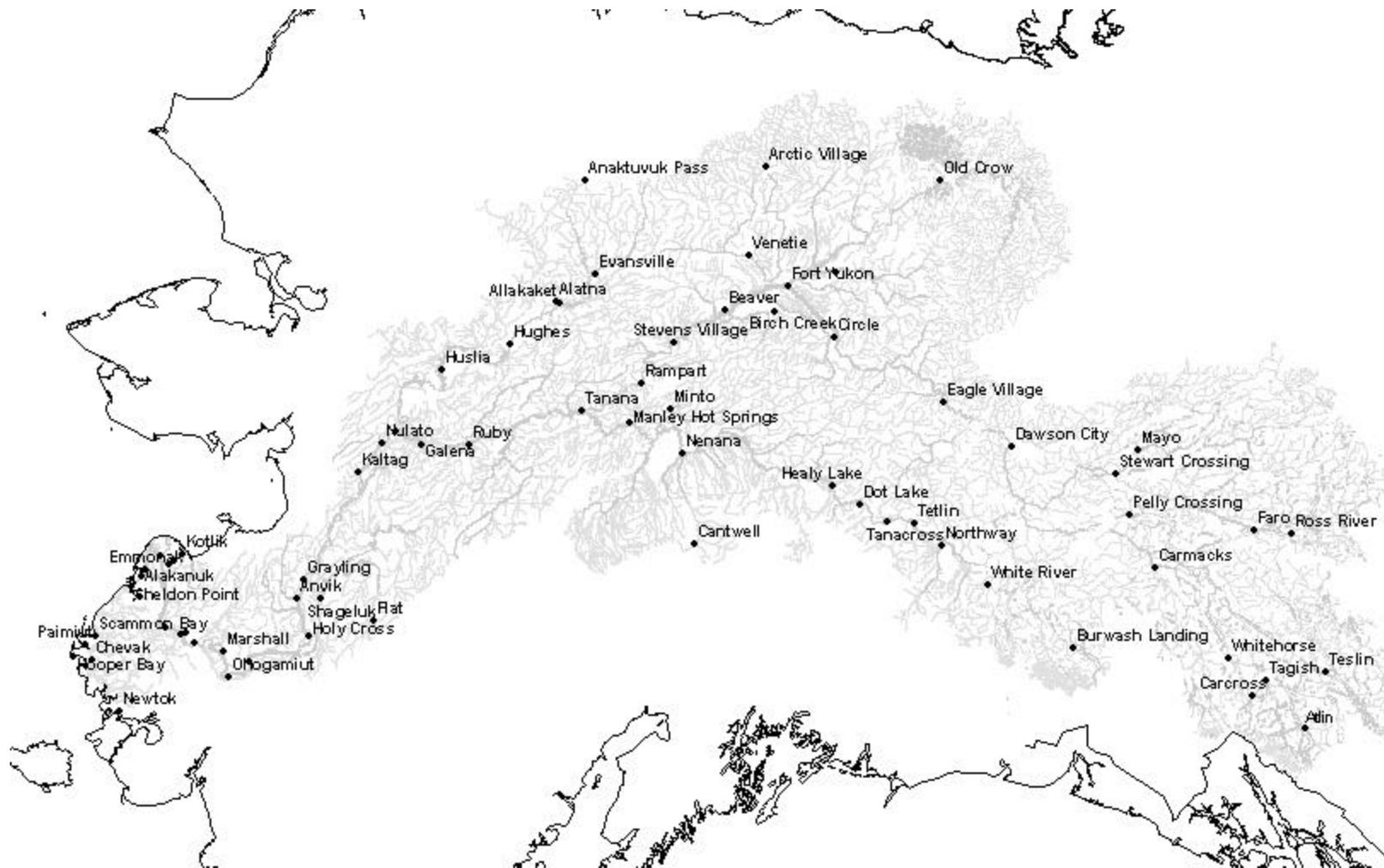




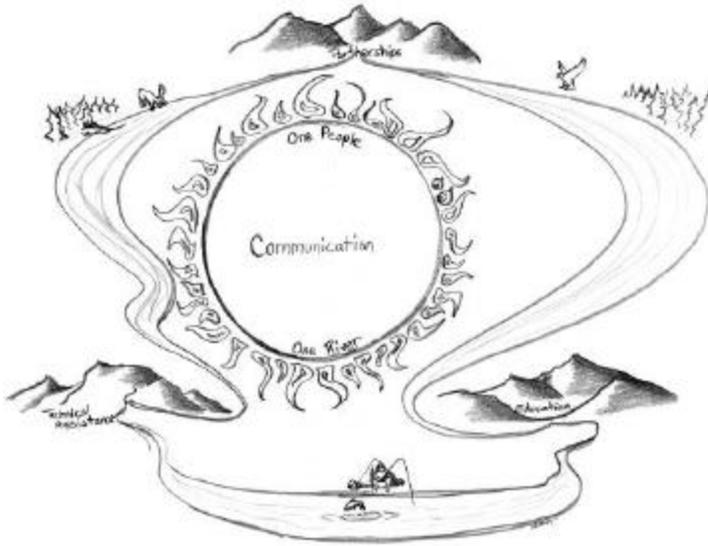
Yukon River Unified Watershed Assessment

Prepared by
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*Indigenous Communities of the Yukon River Watershed
(due to page size not all communities are shown)*



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**Yukon River Inter-Tribal Watershed Council
Unified Watershed Assessment**

“We, the Indigenous Peoples from the headwaters to the mouth of the Yukon River, including its tributaries, having been placed here by our Creator, do hereby agree to initiate and continue the clean up and preservation of the Watershed for the protection of our own and future generations of our Indigenous Peoples and for the continuation of our traditional Native way of life.”

-YRI TWC Mission Statement

Introduction

The Yukon River drainage is the fourth largest watershed in North America, draining an area of approximately 330,000 square miles and extending a distance of 2,300 miles from the headwaters in Canada to the mouth at the Bering Sea. This diverse landscape of glaciers, mountains, wetlands and tundra is home to over 20,000 indigenous people (2000 US Census Data, 1996 Canadian Census Data) who subsist and depend upon the entire watershed for their traditional and cultural survival.

In December 1997, tribal leaders from the entire length of the Yukon River met in Galena, Alaska to discuss their concerns over the health of the watershed. Through this first summit, the group formed a mission statement for the organization, which was to become the Yukon River Inter-Tribal Watershed Council. The Bi-annual summits guide the direction of the organization. Mountain Village, Alaska hosted the second summit in May 1999. During the second summit, the guiding principles from which the organization operates were developed. The guiding principals mirror those values of the Indigenous Elders of the river. They are:

- | | | |
|------------------|----------------------------------|------------------|
| ✓ inclusive | ✓ hear | ✓ fair and equal |
| ✓ listen | ✓ allow for diversity | ✓ integrity |
| ✓ patient | ✓ consensual | ✓ bold |
| ✓ non-judgmental | ✓ respectful | ✓ tenacious |
| ✓ trustworthy | ✓ timely decisions and responses | ✓ flexible |
| ✓ honest | ✓ sharing of wisdom | |

This document is developed and written with these guiding principles in mind.

Additionally, goals and objectives for the future direction of the organization were developed. The focus areas for the organization to work in are:

1. **Riverwide Assessment & Mapping** - Assessment of the health of the Yukon River Watershed from the mouth to the headwaters.
2. **Environmental Education** - Provide culturally appropriate Environmental Education curriculum to youth through school and community programming & raise community awareness of the issues that affect the watershed.
3. **Remediation/Reclamation Planning** - Provide the necessary data through watershed assessment to assist the Indigenous communities in the

Watershed to identify, existing and potential sites in need of reclamation / remediation.

4. **Technical Assistance** – Provide technical assistance to communities and Indigenous Peoples in the Watershed.
5. **Organizational Development** – Build capacity in the organization and between communities to ensure the continuity of efforts and communication.

This Unified Watershed Assessment (UWA) is the first step in achieving the initial goal of the YRITWC to gain an understanding of the changes in the Yukon River's condition and to begin documenting these changes in a traditional and culturally sensitive manner. It is not a new idea that 'knowledge' is power, to this end the YRITWC is attempting to become knowledgeable in a technical sense to began making and impacting change to maintain the indigenous way of life. To date there has not been a holistic and comprehensive look at the sources of non-point and point source pollution within the Yukon River Watershed. The Indigenous Peoples indicated the need to be educated in the available studies, resources and issues within the drainage affecting the quality of the water and the overall health of the Watershed. As directed, the riverwide assessment will include water quality testing and monitoring, issue identification, historic information, traditional uses and the gathering of scientific data and research. This Unified Watershed Assessment is the first step in a long process of assessing the Yukon River.

In August 2001, the Indigenous People of the Yukon Watershed came together in Teslin, YT to formalize their connective vision in an Inter-Tribal Accord. The accord states that the participating Indigenous People agree to cooperate and work together to clean up and preserve the Yukon Watershed. This document provides the grass roots direction the organization will take to address the concerns regarding the health of the Yukon River and what type of programs were needed to achieve the organizational goals and objectives.

The UWA provides an avenue to build cooperation and an understanding of the issues within the drainage, among the First Nations and Tribes. A comprehensive look at the issues within the drainage will enable all communities to have an understanding of how the different impacts may be affecting the overall health of the watershed and the animals and people which reside within the watershed.

Information for this assessment is from publicly available sources as well as from the Tribes and First Nations who live within the Watershed. Workshops were held to determine the direction of this assessment and determine the steps necessary to develop a long term monitoring and assessment plan.

The Yukon River is currently listed as a High At-Risk and High Data Collection Waterbody on the State of Alaska FY03 ACWA Nonpoint Source Waters Draft Priority List. Additionally, sub watersheds are also currently listed in the 1998 State of Alaska 303(d) Report under the Clean Water Act (CWA). At the end of this report are individual priority rankings for select streams and watersheds within the Alaska portion of the Yukon Drainage, as submitted by the Tribes.

While categorizing some waters, and providing additional comprehensive information for the current classification of the Yukon River, the UWA presents a holistic picture of the watershed and the cumulative effects of the environmental impacts on the system. The

UWA is a starting point for longterm monitoring and assessment planning and implementation.

The UWA is broken down into four parts. The first part of the Assessment looks at aspects of the Healthy Watershed as determined by Tribal and First Nation Environmental and Land & Resources Staff. These aspects represent a “consensus” of participating communities within the drainage, of which, will be the beginning of a benchmark to determine the impairment to waters within the drainage.

The second part of the UWA looks at the physical characteristics of the watershed as well as the history of the watershed. This section describes the various sources of non-point and point source pollution within the drainage. This section focus' on the five major themes of concerns in the drainage, and discusses other sources of contamination or potential sources. The themes were developed during the Teslin workshop by the Tribes and First Nations technical staff. These themes remain consistent with the conceptual ideas and concerns, which formed the YRITWC; these concerns relate to the impacts of Mining, Military, Landfill/Sewage, Tourism and Subsistence Foods, system wide.

The third section describes, in more detail, the sources and impacts based on a sub-watershed and community basis. Information is presented on various streams and rivers, recommended by tribes within the drainage for categorization.

To conclude the UWA discusses the gaps in available information, future information and data collection needs as well as presentation of the compiled bibliography of information available about the watershed.

Aspects of Healthy Watershed



*“My grandfather said to me, “
You know, some day ...you’re
going to see a lot of changes.
When there’s only loons out
there, you’re going to know
then that something’s wrong
with the land and with the
weather.”*

*- Norma Kassi, “Contaminants
in the Yukon.” Northern
Perspectives, Winter 1998*

Figure 1- Drawing from Teslin Workshop

In developing this assessment it was apparent that strictly using water quality standards and guidelines, in Alaska and Canada, as the guiding force was not acceptable to the Tribes and First Nations. These standards and criteria have been developed outside of input from

the Indigenous Peoples of the watershed. In looking at the watershed on a holistic basis, aspects of a Healthy Watershed in narrative terms should be the reference condition by which impairment in the watershed is determined. Additional reference to current water quality standards and guidelines is also necessary to describe the impairments.

In August 2001, the Third Bi-Annual YRI TWC Summit, in Teslin, YT, Canada, provided the opportune time and place to begin enacting change. Throughout the history of the YRI TWC, the communities have been in the forefront of determining the future of the organization, the UWA and the process from which it was borne is a good example of the way the Indigenous Peoples want to conduct their efforts.

To begin the process of designing a framework for longterm monitoring and assessment, a definition of a healthy watershed had to be determined by the Tribes and First Nations first. During the Third Summit, in an effort to include and capture the ideas of the communities, a workshop with over 30 attendees from the Tribes and First Nations was held. The workshop consisted of primarily technical staff persons from the Tribal and First Nation communities, whom would be helping to frame and begin developing a long-term plan. This was the first time this technical group, which has been charged by their leadership to conduct the longterm monitoring and assessment of the river, were able to come together to begin discussing the details of this enormous endeavor. At this workshop, groups were asked to draw pictures of what a healthy watershed would entail. These groups were randomly formed, without reference to regions. All the drawings were examined and the commonalities of these drawings were discussed.

The following list is what came out of the discussions:

- ⓪ A healthy watershed is not just about water, but many other things are needed to comprise a healthy watershed.
- ⓪ If the animals are healthy, then people are healthy.
- ⓪ People interact with the entire environment.
- ⓪ Clean water is associated with a sense of wilderness.
- ⓪ The beauty of the land is shown.
- ⓪ The natural food chain is in its original abundance.
- ⓪ The same message is presented whether the drawing is of one lake up to an entire watershed.
- ⓪ Water is precious.
- ⓪ Diversity, unity and the cycle of life are apparent.

The above aspects are indicative of what comprises a healthy watershed. However, water quality standards and guidelines are the means by which these aspects are represented at the governmental level. Even though streams and rivers may fall within the stated standards and guidelines at a given time, when sampled, the watershed may not be healthy in the holistic sense of providing an environment for the flora and fauna of the watershed.

When looking at the criteria, developed by the people of the Yukon River, the values of a healthy watershed and the status of the Yukon Watershed, the conclusion can be drawn that the Yukon River is in trouble. During the first Yukon River Inter-Tribal Watershed Council Protection Summit held in Galena, Alaska in December 1997, there were comments addressed at the overall problems with the watershed and the need for the Indigenous

Communities to work cooperatively to help solve the problems of the waters. These problems arise both within and outside of each community. Affects of environmental degradation seen in the watershed include decrease in fish and wildlife populations, changes in animal distribution and an overall sense the watershed is unhealthy. Elders have noted changes in not only anadromous salmonid populations but also in freshwater fish such as the winter staple whitefish, as well as an increase in the incidence of tumors and cysts in both fish and wildlife, which is also indicative of the change in human health. The health of the indigenous peoples of the watershed is related to the health of the subsistence foods, which they eat.

Indigenous people are a natural part of the environment, and when developing this assessment, the human factor is considered. The YRI TWC addresses the human factor in the environment through cleaning up their own areas or providing the impetus for responsible parties to clean up sources of environmental degradation within their area.

“Every time I return I see fewer animals, fewer fish, fewer birds. The water is silent and so crystal clear I can see to the bottom. There used to be so much activity, so much aquatic life - such as insects and little shrimp-like things that are food for other animals like muskrat - that I couldn't see the bottom. Now I can. And now I see a pair of loons out there, and that's about it.”

- Norma Kassi, *“Contaminants in the Yukon.” Northern Perspectives, Winter 1998*



Figure 2 - Drawing from Teslin Workshop

Watershed History

When researching the history of the Yukon River it seems that time began on the Yukon River in the early 1800's with the exploration of the river by Russians. However, human inhabitants of the watershed have been documented since before the time of Beringia. The Interior of Alaska and the Yukon, much of which is the Yukon Drainage was the Beringia refuge of 25,000 years ago during the last ice age. While the majority of what is now Alaska and the Yukon Territory were covered in glacial sheets of ice, the Beringia Refuge remained ice free and provided suitable habitat for animals and people to subsist within this region. The arid region received nutrient input into the system from the dust blown from the glaciers into the refuge.

The Yukon River Timeline – Modern Times

C.a.740AD – Large volcanic eruption at the head of White River

1824 – First Russian exploration of the Yukon River

1847 – Fort Yukon established

1867 – The “sale” of Alaska by Russia to the United States

1886 – Gold Discovered in the Forty-Mile District

1893 – Gold Discovered near Rampart and Circle

1896 – gold discovered on the Klondike, near Dawson City, which set off the great gold rush of 1898

1902 – gold discovered on Pedro creek leading to the founding of Fairbanks

1906 – gold discovered in the Chandalar district

1907 – Richardson trail from Valdez to Fairbanks established (the route the Trans Alaska-Pipeline eventually followed)

1942 – The Alaska/Canada Highway was built.

1948 – The Venetie reservation formed

1971 – Alaska Native Claims Settlement Act (ANSCA) becomes law.

1977 – The Trans-Alaska Pipeline is completed

1978 – Alaska National Interest Land Claims Act passed

During this time frame, the Indigenous people changed from nomadic bands, which traveled with the seasons and utilized the waterways of the Yukon Drainage for transportation to settled communities along the vast waterways of the Yukon River Watershed. The settled communities within the drainage usually represent a summer or winter camp spot. The establishment of missionary and Bureau of Indian Affairs schools changed the face of the landscape within the drainage by creating settlements along the waterways.

The fur trade of the early 1800's, the Gold Rush of the late 1800's brought non-indigenous people to the Yukon Watershed. The gold rush also brought the need for law and order in the land, which brought in the military services to provide that service. The military presence within the drainage was minimal until the 1940's. This era brought about the many

lend-lease military bases, the Alaska-Canada Highway and the major military bases. After the build-up came the long-range radar sites and distant early warning sites.

The work associated with resource extraction and military build-up was conducted before any regulations regarding the disposal of waste were in place. Resource extraction and military build-up have left a lasting legacy of non-point source pollution impacts throughout the drainage.



From the 1865 US Atlas

Geographic Scope and Scale

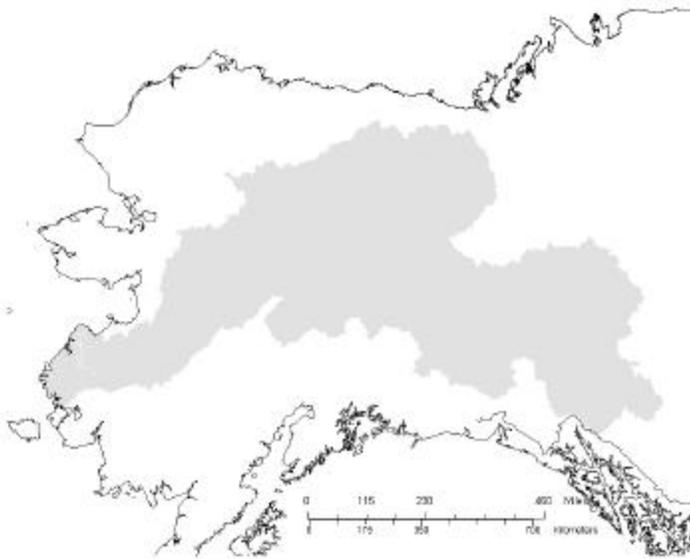


Figure 3 - Map of Yukon River Watershed

The Yukon River begins its 2,300-mile journey to the Bering Sea among the mountains in Southern Yukon Territory and Northern British Columbia in Canada. There is not universal agreement as to the actual source of the mainstem river. The river flows in a northerly direction from Canada to the Yukon Flats in Alaska. It is near Fort Yukon, the Yukon River crosses north and then back south of the

Arctic Circle. The River continues to flow in a southerly direction until it reaches the wetlands of the Yukon Delta. At the Delta, the river fans out and empties into the Bering Sea.

Throughout this 330,000 square mile expanse a vast array of geologic and ecological areas, exist. This multitude of differing terrain and ecology exemplifies the diversity of this drainage. The mainstem Yukon is fed by a number of major tributaries throughout the drainage. The major drainages are the Yukon Headwaters, Teslin River, Pelly River, Stewart River, White River, Upper Yukon, Porcupine River, Chandalar River, East Central Yukon, Tanana River, Koyukuk River, West Central Yukon and Lower Yukon. Many of these sub-watersheds cross political and jurisdictional boundaries.

The Yukon River Hydrologic Unit Code (HUC) is 1904. There currently is some delineation of watersheds in the US portion of the drainage to the 8 digit HUC. Those watersheds which are both in the US and Canada have been assigned up to an 8 digit HUC. The Canadian HUC numbering system is different. The system consists of numbers and letters to designate the watersheds. Future work within the system will require the YRITWC to develop a nomenclature and numbering system to designate sub-watersheds within the drainage. The following table lists the thirteen primary sub-watersheds and their 6 digit HUC for those watersheds with a portion or entirely within the US.

Note: The White River and Forty-Mile River are both listed as 190401 watersheds. While being adjacent watersheds, these are separate areas.

Table 1 - Primary Subwatersheds

Basin	Sq. Miles	HUC	Comments
Yukon Headwaters	13,000		Yukon Territory & British Columbia
Teslin River	13,100		Yukon Territory & British Columbia
Pelly River	18,600		Yukon Territory
Stewart River	19,800		Yukon Territory
White River	18,100	190401	Yukon Territory & Alaska
Upper Yukon	28,200	190401	Yukon Territory & Alaska
Porcupine River	45,000	190402	Yukon Territory & Alaska
Chandalar River	13,700	190403	Alaska
East Central Yukon	27,300	190404	Yukon Territory & Alaska
Tanana River	44,300	190405	Yukon Territory & Alaska
Koyukuk River	35,000	190406	Alaska
West Central Yukon	20,900	190407	Alaska
Lower Yukon	24,500	190408	Alaska

The Yukon drainage is the fifth largest drainage in North America in terms of discharge volume. The mean discharge is more than 200,000 cubic feet per second. The river is characterized by winter freeze-up and summer thaws on an annual cycle. Most of the discharge occurs during the ice-free months from snowmelt, rainfall and glacial melt. The Tanana and White River drainages are glacially fed systems and provide 29% of the total water flow of the discharge at the mouth. The Porcupine and Koyukuk are mainly underlain by continuous permafrost and provide 22% of the total flow. Wetlands account for 30% of the Yukon River Watershed.

The Yukon River transports about 60 million tons of suspended sediment annually with about 20 million tons deposited on the flood plains of the braided stretches.

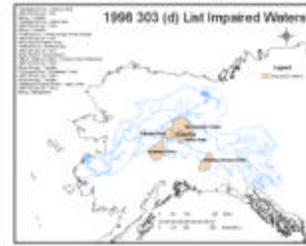
Further information can be found in USGS publication, Water-Resources Investigations Report 99-4204, "Environmental and Hydrologic Overview of the Yukon River Basin, Alaska and Canada".



They have to listen to us about our land and our water. Another 50 years from now, maybe this water won't be any good if we don't say something."

- Johnny Smith, Kwanlin Dun First Nation Elder.

Uses, Values and Threats



"Water is critical to the survival of the peoples and our way of life."

- Peter Captain, Sr., Louden Tribal Council

The Indigenous Peoples of the drainage utilize the watershed for all aspects of their lives including drinking water, food, transportation, bathing, ceremonial and traditional practices. Currently many communities obtain their drinking water directly from the Yukon River or one of its tributaries where the water is chlorinated before distribution to a central watering point or to houses through a piped water system. Other communities obtain water from groundwater near the surface.

The river represents the major transportation route between the villages that are not road connected within Alaska and the Yukon Territory. Boats traverse these waterways moving people, hauling supplies and removing commodities such as furs and precious metals.

Water within the drainage is also used for mining, agricultural irrigation, power plant coolant, primary and secondary contact recreation, fishing and farming. The water is also used to dilute pollution through point source discharges such as sewage treatment plants, electrical generation cooling, and mixing zones for sedimentation from mining.

The people of the river value the watershed for many things. Among these are fish habitat for salmon, whitefish, sheefish, burbot and pike. These fish provide a stable food source for the people who subsist within the drainage. The watershed also provides for the diverse wildlife in the region such as moose, caribou, sheep and furbearers. The fish and wildlife, which provide sustenance to the people, are dependent upon the health of the watershed in which they live and raise their young. Traditional knowledge of the river indicates changes in the health of the fish and wildlife, which live in the drainage such as tumors, cysts and other anomalies, which may be indicative of an unhealthy watershed.

The watershed also provides for a rich growing environment through the transportation and deposition of nutrient rich sediments, which provides for the growth of indigenous plants as well as providing the rich soil for the many gardens within the drainage.

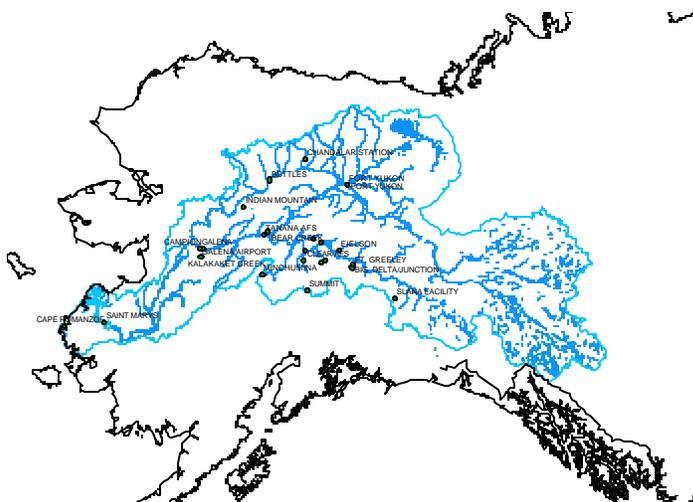
Another value of the watershed is the aesthetic qualities of the region. These aesthetic qualities also are important to the tourism industry within the watershed. Many people "float" the river during the open water months. The tourism industry is also impacting the entire drainage. These impacts are both positive and negative.

The Yukon River Watershed is threatened by impacts and pollution from multiple sources of contamination, which will be discussed in detail further in this report. The geographical

extent of the drainage provides a major repository for long-range transport of contaminants. Major long-range contaminants include heavy metals and herbicides and pesticides (Persistent Organic Pollutants). Persistent Organic Pollutants bio-accumulate in the food chain on which the Indigenous Peoples of the drainage rely on for sustenance.

Climate Change is documented in the drainage. The average growing season has increased from 130 to 194 days and air temperatures are increasing at a rate of 1.4°F (0.75°C) per decade from 1961 - 1990 (USGS, 1999). This increase in temperature increase may be threatening the overall health of the watershed. Climate change and long-range transport of POP's may not be controllable by the people who live in the drainage; many other sources of potential impacts are controllable.

During the Watershed Assessment workshop held in Teslin, YT, the technical staff at the workshop spoke about the impacts and concerns to their communities and surrounding areas. Through this discussion, there were five areas, which were a constant theme from the headwaters to the mouth. These are 1) Military Impacts; 2) Mining Impacts; 3) Sewage Disposal; 4) Tourism; 5) Health of Subsistence Foods.



Military

The current active military bases and test ranges comprise some of the major impacts to the watershed in terms of non-point source pollution. The active military locations are only in the Alaska portion of the drainage. Contamination at these locations consists mainly of petroleum products, such as diesel and gasoline, but also solvents, pesticides, batteries, and asbestos. In addition, historical

Figure 4 - Current Military Sites

military locations are also noted as potential sources of non-point source pollution. These sites include closed long-range radar and Distant Early Warning (DEW line) sites as well as construction camps associated with the construction of the Alaska Highway, CANOL pipeline and Fairbanks - Haines pipeline. The water quality associated with non-point source pollution to the watershed from military sites has not been documented. However, in most of these areas groundwater contamination from solvents and petroleum products is documented. As the river goes through the annual spring and thaw cycle, the contaminated groundwater may be entering the Yukon River. In an effort to address the potential non-point source pollution, many of the current bases have on-going cleanup efforts. These efforts have allowed for documentation of free product and high levels of benzene and TCE in the groundwater. The groundwater flow within the drainage is difficult to document in most cases as there is a flux of the groundwater associated with the high and low levels of the Yukon River and its tributaries.

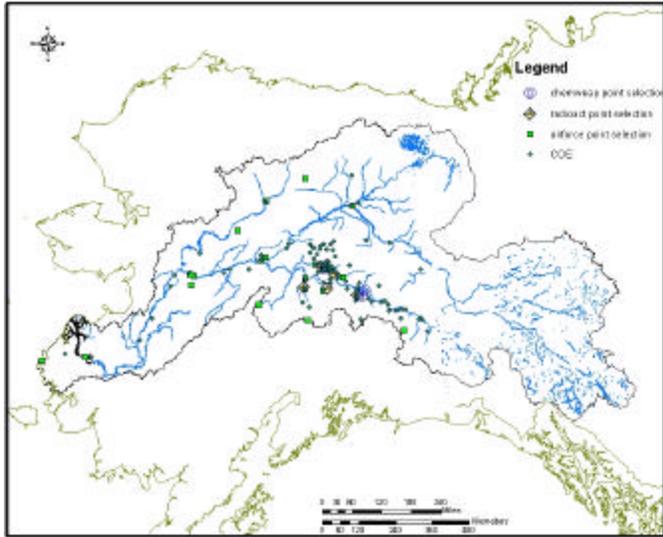


Figure 5 - Map indicating military sites and formerly used defense sites (FUDS)

Documentation of historic military sites throughout the drainage is an on-going process. There are many gaps in the documentation of the historic sites and the knowledge of these sites is being lost through time. The information available, anecdotal and documented, indicate the historic practices have left a lasting legacy of environmental impacts throughout the drainage. These impacts have been detrimental primarily due to the lack of environmental regulations being established and the lack of knowledge and preventative measures to limit the potential for contamination of the surface and groundwater in the area.

The three major military bases within the drainage are Fort Wainwright (US Army), Eielson Air Force Base (US Air Force) and Fort Greely (US Army). Ft Wainwright and Eielson are located near Fairbanks and Fort Greely is located near Delta Junction. All three bases are located within the Tanana River Drainage. Associated with these bases are major training areas used for live fire exercises by the military.

In addition, to the three bases and training areas, smaller military bases are located at Galena and Black Rapids. Other sites of military presence include the long-range radar sites located throughout the drainage. The military also has a seismic sensor site at Burnt Mountain, approximately 65 miles north of Fort Yukon. This site, historically, was powered by strontium - 90 radioisotope thermoelectric generators. These generators have since been replaced with hybrid diesel and solar generators.

Further testing at these bases and sites is necessary to ensure no contaminants are leaching into the nearby waterways. There is currently an EPA approved TMDL (total maximum daily load) for PCB's at Garrison Slough within the Tanana Drainage. This site is associated with activities at Eielson Air Force Base. In addition, Galena is actively pursuing a cooperative relationship with the Air Force to cleanup any potential non-point source pollution.

Detailed information on the FUDS program and sites can be found at http://www.poa.usace.army.mil/fuds/map/fud_index.html .

Mining

Mining presents a major concern throughout the drainage. Mining has been in existence within the drainage since the mid 1800's. Hard rock (underground tunnels), open pit, and placer (surface) mining present unique concerns for effluent runoff, chemical spills and sediment loading. "...regulations did not exist until after 100 or more years of unregulated mining occurred in Alaska." Mining represents a major economic base in Alaska and Canada.

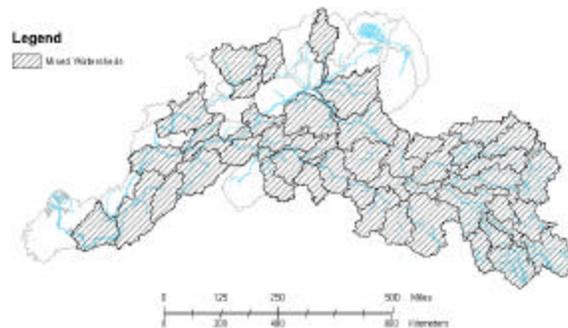


Figure 6 - Mined Watersheds in the Yukon River

Old mines present a particular challenge for people responsible for protecting the Yukon's environment. It is difficult to determine how the environment has changed when you do not know what was there in the first place. And when the concern is about pollution in moving water, the task becomes even more challenging. ...But many of the Yukon's old mines were established before there was much concern about potential impacts on the environment "It is very important to have good baseline data because a definition of impact is only as good as your ability to prove it," says Benoit Godin, head of Environmental Contaminants with Environment Canada in the Yukon. A 1985 study showed that there were significantly higher levels of heavy metals in the creek sediments than on other parts of the property. There were also fewer types of benthic invertebrates in the creek. "Abandoned mines will continue to haunt us in the Yukon," says Godin. (*your Yukon*, column #126)

Abandoned and aging mines are a problem throughout the drainage. This problem results from mines that do not fall into a specific category for clean-up/remediation and there is technically no responsible party who is required to maintain and reclaim the site. Not only are the mines themselves a potential risk to the watershed through the breaching of tailing ponds, but also the machinery and petroleum products, which are left after the mine closes. Many mining practices were not regulated until the 1970's in the US. There is a need to inventory all the mining sites, present and historic to determine the actual remaining areas of concern and the locations of these sites. Once these sites are inventoried, a priority ranking could be established for clean-up. However, there is currently no financial support to clean-up these abandoned mines which were in existence over 100 years ago and which are still a source of non-point source pollution to the watershed.

Sewage and Landfills

Sewage disposal represents a unique challenge in the Yukon Watershed. Most villages within the Alaska portion of the drainage use sewage lagoons to dispose of and treat raw sewage.

Many of these communities also lack piped sewer and water to their homes, and rely on “honey buckets” and outhouses for sewage disposal, which presents its own unique problems.

Communities are usually located on a waterway with the sewage lagoon in close proximity, exposed to annual flooding and erosion. This annual occurrence causes the sewage lagoons to overflow and disperse debris throughout the community and the river. Equally, a threat to the sewage lagoon is the erosion of the riverbanks. Naturally, occurring erosion causes the sewage spills from “honey buckets”, flooding or direct disposal into the waterways, to move downstream to the water intake of the communities downstream. Additionally, many of the communities that do have piped sewer systems have inadequate treatment systems. These systems are old, unreliable and hard to maintain due their age and lack of available maintenance parts.

The increase in tourism activity has also enhanced the generation of waste. There are few approved or maintained campgrounds along the mainstem Yukon River within Alaska. Many of the tourists traveling the Yukon River, have limited options as to what to do with their waste generation, while camping on the gravel bars and islands within the drainage. Unfortunately, the lack of options and the remoteness encourages the practice of dumping sewage and other waste directly into the river.

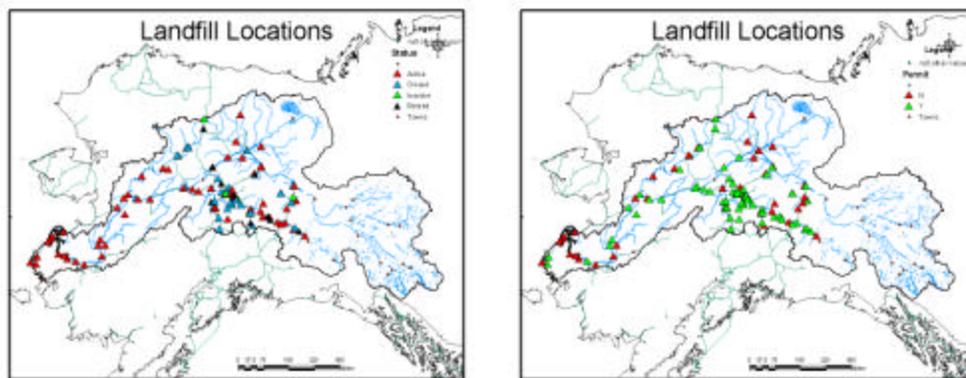


Figure 7 - Landfill locations and permit status in Alaska

Unregulated “open dumps” throughout the drainage are thought to play a major role in contamination of the waters in the drainage. These “open dumps” are unpermitted landfills which are built in the lowlands next the river. The landfills are not lined, lack adequate containment or opportunities to sort and segregate hazardous waste and have little maintenance. In addition, open burning of waste is a common practice. These practices present a leachate hazard to the drainage as well as a human health risk. Recent environmental awareness efforts are working to reduce the amount and type of waste going into these landfills as well as providing the necessary training and education to the communities to improve the condition of their landfills or to build new ones which are not apt to leach into the surrounding waters. The quality of maintenance is also improving. The landfills, especially the lower river on the delta is subject to periodic flooding with a movement of the landfill material into the river.

Tourism

Tourism has increased in the Yukon River Drainage during the past decade. This increase in the number of people visiting the river and communities along the waterways has had both positive and adverse impacts to the drainage and communities. Tourism within the drainage comes in a variety of types, from the individual “floater” to the large tour buses and boats. Tourism in Alaska is the second largest private industry and the fastest growing industry in Alaska.

Tourism increases the burden of the infrastructure of each of the communities such as sewage and solid waste disposal. Additionally, tourism activities, which occur outside of communities, increase the impacts of sewage and solid waste disposal throughout the drainage. Work is being done throughout the drainage to inform tourists of the negative impacts of tourism to reduce these impacts. These efforts include informing visitors to remove their garbage, where to site sewage facilities while camping, how to minimize erosion impacts and generalized knowledge of how to protect the watershed.

Subsistence Foods

Subsistence is not just a word, but a “way of life” for the Indigenous people of the River. Subsistence provides an avenue for elders to pass knowledge to the youth regarding their environment, through subsistence hunting, fishing and gathering. The Indigenous Peoples of the drainage are directly tied to the health of the watershed. As indicated earlier, a healthy watershed is indicative of the healthy populations of animals and fish, which in turn create healthy populations of people.

Regional Overview

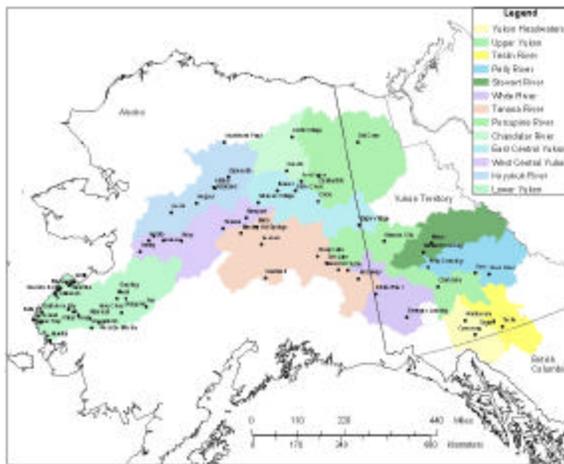


Figure 8 - Yukon Watershed Major Sub basins

The first being the Tribes and First Nations themselves. Information was gathered on the impacts and concerns to each of the areas during the watershed assessment meeting held in Teslin, YT, Canada in August 2001. Additionally, meetings were held with the Alaska Tribes during October 2001 at the ANHB Tribal Environmental Management Conference and February 2002 at the Alaska Forum on the Environment Conference. The local information is further supported by a survey developed by the

The Regional Overview section is a more detailed account of the sources of non-point source pollution within each drainage. The drainages illustrated in each of the maps and referenced in the text, are those delineated areas, as they currently exist. There is currently work being conducted by several agencies to further digitally delineate watersheds in Alaska. The information provided for those watersheds in Canada came from both the Department of Fisheries and Oceans FISS database and the Geogratis web site.

Information presented in the regional overview section was obtained from a variety of sources. The first being the Tribes and First Nations themselves. Information was gathered on the impacts and concerns to each of the areas during the watershed assessment meeting held in Teslin, YT, Canada in August 2001. Additionally, meetings were held with the Alaska Tribes during October 2001 at the ANHB Tribal Environmental Management Conference and February 2002 at the Alaska Forum on the Environment Conference. The local information is further supported by a survey developed by the

YRITWC and completed by the communities. A copy of the survey is included with this assessment.

The Regional Overview begins at the headwaters of the Carcross/Tagish and Atlin First Nations and follows the river with the inflow of the major tributaries to the mouth of the Yukon, 2,300 miles downstream at the Bering Sea and the villages of Alakanuk, Emmonak and Kotlik. Each regional overview provides a synopsis of the subwatershed, a narrative of the types of impacts and a description of some of the major impacts within each watershed.

Specific information to communities in Alaska can be found at http://www.dced.state.ak.us/cbd/commdb/CF_COMDB.htm; Yukon Territory at <http://www.yukoncommunities.yk.ca/> . NOTE: Digital Data of impact sites in Canada is not included in the maps in this report.

Yukon Headwaters

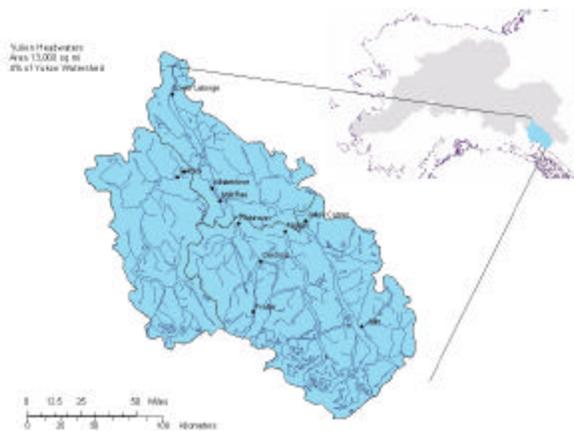


Figure 9 - Yukon Headwaters Watershed

The Yukon Headwaters encompass the “Southern Lakes” region of southern Yukon Territory and Northern British Columbia. The area is characterized by the high mountains of the St. Elias and Coast Ranges, long narrow lakes, broad valleys and rolling hills. There are glaciers throughout the mountains at the headwaters.

Atlin

Atlin is the most northwesterly community in British Columbia and a few miles south of the Yukon

Territory border. The community is located on Atlin Lake. The community of Atlin was established in the late 1890's with the discovery of gold in the Klondike. At one time, over 10,000 people inhabited the community of Atlin.

Carcross

Carcross and Tagish are the home of the Carcross/Tagish First Nation. Carcross was originally known as Caribou Crossing because the narrows between Lake Nares and Lake Bennett was a favorite spot for caribou to cross during their annual migration. Carcross became an important supply route to the interior.

The community of Carcross is concerned with the PCB contamination of the old railroad tie plant. They have worked cooperatively with Environment Canada and the White Pass Railroad to clean up a PCB contaminated site at Carcross. Other concerns relate to historic and potential future mining in their area. Mining escalates the potential for arsenic contamination, tailing ponds and acid mine drainage. Tailing pond dam breaching in these headwater areas is a major concern of First Nations in Canada, as well as the communities downstream of these potential environmental hazards.

Carcross also has concerns regarding the dumping of sewage, creosote associated with the activities of the railroad and the potential for a hazardous or petroleum spill from materials being transported on the road.

Whitehorse

The Kwänlin Dun, “people of the rapids”, live in the Whitehorse area. Whitehorse is the capital of the Yukon Territory. Whitehorse is the largest community in the Yukon Territory with a population in the metropolitan area of just over 21,000. Concerns around the Whitehorse area include mining, sewage disposal and impacts from urbanization. There is also concern regarding the impacts to the watershed from agriculture. The Kwänlin Dun are working on developing stewardship plans, monitoring salmon and the water quality of their habitats. There is a concern over the lack of access to the river for the community.

The Whitehorse Dam, across the Yukon River, was built in 1958 to generate hydroelectric power. The building of the dam tamed the famous rapids of Miles Canyon and created Schwatka Lake (reservoir). A fishway was also built in 1959 to allow migrating salmon to get past the dam.

Just downstream from Whitehorse is the home of the Ta'an Kwach'an First Nation, "people of the flat lake place". The area is around Lake Laberge. The concerns from this area are landfills, old army sites (tar pits of used oil next to rivers and streams), fish hatcheries, sewage disposal, urbanization in Whitehorse and pesticides from agriculture. The Ta'an Kwach'an are working on a water management group to make recommendations on regulations.

Teslin River

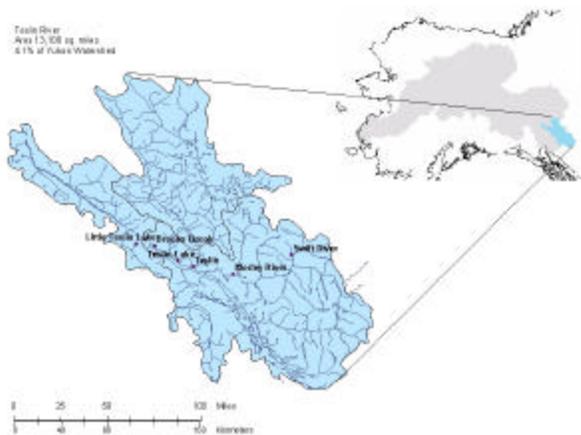


Figure 10 - Teslin River Watershed

The Teslin river drainage is characterized long narrow lakes, gentle slopes and rolling topography near the lakes with moderately high rugged mountains along the northeastern edge of the drainage. Most of the water within the drainage is from snowmelt runoff in the upper portions of the drainage. The outlet of Teslin Lake is located at the lower end of the drainage.

Teslin

The community of Teslin is situated at the confluence of the Nisutlin Bay and Teslin Lake. The name Teslin comes from the Tlingit word Teslintoo, meaning "long narrow waters". Teslin Lake is 92 miles long and resembles a large river.

The community of Teslin is concerned with preserving the quality of the water in their community, and historical contamination left from the military during the building of the Alaska Highway. The closure of the highway construction camps left debris such as discarded materials, including barrels and vehicles. There is concern that the knowledge of some of these sites is being lost through time. Other concerns include the presence of DDT and PCB's being found in the region, and potential and exploratory mining in the mountains upstream of the community.

The growth in tourism is causing concern within the community regarding non-point source pollution. These concerns include sewage and garbage and the impacts from heavily traveled areas.

"Protecting a precious resource" Juanita Sydney, Teslin Tlingit Council, YRI TWC 3rd Summit, Brooks Brook, YT, Canada, August 2001.

Pelly River

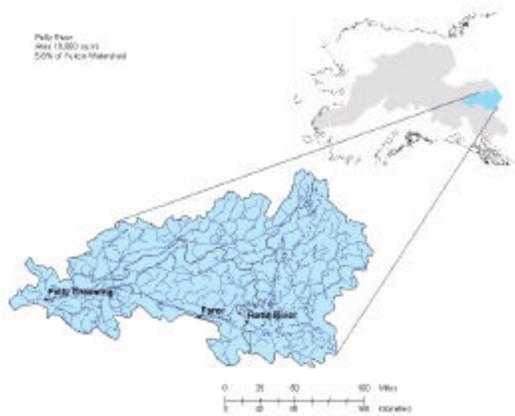


Figure 11 - Pelly River Watershed

associated with them. In particular, there is an expressed concern with the Faro Mine and the lack of clear responsibility or money for cleanup. The Faro Mine is located within the drainage and the full tailing ponds threaten to breach and flow into the Pelly River. The mine closed in 1998 and the operator of the mine went bankrupt. Other concerns relate to sewage disposal practices in other communities, the low numbers of returning salmon and the odor of their drinking water.

The Selkirk First Nation is working on stream profiles on tributaries within their traditional territory, such as aquatic life and classifying streams. The surveys were done with an elder, a youth and an outside consultant. Other activity includes a recently installed a new water treatment plant.

Stewart River



Figure 12 - Stewart River Watershed

The Pelly River drainage is characterized by rolling topography near the main Yukon River to moderately high mountains in the eastern portion of the drainage.

Ross River

Ross River is located at the confluence of the Pelly and Ross rivers. This area is home to the Kaska Dena.

Pelly Crossing

The Selkirk First Nation is located at the community of Pelly Crossing. The Selkirk First Nation is concerned with historic and current mines and the tailing ponds

The Stewart River drainage is located in the Eastern portion of the Yukon Watershed, and drains the southern slopes of the Ogalvie Mountains.

Mayo

The Nacho Nyak Dun (NND) First Nation resides within the Stewart River watershed at the community of Mayo. The concerns of NND include mining, oil & gas exploration. They are working on developing educational pamphlets for the people on the river such as camping sites and wildlife areas. NND is also working on salmon restoration projects and water quality monitoring projects.

scarcer, which in turn caused an increase in the use of coal. Carmacks became an important service location for the mines in the area, as well as a transportation stop on the highway.

Concerns in Carmacks include raw sewage being dumped into the Yukon River, garbage that is left behind, hard rock and placer mining, and the increase in tourism. Concerns regarding mining are the leaching of cyanide from tailing ponds and the cleanup of historical mine sites. Tourism concerns are the lack of understanding of tourists regarding the cultural uses and a lack of integrity for the river.

The Little Salmon Carmacks First Nation is working on training community members to conduct stream assessments and fish counts. They have established a river group for monitoring the river, such as counting tourists and the types of tourism (canoeists, kayakers, hunters), and inventory of fish camps. This river group consists of three people of whom one is an elder and one youth.

Dawson

One of the main concerns of the Tron Dek Gwitchen First Nation is the sewage system in Dawson. The current situation is that the City of Dawson, who is responsible for sewage disposal, pumps only primary treated sewage directly into the Yukon River. The concentrated sludge from the primary treatment system is hauled to an old landfill for proper disposal. People in the region do not feel it is safe to drink the water or to engage in water contact activities due to the sewage situation.

Porcupine River

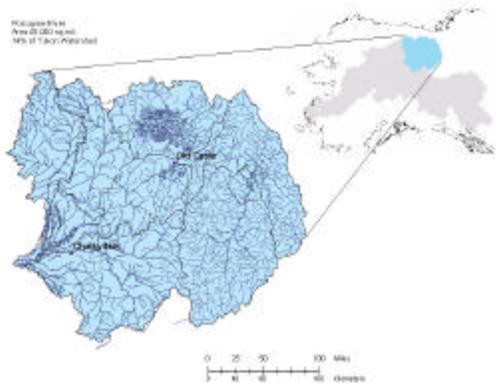


Figure 16 - Porcupine River Watershed

sonar station for enumerating Fall Chum Salmon returns on the Sheenjek River within the drainage. The Dept. of Fisheries and Oceans operates a salmon enumeration weir on the Fishing Branch.

The Porcupine River drainage is underlain by continuous permafrost. The Porcupine River drains the Northeastern portion of the watershed. The Porcupine drainage is home to some of the larger spawning beds for Fall Chum Salmon (Sheenjek River and Fishing Branch).

The Porcupine drainage is home to the Porcupine Caribou Herd. The Old Crow Flats north of the community of Old Crow, were designated a wetland of international importance in 1982 under the Rasmussen convention. The State of Alaska Dept. of Fish & Game operates a



Figure 17 - Porcupine River Watershed Land Status

Impacts within the drainage include FUDS sites on the lower Porcupine River. The military used these recreation sites when the base at Fort Yukon was active. There are also placer mining claims within the drainage.

Old Crow

The Vuntut Gwitch'in First Nation is the only non-road connected First Nation in the Yukon Territory. Old Crow sits on the North Bank of the Porcupine River. The Vuntut Gwitch'in are "the people of the lakes", and are part of the Gwitch'in Nation, which covers Northwestern Canada and Northeastern Alaska.

Canyon Village

Canyon Village is a historical village and traditional hunting area. The village sits on the North Shore of the Porcupine River. The community is not currently inhabited full time. The Tanana Chiefs Conference, Inc. (TCC), DOD Environmental Restoration Program documents 200 Drums left by the USAF in 1963 at Canyon Village.

Chalkyitsik

Chalkyitsik sits on the South Shore of the Black River. The name Chalkyitsik is Gwitch'in for "fish hooking place". Traditionally, the people of the area wintered in the headwaters of the Black River and moved to Chalkyitsik during the summer months for fishing. The Black River has its headwaters in the Yukon Territory.

Use of water includes; kids play with water, squirt guns and water balloons, plants/Gardens, drinking, washing, fishing, swimming, and transportation. "We hunt, fish and swim in these waters." (Black River). They have a washeteria, which obtains water from the Black River before treatment and distribution. It also pumps water up to the school. People also drink straight from the river.

Within the US portion of the drainage are portions of the Arctic National Wildlife Refuge, the Yukon Flats National Wildlife Refuge and the Yukon-Charley National Preserve. Wild and Scenic Rivers in the drainage include that portion of the Sheenjek River within the Arctic National Wildlife Refuge. Additionally, in Canada, the Vuntut National Park is located within the Porcupine drainage.



Figure 18 - Porcupine River NPS Sites

Concerns in the community include a sewage lagoon drainage that cracks up the ground and drains into a dry slough. There are six oil tanks by the school, which have pipes under the ground to pump oil into the school and into the power plant. The community does not know what impacts this practice has.

An active open dump also is a concern for the community. Garbage is scattered all over and is located not far from the river, as well as buried garbage. A sewage lagoon by the school that drains into a dry slough, and when the water gets high it drains into the Black River. It's at least 40 or 50 yards away from the water. The community does not know if the landfill is leaching.

NOTE: The above information was supplied by the questionnaire survey for this project.

Chandalar River

The Chandalar River drains the south side of the Brooks Range. This watershed is underlain by permafrost. The Chandalar Watershed is composed of the Middle & North Fork, East Fork, Christian and Lower Chandalar River Watersheds.

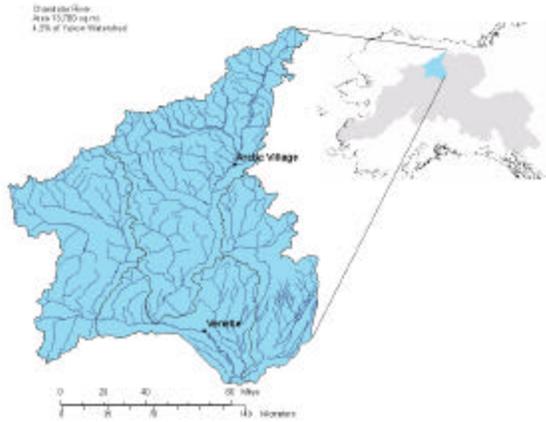


Figure 19 - Chandalar River Watershed

The Wind River in the Chandalar drainage is a Wild and Scenic River.

The Chandalar mining district is the area around the upper drainage of the Chandalar River. This area was "discovered" in 1906 and had placer production through 1959 of 30,708 ounces. The area along Big, Dictator and Little Squaw Creeks had very many rich placer mines.

The Chandalar Watershed encompasses the 1.8 Million Acre Venetie Reservation.

The US Fish and Wildlife Service (USFWS) maintains a split-beam sonar site for enumerating salmon on the lower part of the Chandalar River. The Chandalar is home to one of the major chum salmon spawning areas within the Yukon Drainage.

Both the communities of Arctic Village and Venetie derive their drinking water from the rivers of the Chandalar Watershed. These watering points draw water directly from the rivers where the water is then treated at the local Water Treatment Plant for distribution from a watering point.

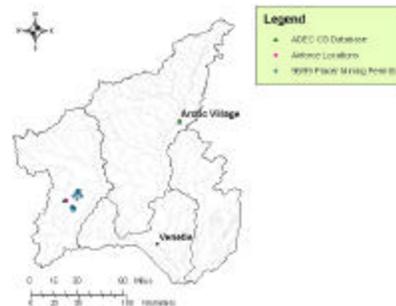


Figure 20 - Porcupine River NPS Sites

Impacts in the drainage include petroleum spills associated with tank farms and placer mining activity. One FUDS site is located within the drainage.

Arctic Village

Arctic Village is the northernmost village within the drainage. Arctic Village is 250 miles north of Fairbanks and is home to the Neetsaii Gwitch'in people. The people of Arctic Village depend upon the Porcupine Caribou Herd as their main form of subsistence food. Aside from the Arctic Village School and the washeteria, the community of Arctic Village does not have piped running water in the homes. The washeteria serves as the community laundry mat, showers and watering point. The sewers of the washeteria and the school both empty into a common lagoon.

Venetie

Venetie is located on the East Bank of the Chandalar River. The Venetie Reservation encompasses an area of 1.8 million acres from Arctic Village in the North to the confluence of the Chandalar and Yukon Rivers.

East Central Yukon

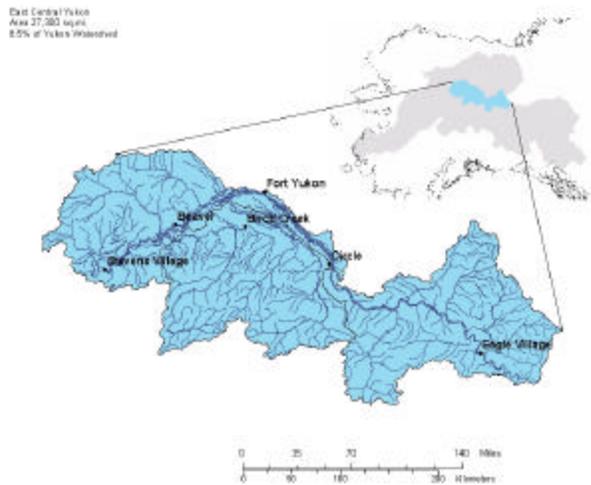


Figure 21 - East Central Yukon Watershed

Upper Beaver Creek (127 miles), Upper Birch Creek (126 miles) and the Charley River (entire river and tributaries - 208 miles) are designated Wild and Scenic Rivers. In addition to the public lands are lands selected by Doyon Ltd. and the Village Corporations of Fort Yukon, Beaver, Stevens Village, Circle and Birch Creek.

The East Central Yukon Drainage has two watersheds, which are listed on the State of Alaska 1998 303(d) report for impaired

The East Central Yukon encompasses the area known as the Yukon Flats. This area is a vast wetland of ponds, marshes and sloughs. Throughout the 150 mile journey in this area the river is braided to approximately 5 miles wide in some areas. This area is one of the richest migratory waterfowl breeding areas.

Within the East Central Yukon drainage are the Yukon Flats National Wildlife Refuge, Yukon Charley National Preserve, Steese Conservation Area and White Mountain Recreation Area. Within the East Central Yukon watershed

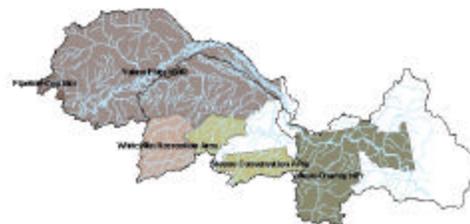


Figure 22 - East Central Yukon Land Status

waters. These are the Beaver and Birch Creek watersheds. The area has been extensively mined for placer deposits of gold. They are listed for turbidity from placer mining. The Birch Creek Watershed has a TMDL for turbidity and is designated a Tier III. Additional impacts to the watershed are from the military presence at Fort Yukon and the Upper Beaver Creek area. There is also mining activity near Eagle.

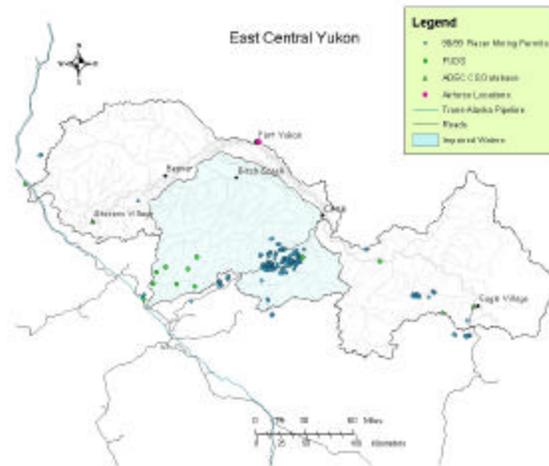


Figure 23 - East Central Yukon NPS Sites

Eagle

The Native Village of Eagle is located on the South Bank of the Yukon River near the US/Canada Border. The Han Gwitch'in inhabit the area around Eagle. The City of Eagle was established in the late 1890's. The first non-native settlers in the area were those prospectors who did not find gold in the Klondike Gold Rush. The US Military built Fort Egbert at Eagle in 1899 to bring law and order to the Forty-Mile country. Fort Egbert is on the National Historic Site Register. The present day community is currently in the process of building new housing upstream from the current village location. Water supply is through individual wells and septic systems, or a central watering point at the water treatment plant.

Circle

Circle is on the South side of the Yukon River and the end of the Steese Highway. Circle was established as a mining supply hub before the Klondike gold rush. Circle is located about 90 miles downriver from Eagle. Drinking water is derived from a well near the Yukon River. Only a portion of the community has piped water from individual wells. The outlying portions of the community rely on hauling water from the water treatment plant. A new landfill was constructed in 1999/2000.

Birch Creek



Birch Creek sits on a bend along the Lower Mouth of Birch Creek. The Dendu Gwitch'in inhabit the area of Birch Creek. Birch Creek Jimmy founded the community of Birch Creek. The community is 21 miles south of Fort Yukon. The community of Birch Creek draws its drinking water from the thaw bulb beneath Birch Creek. This system was installed, as well as a new sewage lagoon in the summer of 1999. The community does not

Photo 1 - Lower Birch Creek looking towards well house on left bank.

have piped water or sewer to the homes in the community.

Fort Yukon

Fort Yukon is located on the North shore of the Yukon River, just upstream from the confluence of the Porcupine River. Fort Yukon is located at the northern most point of the mainstem Yukon River and is along the portion of the mainstem, which is above the Arctic Circle. The Fort Yukon Long Range Radar site (LRRS) is located at the community of Fort Yukon as well as a former White Alice Communication site. The Air Force is currently conducting a clean-sweep operation for demolition and clean-up of the LRRS. There are additional FUDS in the area surrounding Fort Yukon, which are currently or have been assessed for impacts.



Photo 2 - Yukon River at Fort Yukon, Upper Mouth of Porcupine River in background.

Beaver

Beaver sits along the North Bank of the Yukon River, about halfway between Fort Yukon and Stevens Village. Beaver is across the Yukon from the confluence of Beaver Creek. Beaver was established in the early 1900's as a supply point for miners heading into the Chandalar district. A trail was constructed from Beaver to Caro. Frank Yasuda, a Japanese trader, traveled from Barrow to Beaver with a group of Eskimos, and became a partner in the trading post. Many descendants of these people still reside in Beaver.

The drinking water in the community is from a well located near the Yukon River. The community does not have piped water or sewer. In addition, the sewage lagoon in the community is subject to periodic spring flooding.

Stevens Village

Stevens Village is at the lower end of the Yukon Flats, on the North Bank of the River, where the Yukon turns back to a single channel before heading down to Rampart. About 20 miles downriver of Stevens Village, the Trans-Alaska pipeline crosses the Yukon River along the Dalton Highway Bridge.

The original village was known as Dinyea, or "mouth of the canyon". The name changed after Old Steven was elected chief in 1902.

One of the major concerns of Stevens Village is the Trans Alaska Pipeline crossing the Yukon River and the benzene emissions from the pipeline pump station. Other concerns relate to the residue of increased tourist activity leaving of animal waste, garbage, abandoned gas tanks and a general lack of respect for private property. They are also concerned about the old landfill in the community.

Stevens Village is working to do an inventory and testing of impact sites around their community. A major focus for improvement to he community is to conduct environmental education programs with the children in the school.

Tanana River

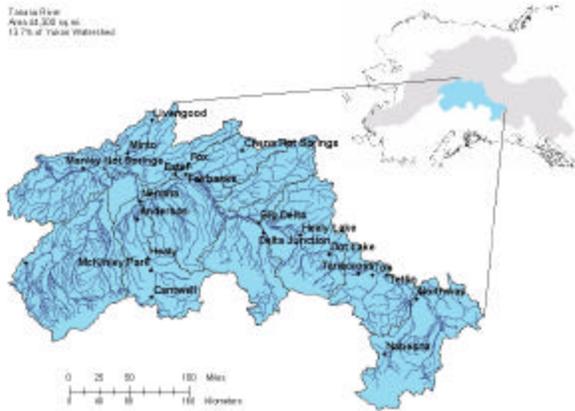


Figure 24 - Tanana River Watershed

The Tanana River has its headwaters in western Yukon Territory Canada. The river flows in a westerly direction to its confluence with the Yukon River near the community of Tanana. The Tanana River receives water from the Wrangell Mountains and the Alaska Range on the southern edge. The massive glaciers of these mountains feed the Tanana Watershed. The Tanana drainage consists of high mountains (the northern flanks of Mt. McKinley), rolling hills to the vast wetlands

of the Tanana and Minto Flats. The Tanana River is subject to spring flooding from glacial melt and rainfall.

The Tanana River is the second largest drainage in the Yukon River Watershed. Within the drainage are Denali National Park and Preserve, the Wrangell St. Elias National Park and Preserve, the Tetlin National Wildlife Refuge and State of Alaska Conservation System Units. The Delta River, including Tangle Lakes, is classified a Wild and Scenic River in the Tanana Watershed. Other lands include those selected by Doyon Ltd. and the village corporations within the drainage.

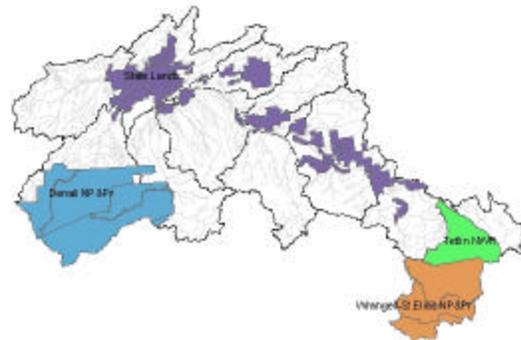


Figure 25 - Tanana Watershed Land Status



Photo 3 - Looking south across the Tanana River towards the Alaska Range.

In the early 1900's, a group of railroad workers began betting on the date the ice would go out on the Tanana River at Nenana. This information is one of the longest documented environmental recordings in Alaska.

The Tanana River drainage provides a natural corridor between Alaska and Canada. This corridor was chosen for the route of the Alaska/Canada highway, built in 1942 to supply military bases within Alaska. Within the Tanana River drainage are some of the most visible and historical environmental

impacts within the Yukon Drainage. Within this drainage are several military bases, the Alaska Highway, the urban center of Fairbanks, a portion of the Trans-Alaska Pipeline and the now removed CANOL fuel pipeline. The Haines - Fairbanks pipeline was built in the 1950's. The new missile defense site is being built at Fort Greely near Delta Junction.

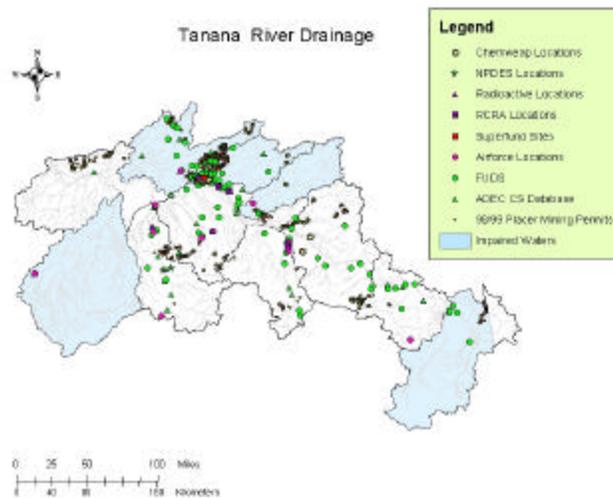


Figure 26 - Tanana Watershed NPS Sites

Within the drainage are several streams and rivers listed on the State of Alaska 1998 303(d) list. They are Slate Creek (Tier II) and Caribou Creek (Tier I) in the Kantishna drainage; Chena Slough (Tier I) and Noyes Slough (Tier I) in the Chena river drainage; Harding Lake (Tier I) in the Salcha River drainage; Goldstream Creek (Tier II) in the Tolovana River drainage and Cabin Creek (Tier II) in the Nebesna-Chissana Rivers drainage.

Non-point source pollution impacts to the drainage are from military activity, mining and urbanization. Extensive studies and restoration projects are on going within the drainage.

Contamination of fish and wildlife within the drainage is a concern to most people. The USFWS conducted a study of contaminant concentrations from burbot (*Lota lota*) in Interior Alaska. "In general, there were greater contaminant concentrations from samples collected downstream from Fairbanks and samples collected within the Yukon Flats Refuge than at Tetlin and Kanuti Refuges." USFWS, Contaminants in Wildlife, Alaska Region, March 2001.

Most of the Indigenous communities within the Tanana drainage are connected by a major road system.

Northway

Northway is located on the Nebesna Slough within the Tetlin National Wildlife Refuge, 9 miles from the Alaska Highway on a spur road. The area was used by several bands of nomadic Athabascans. In the 1940's with the construction of the Alaska Highway and the Lend-Lease Airport at Northway there developed a settled community. The community was named after Chief Walter Northway.

The Northway area has been impacted by historic military activities from the Northway Staging Area, Northway Army Communications Site, Alaska Highway construction and the CANOL and Haines/Fairbanks Pipelines.

There is a potential for future mining activity in the Northway area. Copper, bismuth, antimony, lead, gold and silver have been found in a polymetallic mineralization at the Road Metal prospect.

Tetlin

Tetlin is located on the Tetlin River a tributary to the Tanana River, and within the Tetlin National Wildlife Refuge. Tetlin is not connected to the state road system by a maintained road. The community utilizes an unmaintained road for travel when passable. The communities of Tetlin and Last Tetlin, established the 768,000-acre Tetlin Indian Reserve in 1930. The reserve was revoked during the passage of the Alaska Native Claims Settlement Act (ANCSA). Tetlin received surface and subsurface title to 743,000 acres of land in the former reserve.

The community uses water for drinking, washing, steam baths, traditional ceremonies, fishing, swimming, and transportation. They are concerned that the community landfill is unpermitted and not controlled, and it is not known if it is leaching. They are currently building a new landfill and need to operate and maintain it. The sewage lagoon in Tetlin is too close to the water.

NOTE: The above information was supplied by the survey questionnaire for this project.

Tanacross

Tanacross is located on the South Bank of the Tanana River, 12 miles west of Tok. Most of the people in the village relocated from Mansfield Village, Kechumstuk or Last Tetlin with the establishment of the Episcopal Mission in 1912. The village was originally known as "Tanana Crossing" and was located on the north side of the river. An airstrip was built on the south side of the river in the 1930's. The military began utilizing the airstrip in the 1940's and paved it 1942. Camps were established and thousands of troops were deployed through this area. The village relocated to the south side of the river in the early 1970's due to frequent flooding and the resulting unsanitary conditions.

The traditional territory of the Daendeh people of Tanacross extended from "the Canadian Border to the east, the Delta River and Goodpasture River to the west and north, and the Copper River to the south, essentially as far north as was necessary to find moose and the migratory caribou" - description from the Native Village of Tanacross web site <http://www.nativevillageoftanacross.com/nvthistory.html>.

Dot Lake

The community of Dot Lake is located on the Alaska Highway. The Alaska Native community of Dot Lake village is located one mile off the highway. The area was historically used as a seasonal hunting camp by Athabascans from Tanacross and George Lake. During construction of the Alaska Highway, Sears Camp was located at the present location of Dot Lake. Several families moved from George Lake, Sam Lake and the Tanacross area after 1946.

The Village of Dot Lake built a burn box to reduce the amount of solid waste going into their landfill. They recently installed a wood fired boiler system to heat several tribal office buildings and reduce dependence on fossil fuel.

Healy Lake

The community of Healy Lake is located on the North Shore of Healy Lake on the Healy River approximately 29 miles east of Delta Junction. The community is not connected to the road system. Access to Healy Lake is by plane year round, boat in the open water months and an ice road during winter. The Healy River-Joseph band was recognized to use this area traditionally. Based on radiocarbon chronology this community and its environs represent perhaps 11,000 years of continuous occupation. (Griffen 1990).

Cantwell

The community of Cantwell is located at the junction of the Denali and Parks Highways, just South of the entrance to Denali National Park. The Nenana River was formerly named the Cantwell River. The area was used by nomadic bands for hunting, trapping and fishing.

Nenana

The community of Nenana is located at the confluence of the Nenana and Tanana Rivers, downstream of Fairbanks. The local word for the area is "Toghotthele," which means "mountain that parallels the river." The Parks Highway and Alaska Railroad cross the Tanana River at Nenana. The City of Nenana maintains the two municipal wells, and treats the water and distributes it to the homes.

Minto

Minto is located on the west bank of the Tolovana River and is connected to the road system by an 11-mile spur road to the Elliot Highway.

Manley Hot Springs

Manley Hot Springs is located on Hot Springs Slough, 5 miles north of the Tanana River. Manley Hot Springs is at the end of the Elliot Highway, 160 miles from Fairbanks.

Koyukuk River

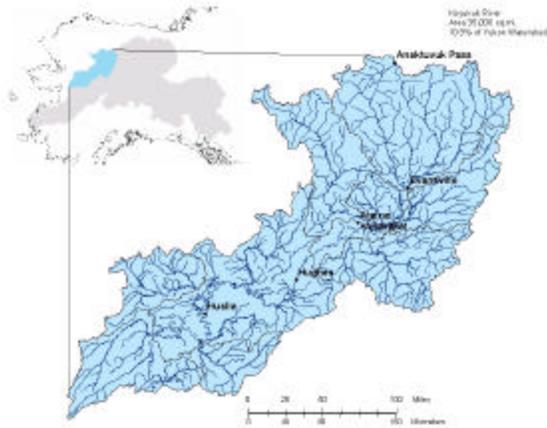


Figure 27 - Koyukuk River Watershed

The Koyukuk River drainage is underlain by continuous permafrost. The Koyukuk River and its tributaries drain the western portion of the Brooks Range. The Koyukuk River flows for 400 miles in a southwesterly direction to its confluence with the Yukon River.

Within the Koyukuk drainage are the Gates of the Arctic National Park & Preserve, Yukon Flats National Wildlife Refuge, Kanuti National

Wildlife Refuge and the Koyukuk National Wildlife Refuge. The Selawik NWR is adjacent to the Koyukuk drainage on the West. The Trans-Alaska Pipeline runs through the Northeastern portion of the Drainage. Interspersed through this area are the native lands selected by Doyon Ltd. and Arctic Slope Regional Corp. and the Village Corporations.

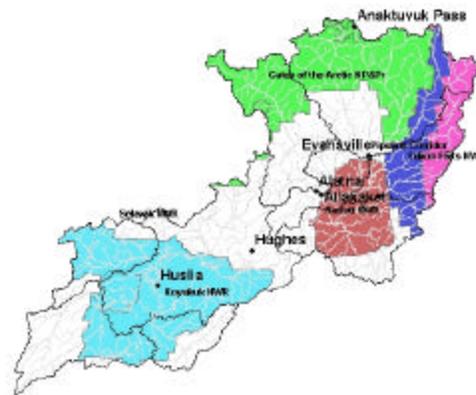


Figure 28 - Koyukuk River Land Status

Wild and Scenic Rivers in the drainage are the Alatna (within the Gates of the Arctic NPR), the John (within the Gates of the Arctic NPR), the North Fork of the Koyukuk (within the Gates of the Arctic NPR), and the Tianayguk, a tributary to the North Fork of the Koyukuk (within the Gates of the Arctic NPR).

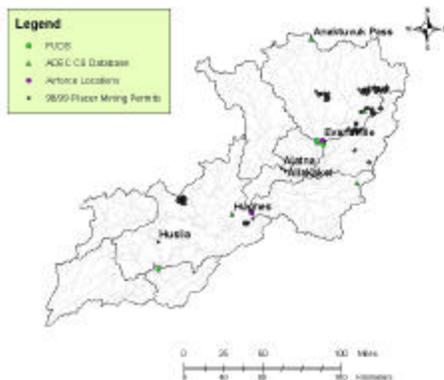


Figure 29 - Koyukuk River NPS Sites

Gold was discovered in the later 1800's in the upper Koyukuk Drainage. The US Bureau of Land Management is currently conducting two reclamation projects in the drainage. The Gold Bench and Ironside are located in the upper reaches of the drainage.

Other impacts to the drainage include the LRRS at Indian Mountain, FUDS locations, petroleum spills and historic mining. The Trans-Alaska Pipeline crosses the Upper Koyukuk River.

Alatna

Alatna is located on the North Bank of the Koyukuk River downstream from the confluence of the Alatna River. Various Native groups inhabit the area. The old site of Alatna was a trading center for the Native people of the area. The various bands on people in the area established communities after 1851. A flood in 1994 destroyed almost the entire community.

Allakaket

Allakaket is on the South Bank of the Koyukuk River downstream from the confluence of the Alatna River and across the river from the community of Alatna. Both communities are air access only. In 1975, a municipality was incorporated for both Alatna and Allakaket.

Hughes

The community of Hughes is located on the East Bank of the Koyukuk River. Access to Hughes is by airplane year round and boat during periods of sufficiently high water. Local winter trails provide access to nearby communities. Hughes served as a supply point for the local mining operations.

The community of Hughes is concerned with the military site cleanup at Indian Mountain, abandoned mines in the area, the Trans-Alaska pipeline (which crosses the upper Koyukuk River), and transportation of hazardous materials and outside hunters in the area. They are working with the military on Indian Mountain through the formation of a Restoration Advisory Board.

Huslia



Huslia is located on the East Bank of the Koyukuk River and is the most downstream community on the tributary to the Yukon River.

The community is concerned with low numbers of fish populations in the area. They are working on monitoring hunter and would like to do water testing on the spawning grounds.

NOTE: The above information was supplied by the questionnaire survey for this project.

Photo 4 - Koyukuk River at Huslia.

West Central Yukon

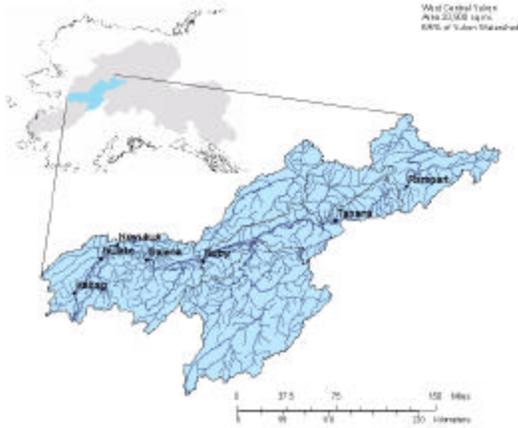


Figure 31- West Central Yukon Drainage

Within the West Central Yukon drainage are the Innoko National Wildlife Refuge, the Nowitna National Wildlife Refuge and the Trans-Alaska Pipeline Corridor. The Yukon Flats NWR and Kanuti NWR are adjacent to the drainage. Within the drainage the Nowitna River(225 Miles) is the only designated Wild and Scenic River.

NPS impacts within the drainage include military sites, present and historic mining activities, petroleum spills and FUDS.

The West Central Yukon drains the low-lying areas of the Yukon River drainage. The main tributaries are the Tanana and the Koyukuk. The area extends from the lower end of the Yukon Flats to the mountains which form the upriver end of the Yukon Delta.



Figure 30 - West Central Yukon Land Status

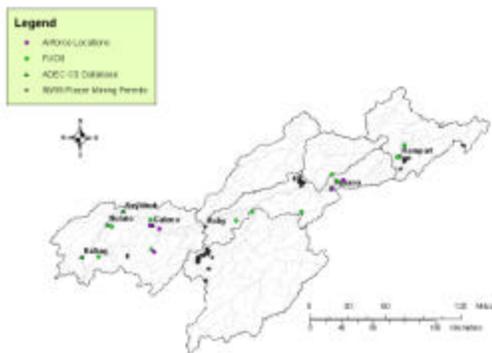


Figure 32 - West Central Yukon NPS Sites

Rampart

Rampart sits on the south bank of the Yukon River, approximately 75 upstream from the confluence with the Tanana River. Rampart derives its name from the low mountains in the area known as the "ramparts" that the Yukon River passes through. Gold was discovered in the late 1800's in the area south of Rampart.

Tanana



The community of Tanana is located on the North Bank of the Yukon River, 2 miles downriver from the confluence with the Tanana River. Tanana was a traditional trading settlement for the Interior Athabascan people. Fort Gibbon was established in 1898 to maintain the telegraph line between Fairbanks and Nome. The community of Tanana has multiple sources of petroleum spills within the community with various federal and state agencies as responsible parties.

Photo 5 - Yukon River at Tanana looking downstream.

Ruby

Ruby is located on the South Bank of the Yukon River between Tanana and Galena, in the Kilbuk-Kuskokwim Mountains. Ruby began as a supply point for miners, but is currently mainly inhabited by the Nowita-Koyukuk band of Athabascans. Gold was discovered in the Ruby area in the early 1900's. The miners of the era named the town Ruby because they thought the red rocks along the river were rubies. After WWII, the residents of Kokrines relocated to Ruby. Ruby is accessible by air transportation year-round and boat in the open water months. There is a 35-mile road to Long Creek Mine south of Ruby.

Drinking water is supplied by individual wells or from the central watering point at the washeteria. The community of Ruby is concerned about the mining in the area. They are also concerned about the barges that travel the Yukon River. There are concerns regarding the safety of the fuel tanks they use to haul the winter fuel supply for the various communities.

Galena



Galena is located on the North Bank of the Yukon River upstream of the confluence with the Koyukuk River. Galena was originally a fish camp. It eventually became a supply point for the mines in the area. The people who lived in Loudon, 14 miles upstream, began moving to Galena in the 1920's. The Tribal Government in Galena is the Loudon Tribal Council.

During WWII, the military constructed an airfield at Galena. They also built the Campion Air Base and the Kalakaket LRRS in the nearby area. The military base closed in 1993 and the facilities are currently

Photo 6 - Yukon River at Galena looking downstream.

being maintained under contract. Cleanup of the contamination associated with these facilities is a long-term process.

The community is concerned about the cap on the old landfill; the various air stations, hydrocarbon plumes on the groundwater (there is documented benzene, diesel and TCE plumes associated with the base) and PCB contamination. During the 1950's, several thousand barrels of various substances were stockpiled at Galena. A flood during the 1960's washed these barrels downstream. There has been an ongoing project with the military and Gana-A Yoo Ltd. to retrieve and dispose of these barrels from along the waterways. They are also concerned about the barges delivering fuel to the communities and the potential for petroleum spills during the transfer of fuel.

Louden Tribal Council has been active in working with the military on the cleanup of the bases in the area. They would like to do soil and water testing, subsistence foods (fish) and conducting site characterization with the military.

Koyukuk

Koyukuk is located on the North Bank of the Yukon River at the confluence of Koyukuk and Yukon Rivers.

Nulato

Nulato is located on the West Bank of the Yukon River downstream from the community of Koyukuk. The site was a trading area for the Athabascans and Eskimos of the Kobuk River drainage. A Russian trading post was established at Nulato in 1839.

There are actually two areas that are traditional territory, they are Kiayuh and the Nulato river. Water is used for drinking, washing, fishing, swimming and transportation.

The major areas of concern in the community are the fuel tank farms, the landfill and the Illinois Creek Mine. There is potential contamination of the Kiayuh River from the Illinois Creek Gold Mine about 15 to 20 miles South of Nulato.

The Nulato River is potentially being contaminated from leachate from the landfill and sewage lagoon. There is an active open dump, which is not permitted. The old dump is closed, but is next to the active landfill. The landfill is located right next to a lake that drains into the Nulato River. There is possible leachate into the surrounding lakes and when there is a flood the landfill gets flooded out. There is a sewage lagoon about 200 ft from the dump and another sewage lagoon about a hundred feet from AKD school. There's two lagoons in Nulato; one is for the laundromat and the school at the old town site and the other one is for the new town site.

There are three tank farm sites in Nulato; the AKD School, AVEC Power Plant and Nulato fuel depot. There was a fuel spill at the school this past summer. The power plant is built on a hill overlooking the Muklus slough. The Nulato fuel depot is built about 75 feet from the Nulato River.

NOTE: The above information was supplied by the questionnaire survey for this project.

Kaltag



Photo 7 - Kaltag River looking upstream. The pump house is in the background.

Kaltag is located on the West Bank of the Yukon River, at the base of the Nulato Hills. Kaltag is the inland terminus of the portage trail to the coastal community of Unalakleet. Drinking water is supplied by a central well (the water is drawn from the Kaltag River) and piped to most of the homes in the community.

Concerns in the community include mining at the Illinois Creek Mine and a potential for future mining 22 miles downriver from Kaltag. Water in the community is used for drinking, fishing, swimming, transportation, recreation, and water skiing. There is an old (Federal Aviation Administration) site downstream. The community has a permitted landfill.

NOTE: The above information was supplied by the questionnaire survey for this project.

Lower Yukon

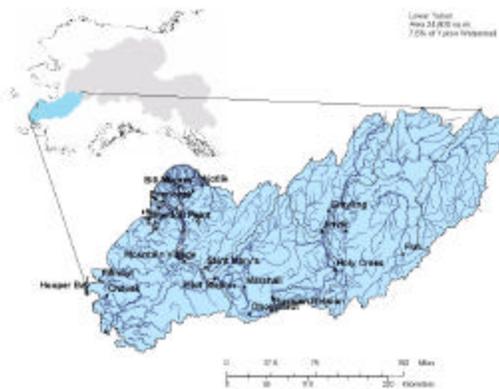


Figure 33 - Lower Yukon Watershed

The Lower Yukon River moves through the Nulato hills before fanning out on the Yukon Delta. The Yukon and Kuskokwim Rivers form the Y-K Delta region. This region is home to millions of migratory waterfowl.

Within the drainage are the Innoko and Yukon Delta National Wildlife Refuges.

Grayling

Grayling is located on the West Bank of the Yukon River. In 1925, families moved from Holikachuk, on the Innoko River, to the present site of Grayling. The community water supply is derived from an infiltration gallery on the Grayling River. The water is then piped to the homes. Access is to Grayling is by airplane or boat during the open water months.

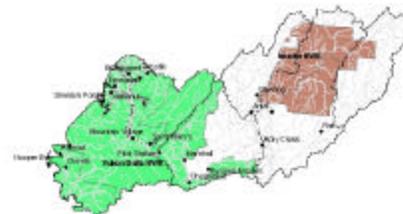


Figure 34 - Lower Yukon Land Status

Shageluk

Shageluk is located on the East bank of the Innoko River, a tributary to the Yukon River. There were six reported villages on the Innoko River in 1861. Access to Shageluk is by airplane or boat in open water months. Water must be hauled from the washeteria and sewage is disposed of it pit privies and bunkers.

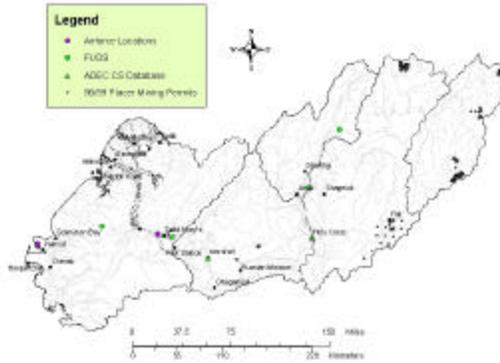


Figure 35 - Lower Yukon NPS Sites

Anvik

Anvik is located on the Anvik River west of the Yukon River. An Episcopal mission and school were established in 1887. Residents in the surrounding area moved to the present location. Many homes have individual wells and are piped for sewage disposal. Access to the village is by airplane and boat during open water months. The school is connected to the city water system but has its own drainfield.

Holy Cross

Holy Cross is located on Ghost Creek Slough off the Yukon River. A Catholic mission and school were established in the 1880's. Drinking water is derived from a deep well, treated and distributed to homes. Some residents haul water from the washeteria and still use honeybuckets. Access to the community is by airplane year round and boat in the open water months.

Mountain Village

Mountain Village is located on the North bank of the Yukon River at the base of the 500' Mount Azachorok. This mountain is the first encountered by travelers coming upriver from the Yukon Delta. Mountain Village was a summer fish camp until a missionary school and general store opened in 1908. Drinking water is derived from a well and piped into the homes. Homes are plumbed and piped for sewage disposal. The community is working on getting major repairs to the wastewater treatment plant completed. A summer road links Mountain Village with Pitka's Point, St. Mary's and Andreafski.

Within Mountain Village, there are two large tank farms, as well as four smaller ones. The tank farms aren't completely lined. The landfill is 20 - 30 years old, and located approximately 200 feet from the Yukon River. This landfill is subject to spring flooding during breakup. Old batteries are a concern. They are currently being collected and not put into the landfill, but there is a problem with getting them out of the village for recycling.

NOTE: The above information was supplied by the questionnaire survey for this project.

Russian Mission

Russian Mission is located on the West bank of the Yukon River. Russian Mission was originally known as "Ikogmiut" or "people of the point". A Russian Orthodox Church was established in 1867. Drinking water is derived from a well and piped to the homes.

Pilot Station

Pilot Station is located on the northwest bank of the Yukon River. A Russian Orthodox Church was established in the early 1900's. The name Pilot Station is derived from riverboat pilots using the point as a reference landmark. A portion of the community is served by piped water and sewage disposal, while the other portion must haul water and use honeybuckets. The USGS has maintained a water quality monitoring station at Pilot Station since the early 1970's.

St Mary's

St. Mary's is located on the North bank of the Andreefski River, five miles upstream from the confluence with the Yukon River. Within the area are two federally recognized Alaska Native Tribes, the Yupiit of Andreefski and Algaaciq. The two communities are both located within the municipality of St. Mary's. Drinking water is obtained from the Alstrom Creek reservoir. Most homes have plumbed water and sewer, a few residences haul water and use honeybuckets.

Water is used for drinking, washing, steam baths, traditional ceremonies, fishing, swimming, and transportation year round. The following information is from the "Western Alaska - Sub area contingency plan". This information needs to be updated. In June 2001, there were 11 tanks @275,050 gallons at the City of St. Mary's; Boreal Fisheries Inc. had 3 tanks @24, 5000 gallons; Hagelund Aviation had 3 tanks at 23,000 gallons. The main landfill is located on Pitka's Point Corporation land, but the landfill is equally shared by residents of Algaaciq, Pitka's Point and Yupiit of Andreefski. The Alaska Dept. of Transportation and City of St. Mary's have sewage lagoons. The landfill is an active open landfill. Other areas of concern include dead batteries and household batteries, spray products, paper, pop cans, etc.

NOTE: The above information was supplied by the questionnaire survey for this project.

Kotlik

Kotlik is located on the northern mouth of the Yukon River. The community grew in the 1960's after the establishment of a BIA School. Residents of outlying communities moved to Kotlik because of the school. There are two federally recognized Alaska Native Tribes in the Kotlik area. They are Bill Moore's Slough Traditional Council and the Kotlik Traditional Council.

Concerns in the community include their landfill, which needs to be relocated. Their sewage lagoon is in a low area and is potentially affected by floods.

Emmonak

Emmonak is located 20 miles up river from the mouth of the Yukon River. Emmonak is on the Kwiguk River tributary.

Concerns of Emmonak include landfills and sewage lagoons upriver of their community. Tourist impacts, changes in beaver and fish populations, deformed and diseased seals, and similar issues as indicated throughout the remainder of the watershed.

Over the years, there has been a big decline in our fishing. We do not hear what is causing the decline. Over the years, there also been a beaver boom, which is causing a problem in the area. Water is used for drinking, washing, steam baths, fishing, swimming and transportation. There are no military sites near Emmonak. The only building is the Army National Guard. The closest site is at Cape Romanzof, which is located about 70-80 miles from Emmonak. There are no mining sites in Emmonak. Emmonak has a new tank farm site, which is up to date as of last summer. The Alaska Village Electric Cooperative, Inc. (AVEC) site is an old tank farm site and they are going to be building a new site possibly this summer. The current site is within a flood stage site, which is low land. Our landfill is out of control and a new site is in the planning stage. Every year Emmonak has a spring flood. Our sewage lagoon is 1000-2000 ft from the village and sometimes there is an odor from the lagoon. Beaver have populated this region, making many dams, causing fish not go into the spawning grounds. The Emmonak city dump is our biggest environmental concern. It is an uncontrolled dump.

NOTE: The above information was supplied by the questionnaire survey for this project.

Alakanuk

Alakanuk is located at the east end Alakanuk Pass, the southern mouth of the Yukon River, 15 miles upstream from the Bering Sea. Alakanuk in Yup'ik means "wrong way" referring to the mazes of channels in the area. The City of Alakanuk operates the water distribution system and sewage collection system. There is a sewage lagoon for disposal of honeybucket waste. Drinking water is obtained from the Alakanuk Slough and treated before distribution.

Our traditional territory includes the old village site of Akulurak and along the coastline to Black River, north of the coastline to Kotlik. Water is used for drinking, washing, steam baths, fishing, swimming and transportation. The main concern we have about our territory is the abundance of beaver dams blocking fish migration to spawn (black fish, pike, white fish shee-fish etc.). We are currently working with AVEC and the Denali commission to upgrade the tank farm facilities in our community. They include the Alakanuk Native Store, Alstroms, City of Alakanuk and AVEC. There are concerns about the management of the landfill. The self-haul type of disposal is being abused by individuals who throw trash away in front of the entrance gate to the fenced area. Alakanuk has a new sewage lagoon, which was built at the same time the water, and sewer hookup was put in. The overflow is spilling into the pond. Other concerns old car and truck batteries. There isn't a designated area for disposing of these batteries. Used oil is another concern.

Chevak

Chevak is located on the north bank of the Niglikfak River, which is a tributary to the Yukon River on the Yukon Delta. The Yup'ik meaning of Chevak is "connecting slough", describing the location of "Old" Chevak.

Concerns in Chevak include traditional and historic sites on a tributary to the Yukon River, which are potentially being contaminated by the Yukon River during high water periods.

Cape Romanzof LRRS is located near Chevak. There are below grade fuel spills at the site that are sometimes not known until the petroleum products surface. They are also concerned about landfills along the river and the effect contaminants have on "birds and fish and other things that are gathered or hunted". They are concerned about PCB's and DDT in fish tissue as well as the increased cancer rates among their community members.

They are working on the testing of subsistence foods for contamination. They are working with the US Air Force to train and hire tribal staff on the LRRS clean up. They have formed a Restoration Advisory Board with the Air Force and three other communities regarding the LRRS clean up. They also have water resources funding from the Bureau of Indian Affairs to do surveys.

Land Status

The Yukon Drainage encompasses a wide range of land ownership and responsibility that crosses, federal, territorial, First Nation, Federal Government, State Government, Native corporation, Allotment and private land. The land status within the system is a checkerboard of these differing jurisdictions, responsibilities and regulations. The land status and regulatory responsibility all affect the regulations, which affect water quality within the system. Unfortunately, within Alaska many of these federal agency headquarters which have responsibility over the land and subsequently the water, have their offices in urban areas far detached from the land and water which they have responsibility.

Unified Watershed Assessment Categories

Waters listed within this section are strictly within the State of Alaska. While there are waters in Canada that are within these categories it wasn't felt that categorizing Canadian streams would be beneficial.

The categorizations presented below are derived from a survey sent to the Tribal Environmental Programs and returned. Community meetings are needed to provide public input into the categorizations of waters. The systems and information is provided for generalized purposes. The YRI TWC is working with the First Nations and Tribes to develop a longterm monitoring and assessment program, which will assist in further determination and community involvement in the categorizing of drainage systems within the Yukon River Watershed.

Category I - Watersheds in need of Restoration

Yukon River

Black River

Category II - Watersheds Meeting Goals, Including those Needing Action to Sustain Water Quality

Clearwater River (near Mtn. Village)

Black River

Tetlin River - There is no data or information on the water quality of the river in Tetlin. It is important for them to have any information available.

Nulato

Category III – Watershed with Pristine/Sensitive Aquatic System Conditions on Lands Administered by Federal, State, or Tribal Governments

Yukon River

Kaltag Creek

Old Village River

Clearwater River (near Mtn. Village)

Black River – Our Watershed is very important since it has a high population of fish, subsistence hunting, berries and swimming. Our drinking water is taken from the Black River and is treated at our washeteria. People also drink water straight from the river. We also have a contaminated slough near the Black River. The slough drains into the river during high water.

Category IV – Watershed with Insufficient Data to Make an Assessment

Watershed suggested but no category specified

- North and East Fork of the Koyukuk (referred to by residents as South Fork) and listed as Wild & Scenic River.

Information Gaps

The categorizations in this UWA are a sampling, as no community meetings were held for the ranking determination. Therefore, rivers are suggested. Future work to develop the longterm monitoring and assessment program will provide additional definition to categorizing the rivers.

One of the major information gaps within the Yukon Drainage is the correct documentation of existing locations of impacts within the drainage. The maps provided in this document are for visual reference and not every point placed has been authenticated as for location. cursory overviews of the publicly available data do indicate some discrepancies in location information. Future work would include the verification of existing location information as well as the documentation of site locations not currently listed in publicly available databases.

Traditional knowledge of historic locations is currently being lost. The documentation of each of these historic sites as to location, type of impact and responsible party needs to be completed.

Collection of historic water quality data and analysis of that data is another need. USGS samples obtained for 30 years at Pilot Station indicated dissolved oxygen levels below Alaska Water Standards during the winter months. Collection and analysis of this historic data will indicate other areas, which may have a problem such as dissolved oxygen.

Current work in both the US and Canada to collect a database of historic studies within the Yukon Watershed is an ongoing project for the YRITWC. This information will provide the First Nations and Tribes with a comprehensive look at available information as well as providing researchers a resource for determining information gaps. This will enable future work within the watershed to address specific gaps in the information.

Conclusion

Alaska Clean Water Actions Water List - 2002 High Priority Waters At-Risk

Yukon River - "concerns over old military sites and toxics, petroleum products, sewage lagoons, landfills and mining and transboundary issues from raw sewage and acid mine drainage"

The Yukon River Watershed is at risk from multiple sources of non-point source pollution throughout the drainage. These impacts arise both within and outside of the communities of the drainage. One site or location may not pose a major risk by itself, but when all the various sites and sources are combined there is a tremendous load being placed on the Yukon Watershed.

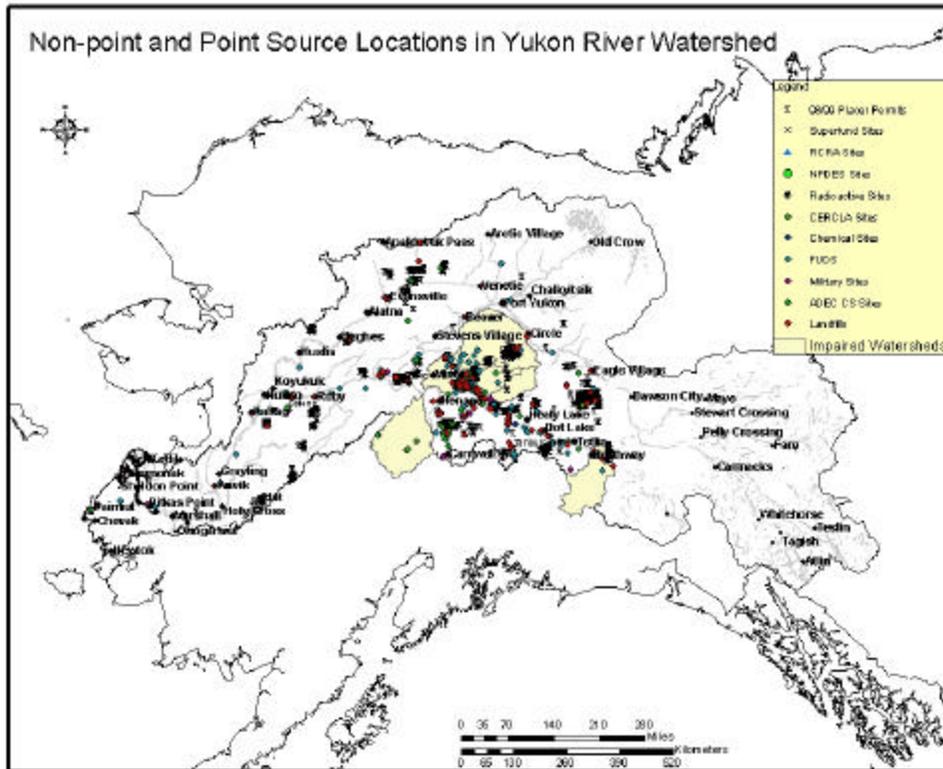
Many people have commented on the changes to subsistence foods such as cysts, tumors and anomalies. There is also western science evidence that the climate is changing within the region. The Yukon River Watershed does not meet the aspects of a healthy watershed, for healthy population of fish and wildlife, animals in their natural diversity and abundance. There are changes to subsistence foods, which in turn are creating changes in the health of the Indigenous People.



Much of the historic contamination, which still exists, happened before any environmental regulations being in place to protect ground and surface water resources. This historic contamination (which in many cases may still be contributing contamination to the system) coupled with current contaminant loads on the system is threatening the health of the Yukon Watershed.

This report is the first step in the long process of conducting a longterm monitoring and assessment program. Throughout the summits, it has been recognized by the First Nations and Tribes that a comprehensive and holistic look at the watershed is important. The information obtained from studies has not been returned to the communities so the need to gather this information into a comprehensive data collection is necessary. This information then needs to be analyzed in conjunction with the traditional knowledge of the indigenous people who live in the watershed to determine the information gaps and future data collection needs.

"...we want to do water sampling and we want to set up sampling stations beyond what the Federal Government currently utilizes. These are our concerns and we want to address them." Steve Carem, Tron Dek Gwitchen



"The same thing with our water quality, our water testing, air quality and all that stuff. We need to do those ourselves and analysis so that we can know what is going on. Instead of depending on somebody that doesn't understand about the country or the people that live here." - Albert James, Arctic Village, CATG Natural Resource Training, February 1998.

"...to be able to drink directly from the river."

- YRI TWC Vision Statement

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