

APPENDIX B

Summary of Instream Flow Conditions By Water Resources Inventory Areas

October 1999

This summary is based on various sources of information such as watershed assessments conducted by the Department of Ecology in 1995, watershed recovery inventory program conducted by the Department of Fish and Wildlife in 1997, and other information.

WRIA 1 - NOOKSACK

- IFIM studies were done and instream flows set by rules in 1985.
- Flows were set more toward 100 percent habitat protection.
- Significant illegal uses (300 to 500) and significant number of exempt wells make this basin a good case of where Ecology set a protective instream flow but illegal/exempt withdrawals and extensive growth pressure are putting tremendous stress on the water resources in the basin and withdrawing water that would otherwise be available for the fish.
- Ecology has issued in 1995 a report on the "State of Nooksack River Watershed".

Note: Ecology did IFIM studies on North Fork Nooksack River (RM 45), South Fork Nooksack River (RM 5.0), Middle Fork Nooksack River (RM 1.4), Maple Creek (RM 0.8), Kendall Creek (RM 0.2 and 0.7), Terrell Creek (RM 4.9), and Silver Creek (RM 1.9). Ecology, WDFW and the Tribes prioritized these streams in the basin as anadromous streams most threatened by future development and in need of putting water back in stream by protecting the established instream flows. Other streams had much higher fish use (Thompson, Cornell, Gallup, and Deadhorse), but were not in need of instream flow protection since they are on U.S. Forest Service land.

WRIA 2 - SAN JUAN

- Small streams with naturally extreme low flows

WRIAs 3 and 4 - LOWER SKAGIT/SAMISH & UPPER SKAGIT

- In the Upper Skagit no instream flows have been set, upper is mostly on USFS lands and no growth pressure. Only the mouth of the Skagit is on private lands.
- Middle and lower Skagit:
 - No instream flows set. I.F. Studies were done on the tributaries and on the Samish River.
 - I.F. studies were done by the Fish Research Institute, University of Washington, on the middle Skagit. The study was used to set instream flows on the Skagit hydro system.
 - Skagit PUD completed an IF study on the lower Skagit and selected tributaries (Ecology was consulted). The purpose of the study is to set I.F. on the lower Skagit and to

condition the PUD water right change with the I.F. as a requirement to moving the points of diversions from the tributaries to the main stem.

Note: Lower Skagit-Samish: Ecology did IFIM studies on Day, Parker, and Carpenter Creeks and the Samish River. Upper Skagit: The Fisheries Research Institute (University of Washington) did 7 IFIM sites on the Skagit River from RM 67.5 to 92 (Rockport to Newhalem). There are dozens of other streams with IFIM studies, but they are all for hydroelectric projects on National Forest or National Recreation land.

WRIA #5 - STILLAGUAMISH

- Stillaquamish was identified by Ecology and WDFW as number one priority for setting instream flows. There is lots of water and fish. Healthy runs of Chinook and Coho which should be protected in the very near future. Growth is headed there fast, increasing the need for water for future growth.
- Several I.F. studies were done by USGS on the main stem and tributaries. Studies were done without participation of Ecology, WDFW and the Tribes.
- To redo the studies will not be cost effective, will require a large crew and 24 months to complete. Instead the agencies and tribes will need to review the USGS report to determine its accuracy, usefulness and whether additional data or analysis is needed.

Note: USGS did 14 IFIM sites on the Stillaquamish basin lower mainstem, 4 sites on North Fork Stillaquamish, 4 sites on South Fork Stillaquamish, 2 sites on Jim Creek, Pilchuck Creek, Squire Creek, and Canyon Creek.

WRIA 6 - ISLANDS

- Small streams, experiencing natural extreme low flows

WRIA 7 - SNOHOMISH

- The conditions in the Snohomish are similar to the Stilliquamish except that growth pressure is already there.
- Existing instream flows were set by rules in 1979. They were reviewed in 1995 and determined to be adequate, except for 7 tributaries needing flows.
- Subsequently instream flow studies and analysis were done on tributaries, need to develop recommendations from agencies and tribes.
- The highest priority tributaries are Wallace River and Cherry Woods Creek.

Note: Ecology did IFIM studies on Woods Creek, Cherry Creek, and 2 sites on the Wallace River. Dames and Moore consultant did 4 sites on the Snoqualmie River (from the Tolt River confluence up to Snoqualmie Falls), the mainstem Snoqualmie from the Falls up to the three forks, and 3 sites in the North Fork Snoqualmie. Weyerhaeuser also did an IFIM study on the North Fork Snoqualmie. Ecology conducted a watershed assessment in 1995 evaluating the conditions of water resources concluding that instream flow requirements are not met an average of 121 days per year, especially from mid-May to mid-October.

WRIA 8 - CEDAR-SAMMAMISH

- I.F. were set by rules in 1978. Several tributaries of Lake Washington and the lake itself were closed.
- Subsequent studies were done, reaching same conclusion on flow levels. I.F. set by rules are adequate based on storage availability, but not always met due to withdrawals by Seattle.
- Seattle is a major user with claims (not subject to IF). The city is trying, however to meet the I.F. requirements.
- Tribes and the U.S. Corps of engineers have equally valid claims probably some pre-dating Seattle.
- Negotiation have been completed between the City of Seattle, Departments of Ecology and Fish and Wildlife, the tribes, environmental groups and other interests for higher and more reliable I.F. under an HCP. The draft HCP is being reviewed by NMFS.

Note: Cascade Environmental Service for Seattle did an IFIM study on the Cedar River and used 64 transects to cover the river from the mouth up past Landsburg Dam to Cedar Falls (RM 33.7) and beyond to RM 43.2. Ecology conducted a watershed assessment in 1995 evaluating conditions of water resources, concluding that minimum flows have not been met an average of 81 days per year since 1980, with number of days increasing. Significant declines are registered in gages on Sammamish River and Issaquah Creek due in fact to ground water withdrawal and changes in land use (increase in previous surface).

WRIA 9 DUWAMISH / GREEN

- I.F. were set by rules in 1989, in addition, all tributaries of Green are closed. The flows are inadequate, protecting 95 percent or less of habitat.
- City of Tacoma water right is not affected by I.F. requirements except for pipeline number 5.
- Ecology after 1980 did an IFIM study and issued a report with recommendations for higher instream flow levels.
- Tacoma has negotiated an agreement with the tribes for higher I.F. an HCP is being negotiated.
- Tacoma wants to expand Howard Hanson storage to use for municipal water and some flow augmentation.
- In addition to the large water withdrawals from Tacoma, there are significant number of wells (including exempt wells) in the watershed directly affecting the flows in the river

Note: Ecology did IFIM studies on the Green River at 4 sites from Kent (RM 27.2) up to Tacoma's Diversion below Howard Hanson Reservoir (RM 60.6). Ecology conducted in 1995 a watershed assessment evaluating the water resources. Concluding that the allocation of water has drastically increased from 5 cfs + to 40 cfs + in a 25 year period.

WR 10 - PUYALLUP-WHITE

- I.F. were set in 1980

- I.F. should be reviewed to determine adequacy.

Note: USGS did IFIM studies on 3 sites on the Puyallup River (RM 7, 14, 20), 2 sites on the White River (RM 3 and 5), and the Carbon River (RM 2). Hosey and Associates for Puget Power did IFIM Studies on the White River at 5 sites (RM 4.3, 6, 10, 13.8, and 21.2). Ecology conducted a watershed assessment on 1995. The assessment indicates a decrease in low flows in the past 20 years despite above average precipitation and closures of some streams. The decline is due to ground water withdrawals and land use changes.

WRIA 11- NISQUALLY, 12- CHAMBER-CLOVER, 13- DESCHUTES, AND 14- KENNEDY-GOLDSBOROUGH

- I.F. were set by rules in 1981 for the Nisqually. Instream Flows have been identified as issue by the local planning unit under 2514 process.
- I.F. were set by rules in 1979 for Chamber Clover. Instream Flows have been identified as issue by the local planning unit under 2514 process.
- I.F. were set by rules in 1980 for Deschutes. Instream Flows have been identified as issue by the local planning unit under 2514 process.
- I.F. were set by rules in 1984 for Kennedy Goldsborough.

Note: Ecology conducted a watershed assessment in 1995 for Chamber-Clover and Deschutes. I.F. are lowest in summer and fall when salmon migrate to spawn. Extensive ground water withdrawals and change in land use are affecting summer flows.

WRIA 15, KITSAP

- Instream flows were set by rules in 1981. Need to be reviewed for adequacy.
- Existing GW withdrawals are extensive, most in continuity with streams. Large number of pending applications due to growth.

WRIA 16 -SKOKOMISH-DOSEWALLIPS

- Ecology completed instream flow studies and recommendations in 1985. The Ecological Commission vetoed in 1985 Ecology's proposed I.F. rules for the basin on the basis that the levels were not protective (90%). The Ecological Commission required 100% habitat protection especially given that the fish stocks were depressed.

Note: Ecology did IFIM studies on the Dosewallips, Duckabush, and Hamma Hamma Rivers; and on the Finch, Eagle, Johns, Jorsted, and Fulton Creeks. U.S. Fish and Wildlife Service did IFIM studies on the North Fork, South Fork, and mainstem Skokomish River. Harza Inc. for Tacoma is presently doing an IFIM study on the lower North Fork of the Skokomish River.

WRIA 17 - QUILCENE

- Instream flow studies are done, recommendations and report in progress.
- Stocks are very critical and depressed.

- Instream flows need to be set – a very high priority basin.

Note: Ecology did IFIM studies on the Little and Big Quilcene Rivers. Additional data has been collected in the summer of 1999 on the Little Quilcene and tributaries. Hosey and Associates did IFIM study on 4 sites on the Big Quilcene River.

WRIA 18 - DUNGENESS

- Stocks are very depressed more than any other basin.
- I.F. studies and recommendations are completed.
- I.F. setting is a very high priority, I.F. rules proposal in progress. Existing efforts to restore flows underway.

Note: U.S. Fish and Wildlife Service did an IFIM study on the Dungeness River at 2 sites (RM 2.3, and 4.2).

WRIA 19 - LYRE-HOKO

- No instream flows set. Very low development.
- Natural low flows at times, overall healthy fish.
- Not an I.F. issue at this time.

Note: CH2M Hill for PUD number 1 of Clallam County did an IFIM study on the Lyre River (RM3.2).

WRIA 20 - SOL DUC

- Same as number 19.

WRIA #21 - QUEETS-QUINAULT

- No instream flows set. Majority of land is protected from development
- Overall good fish runs.

WRIA 22 & 23 - LOWER Chehalis and Upper Chehalis

- Some runs are in trouble, other are fairly healthy.
- I.F. were set by rule in 1976 on the mainstem but not on the tributaries, using old methods.
- ***I.F. levels are very inadequate.***
- Subsequently IFIM studies were done on mainstem and tributaries.
- River and tributaries suffer natural very low flow conditions (recharged mostly by rainfall in low elevation).
- There are large withdrawals for irrigation. The basins experience major water quality problems, especially temperature.

Note: Washington Department of Fisheries (WDF) did IFIM studies on Cloquallum Creek (RM 3) and the Wiskah River (RM 20.5). WDF did IFIM studies on the Chehalis River (RM 90, upstream of South Fork Chehalis confluence), Newaukum River (RM 3.5), South Fork Newaukum (RM 16.5), and North Fork Newaukum (RM 4.5). Ecology conducted a watershed assessment in 1995 evaluating water resources, concluding that water use is steadily increasing; water quality is major problem and base flows are not met many days each year.

WRIA 24 - WILLAPA

- No instream flows set. Ecology has some instream flow studies
- Conditions are similar to Chehalis - low flows, irrigation diversions, however lower development pressure.

Note: Ecology did IFIM studies on the Willapa, S.F. Willapa, North, and Naselle Rivers.

WRIA 25 - GRAYS - ELOCHOMAN

- Studies completed, part of the Lower Columbia Salmon/Steelhead Recovery region.
- Low summer flows, very low development pressure
- Grays River has Chum – priority

Note: Ecology issued a report 1995 on local water issues in southwest Washington.

WRIA 26 COWLITZ

- River controlled by hydropower development.
- Irrigation and development are not significant.
- Fish passage and hatcheries are key problems.
- Studies completed by Tacoma for hydro relicensing. Tacoma is looking at restoring fish for the whole basin.
- Studies completed by Ecology and WDFW as part of the Lower Columbia salmon Recovery region.

Note: Ecology issued a report 1995 communicating local water issues in southwest Washington.

WRIA 27 - LEWIS

- Conditions are similar to the Cowlitz. It is a large river controlled by hydro development with no other development pressure.
- PGE is working on relicensing its hydropower system. The company is doing IF studies basinwide.
- Studies completed by Ecology and WDFW as part of the Lower Columbia region.

Note: An IFIM study was done by Northwest Energy Services Company for Pacific Power and Light on the North Fork Lewis River. Ecology issued report in 1995 on local water issues in southwest Washington.

WRIA 28 - SALMON - WASHOUGAL

- Very high growth pressure especially in the Salmon basin.
- Very low summer flows.
- No instream flow set, studies completed by Ecology and WDFW.

Note: Ecology issued a report 1995 describing the water issues in southwest Washington.

WRIA 29 - WIND-WHITE SALMON

- Overall small development of pressure
- Low summer flows
- No instream flows set. Studies are available for the White, done by Ecology and WDFW.

Note: An IFIM study was done by Entrix, Inc. for Pacific Power and Light on the White Salmon River downstream of Condit Dam.

WRIA 30 – KLICKITAT

- U.S. Fish and Wildlife Service did an IFIM study on main stem of the Klickitat River.
- Ecology did an IFIM studies on Little Klickitat and its tributaries, report is written.
- The little Klickitat is a fully appropriated basin. It was adjudicated and administratively closed (no rules) for over 25 years.
- The main stem of Klickitat River has lots of water. It runs through a canyon with limited development.
- There is threat from future ground water development. The lower part of the basin is being subdivided into 20-acre “ranches” growth spill over from Clark County.

Note: Ecology did IFIM studies at 2 sites on the little Klickitat River, and Spring, Blockhouse, Bloodgood, Mill, and Bowman Creeks. U.S. Fish and wildlife did an IFIM study on the Klickitat River.

WRIA 31 –ROCK-GLADE

- The basin has 3 small creeks.

WRIA 32 –WALLA-WALLA

- Basin plan was adopted by rules in 1977, no instream flows set.
- Oregon water users take most of the flow of the Walla Walla at the border.
- It is an adjudicated basin. Streamflows are totally appropriated during the irrigation season. The Walla Walla is closed from May to November.
- Studies are underway for Mill creek and the Walla Walla, being conducted by Ecology and WDFW.

Note: An IFIM was done on Mill creek. In 1995 Ecology conducted a watershed assessment to evaluate the conditions of the water quantity and quality in the basin.

WRIA 33- LOWER SNAKE

- The main stem of Snake River was withdrawn from any further appropriation in 1995. The withdrawal expires on July 1, 1999.
- In addition there are 2 tiny streams, not certain whether fish exists in them.

WRIA 34- PELOUSE

- Instream flow is not a concern

WRIA 35- ASOTIN- TUCANNON

- No instream flows are set for both rivers. IFIM studies and reports were done for both rivers and tributaries. BPA did a major study of the watershed and Ecology did a water use study as part of its watershed assessment.
- Tucannon river has decent flows, problem is high temperature (caused by removal of riparian vegetation) and sediment due to farming to the edge of the river. Tucannon's problem is a "*Tree problem*". Restoration such as fencing and tree planting is a high priority.
- Asotin on the other hand is a low flow problem. Asotin flows get very low. The river dries out most of the time in the summer due to significant existing irrigation. Very little new development

Note: Ecology completed an IFIM study on the Tucannon river, Asotin Creek, N.F. Asotin Creek, S.F. Asotin Creek, and Charley Creek.

WRIA 36- ESQUATZEL COULEE

- Instream flow is not a concern

WRIA 37, 38, And 39- YAKIMA

- The basin is being adjudicated since 1977.
- The court awarded the tribe an unquantified instream flow right of time immemorial.
- Most of the water is for irrigation under US Bureau of Reclamation contracts.
- Tribes did IFIM studies, 12 tributaries need to be studied yet.
- No surface water rights are being issued; the basin is under court control.
- USBR, the irrigators, the tribes, and the state are working on restoration of flows through conservation and efficiency; transfer of saved water, short-term water leases and reservoirs releases.

Note: The US Fish and Wildlife service and the Yakama Indian tribe did IFIM studies on the Upper and lower Yakima. CH2M Hill did an IFIM study for BPA on the Naches River at Oak Flats.

WRIA 40– ALKALI AND SQUILCHUCK

- Twelve or so very small streams (1 – 2 cfs streams) – tributaries to Columbia used for spawning and rearing by Coho, Steelhead, and Chinook.
- IFIM studies already done on all streams.
- Squilchuck – 500 existing water rights with summer appropriation totaling 10 cfs for 1 cfs streams. 90% of water rights are not used, most are pre-1917 claims.

Note: Ecology did IFIM studies on Squilchuck, Stemilt, Colckum, Hanson, Whiskey Dick, Tekison Tarpiscan, and Skookumchuck creeks.

WRIA 41- LOWER CRAB

- There are water quality and quantity problems, not a good stream. It is basically an irrigation ditch.
- Sand Hollow flows are mostly irrigation return flows, Chinook get there during high flows.
- Willow Spring had Coho. Better flows than Sand Hollow with cooler temperature.
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Note: Ecology did an IFIM study on Willow, Sand Hollow and Lynch Creeks.

WRIA 42 GRAND COULEE, WRIA 43 UPPER CRAB- WILSON, and WRIA 44 MOSES COULEE

- Instream flow concerns not known.

WRIA 45 – WENATCHEE

- Instream flows were set by rule in 1983, with minimum flows on main stem and tributaries and closures on several streams. The flows were not set high, they are very inadequate. Low flow conditions are real problems. Instream flows are not frequently met.
- In the past Ecology kept issuing water rights (conditioned with instream flow) even though instream flows were not met.
- Need studies on Icicle, Napequa, White, Little Wenatchee, Chiwancum, Bewist, Chumstick –
- Nassau and Chiwana have studies.
- Instream flows need to be set on tributaries without flows and need to be modified.

Note: An IFIM study was done on the Wenatchee River. Ecology is finishing IFIM studies on the Chiwawa River and Nason Creek. The US Fish and Wildlife Service did an IFIM study on

Icicle Creek for the City of Leavenworth. In 1995 Ecology conducted a watershed assessment to evaluate the conditions of the water quantity and water quality in the basin.

WRIA 46 – ENTIAT

- IFIM Studies and report with recommendations are done, ready to adopt instream flows.
- Very high priority basin for setting instream flows– relatively undeveloped basin upstream with decent flows– 90% of the land is federal land with steep “V” shaped valleys. Development is occurring mostly at the bottom of the basin. And has potential to impact fisheries resources.

Note: Ecology and WDFW completed IFIM study and report on the Entiat River at 2 sites and on the Mad River. A basin assessment was done by Ecology in 1995. A public workshop held as a follow up was very controversial. Ecology did not proceed with the instream flow setting.

WRIA 47- CHELAN

- Instream flow is a concern on the tributaries of Lake Chelan.
- Ecology conducted a watershed assessment in 1995 evaluating the condition of water quality and quantity.
- Instream flow studies (including fish and recreational flows) were completed by the Chelan PUD in 1999.

WRIA 48 – METHOW

- Instream flows were set by regulation in 1976. The flows are very inadequate.
- Subsequently Ecology did IFIM studies on main stem and tributaries. Studies show the need for higher minimum flows.
- As part of the Methow basin planning effort and after consultation with the Tribes and WDFW, Ecology decided not to amend the existing instream flows rules. The reason is that setting higher instream flows in a basin with very low flows does not make more water. Also the debate about the level distracted people from the real issue of how to put water back in the stream.
- Efforts were, instead, expanded on finding ways to restore flows using water efficiency and conservation, metering, and transfers of existing water rights.
- There are seven little streams still open with no instream flows, need studies and instream flows set.

Note: Ecology did an IFIM study on the Methow River at 4 sites, and on the Twisp River, Chiwuch River, and Early Winter Creek. A local water management plan and a groundwater management plan were developed for the Methow basin in 1994 in 1995.

WRIA 49 – OKANOGAN

- Instream flows were set by rules in 1976 for the Okanogan and the Similkameen rivers. There are many closures affecting perennial streams and the Okanogan river.
- Major problem is temperature, which prevent migration during July/August. Naturally it is borderline, however losses of streamside cover due to grazing and releases of warm water from the Canadian reservoirs, and Lake Osoyoos are main causes for hot summer flows in the Okanogan.
- Tributaries dry out.
- Studies and instream flow action are needed on seven tributaries that have no instream flows.
- Similkameen – main tributary – Enloe dam in Washington prevent the fish from migrating beyond that point.

Note: An IFIM was done by US Fish and Wildlife Service on the Similkameen. Ecology conducted a watershed assessment in 1995 evaluating the water quantity (including instream flows) and water quality conditions.

WRIA 50 -FOSTER

- One creek Foster creek that dries almost all times not used by fish.

WRIA 51- NESPELEM

WRIAs 52-SANPOIL; 53-LOWER LAKE ROOSEVELT; 54- LOWER SPOKANE; 55- LITTLE SPOKANE; 56- HANGMAN; 57- MIDDLE SPOKANE; 58- MIDDLE LAKE ROOSEVELT; 59- COLVILLE; 60 –KETTLE; 61- UPPER LAKE ROOSEVELT; AND 62-POND OREILLE

- Bull Trout listing in June 1998 impacted some of these WRIAs.
- Little Spokane WRIA 55 has instream flows set by rules in 1976.
- Instream flows were set for the Colville River Basin WRIA 59 in 1977.
- In 1995 Ecology conducted a watershed assessment on the Little Spokane River evaluating the conditions of the water quality and quantity. Water levels in the Little Spokane River do not meet instream flow requirement 15 % of the time during an average year, due to existing withdrawals not subject to instream flow requirements.
- Ecology conducted in 1995 a watershed assessment evaluating the water quality and quantity in the Kettle and the Pond Oreille basins.