

Visitors Prefer Park Values to Oil and Gas Development

By George Wallace

Visitors stopping at viewing points in all three units of Theodore Roosevelt NP (TRNP) see a dramatic landscape that combines badlands, prairie, and riverbottom vistas. Such views often extend over several miles of parkland and beyond park boundaries. Park staff have felt for some time that the park's unique values may be threatened by increasing numbers of nearby oil wells, tanks, roads, powerlines, and communication towers visible from many points inside the park.

More than 1000 oil and gas wells lie within 10 miles of the park, some within a quarter mile of park and wilderness boundaries. Additional impacts associated with these sites include flare pits, electrical lines, an extensive network of roads, truck traffic noise, and accompanying dust and odors. Industrial human and wildlife fatalities have occurred near the park as a result of accumulations of hydrogen sulfide gas, which can collect near the wells. Were such human-caused landscape features affecting the visitors' experience, park visitation – hence the park's contribution to the local economy?

Despite a variety of laws and directives clearly entrusting parks with management of scenery, visual resources, viewsheds, integral vistas, and air quality related values (NPS Act 1916, Clean Air Act 1963, Wilderness Act 1964, NEPA 1969, Surface Mining Act 1977, etc.) TNRP managers frequently found themselves in hearings and negotiations attempting to stop or mitigate adjacent development but armed with little data on which to make their case.

In 1988, at the request of TRNP staff, the University of Wyoming NPS Research Center sponsored a study designed to look at the effect of external development on the economic and aesthetic values of TRNP. Researchers from Colorado State University worked with park staff to design and conduct a study that inquired into visitor perceptions, expenditures, and other related information over a 2-year period.

"The thousands of visitors to Theodore Roosevelt NP expect and deserve more than to have their vistas marred by adjacent oil and gas development," said Park Supt. Pete Hart after the Little Missouri National Grassland Oil and Gas Final Environmental Impact Statement (FEIS) and Record of Decision (ROD) was released on Oct. 24, 1991. "The FEIS vastly understates the seen areas visitors are viewing," he said, "especially from the wilderness area."

"The projection of over 500 new wells on USFS lands in the vicinity of park and designated wilderness area will severely impact the quality of the visitor experience and cause the degradation of park resources for decades to come."

Hart referred to the study described in this article as having "direct management implications for dealing with external development impacts. Our major concerns are for the cultural integrity of the Elkhorn Ranch, air quality, wilderness values, and visual resources," Hart said. Formal comments on the FEIS are being prepared by the park, the Region, and WASO in a joint memorandum for signature by the NPS A/D for Planning to the Regional Forester (Northern Region.)

Study Design

On site interviews were conducted at 6 of the park's main vistas, where visitors interviewed could see large landscape areas while responding to survey items about (1) the value of a mixed grass prairie ecosystem national park like TRNP, and (2) external impacts and human-generated landscape features. This second part of the study included items best evaluated while visitors were viewing the resource and/or items less

appropriate for a mail survey. Those interviewed were then given a mailback questionnaire to be filled out upon completion of their visit to the park.

The questionnaire was to gather information about (1) visitor and trip characteristics such as length of stay, group size and composition, locations visited, and activities pursued and most enjoyed; (2) visitor satisfaction; (3) expenditures associated with the visit; (4) socio-demographic information, and (5) comments.

The study was piloted in the summer of 1988, with a stratified random sample of 250 visitors, refined and continued in 1989 with a sample of 686. The number of interview days allocated each of the 6 sites was in proportion to the visitation typically received (annual visitor hours) at that site. Interviews were distributed over the summer to reflect vegetative changes in the landscape and changes in types of visitors.

Interview Procedure Features

Prior to the field interviews, photographs were taken at each of the 6 integral vistas, duplicated and enlarged to 11" x 17". On one of the paired photos for each vista, simulations either *added* or *removed* human-generated landscape features. All simulations were put to scale: added features like oil wells or powerlines were put in locations where they were slated to be built. In photos where human-caused features were removed, natural vegetative conditions were simulated in their places.

These photos were used as "cues" to help visitors make "mind's eye" judgments about a particular portion of the landscape seen during the interview as it might look under other conditions. Using the cues and the real landscape, visitors were asked to rate the attractiveness of the two landscapes and then to answer questions regarding how the simulated landscape (with external impacts either added or removed) might affect their behavior at that place (time spent viewing, picture taking, hiking, camping, and using the wilderness area in or near that landscape.)

Table 1. Mean Landscape Attractiveness Ratings at Six Integral Park Vistas Cued by Photo Simulation (on a 10 point scale with 10 being most attractive), Summer 1989.

Integral Vista	Photo-Simulation				
	As Is	Man-Made Features Added	Man-Made Features Removed	(N)	% Change
Bentonite Clay	9.2	3.4	—	81	-63.0
Boicourt Ridge	5.6	—	8.5	179	-51.8
Riverbend Overlook	9.1	5.4	—	70	-40.7
Man and Grass	5.2	—	8.0	34	-53.8
Painted Canyon	6.6	—	8.8	133	-33.3
Schramm Hill	6.5	—	8.7	182	-33.8
— = no photo simulation made					

Table 2a. Expected Vista-Viewing and Picture Taking Behavior, by Park Site (Summer, 1989).

	Park Site					
	Bentonitic Clay†	Boicourt Ridge*	RiverBend Overlook†	Man and Grass*	Painted Canyon*	Schramm Hill*
(N)	82	179	73	35	133	182
	Percent					
	1.2	0.0	1.4	0.0	0.0	0.0
	61.0	38.4	2.9	2.3	2.2	
	35.4	60.9	60.3	62.9	73.7	66.5
	2.4	37.4	0.0	34.3	24.1	31.3
† = external development added * = external development removed						

Table 2b. Expected picnicking, hiking and camping behavior, by Park site (Summer, 1989).

	Park Site					
	Bentonitic Clay	Boicourt Ridge	RiverBend Overlook	Man and Grass	Painted Canyon	Schramm Hill
(N)	82	179	73	35	133	182
	Percent					
	7.3	0.0	5.5	0.0	0.0	0.0
	59.8	1.1	34.3	2.9	3.8	1.1
	30.5	61.8	60.3	54.3	69.2	69.2
	2.4	37.1	0.0	42.9	27.1	29.7

Table 3. Man-made or man-caused features reported in Boicourt Ridge landscape, by order of mention (Summer, 1989).

	Order of Mention					Percent Noticing
	First	Second	Third	Fourth	Fifth	
(N)	178	175	102	43	14	
1. Oil and gas well site	97.8	0.6	0.0	0.0	0.0	98.4
2. Oil and gas well site	0.0	98.9	1.0	0.0	0.0	99.9
7. Oil and gas well site	0.6	0.0	49.0	25.6	7.1	82.3
5. Road (with scoria surface)	1.1	0.0	12.8	11.6	0.0	25.5
3. School and church	0.0	0.0	18.6	0.0	0.0	18.6
8. Access road	0.0	0.0	6.9	25.6	35.7	68.2
9. Reservoir/pond	0.0	0.0	7.8	18.6	7.1	33.5
10. Other	0.0	0.0	1.0	14.0	35.7	50.7
6. Agricultural fields	0.0	0.0	2.0	0.0	0.0	2.0
11. Other	0.0	0.0	0.0	0.0	7.1	7.1
4. Combine	0.0	0.0	0.0	0.0	0.0	0.0

Economic Analysis Features

The mailback survey enabled researchers to estimate visitor expenditures by category (transportation, lodging, food, etc.) both within 50 miles of the park and within the rest of North Dakota. These expenditures

were combined with those that the operation of TRNP itself contributes to the economy (payroll, local purchases, sub-contracts, etc.) and converted to fit the categories and coefficients used by the North Dakota Input-Output Model. The IMS Regional Economic

Input-Output Model developed by John McKean at Colorado State University was run using the data. Such models include the multiplier effect of expenditures for each sector of the economy and provide the estimated value of a park like TRNP to the local and state economy. Following are a few of the salient results from the study.

Economic and Non-Economic Values Revealed

The economic portion of the study revealed some figures that should enable park managers to provide information of high interest to local decision makers. In 1989, TRNP produced the equivalent of 1164 jobs in North Dakota's private sector, and an **economic contribution to the state** (changes in total sales) of **\$62,740,000**. Visitors were asked during the interviews how they valued a prairie park like TRNP compared to other national parks. Although TRNP is off the beaten path and not typically a destination park, the study showed that 76.7 percent of all visitors valued the park equally as much, and 20.5 percent valued TRNP more than other parks; 94.4 percent of all visitors said that environmental laws protecting the park's resource quality should be adhered to, even if it adds to the costs of oil and gas production.

Although the information is not politically viable at the moment, the study asked – as an indicator of public sentiment – for visitor opinion about creating a 1-mile buffer zone around the park. More than 72 percent responding favored such a buffer, regardless of whether oil and gas companies were compensated; 16.5 percent favored a buffer with compensation, and 11 percent opposed any buffer. The park has a sizeable group of return users, many of whom are locals and who value the park highly. Local visitors, many of whom depend on the energy sector, were among those assigning the highest value to the park, but showed the highest opposition to the buffer zone concept (34.3%).

External Development and Visitor Experience

The study showed TRNP to be a very visually oriented park, where the most frequent and enjoyed activities are vehicle touring, stopping at scenic vistas, viewing wildlife, and day hiking. At all 6 vistas where sampling was done, the simulated removal of visual impacts (human-caused features) increased ratings of attractiveness while the simulated inclusion of visual impacts in photo cues lowered landscape attractiveness ratings (Table 1). Even subtle simulated changes in landscape features caused noticeable differences in attractiveness ratings. Increases in external development which actually occurred near interview sites between 1988 and 1989 also are distinctly reflected in the data.

In the on-site interviews, visitors were asked "if the landscape was like that shown in the simulated photo," how would it affect the amount of time they would spend (a) vista viewing or picture taking, (b) picnicking, hiking or camping, (c) or using the wilderness area nearby. Results clearly indicate that for landscapes where human-caused landscape features related to external development were added, many people reported they would spend less time or not come at all. Where development was removed, they would spend more time (again, photos were used as cues for judgments about the actual landscape) Table 2.

Although visitors still rate their experience at TRNP as good, the external development (particularly of oil and gas and its associated structures, noise, odors, and dust), is negatively affecting their experience. The context within which human-caused landscape features are seen is very important. Obviously not all

(Continued on page 22)

human-caused landscape features detract. Some are expected and add to the visitor experience. Smoke from natural sources like burning coal seams, from controlled burns, and from oil and gas wells were all evaluated differently, although most visitors were unable to distinguish among these different types of smoke.

Mitigating Impacts

At each vista, those interviewed were asked simply to tell researchers what human-caused landscape features they saw on the landscape in question. Responses were recorded on a vista grid in the order of mention and the results compared with a master grid having all visible human caused features on it. These data, displayed for the Boicourt Ridge site in Table 3, allow managers to better understand the relative visibility of external features and to see whether managers and visitors notice the same things. Mitigation priorities (painting with earth tones, changing the color of a road surface material, moving and site planning, etc.), can become more evident with such data, and like other of the study's results, can be useful during negotiations with energy companies, county commissioners, or during the permitting and site planning process.

Study results show that TRNP is a highly valued park that makes a significant contribution to the local and state economies. a park where the principal activities pursued by visitors are being impacted by external development. Indications are that eventually this may affect the amount of time visitors spend on these activities. There is some evidence too that impacts from external development may be reducing the economic contribution the park makes to the local economy. Several factors, like displacement (some visitors may already have stopped coming), make it difficult for this study to assign an exact dollar value to the impacts of external development, but many of the results seem to stand on their own.

Results from this and similar studies will make it easier for park managers to explain the economic, aesthetic, and other values the park embodies. The data generated quantify external impacts and suggest necessary mitigation for both present and proposed external development.

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