribution to the local economy.
4. An estimated \$25-34 million of the total \$115-150 million in fire-related expenditures was spent in the GYR. A listing of those monies spent in the local economy is included in Table 1.
5. An estimated 80 percent of all fire-related expenditures were spent in the Idaho-Montana-Wyoming area. This represents an infusion of some \$90-120 million into the three-state economy, assuming total fire costs of \$115-150 million.
6. Recreational visitor use of the Yellowstone/Grand Teton parks declined some 480,000 visitors during the July-October, 1988, period. If one assumes an average travel/tourism expenditure level of \$50-75/visitor within the Greater Yellowstone Region, the impacts on the GYR economy resulting from a decrease in tourism is a loss of \$24-36 million. Similarly, if one assumes an average expenditure level of \$150-250/visitor within the three-state region, the corresponding impact on the three state regional economy resulting from a decrease in tourism is a loss of \$72-120 million.
7. Comparing the economic benefits in the GYR from fire-related expenditures (+ \$25-34 million) versus the economic losses in the GYR resulting from decreased Yellowstone/Grand Teton visitation (- \$24-36 million) suggests relatively minor overall economic changes in the GYR. However, significant impacts in various economic sectors and in various geographic areas probably did occur.
8. Comparing the economic benefits in the three-state area from fire-related expenditures (+ \$90-120 million) versus the economic losses in the three-state area resulting from decreased tourism (- \$72-120 million) similarly suggests

relatively minor overall economic changes. As was the case within the GYR, it is reasonable to assume that significant economic dislocations probably occurred in various economic sectors and geographic areas.

7. An analysis of 1988 versus 1987 Wyoming and Idaho sales tax revenues (Montana has no sales tax) suggests that fire-related activities may well have had a positive effect on the economy of the GYR:

- 2-county Wyoming area for the '88 vs '87 July-December period:

	<u>'87 to '88 change</u> <u>in sales tax revenues</u>
lodging sector	+ 13%
total sales	+ 7.6%

- 3-county Idaho area for the '88 vs '87 July-September period:

lodging sector	+ 9.7%
total sales	+ 6.5%

The expenditure data derived from Wyoming and Idaho sales tax revenues indicate revenue increases of some 5-8 percent for the 3-month July to September fire period. Although there are no sales tax receipts available for Montana it is believed from fire expenditure data that Montana counties in the GYR experienced economic benefits equal to or greater than the 5-8 percent gains recorded for the five adjacent Wyoming/Idaho counties. In the opinion of Dr. Phillips, sales tax revenues are regarded as the most reliable indicator of the fire impacts on the overall economy of the Greater Yellowstone Region.

#### Summary Comments:

It seems clear that loss of tourism revenues associated with the Yellowstone fires did not cause a devastating impact on the GYR economy, as many had speculated. In fact, fire expenditure data, coupled with available sales tax data, suggest something quite different...namely that expenditures related to the Yellowstone fires more than compensated for loss of tourism revenue in the economies of both the Greater Yellowstone Region and the three-state Idaho-Montana-Wyoming area. However, one should not conclude that individual economic sectors such as lodging, food services, transportation services or recreation services, shared equally in whatever expenditure gains occurred within the region. Clearly

there were both positive and negative economic dislocations resulting from the fire and there were disparities, probably severe in some cases, in different geographic areas, and certainly within individual businesses.

Finally, it is well to reiterate that expenditure data relating to the Yellowstone fires are incomplete, making it difficult to trace primary and secondary spending patterns or to determine economic impacts on selected businesses and economic sub-sectors. While the results of the current economic study appear credible on the large scale, the experience gained through this project suggest that we should not expect to be able to complete detailed analyses of the regional economic impacts of major fires unless better accounting systems and procedures are developed to document and track expenditure data, and unless such accounting systems and procedures are utilized in a consistent manner by all Agencies involved in the fire fighting effort.

1988 YELLOWSTONE FIRESFIRE-RELATED EXPENDITURES

	<u>Estimated Total Expenditures</u>	<u>Portion of Total Expenditures Spent in Greater Yellowstone Region</u>
Air service costs	\$40 - 60m	\$4 - 5m
Food & shower catering firms	19.4m	1 - 3m
Vendor materials & equipment rental	23.1m	
Wages to casual (local) fire fighters	4.9m	14.3m
Overtime pay to local federal workers	----	2 - 5m
Leased equipment operators and maintenance crews	----	1 - 2m
Military personnel (5600) and equipment	----	
Non-military Federal personnel (regular wages)	----	3 - 5m
Special fire-fighting crews	----	
Media representatives	----	
Stocks of stand-by fire equipment and materials consumed in fire fighting	----	----
	<hr/> \$115 - 150m	<hr/> \$25 - 34m