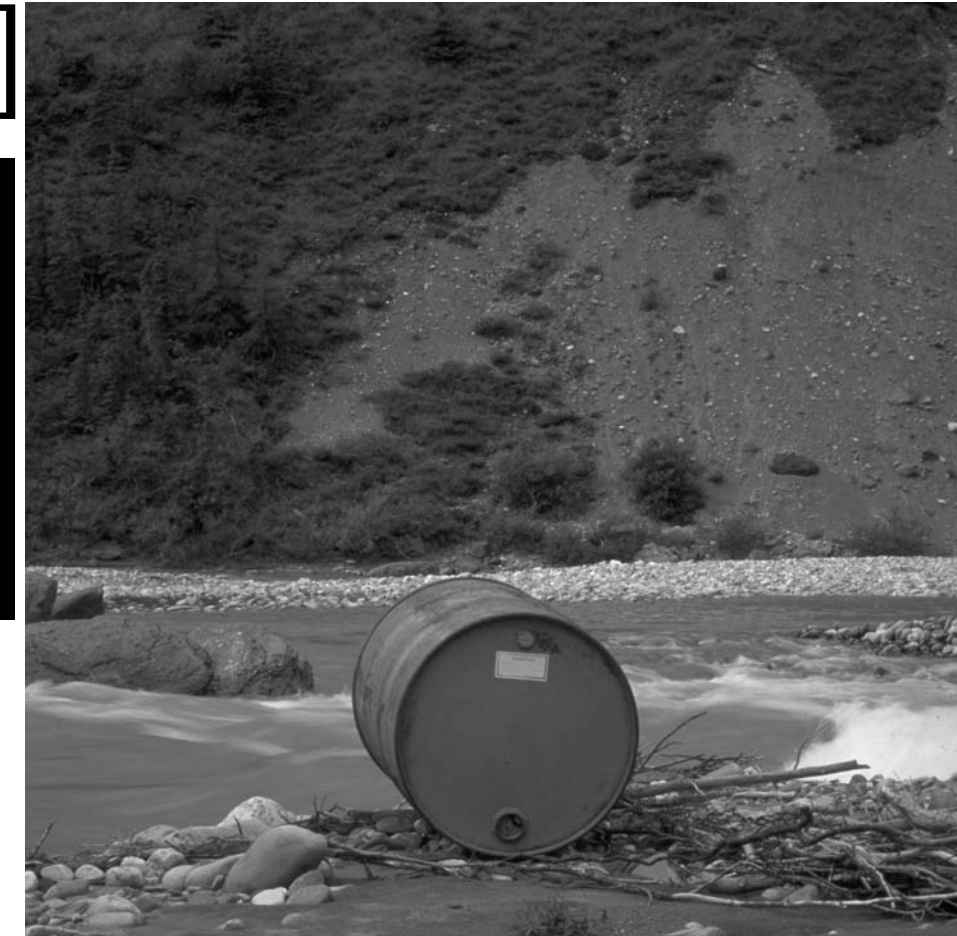


# sequence of industrial development

Fuel drums from exploration activities have been abandoned throughout the watershed. This one was seen along the Snake River. [KM]



As Map 28 demonstrates, the level of industrial activity in the Peel River watershed has increased tremendously over the last 50 years. Keep in mind that the map only shows roads and oil and gas exploration activities. Other activities such as mining are not included, since information on timelines for different claimblocks was not readily available.

The effects of oil and gas industrial activity on fish and wildlife was effectively summed up by a publication produced by the Yukon Fish and Wildlife Management Board (Yukon Fish and Wildlife Management Board, 2002).

The following are excerpts of some of the concerns and issues outlined in the publication:

## Freshwater Concerns

The explosives used during seismic exploration can have significant impacts on fish and fish habitat. The explosions can cause physical injury to a fish's swimbladder (which controls its buoyancy). It can also cause other organs to rupture and hemorrhage. Fish eggs and larvae may be killed. The explosives can also cause an increase in sedimentation in the water. This may cover spawning areas or kill or reduce the bottom-dwelling organisms that fish use for food. Furthermore, the detonation of explosives may have by-products such as ammonia that are toxic to fish and other freshwater animals.

Oil and gas exploration inevitably involves the building of access roads. These roads can have further effects on fish and fish habitat. The main problems here are increased sedimentation and changes to the surface and subsurface hydrology patterns.

## Pollution and Toxicity

The oil and gas industry produces wastes such as empty chemical containers, oily rags, used filters, spent catalysts and drilling fluids, elemental sulphur, and tank bottom sludge. Water and soil can be contaminated with crude oil heavy metals, salts, and other chemicals. If seismic shotholes are not plugged properly then contaminants can get into contact with groundwater. Furthermore, leaks and spills can occur in many places. Oils and chemicals can leak from vehicles. Drilling fluids, hydrocarbons and water can spill out during the drilling operations. Leaks can occur at well heads, pipe connections and vehicle loading areas. All these chemicals can cause harm or death to fish and wildlife.



Without proper clean-up and reclamation, industrial development activities can leave scars on the landscape long after the activities themselves have stopped. [JP]

## sequence of industrial development

### Camp Concerns

Seismic programs may require the use of camps to house work crews. If this is the case, interactions with wildlife can be a concern. For instance, the feeding of bears or improper disposal of garbage may result in nuisance bears. Hunting and poaching of fish and wildlife can also be an issue.

### Aircraft Disturbance

Helicopters and low flying aircraft are frequently used in oil and gas exploration programs. Wildlife responses to these aircraft may vary, depending on the species, the individual, the type of disturbance, the season and likely a number of other factors.

Some of the key concerns are that wildlife may be displaced from their preferred habitat as a

result of the disturbance and may abandon these areas entirely. As well, animals may spend more energy, trying to run away from a disturbance, being more watchful, etc. This can have further effects on their health, their ability to reproduce and make it through winter seasons. When animals run away from a disturbance they run the risk of injury, losing young animals that can't keep up, abandoning young or exposing themselves to natural predators.

### Linear Developments

Roads and seismic lines (as well as pipeline right-of-ways, which are as of yet not an issue in the Peel watershed) are often grouped together as "linear development". One of the biggest issues surrounding linear developments in the Yukon has to do with access. Roads and seismic lines create easy access into areas that

were once difficult to get to. All-terrain vehicles and snowmobiles make this even more possible. The problem with this is that it can lead to increased hunting, trapping and poaching pressures. These activities, along with other recreational uses, can disturb wildlife, displace them, increase road-kill incidents, and otherwise put pressures on wildlife populations that did not face these pressures previously. Some wildlife will avoid linear developments and refuse to cross them, and therefore may get cut off from their preferred habitats. The more of these types of linear developments are put in place, the more fragmented the landscape becomes.

Furthermore, once a road is put in place, it opens the way for other industrial activities, which were previously deterred due to remoteness, to enter a region.

## sequence of industrial development

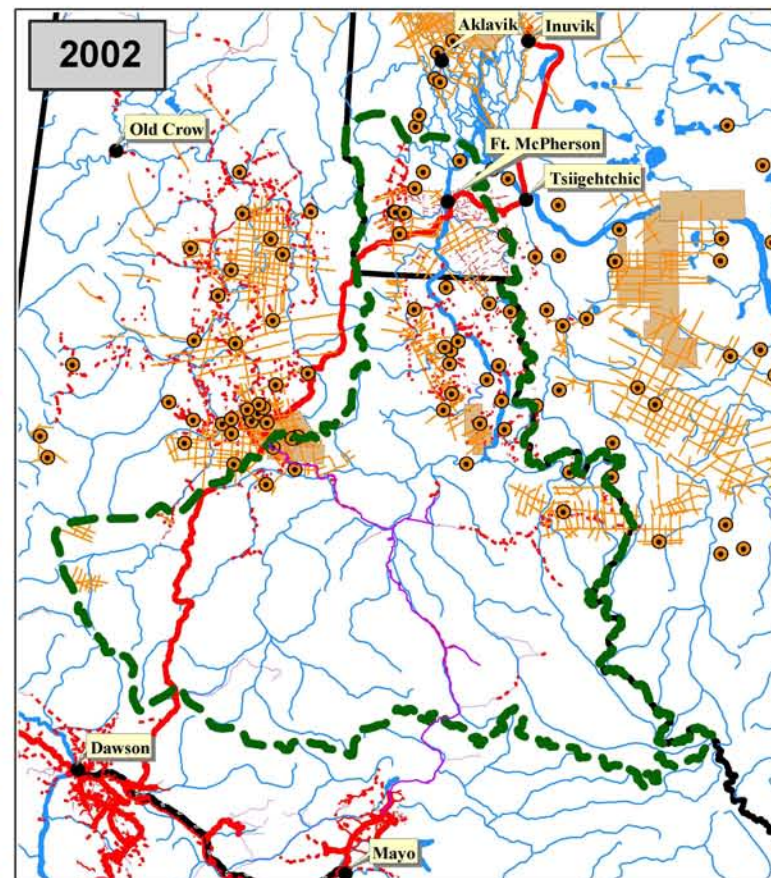
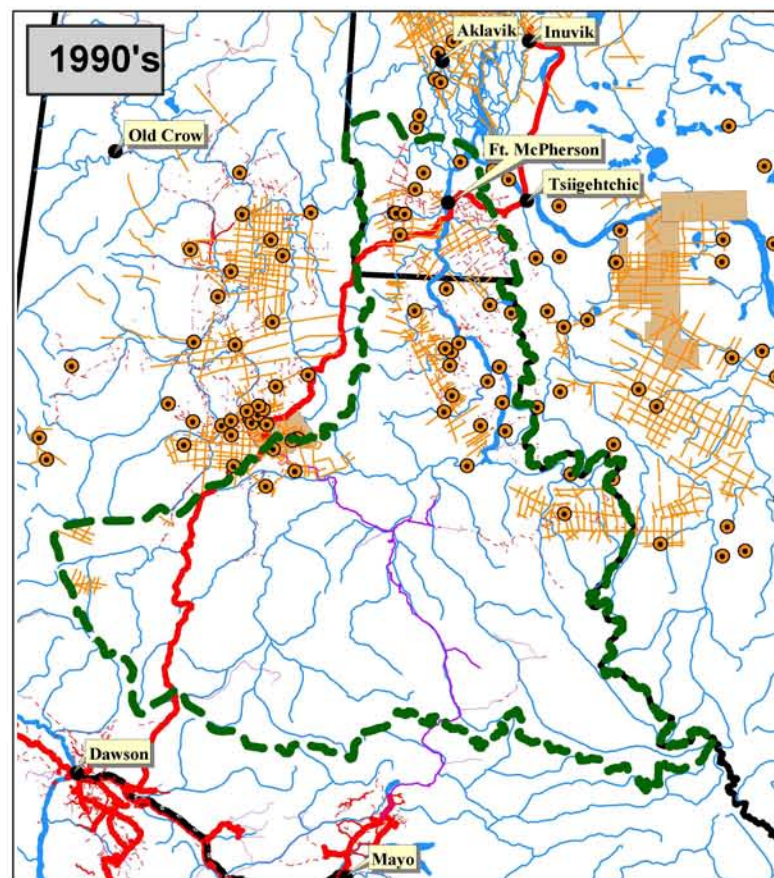
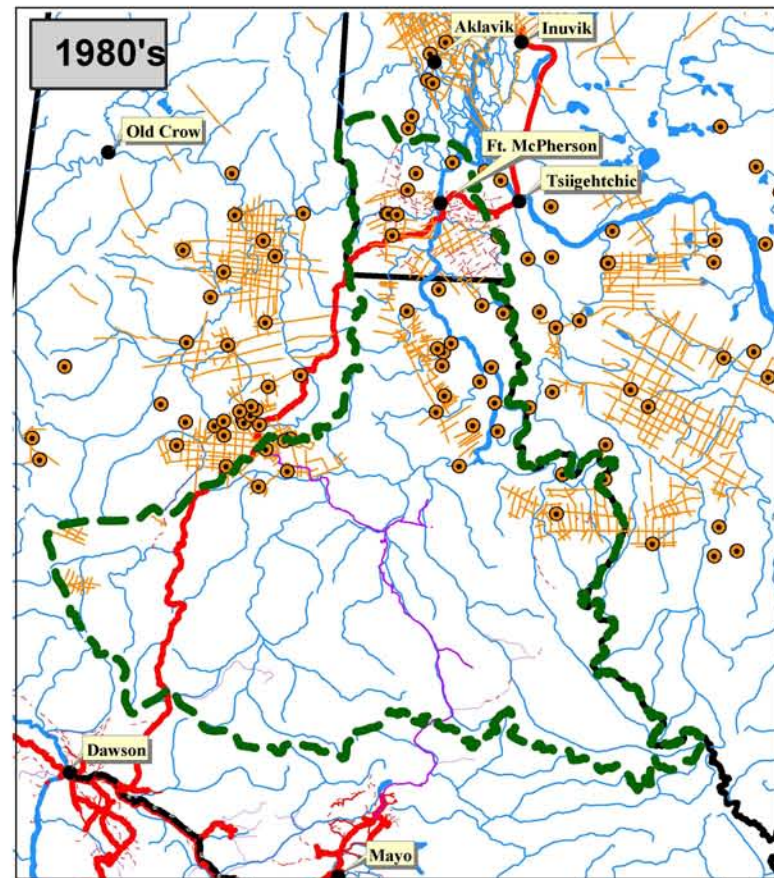
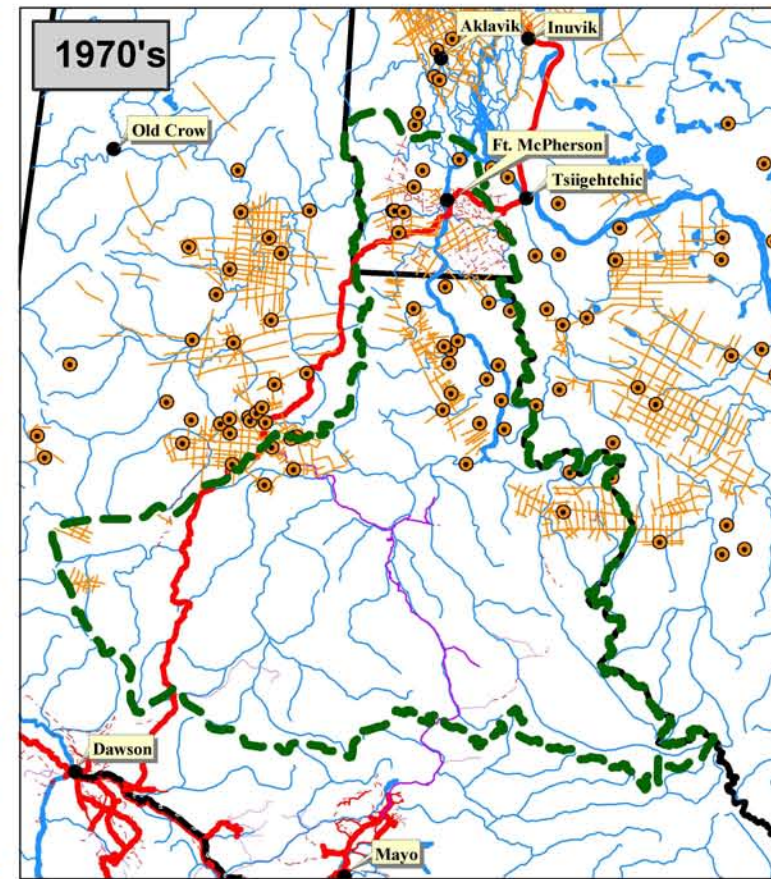
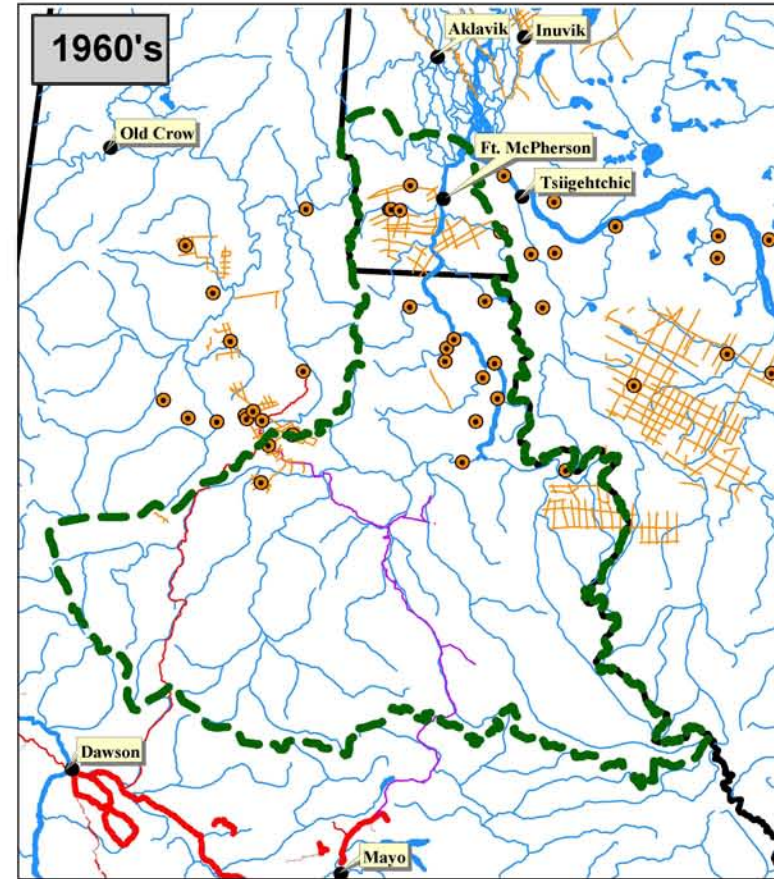
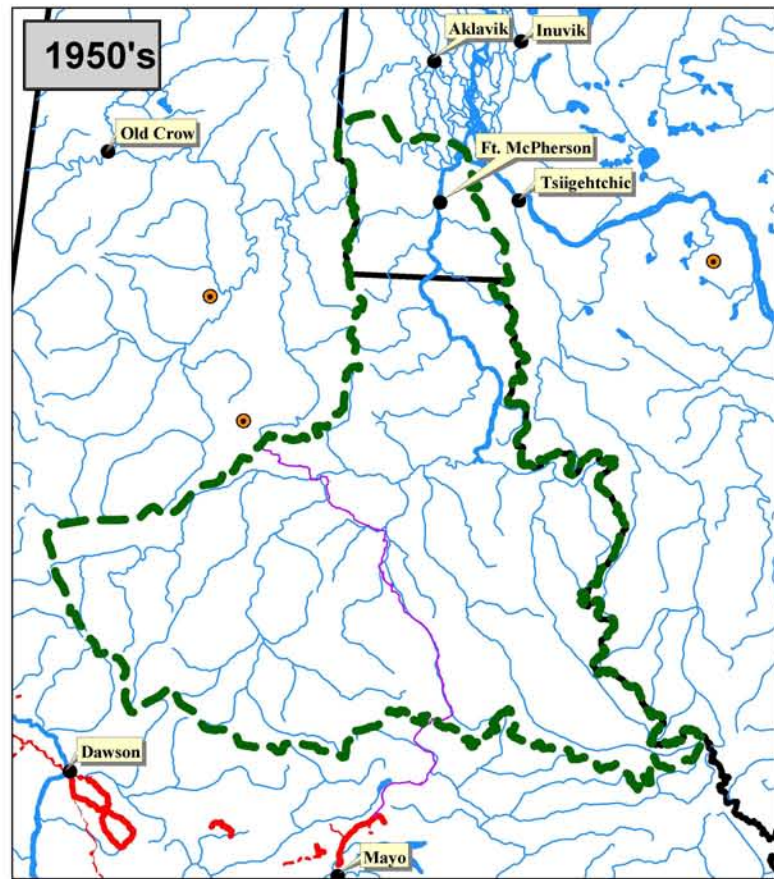
### Impacts on Northern Vegetation

Plants in the north grow extremely slowly. If these plants are disturbed as a result of oil and gas exploration (for example by being driven over, cut down or covered in gravel or dust), they may take a long time to grow back or may not grow back at all. This may mean that there is less food available for wildlife depending on this vegetation. Lichens, for instance, have been found to be rare in disturbed areas up to 30 years after the disturbance took place. This is of concern for caribou populations, which use lichen as a major food source.

Disturbances can also cause permafrost to thaw in places. This can lead to erosion and loss of vegetation. In the case where ponds have formed as a result of the permafrost, a thawing can result in the loss of this important water source for many wildlife.

### Cumulative Impacts










One of the biggest concerns regarding the boom of industrial activities in a specific region is that of cumulative effects. These are the combined effects of all the different activities on the ecosystem as a whole. Although one particular activity may not appear that harmful to wildlife and habitat, in combination with a number of other activities, it may be too much for the environment to handle. When considering industrial activity, one must always keep in mind the activities that are already taking place and the activities that may be added as a result of the new activity.

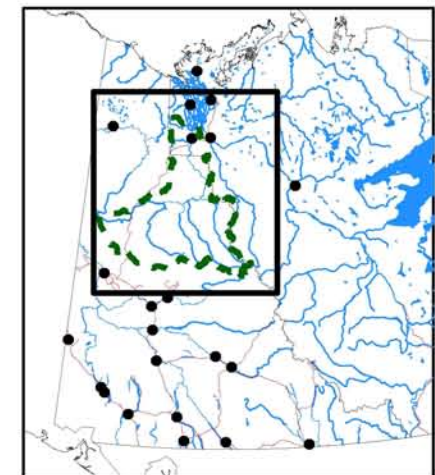


# Peel River Watershed

## Map 28: Sequence of Industrial Development

### Roads network

-  Main highway
-  Road
-  Road of limited use
-  Trail
-  Winter road
-  Oil & gas dispositions
-  Seismic lines
-  Oil & gas wells
-  Peel River Watershed boundary



### Data sources:

YTG Dept. of Energy, Mines & Resources, Oil & Gas Management Section  
 NTDB roads data at 1:50,000.  
 Base data: National Topographic Data Base (NTDB) at 1:250,000 (NAD 83).

Projection: Albers Equal-Area Conic

December 2003

**DRAFT**

