

United States Department of the Interior

NATIONAL PARK SERVICE ENERGY, MINING AND MINERALS DIVISION P. O. BOX 25287 DENVER, CO 80225

in reply refer to: (480)

July 25, 1986

Memorandum

To:

All Regional Directors

ATTN: Regional Training Officer

From: Chief, Environmental 'Assessment Branch Energy, Mining and Minerals Division

Subject: EMMD Videotape

Enclosed is a copy of a videotape titled "Mineral Development on National Park Lands". Also enclosed is a copy of the script for the videotape, in case you need specific data or information at a later time.

The videotape is excellent! It does a good job at providing technical information regarding mineral development in and near NPS units in an easily understandable way. It also graphically portrays the types of mineral activity and resulting natural resource impacts that are occurring today in many NPS units.

The videotape runs about 30 minutes, and is designed as a training tool. We used an earlier version of the videotape at an NPS orientation session, and it was most effective at portraying the seriousness of the minerals issue to the National Park Service and at getting people's attention. We hope you'll use the videotape in whatever training sessions are appropriate, including but not limited to orientation courses, natural resource courses, etc.

Copies of the videotape have been distributed to all ten Regional Offices, each training center, and those parks featured in the film. We encourage you to circulate your copy of the tape to parks in your region, as we believe it will be most informative for them. We have a couple of additional copies at our office in Denver, should you ever need a back-up copy.

Enjoy the video! Please call me if you have any questions, or if you have suggestions on further use/distribution of the tape. I can be reached at FTS 776-8780 or (303) 236-8780.

Mary Ann Grasser Mary Ann Grasser

Enclosures

cc: Regional Mineral Contact

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## FINAL SCRIPT

## NPS VIDEOTAPE

## "MINERAL DEVELOPMENT ON NATIONAL PARK LANDS"

The National Park System was created in 1916 to preserve and protect the nation's outstanding natural resources so that they could be enjoyed by present and future generations.

We look at the National Park System today and find that mineral extraction is taking place within the boundaries of about 30 park units - - or ten percent of the total 339 park units currently within the system.

The reason for this, is that even though the National Park Service owns the surface rights to land in the parks, they do not necessarily own the mineral rights. In fact, the Park Service does not own mineral rights on nearly 6 million acres of the National Park System. Some parks, such as Denali and Death Valley contain mining claims that existed prior to the park's creation. In other parks, such as Big Cypress and Padre Islands, the legislation that created the park expressly allows for mineral development. In cases where private individuals had rights to minerals within park units, the Park Service must allow the minerals to be developed or they must acquire the mineral rights.

The rights to develop minerals on National Park Service lands occur under 3 general categories:

federal mining claims federal mineral leases, and non-federal mineral rights.

<u>Mining claims</u> are private rights to Federal minerals established under the 1872 Mining Law. This law allows individuals to prospect on Federal lands and file claims when a valuable mineral deposit is found. Claims have typically been staked for precious metal minerals such as gold, silver, and copper, or for other minerals such as uranium, antimony, borates and talc.

Most Park Service units were closed to new mineral entry by their enabling legislation, and the 1976 "Mining in the Parks Act" closed all remaining units of the System. However, individuals who established valid mining claims prior to the closure of the park land have the right to work and develop those claims.

There are currently about 2200 mining claims in parks located in Alaska and an additional 600 claims in parks in the lower 48 states.

<u>Federal mineral leases</u> are rights that authorize the exploration for and extraction of Federally-owned minerals. Generally, Park Service lands have been closed by Congress to any new mineral leasing. However, five national recreation areas were left open to new mineral leasing. These are Glen Canyon, Lake Chelan, Lake Mead, Ross Lake and Whiskeytown national recreation areas. Because of the presence of sensitive environmental resources and incompatible land uses, Park Service regulations have closed all of Lake Chelan and portions of the other National Recreation areas to new leasing. Nine park units have Federal mineral leases that pre-date the creation or expansion of the parks. Currently, there are about 80 mineral leases in the national parks.

<u>Nonfederal mineral rights</u> exist within national parks because the Federal government did not acquire all the land within the boundaries of a park or did not purchase the subsurface mineral rights along with the surface rights. These rights may be held by states, individuals, or companies and include all types of minerals, such as oil, gas, hardrock minerals, sand and gravel, and coal.

There are no regulations in place to control the development of nonfederal minerals other than oil and gas. At the present time, there are nine parks containing 16 operations of this type.

If a private party wants to develop a mining claim or other mineral right, and the development proposal cannot be sufficiently modified to protect park resources and visitor values, the Park Service can seek to acquire that mineral right from the individual. This option may be used by the Park Service when the regulatory tools used to control mining prove inadequate to insure park protection or when no regulatory tools are available to address the proposed development.

You've heard why private mineral rights occur in national parks; now let's see how these mineral rights are developed and how the park resources are affected.

There are five general categories of mineral development occurring in and near park units. These are:

hardrock mining oil and gas extraction coal mining geothermal steam development, and mineral materials, such as sand and gravel.

As mentioned previously, there are over 300 park units in the National Park System. There are about 30 parks where mineral development activities are presently occurring within the park boundaries. These are:

> Death Valley Lake Mead Whiskeytown Bering Land Bridge Denali Gates of the Arctic Glacier Bay Kenai Fjords Lake Clark Wrangell - St. Elias Yukon - Charley

Cuvahoga Valley Theodore Roosevelt Big South Fork **Big Cypress** Natchez Trace Alibates **Big Thicket** Lake Meredith Padre Island Aztec Ruins Bighorn Canyon Curecanti Fort Laramie Glen Canyon Chattahoochee River Hot Springs Point Reyes

Additionally, about 130 parks have active mineral development activities within 15 miles of the park boundary. Some examples of these are Yellowstone, Glacier and Bryce Canyon. Most of the present mineral development is for precious metals and oil and gas.

There is also the potential for increased mineral development activity in and around NPS units. Current statistics show over 90 parks with the potential for internal mining activity and another hundred parks where the potential exists for mineral development outside the boundaries yet close enough to result in direct or indirect environmental impacts to the park resources.

This table summarizes the current and potential mineral development activities in and near the parks. Most active and potential mineral development is for hardrock minerals and oil and gas.

The authority to control mining in the National Parks is derived from the National Park Service Organic Act and the Mining in the Parks Act of 1976. This law authorizes regulation of mining activities on mining claims. The Park Service implementing regulations for this law are found in Part 36 of the Code of Federal Regulations.

These regulations require a prospective mining operator to have a plan of operations approved by the Park Service for any activities planned on patented or unpatented mining claims within a park unit.

The plan of operations, which the operator submits to the Park Service, must include:

- ° a detailed description of proposed mining operations and an estimated timetable for each phase of the operation
- ° a description of the mineral deposit

- \* maps showing the proposed area of operations, and access routes for hauling ore
- ° a description of equipment to be used in the mining operation
- ° a reclamation plan, and
- ° an environmental impact report.

The Park Service also requires that a bond of sufficient amount be posted to ensure that reclamation of the area disturbed by mining will be completed prior to abandonment of the operation.

Part 36, Subpart 9 of the Code of Federal Regulations also contains the regulations for controlling the exercise of rights to non-federally owned oil and gas within national parks. Again the operators must submit a - proposed plan of operations for Park Service approval and post an adequate reclamation bond. In the case of the leasing of federal oil and gas, Bureau of Land Management regulations found in Part 43, Subpart 3100 and 3500 require Park Service concurrence before the BLM may approve any lease. This allows the Park Service to protect park resources by requiring special resource protection stipulations in their operating plan which preclude unacceptable mineral development.

Now that we've summarized how the Park Service can control mineral development that can occur in the national parks, let's take a look at some actual mining operations occurring in the parks and see what is involved, what impacts there are on the resources, and why this activity is a major concern to officials of the National Park Service.

Death Valley is the lowest, hottest and driest place in North America. Yet in Death Valley National Monument, which is located in the desert areas of southern California and Nevada, one can find spectacular sand dunes, beautiful displays of wildflowers, and the snow covered peaks of the Panamint Mountains.

Death Valley is a land of extremes in many ways. The elevation changes from 280 ft. below sea level on the floor of the Valley, to over 11,000 ft. above sea level at Telescope Peak--a short 15 miles away. The temperature has reached as high as  $134^{\circ}$ F in the summer and as low as  $15^{\circ}$ F in the winter. The vegetation in the park is well adapted to these extreme environmental stresses and there are over 900 different species of plants in the Monument.

Death Valley National Monument was established in 1933 and expanded in 1937. Even from that time, mining was a common activity within its boundaries.

Borates were first discovered and mined in Death Valley in the 1880's. It was during this time that the familiar twenty mule team wagons hauled their 37 ton loads of ore to the nearest railroad 165 miles away. Borates are still used today in the production of fiberglass, insulation, soaps, fertilizers and other industrial products. Later mining led to the recovery of richer vein deposits of colemanite and other borate related compounds in the hillsides of the Black Mountains.

Current mining activity and mining claims in Death Valley are relatively extensive. There are presently 101 valid unpatented claims and 118 patented claims in Death Valley. The mining claims affect about 9000 acres of land within the park. At this time there are 16 mines with approved plans in Death Valley. These include 1 gold mine, 3 borate mines and 12 talc mines. On the average, four of those mines are operating each day.

Current active operations include both underground and open pit surface mines. Open pit mining has occurred in the park since 1957. There are currently 11 open pit operations in the park. One of the largest open pit mines in the park is the Panamint talc mine in the beautiful Warm Springs Canyon area of Death Valley.

Environmental impacts from open pit mining are numerous. They include mining noise which causes disruption to wildlife and which affects visitors enjoyment of the park. The sensitive balance of the desert ecosystem is altered. Adverse visual impacts result from the scarring of the natural landscape, and removal of natural vegetation.

In such a dry, environment there are also significant air quality impacts from fugitive dust. Dust levels are especially high where ore is loaded into trucks.

Another very noticeable impact of borate and talc mining in the park is the conflicting uses of the park roads. This is caused by large trucks hauling ore out of the park and visitors using the same roads to view the scenery and stop at interpretive displays.

Reclamation in an arid environment is an extremely difficult task. Revegetation is nearly impossible due to extreme dryness and heat. Reclamation in Death Valley generally consists of covering the white colored areas exposed by talc and borate mining with darker colored natural soil and rock material to reduce the visual impact.

Death Valley also has many abandoned mine openings in areas formerly mined for gold and silver. To minimize the safety hazards of these openings, the entrances to these abandoned mines and shafts have been covered. The coverings are wire mesh nets which were designed and installed by Death Valley staff. The nets work well because they allow ventilation which helps maintain constant humidity so that support timbers in the mines don't rot. They also allow natural inhabitants such as bats to pass freely from the mines to the outside environment.

Moving north now, to Alaska, the last frontier and the state with more land in the National Park System than any other--and the state potentially facing significant resource impacts from current and future mineral development. Denali National Park, located approximately 150 miles north of Anchorage is currently being affected by many gold placer mining operations. Most of the mining occurs in Kantishna Hills--a 200,000 acre area included in a 1980 addition to the northern portion of Denali National Park and Preserve. The Kantishna area is an area rich in mineral deposits of placer and lode gold, silver, antimony, and tungsten. It has many patented and valid unpatented mining claims and historically active placer mining operations. The mining claims in Kantishna existed before the area was designated as a National Park.

One of the reasons for the addition of the Kantishna Hills region to Denali National Park was to preserve areas of significant habitat for the Denali caribou herd. In recent years, caribou have used two major calving areas near Kantishna and Wonder Lake.

Populations of grizzly and black bears also use the Kantishna Hills habitat. Nearby salmon spawning areas are used by grizzlies in the Fall.

The natural, unhunted population of moose at Denali provide unique opportunities for research, photography and observation. Moose frequently are found in streamside environments where they browse willow, dwarf birch, aspen, forbs and sedges.

Mining in and near Denali is not new. The Kantishna Hills have gold bearing gravels and mineralized veins which have been mined since 1905. Currently there are 317 patented and unpatented placer and lode mining claims covering approximately 7000 acres in the Kantishna Hills area. There have been from 10-18 operating plans approved annually for placer mining in Kantishna during the period of 1980 to 1985.

The placer mining process itself is quite simple and straight forward. Overburden is scraped off with a backhoe or bulldozer until the gold bearing stream gravels are exposed. A backhoe then scoops buckets full of sand, gravel and rock from the gold bearing layer.

Those materials are placed on a washing plant which is a large piece of equipment that functions as a cleaner and sorter. The machine constantly shakes and sorts the materials through a punch plate with a set diameter. Material that is too large is taken off the top by a conveyor belt. The rest of the material is fed by gravity down through the plant and raceway. The gold pay is filtered out in riffles in the sluice box below and then collected.

The impacts from this type of mining are very severe in the localized zone of mining. The natural stream channel is altered. Fisheries habitat and aquatic fauna are destroyed as the bottom sediments are disrupted. The water becomes very turbid, or laden with sediment. Sedimentation, if uncontrolled, can spread far beyond the stream and valley in which the mining is occurring - - sometimes sediments are still clouding the stream as much as 30 to 50 miles downstream.

The visual effect of placer mining is a disrupted, unnatural stream bed and piles of bare rocks and wasted gravels stacked up in heaps.

Such impacts can be mitigated by appropriate actions. Settling ponds can be constructed downstream of the mining operations. This provides an opportunity for the sediments, dissolved solids and heavy metals in solution to settle out before the mine waste waters are released downstream.

Water quality monitoring downstream of active operations will ensure that standards for turbidity, settleable solids and concentrations of certain heavy metals are met.

After mining, the site must be graded and reclaimed. Natural stream scouring actions due to runoff from storms will further alter final site recontouring to speed site reclamation.

In addition to the direct impacts from mining itself, other impacts occur from access to the mining site. Bringing mining equipment in after the ground has thawed can permanently scar sensitive alpine tundra.

The water collects in the vehicle tracks creating dark areas above permafrost which absorb the suns rays and cause the permafrost to melt down even further. Mining equipment has been buried up to 8 feet deep in some of these thawed permafrost areas. These impacts can be mitigated by requiring the use of special vehicles - - such as this Big Foot.

We now move, away from Alaska, to observe the impacts of coal mining and oil and gas operations. Impacts from oil and gas operations are found within ten parks and adjacent to 43 parks. Although coal mining does not affect a large number of parks, the magnitude of coal mining and its associated impacts are of major concern, especially in the Western states. There is no active coal mining currently occurring inside the boundaries of park units although about 20 parks are currently affected by coal mining outside their boundaries. The impacts of both coal mining and oil and gas development can be seen clearly at the Big South Fork National River and Recreation Area located in the Cumberland Plateau region in Northeastern Tennessee and Southeastern Kentucky.

Big South Fork is a relatively new addition to the National Park System. It was established by Congress in 1974. Its purpose is to conserve and interpret a unique historic, cultural and environmental resource.

The Big South Fork is an area of rugged terrain, heavily forested and laced with many streams. The rushing waters of the Big South Fork River have carved out a magnificent gorge, hundreds of feet deep. The area includes over 80 miles of prime waters for canoeing and white water rafting. The enabling legislation which created Big South Fork divided it into two management areas--the gorge area and the remainder of the park. The gorge area is to be managed as a river area for recreation and scenic enjoyment. The remainder of the park is to be managed to preserve park values but also to allow for mineral development which is shown to be consistent with protection of the park.

Big South Fork is located in the middle of a large coal region. There are no active coal mining operations within the boundaries of Big South Fork today, but there are approximately 120 abandoned entrances to coal mines within the park. In addition, there are many active coal operations outside the park boundary and numerous abandoned coal strip mines and coal mining spoil piles near the park.

Let's look at some of the environmental impacts and resource protection concerns associated with coal mining.

During strip mining, the operators cut a bench and remove topsoil to reach their layers of coal. This creates a high wall which leaves visible landscape scars, exposes gray coal seams, and leaves little soil remaining for reclamation.

"The exposed gray coal seams on thye slope are where most problems occur. As water leaches down over the exposed coal, it picks up sulfur and creates sulfuric acid which eventually runs off into the streams."

Here we are looking at about 2 acres out of approximately 750 acres in the area which have been strip mined for coal.

Water quality problems from acid drainage from coal mined areas are significant. Rain runoff leaches through the exposed highly sulfurous coal and shales and accumulates in low lying areas and mined out pits. The highly acidic runoff kills the nearby vegetation and when it rains, the pits can overflow and run off into nearby tributaries and rivers where aquatic organisms are adversely affected.

Most of the streams in this area have a normal acid level pH of 6 to 8. The pH of this pit tested at 3.1 - - highly acidic, in fact, quite close to the pH of vinegar which is 2.9. This pit is one of some 50 similar strip pits adjacent to Big South Fork.

Water quality is also impacted adversely by sedimentation from erosion of the strip mine areas. Eroded sediments from strip mining have coated the substrata of streams with more than one inch of acid mine spoils in some areas.

Active coal mining operations also impact the park environment by creating noise and destroying vegetation and wildlife habitat. One of the most noticeable impacts is, of course, the effect on the visitor. The sight of a mining operation in a national park is very upsetting to many park visitors. Coal mine reclamation can be difficult. A good example of reclamation is the Blue Heron Mine which operated from 1937 until 1962. This coal tipple, once considered "state of the art," now stands as a historic reminder of the many mining communities which flourished throughout the Cumberland Plateau. Mining ceased in 1962 and the area remained abandoned until 1984 when the Park Service started reclamation efforts.

A good lesson in reclamation was learned at this site. Loosening the top crusted layer of spoil only brought more acid material to the surface - material that was acidic enough to kill any plants that might attempt to grow in it. So Park Service staff put 7 tons/acre of lime on the undisturbed surface in order to reduce the acid levels, seeded it, mulched it and covered it with net. Today it's growing in quite well.

The other mineral activity at Big South Fork is oil and gas development. Within Big South Fork there are approximatley 12,000 acres of private mineral rights. Oil and gas exploration and development activities are very evident in the park. There are 150 active oil and gas wells in Big South Fork. There are 80 abandoned or inactive oil and gas wells and there are thousands of oil and gas wells within twenty miles of the park boundary.

Environmental impacts from oil and gas operations are also significant. The most obvious are oil spills. Spills can come from truck accidents, such as this one in Big Cypress, from vandalism, from human error or from pipeline ruptures. Tank batteries are susceptible to vandalism. Last year 175 barrels of oil were lost due to vandalism. Someone turned a valve and let the oil flow - - luckily it was stopped before the oil hit the river.

Gas development also causes environmental impact. Besides the loss of vegetation due to clearing an area for the well pad, there is a potential for forest fires from gas leaking from poorly capped or uncapped well heads. A random check on some backwoods well sites found this ignited well. It could have been lit by a vandal or by some natural combustion. High winds could cause severe fire problems at these sites.

Road access to these sites is one of the most noticable environmental impacts. Paths through the woods must be cut. Large amounts of rain cause big mud holes and ruts in the road which speed erosion and soil loss.

The challenges for resource managment at Big South Fork are many. The environmental consequences of mineral development are widespread and the scenic and recreational opportunities are unique. The beauty of the gorge, the serenity of the landscape, the abundance of wildlife, the excitement of the river all make Big South Fork one of the most diverse, yet unfortunately, one of the most environmentally stressed and threatened units in the National Park system. We've seen why mining occurs in the National Park System, how many park units are affected, how the Park Service regulates mining and what the environmental impacts are. Park Managers must take an active role in reviewing, permitting and overseeing mineral operations to ensure that the effects of mineral development, both from individual operations, and the cumulative effects of multiple operations, do not adversely affect park resources and values.

The challenges of controlling mineral development within units of the National Park System while protecting natural ecosystems and park resources is formidable.

The Energy, Mining and Minerals Division of the National Park Service was organized to help park managers meet the resource protection challenges posed by mineral development in the national park system.

The division has a team of technical specialists including geologists, regulatory specialists, planners, ecologists and mining and petroleum engineers.

The Energy, Mining and Minerals Division provides information and assistance to the public and to Park Service staff in parks that are threatened by mineral development. If you need their assistance, contact them in Denver by phoning area code (303) 236-8777 or by writing to Chief, Energy Mining and Minerals Division, National Park Service, P.O. Box 25287, Denver, Colorado 80225.

The National Park system is a unique and beautiful natural heritage that has delighted and inspired millions of visitors over the past 70 years. The parks resources and wildlife are vulnerable to change and can easily be forever damaged by changes which impact their environment.

The development of mineral resources in and near our national parks has tremendous potential to permanently damage their awe-inspiring characteristics. Now, more than ever, the National Park Service must take the lead in aggressive protection of our natural, recreational and cultural resources.

## CREDITS

Special thanks to the many Park Service Staff who provided background information on mineral claims and leases and who showed us what mining activities were taking place in their specific parks. Their information, insights and experiences were invaluable in the preparation of this program.

This has been a production of Woodward-Clyde Consultants and MultiMedia, Inc.