Interagency Hydrology Committee of Alaska (IHCA)
USF&W Service Office - Anchorage, Alaska
October 22-23, 2003

Agency reports received by 10/17/03

Agency Report – US Army CRREL

U.S. Army Cold Regions Research and Engineering Laboratory

Report to the IHCA Fall Meeting, October 22-23, 2003 USF&W Service Offices

- Working with the Corps Hydrologic Engineering Center (HEC) to include snowmelt into the current version of HEC-HMS (Hydrologic Modeling System, the replacement of HEC-1). Version 3.0 is in Beta testing with a hopeful release date of early 2004. This version has a whole new look from the existing HEC-HMS. HEC says that the release will be for calculation by sub-basins and elevation bands as well as gridded cells from 10m to 10 km.
- Statistical analysis of peak accumulated freezing degree days (AFDD) for all 1st order stations in US (coop stations not tested yet). For colder stations, the distribution is nearly normal and adequately described by the mean and standard deviation. Warmer stations (those with AFDD less than zero) didn't fit as well unless the zero years were dropped.
- RADARSAT image analysis to determine ice conditions on rivers showed that large and medium rivers ok, (smaller rivers less than 100m wide not very good) in determining ice presence, smooth ice or rough ice.
- Ship Creek Geomorphic Assessment continues. Baseline bed material characterized from Reservoir to inlet and will do again after current dredging (in reservoir) is completed. New bank restoration/stabilization project completed just upstream of Fish hatchery on Ft. Richardson.
- USARAK interested in baseline water quality monitoring prior to transition to "new" training lands usage (Stryker vehicle). May use Ship Creek as model for all Army lands in AK.
- Eagle River Flats pumping work completed final year of full program. One pump may operate next summer, concentrating on an area where new white phosphorous rounds were found in September.
- Water quality sampling in Knik Arm in May (metals, explosives, phosphorous) off of Eagle River Flats (off Goose Bay for control) showed no detectable levels. This program may continue each spring for 5 years.
- Soil and water characterization, looking for residual contaminants (explosives) from past and current training activities along Gerstle River, Delta River, Jarvis Creek, and Stuart Creek near Fort Greeley.
- Tanana Flats Training Area Access Study has begun to look at methods to access training area all year (ice bridges, ferries, permanent bridges, etc). Being conducted by UAF consortium with CRREL as USARAK reviewer.

Agency Report – US Army Corps of Engineers

Corps of Engineers Agency Report
Fall 2003

Eklutna River Watershed Study- Study will concentrate on the lower watershed from the old power supply dam to the inlet. Emphasis will be on fish habitat and removing the old dam which has disrupted the sediment supply to the lower river. The situation is complicated by power and water supply withdrawals at Eklutna Lake.

Black Lake Environmental Restoration- Black Lake water water levels have fallen as much as a meter since 1950. Habitat for red salmon has deteriorated do to the decline in lake levels and shifts in the location of the major inflow channel. Project will try to prevent further reduction in water surface elevations and raise the winter lake levels to provide better over wintering habitat for the salmon. The project will also attempt to shift the major inflow stream such that it enters the lake further from the outlet then it does currently.

Cook Inlet Modeling- The upper portion of Cook Inlet was modeled with a 2D numeric model and a flow table. Do to the complexity of the flow characteristics (3D) of the inlet results are considered qualitative. Actual magnitudes of potential changes brought on by the proposed Anchorage port expansion and the Kink Arm Crossing are will beyond the capability of this effort. However indications from the modeling efforts are that tidal ranges could be effected in Knik Arm, shoaling could increase at the Port of Anchorage and at the Point Mackenzie Dock, and velocities thru the necked down portion of the crossing will increase 2 to 3 times above what they currently are.

Kenai Floodplain Mapping- The Kenai River thru Copper Landing, the Anchor River up to the highway crossings, and the Ninilchik River up to the highway will be mapped with 2-foot topo, flood flow frequency's determined, and a backwater model run to determine the 100 year floodplain in these areas.

Kake Dam- Realestate issues are still holding up the dam project.

GAO Erosion Analysis- Erosion problems at several coastal communities are being investigated to determine when and what kind of help will be needed to provide erosion protection or relocation help.

North Slope Oil Fields- Reviewing permit apps. for Alpine Satellite and NPR-A oil field development. Several river and stream crossings are necessary for the development.

Homer and Dillingham Dredge Disposal Management Plains- 20-year plans for the disposal of the material dredged from the harbors are being developed. An in-water trial will be conducted at Dillingham this June to see of the material deposited in the harbor could be pumped out into the NUshagak River without causing any environment impacts.

Duck Creek, Mendenhal River, Chena River, Matanuska River, Ship Creek, and Chester Creek Watershed Studies- Not much happening at our end.

Stream gage activities- Two new gages at Chignik and one new gage Newtok. We had a pretty good cut in funding for our general investigation funded gages. We had to cut the gage at Aniak. The Chena Project O&M gages remained the same.

Agency Report – USDA Forest Service

Report to the IHCA Fall Meeting, October 22-23, 2003
USFWS Office Anchorage, Alaska

USDA Forest Service – Alaska Region

April - October

- Rosgen Level I course, Applied Fluvial Geomorpholgy, was given June 16 – 19 in Anchorage.
- Memorandum of Agreement (MOA) with the US Geological Survey was finalized and signed in June. MOA for FY03 included stream gage network work for long-term stations as well special projects.
- Hiring of Michael Crotteau, new regional hydrologist.
- USFS Guiding Principles for Water Resources (handout).
- Notice of Intent is out to prepare an EIS for Resurrection Creek in Hope.

Up-and-coming

- Development of the FY04 MOAs with USGS has begun for stream gage network projects on the Tongass and the Chugach. Two separate MOAs will be developed this year, one for base station work and the other for special projects.
- Work with ADEC on updating the MOU between agencies on the Nonpoint Source Pollution Program.
- Development of a national BMP handbook.
- Revision of the USFS Alaska Region Soil and Water Conservation Handbook for BMPs.
- Work with ADEC on Source Water Assessment and potentially develop policy that would dovetail with those efforts.

Agency Report – NRCS

NATURAL RESOURCES CONSERVATION SERVICE AGENCY UPDATE
IHCA – October 22-23, 2003 Anchorage, Alaska

Staff Contacts:
Rob Sampson – NRCS State Engineer
271-2424x117 rob.sampson@ak.usda.gov
Rick McClure – Snow Survey DCO
271-2424x113 rmcclure@ak.usda.gov

WATERSHED PROJECTS

- Rika's Roadhouse – NRCS has completed preliminary designs and the environmental assessment to assist Alaska Parks and Recreation in stabilizing erosion along the Tanana River.

- City of Soldotna – Phase V is in construction to treat erosion along the Kenai River.

- City of McCarthy – We will start a hydrologic assessment of McCarthy Creek and the Kennecott River to try and get a handle on bedload transport rates, and management options for the town.

Watershed Planning Activities

- Nightmute Floodplain Study – Surveying will be done this summer, and hydrologic modeling (design storms and water surface profiles) is in progress. The draft report was completed and presented to the village in December 2002.

- A watershed planning effort is underway at Harding Lake, led by the Salcha-Delta Soil and Water Conservation District. Local citizens are interested in raising the lake level. COE provided LIDAR data, and a preliminary water budget has been completed.

- NRCS completed their preliminary assessment of relocation sites for Shishmaref. This summer, NRCS will complete more intensive soils, vegetation and hydrography mapping at the selected relocation site.

- Fish Creek – NRCS is assisting the watershed group to plan and design a scheme to daylight a tributary to this Anchorage Creek.

- Salmon Creek – NRCS completed a preliminary geomorphic evaluation of the Salmon Creek near Seward after recent flooding.

Emergency Watershed Protection

- Taiya River – NRCS has completed designs to moderate erosion along the Taiya River. This erosion was exacerbated by the West Creek moraine failure in July 2002.

- City of Valdez – NRCS will complete surveys to determine alternatives to erosion treatment along the road the dump. Solutions will look to temporarily minimize the chance of the Valdez glacial stream going through the dump. The city has a larger-scale watershed planning effort ongoing with the COE.

- Village of Metlakatla – NRCS has completed a survey and will soon complete preliminary designs to stabilize a hillslope and protect 9 houses in the village.

SNOW SURVEY ACTIVITES

The following is the progress made in Alaska Snow Survey/Water Supply Forecasting Program (SS/WSFP) for the fiscal year 2003

NRCS appreciates the In-Kind Services provided to the Snow Survey Program annually from each of the agencies and private companies.

- One new SNOTEL site was installed this past field season: Upper Tsaina River (2 miles northeast of the Worthington Glacier snow course on Thompson Pass) the 2 sites in the Bradley Lake Hydro-electric project will be installed early next field season.
- Two SCAN (Soil Climate Analysis) sites were installed this field season reporting on ambcs.org: Tok and Nenana

Currently we are responsible for **34 SNOTEL** sites reporting hourly information to the web site **ambcs.org**. The web site has daily midnight readings since the beginning of the Water Year. We have stored the midnight readings in an annual file available by way of e-mail for previous years of record
An updated Snow Survey site map was made available in July and is on the web site along with updated meta-data files for the SNOTEL sites.

The Alaska staff consists of a Hydro-tech, Statistical Assistant, and Data Collection Officer (DCO). With the increase in SNOTEL sites and new snow courses, a Hydrologist is needed. This position has been vacant for several years.

Agency Report – National Weather Service

Agency Report

Presented by
Larry Rundquist
Development and Operations Hydrologist

National Weather Service
Alaska-Pacific River Forecast Center (APRFC)
http://aprfc.arh.noaa.gov
October 2003

Management and Staff

Current staffing and contacts are as follows:

Robin Radlein – Regional Hydrologist/Alaska Region & Hydrologist in Charge of APRFC
266-5151 or robin.radlein@noaa.gov
Larry Rundquist – Development and Operations Hydrologist
266-5152 or larry.rundquist@noaa.gov
Becky Perry – Hydrotech/Administrative Assistant, 266-5150 or becky.perry@noaa.gov
Contact all APRFC staff via email at nws.ar.aprfc@noaa.gov

Hydrologists

Scott Lindsey, 266-5157
Dave Streubel, 266-5156
Ben Balk, 266-5155 Eric Holloway, 266-5154
Jim Coe, 266-5159

Hydrometeorological Analysis & Support Forecasters

Jeff Perry, 266-5158
Arleen Lunsford, 266-5153

Weather Forecast Office Hydrology Contacts:

Anchorage – John Papineau, Senior Service Hydrologist, 266-5165
Fairbanks – Ed Plumb, Service Hydrologist, 458-3714
Juneau – Mike Mitchell, Hydro Focal Point, 790-6824

Operations/Flooding

The hydrologic events for the May through September period are summarized below.

On May 11, an ice jam formed along a tight bend in the Koyukuk River approximately 2 miles downstream of the village of Hughes. Water and ice backed up behind the jam and began to inundate the village late that evening. The flood waters continued to rise until the ice jam released on the morning of May 13. Water levels on the Koyukuk River rapidly dropped and left many large ice chunks stranded in the village and along the adjacent river bank. The floodwaters washed out the airport taxi ways, knocked over two fuel tanks, flooded the lowest level of several houses, and submerged the solid waste dump.

Flooding along the Tanana River about 35 miles southeast of Fairbanks in the community of Salcha has become a recurring problem. After periodic flooding throughout the winter of 2002-03, the area was hit with ice jam flooding during spring breakup in late April. An ice jam on the Tanana River diverted a portion of the river through an adjacent residential area. The high water made roads impassable, flooded numerous homes, and left many residents stranded for several days.

Flooding and rapid rates of bank erosion along the Tanana River continued at Salcha in the summer. It is believed that the highly braided river is shifting and beginning to establish a primary channel in the area where people are living. This change in the course of the Tanana River has prompted the Department of Transportation and the Army Corps of Engineers to

investigate ways to mitigate future flooding. One possibility is to construct a levee or dike to prevent erosion and direct the Tanana flow away from the flood prone area.

Record rainfall across the central interior in late July resulted in significant flooding in the Fairbanks area. The Fairbanks airport reported its greatest daily July rainfall total of 2.27 inches on the 27th, and also experienced the wettest July on record with 5.96 inches of rain. Much higher amounts were reported north and east of town, with some stations in the surrounding hills picking up nearly 10 inches of rain for the month. All this rain resulted in some of the highest water levels seen on the Chena and Chatanika Rivers since the disastrous flood of 1967. The high volume of water coming down the Chena River resulted in the lowering of the flood gates at the Chena Flood Control Project by the US Army Corps of Engineers. Significant flooding occurred along portions of the Chatanika, Little Chena, Upper Chena, and Tanana Rivers. Flooding was also reported downstream along the Tanana River in Nenana.

River/Rain Gaging network

We re-activated river observer sites at three locations this year: Koyukuk River at Allakaket and Hughes and Little Susitna River at Houston. We started two new sites at former USGS gaging station locations this summer: Nushagak River at Ekwok and Kvichak River at Igiugig. We discontinued observations on the King Salmon River at King Salmon and on the Newhalen River near Nondalton (our observer moved). Several sites had a low number of observations and we will be looking for replacement observers for these locations this winter.

A new weather station was installed in Cordova and we had late summer funding to purchase equipment for six new sites. Detailed site selection will take place this winter for installation next summer. The target locations are as follows:

< Harding Icefield (in cooperation with NPS and USGS)
< In or between upper Ninilchik and Anchor River basins
< Alaska Range at Richardson Highway
< Fortymile country (Jack Wade Creek valley)
< North Slope near Dalton (Pump Station 3)
< Southeast Alaska

We are gearing up for our ice thickness measurement program for this winter and hope to receive ice thickness data that are measured by other agencies during discharge measurements to augment ice data collected by our observers.

Projects

Operations occupied the bulk of the time during the past 6 months, so project work was limited. The airborne gamma snow water equivalent data collection program for Alaska continued this summer with the collection of background radiation data on additional flight lines. Selected flight lines on the Kenai Peninsula were re-flown to better define the baseline radiation and associated soil moisture data were collected and analyzed. Although NOHRSC plans to fly all flight lines next spring to gather SWE information, the status of funding for airborne gamma snow water equivalent data collection next spring is uncertain at the present time since it is based on FY04 funding levels that have not yet been resolved.

This winter, we will be working on a number of development projects aimed at improving our

service.

Useful Links

National Operational Hydrologic Remote Sensing Center
http://www.nohrsc.nws.gov/
Climate Reference Network
http://www.ncdc.noaa.gov/oa/climate/uscrn/
IHCA Flood Report Form (web entry or pdf format)
http://aprfc.arh.noaa.gov/forms/formmenu.html
Hydrometeorological Design Studies Center (TP 47 pcpn freq studies)
http://www.nws.noaa.gov/oh/hdsc/index.html

Agency Report – Bureau of Land Management

Report to IHCA, October 22, 2003
Bureau of Land Management

Anchorage Field Office:

Chuck Denton, 267-1317, Charles_Denton@ak.blm.gov

FY 03:

- Completed the evaluation of Properly Functioning Condition (PFC) on 200 miles of the George River Wild and Scenic River
    - -Inventory of streams
    - -Denver (Science & Tech Center) for remote sensing & photogrammetry specialist
    - -Field work completed in late June

-Stream Gages (Unalakleet & Anvik)
    - -in conjunction w/ USGS

-Mining Claims
    - -conducted site visits to all mining claims on BLM land
    - -determined stream/water issues
    - -performed cross-sections up/down stream when possible

-Bristol Bay
    - -performed hydrologic assessment.
        - -cross-sections

-Investigated abandoned SNOCOURSE sites
    - -approx. 9 Unalakleet Wild and Scenic River, 5 in Kuskokwim Wild and Scenic River

FY 04:

- Continue work and gages above
- Conduct the evaluation of Properly Functioning Condition (PFC) on 200 miles of a river yet to be determined
    - -Inventory of streams
    - -Denver (Science & Tech Center) for remote sensing & photogramatry specialist
    - -Field work in summer of 04

Northern Field Office, Fairbanks, Alaska

Richard Kemnitz, 474-2225, Richard_kemnitz@ak.blm.gov

FY 03:

Operated the following gaging stations in NPRA:

Installed 2 real-time gaging stations (on NWS website):

Ikpikpuk R below Fry Creek collecting stage, water and air temp, precip, windspeed and direction

Fish Ck (Mile 32) nr Nuiqsut collecting stage, water and air temp, precip, windspeed and direction

Operated 9 gaging stations near Nuiqsut:

Ublutuoch Ck (Mile 13.7 & Mile 55) nr Nuiqsut

Judy Ck (Mile 7 & Mile 124) nr Nuiqsut

North Fork Tributary, Kalikpik River nr Nuiqsut & nr Kalikpik River

Inigok Ck nr Nuiqsut

Fish Ck above Inigok Ck & Mile 112 nr Nuiqsut

Monitoring the Colville R at Umiat gage (done by USGS).

Made a high streamflow measurement during breakup.

Monitored lake levels of 5 lakes near Nuiqsut

Obtained field parameters and water quality samples at all sites.

Reclamation of 0.5 mile of stream channel on Nome Creek

4 White Mtns. snow survey sites

4 gages on Nome Creek basin (1 data logger, 3 crest-stage gages)

6 gages on Fortymile River basin (observer readings used by NWS)

2 gages on Jim River

1 gage on Kanuti River

Ongoing water resources surveys in Northwest NPR-A for the leasing EIS

FY04:

same program as above plus 1 new gage on South Fork Koyukuk River

Will complete ten year snow course report (Jon Kostohrys)

Glennallen Field Office, Glennallen, Alaska

Mike Sondergaard, 822-3217, Mike_Sondergaard@ak.blm.gov

FY 03:

- Started work on completing data analysis and report for the soil survey on the Delta River, field work completed in 1999 (NRCS)

Setup real-time gage on the Gulkana R below Paxson Lake Outlet

FY 04:

- Continue work on completing the report for the soil survey on the Delta River, (NRCS)
- Continue gage on the Gulkana River

Agency Report – US Fish and Wildlife Service

Interagency Hydrology Committee for Alaska
Agency Report –October 22 and 23, 2003, Anchorage, AK
U.S. Fish and Wildlife Service, Region 7, Water Resources Branch

Water Resource Investigations
The Fish and Wildlife Service currently has 30 stream gaging stations in operation.

Becharof Refuge: Egegik River at the outlet of Becharof Lake is being gaged; the project will continue. Project Hydrologist - John Trawicki 786-3474

Togiak Refuge: Stream gaging was initiated in October, 1998, at 20 sites on the Togiak Refuge. Project Hydrologist - Alan Peck 786-3662

Snake River	Kanektok River	Goodnews River
East Fork Arolik River	Arolik River	Upper Goodnews River
Togiak River	Pungokepuk River	MF Goodnews River
Kinegnak River	Unaluk River	Upper MF Goodnews River
Quigmy River	Matogak River	Kukukak River
Gechiak River	Ongivinuck River	Igushik River
Osviak River	Faro Creek	

Kodiak Refuge: 9 gages were installed in Oct.of 2000, They were temporarily out of operation due to funding (2001). They are currently operating. Project Hydrologist- John Trawicki.

Akalura River		Ayakulik River
		Dog Salmon Creek (2)
Karluk River (2)	Sturgeon River	
South Olga Creek	East Fork Uganik River	

Other Hydrology News

X USFWS-Water Resources Web Page is up and running. It can be accessed through the USFWS R7 home page. (http://alaska.fws.gov/water) Suggestions or to add links contact Alan Peck 786-3662, alan_peck@fws.gov .

X We are collecting water chemistry to establish baseline water quality conditions at our stream gaging stations. Measurements and samples will be taken at stream gaging stations during normal site visits.

Water Rights: USFWS has not filed any new water right applications since October 2002.

Agency Report – US Geological Survey

U.S. Geological Survey Fall 2003 Report to the IHCA

Stream Gaging Program—We operate 139 continuous stream gages statewide (an increase of 24 from last year), 76 of which are equipped with telemetry (an increase of 11 from last year). In addition, we operate 55 partial-record stations, primarily for the collection of annual peak flows. Many of the new stream gages are in SE Alaska, funded in cooperation with ADF&G.

Hydrologic Investigations in cooperation with Alaska Department of Transportation and Public Facilities include:

- Near real-time streambed monitoring at eleven scour critical bridges.
- Conducting a 2-D hydrodynamic model on the Tanana River near Tok. (in preparation)
- "Scour Analysis of Parks Highway Bridge #201, Tanana River at Nenana" (in review)
- "Summary and Comparison of Streamed Scour Analyses at Selected Bridge Sites in Alaska" (in review)
- "Estimating Annual High-Flow and Monthly and Seasonal Low-Flow Statistics for Alaska Streams" (published, http://water.usgs.gov/pubs/wri/wri034114/)
- "Estimating Magnitude and Frequency of Peak Streamflows in Alaska" (published, http://water.usgs.gov/pubs/wri/wri034188/ (caution: missing p 1-20 in web publication as of 10/20/03; should be fixed by 10/22/03)

A number of investigations in National Parks are funded through the Water-quality partnership program in the USGS. Projects are funded for three years. The current status of projects (by short title) is as follows:

- Johnson River, Lake Clark National Park: report in press.
- Tlikakila Glacier, Lake Clark National Park: report in review.
- Indian River, Sitka National Historic Park: report in review.
- Red Dog Mine, Cape Krusenstern National Park: data in hand, report in preparation.
- John River, Gates of the Arctic National Park: Third year of funding, QW data being processed, GW model in development.
- Crescent River, Lake Clark National Park: Second year of funding, data collection ongoing, likely lost most of the equipment during floods Oct 1.

NAWQA—Funding complete last year, Summary report in review, Chester C and Basic Fixed Site reports in preparation.

NASQAN—The 5-year Yukon River NASQAN continues its primary data collection at five sites. Synoptic sampling last summer extended from Dalton Hwy to Pilot Station. Next year—Whitehorse to Eagle.

Glacier Monitoring—Program of monitoring mass balance at Gulkana and Wolverine Glaciers continues.

Volcano Hazards Monitoring—Program of hazard monitoring and research of lahar deposits and potential tsunami generation continues through the Alaska Volcano Observatory.

Agency Report – USDI National Park Service

Interagency Hydrology Committee of Alaska – Update, Fall, 2003
Nancy Deschu, National Park Service (NPS), Alaska Regional Office

Inventory and Monitoring Program, National Park Service:
The NPS in Alaska is part of the nationwide Inventory and Monitoring (I&M) Program. This intensive program is focused on inventorying and subsequently monitoring natural resources in national parks nationwide – this includes not only flora and fauna but also physical parameters such as hydrology, weather, and air quality.

For the purposes of the I&M program, parks are set up in "networks". In Alaska, these are the networks and the network leads:
Central Alaska Network: Denali, Yukon-Charley, Wrangells-St.Elias (Maggie MacCluskie); Southwest Alaska Network: Katmai. Lake Clark, Kenai Fjords (Alan Bennett); Arctic Alaska Network: Gates of the Arctic, Bering Land Bridge, Noatak, Kobuk, Cape Krusenstern (Diane Sanzone); Southeast Alaska Network: Glacier Bay, Sitka, Klondike (Chitra Dur).

Regarding water resources, each network will be addressing water resources to some degree dependent upon the resources in the parks and the networks' priorities. Planning is still in early stages for water resource monitoring in the Alaska networks. What has been accomplished to date has been water "inventories" (baseline data) collected at sites where freshwater fish inventories were conducted. As the planning for monitoring moves along, water resources (water quality, hydrology, aquatic habitat, climate, air) will be an integral part of each network's program. For an overview of the national program go to: http://science.nature.nps.gov/im/monitor/index.htm

Some of the Water Resource Projects Ongoing in NPS areas in Alaska:
Tanada Lake Limnology Study, Wrangell St. Elias National Park and Preserve
Anaktuvuk Groundwater Study, Gates of the Arctic National Park and Preserve
Crescent River Study, Lake Clark National Park and Preserve
Taiya River Geomorphology, Klondike Gold Rush National Historical Park
Snow Courses, Weather Stations – ongoing, Denali National Park and Preserve
Restoration of Nelson Slough, Klondike Gold Rush National Historical Park
Exit Glacier Floodplain Survey, Kenai Fjords National Park
Water Resource Management Plan, Denali National Park and Preserve
Kijik River Basin, Lake Clark National Park and Preserve
Freshwater Fish Surveys, Aniakchak National Monument
Biology of Landlocked Sockeye (kokanee) Jo-Jo Lake, Katmai, National Park
Long Lake Fish Weir and WQ in Cooperation with Cooper River Watershed Project, Wrangell-St. Elias National Park and Preserve

Gage Status in National Parks in Alaska:
Alsek River, Glacier Bay National Park and Preserve: active (USGS-Juneau)
Indian River, Sitka National Historical Park: continued pending funding (USGS-Juneau)
Johnson River, Lake Clark National Park and Preserve: active (USGS-Anchorage)
Kandik River, Yukon Charley National Preserve: discontinued
Nation River, Yukon Charley National Preserve: (continuing dependent on funding)

State Agency Reports

Agency Report – Dept of Environmental Conservation

Alaska Department of Environmental Conservation

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Ron_Klein@dec.state.ak.us 907-269-7595

Jeff Hock, Section Manager, Statewide Database

Jeff_Hock@dec.state.ak.us 907-465-5185

2002-2003 Integrated Water Quality Assessment and Monitoring Report

DEC's re-issued the 2002/2003 Integrated Water Quality Assessment and Monitoring Report for public review. The review period is August 31, 2003 through October 29, 2003. The Integrated Report provides information on the state of water quality in Alaska and categorizes waterbodies based upon what is known about water quality and whether corrective or restorative actions are necessary. The report serves as Alaska's Clean Water Act Section 303 (d) and 305 (b) reports. The Integrated Report was described during the April 2002 IHCA meeting. The report was revised based upon EPA and public comment.

2004 Integrated Water Quality Assessment and Monitoring Report

DEC published a request for water quality information to be considered for the 2004 Alaska Draft Integrated Water Quality Monitoring and Assessment Report. The solicitation period is August 31, 2003 through October 29, 2003. This information will be evaluated and considered for inclusion in Alaska's Draft 2004 Integrated Water Quality Monitoring and Assessment Report. There will be a public review period this winter. DEC expects to submit the final report to EPA in April 04.

Water Quality Standards Triennial Review

Every three years, the DEC conducts a comprehensive review of the Water Quality Standards (WQS) in 18 AAC 70. This *Triennial Review* is a federal Clean Water Act requirement that helps set pollution limits for Alaska's waters by integrating the most current science and technology. DEC solicited comment on potential review areas and has prioritized them for action. The Background information and the review schedule may be found at http://www.state.ak.us/dec/dawq/wqs/documents/triennial.htm Point of contact is Nancy Sonafrank, Water Quality Standards Section Manager, Nancy_Sonafrank@dec.state.ak.us 907-451-2726.

ACWA Program Development Project

DEC in coordination with the Departments of Fish and Game and Natural Resources has begun development of a statewide water monitoring strategy. The strategy will outline the framework for activities to assess the status, trends, and needs of Alaska's waters. The strategy will be completed by the end of state fiscal year 2005. DEC is funding DNR and F&G participation, including an interagency effort to evaluate and prioritize waterbodies for assessment, restoration and stewardship needs.

Data Management

ACWA Database: A "Software Requirements Specification" document was completed for the development of the ACWA Database, a web-based system to provide for the nomination, analysis and tracking of waterbodies and associated actions related to: data collection & monitoring; protection, restoration and stewardship. The analysis component provides criteria and evaluation tools for ACWA agencies to assess if data are credible and sufficient, if stewardship is sufficient and a means to priority rank waterbodies targeted for future actions. Recruitment for a non-perm, Analyst Programmer III to assist in the development of this system is currently underway.

Additional Items of Past Interest:

- Entered into $30,000 MOU with BLM to support completion of NHD, 5th and 6th order HUCs.
- DEC is funded through an EPA challenge grant to participate in an XML data exchange node development project with other Region 10 states that will enable web-based, remote input and output of Modernized STORET water quality data. An XML schema for water quality data exchange is under development and review.
- Alaska Legacy STORET water quality data is available through CIIMMS at: http://info.dec.state.ak.us/ciimms/

Agency Report – Dept of Military and Veterans Affairs

IHCA Agency Report **Presented by:**

October 21-22, 2003 **Emerson Krueger**

Stewart River Training Area

2003-2004 Natural Resource Projects

- Surface Water Quality Survey USGS

- In-stream Macroinvertebrate Survey in conjunction with UAA ENRI

Using the standard operating procedures for the Alaska Stream Condition Index, one round of sampling has been conducted. We are planning on a sampling event in November if we can break through the ice. Sampling will occur as often as we can get to the training area (1-3 times / year)

- Erosion Hazard Survey NRCS

- Soil Survey NRCS

- Revegetation and Restoration of Maneuver Damage

- Wetland delineation

Local Training Areas

Prioritizing training areas by use and will begin conducting environmental baseline surveys for new areas and environmental surveys of training areas with an established baseline.

Agency Report – Dept of Natural Resources

Alaska Department of Natural Resources
Division of Mining Land & Water
Interagency Hydrology Committee for Alaska
October, 2003 Report

DNR Water Resources Section Organization (Gary Prokosch, Chief 269-8645): Please visit at http://www.dnr.state.ak.us/mlw/water/index.htm .

- Three primary sections:
  1. Water Management Section (Kellie Westphal, section head 269-8646)
     - Adjudicates water resources.
     - Total staffing of nine positions, six staff in Anchorage, two in Juneau, and one in Fairbanks.
     - Cooperative ADF&G/DNR position currently vacant.
  2. Alaska Hydrologic Survey Section (AHS) (Mark Inghram, section head 269-8638)
     - Collects & analyzes hydrologic data.
     - Total staffing of five positions, four in Anchorage, one in Fairbanks.
  3. Dam Safety & Construction (Charles Cobb, entire section 269-8636)
     - Administers state dam safety program.
     - One position statewide, located in Anchorage.
- Budget for current fiscal year (FY 04) is largely status quo from last. The Hydrologic Survey Section is funded at only 60% general fund, & therefore is always seeking cooperators. FY 05 budgetary process just beginning. Indications are that there could be substantial layoffs in State Government next year, but it is unknown how this will affect the DNR Water Section. Further consolidations of State services and offices to reduce administrative costs may reorganize offices.

DNR Reorganizations:

- What had been the Habitat Division of ADF&G is now part of DNR, and renamed the Office of Habitat, Management & Permitting, and is located in the office of the Commissioner. This is a separate function from the Water Resources Section.
- The State Alaska Coastal Management Program (ACMP) function has now also been transferred entirely to DNR. This office is now named Office of Project Management & Permitting, and is also located in the office of the Commissioner. This is a separate function from the Water Resources Section.

Legislative Update:

- Senate Special Concurrent Resolution No. 1: A resolution that the Legislature disapproves of Executive Order no. 107 that transferred the Habitat Division from ADF&G to DNR.

- Senate Bill No. 39: An act whereby the legislature retains the right to manage fish and game in and on the navigable and submerged lands of Alaska.
- House Bill No. 192: An act whereby DNR is directed to lead and coordinate all matters relating to the review and authorization of resource development projects.
- House Bill No. 238: An act merging the Department of Environmental Conservation and the Department of Natural Resources, resulting in the Department of Natural Resources and Conservation.

Regulation Amendments: The Water Resources Section is in the process of amending its Water Management, Dam Safety, and fee regulations.

- The Water Management and Dam Safety regulations have recently completed the public notice portion of the adoption process.
- The fee regulations should be out for public notice within the month.

Current Projects/Issues of interest: In addition to many on-going projects outlined in previous reports, those itemized below are most timely & of greatest interest.

- AHS Water Data On-Line: This project makes water quality and water quantity data collected by DNR-AHS accessible via the internet. This will provide management agencies and the public with access to data needed to evaluate, protect, and restore Alaska's clean Water Actions (ACWA) waterbodies.
- Peters Creek Scimitar Subdivision Ground Water: A planned subdivision near Peters Creek has been the object of a multi-year assessment of ground water. At issue is the availability of water from a limited bedrock aquifer, and the possible effects of additional wells in a new subdivision effecting existing water rights holders. This project has involved both hydrologists, water managers, and the State Attorney Generals office.
- Anchor Point gravel extraction: The possible draining of a shallow ground water aquifer near Anchor Point by a contractor removing overburden to reach the gravel below has resulted in a water rights issue to local water rights holders. AHS has made an assessment, and the Water Management Section is proceeding with authority allowed to protect the water rights holders.
- Tuluksak River gaging: The native community of Tuluksak has made verbal commitment to a cooperative stream gaging operation on the Tuluksak River at Tuluksak. This project would be funded by a grant from the BIA through the village of Tuluksak.
- Moose Meadow gaging: Alyeska Resort uses snow making early in the season to allow earlier skiing operations, and extend its season. This project allows for monitoring of the source stream for snow making.
- North Slope Water Use: Water used in making of ice roads for winter travel is an integral part of North Slope Oil operations and exploration. Research is currently being conducted by the University of Alaska Water and Environmental Research Center to assess the impacts of water extraction from lakes. DNR is working with the Research Center to both locate lakes where sufficient water is likely to be withdrawn to allow for impact assessment and in the permitting process to allow for the water extraction. Results from this research will eventually be incorporated into the permitting process.

- Tundra Travel: Critical to exploration and operations of the North Slope Oil industry is the period of time allowed for over tundra travel. By allowing for earlier in the season over tundra travel the substantial costs associated with construction of ice roads and bridges (as in the Colville River) are better utilized. DNR is working on research and guidelines to allow for earlier season travel than previously allowed.
- Dam Safety: As part of the Dam Safety program DNR is charged with assessing the possible safety issues resulting from dam failure. A dam failure assessment at a location near Hoonah is currently being completed.
- Mining Industry support: Provides data collection and analysis for mine sites throughout Alaska. Recent work has included Whole Effluent Toxicity (WET) sampling at Hoseanna Creek and Healy Creek to address current and future NPDES permits in coal mining areas. Work with the Large Mine Planning Team is ongoing.

Agency Report – Dept of Transportation & Public Facilities

Interagency Hydrology Committee for Alaska

Fall 2003

Alaska Department of Transportation and Public Facilities

- Culvert Assessment Protocol
  - Field work complete, office analysis pending
- Stream Gauging Program (coop with USGS)
  - 49 Crest-stage gages and 15 Hydrograph Stations
  - New Peak Flow Regression Analysis – Published
  - Low flow statistics – Published
- Bridge Scour Investigations (coop with USGS)
  - Salcha River
  - N.F. Chena River
  - Knik River Old Glenn Hwy
  - Chistochina River
  - Tanana River at Nenana
  - Nenana River at Windy
- Bridge Scour Monitoring Program
  - Installed FY01-02
    - Eagle River (Juneau)
    - Kenai River, Soldotna
    - Kasilof River
    - Tok River
    - Slana River
    - Slana Slough
    - Mabel Creek
  - Planned FY03-04
    - Nenana River at Rex
    - Tanana River at Tok
    - Nenana River at Park Boundary
    - Chatanika River Elliot Hwy
    - Lowe River Lower Crossing
- Channel Roughness for Steep Alaskan Streams
  - Draft Publication
- Culvert and Fish Behavior Pooled Fund Study – ongoing (Skookumchuck Hatchery)
  - With State of Washington, Oregon, Idaho, Montana, California, others
- Ice Forces on Riprap (UAF) Final Report done
- Evaluation of Bioengineered Streambank Protection in Alaska (Hydraulic Mapping and Modeling)
  - Published
- Inlet Loss Coefficients for Buried Invert Culverts (Utah State University)

- Bed Material Stability in Buried Invert Culverts (Turner-Fairbanks Hydraulics Lab - pending)
- Recent Hydrology and Hydraulic Studies
    - Resurrection River
    - Clear Creek
    - Lost Creek
    - Bear Creek
    - Victor Creek
    - Ptarmigan Creek
    - Falls Creek
    - Hutlinana Creek
    - Caribou Creek
    - Lowe River
    - Stariski Creek
    - Clearwater Creek
    - Kenai River - Soldotna
    - Abercrombie Creek
    - Wood River
    - Buckland River
    - WillowCreek
    - Marion Creek
    - Moose Creek
    - Nenana River, Park Station
    - Hick's Creek
    - Grayling Creek
    - Yak./Russel Fiord

Agency Report - UAA

Report to the Fall IHCA Meeting October22-23, 2003
UAA

- Orson Smith (CE) finishing study of beach erosion at Nikiski extending it to include more wave-induced sediment transport simulations. STWAVE (a WES model) is working now. Simon Evans successfully defended thesis "tidal effects on groundwater at Pillar's park" which showed an implicit exchange of water between the river and the confined aquifer. Heike Merkel "tidal effects on sediment transport in the lower Kenai River" defense will be October 31.
- Flume construction continues with hopeful water flow in November.
- Bill Schnabel (CE) is studying uptake character of wetlands. Also has greenhouse ready and will be constructing an artificial wetlands with flow from Chester Creek.
- Bill Schnabel and Bill Lee (CE) are building lysimeters at Elmendorf to measure the infiltration of moisture through a vegetated landfill cap.
- Craig Woolard (CE) has been involved with several studies on water and wastewater treatment schemes in Arctic native villages.
- LeeAnn Munk (Geology) is studying the geochemistry of trace elements including arsenic in surface water, streambed sediments and groundwater in the Anchorage area. She is also investigating the distribution and environmental effects of metals in the terrestrial and nearshore environments at abandoned copper sulfide mines in Prince William Sound.
- Patricia Hieser (Geology) recently received a 3 year grant on Lake Clark, Iliamna, and Naknek to look at paleohydrology, salmon history, landscape dynamics by investigating lake bed sediment cores. This could be helpful in defining if and when Russell Fiord has spilled in the past.

Agency Report - UAF

Caribou Poker Creeks Research Watershed

A summary of recent research accomplishments

Larry Hinzman, University of Alaska Fairbanks

Our research combines hydrology, permafrost science and biogeochemistry to better understand disturbance at the landscape scale. For instance, we have quantitatively determined source area for major solutes, dissolved organic carbon, and dissolved organic nitrogen in stormflow periods during the summer months and after the Frostfire prescribed burn (Petrone et al., 2000). Identification of these source areas has allowed us to determine how processes such as weathering in the groundwater system and decomposition in the surface soils affect stream chemistry. We have also discovered that changes in the active layer thickness throughout the summer play a major role in the hydrologic response and the coupling of upland soil and stream chemistry. Furthermore, we are now compiling a complete annual record of hydrology and chemistry to calculate annual flux rates of major solutes and organics from watersheds that differ in permafrost coverage. It appears that annual flux rates of nitrogen at the CPCRW watershed are higher than atmospheric inputs (measured from the on-site National Atmospheric Deposition Program). This is in sharp contrast to watersheds in the temperate U.S or Boreal forests of Canada that retain much of the nitrogen entering with precipitation. These findings demonstrate that boreal forest watersheds in Alaska may be fundamentally different than their counterparts in Canada and the U.S due to a changing climate driving a release of nitrogen from previously frozen soils.

Results from our experimental forest fire have resulted in numerous publications (specifically, see JGR special issue, Hinzman et al., 2003). This experiment has enabled documentation of the role of fire as an important factor controlling landscape change in permafrost regions (Hinzman et al., 2001a). Additionally, it has further enhanced our understanding of the interconnection among disturbance and climate change particularly with respect to permafrost degradation following fire (Yoshikawa et al., 2003a).

Hydrological studies have demonstrated the critical controls that permafrost exerts upon hydrological processes (Bolton et al., 2000; Ishikawa et al., 2001; Knudson et al., 2000). As permafrost becomes thinner, small springs can penetrate the frozen ground and lead to formation of aufeis in the winter and more stable baseflow in the summer (Hinzman et al., 2001b). As permafrost degrades to the point of becoming discontinuous, surface water can infiltrate to groundwater and eventually enter the stream drainage network providing stable baseflow during dry periods and in winter. Soils over permafrost with a thin active layer have higher soil moistures as compared to permafrost-free soils, all other factors being equal. As permafrost disappears in the upland areas (where soil moisture can infiltrate to deeper groundwater) the ecosystem will become drier. In lowland areas (where groundwater has upward gradients) the ecosystems may become wetter as permafrost degrades. This understanding of hydrological interactions with permafrost has permitted improved modeling of groundwater flow pathways and, consequently, stream chemistry dynamics (Hinzman et al., 2002). Hydrological studies have been conducted in CPCRW since 1969; however, not all of these data are continuous or of

high quality. The available data have been compiled and rigorously quality controlled. Analyses on long-term water balance are being completed. Preliminary conclusions are • In most years, precipitation meets or exceeds the evapotranspiration demand.
• The type and distribution of precipitation exerts a strong control over runoff regime and evaporation rates (and therefore influence the R/P ratios).
• Watersheds with higher permafrost coverage tend to be more sensitive to daily and seasonal variations. Year-to-year differences in each watershed are likely due to snowpack conditions, soil moisture content prior to the fall freeze-up and summer precipitation events, and the amount and timing of rainfall events. Historical data indicate that during large precipitation events, the contribution of the base flow component from the low permafrost watershed is about 80% throughout the summer. The base flow component of the medium and high permafrost sub-watersheds increases throughout the summer from between 50-60% at the beginning of the summer to approaching 85% by the summer's end.

The central hypothesis of the groundwater research in CPCRW was that water emerging from a spring at the base of the north-facing slopes was derived from infiltration on south-facing slopes and displayed a different groundwater source pathway from other shallow springs (Yoshikawa et al., 2003b). This was expected since less water can infiltrate the subsurface on the north-facing slopes where ice rich permafrost forms a hydraulic boundary. Artesian spring water emerging from beneath the permafrost on the north-facing slopes may therefore be derived from sources outside the topographic boundary of the watershed. The groundwater from pingo spring and lower south-facing slopes has unique characteristics from the other springs (White et al., 2002). The source of water of the other springs is more likely to be mixing of younger water. The deeper groundwater (pingo) system survived during the entire Holocene period and intense weathering processes. The south-facing slopes had aspen and birch dominant forest colonies (black spruce in north-facing, and valley bottom) today. The lower- middle south-facing slope is only place to remain permafrost-free over a long time. Over the last 20 years, most of the permafrost has disappeared from the hilltop's black spruce areas. The area's higher elevation is a reasonable place to expect permafrost retreat, as well as increasing groundwater infiltration. As a result, base flow and spring discharge increased. The increasing base flow was compared to 1907 and 1978 reports and 2001 measurements. The TR-6 spring stared after 1969, and also C3 springs may start within 50 years as well as pingo spring discharge increase since 1989.

We have developed a model for determination presence or absence of permafrost based upon climatic and terrain data (Yoshikawa et al., 2002). This model is useful for predicting spatial variations in hydrological and ecological processes as impacted by permafrost. Additional research has revealed that the spatial extent of permafrost in CPCRW has decreased by approximately 2% over the last century.

We have made significant advances in the CPCRW and Bonanza Creek with our data collection. The first was the installation of a radio network that transmits data hourly to our data server in Fairbanks. This allows us to share information in real time with the general public and also government agencies. Important data retrieved hourly include measured air temperatures at four different elevations in close proximity to each other. This is a valuable tool for identifying and quantifying our winter temperature inversions. In addition to the four weather stations connected in real time, two cameras have been installed in the watershed. The first camera, attached to our

main climate station, gives users a general idea of weather conditions in the watershed. This camera has been operating unattended since May of 2002, with images archived locally at the WERC. This camera could also be used to aid in studying the radiation balance at this site. The long wave and short wave radiometers are in the field of view, allowing a visual inspection of the sensors in order to validate radiation data. The second camera installed at the watershed was in support of an aufeis monitoring station. This camera allowed researchers to inspect their site and correlate the data measured by their station with the physical growth of aufeis. It was operational for approximately nine months. Using current technology we now have the ability to install a camera at virtually any site in the watershed in support of a research project and acquire images hourly. There are many potential uses for such a system.

The established radio network in the watershed is only in its second year. Currently we are using approximately ten percent of the radio networks data transmission capacity. Future projects should consider adding telemetry capabilities to instrumentation that is installed in the watershed. Data intensive sites such as eddy covariance towers would be able to take advantage of this available bandwidth. Future research into surface energy balance could rely on remote cameras capturing real time images to validate data during winter months. Visual observations from radiation sensors could be used to confirm that sensors were snow and ice-free during the measurements.

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Minutes of Conference Call on TP 47 Project Update

TP47 Conference Call
Friday 06 Jun 2003 at 9 am

Participants:
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1. Basis for current cost estimate to prepare analyses for Alaska (Geoff)

NWS is not authorized or mandated to conduct these analyses, but we have been doing these analyses for many years. It was determined however that NWS had the best access to the data and expertise to conduct these studies. NWS must use contractors rather than staff to conduct these studies. They have an effective staff working on projects at the present time.

New technologies have become available (region frequency analyses based on L moments)(book by Hosking and Wallace) to do the analyses in the early 90's. Several studies were started in the 90's but stalled out. The NWS was restructured a few years ago and Goeff was assigned the responsibility to run the program of doing these analyses. They found that the cost estimates were well underestimated.

Last year a quick estimate was made for Alaska of $1.1 million over three years. This covers only pcpn freq analyses and not PMP. The durations covered are 5 min to 10 days and frequencies from 10-yr to 1000-yr. Products would be electronic only and no paper product would be produced. Will also include confidence limits to express uncertainty. Also producing temporal duration distributions.

Unknowns include quality of data, form of data (paper or electronic), spacial distribution of data, and elevation distribution of the data. A more detailed cost estimate can be made if requested, but would likely be a phased cost estimate to allow for unknowns at the present time.

Would likely incorporate PRISM processes in the conduct of the study and would entertain other entities doing QC of data. Dajing mentioned their studies to account for under-catch in cold regions.

2. Project schedule options (shortest, longest, earliest, phased, etc) (Geoff)

Can add staff within a few months to cover any reasonable schedule for the project. Thus any schedule can be accommodated.

3. Compile potential list of funding sources (all)
COE, NRCS, USBR, State Agencies and others have contributed to existing studies
COE can not fund these studies any more
DOT national transportation research board pooled funding is a potential source
FEMA is a potential source
EPA is becoming more involved in using pcpn freq info in their analyses and could be source

4. Develop plan for approaching funding sources with request (all)

Direct letter to national and regional FEMA management officials - expectation of extended lobbying is required.
Mark will prepare IHCA letter (RFP) to Geoff requesting a proposal to conduct the studies
Will need to prepare a summary document and a detailed document for distribution to funding sources and other groups

5. Develop wording of request from IHCA and/or other groups (all on phone and followup email) (reference old IHCA request provided by Christy)

Potential groups:
Association of Floodplain Managers
Soil and Water Conservation Districts (NRCS)