FLOW RESTORATION DATABASE

This database describes efforts to restore river flow conditions to benefit river ecosystem health. These efforts include modifying dam operations, removing dams, managing ground water pumping, and other strategies to restore river flows. Case studies, reports and other citations from around the world are summarized. Presently, the database lists **855** rivers in **53** countries. If you know of another project or citation that should be included, please send the appropriate information to sustainablewaters@tnc.org, and we will add it to this database.

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Sustainable Waters Program

	RIVER	TYPE OF FLOW	RESTORED FLOW COMPONENTS	ECOLOGICAL PURPOSES	PROJECT STATUS	MONITORING INDICATORS	REFERENCE
Angola							
	Okavango River	Other	Improve ecological flows	For the river and Delta health	Planned/ Proposed	To be determined	Natural Heritage Institute. 2003. Okavango River Basin. Internet: www.n-i-h.org
Armenia							
	Lake Sevan	Other	Increase inflow	To raise lake level & restore ecosystem	Planned/ Proposed	Fish, wetlands, birds, water quality, vegetation, salinity	World Bank. 2001. Armenia: Towards Integrated Water Resources Management. World Bank Technical Paper. November 2001.
Australia							
New South Wales	Barwon-Darling	Dam re-operation	Minimum seasonal flows, high flows	For basic river health & fish migration	Implemented	Fish, water quality, habitat	Chessman, B & H. Jones. 2001. Integrated monitoring of environmental flows:design report. New South Wales Dept. of Land & Water Conservation.
	Bega-Bemboka River	Other	Natural low flows, high flows, mimic natural variability	To protect & restore river system health	Planned/ Proposed	Aquatic invertebrates, water quality, fisheries	NCCNSW Water & Fisheries. 1999. NCC response to Draft Bega/Bemboka River Flow Plan 1999.
	Bellinger River	Reduction of water usage & Dam re-op	Restoration of natural dry times, low flows, freshets & high flows & natural variability	To restore & protect the ecosystem	Implemented	Water quality, groundwater, wetlands, habitat, fish, vegetation, salinity, estuary condition	Dept. of Environmental Conservation. 2004. Bellinger River: Interim river flow Objectives explained. Government of New South Wales.
	Black Creek	Other	Mimic natural drying, maintain variability, reduce unnatural high flows	To protect the aquatic ecosystem	Implemented	Water quality	New South Wales EPA.2002. Hunter River Water Quality and River Flow Interim Environ-mental Objectives.
	Clarence River Catchment	Dam re-operation	More natural flow regime	To protect & enhance habitat	Planned/ Proposed	Eastern cod, sediment, habitat, native & introduced fish populations	Natural Heritage Trust. 2004. Eastern Cod Recovery Plan. *NSW Fisheries Threatened Species Recovery Planning Program.*
	Cotter River	Dam re-operation	Low flows & monthly spikes	To benefit the river ecosystem	Implemented	Habitat, fish populations, algae, macroinvertebrates	Dyer, F. 2004. Can Environmental Flows Compensate for Upstream Dams? *SIL News.* Vol. 4, January 2004. pg. 5
	Coxs River	Dam re-operation	Various experimental base flow releases & one flush release	To benefit aquatic life	Implemented	Water quality, stream bed composition, macroinvertebrates, fish, amphibians, riparian vegetation	Young, WJ et al. 2000. Assessment of river condition under the current flow regime and proposed flow regimes in the lower Coxs River. New South Wales. CSIRO Land and Water. Consultancy Report.

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	RIVER	TYPE OF FLOW	RESTORED FLOW COMPONENTS	ECOLOGICAL PURPOSES	PROJECT STATUS	MONITORING INDICATORS	REFERENCE
New South Wales (cont)	Coxs River	Dam re-operation	Channel maintenance flows, increased base flows, seasonal flows, minimum low flows	To benefit aquatic life	Planned/ Proposed	Water quality, stream bed composition, macroinvertebrates, fish, amphibians, riparian vegetation, sediment transport, riverine habitats	Young, WJ et al. 2000. Assessment of river condition under the current flow regime and proposed flow regimes in the lower Coxs River. New South Wales. CSIRO Land and Water. Consultancy Report.
	Darling River	Dam re-operation & Water usage reduction	Base flow established	For ecosystem restoration	Implemented	Not Indicated	Tarlock, A. Dan. Australia Moves Toward Basin-wide Environmental Flows. *Rivers*, 7(2) pages 138-140, 2000.
	Gwydir River	Dam re-operation	Extended high flows; higher minimum flows	To mimic natural flow variability; to benefit nesting water birds; to benefit migrating fish	Implemented	12 species of water birds; fish population; water temperature	Blanch, S. 1999. Environmental Flows: present and future. Presented at the *Australian Natl. Committee on Large Dams* 1999 Conference. Internet: Inland Rivers Network: www.nccnsw.org.au
	Hawkesbury-Nepean River	Dam re-operation	Experimental high pulses, duration & seasonal releases	To determine environmental release flow data	Implemented	Habitat, macroinvertebrates, salinity, water quality, sediment transport, wetland connectivity, riparian vegetation	Australian Museum Business Services. 2000. Final Report: Experimental Environmental Flow Strategy. Sydney Catchment Authority Contract 14849
	Hawkesbury-Nepean River	Dam re-operation	More natural & variable flow releases, higher flows & flood events	To increase habitat diversity	Planned/ Proposed	Habitat, macroinvertebrates, salinity, water quality, sediment transport, wetland connectivity, riparian vegetation	Australian Museum Business Services. 2000. Final Report: Experimental Environmental Flow Strategy. Sydney Catchment Authority Contract 14849
	Hunter River	Dam re-operation	High flow events, minimum seasonal flows	For basic river health, water quality & estuarine health	Implemented	Fish population, water quality, salinity	Chessman, B & H. Jones. 2001. Integrated monitoring of environmental flows:design report. New South Wales Dept. of Land & Water Conservation.
	King Parrot Creek	Reduction of Water usage	Maintain regimes, higher flows during irrigation season	To benefit ecological health of watershed & promote biodiversity	Implemented	Social research on attitudes	Finger, L & S Flett. 2004. Towards achieving environmental flows in unregulated catchments: research by the Dept. of Primary Industries" Targeted Water project in the Goulburn Broken Catchment. In: *River & Catchment Health: Presenting current research in the Goulburn Broken Catchment.* Goulburn Broken Catchment Management Authority.

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	RIVER	TYPE OF FLOW	RESTORED FLOW COMPONENTS	ECOLOGICAL PURPOSES	PROJECT STATUS	MONITORING INDICATORS	REFERENCE
New South Wales (cont)	Lachlan River	Dam re-operation	More natural flow regime; low flow protection	To benefit fish and bird breeding populations; to flush salinity & blue-green algae	Implemented	Fish & bird populations; water temperature & salinity; blue-green algae	Blanch, Stuart. 1999. Environmental Flows: present and future. Presented at the *Australian Natl. Committee on Large Dams* 1999 Conference. Internet: Inland Rivers Network: www.nccnsw.org.au
	Lower Balonne River	Dam re-operation & other	Mimic natural flow regime, medium, low & high flow events	To benefit downstream ecosystem, floodplains & Narran Lakes, Ramsar Lakes	Planned/ Proposed	Fishery, habitat, sediment, vegetation, wildlife, wetlands, birds	Lower Balbone Community Reference Group. 2003. Final Proposal. 03/09/003.
	Macquarie River	Dam re-operation	High flow events, minimum seasonal flows	For basic river health, & wetland health	Implemented	Fish population, water quality, biofilm, habitat, waterbirds	Chessman, B & H Jones. 2001. Integrated monitoring of environmental flows:design report. New South Wales Dept. of Land & Water Conservation.
	Mowamba River	Dam re-operation	Increased flows	To benefit the Snowy River ecosystem	Implemented	Water quality	Enders, G. 2004. A Snowy River Journey. *7th Intl.*River*Symposium..* Aug. 31- Sept 3, 2004. Brisbane, Australia. Pg. 34
	Murray River	Other	Experimental restoration of spring flood regimes	For wetland health & wildlife habitat; forestry	Implemented	River red gum trees; biofilm, macrophytes	Robertson, A I., Bacon, P & Heagney, G. 2001. The responses of floodplain primary production to flood frequency and timing. *Journal of Applied Ecology*: 38, 126-136.
	Murray River	Dam re-operation & Water usage reduction	Base flow established	For ecosystem restoration	Implemented	Not Indicated	Tarlock, A. Dan. Australia Moves Toward Basin-wide Environmental Flows. *Rivers*, 7(2) pages 138-140, 2000.
	Murrumbridgee River	Dam re-operation	Maintain/mimic natural flow variability; rise and fall of river; high flows restored; natural low flows	To improve wetlands; improve aquatic habitat	Implemented	9 frog species, aquatic vegetation (moria grass), long-necked tortoises, fish, 14 species of water birds	Blanch, S. 1999. Environmental flows: present & future. *Inland Rivers Network Media Release*, November 18: 9 pp. Internet: www.nccnsw.org.au
	Naomi River	Dam re-operation	High flow events, minimum seasonal flows	For basic river health, algal repression, & fish migration	Implemented	Fish population, algal blooms, biofilm	Chessman, B & H. Jones. 2001. Integrated monitoring of environmental flows:design report. New South Wales Dept. of Land & Water Conservation.
	Oaky Creek	Other	Mimic natural drying, maintain variability, reduce unnatural high flows	To protect the aquatic ecosystem	Implemented	Water quality	New South Wales EPA.2002. Hunter River Water Quality and River Flow Interim Environ-mental Objectives.

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	RIVER	TYPE OF FLOW	RESTORED FLOW COMPONENTS	ECOLOGICAL PURPOSES	PROJECT STATUS	MONITORING INDICATORS	REFERENCE
New South Wales (cont)	Parramatta River	Dam re-operation	Restore more natural flows	To protect the ecosystem	Planned/ Proposed	Water quality; aquatic plants & animals	EPA, New South Wales. 2000. Sydney Harour and Parramatta River. Internet: www.epa. nsw.gov.au
	Richmond River Catchment	Dam re-operation	More natural flow regime	To protect & enhance habitat	Planned/ Proposed	Eastern cod, sediment, habitat, native & introduced fish populations	Natural Heritage Trust. 2004. Eastern Cod Recovery Plan. *NSW Fisheries Threatened Species Recovery Planning Program.*
	Shoalhaven River	Dam re-operation	More natural environmental releases	To protect the ecosystem & water quality	Implemented	Fish, vegetation, water quality, invasive species of flora	Dept. of Infrastructure, Planning & Natural Resources. NSW, Australia. 2001. Meeting the Challenges-Securing Sydney's Water Future.
	Snowy River	Dam re-operation	Increased flow by 20%	To conserve river; native fish, waterbirds, platypus & frog species	Planned/ Proposed	Not indicated	Jones, Mathew. 2000. The Snowy flows again! *Habitat Australia*. Dec. 2000: Vol. 28 (6) p. 10.
	Snowy River	Dam re-operation & Other	6% increase in flows	To benefit fish, fish migration & habitat	Implemented	Fish populations, habitat	Bevitt, R & Gilligan, D. 2004. Fish community of the Snowy River below Jinabyne Dam; Species distribution, diversity & abundance. *7th Intl. RiverSymposium.* Aug. 31-Sept 1, 2004. Brisbane, Australia. Pg. 23.
	Upper Nepean River	Dam re-operation	More natural environmental releases	To protect the ecosystem & water quality	Implemented	Fish, vegetation, water quality, invasive species of flora	Dept. of Infrastructure, Planning & Natural Resources. NSW, Australia. 2001. Meeting the Challenges-Securing Sydney's Water Future.
	Woronora River	Dam re-operation	More natural environmental releases	To protect the ecosystem & water quality	Implemented	Fish, vegetation, water quality, invasive species of flora	Dept. of Infrastructure, Planning & Natural Resources. NSW, Australia. 2001. Meeting the Challenges-Securing Sydney's Water Future.
	Yea River	Reduction of Water usage	Maintain regimes, higher flows during irrigation season	To benefit ecological health of watershed & promote biodiversity	Implemented	Social research on attitudes	Finger, L & S Flett. 2004. Towards achieving environmental flows in unregulated catchments: research by the Dept. of Primary Industries" Targeted Water project in the Goulburn Broken Catchment. In: *River & Catchment Health: Presenting current research in the Goulburn Broken Catchment.* Goulburn Broken Catchment Management Authority.

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Northern Territory	Daly River	Reduction of water usage	Interannual variability & minimum flow during dry season (May-June)	To maintain ecological health of river system	Planned/ Proposed	Water quality, algae, salinity, land use, habitat, sediment, groundwater levels	Townsend, S. et al. 2003. Periphyton and Phytoplankton Response to Reduced Dry Season Flows in the Day River. *Final Milestone Report* for the National River Health Program, Environmental Flows Initiative.
	Douglas River	Reduction of water usage	Interannual variability & minimum flow during dry season (May-June)	To maintain ecological health of river system	Planned/ Proposed	Water quality, algae, salinity, land use, habitat, sediment, groundwater levels	Townsend, S. et al. 2003. Periphyton and Phytoplankton Response to Reduced Dry Season Flows in the Day River. *Final Milestone Report* for the National River Health Program, Environmental Flows Initiative.
	Flora River	Reduction of water usage	Interannual variability & minimum flow during dry season (May-June)	To maintain ecological health of river system	Planned/ Proposed	Water quality, algae, salinity, land use, habitat, sediment, groundwater levels	Townsend, S. et al. 2003. Periphyton and Phytoplankton Response to Reduced Dry Season Flows in the Day River. *Final Milestone Report* for the National River Health Program, Environmental Flows Initiative.
	Katherine River	Reduction of water usage	Interannual variability & minimum flow during dry season (May-June)	To maintain ecological health of river system	Planned/ Proposed	Water quality, algae, salinity, land use, habitat, sediment, groundwater levels	Townsend, S. et al. 2003. Periphyton and Phytoplankton Response to Reduced Dry Season Flows in the Day River. *Final Milestone Report* for the National River Health Program, Environmental Flows Initiative.
Queensland	Boyne River	Dam re-operation	High flows released	To benefit river ecosystem & estuary	Implemented	Fish & fish migration and breeding, marine inhabitants.	Queensland Government, Natural Resources & Mines Dept. 2004. Healthy flows for Boyne River. Press release: 30/07/2004.
	Brisbane River	Simulation	Assessment/recommendations for flow regime: Low flow characteristics; flow variability; medium-high flows; flood flows	To restore ecological health of the ecosystem	Planned/ Proposed	Riparian vegetation; biological community habitats; fish pops.; sediment; aquatic vegetation; invertebrates	Arthington, AH. 1998. Brisbane River trial of a flow restoration methodology. *Water for the Environment* (Arthington & Zalucki, Eds.) Forum Proceedings: Queensland, Australia. Pp 35-49
	Logan River	Dam re-operation	Mimic more natural flow regime (trial using BBM)	To restore health of the ecosystem	Implemented	Sedimentation;riparian vegetation; aquatic macrophytes; invertebrates; fish; water quality; overall condition of the river system.	AH Arthington. 1998. Logan River Trial of the Building Block Methodology. *Water for the Environment* (AH Arthington & JM Zalucki, Eds) Forum Proceedings: 4/98 Brisbane, QLD, Aus. Pp 21-33

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	RIVER	TYPE OF FLOW	RESTORED FLOW COMPONENTS	ECOLOGICAL PURPOSES	PROJECT STATUS	MONITORING INDICATORS	REFERENCE
Queensland (cont)	Murray/Darling	Dam re-op & Reduction of water usage	Base flow established	For ecosystem restoration	Implemented	Not Indicated	Tarlock, A. Dan. Australia Moves Toward Basin-wide Environmental Flows. *Rivers*, 7(2) pages 138-140, 2000.
	Queensland River Systems	Other	Mimic natural flow regime incl. variability, magnitude of events, frequency of events	Management MODEL for ecosystem health	Planned/ Proposed	Riverbed composition; sediment transport; riparian vegetation; benthic invertebrates; floodplain systems	Burgess, GK & MC Thoms. 1998. Environmental Flow Management in Queensland River Systems. *Water for the Environment* (Athington & Zalucki, Eds.) Forum proceedings: QLD, Au. Pp 11-20
Tasmania	Clyde River	Dam re-operation	Minimum summer flow	To protect aquatic species, wetlands & inflow to estuary	Implemented	Habitats, macroinvertebrates, brown trout	Davies, P. & R. Pinto. 2000. Clyde River Environmental Flows: IFIM Evaluation of Minimum Flows. Tasmania Dept of Primary Industries, Water & Environment.
	Emu River	Dam re-operation	Minimum summer flows	To protect river ecosystem	Planned/ Proposed	Habitats, macroinvertebrates, trout, platypus	Krasnicki, TJ. 2001. Environmental Water Requirements for the Emu River. Dept of Primary Industries, Water & Environment. Hobart Technical Report # WRA 01/2001.
	Great Forester River	Reduction of water usage	Minimum summer flows	To protect health of river system & estuary	Planned/ Proposed	Habitats, macroinvertebrates, fish, salinity, vegetation, crayfish, lamprey, brown trout, freshwater crayfish	McKenny, C. & M. Read. 1999. Ecological flow requirements for the Great Forester River. Tasmania Dept of Primary Industries Water & Environment. Report # WRA 99/15
	Little Forester River	Reduction of water usage	Minimum summer flows	To protect river system & aquatic wildlife & habitat	Planner/ Proposed	Habitats, giant crayfish, brown trout, lampreys, jollytail, fish	Nelson, M. 2000. The Environmental Water Requirements for the Little Forester River. Tasmania Dept of Primary Industries,Water & Environment. Report # WRA 00/10.
	Little Musselroe River	Dam re-operation	More natural summer low flows	To improve & protect ecosystem	Planned/ Proposed	Habitats, flora, birds, estuary, green & gold frogs, giant freshwater crayfish, Austr. grayling, dwarf galaxiid	Read, M & B Graham. 2000. Environmental Water Requirements for the Little Musselroe River. Tasmania, DPIWE. Report# WRA 00/14
	Little Swanport River	Dam re-operation	Summer & Winter flows, possible flushing flows	To protect the aquatic ecosystem	Planned/ Proposed	Vegetation, macroinvertebrates, brown trout, jollytail, shortfinned & longfinned eels, Australian grayling, swan galaxias	Pinto, R. 2001. Environmental Water Requirements for the Little Swanport River. Tasmania DPIWE. Report # WRA 01/08.
	Lower Derwent River	Dam re-operation	Minimum seasonal base flows, high maintenance flows, flushing flows	To protect river & estuary ecosystem	Planned/ Proposed	Habitats, invasives, estuary, fish, riparian vegetation, platypus, macroinvertebrates, sediment, water quality	Davies, P, D. Warfe, J Parslow, D. Telfer. 2002. Environmental Flows for the Lower Derwent River: Final Report to DPIWE.

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	RIVER	TYPE OF FLOW	RESTORED FLOW COMPONENTS	ECOLOGICAL PURPOSES	PROJECT STATUS	MONITORING INDICATORS	REFERENCE
Tasmania (cont)	North West Bay River	Dam re-operation	Increased summer flows (Dec-April)	To protect river ecosystem & estuary	Implemented	Habitats, brown trout, platypus, water quality, shortfinned eel, jollytail, macro-invertebrates	Krasnicki, TJ & B. Graham. 2001. Environmental Water Requirements for the North West Bay River. Dept of Primary Industries, Water & Environment, Hobart Technical Report No. WRA 01/03.
	Tomahawk River	Dam re-operation	Increased summer flows (Dec-April)	To protect river ecosystem & estuary	Implemented	Habitats, dwarf galaxiid, Australian grayling, giant freshwater crayfish, Green & Gold Frog	Krasnicki, T & B Graham. 2000. Environmental Water Requirements for the Tomahawk River. Report No: WRA 00/08.
Victoria	Campaspe River	Dam re-operation	Mimic natural flow regime	To restore the ecological health of the watershed	Planned/ Proposed	Adult fish, larval fish, habitat & macroinvertebrates	Humphries, P & R Cook. 2001. Making the most of a Drought: The Campaspe Flow Manipulation Project. Internet: enterprise.canberra.edu.au
	Cordeau River	Dam re-operation	Increased base flows in mid spring-mid summer	To benefit river ecosystem	Implemented	Habitat, macroinvertebrates, platypus, river fauna	Bacon, P, Berryman, T, Gippel, C. 2004. Impact of bulk water transfers on stream Habitat. *7th Intl. RiverSymposium.* Aug 31- Sept 3, 2004. Brisbane, Australia. Pg 21.
	Goulburn River	Dam re-operation	Spring high flows, increased flows.	To benefit ecological health of the watershed	Implemented	Floodplain inundation habitat	Cottingham, P. etal. 2004.Setting environmental flows recommendations for the Goulburn River. In *River & Catchment Health: Presenting current research in the Goulburn Broken Catchment.* Goulburn Broken Catchment Mgmt Authority.
	Kiewa River	Dam re-operation	Minimum flows for fall & summer; flushing flows	To protect river biota & environment	Planned/ Proposed	Fish, habitat, vegetation, sediment, water quality	Zampatti, BP & PG Close. 2000. An Assessment of Environmental Flow Requirements for the Kiewa River: A Component of the Kiewa River Streamflow Mgmt Plan. *Arthur Rylah Institute* for Goulburn-Marray Water.
	Macalister River	Dam re-operation	Flows ranging from cease flows to overbank flows (more natural regime)	To restore maximum ecological health of ecosystem	Planned/ Proposed	Fish, macroinvertebrates, salinity, vegetation, geomorphology	Thomson Macalister Environmental Flows Task Force. 2004. *Environmental Flow Options for the Thomson and MacalisterRivers: Summary of Technical Information.*
	Mitta Mitta River	Dam re-operation	Variable flow releases to mimic natural regime	To restore the ecosystem	Implemented	Macroinvertebrates, water quality	Sutherland, L, DS Ryder & RJ Watts. 2002. Ecological Assessment of Cyclic Release Patterns from Dartmouth Dam to the Mitta Mitta River, Victoria. Final Report to Murray-Darling Basin Commission.

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	RIVER	TYPE OF FLOW	RESTORED FLOW COMPONENTS	ECOLOGICAL PURPOSES	PROJECT STATUS	MONITORING INDICATORS	REFERENCE
Victoria (cont)	Running River	Dam re-operation	Minimum flows for fall & summer; flushing flows	To protect river biota & environment	Planned/ Proposed	Fish, habitat, vegetation, sediment, water quality	Zampatti, BP & PG Close. 2000. An Assessment of Environmental Flow Requirements for the Kiewa River: A Component of the Kiewa River Streamflow Mgmt Plan. *Arthur Rylah Institute* for Goulburn-Murray Water.
	Thomson River	Dam re-operation	Flows ranging from cease flows to overbank flows (more natural regime)	To restore maximum ecological health of ecosystem	Planned/ Proposed	Fish, macroinvertebrates, salinity, vegetation, geomorphology	Thomson Macalister Environmental Flows Task Force. 2004. *Environmental Flow Options for for the Thomson and Macalister Rivers: Summary of Technical Information.*
	Wimmera River	Dam re-operation & Reduction of water usage	Increased flows	To alleviate high salinity	Implemented	Salinity, water quality	Carter, R. 2004. Environmental Flows in the Wimmera Catchment, NW Victoria, Australia. *7th Intl.* River*Symposium,* August 31-Sept 3, 2004. Brisbane, Australia. Page 27
	Yackandandah River	Dam re-operation	Minimum flows for fall & summer; flushing flows	To protect river biota & environment	Planned/ Proposed	Fish, habitat, vegetation, sediment, water quality	Zampatti, BP & PG Close. 2000. An Assessment of Environmental Flow Requirements for the Kiewa River: A Component of the Kiewa River Streamflow Mgmt Plan. *Arthur Rylah Institute* for Goulburn-Murray Water.
W. Australia	Darling Scarp	Other	Increased flows	To benefit in-stream & riparian systems	Planned/ Proposed	Water quality, fish, invertebrates	Arthington, AH & BJ Pusey. 2003. Flow Restoration and Protection in Australian Rivers. *Riv Res. & Applica.* 19: 377-395.
	Ord River	Dam re-operation	Higher wet season flows, lower dry season flows	To benefit river ecosystem & wetlands	Implemented	Sedimentation, aquatic & riparian vegetation, invertebrates, fish populations, water birds, crocodiles, habitat, water quality	Ord River Scientific Panel. 2000. Recommendations for Estimation of Interim Ecological Water Requirements for the River Ord. Report to the Water & Rivers Commission.
Austria							
	Austrian Rivers	Dam Removal & Dam re-operation	Free flowing stretches & more natural regimes	To restore biodiversity & water quality, fisheries	Planned & Implemented	Fish populations & migration; vegetation; mammals; birds; water quality	Schreiber, H. 2001. Austria's Living Rivers Campaign. Presentation at the Summit on Environment & Sustainability Development in the Danube-Carpathian Region. Bucharest.
	Dyje/Thaya River	Dam re-operation	Increased minimum flows Nov-Aug	For ecological health of river system	Implemented	Fish, zoobenthos, habitat	Danube Watch. 2003. A new framework for future dam management. Internet: www.icpdr.org

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	RIVER	TYPE OF FLOW	RESTORED FLOW COMPONENTS	ECOLOGICAL PURPOSES	PROJECT STATUS	MONITORING INDICATORS	REFERENCE
Austria (cont)	Traisen River	Dam re-operation & Other	Increase in minimum flow	To improve aquatic ecosystem	Planned/ Proposed	Habitat, vegetation, nase, barbel, rheophilic cyprinids	Schmutz, S, A Melcher, G. Holzer & G. Hollerer. 1999. Arbeitspaket 19a Habitatmodellierung Lebensraumanspruche der Leitischarten Nase, Barbe, Huchen und Asche, Amt der NO Landesregierung, Bundeswassebauverwaltung, Traisenwasserverband, Wein.
Bangladesh							
	Gorai River	Other	Environmental flows	To protect the ecosystem	Planned/ Proposed	To be determined	Delft Cluster. 2001. ENFRAIM: Environmental Flow Requirements as an Aid for Integrated Management. Project Description.
	Kushiara River	Other	Environmental flows	To protect the ecosystem	Planned/ Proposed	To be determined	Delft Cluster. 2001. ENFRAIM: Environmental Flow Requirements as an Aid for Integrated Management. Project Description.
	Teesta River	Other	Environmental flows	To protect the ecosystem	Planned/ Proposed	To be determined	Delft Cluster. 2001. ENFRAIM: Environmental Flow Requirements as an Aid for Integrated Management. Project Description.
Botswana							
	Okavango River	Other	Improve ecological flows	For the river and Delta health	Planned/ Proposed	To be determined	Natural Heritage Institute. 2003. Okavango River Basin. Internet: www.n-i-h.org
Brazil							
	Bahia	Other	Minimum flow (20%) established	To protect aquatic ecosystem	Implemented	Not indicated	Benetti, AD, AE Lanna & MS Cobalchini. 2003. Current Practices for Establishing Environmental Flows in Brazil. *River Res. Applic.* 19: 1-18.
	Cuiaba River	Dam re-operation	Restoration of natural flow regime	To restore degraded ecosystem	Planned/ Proposed	Fisheries, birds, wildlife, & vegetation	The Nature Conservancy. 2004. Upper Paraguay River Basin, Brazil. Internet: nature.org
	Minas Gerais	Other	Minimum flow (30-50%) established	To protect aquatic ecosystem	Implemented	Not indicated	Benetti, AD, AE Lanna & MS Cobalchini. 2003. Current Practices for Establishing Environmental Flows in Brazil. *River Res. Applic.* 19: 1-18.

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	RIVER	TYPE OF FLOW	RESTORED FLOW COMPONENTS	ECOLOGICAL PURPOSES	PROJECT STATUS	MONITORING INDICATORS	REFERENCE
Brazil (cont)	Parana	Other	Minimum flow (50%) established	To protect aquatic ecosystem	Implemented	Not indicated	Benetti, AD, AE Lanna & MS Cobalchini. 2003. Current Practices for Establishing Environmental Flows in Brazil. *River Res. Applic.* 19: 1-18.
	Pernambuco	Other	Minimum flow established	To protect aquatic ecosystem	Implemented	Not indicated	Benetti, AD, AE Lanna & MS Cobalchini. 2003. Current Practices for Establishing Environmental Flows in Brazil. *Riv. Res. Applic.* 19: 1-18.
	Rio de Janeiro	Other	Minimum flow (30-50%) established	To protect aquatic ecosystem	Implemented	Not indicated	Benetti, AD, AE Lanna & MS Cobalchini. 2003. Current Practices for Establishing Environmental Flows in Brazil. *River Res. Applic.* 19: 1-18.
	Sao Paulo	Other	Minimum flow (20%) established	To protect aquatic ecosystem	Implemented	Not indicated	Benetti, AD, AE Lanna & MS Cobalchini. 2003. Current Practices for Establishing Environmental Flows in Brazil. *River Res. Applic.* 19: 1-18.
Cameroon							
	Logone River	Dam re-operation	Flood flows	To improve floodplain ecosystem and to restore biodiversity	Implemented	Annual & perennial grasses; fish populations; vegetation	Acreman, MC et al. 2000. Managed flood releases from reservoir: issues & guidance. *Report to DFID & the World commission on Dams*. Centre for Ecology & Hydrology, Wallingford, UK
	Logone River	Dam re-operation	Increased flows	To restore river floodplain	Implemented	Not specified	Rijsberman F.R. & D. Molden. 2001. Balancing Water Uses:Water for Food and Water for Nature. Intl. *Conference on Freshwater*. Bonn, 2001. Internet: http: //freshwater.unep.net
Canada							
Alberta	Athabasca River	Dam re-operation	Improved winter flows	For ecosystem health	Planned/ Proposed	Fish habitat, ice-cover, biological survey	Katopodis, C. 2003. 2-D ice-free and ice-covered hydrodynamic modeling of riverine habitat in the Canadian Prairies. *International ifim User's Workshop*. June 1-3, 2003. Colorado State University.
	Battle River	Other	Increased flows	To benefit ecosystem	Planned/ Proposed	Water quality, riparian health, fisheries	Alberta Environment. 2004. Battle River Watershed Management Planning Process, Phase 1: Terms of Reference. May 27, 2004.

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	RIVER	TYPE OF FLOW	RESTORED FLOW COMPONENTS	ECOLOGICAL PURPOSES	PROJECT STATUS	MONITORING INDICATORS	REFERENCE
Alberta (cont)	Battle River	Dam re-operation	Environmentally friendly flows and rates of flows	To benefit ecosystem	Planned/ Proposed	Water quality, riparian health, fisheries, groundwater, climate change, wildlife, channel morphology	Alberta Environment. 2004. Battle River Watershed Management Planning Process, Phase 1: Terms of Reference. May 27, 2004.
	Belly River	Dam re-operation	Mimic natural flow regime	To benefit ecosystem	Planned/ Proposed	Fish habitat, water quality, riparian vegetation, channel maintenance, sport fish	Alberta Environment. 2003. So. Saskatchewan River Bain Instream Flow Needs Determination.
	Bow River	Dam re-operation	Environmental flows, flood peaks & timing	To benefit aquatic ecosystem	Planned/ Proposed	Riparian vegetation, invasives, land use, water quality, cottonwoods	Alberta Riparian Habitat Management Program-Cows & Fish. 2004. South Saskatchewan River Basin Riparian Health Overview: Part 1-Red Deer, Bow, & South Saskatchewan Rivers. For Alberta Environment.
	Highwood River	Reduction of water usage	Increased flows, particularly during summer low flow periods	To benefit fish populations and water quality	Implemented	Water quality & fish populations	Government of Alberta News Release. June 29, 2000. Little Bow Project officially underway. Internet: www.gov.ab.ca
	Highwood River	Dam re-operation	More natural, variable flows	To benefit ecosystem	Implemented	Water quality, fish habitat, vegetation, fish populations	Clipperton, G.K., CW Koning, A. Locke, JM Mahoney & B Quazi. 2003. Instream Flow Needs Determinations for the South Saskatchewan River Basin, Alberta, Canada. Internet: Alberta Environment web site
	Kananaska River	Dam re-operation	Reduced peaking, & mimic natural flow regime	To benefit habitat for fish, & water quality	Planned Proposed	Water quality, fish populations	Instream Flow Council. 2002. Instream Flows for Riverine Resource Stewardship. Pg. 94
	Northern Rivers	Dam re-operation	Environmental flows	To protect the aquatic ecosystem	Planned/ Proposed	Water quality, sediment, fish, habitat, vegetation, morphology,	Alberta Environment. 2002. Northern Rivers Basins Study: Final Report. Internet: www.3.gov.ab.ca.
	Oldman River	Dam re-operation	Mimic natural flow regime	To benefit ecosystem	Planned/ Proposed	Fish habitat, water quality, riparian vegetation, channel maintenance, sport fish	Alberta Environment. 2003. So. Saskatchewan River Bain Instream Flow Needs Determination.
	Oldman River and Tributaries	Dam re-operation	Increase summer flows; reduce rates of post flood stage decline; mimic natural flows in wet years	To restore riparian vegetation (cottonwoods) and cold -water (trout) fisheries	Implemented	Field surveys of cottonwood seedlings	Rood SB, Mahoney JM, Reid DE, Zilm L. 1995. Instream flows and the decline of riparian cottonwoods along the St. Mary River, Alberta. *Canadian Journal of Botany* 73: 1250-1260.
	Peace River	Dam re-operation	Natural flow regime, flood flows	To protect the natural ecosystem & delta	Planned/ Proposed	Water quality, sediment transport, habitat, ice regime, fish, fish contamination, vegetation, invertebrates	Alberta Environment. 2002. Northern River Basins Study: Final Report. Internet: www.3.gov.ab.ca/env/water/nrbs/misc/Key_Findings

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	RIVER	TYPE OF FLOW	RESTORED FLOW COMPONENTS	ECOLOGICAL PURPOSES	PROJECT STATUS	MONITORING INDICATORS	REFERENCE
Alberta (cont)	Red Dear River	Dam re-operation	Increased winter flows, increased high/flood flows	To restore & maintain ecosystem	Planned/ Proposed	Water quality, fish habitat, riparian vegetation, channel morphology, cottonwoods	Clipperton, G.K., CW Koning, A. Locke, JM Mahoney & B Quazi. 2003. Instream Flow Needs Determinations for the South Saskatchewan River Basin, Alberta, Canada. Internet: Alberta Environment web site
	Slave River	Dam re-operation	Improved winter flow regime	To benefit aquatic ecosystem & delta	Planned/ Proposed	Ice-jam flooding, sediment regime, vegetation, habitat	Prowse, TD & M Cody. 2002. Impacts of Flow Regime on the Aquatic Ecosystem of the Peace and Slave Rivers. In *Northern River Basins Study Final Report.* For Alberta Environment.
	St. Mary River	Dam re-operation	Gradual flow recession post flood, mimic more natural flow	For riparian restoration	Implemented	Cottonwood seedlings	Rood, SB & Mahoney, JM. 2000. Revised Instream Flow Regulation Enables Cottonwood Recruitment Along the St. Mary River, Alberta, Canada. *Regulated Rivers*: 7(2) 109-125.
	St. Mary River	Dam re-operation	Increased minimum flows and more gradual flow reductions after high flow period in late spring	For Cottonwood recruitment	Implemented	field observation of cottonwood seedlings, saplings and healthy adult trees	Rood SB, Mahoney JM, Reid DE, Zilm L. 1995. Instream flows and the decline of riparian cottonwoods along the St. Mary River, Alberta. *Canadian J. of Botany* 73: 1250-1260.
	St. Mary River	Dam re-operation	Mimic natural flow regime	To benefit ecosystem	Planned/ Proposed	Fish habitat, water quality, riparian vegetation, channel maintenance, sport fish	Alberta Environment. 2003. So. Saskatchewan River Bain Instream Flow Needs Determination.
	So. Saskatchewan River	Dam re-operation	Environmental flows, flood peaks & timing	To benefit aquatic ecosystem	Planned/ Proposed	Riparian vegetation, invasives, land use, water quality, cottonwoods	Alberta Riparian Habitat Management Program-Cows & Fish. 2004. South Saskatchewan River Basin Riparian Health Overview: Part 1-Red Deer, Bow, & South Saskatchewan Rivers. For Alberta Environment.
	Waterson River	Dam re-operation	Increased summer flows flows	For ecosystem health	Planned/ Proposed	Water quality, fish habitat, riparian vegetation, channel morphology	Clipperton, G.K., CW Koning, A. Locke, JM Mahoney & B Quazi. 2003. Instream Flow Needs Determinations for the South Saskatchewan River Basin, Alberta, Canada. Internet: Alberta Environment web site
	Waterton River	Dam re-operation	Mimic natural flow regime	To benefit ecosystem	Planned/ Proposed	Fish habitat, water quality, riparian vegetation, channel maintenance, sport fish	Alberta Environment. 2003. So. Saskatchewan River Bain Instream Flow Needs Determination.

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British Columbia	Alouette River	Dam re-operation	Minimum flow increased	To reintroduce pink & chum salmon	Implemented	Salmon population	Glavin, Terry. 2002. B.C. Water: Missing and Presumed Drained. *The Georgia Strait*, Vol. 36, No. 1820, Aug 29-Sept 5, 2002 pp 21-26.
	Ash River	Dam re-operation	Higher flows during late summer & cooler water temperature	To benefit fish population	Planned/ Proposed	Coho & chum salmon; steelhead, rainbow & cutthroat trout; water temp	River Recovery. 2001. List of Candidate Dams: Removal of Decommissioning Strategies. Internet: www.recovery.bcit.ca
	Big Falls River	Dam re-operation	Improved flows	To benefit fish & fish habitat; water quality; wildlife	Planned/ Proposed	To be announced	BC Hydro. 2002. BC Hydro starts water use planning process for Falls River facility. *News Release*, Sept. 23, 2002. Internet: www.eww.bchydro. bc.ca
	Boulder Creek	Dam re-operation	Minimum year-round flows	For fish passage	Planned/ Proposed	Fish migration	BC Hydro. 2003. Consultative Committee Report - Wahleach Water Use Plan.
	Bridge River	Dam re-operation	Improved flows to be determined	To benefit fish & wildlife habitat	Planned/ Proposed	Bull, kokanee, & rainbow trout; aquatic habitat; water temp & turbidity; Harlequin ducks	BC Hydro. 2002. Water Use Planning: Bridge River - Recent Progress. Internet: www.eww.bchydro.bc.ca
	Bridge River	Dam re-operation	Rewatering of section of river previously de-watered	To benefit fisheries	Implemented	Habitat for chinook, coho, sockeye & steelhead.	Fisheries and Oceans Canada. 2002. Annual Report 2001-2002.
	Bull River	Dam re-operation	Increased winter flows, improved ramping rates	To benefit fish & habitat, wildlife	Planned/ Proposed	Habitat, fishery, gravel recruitment	BC Hydro. 2003. Consultative Committee Report - Aberfeldie Water Use Plan.
	Campbell River	Dam re-operation	Interim Flow Agreement in operation with improvements in seasonal flow being considered	To maximize abundance & diversity of indigenous & wild fish populations & habitat	Implemented	Spawning habitat; fish stranding & productivity; habitat use	BC Hydro. 2002. Campbell River Water Use Plan Update. March 2002, Vol 2. Internet: www.eww.bchydro. bc.ca
	Cheakamus River	Dam re-operation	Transition flows provided between seasonally varying flow regimes; minimum flows established	To benefit wild fish populations; to benefit integrity of the aquatic & riparian ecosystem	Planned/ Proposed	Salmon; resident trout; benthotic community; channel morphology; groundwater levels	Marmorek, D.R. &I. Parnell. 2002. Cheakamus River Water Use Plan: Report of the Consultative Committee, Executive Summary. May 24, 2002.
	Clayton Falls Creek	Dam re-operation	Minimum year-round flows, improved drawdown schedule	To benefit fish & habitat	Planned/ Proposed	Fish abundance & diversity, stranding, habitat	BC Hydro. 2003. Consultative Committee Report - Clayton Falls Water Use Plan.
	Clowhom River	Dam re-operation	Reservoir levels modified, timing of drawdowns improved	To benefit ecosystem	Planned/ Proposed	Upstream wetlands, fish, wildlife, habitat	BC Hydro. 2004. Consultative Committee Report - Clowhorn Water Use Plan.

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	RIVER	TYPE OF FLOW	RESTORED FLOW COMPONENTS	ECOLOGICAL PURPOSES	PROJECT STATUS	MONITORING INDICATORS	REFERENCE
British Columbia (cont)	Coquitlam River	Dam re-operation	Increased flows	To benefit fish populations	Implemented	Sedimentation, coho & chum salmon, cutthroat & steelhead trout, Dolly Varden char	Stott,R. & Smith, L. 2001. River Recovery: restoring rivers & streams through dam decommissioning & modification. BC Outdoor Recr. Council, Project Final Report.
	Cranberry Creek	Dam re-operation	Minimum flows, year round	To maximize fish habitat	Planned/ Proposed	Fish (rainbow & kokanee trout), habitat, riparian zone, wildlife	BC Hyrdo. 2004. Walter Hardman Water Use Plan. BC Hydro Project Team & the Walter Hardman Water Use Plan Consultation Committee Report.
	Cranberry Creek	Dam Removal	Restoration of Coursier Lake natural levels & downstream	To improve fisheries	Implemented	Fisheries	Vancouver Sun. 2003. Hydro Pulls Plug on Troubled Dam.)1/12/2003.
	Elk River	Dam re-operation	Minimum winter flow, modified ramp down rate,	To benefit fish & fish habitat	Planned/ Proposed	Fish mortality, stranding, & spawning, habitat, wildlife, aquifier recharge	BC Hydro. 2003. Consultative Committee Report - Elko Water Use Plan.
	Falls River	Dam re-operation	Seasonally varied minimum flows, modified ramping rates, change in timing of drawdowns	To benefit ecosystem	Planned/ Proposed	Steelhead & Salmon spawning, wildlife, tributary back-watering, sediment, water quality, habitats, riparian vegetation	BC Hydro. 2003. Consultative Committee Report - Falls River Water Use Plan.
	Findlay Creek	Dam re-operation	Increased flows	To benefit migrating fish (trout)	Planned/ Proposed	Rainbow trout	Stott,R. & Smith, L. 2001. River Recovery: restoring rivers & streams through dam decommissioning & modification. BC Outdoor Recr. Council, Project Final Report.
	Fraser River	Dam re-operation	Fish flows	To benefit Interior Coho Salmon population	Planned/ Proposed	Coho salmon, habitat, sediment, water quality, land use, groundwater, vegetation	Interior Fraser Coho Recovery Team. 2004. National Recovery strategy for coho salmon in the Interior Fraser River watershed, British Columbia, 124 pp.
	Jones Creek	Dam re-operation	Improved flows to be determined	To improve fisheries and improve wildlife habitat	Planned/ Proposed	Quality & stability of fish habitat; pink & chum salmon spawning & fry emergence; fry stranding	BC Hydro. 2002. Water Use Planning: Wahleach - Recent Progress. Internet: www.eww.bchydro.bc.ca
	Jordan River	Dam re-operation	Year round minimum flows established	To benefit fisheries & optimize riparian habitat for wildlife	Implemented	Rainbow trout; coho, pink, chum & steelhead populations & habitat	BC Hydro. 2002. Consultative Committee Report: Jordan River Water Use Plan. Feb., 2002. Internet: www.eww.bchydro.bc.ca

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British Columbia (cont)	Okanagan River	Dam re-operation	Increased flows during spawning & migration seasons	To benefit fish populations	Planned/ Proposed	Kokanee & Sockeye Salmon; water temperature; aquatic habitat; baseline inventory of habitat & species	Stott,R. & Smith, L. 2001. River Recovery: restoring rivers & streams through dam de-commissioning & modification. BC Outdoor Recr. Council, *Project Final Report.*
	Peace River	Dam re-operation	Increased flows	To raise lake levels & replenish water levels in the delta	Implemented	Water quality, sediment transport, habitat, ice regime	Alberta Environment. 2002. Northern River Basins Study: Final Report. Internet: www.3.gov.ab.ca
	Peace River	Dam re-operation	Natural flow regime, flood flows	To protect the natural ecosystem & delta	Planned/ Proposed	Water quality, sediment transport, habitat, ice regime, fish, fish contamin-ation, vegetation, invertebrates	Alberta Environment. 2002. Northern River Basins Study: Final Report. Internet: www3.gov.ab.ca
	Puntledge River	Dam re-operation	Varied minimum flows, pulse flows, modified ramping rates	To benefit fish populations	Planned/ Proposed	Chinook & steelhead, wildlife, water quality, habitat, fish stranding	BC Hydro. 2003. Consultative Committee Report: Puntledge River Water Use Plan.
	Sakinaw Lake Creek	Dam re-operation	Increased fish migration flows	To benefit Sakinaw sockeye salmon	Implemented & Proposed	Sakinaw sockeye salmon, habitat, sediment, water temp & water quality	Sakinaw Sockeye Recovery Team. 2004. National Recovery Strategy for Sockeye Salmon Sakinaw Lake Population, in British Columbia. Natl. Recovery Strategy No. XXX Recovery of Nationally Endangered Wildlife.
	South Allouette River	Dam re-operation	Flushing flows; higher base flows year round	For the biological health of the river	Implemented	Fish & riparian wildlife; quantity & quality of aquatic habitat	BC Hydro. The Alouette Stakesholder Com-mittee: Process, Analysis & Recommendations. Internet: www.eww.bchydro.bc.ca
	Spillimacheen River	Dam re-operation	Minimum flows, reduced ramping rates, reduced fluctuations	To benefit fish & fish habitat	Planned/ Proposed	Fish, habitat, sediment, icing over in winter	BC Hydro. 2003. Spillimacheen Water Use Plan. BC Hydro Project Team & the Spillimacheen Water Use Plan Committee Report.
	Stave River	Dam re-operation	Year round minimum flows established; flooding flows; reduced fluctuations in both magnitude & frequency	To support viability of fish populations; spawning & rearing habitat; reduce egg stranding	Implemented	Fry & adult population; egg stranding; water quality; salmon, cutthroat	BC Hydro. 1999. Stave River Water Use Plan - Report of the Consultative Committee. Oct, 1999. Internet: www.eww.bchydro.bc.ca
	Theodosia River	Dam re-operation	Increasing flows until full restoration of natural flow (over 5 year period)	To restore the natural ecosystem	Implemented	Fish population (including pink, chum & coho salmon) and other baseline studies	Stott,R. & Smith, L. 2001. River Recovery: restoring rivers & streams through dam decommissioning & modification. BC Outdoor Recr. Council, *Project Final Report*.

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	RIVER	TYPE OF FLOW	RESTORED FLOW COMPONENTS	ECOLOGICAL PURPOSES	PROJECT STATUS	MONITORING INDICATORS	REFERENCE
British Columbia (cont)	Theodosia River	Dam Removal	Restoration of natural flow	To benefit the ecosystem	Implemented	Salmon, habitat	Ministry of Environment, Land & Parks. 2002. New Release. February 28, 2000.
Manitoba	Assiniboine River	Dam re-operation	Environmental flows	To protect fish, habitat & ecosystem health	Planned/ Proposed	Fish populations, water quality, biological data	Manitoba Water Stewardship. 2005. Annual Report 2003-2004.
	Dauphin River	Dam re-operation	Improved flow regime	To benefit Lake Manitoba	Planned/ Proposed	Not indicated	Manitoba Water Stewardship. 2005. Annual Report 2003-2004.
	Fairford River	Dam re-operation	Improved flow regime	To benefit Lake Manitoba	Planned/ Proposed	Not Indicated	Manitoba Water Stewardship. 2005. Annual Report 2003-2004.
New Brunswick	Petitcodiac River	Dam re-operation	Experimental flow regime	To benefit estuary inflow & outflow	Implemented	Sediment flushing, water quality	Environment Canada. 2000. Canada Water Act Annual Report 1999-2000. Internet.
Newfoundland	Pamehac Brook	Dam Removal	Restored flow	For rearing and spawning habitat for brook trout and Atlantic Salmon	Implemented	Juvenile trout and salmon	Scruton, DA, TC Anderson, & LW King 1998. Pamehac Brook: A case study of the restor-ation of a N, Can., river impacted by flow diversion for pulpwood transport. *Aq. Cons.*: Mar. Freshw. Ecosyst. 8: 145-157.
	West Salmon River	Dam re-operation	Experimental peaking flows; summer & fall, day/night variability	Simulation to benefit fish populations	Implemented	Atlantic salmon & brook trout habitat & movement	Scruton, D.A., et al. 2003. The behavioral response of juvenile Atlantic salmon (Salmo salar) and brook trout (Salvelinus fontinalis) to experimental hydropeaking on a New-foundland (Canada) river. *Riv Res and Applic.* (19) 5-6: 577-587.
Ontario	Batteaux River	Other	Improved flows	To restore channel function, provide flood flow capacity, water quality, and improve habitat for cold water species such as trout and salmon	Planned/ Proposed	Not indicated	Nottawasaga Valley Conservation Authority. Watershed Health Report. Internet: http://www.nvca.on.ca/ monitoring/watershed_report/index.htm.
	Canagagigue Creek	Dam re-operation	Low flow compensations	To maintain water quality	Implemented	Water quality	Grand River Conservation Authority. 2005. Low Water Response - Flow Augmentation.
	Grand River	Dam re-operation	Low flow compensations	To maintain water quality	Implemented	Water quality	Grand River Conservation Authority. 2005. Low Water Response - Flow Augmentation.

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	RIVER	TYPE OF FLOW	RESTORED FLOW COMPONENTS	ECOLOGICAL PURPOSES	PROJECT STATUS	MONITORING INDICATORS	REFERENCE
Ontario (cont)	Lower Conestogo River	Dam re-operation	Low flow compensations	To maintain water quality	Implemented	Water quality	Grand River Conservation Authority. 2005. Low Water Response - Flow Augmentation.
	Lower Speed River	Dam re-operation	Low flow compensations	To maintain water quality	Implemented	Water quality	Grand River Conservation Authority. 2005. Low Water Response - Flow Augmentation.
	Mad River Sub-Watershed	Dam re-operation	Optimized management of Glen Huron Dam to moderate alterations to flow regime	To restore riparian habitat	Planned/ Proposed	Comprehensive monitoring by Watershed Authority	Nottawasaga Valley Conservation Authority. Watershed Health Report. Internet: www.nvca. on.ca/monitoring/watershed_report/ index.htm
	Madawaska River	Dam re-operation	Minimum flows, reduction of peaking, controlled freshets	To benefit the aquatic ecosystem & biodiversity	Implemented	Fish populations incl. walleye & pike, wetland habitat, water fowl	Ontario Ministry of Natural Resources. 2000. Madawaska River Water Management Review. *Water Management Plan.*
	Magpie River	Dam re-operation	Minimum & reduced peakinglimitations established	For aquatic habitat protection	Implemented	Walleye, brook trout	D.A. House. 2001. Waterpower Project-*Watershed* Science Information Report. *Watershed Science Centre Report: WSC.01.04.* Ontario Ministry of Natural Resources.
	Middle Nottawsage River	Other	Improve water current allocation	To restore impaired habitats (for migratory trout and salmon species) and water quality	Planned/ Proposed	Comprehensive monitoring by Watershed Authority	Nottawasaga Valley Conservation Authority. Watershed Health Report. Internet: http://www.nvca. on.ca/ monitoring/watershed_report/ index.htm.
	Nipigon River	Dam re-operation	Increased minimum flows, reduced fluctuations, more natural river flows	To benefit ecosystem	Implemented	Fish & wildlife, walleye, perch, brook trout, water quality, habitat, wetlands	Environment Canada. 2003. Canada's RAP Progress Report 2003: Nipigon Bay.
	Thompson River	Dam re-operation	Minimum flows established	To maintain instream habitat	Implemented	Macroinvertebrate habitat	D.A. House. 2001. Waterpower Project-*Watershed* Science Information Report. *Watershed Science Centre Report: WSC.01.04.* Ontario Ministry of Natural Resources.
	Winnipeg River	Dam re-operation	More natural flow regime, reduced/no peaking, stable flows	To benefit aquatic species	Implemented	Spawning whitefish & walleye	Lake of the Woods Control Board. 2004. Regulations. Internet: www.lwcb.ca/ regulation/
Quebec	Rupert River	Other	Reduced flows	To maintain lake levels & to maintain the upstream wetlands	Implemented	Environmental studies including sediment, fish habitat & populations, vegetation	Hydro Quebec. 2003. Remedial Facilities for a Reduced Flow. *Boumhounan News-letter*, Bulletin 3, April 2003.

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China						
Suzhou Creek	Dam re-operation	Low flow augmentation & flushing flows	To improve water quality & the environment	Implemented	Water quality	Delft Hydraulics. 2003. Water Quality Management Planning for Suzhou Creek Rehabilitation Project Shanghai, PR of China.
Yangtze River	Other	Reduced flood flows	To benefit ecosystem & coastal system	Implemented	Water quality, & other parameters	Nakamura, T. (no date) Integrated River Basin Management- Ecosystem Function-Based Approach and Application. United Nations Environment Programme (UNEP). Internet: www.unep.org
Yellow River	Dam re-operation	Flushing flows	Experimental flows for sediment transport	Implemented	Sediment composition & transport	Yellow River Conservancy Commission. 2004. Artificial density flow-the new achievements of the sediment transportation experiment on the Yellow River. Internet: www.yellowriver. gov.cn/eng.
Denmark						
River Skjern	Other	Natural flow restored, re-watered sections, bank overflows	To benefit wetlands, and watershed ecosystem	Implemented	Sediment, water quality, habitat, aquatic systems	The River Restoration Centre. River Skjern, Denmark. Internet: www.therrc.co.uk
Finland						
Headwater streams	Dam re-operation	Decreased flow	To increase moss cover and invertebrate abundance	Implemented	Moss & invertebrates	Laasonen, P, Muotka, T & Kivijorvi, I. 1998. Recovery of macroinvertebrate communities from stream habitat restoration. *Aquatic Conservation*: Marine & Freshwater Ecosystems 8: 101-113
Kymijoki River	Dam re-operation	Optimal flow instated	To allow for fish passage	Implemented	Fish populations	Laasonen, J. 1994. Designing hydraulic structures using a 2-dimentional numerical model. *Vestialous*. Vol. 5, 29-31.
Oulujoki River	Dam re-operation	Reduction of peaking flows	To benefit fish & fish	Planned/ Proposed	Habitat, fish, simulated flows, roach, pikeperch	COST. 2004. Current Projects. Internet: www.eamn

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France						
Adour River	Reduction of water usage	Minimum ecological flow during dry season	To benefit ecosystem	Planned/ Proposed	Not indicated	Thoyer, S. 2003. How to reallocate water rights when environmental goals conflict with existing entitlements. Presentation: *14th International Farm Management Congress IFMA,* Perth.
Allier River	Dam Removal	Free flow	To benefit Atlantic Salmon	Implemented	Atlantic salmon (last wild European stock); sediment; water quality	RiverNet. Loire Dams dismantled for Salmon. Internet: www.rivernet.org by the European Rivers Network
Durance River	Dam re-operation	Environmental flows	To benefit aquatic life	Planned/ Proposed	Habitat, sofie, nase, barbel, morphology, cyprinids	Le Coarer, Y. G Carrel, & B Dumont. 2000. Moyenne Durance. Situ du Largue. Aspects morphodynamiques, thermiques et piscioles, Cemagref, UR Hydrobiologie, Aix-en-Provence, 60 pp.
Leguer River	Dam Removal	Free Flow	To benefit migratory fish & prevent flooding	Implemented	Atlantic salmon, water quality, sediment	RiverNet. 2004. Dam Decommissioning in France. Internet: www.rivernet.org
Loire River	Dam Removal (2)	Free Flow	To benefit migratory fish & prevent flooding	Implemented	Atlantic salmon, water quality sediment	RiverNet. 2004. Dam Decommissioning in France. Internet: www.rivernet.org
Nestle d'Oueil River	Dam re-operation	Improved summer low flows	To benefit fisheries	Planned/ Proposed	Trout, habitat	Grouraud, V., C. Sabaton, & H. Capra. 2003. Presentation at the *International IFIM User's Workshop.* June1-3, 2003. Colorado State Univ
Rhone River	Dam re-operation & other	Increased minimum flows	To benefit river ecosystem	Implemented	Rheophilic communities, water quality, habitat, fisheries	Souchen, Y. 2004. The Rhone River: Hydro-morphological & Ecological Rehabilitation of a Heavily Man-Used Hydrosystem. *Assessment & Provision of Environmental Flows in Med-iteranean Watercourses.* IUCN.
Roizonne River	Dam re-operation	Increased minimum flows	To benefit ecosystem	Implemented	Trout population & habitat	Capra, H, C Sabaton, V Gouraud, Y Souchon & P Lim. 2003. A population dynamics model & habitat simulation as a tool to predict brown trout demography in natural and bypassed stream reaches. *Riv Res Applic.* 19:551- 568.
Vienne River	Dam Removal	Free flow	For Atlantic salmon migration	Implemented	Atlantic salmon, eel, shad	RiverNet. Loire Dams dismantled for Salmon. Internet: www.rivernet.org

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Germany						
River Brenno	Dam re-operation	To be determined	To provide ecological sustainability	Planned/ Proposed	Benthic habitat, fish	Norwegian University of Science & Technology. 2003. OKOSTROM. Internet: www.bygg.ntnu.no /~borsanyi/eamn-web/surr_ projects.htm
River Eschach	Dam re-operation	Environmental flows	To benefit the ecosystem	Planned/ Proposed	Habitat, water temperature, macro-invertebrates	"Reginale Mindestwasserstudie fur die Obere Eschach" Technischer Bericht TB 03/02, Universitat Stuttgart, Institut fur Wasserbau. Unpublished report in German.
River Inn	Dam re-operation	Environmental flows to be determined	To provide ecological sustainability	Planned/ Proposed	Salmonids, macroinvertebrates	Norwegian University of Science & Technology. 2003. Environmental Impact Assessment including Instream Flow Investigations for 2 Hydropower Plants in the Rivers Inn & Lenne. Internet: www.bygg.ntnu.no
River Lenne	Dam re-operation	Environmental flows to be determined	To provide ecological sustainability	Planned/ Proposed	Salmonids, macroinvertebrates	Norwegian University of Science & Technology. 2003. Environmental Impact Assessment including Instream Flow Investigations for 2 Hydropower Plants in the Rivers Inn & Lenne. Internet: www.bygg.ntnu.no
Hungary						
Danube River	Dam re-operation	Timing & duration of flood flows	To benefit forest floodplain	Planned/ Proposed	Forest regeneration & growth	Hughes, FMR & SB Rood. 2003. Allocation of River Flows for Restoration of Floodplain Forest Ecosystems: A Review of Approaches and their Applicability in Europe. *Environ. Mgmt.* Vol 32, No. 1:12-33.
India						
River Ganga	Other	Increased flows post rainy season	To improve water quality, habitat diversity & vegetation, and aquatic population	Planned/ Proposed	Not specified	Gopal B. 2003. State of Degradation and Approaches to Restoration of Floodplain Rivers in India. *Large Rivers Symposium.* Phnom Penh, Cambodia. Internet: www. lars2.org/unedited_papers/unedited_ paper/Gobal.pdf
Salandi River	Reduction of water usage & dam re-operation	Increased flows	To benefit whole ecosystem and improve flood flow capacity	Planned/ Proposed	Fish populations (carp, cat fish, H.Ilisha) sedimentation, water quality, ground water levels, flora & fauna, salinity	Prasad Das, B. 2002. Environmental flow & river protection for Salandi, Orissa, India. *RiverFestival Symposium,* 2002.

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RIVER	TYPE OF FLOW	RESTORED FLOW COMPONENTS	ECOLOGICAL PURPOSES	PROJECT STATUS	MONITORING INDICATORS	REFERENCE
Iraq						
Euphrates River	Dam removal	Restore natural flow	To restore marshland ecosystem	Planned/ Proposed	Fisheries, birds, aquatic vegetation, water buffalo	River Revival. 2003. Attempt to restore the Tigris-Euphrates marshes. *River Revival Bulletin* No. 48, May 27, 2003.
Euphrates River	Dam removal	Restored flows	To restore the marshland	Implemented	Fisheries, water quality, wildlife, vegetation, salinity, soil	Rincon, P. 2005. Promising signs for Iraq marshes. *BBC News.* 02/21/2005. Internet: http://newsvote.bbc.co.uk
Tigris River	Dam removal	Restore natural flow	To restore marshland ecosystem	Planned/ Proposed	Fisheries, birds, aquatic vegetation, water buffalo	River Revival. 2003. Attempt to restore the Tigris-Euphrates marshes. *River Revival Bulletin* No. 48, May 27, 2003.
Italy						
Valtellina River Basin	Dam re-operation	Improved environmental flows (experimental & provisional)	For improvements to the environment	Implemented	Not specified	Maran, S. (not dated) Environmental Flows and Integrated Water Resource Management: the Volmano River case study. In *Resource Kit,*World Conservation Union.
Vomano River Basin	Dam re-operation	Improved environmental flows	For improvements to the environment	Planned/ Proposed	Microhabitat, fish distribution, water quality, aquatic fauna, habitat, cyprinids, salmonids	Maran, S. (not dated) Environmental Flows and Integrated Water Resource Management: the Volmano River case study. In *Resource Kit,*World Conservation Union.
Japan						
Kumagawa River	Dam Removal	Free Flow	To benefit the aquatic ecosystem	Planned/ Proposed	Smelt	Frederick, J. 2002. Japan's pork-barrel building projects have earned is a reputation as the Construction State. Now one of them is coming down.*TIME Asia Magazina.*12/23/02.
Nagara River	Dam Removal	Free Flow	To benefit river ecosystem	Planned/ proposed	Sediment; salinity; water quality of estuary; fish migration	Zinke. 2003. Case Study: The Nagara River. Internet: www..zinke.at/Nagara.htm
Kazakhstan						
Amudarya River	Water Usage reduction	Increased flows	To benefit the Aral Sea	Planned/ Proposed	Salinity, water quality, fisheries, wetlands	Hirji, R & T Panella. 2003. Evolving policy reforms & experiences for addressing down-stream impacts in World Bank water resources projects. *Riv Res Applic.* 19: 667 -681.

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	RIVER	TYPE OF FLOW	RESTORED FLOW COMPONENTS	ECOLOGICAL PURPOSES	PROJECT STATUS	MONITORING INDICATORS	REFERENCE
Kazakhstan (cont)	Syrdarya River	Water Usage reduction	Increased flows	To benefit the Aral Sea	Planned/ Proposed	Salinity, water quality, fisheries, wetlands	Hirji, R & T Panella. 2003. Evolving policy reforms & experiences for addressing down-stream impacts in World Bank water resources projects. *Riv Res Applic.* 19: 667 -681.
Kenya							
	Tana River	Dam re-operation	Flood flows	To restore environment including fisheries, riverine & floodplain forests.	Planned/ Proposed	Sediment transport, fisheries	Acreman, MC et al. 2000. Managed flood re-leases from reservoirs: issues & guidance. Report to DFID & the World Commission on Dams. Ctr. for Ecol. & Hydrology, Wallingford, UK
Korea							
	Kum River Basin	Dam re-operation	Environmental flows, drought contingency plans	For water quality and fish movement	Planned/ Proposed	Water quality, fish between & below dams	The Alpheus Group. (Univ of Washington) 2002. An application of Water Conflict Resolution in the Kum River Basin, Korea. Internet: www.tag. washington.edu /projects/korea_waterconflict.
Lesotho							
	Malibamatso River	Dam re-operation	Environmental flows (4 scenarios)	For ecosystem health	Planned/ Proposed	DRIFT method	Arthington, AH, et al 2003. Environmental flow requirements of fish in Lesotho Rivers using the DRIFT methodology. *Riv. Res.& Applica.* 19: 641-666.
	Sequ/Orange River	Dam re-operation	Experimental flows including flood flows	To meet downstream ecosystem requirements	Implemented	Not specified	Rijsberman, FR & D.Molden. 2001. Balancing Water Uses: Water for food & Water for Nature. Intl. Conf on Freshwater. Bonn. Internet: freshwater. unep.net
	Sequ/Orange River	Dam re-operation	Increased flows	To benefit downstream ecosystem	Implemented	DRIFT method	Hirji, R & T Panella. 2003. Evolving Policy Reforms & Experiences for Addressing Downstream Impacts in World Bank Water Resources Projects. *Riv Res & Applic.* 19: 667 - 681.

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	RIVER	TYPE OF FLOW	RESTORED FLOW COMPONENTS	ECOLOGICAL PURPOSES	PROJECT STATUS	MONITORING INDICATORS	REFERENCE
Mauritania							
	Senegal River	Dam re-operation	Flood Flows	To restore ecological functions to the Dawling Delta	Implemented	Acacia tree seeds; sporobulus robust; fish populations	The World Conservation Union. 2004. Artificial flooding bring back life and livelihoods to the Diawling delta, Mauritania. Press Release. 2/18/2004.
	Senegal River	Dam re-operation	Initial releases to simulate rainfall, then flood releases	To restore natural resources and biodiversity	Planned/ Proposed	Mangroves; penaeid shrimp; mullet; fisheries; crowned cranes	Acreman, MC et al 2000. Managed flood releases from reservoirs: issues & guidance. Report to DFID and the World Commission on Dams. Ctr. for Ecology & Hydrology, Wallingford, UK
Mexico							
Multi-State	Lerma River	Reduction of water usage	Increased flows	To increase water levels of Lake Chapala	Planned/ Proposed	Water quality, aquatic habitat & vegetation	Wageningen University, Instituto Mexicano de Technologia del Agua, & Institut de Recherche pour le Development. 2003. Basin Synthesis Study of the Lerma-Chapala River Basin, Mexico. Internet: www.iwmi.cgiar.org
Chihuahua	Mimbres River	Reduction of water usage	Increase flow during irrigation season	To enhance biodiversity of area	Implemented	Chihuahua chub; rainbow trout; Rio Grande sucker; speckled dace; longfin dace	Abell,R, D Olsen, E Dinerstein, W Eichbaum, S Walters, P Hurley, W Wettenger, C Loucks, & P Hedao. 1998. A Conservation Assessment of the freshwater ecoregions of North America. World Wildlife Fund.
Morocco							
	Lower Moulouya River	Dam re-operation & Reduction of water usage	Environmental flows	To protect Moulouya estuary & river ecosystem	Planned/ Proposed	Water quality, sediment, salinity, birds, fishery, invertebrates, groundwater quality, estuary species	Snoussi, M. 2002. Review of certain basic elements for the assessment of environmental flows in the Lower Moulouya. *Assessment Provision of Environmental Flows in Mediterranean Watercourses*. ICUN.
Mozambique							
	Incomati River & tributaries	Dam re-operation & other	Environmental flows Interim flows	To protect ecosystem	Implemented	Water quality, comprehensive studies	Tripartite Interim Agreement Between the Republic of Mozambique & The Republic of South Africa & The Kingdom of Swaziland. 2002

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	RIVER	TYPE OF FLOW	RESTORED FLOW COMPONENTS	ECOLOGICAL PURPOSES	PROJECT STATUS	MONITORING INDICATORS	REFERENCE
Mozambique (cont)	Maputo River & tributaries	Dam re-operation & other	Environmental flows Interim flows	To protect ecosystem	Implemented	Water quality, comprehensive studies	Tripartite Interim Agreement Between the Republic of Mozambique & The Republic of South Africa & The Kingdom of Swaziland. 2002.
	Zambezi River	Dam re-operation	Mimic natural flow variability, including lowering dry-season flow, rise in wet-season flow, and flood regime	For flood plain health, fisheries, flora & fauna	Planned/ Proposed	Mangroves; cape buffalo; prawn; waterfowl; waterbuck; vegetation; invasives	Beilfuss, Richard. 1999. Can this river be saved?: Rethinking Cahora Bassa could make a difference for dam-battered Zambezi. *World Rivers Review*. Feb 1999: 8-11
Nambia							
	Okavango River	Other	Improve ecological flows	For the river and Delta health	Planned/ Proposed	To be determined	Natural Heritage Institute. 2003. Okavango River Basin. Internet: www.n-i-h.org
Nepal							
	Mahakali River	Dam re-operation	Minimum flows (10%)	For ecosystem needs & downstream users	Planned/ Proposed	Water quality & other in EIA	Dixit, A, P Adhikari & S Bisangkhe (Eds) 2004. *Dams and Development in Nepal.* IUCN Nepal & Nepal Water Conservation Foundation.
New Zealand							
	Ahuriri River	Other	Minimum seasonally adjusted flows	To protect ecosystem & cultural values	Implemented	Groundwater levels, salinity, water quality, fisheries	Consensus Environmental Consulting. 2004. Waitaki Catchment - Summary of Resource Mgmt Planning Documents. Report for the Ministry for the Environment, New Zealand.
	Ashley River	Other	Augmented flows	To protect river ecosystem	Planned/ Proposed	Aquatic ecosystem	Environment Canterbury. 2004. Waimakariri River Regional Plan. Report No 4/7.
	Cust River	Other	Augmented flows	To protect river ecosystem	Implemented	Habitat for trout & salmon, water quality, vegetation	Environment Canterbury. 2004. Waimakariri River Regional Plan. Report R04/7.
	Hakataramea River	Other	Minimum seasonally adjusted flows	To protect ecosystem & cultural values	Implemented	Groundwater levels, water quality, fisheries	Consensus Environmental Consulting. 2004. Waitaki Catchment - Summary of Resource Mgmt Planning Documents. Report for the Ministry for the Environment, New Zealand.

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	RIVER	TYPE OF FLOW	RESTORED FLOW COMPONENTS	ECOLOGICAL PURPOSES	PROJECT STATUS	MONITORING INDICATORS	REFERENCE
New Zealand (cont)	Hawea River	Dam re-operation	Fluctuating flows (experimental)	To evaluate effects of change in flow rate on invertebrates in regulated rivers (slow vs. rapid rate changes)	Implemented	Benthic invertebrates; drift of non-invertebrates	Irvine, JR & PR Henriques. 1984. A preliminary investigation on effects of fluctuating flows on invertebrates of the Hawea Riv., a large regulated river in NZ. *J. of Mar. and Freshwater Res.* Vol 18: 283-290.
	Omarama River	Other	Minimum seasonally adjusted flows	To protect ecosystem & cultural values	Implemented	Groundwater levels, salinity, water quality, fisheries	Consensus Environmental Consulting. 2004. Waitaki Catchment - Summary of Resource Mgmt Planning Documents. Report for the Ministry for the Environment, New Zealand.
	Opihi River	Other	Increased minimum flows *, freshets proposed, seasonal variability	For the overall health of the ecosystem & lagoon	Implemented* Planned/ Proposed	Water quality, fisheries, invertebrates, waterbirds, groundwater, riparian vegetation, habitats, salmon & trout	Environment Canterbury. 2000. Opihi River Regional Plan. Report R00/16.
	Opihi River tributaries	Other	Minimum flows seasonally variable	For the overall health of the ecosystem & lagoon	Implemented	Water quality, fisheries, invertebrates, waterbirds, groundwater, riparian vegetation, habitats, salmon & trout	Environment Canterbury. 2000. Opihi River Regional Plan. Report R00/16.
	Temuka River	Other	Minimum flows seasonally variable	For the overall health of the ecosystem	Implemented	Water quality, fish, invertebrates, habitats, waterbirds, groundwater, vegetation,	Environment Canterbury. 2000. Opihi River Regional Plan. Report R00/16.
	Waitaki River	Other	Minimum seasonally adjusted flows	To protect ecosystem & cultural values	Implemented	Groundwater levels, water quality, fisheries	Consensus Environmental Consulting. 2004. Waitaki Catchment - Summary of Resource Mgmt Planning Documents. Report for the Ministry for the Environment, New Zealand.
	Waimakariri River	Other	Environmental flows	To protect river ecosystem	Planned/ Proposed	Aquatic ecosystem	Environment Canterbury. 2004. Waimakariri River Regional Plan. Report Ro4/7.
Nigeria							
	Hadejia River	Dam re-operation	Test flood releases recharge regional aquifer	To restore wetlands	Implemented	Fisheries	Acreman, MC et al 2000. Managed flood releases from reservoirs: issues & guidance. Report to DFID & the World Commission on Dams. Ctr for Ecology & Hydrology, Wallingford, UK
	Komadugu River Basin	Dam re-op & other	Sustainable flows	To allow for water sharing & environmental sustainability	Planned/ Proposed	Water quality	The World Conservation Union. 2002. Stakeholders form unique partnership for sustainable water management in the Komadugu Yobe Basin, Nigeria. Press Release, 01/16.

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RIVER	TYPE OF FLOW	RESTORED FLOW COMPONENTS	ECOLOGICAL PURPOSES	PROJECT STATUS	MONITORING INDICATORS	REFERENCE
Norway						
River Driva	Dam re-operation	Minimum flows, Attraction floods	To benefit Atlantic salmon & sea trout	Implemented	Atlantic salmon & sea trout	Amekleiv, JV & Koksvik, J. 2002. Endring av manovreringsreglmentet for Driva kraftverk-mulige konsekvenser for fiskebiologiske forhold i Driva og Gjevilvatnet. *LFI*, notat 24. (In Norwegian)
River Lagen	Dam re-operation	Increased minimum flows	To benefit fish migration and spawning	Implemented	Trout population	International Energy Agency. 2000. Implementing Agreement for Hydropower Technologies & Programmes. Annex III. Hydropower & the Environment. Volume 1.
River Maana	Dam re-operation	Environmental flows	To benefit ecosystem	Planned/ Proposed	Habitat, water quality, trout, ice conditions	Harby, A. (ed). 2000. Vassdragssimulatoren for Maana. Hovedrapport. SINTEF, Trondheim, Norway. (In Norwegian).
Norwegian Rivers	Dam re-operation	Minimum flows, seasonal flow variations	To restore & maintain environment	Planned/ Proposed	Not specified	Norwegian Water Resources & Energy Directorate (NVE). 2003. The Licensing Procedures for Hydropower Development in Norway. Internet: www.nve.no
River Suldalslaagen	Dam re-operation	Minimum flows, Attraction floods	To benefit Atlantic Salmon	Implemented	Atlantic salmon	Sandoy, S & L"Abee-Lund, JH. 1999. How can spring flood be set in regulated rivers to ensure Atlantic salmon life history. *3rd Symposium on EcoHydraulics*, Salt Lake City, Utah.
River Suldalsvassdraget	Other	Environmental flows	To benefit Atlantic salmon	Planned/ Proposed	Atlantic salmon, water quality	Norwegian Water Resources & Energy Directorate. 2003. Suldalsvassdraget Pilot River Basin - Norway.
River Surna	Dam re-operation	More natural flow regime	To benefit Atlantic salmon	Planned/ Proposed	Atlantic salmon	Halleraker, JH et al. 2004. Which parts of the hydrograph are essential for maintenance of Atlantic salmon in the regulated river Surna. *5th International Symposium on Eco-hydraulics,* Madrid 12-17 September 2004.

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RIVER	TYPE OF FLOW	RESTORED FLOW COMPONENTS	ECOLOGICAL PURPOSES	PROJECT STATUS	MONITORING INDICATORS	REFERENCE
Pakistan						
Indus River	Dam re-operation	Flood flows at least twice in 5 years; flood flows at end of wet season	To sustain floodplain forests, mangroves, and fisheries and rare species	Planned/ Proposed	Mangrove saplings	Acreman, MC et al. 2000. Managed flood releases from reservoirs: issues & guidance. Report to DFID & the World Commission on Dams. Centre for Ecology and Hydrology, Wallingford, UK
Indus River	Reduction in water usage	Higher minimum flows	To benefit the Delta ecosystem	Planned/ Proposed	Saltwater intrusion, mangroves, fish populations, aquatic habitat	The World Conservation Union. 2003. Indus Delta, Pakistan: economic costs of reduction in freshwater flows. Case study #5. Internet: www.waterandnature.org
Philippines						
Agus River/ Lake Lanao	Dam Removal	Restore flow	To benefit the aquatic environment & fisheries	Planned/ Proposed	Fish, shrimp, & other aquatic life	Enerio, BD. 2004. Maranaos call for closure of power plant. *ABS-CBN News.* 09/01/04. Internet available: www.abs-cbnnews.com
Poland						
Vistula River	Dam Removal	Increased flows	For river restoration	Implemented	Not indicated	Dyson, M,G. Bergkamp & J Scanlon (eds) 2003. Flow. The Essentials of Environmental Flows. IUCN, Gland, Switzerland & Cambridge, UK
Puerto Rico						
Espiritu Santo River	Dam re-operation	Timing of flows	To improve freshwater shrimp survival & migration	Implemented	Shrimp population	Postel, S & B Richter. 2003. *Rivers for Life.* Island Press.
Icacos River	Dam re-operation	Increased minimum flow	To improve existing habitat for aquatic species	Implemented	Field sampling of mountain mullets & river shrimp	Sutton, RJ, Miller, WJ, Patti, SJ. 1997. Application of the Instream Flow Incremental Mthodology to a Tropical River in Puerto Rico. *Reg. Rivs.*: 6(1); 1-9.
Russia						
Volga River	Dam re-operation	Increased spring flows, improved timing & duration, reduced winter flows	To benefit the ecosystem	Planned/ Proposed	Terrestrial & aquatic flora & fauna, fish populations, birds, sediment, water quality	Leummens, I. 2004. Volga River discharge regulation: An integrated analysis of impact on downstream riverine ecosystems. *7th Intl. RiverSymposium.* Aug 31- Sept 3, 2004. Brisbame, Australia. Page 50.

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RIVER	TYPE OF FLOW	RESTORED FLOW COMPONENTS	ECOLOGICAL PURPOSES	PROJECT STATUS	MONITORING INDICATORS	REFERENCE
Slovenia						
Rizana River	Reduction of water usage	Increased in minimum flows (summer dry season)	To benefit the ecosystem	Planned/ Proposed	Fisheries, water quality, phytobenthos, zoobethos, habitats, riparian vegetation	Smolar-Zvanut, N. 2002. The Rizana River: Environmental Flow Assessment. *Assessment & Provision of Environmental Flows in Mediterranean Watercourses*. IUCN.
Soca River	Dam re-operation	Increase in flows	To improve water quality	Implemented	Water quality, macrophytes, birds, bethos, mammals & riparian vegetation	Vrhovsek, D. et al. 2002. Determination of ecologically acceptable flow for the Soca River Below the Podsela Dam (in Slovene). Final Report, Ljubljana, 60 pp.
South Africa						
Breede River	Dam re-operation	Increase in dry season low flows	To improve river ecosystem	Planned/ Proposed	Water quality, riparian vegetation, fish, macroinvertebrates	Brown, CA & JM King. 2002. Breede River Basin Study: Drift Application. *Southern Waters*.Draft Report.
Groot River	Dam re-operation	Water releases at irregular intervals from Beervlei Dam	For spawning induced in small scale red fin minnow	Implemented	Small scale red fin minnow	Cambray, J. A., 1991. The effects of fish spawning and management implications of impoundment water releases in an intermittent 39-52.
Incomati River & tributaries	Dam re-operation & other	Environmental flows Interim flows	To protect ecosystem	Implemented	Water quality, comprehensive studies	Trpartite Interim Agreement Between the Republic of Mozambique & The Republic of South Africa & The Kingdom of Swaziland. 2002.
Kromme River	Dam re-operation	Experimental flood flow	To improve estuary conditions	Implemented	Abiotic & biotic communities, sediment	King, J, R Tharme & C Brown. 1999. Definition and Implementation of Instream flows. *World Commission on Dams*. Thematic Report.
MaputoRiver & tributaries	Dam re-operation & other	Environmental flows Interim flows	To protect ecosystem	Implemented	Water quality, comprehensive studies	Tripartite Interim Agreement Between the Republic of Mozambique & The Republic of South Africa & The Kingdom of Swaziland. 2002.
Olifants River	Dam re-operation	Small pulses of higher flow to mimic dry season	Fort spawning of endemic, vulnerable cyprinid, Clanwilliam yellowfish (experimental)	Implemented	Spawning yellowfish, water temperature	King, J, Cambray, JA, & Impson, ND. 1998. Linked effects of dam-released floods & water temperature on spawning of the Clanwilliam yellowfish Barbus capensis. *Hydrobiologia*, 384: 245-265.

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	RIVER	TYPE OF FLOW	RESTORED FLOW COMPONENTS	ECOLOGICAL PURPOSES	PROJECT STATUS	MONITORING INDICATORS	REFERENCE
South Africa (cont)	Olifants River	Dam re-operation	Experimental releases of high flow	To increase the number of B.capensis	Implemented	Spawning, embryos, and larval B capensis	Cambray, JA, JM King, & C Bruwer. 1997. Spawning behavior and early devel. of the Clanwilliam Yellowfish, linked to experimental dam releases in the Olifants R., S. Afr. *Reg Riv:Res & Mgmt*: 13: 595-602
	Orange River	Dam re-operation	Increased flows	To benefit downstream ecosystem	Implemented	DRIFT method	Hirji, R & T Panella. 2003. Evolving Policy Reforms & Experiences for Addressing Downstream Impacts in World Bank Water Resources Projects. *Riv Res & Applic.* 19: 667 - 681.
	Palmiet River	Dam re-operation	Increased flows	To benefit ecosystem	Implemented	DRIFT method	Dyson, M,G. Bergkamp & J Scanlon (eds) 2003. Flow. The Essentials of Environmental Flows. IUCN, Gland, Switzerland & Cambridge, UK. xiv + 118 pp.
	Phongolo River	Dam re-operation	Flood flows	To restore floodplain ecosystems; fisheries; biodiversity	Implemented	Fisheries	Acreman, MC et al. 2000. Managed flood releases from reservoirs: issues and guidance. Report to DFID and the World Comm. on Dams. Ctr. for Ecol. & Hydrology, Wallingford, UK
	Sabie River	Reduction of water usage & Dam re-op	Minimum flows, & environmental flows	To benefit ecosystem health	Planned/ Proposed	Sediment, vegetation, fish, land use, aquatic insects, habitat, water quality	Postel, S & Richter, B. *Rivers for Life.*2003. Island Press.
Spain							
	Adaja River	Dam re-operation	Variable minimum flows	To benefit aquatic ecosystem	Implemented	Aquatic communities, habitat	Garcia de Jalon, D. 2003. The Spanish Experience in Determining Minimum Flow Regimes in Regulated Streams. *Canadian Water Resources Journal.* Vol 28, No. 2.
	Alberche River	Dam re-operation	Variable minimum flows	To benefit aquatic ecosystem	Implemented	Aquatic communities, habitat	Garcia de Jalon, D. 2003. The Spanish Experience in Determining Minimum Flow Regimes in Regulated Streams. *Canadian Water Resources Journal.* Vol 28, No. 2.

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	RIVER	TYPE OF FLOW	RESTORED FLOW COMPONENTS	ECOLOGICAL PURPOSES	PROJECT STATUS	MONITORING INDICATORS	REFERENCE
Spain (cont)	Albina River	Dam re-operation	Variable minimum flows	To benefit aquatic ecosystem	Implemented	Aquatic communities, habitat	Garcia de Jalon, D. 2003. The Spanish Experience in Determining Minimum Flow Regimes in Regulated Streams. *Canadian Water Resources Journal.* Vol 28, No. 2.
	Arceniega River	Dam re-operation	Variable minimum flows	To benefit aquatic ecosystem	Implemented	Aquatic communities, habitat	Garcia de Jalon, D. 2003. The Spanish Experience in Determining Minimum Flow Regimes in Regulated Streams. *Canadian Water Resources Journal.* Vol 28, No. 2.
	Arlanzon River	Dam re-operation	Variable minimum flows	To benefit aquatic ecosystem	Implemented	Aquatic communities, habitat	Garcia de Jalon, D. 2003. The Spanish Experience in Determining Minimum Flow Regimes in Regulated Streams. *Canadian Water Resources Journal.* Vol 28, No. 2.
	Barrundia River	Dam re-operation	Variable minimum flows	To benefit aquatic ecosystem	Implemented	Aquatic communities, habitat	Garcia de Jalon, D. 2003. The Spanish Experience in Determining Minimum Flow Regimes in Regulated Streams. *Canadian Water Resources Journal.* Vol 28, No. 2.
	Carrion River	Dam re-operation	Variable minimum flows	To benefit aquatic ecosystem	Implemented	Aquatic communities, habitat	Garcia de Jalon, D. 2003. The Spanish Experience in Determining Minimum Flow Regimes in Regulated Streams. *Canadian Water Resources Journal.* Vol 28, No. 2.
	Cofio River	Dam re-operation	Variable minimum flows	To benefit aquatic ecosystem	Implemented	Aquatic communities, habitat	Garcia de Jalon, D. 2003. The Spanish Experience in Determining Minimum Flow Regimes in Regulated Streams. *Canadian Water Resources Journal.* Vol 28, No. 2.
	Donana Watershed	Other	Increase quantity & quality of flow from rivers & tributaries to the marshlands; restore connectivity of rivers & streams	To restore hydrolic function and connectivity to marshlands in & around Donana Natl. Park	Planned/ Proposed	Water quality; estuary pops.; sediment loads; aquatic macrophytes; nutrient load; helophytes; Malmsey: spoonbill; Bittern; Marbled Teal	JS Martinez, BB Jardin,JC Grande,AR Larramendi,CU Alonso.2001.Outline Doc. for the Devel. of the Donana 2005 Project. Ministry for the Environment.
	Duero River	Dam re-operation	Variable minimum flows	To benefit aquatic ecosystem	Implemented	Aquatic communities, habitat	Garcia de Jalon, D. 2003. The Spanish Experience in Determining Minimum Flow Regimes in Regulated Streams. *Canadian Water Resources Journal.* Vol 28, No. 2.

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	RIVER	TYPE OF FLOW	RESTORED FLOW COMPONENTS	ECOLOGICAL PURPOSES	PROJECT STATUS	MONITORING INDICATORS	REFERENCE
Spain (cont)	Duraton River	Dam re-operation	Variable minimum flows	To benefit aquatic ecosystem	Implemented	Aquatic communities, habitat	Garcia de Jalon, D. 2003. The Spanish Experience in Determining Minimum Flow Regimes in Regulated Streams. *Canadian Water Resources Journal.* Vol 28, No. 2.
	Ebro River	Other	Higher minimum flows, flushing flows, more natural regime	To maintain ecosystem function & delta health	Planned/ Proposed	Water quality, sediment, fish habitat, salinity, fisheries, macrobenthos, fish population	Alcacer-Santos, C. 2002. Environmental Flow Assessment for the Ebro Delta in Spain. *Assessment & Provision of Environmental Flows in Mediterranean Watercourses.* IUCN.
	Esla River	Dam re-operation	Variable minimum flows	To benefit aquatic ecosystem	Implemented	Aquatic communities, habitat	Garcia de Jalon, D. 2003. The Spanish Experience in Determining Minimum Flow Regimes in Regulated Streams. *Canadian Water Resources Journal.* Vol 28, No. 2.
	Formiga River	Dam re-operation	Variable minimum flows	To benefit aquatic ecosystem	Implemented	Aquatic communities, habitat	Garcia de Jalon, D. 2003. The Spanish Experience in Determining Minimum Flow Regimes in Regulated Streams. *Canadian Water Resources Journal.* Vol 28, No. 2.
	Genil River	Dam re-operation	Variable minimum flows	To benefit aquatic ecosystem	Implemented	Aquatic communities, habitat	Garcia de Jalon, D. 2003. The Spanish Experience in Determining Minimum Flow Regimes in Regulated Streams. *Canadian Water Resources Journal.* Vol 28, No. 2.
	Guadalquivar River	Dam re-operation	Variable minimum flows	To benefit aquatic ecosystem	Implemented	Aquatic communities, habitat	Garcia de Jalon, D. 2003. The Spanish Experience in Determining Minimum Flow Regimes in Regulated Streams. *Canadian Water Resources Journal.* Vol 28, No. 2.
	Guadarrama River	Dam re-operation	Variable minimum flows	To benefit aquatic ecosystem	Implemented	Aquatic communities, habitat	Garcia de Jalon, D. 2003. The Spanish Experience in Determining Minimum Flow Regimes in Regulated Streams. *Canadian Water Resources Journal.* Vol 28, No. 2.
	Idas River	Dam re-operation	Variable minimum flows	To benefit aquatic ecosystem	Implemented	Aquatic communities, habitat	Garcia de Jalon, D. 2003. The Spanish Experience in Determining Minimum Flow Regimes in Regulated Streams. *Canadian Water Resources Journal.* Vol 28, No. 2.

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	RIVER	TYPE OF FLOW	RESTORED FLOW COMPONENTS	ECOLOGICAL PURPOSES	PROJECT STATUS	MONITORING INDICATORS	REFERENCE
Spain (cont)	Izora River	Dam re-operation	Variable minimum flows	To benefit aquatic ecosystem	Implemented	Aquatic communities, habitat	Garcia de Jalon, D. 2003. The Spanish Experience in Determining Minimum Flow Regimes in Regulated Streams. *Canadian Water Resources Journal.* Vol 28, No. 2.
	Jarama River	Dam re-operation	Variable minimum flows	To benefit aquatic ecosystem	Implemented	Aquatic communities, habitat	Garcia de Jalon, D. 2003. The Spanish Experience in Determining Minimum Flow Regimes in Regulated Streams. *Canadian Water Resources Journal.* Vol 28, No. 2.
	Lozoya River	Dam re-operation	Variable minimum flows	To benefit aquatic ecosystem	Implemented	Aquatic communities, habitat	Garcia de Jalon, D. 2003. The Spanish Experience in Determining Minimum Flow Regimes in Regulated Streams. *Canadian Water Resources Journal.* Vol 28, No. 2.
	Nejerilla River	Dam re-operation	Variable minimum flows	To benefit aquatic ecosystem	Implemented	Aquatic communities, habitat	Garcia de Jalon, D. 2003. The Spanish Experience in Determining Minimum Flow Regimes in Regulated Streams. *Canadian Water Resources Journal.* Vol 28, No. 2.
	Noguera de Tor River	Dam re-operation	Base flow to mimic natural seasonal variability	To maintain riverine ecosystem	Implemented	Trout,, habitat	Palau, A. 1995. Propuesta de Caudales de Mantenimiento para el tramo final del rio Noguera de Tor. Programa PIE 121.43. ENHER -OCIDE. Barcelona. 108 pp. (in Spanish)
	Manzanares River	Dam re-operation	Variable minimum flows	To benefit aquatic ecosystem	Implemented	Aquatic communities, habitat	Garcia de Jalon, D. 2003. The Spanish Experience in Determining Minimum Flow Regimes in Regulated Streams. *Canadian Water Resources Journal.* Vol 28, No. 2.
	Perales River	Dam re-operation	Improved environmental flows	To benefit downstream ecosystem	Planned/ Proposed	Water quality, sediment, fisheries, la Pardilla	Marchamalo, M., C. Alonso, D. Garcia de Jalon. 2002. Propuestas de criterios para la demolicion de embalses: Ejemplos practicos en el caso Espanol. Universidad Politecnica de Madrid. (In Spanish)
	Pisuerga River	Dam re-operation	Variable minimum flows	To benefit aquatic ecosystem	Implemented	Aquatic communities, habitat	Garcia de Jalon, D. 2003. The Spanish Experience in Determining Minimum Flow Regimes in Regulated Streams. *Canadian Water Resources Journal.* Vol 28, No. 2.

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	RIVER	TYPE OF FLOW	RESTORED FLOW COMPONENTS	ECOLOGICAL PURPOSES	PROJECT STATUS	MONITORING INDICATORS	REFERENCE
Spain (cont)	Riaza River	Dam re-operation	Variable minimum flows	To benefit aquatic ecosystem	Implemented	Aquatic communities, habitat	Garcia de Jalon, D. 2003. The Spanish Experience in Determining Minimum Flow Regimes in Regulated Streams. *Canadian Water Resources Journal.* Vol 28, No. 2.
	Santa Engracia River	Dam re-operation	Variable minimum flows	To benefit aquatic ecosystem	Implemented	Aquatic communities, habitat	Garcia de Jalon, D. 2003. The Spanish Experience in Determining Minimum Flow Regimes in Regulated Streams. *Canadian Water Resources Journal.* Vol 28, No. 2.
	Subialde River	Dam re-operation	Variable minimum flows	To benefit aquatic ecosystem	Implemented	Aquatic communities, habitat	Garcia de Jalon, D. 2003. The Spanish Experience in Determining Minimum Flow Regimes in Regulated Streams. *Canadian Water Resources Journal.* Vol 28, No. 2.
	Tera River	Dam re-operation	Variable minimum flows	To benefit aquatic ecosystem	Implemented	Aquatic communities, habitat	Garcia de Jalon, D. 2003. The Spanish Experience in Determining Minimum Flow Regimes in Regulated Streams. *Canadian Water Resources Journal.* Vol 28, No. 2.
	Tomes River	Dam re-operation	Variable minimum flows	To benefit aquatic ecosystem	Implemented	Aquatic communities, habitat	Garcia de Jalon, D. 2003. The Spanish Experience in Determining Minimum Flow Regimes in Regulated Streams. *Canadian Water Resources Journal.* Vol 28, No. 2.
	Unedbe River	Dam re-operation	Variable minimum flows	To benefit aquatic ecosystem	Implemented	Aquatic communities, habitat	Garcia de Jalon, D. 2003. The Spanish Experience in Determining Minimum Flow Regimes in Regulated Streams. *Canadian Water Resources Journal.* Vol 28, No. 2.
	Zadorra River	Dam re-operation	Variable minimum flows	To benefit aquatic ecosystem	Implemented	Aquatic communities, habitat	Garcia de Jalon, D. 2003. The Spanish Experience in Determining Minimum Flow Regimes in Regulated Streams. *Canadian Water Resources Journal.* Vol 28, No. 2.
SriLanka							
	Mahaweli Ganga	Dam re-operation	Flushing flows	For sediment transport	Implemented	Sediment movement	Acreman, M.C. et al. 2000. Managed flood releases from reservoirs: issues and guidance. Report to DFID and the World Commission on Dams. Centre for Ecology and Hydrology, Wallingford, UK.

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RIVER	TYPE OF FLOW	RESTORED FLOW COMPONENTS	ECOLOGICAL PURPOSES	PROJECT STATUS	MONITORING INDICATORS	REFERENCE
Swaziland						
Incomati River & tributaries	Dam re-operation & other	Environmental flows Interim flows	To protect ecosystem	Implemented	Water quality, comprehensive studies	Trpartite Interim Agreement Between the Republic of Mozambique & The Republic of South Africa & The Kingdom of Swaziland. 2002.
MaputoRiver & tributaries	Dam re-operation & other	Environmental flows Interim flows	To protect ecosystem	Implemented	Water quality, comprehensive studies	Trpartite Interim Agreement Between the Republic of Mozambique & The Republic of South Africa & The Kingdom of Swaziland. 2002.
Switzerland						
River Brenno	Dam re-operation	Environmental minimum flows	To improve the ecosystem	Planned/ Proposed	Habitat, brown trout, grayling	European Aquatic Modelling Network. 2000. Proposal for a new COST Action. Internet: www.eamn.org.
River Inn	Dam re-operation	Improved minimum flows	To protect the ecosystem	Planned/ Proposed	Sediment, fisheries, riparian system	Truffer, B., J. Markard, C. Bratruch & B. Wehrli. 2001. Green Electricity from Alpine Hydropower Plants. *Mountain Research & Development:* Vol. 21, No. 1: 19-24, Feb. 2001.
River Spol	Dam re-operation	Summer Flood flows	To benefit the functioning of the river system.	Implemented	Sediment transport, brown trout, invertebrates, nutrients, periphyton	Uehlinger, U, B.Kawecka & CT Robinson. 2003. Effects of experimental floods on periphyton and stream metabolism below a high dam in the Swiss Alps. *Aquat.Sci.* 65: 199-209. (Entire journal on river's restoration)
Taiwan						
Hsintien Stream	Dam re-operation	Increased flows, set minimum flow	To improve water quality & improve fish survival	Planned/ Proposed	Water quality, sediment transport, salinity, fish populations	Liu, W.C., MH Hsu, AY Liu, & AY Kuo. 2004. Water Quality Simulation to Determine Minimum Instream Flow for Fish Survival. Internet paper.
Tanzania						
Great Ruaha River	Water usage reduction	Increased flow during dry season	To improve wetland health	Planned/ Proposed	Fish population, habitat, land use	Hirji, R & T Panella. 2003. Evolving Policy Reform & Experiences for Addressing Down-stream Impacts in World Bank Water Resources Projects. *Reg Riv Applic.* 19:667 - 681.

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	RIVER	TYPE OF FLOW	RESTORED FLOW COMPONENTS	ECOLOGICAL PURPOSES	PROJECT STATUS	MONITORING INDICATORS	REFERENCE
Tanzania (cont)	Kihansi River	Dam re-operation	Experimental intermittent releases	To protect the Kihansi Spray toad	Implemented	Kihansi Spray Toad	NORPLAN. 2001. Immediate Rescue and Emergency Measures: Lower Kihansi Hydro-power Project. *Newsletter.* May 2001-No. 4.
	Pangani River	Water usage reduction	Increased flows	To benefit the ecology of the watershed	Planned/ Proposed	Water quality& other factors to be determined	World Bank-Netherlands Water Partnership Program. Determining Environmental Flow in Tanzania-Phase I. Internet: www. worldbank.org
Thailand							
	Mun River	Dam re-operation	Allowed free flowing conditions from May-Sept from Pak Mun Dam	To allow for fish migration	Implemented	Fish populations including Mekong Giant Carfish; Aquatic habitat; riparian vegetation	International Rivers Network. Pak Mun Campaign. Internet: www.irn.org
	Mun River	Dam re-operation	Opened all gates of Rasi Salai dam for two year period to allow free flow	For the recovery of fresh-water swamp forest; fish migration; reduce salinity	Implemented	Comprehensive study in progress	International Rivers Network. Mun River Campaign. Internet: www.irn.org/programs
Tunisia							
	Lake Bizerta	Other	Increased flows into lake	To decrease salinity & prevent salinity intrusion from sea	Implemented	Salinity, fisheries, aquatic vegetation waterfowl, birds, flora	Smart, M. 2004. River Flow Regulation & Wet-land Conservation in a Dry Country: Ichkeul, Tunisia. *Assessment & Provision of Environ-mental Flows in Mediterranean Watercourses.* IUCN.
	Oeud Joumine (river)	Dam re-operation	Increased flows into Lake Ichkeul	To prevent salinity & to provide flows to the wetlands & Lake Bizerta	Implemented	Salinity, fisheries, aquatic vegetation waterfowl, birds, flora, waterfowl	Smart, M. 2004. River Flow Regulation & Wet-land Conservation in a Dry Country: Ichkeul, Tunisia. *Assessment & Provision of Environ-mental Flows in Mediterranean Watercourses.* IUCN.
	Oued Sejnane (river)	Dam re-operation	Increased flows into Lakes	To decrease salinity & to provide flows to the wetlands	Implemented	Salinity, fisheries, aquatic vegetation waterfowl, birds, flora, waterfowl	Smart, M. 2004. River Flow Regulation & Wet-land Conservation in a Dry Country: Ichkeul, Tunisia. *Assessment & Provision of Environ-mental Flows in Mediterranean Watercourses.* IUCN.

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	RIVER	TYPE OF FLOW	RESTORED FLOW COMPONENTS	ECOLOGICAL PURPOSES	PROJECT STATUS	MONITORING INDICATORS	REFERENCE
Turkey							
	Yay Lake & Sultan Marshes	Dam re-operation & Other	Large increase in flow to marsh & minimum lake level established	To conserve biological diversity & ecological integrity of the ecosystem	Implemented	Waterfowl, habitats, flora & fauna, water quality	Ozesmi, U. & G. Ibrahim. 2002. Sultan Sazligi: Biodiversity & Natural Resources Management Pilot Project in Turkey. *Assessment & Provision of Environmental Flows in Mediterranean Water Courses.* IUCN.
United Kingdom							
England	Ampney Brook	Reduction of water usage	Alleviation of low flows	To protect the ecosystem	Implemented	Water quality, wildlife	Thames Water. 2003. Corporate Responsi-bility Report; Managing Water Resources.
	Anglian Watershed	Reduction of water usage	Additional flow due to limits on groundwater abstractions	For ecological health of the river systems	Implemented	Not Indicated	Petts, Geoffrey E. 1996. Water Allocation to protect river ecosystems. *Regulated Rivers: Research & Management*. Vol. 12: 353-365
	River Ashop	Dam re-operation	Seasonally variable envioron-mental flows	For ecosystem restoration	Planned/ Proposed	Habitat, invertebrates, grayling, brown trout, brook lamprey, bullhead	Maddock, I.P. et al 2001. Reallocation of compensation releases to restore river flows and improve instream habitat availability in the upper Derwent catchment, Derbyshire, UK. *Reg. Rivs.* 17: 417-441.
	River Avon	Other	Full range of seasonally variable flows & protection from low flows	To protect the ecosystem	Planned/ Proposed	Water quality, Atlantic salmon, bullhead, lamprey, aquatic vegetation, land use, groundwater (Upper Avon -Desmoulin's whorl snail)	Wheeldon, J. 2003. The River Avon cSAC Conservation Strategy. English Nature. Peterborough.
	River Babingley	Other	Flushing flows, winter flow to sustain river connectivity, summer flow, to simulate natural flows	To protect the habitat for trout	Planned/ Proposed	Trout population; field observation of habitat	Petts, Geoffrey E. 1996. Water Allocation to Protect River Ecosystems. *Regulated Rivers: Research & Management*. Vol 12: 353-365.
	Battlefield Brook	Other	Alleviation of low flows	To protect the ecosystem	Implemented	Water quality, habitats, fisheries, biodiversity	Severn Trent Water. 2004. Biodiversity Action Plan: The First Five Years.
	River Bourne	Other	Full range of seasonally variable flows & protection from low flows	To protect the ecosystem	Planned/ Proposed	Water quality, Atlantic salmon, bullhead, lamprey, aquatic vegetation, land use, groundwater (Upper Avon -Desmoulin's whorl snail)	Wheeldon, J. 2003. The River Avon cSAC Conservation Strategy. English Nature. Peterborough.

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	RIVER	TYPE OF FLOW	RESTORED FLOW COMPONENTS	ECOLOGICAL PURPOSES	PROJECT STATUS	MONITORING INDICATORS	REFERENCE
England (cont)	Bow Brook	Other	Alleviation of low flows	To protect the ecosystem	Implemented	Water quality, habitats, fisheries, biodiversity	Severn Trent Water. 2004. Biodiversity Action Plan: The First Five Years.
	River Brennand	Reduction of water usage	Alleviation of low flows	To protect ecosystem	Planned/ Proposed	Fisheries, habitats, macroinvertebrates, salmonids	Environment Agency. 2003. The Brennand and Whitendale Low Flow Improvement Scheme. No. 4 Newsletter 2003.
	River Bulbourne	Other	Alleviation of low flows	To protect ecosystem	Implemented	Habitat, fishery	Thames Water. 2004. River Wye and River Bulbourne. Chilterns Low Flow Alleviation Scheme.
	Chitterne Brook	Other	Full range of seasonally variable flows & protection from low flows	To protect the ecosystem	Planned/ Proposed	Water quality, Atlantic salmon, bullhead, lamprey, aquatic vegetation, land use, groundwater (Upper Avon -Desmoulin's whorl snail)	Wheeldon, J. 2003. The River Avon cSAC Conservation Strategy. English Nature. Peterborough.
	River Churn	Reduction of water usage	Alleviation of low flows	To protect the ecosystem	Implemented	Water quality, wildlife	Thames Water. 2003. Corporate Responsi-bility Report; Managing Water Resources.
	River Cole	Dam re-operation	Meandering course restored; historic water levels and flood frequency restored.	For river restoration & floodplain restoration	Implemented	Water quality; flood defense; soil; invertebrates; vegetation; fish, otters, birds; instream nutrients; sedimentation	Nielsen, M.B. 1996. River restoration: a report of a major EU Life demonstration project. *Aquatic Conservation*: *Marine & Freshwater Ecosystems*. Vol 6, 187-190
	River Cotswolds	Reduction of water usage	Alleviation of low flows	To protect the ecosystem	Implemented	Water quality, wildlife	Thames Water. 2003. Corporate Responsi-bility Report; Managing Water Resources.
	Croxden Brook	Other	Alleviation of low flows	To protect the ecosystem	Implemented	Water quality, habitats, fisheries, biodiversity	Severn Trent Water. 2004. Biodiversity Action Plan: The First Five Years.
	River Darent	Other	Alleviation of low flows	For environmental health	Implemented	Badgers & aquatic environment	Halcrow Water Services. 2003. Eynsford River Darent Low Flow Alleviation.
	River Dart	Other	Environmental flows	To protect the ecosystem	Planned/ Proposed	Water quality, salmon, habitat, riparian vegetation, otter, fairy shrimp	The Dartmoor Biodiversity Project. 2004. Action for Wildlife. Internet: www.swbiodiversity.org.uk/Habitats/Freshwater
	Dockens Water	Other	Full range of seasonally variable flows & protection from low flows	To protect the ecosystem	Planned/ Proposed	Water quality, Atlantic salmon, bullhead, lamprey, aquatic vegetation, land use, groundwater (Upper Avon -Desmoulin's whorl snail)	Wheeldon, J. 2003. The River Avon cSAC Conservation Strategy. English Nature. Peterborough.

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	RIVER	TYPE OF FLOW	RESTORED FLOW COMPONENTS	ECOLOGICAL PURPOSES	PROJECT STATUS	MONITORING INDICATORS	REFERENCE
England (cont)	River Dour	Other	Increased flows	To benefit fish & aquatic life	Implemented	Wild brown trout, aquatic populations	Harding, L. 2004. Environment Agency & Folkestone & Dover Water Service Pledge. Commitment to River Dour. United Kingdom, Environment Agency, *Agency News:* Dec. 6, 2004.
	Dover Beck	Other	Increased flows	To protect aquatic environment	Implemented	Fish populations, vegetation, water quality	Blackburn, O. 2005. Bringing back the flow. United Kingdom, Environment Agency, *Agency News:* March 17, 2005
	River Eden & catchment	Dam re-operation & Other	Minimum flows, peak flows & seasonally varied flows	To protect the ecosystem	Planned/ Proposed	Atlantic Salmon, lamprey, brown trout, Otter, woodlands, bullhead, white clawed crayfish, habitat, water quality, vegetation	Locke, E & M Robinson. 2003. The River Eden cSAC Conservation Strategy.Conserving Natura 2000 Rivers. English Nature, Peterborough.
	River Erme	Other	Environmental flows	To protect the ecosystem	Planned Proposed	Water quality, salmon, habitat, riparian vegetation, otter, fairy shrimp	The Dartmoor Biodiversity Project. 2004. Action for Wildlife. Internet: www.swbiodiversit.org.uk /Habitats/Freshwater
	River Gelt	Other	Minimum flows	To allow for fish passage	Implemented	Atlantic Salmon migration	Locke, E & M Robinson. 2003. The River Eden cSAC Conservation Strategy.Conserving Natura 2000 Rivers. English Nature, Peterborough.
	Glynch Brook	Reduction of water usage	Summer compensation flows, guaranteed minimum flows	To protect the ecosystem	Implemented	Water quality, habitats, fisheries, biodiversity	Severn Trent Water. 2004. Biodiversity Action Plan: The First Five Years.
	River Hamble	Reduction of water usage	Increase flows	To benefit ecosystem	Implemented	Brown trout, water quality, macroinverte-brates	Environment Agency. 2003.The East Hampshire Catchment Abstraction Management Strategy.
	Hewell Grange Lake	Other	Increased winter flows to lake, Higher summer levels	To benefit environment	Implemented	Wildlife	Blackburn, O. 2005. Hewell Grange Lake Re-generation. United Kingdom Environment Agency, *Agency News:* February 16, 2005.
	River Holme	Dam re-operation	Mimic natural regime	To benefit fisheries	Planned/ Proposed	Habitat availability, fisheries, salmonids	Hull International Institute. 2004. Impacts of reservoir compensation release schemes on the fish populations of four tributaries of the rivers Don and Calder, Yorkshire. Environ-mental Agency (2003-2004).
	Itchen River	Other	Augmentation to naturalize flow	To benefit the River Itchen Atlantic Salmon & trout fisheries	Implemented	Invertebrates; fish populations	Giles, DM, VA Lowings & P Midgley. 1988. River Regulation by Seasonal Groundwater Abstraction: The case of the River Itchen. *Reg. Riv: Res & Mgmt,* Vol 2, 335-347.

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	RIVER	TYPE OF FLOW	RESTORED FLOW COMPONENTS	ECOLOGICAL PURPOSES	PROJECT STATUS	MONITORING INDICATORS	REFERENCE
England (cont)	River Kennet	Other	Increased flows	To benefit fisheries & water quality	Planned/ Proposed	Wild brown trout, grayling, roach, dace, chub, silver fish, habitat, water quality	Fisheries Action Plan Group. 2002. Kennet & Pang Fisheries Action Plan.
	River Lambourn	Other	Augmented flows	To minimize loss of macrophytes due to extreme low flows	Implemented	Macrophytes, invertebrates & fish populations	Wright, J.F., Berrie, A.D. 1987. Ecological effects of groundwater pumping and a natural drought on the upper reaches of a chalk stream. *Reg. Rivs.: Research and Management:* Vol 1, 145-160.
	River Little Stour	Other	Increase flows	To protect the ecosystem & low flow alleviation	Planned/ Proposed	Water quality, fisheries	Environment Agency. 2003. The Stour Catchment Abstraction Management Strategy.
	River Lowther catchment	Other	Minimum flows	To protect the ecosystem	Implemented	Fish migration, habitat	Locke, E & M Robinson. 2003. The River Eden cSAC Conservation Strategy.Conserving Natura 2000 Rivers. English Nature, Peterborough.
	River Lowther	Dam re-operation & Other	Improved flows	To benefit fisheries	Implemented	Water quality, salmon migration	United Utilities. 2003. Corporate Responsibility Report. Environment: Maintaining Improvement.
	River Loxley	Dam re-operation	Mimic natural regime	To benefit fisheries	Planned/ Proposed	Habitat availability, fisheries, salmonids	Hull International Institute. 2004. Impacts of reservoir compensation release schemes on the fish populations of four tributaries of the rivers Don and Calder, Yorkshire. Environmental Agency (2003-2004).
	River Medway	Reduction of water usage & Other	Minimum flows required*, improved flows desired, drought safeguard flows	To benefit ecosystem & estuary	Implemented* Planned/ Proposed	Habitat. fisheries, vegetation, water quality, otter, brown trout, white-clawed crayfish, water vole	Kent Government (UK).2004. Rivers & Streams. Internet: www.kent.gov.uk/living/biodiversity
	River Meon	Reduction of water usage	Increase flows during low flow period	To benefit ecosystem	Implemented	Brown trout, sea trout, water quality, macroinvertebrates	Environment Agency. 2003.The East Hampshire Catchment Abstraction Management Strategy.
	River Mimram	Reduction of water usage & Other	Increased flows	To benefit the ecosystem	Planned/ Proposed	Water quality, aquatic vegetation, fisheries, habitat, mammals, white clawed crayfish, macroinvertebrates, sediment	The River Restoration Centre. 2001. River Restoration & Chalk Streams. Seminar Proceedings: January, 2001.
	River Misbourne	Other	Low flows alleviated, more natural flows restored	To benefit ecosystem	Implemented	Habitat, fisheries, aquatic vegetation	Environment Agency. 2004. The State of England's Chalk Rivers.

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	RIVER	TYPE OF FLOW	RESTORED FLOW COMPONENTS	ECOLOGICAL PURPOSES	PROJECT STATUS	MONITORING INDICATORS	REFERENCE
England (cont)	River Nadder	Other	Full range of seasonally variable flows & protection from low flows	To protect the ecosystem	Planned/ Proposed	Water quality, Atlantic salmon, bullhead, lamprey, aquatic vegetation, land use, groundwater (Desmoulin's whorl snail)	Wheeldon, J. 2003. The River Avon cSAC Conservation Strategy. English Nature. Peterborough.
	Nine Mile River	Other	Full range of seasonally variable flows & protection from low flows	To protect the ecosystem	Planned/ Proposed	Water quality, Atlantic salmon, bullhead, lamprey, aquatic vegetation, land use, groundwater (Desmoulin's whorl snail)	Wheeldon, J. 2003. The River Avon cSAC Conservation Strategy. English Nature. Peterborough.
	River Noe	Dam re-operation	Seasonally variable envioron-mental flows	For ecosystem restoration	Planned/ Proposed	Habitat, invertebrates, grayling, brown trout, brook lamprey, bullhead	Maddock, I.P., et al 2001. Reallocation of compensation releases to restore river flows and improve instream habitat availability in the upper Derwent catchment, Derbyshire, UK. *Reg. Rivs.*17: 417-441.
	River North Tyne	Dam re-operation	Improved minimum flows	To improve fisheries	Implemented	Habitat, invertebrates, Atlantic salmon	Gibbins, CN, C Soulsby, MJ Jeffries & R Acornley. 2001. Developing ecologically acceptable river flow regimes: a case study of Kielder reservoir and the Kielder water trans-fer system. *Fisheries Mgmt & Ecol* (8) 6:463
	River Okement	Other	Environmental flows	To protect the ecosystem	Planned/ Proposed	Water quality, salmon, habitat, riparian vegetation, otter, fairy shrimp	The Dartmoor Biodiversity Project. 2004. Action for Wildlife. Internet: www.swbiodiversity. org.uk/Habitats/Freshwater
	River Ouse & tributaries	Other	Augmentation flows in summer/ low flow periods	To benefit aquatic ecosystem & improve water quality	Implemented	Water quality & temperatures, fish populations (roach, gudgeon, bream, chub, dace, perch)	Cowx, IG. 2000.Potential impact of ground-water augmentation of river flows on fisheries: A case study from the River Ouse,Yorkshire. *Fisheries Mgmt & Ecology.* (7) pp 85-96
	Oxton Dumble	Other	Alleviation of low flows	To protect aquatic environment	Implemented	Fish populations, vegetation, water quality, wildlife	Blackburn, O. 2005. Bringing back the flow. United Kingdom, Environment Agency, *Agency News:* March 17, 2005
	River Pang	Reduction of water usage	Alleviation of low flows	To benefit aquatic community	Implemented	Wildlife, sediment, fisheries	CEH Wallingford. Study Site: River Pang. Internet document. www.nwl.ac.uk
	River Parrett	Dam re-operation & Other	Alleviation of low flows & more environmentally beneficial flows	To benefit river, moors, & estuary	Implemented & Planned	Water quality, otter, water vole, white-clawed crayfish, mussels, saltmarsh, birds, fishery	Environment Agency. 2002. The Parrett Catch-ment Water Management Strategy Action Plan.
	River Piddle	Other	Increased summer & fall flows	To benefit river & fish populations	Implemented	Fish spawning, habitat	Wessex Water Company. 2004. Low flow rivers. *WaterVoice Wessex.*

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	RIVER	TYPE OF FLOW	RESTORED FLOW COMPONENTS	ECOLOGICAL PURPOSES	PROJECT STATUS	MONITORING INDICATORS	REFERENCE
England (cont)	River Plym	Other	Environmental flows	To protect the ecosystem	Planned/ Proposed	Water quality, salmon, habitat, riparian vegetation, otter, fairy shrimp	The Dartmoor Biodiversity Project. 2004. Action for Wildlife. Internet: www.swbiodiversity.org. uk/Habitats/Freshwater
	River Ribble	Dam re-operation	Mimic natural regime	To benefit fisheries	Planned/ Proposed	Habitat availability, fisheries, salmonids	Hull International Institute. 2004. Impacts of reservoir compensation release schemes on the fish populations of four tributaries of the rivers Don and Calder, Yorkshire. Environ-mental Agency (2003-2004).
	River Rivelin	Dam re-operation	Mimic natural regime	To benefit fisheries	Planned/ Proposed	Habitat availability, fisheries, salmonids	Hull International Institute. 2004. Impacts of reservoir compensation release schemes on the fish populations of four tributaries of the rivers Don and Calder, Yorkshire. Environ-mental Agency (2003-2004).
	River Ryton	Reduction of water usage	Alleviation of low flows	To protect the ecosystem	Implemented	Water quality, habitats, fisheries, biodiversity	Severn Trent Water. 2004. Biodiversity Action Plan: The First Five Years.
	River Severn	Other	Increased flows (low flow periods)	To protect river ecosystem	Implemented	Fish, habitat, water quality	United Kingdom Environment Agency. 2003. Severn Corridor CAMS.
	River Severn	Dam re-operation	Environmental flows & drought management plans	To protect river ecosystem & estuary	Implemented	Fish, habitat, water quality, waterfowl, macroinvertebrates, salmon, shad, allis, lamprey, twaite, otter	United Kingdom Environment Agency. 2003. Severn Corridor CAMS.
	Sommerset Moors	Other	Increased flows in winter & splash flooding	To benefit breeding birds	Implemented	Wading bird populations	Dyson, M., G. Bergkamp & J Scanlon (eds) 2003. Flow. The Essentials of Environmental Flows. IUCN, Gland, Switzerland and Cambridge, UK. xiv + 118 pp.
	River Tavy	Other	Environmental flows	To protect the ecosystem	Planned/ Proposed	Water quality, salmon, habitat, riparian vegetation, otter, fairy shrimp	The Dartmoor Biodiversity Project. 2004. Action for Wildlife. Internet: www.swbiodiversity. org.uk/Habitats/Freshwater
	River Taw	Other	Environmental flows	To protect the ecosystem	Planned/ Proposed	Water quality, salmon, habitat, riparian vegetation, otter, fairy shrimp	The Dartmoor Biodiversity Project. 2004. Action for Wildlife. Internet: www.swbiodiversity. org.uk/Habitats/Freshwater

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	RIVER	TYPE OF FLOW	RESTORED FLOW COMPONENTS	ECOLOGICAL PURPOSES	PROJECT STATUS	MONITORING INDICATORS	REFERENCE
England (cont)	River Teign	Other	Environmental flows	To protect the ecosystem	Planned/ Proposed	Water quality, salmon, habitat, riparian vegetation, otter, fairy shrimp	The Dartmoor Biodiversity Project. 2004. Action for Wildlife. Internet: www.swbiodiversity.org.uk/Habitats/Freshwater
	River Till	Other	Full range of seasonally variable flows & protection from low flows	To protect the ecosystem	Planned/ Proposed	Water quality, Atlantic salmon, bullhead, lamprey, aquatic vegetation, land use, groundwater (Upper Avon -Desmoulin's whorl snail)	Wheeldon, J. 2003. The River Avon cSAC Conservation Strategy. English Nature. Peterborough.
	River Tone	Reduction of water usage & Dam re-operation	Variable minimum flows	To protect the ecosystem	Implemented	Water quality, fisheries, aquatic vegetation, aquatic invertebrates, salmon migration, brown trout, coarse fish, grayling	Environment Agency. 2004. The Tone Catchment Abstraction Management Strategy.
	River Ver	Reduction of water usage & Other	Increased flows	To protect the ecosystem	Planned/ Proposed	Water quality, fisheries, habitat	The River Restoration Centre. 2001. River Restoration & Chalk Streams. Seminar Proceedings. January, 2001.
	River Wear	Dam re-operation	Improved minimum flows	To improve fisheries	Implemented	Habitat, invertebrates, Atlantic salmon	Gibbins, CN, C Soulsby, MJ Jeffries & R Acornley. 2001. Developing ecologically acceptable river flow regimes: a case study of Kielder reservoir and the Kielder water transfer system. *Fisheries Mgmt & Ecol* (8) 6:463
	River Wey	Reduction of Water usage	Restoration of natural flows	To benefit ecosystem	Implemented	Water quality	South East Water. 2003. Our Five Year Plan.
	River Whittendale	Reduction of water usage	Alleviation of low flows	To protect ecosystem	Planned/ Proposed	Fisheries, habitats, macroinvertebrates, salmonids	Environment Agency. 2003. The Brennand and Whitendale Low Flow Improvement Scheme. No. 4 Newsletter 2003.
	River Worfe	Other	Alleviation of low flows	To protect the ecosystem	Implemented	Water quality, habitats, fisheries, biodiversity	Severn Trent Water. 2004. Biodiversity Action Plan: The First Five Years.
	River Wye	Other	Alleviation of low flows	To protect ecosystem	Implemented	Habitat, fishery	Thames Water. 2004. River Wye and River Bulbourne. Chilterns Low Flow Alleviation Scheme.
	River Wylye	Other	Increased flows	To benefit target fish & their habitat	Implemented	Fish population, habitat	Dyson, M., G. Bergkamp & J Scanlon (eds) 2003. Flow. The Essentials of Environmental Flows. IUCN, Gland, Switzerland and Cambridge, UK. xiv + 118 pp.

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	RIVER	TYPE OF FLOW	RESTORED FLOW COMPONENTS	ECOLOGICAL PURPOSES	PROJECT STATUS	MONITORING INDICATORS	REFERENCE
England (cont)	River Yealm	Other	Environmental flows	To protect the ecosystem	Planned/ Proposed	Water quality, salmon, habitat, riparian vegetation, otter, fairy shrimp	The Dartmoor Biodiversity Project. 2004. Action for Wildlife. Internet: www.swbiodiversity.org.uk/Habitats/Freshwater
Ireland	River Kennet	Other	Minimum flows	To benefit wild brown trout	Implemented	Brown trout population	Dyson, M., G. Bergkamp & J Scanlon (eds) 2003. Flow. The Essentials of Environmental Flows. IUCN, Gland, Switzerland and Cambridge, UK. xiv + 118 pp.
Scotland	River Borgie	Other	Natural flow regime, 90% flow required, *protection from unnatural high flows		Planned/ Proposed *Implemented	Freshwater pearl mussel, otter, Atlantic salmon, habitat, water quality, aquatic & riparian vegetation, forestry practices	Birkeland, K. 2003. The River Borgie cSAC Conservation Strategy. Conserving Natura 2000 Rivers. English Nature. Peterborough.
	Endrick Water	Dam re-operation & Other	More naturalized environmental flow regime	To conserve river ecosystem	Planned/ Proposed	Atlantic Salmon, water quality, lamprey, vegetation	Bond, L. 2003. The Endrock Water cSAC Conservation Strategy. Conserving Natura 2000 Rivers. English Nature, Peterborough.
	River Kerry	Dam re-operation	Minimum flows*, freshets*, moderate flushing flows, reduction of rapid fluctuations	To conserve the freshwater pearl mussel	Implemented* Planned/ Proposed	Freshwater pearl mussel, Atlantic salmon, trout, water quality, vegetation, habitat	Birkeland, K. 2003. The River Kerry cSAC Conservation Strategy. Conserving Natura 2000. English Nature, Peterborough.
	River Leven	Dam re-operation	More naturalized environmental flow regime	To improve ecosystem and fish passage	Planned/ Proposed	Atlantic Salmon, water quality, lamprey, vegetation	Bond, L. 2003. The Endrock Water cSAC Conservation Strategy. Conserving Natura 2000 Rivers. English Nature, Peterborough.
	Scotland Rivers & lakes	Reduction of water usage	Increased flow volume	For ecological health & sustainability of aquatic resources	Planned/ Proposed	Water quality, aquatic habitat & species, wildlife	Ministry of the Environment. 2001. Rivers, Lochs, Coasts: The Future for Scotland's Waters. Report.
	Scotland Rivers & lakes	Dam re-operation	More natural flow regime	For ecological health & sustainability of aquatic resources	Planned/ Proposed	Water quality, aquatic habitat & species, wildlife	Ministry of the Environment. 2001. Rivers, Lochs, Coasts: The Future for Scotland's Waters. Report.
Wales	Afon Teifi	Other	Augmented flows	For ecological health of ecosystem	Implemented	Aquatic vegetation, otter, birds, habitat, fisheries incl. Atl. Salmon, lamprey, bull-head, brown trout, water quality, macro-invertebrates	Davis, S. 2003. The Afon Teifi cSAC Conserv-ation Strategy. Conserving Natura 2000 Rivers. English Nature, Peterborough.

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	RIVER	TYPE OF FLOW	RESTORED FLOW COMPONENTS	ECOLOGICAL PURPOSES	PROJECT STATUS	MONITORING INDICATORS	REFERENCE
United States							
Alabama	Cahaba River	Dam Removal	Free flowing	To benefit ecosystem	Implemented	Snails, mussels, fish populations, habitat, wildlife	Bouma, K. 2004. Cahaba wildlife making gains after removal of dam. *Birmingham News.* November 15, 2004.
	Coosa River	Dam re-operation	Increased minimum flows	To benefit tuloma snail habitat	Implemented	Tuloma Snail	Mobile River Basin Aquatic Ecosystem Coalition. 1997. Mobile River Basin Aquatic Ecosystem: Draft.
	Coosa River	Dam re-operation	Minimum flow below Jordan dam	To benefit the interrupted rocksnail	Implemented	Interrupted rocksnail, habitat	Novak, SF. 2004.Interrupted Rocksnail Re-introduced to the Coosa River. In *Return of the Natives.* C. Olsenius, Ed. Southeast Water-shed Forum.
	Tallapoosa River	Dam re-operation	Higher flows	To increase diversity in aquatic population	Implemented	Aquatic population; diversity of the fish assemblage	Bednarek, Angela T. 2001. Undamming Rivers: a review of the ecological impacts of dam removal. *Environmental Management (27)6:* 803-814
	Tallapoosa River	Dam re-operation	Spring drought event plan	For drought contingency	Implemented	Standing stock of fish populations (preditory, non-preditory, & forage fish). Included were black bass, grass carp, smallmouth buffalo, freshwater drum, channel catfish.	Hornsby, J. 2002. Periodic Monitoring of the Effects of a 72% MAF Min. Continuous Flow at Thurlow Dam, AL, Over an Interval of 12 Yrs. Using Rotenone Combined with Mark-Recap-ture Estimates. *Instream Flow Council Biennial Meeting*. May 19-22, 2002
	Tallapoosa River	Dam re-operation	Minimum continuous flow, new peaking regime	To benefit & protect fish populations	Implemented	Fish population density & diversity, rotenone monitoring survey, macroinvertebrates.	Hornsby, J. 2002. Business Correspondence. Environmental Coordinator, Division of Wildlife & Freshwater Fisheries.
	Tallapoosa River	Dam re-operation	Reduced Fluctuations, higher low-flows	To benefit native & sport fisheries; aquatic habitat, water temperature	Planned/ proposed	Black basses, catfish, shoal lily, fine-lined pocket-books, sport fish, water temp, minnows, darter, mussels & native fish populations.	Irwin, ER & MC Freeman. 2002. Proposal for Adaptive Management to Conserve Biotic Integrity in a Regulated Segment of the Tallapoosa River, Alabama, USA. *Conservation Biology* (16) 5: 1212-1222.
	Tallapoosa River	Dam re-operation	Enhanced flow regime	To increase aquatic diversity	Implemented	Fish diversity, distribution; water depth	Travnichek, VH, MB Bain & MJ Maceina. 1995. Recovery of a Warmwater Fish Assemblage after the Initiation of a Min.-Flow Release Down-stream from a Hydroelec. Dam. *Trans. of the Am Fish Soc* 124:836-844.

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	RIVER	TYPE OF FLOW	RESTORED FLOW COMPONENTS	ECOLOGICAL PURPOSES	PROJECT STATUS	MONITORING INDICATORS	REFERENCE
Alabama (cont)	Tallapoosa River	Dam re-operation	Enhanced flow regime	To increase aquatic diversity	Implemented	Diversity & abundance of fish population in shoreline habitats at specific life stage	Bain,MB & Travnichek,VT.1996. Assessing Impacts and Predicting Restoration Benefits of Flow Alterations in Rivers Developed for Hydro-electric Power. *Proceedings of the 2nd IAHR* .
Alaska	Bradley River	Dam re-operation	Variable flow regime to mimic natural flow	To benefit fish population & habitat	Implemented	Fish population, quality & quantity of habitat	Instream Flow Council. 2002. Instream Flows for Riverine Resource Stewardship. Page 94
	Chatanika River	Dam Removal	Increased flow for 65 miles	For fish passage & habitat	Implemented	Fish populations including chinook & chum salmon, whitefish, & northern pike, & Acrtic grayling	Florida Museum of Natural History. 2002.Fish Passage Restored on Alaska's Chatanika River. *Ichthyology*. March 28.2002. Internet: www.flmnh.ufl.edu.fish/innews/passage2002.
	Sustina River	Dam re-operation	More natural flow regime including seasonal patterns	For ecosystem health	Implemented	Water quality, sediment, aquatic pop-ulations & habitat, terrestrial species	Instream Flow Council. 2002. Instream Flows for Riverine Resource Stewardship. Page 94
	Terror River	Dam re-operation	Variable flow regime to mimic natural regime	To sustain fishery & habitat	Planned/ Proposed	Fish populations, habitat	Instream Flow Council. 2002. Instream Flows for Riverine Resource Stewardship. Page 94
Arizona	Agua Fria River	Dam re-operation & other	Simulate constant and seasonal flows	To develop method for riparian restoration & groundwater discharge	Planned/ Proposed	Cottonwood development, water depth	Springer, A.E. et al. 1999. Coupling ground-water and riparian vegetation models to assess effects of reservoir releases. *Water Resources Research*: 35(12) 3621-3630.
	Bill Williams River	Dam re-operation	Mimic natural flood peak timing and duration	To promote establishment of native trees	Planned/ Proposed	Composition & density of woody vegetation; depth to groundwater;	Midcontinent Ecological Science Center, USGS. Dam Management and Riparian Vegetation along the Bill Williams River,Az. Internet: www.mesc.usgs.gov/research/
	Bill Williams River	Dam re-operation	Pulse flows (spring & fall), Flood flows, base flows	For riparian area health	Planned/ Proposed	Riparian vegetation	National Academy of Sciences. 2002. *Riparian Areas: Functions & Strategies for Management.* National Academy Press, Washington, D.C.
	Bill Williams River	Dam re-operation	Controlled flood releases	For riparian health	Implemented	Cottonwood & willow seedlings, invasive species, fisheries	McKinnon, S. Floods to bring habitat info: Alamo Dam releases set by coalition. *The Arizona Republic.* 03/05/2005.
	Colorado River	Dam re-operation	Controlled flood flow	For sediment transport; beach building & habitat enhancement; deepening of backwaters & eddies	Implemented	Kanab ambersnail (KAS) population and its habitat	Meretsky, V.J., DL Wegner, L.E.Stevens. 2000. Balancing Endangered Species & Ecosystems: A Case Study of Adaptive Management in Grand Canyon. *Environ. Mgmt* (25)6: 579-586

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	RIVER	TYPE OF FLOW	RESTORED FLOW COMPONENTS	ECOLOGICAL PURPOSES	PROJECT STATUS	MONITORING INDICATORS	REFERENCE
Arizona (cont)	Colorado River	Dam re-operation	Controlled Flood flows; interim flows; modified low-fluctuating flows; reduced diurnal variation	For sand deposits to rebuild sand bars & habitats concentration	Implemented	Algal & benthic insect community; water temperature; sediment	Walters, C, J Korman, LE Stevens, & B Gold. 2000. Ecosystem modeling for evaluation of adaptive management policies in the Grand Canyon. *Conserv. Ecology* 4(2):1. Internet: www.consecol.org/vol14/iss2/art1
	Colorado River	Dam re-operation	Mimic magnitude and timing of scouring flood	To restore habitat for endangered fish species and scour riparian zone	Implemented	Sedimentation; beach sizes; fish population & vegetation	Collier MP, Webb RH, Andrews ED. 1997. Experimental flooding in the Grand Canyon. *Scientific American* 276: 82-89.
	Colorado River	Dam re-operation	Habitat maintenance flows, steady low summer flows (experimental)	To conserve sediments & to benefits native fish			Freeman, R. 2002. The restoration potential of harnessing artificial floods. *Conservation In Practice.* Vol. 3 No. 2: 34-38.
	Colorado River	Dam re-operation	2nd experimental scouring flood flow	To build beaches & sandbars for habitat for humpback chub & willow growth	Implemented	Sediment transport, sandbar formation; willows, flycatchers	Reese, April. 2004. Glen Canyon Dam test flow raises questions about future operations. *Land Letter*. Dec. 2, 2004. www.eenews.net
	Fossil Creek	Dam Removal	Decommissioning & dam removal to restore free flow (by 2009)	To restore stream	Planned/ Proposed	Threatened & endangered species incl. Mexican spotted owl, bald eagle, Chiricahua leopard frog, southwest willow flycatcher, Yuma clapper rail, razorback sucker, Arizona agave, loach minnow, & spikedace	Reese, April. 2004. Endangered Species. FERC approves decommission of Ariz. hydro project project: full flows to be restored. *Greenwire.* Internet: www.eenews. October 18, 2004.
	Gila River	Other	To restore natural flow regime, including flood flows	To restore the river's native species & natural communities	Planned/ Proposed	Sonora sucker; desert sucker; roundtail chub; spikedace; Gila trout; longfin dace; speckled dace; loach minnow;amphibians	Freshwater Initiative of The Nature Conservancy. Site Profile of Gila River. Available upon request.
	Lower Colorado	Dam re-operation	Flood flows	To maintain and restore critical ecosystem processes	Implemented	Not indicated	USACE,Los Angeles District. 1997. *Annual Report on Water Control Management Water Year 1996.* p4
	Ramsey Creek	Reduction of water usage	Increased flows	To protect riparian resources	Implemented	Wetland & fen plant communities, aquatic communities, longfin dace, desert sucker	Freshwater Initiative. 2002. Upper San Pedro-Site Profile. Available upon request. www.freshwaters.org
	San Juan River	Dam re-operation	Mimic magnitude, timing, and duration of peak flow; restore low winter baseflows	For recovery of endangered fish species	Implemented	Fish population	Poff, N.L. et al.1997. The Natural Flow Regime, A paradigm for river conservation and restoration. *Bioscience* 47(11):769-784.

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	RIVER	TYPE OF FLOW	RESTORED FLOW COMPONENTS	ECOLOGICAL PURPOSES	PROJECT STATUS	MONITORING INDICATORS	REFERENCE
Arizona (cont)	San Pedro River	Other	Increased year-round flow	To benefit native fish and aquatic life and migratory birds	Implemented	Fish, aquatic life & bird populations	McKinnon, Shaun. 2002. Flow to improve in San Pedro River. *The Arizona Republic*. 09/08/02. Internet: www.arizonarepublic.com
Arkansas	White River	Dam re-operation	Reestablishment of minimum and maximum flows from all dams	To benefit fish & wildlife	Planned/ Proposed	Water temperature; trout habitat; trout growth	Arkansas Game & Fish commission. 1997. Hampton Waterfowl Research Center. Memo of 06/23/1997 -White River Mitigation Meeting.
	White River	Dam re-operation	Reduce peaking activity, higher low flows	To benefit fish, & aquatic habitat	Planned/ Proposed	Water quality, fish populations, invertebrates	State of Missouri. 2002. White River Watershed: Hydrology Chapter. Internet document.
California	Alameda Creek	Dam Removal	Increased flows	To benefit steelhead population	Implemented	Steelhead & rainbow trout	Alameda Creek Alliance. 2002. Threatened Steelhead Back in Alameda Creek. Press release, 01/06/02. Internet: www.alameda creek.org
	Alameda Creek	Dam re-operation	Increased coldwater summer flows	To benefit steelhead population	Planned/ Proposed	Steelhead & rainbow trout population	Alameda Creek Alliance. 2004. Federal Protection Proposed for Alameda Creek Rainbow Trout. Press release 06/16/04. Internet: www.alamedacreek.org
	Alamitas Creek	Dam Removal/ Dam re-op	Improved flows	To protect aquatic ecosystem	Planned/ Proposed	Steelhead & chinook salmon, Calif. Red legged frog, western pond tutle, water quality, flora, birds, wildlife, aquatic habitat, sediment.	Santa Clara Valley Water District. 2003. Notice of Preparation; Environmental Impact Report for the Alamaden Dam Program. Internet: www.valleywater.org
	American River (Lower)	Other	Minimum flows; pulse flows; minimize flow fluctuations; simulate more natural annual & seasonal flow pattern	To protect all life stages of anadromous fish	Planned/ Proposed	Salmonids; American shad; Chinook salmon & steelheads	Jones & Stokes. 2001. A compendium of existing flow recommendations for Central Valley streams. August. (J&S 01024.) Sacramento,CA. Prepared for CALFED Bay- Delta Program, Environmental Water Program Steering Committee, Sacramento, CA
	American River (No. & Middle Forks)	Other	Improved flows	For environmental integrity	Planned/ Proposed	Fish populations; water quality; riparian & aquatic habitat	University of Calif/Davis. 2001. California Ecological Restoration Projects Inventory. Internet: http://endeavor.des.ucdavis.edu

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	RIVER	TYPE OF FLOW	RESTORED FLOW COMPONENTS	ECOLOGICAL PURPOSES	PROJECT STATUS	MONITORING INDICATORS	REFERENCE
California (cont)	Antelope Creek	Other	Increased flow Oct-June	To benefit chinook salmon & steelhead survival	Planned/ Proposed	Fish Populations	Jones & Stokes. 2001. A compendium of existing flow recommendations for Central Valley streams. August. (J&S 01024.) Sacramento, CA. Prepared for CALFED Bay-Delta Program, Environmental Water Program Steering Committee, Sacramento, CA
	Battle Creek	Dam re-operation	Increase in fall flow regime	To sustain adequate flows for salmon & steelhead spawning	Implemented	Salmon spawning	Christopher, M. 2003. Friends of the River Boosts Flows for Threatened Salmon in Battle Salmon in Battle Creek. *Headwaters*, Winter 2003, pg 10.
	Battle Creek	Other	Improve instream flow	To benefit chinook salmon & steelhead	Planned/ Proposed	Fish populations	Jones & Stokes. 2001. A compendium of existing flow recommendations for Central Valley streams. August. (J&S 01024.) Sacramento, CA. Prepared for the CALFED Bay-Delta Program, Environmental Water Program Steering Committee, Sacramento, CA
	Bear Creek	Dam Removal	Increased flow during spring & fall	To benefit chinook salmon & steelhead	Planned/ Proposed	Fish populations	Jones & Stokes. 2001. A compendium of existing flow recommendations for Central Valley streams. August. (J&S 01024.) Sacramento, CA. Prepared for CALFED Bay-Delta Program, Environmental Water Program Steering Committee, Sacramento, CA
	Bear River	Other	Minimum flows; flow events	To improve spawning, incubating & rearing of chinook salmon, steelhead and sturgeon	Planned/ Proposed	Fish populations	Jones & Stokes. 2001. A compendium of existing flow recommendations for Central Valley streams. August. (J&S 01024.) Sacramento, CA. Prepared for CALFED Bay-Delta Program, Environmental Water Program Steering Committee, Sacramento, CA
	Beaver Creek	Reduction of water usage	Restored to free flowing state	To protect fish & aquatic life; improve water quality to Mokelumne River	Implemented	FERC mandated monitoring program includes temp & oxygen monitoring & aquatic populations	Friends of the River. 2000. Rivers of Power. Report. Internet : www.friendsoftheriver.org
	Butte Creek	Dam Removal	Removal of 4 dams & 12 water diversions for 25 miles of unimpeded flow; halted intentional flooding	For restoration of fisheries (chinook salmon)	Implemented	Outmigrating Chinook salmon juvenile fish	American Rivers, Friends of the Earth, & Trout Unlimited. 1999. Dam Removal Success Stories. Pp13-16. Internet: www.tu.org

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	RIVER	TYPE OF FLOW	RESTORED FLOW COMPONENTS	ECOLOGICAL PURPOSES	PROJECT STATUS	MONITORING INDICATORS	REFERENCE
California (cont)	Cache Creek	Other	Mimic more natural seasonal flows	To benefit salmon & steelhead; native fish; wetlands & riparian habitats	Planned/ Proposed	Fish populations	Jones & Stokes. 2001. A compendium of existing flow recommendations for Central Valley streams. August. (J&S 01024.) Sacramento, CA. Prepared for CALFED Bay-Delta Program, Environmental Water Program Steering Committee, Sacramento, CA
	Calaveras River	Other	Enhanced minimum flows; winter flow events	To improve conditions for chinook salmon; sturgeon; striped bass; contribution to Delta outflows	Planned/ Proposed	Water temperature; salmonid population	Jones & Stokes. 2001. A compendium of existing flow recommendations for Central Valley streams. August. (J&S 01024.) Sacramento, CA. Prepared for CALFED Bay-Delta Program, Environmental Water Program Steering Committee, Sacramento, CA
	Carmel River	Other	Minimum flows	To benefit steelhead	Implemented	Fish population	Carmel River Steelhead Association and The Carmel Watershed. Internet: www.carmel riverwatershed.org
	Clear Creek	Dam Removal	To restore natural flow	To improve water supply to the central CA valley region and the Bay Delta region	Implemented	Not indicated	Environmental News Network. United Press International: Oct. 7, 2000. Two CA dams to come down in water project. Internet: www.enn. com/news/wire-stories/2000/10/10072000 /upi_dams_32332.asp
	Clear Creek	Dam re-operation	Periodic scouring floods; increased flow Oct-May & June-Sept	For spring-run Chinook & steelhead holding, spawning & rearing habitat	Planned/ Proposed	Fish populations; water temperature	Jones & Stokes. 2001. A compendium of existing flow recommendations for Central Valley streams. August. (J&S 01024.) Sacramento, CA. Prepared for CALFED Bay Delta Program, Environmental Water Program Steering Committee, Sacramento, CA
	Cold Creek	Dam Removal	Reestablished stream flow, restored to mountain meadow ecosystem	For improved water quality; flood control, fish habitat restoration	Implemented	Resident and spawning fish populations, water quality	American Rivers, Friends of the Earth, & Trout Unlimited. 1999. Dam Removal Success Stories. Pp 41-44. Internet: www.tu.org
	Cosumnes River	Other	Improve summer and fall base flows	To ensure adequate flows for salmonids	Planned/ Proposed	Salmonid population	Jones & Stokes. 2001. A compendium of existing flow recommendations for Central Valley streams. August. (J&S 01024.) Sacramento, CA. Prepared for CALFED Bay-Delta Program, Environmental Water Program Steering Committee, Sacramento, CA

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	RIVER	TYPE OF FLOW	RESTORED FLOW COMPONENTS	ECOLOGICAL PURPOSES	PROJECT STATUS	MONITORING INDICATORS	REFERENCE
California (cont)	Cottonwood Creek	Other	Emulate summer and fall flows	To benefit the holding and spawning of chinook salmon	Planned/ Proposed	Fish populations	Jones & Stokes. 2001. A compendium of existing flow recommendations for Central Valley streams. August. (J&S 01024.) Sacramento, CA. Prepared for CALFED Bay-Delta Program, Environmental Water Program Steering Committee, Sacramento, CA
	Cow Creek	Other	Increased flow to mimic natural seasonal runoff pattern	To benefit migrating chinook salmon & steelhead	Planned/ Proposed	Fish population	Jones & Stokes. 2001. A compendium of existing flow recommendations for Central Valley streams. August. (J&S 01024.) Sacramento, CA. Prepared for the CALFED Bay-Delta Program, Environmental Water Pgm. Steering Committee, Sacramento, CA.
	Crocker Creek	Dam Removal	2 miles of free flow	To improve habitat for chinook & steelhead	Implemented	Chinook & Steelhead	American Rivers. 2002. Dam Removals. Internet available.
	East Panther Creek	Dam Removal	Restored natural flow regime	To benefit river ecosystem	Implemented	Sediment	American Rivers. 2004. Dams Removed from 1999-2003. Internet: www.americanrivers.org
	Eel River	Dam Removal & Other	Remove dams and diversion tunnel (90% of river flow) to natural flow	To benefit chinook salmon, coho & steelhead populations	Planned/ Proposed	Salmon populations	Pejchar, L & K. Warner. 2001. Forum: A River Might Run Through It Again: Criteria for Consideration of Dam Removal & Interim Lessons from California. *Environ. Mgmt.* 28(5):561-575.
	Feather River	Dam re-operation & Other	Emulate seasonal streamflow pattern; increase minimum flows	To benefit fish and plant communities & ecological processes	Planned/ Proposed	Salmon & steelhead; American shad; white sturgeon & green sturgeon	Jones & Stokes. 2001. A compendium of existing flow recommendations for Central Valley streams. August. (J&S 01024.) Sacramento, CA. Prepared for CALFED Bay-Delta Program, Environmental Water Program.
	Ferrari Creek	Dam Removal	Free flow	To remove fish barrier	Planned/ Proposed	Fish population Steelhead	American Rivers. 2002. Dam removal. Internet available.
	Kern River	Dam re-operation	Minimum flows	For ecosystem maintenance	Implemented	Water quality, fisheries, benthic macro-invertebrates, sediment, wildlife & land use, riparian vegetation	Southern California Edison. 2003. Final application for License - Borel Hydroelectric Project. FERC No. 382. February 26, 2003.
	Klamath River	Dam re-operation	Increased flow (3 weeks) in fall (from Trinity River reservoir)	To benefit migrating salmon	Implemented	Water temperature, salmon, water quality	U.S. Bureau of Reclamation. 2004. Trinity River Flows Increase to Assist Fall Fish Migration on Lower Klamath and Trinity Rivers. News release: August 20, 2004

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	RIVER	TYPE OF FLOW	RESTORED FLOW COMPONENTS	ECOLOGICAL PURPOSES	PROJECT STATUS	MONITORING INDICATORS	REFERENCE
California (cont)	Klamath River	Dam re-operation	Improved environmental flows	For salmon & water quality	Planned/ Proposed	Water quality, macroinvertebrates, habitat, sediment transport, fisheries, vegetation, amphibians, reptiles, wildlife, mollusks, land use	Pacificorp. 2002. Study Status Reports: Klamath Hydro Relicensing Project, FERC Project No. 2082.
	Lee Vining Creek	Dam re-operation	Flows restored	For ecosystem health	Implemented	Habitat	California Trout. 2002. Protection of the Public Trust. Internet: www.caltrout.org/about/consvict
	Malibu Creek	Dam Removal	Restore to free flowing state	For habitat & spawning for Pacific steelhead; sediment transport	Planned/ Proposed	Genetically distinct Pacific steelhead	American Rivers. Malibu Creek, California. Internet: www.americanrivers.org
	Matilija Creek	Dam Removal	To restore fish passage and sediment transport	To restore steelhead population; to allow natural flow of sediment downstream	Planned/ Proposed	Steelhead	American Rivers. Matilija Dam, Matilija Creek: Ventura, California. Internet www.americanrivers.org
	Merced River	Other	Increase seasonal flows; reduce rapid flow fluctuations	To benefit chinook salmon	Planned/ Proposed	Salmon population at various points in life cycle	Jones & Stokes. 2001. A Compendium of existing flow recommendations for Central Valley streams. August. (J&S 01024.) Sacramento, CA. Prepared for CALFED Bay-Delta Program, Environmental Water Program.
	Mokelumne River	Dam re-operation	Established year-round minimum flows; pulse flows regulated.	To protect fish, wildlife & riparian habitat	Implemented	Temperature & oxygen; fish populations & FERC mandated monitoring program for aquatic species	Foothill Conservancy. February 2001. Internet: www.outdoingit.com
	Mokelumne River	Other	Enhance summer & fall base flows; provide spring flow event; reduce & control flow fluctuations; pulse flows	For the benefit of fisheries and riparian corridor	Planned/ Proposed	Juvenile salmonids	Jones & Stokes. 2001. A compendium of existing flow recommendations for Central Valley streams. August.(J&S 01024.) Sacramento, CA.Prepared for CALFED Bay-Delta Program, Environmental Water Program Steering Committee, Sacramento, CA.
	Mokelumne River	Other	Increased flows due to removal of dams on tributaries	To benefit river health	Implemented	Fish populations	American Rivers. 2004. Dams Removed from 1999-2003. www.americanrivers.org
	North Fork Feather River	Dam re-operation	Increased base flows & more natural seasonal flow pattern	For river health	Implemented	Fisheries, rainbow trout, habitat, water temperature, sediment, wildlife	California Trout. 2002. Rock Creek -Cresta Relicensing Settlement Agreement Signing. Internet: www.caltrout.org/about/consvict.html

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	RIVER	TYPE OF FLOW	RESTORED FLOW COMPONENTS	ECOLOGICAL PURPOSES	PROJECT STATUS	MONITORING INDICATORS	REFERENCE
California (cont)	North Fork Kern River	Dam re-operation	Increased minimum flows; increased whitewater flows	To improve fisheries & habitat	Implemented	Fisheries; rainbow trout	Evans, Steve. 2003. Kern River Settlement Will Boost Whitewater Flows. *Headwaters*. Winter 2003, pg. 11
	Owens River	Dam re-operation	Increase base flows; partially restore overbank flows	To restore riparian vegetation and habitat for native fishes and non-native brown trout	Implemented	Fish population	Hill MT, Platts WS. In press. Restoration of riparian habitat with a multiple flow regime in the Owens River Gorge, California. *Journal of Restoration Ecology*.
	Owens River	Dam re-operation	Increased pulse and base flows	To rewater the river; riparian vegetation; fisheries & habitat.	Implemented	Microhabitat; brown trout, owens sucker, speckled dace,owens tui chub; willow & cottonwoods, birch & rose; riparian vegetation; sediment	Hill, Mark T. & Wm.S. Platts. 1998. Ecosystem Restoration: A Case Study in the Owens River Gorge, California. *Fisheries*: vol 23, No.11: 18-27.
	Panther Creek, East & West	Dam Removal	Restored to natural free flow	For fish, wildlife & steam ecosystem	Implemented	Multi-agency monitoring under FERC agreement	Foothill Conservancy. February 2001. Archives. Internet: www.outdoingit.com
	Parker Creek	Dam re-operation	Flows restored	For ecosystem health	Implemented	Habitat	California Trout. 2002. Protection of the Public Trust. Internet: www.caltrout.org/about/consvict
	Pit River	Dam re-operation	Test sediment movement releases (May & August)	To benefit aquatic habitat	Implemented	Sediment composition & movement	Smeltzer, M. 2003. Gravel Mobility Study Report; Appendix A-1. May 13, 2003.
	Paynes Creek	Other	Increased spring & fall flows	To improve spawning, rearing & migration for chinook salmon & steelhead	Planned/ Proposed	Fish populations	Jones & Stokes. 2001. A compendium of existing flow recommendations for Central Valley streams. August. (J&S 01024.) Sacramento, CA. Prepared for CALFED Bay-Delta Program,Environmental Water Program Steering Committee, Sacramento, CA
	Putah Creek	Other	Mimic more natural seasonal flow patterns	To benefit Salmon & steelhead; sustain native fish, wetlands & riparian habitats	Planned/ Proposed	Fish populations	Jones & Stokes. 2001. A compendium of existing flow recommendations for Central Valley streams. August. (J&S 01024.) Sacramento, CA. Prepared for CALFED Bay-Delta Program,Environmental Water Program.
	Putah Creek	Reduction of water usage	Spawning & rearing flows; living space flows	To benefit aquatic habitat & ecosystem restoration; improve biodiversity	Planned/ Proposed	Native fish population	Moyle, P.B., M.P. Marchetti,J. Baldrige & T.L.Taylor. 1998. Fish health and diversity: justifying flows for a California stream. *Fisheries management* 23 (7): 6-15

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	RIVER	TYPE OF FLOW	RESTORED FLOW COMPONENTS	ECOLOGICAL PURPOSES	PROJECT STATUS	MONITORING INDICATORS	REFERENCE
California (cont)	Rush Creek	Dam re-operation	Restore perennial flow to lower Rush Creek; Minimum flows & flushing flows	To restore aquatic and riparian habitat	Implemented	Riparian vegetation (incl. Willows); bank erosion; sediment composition; fish populations	Kondolf, G.M. 1998. Lessons learned from river restoration projects in California. *Aquatic Cons.: Marine* & Freshwater Ecosystems: 8:39-52.
	Rush Creek	Dam re-operation	Restoration of perennial flow & Flushing flows	To restore channel form and fine sediment transport	Implemented	Channel dimensions	Kondolf, GM. 1998. Development of Flushing Flows for Channel Restoration on Rush Creek, California. *Regulated Rivers:*6(3): 183-193. 198.
	Rush Creek (and other tributaries to Mono Lake)	Dam re-operation	Increase minimum flows	To restore riparian vegetation and habitat for waterfowl and non-native fishes	Implemented	Riparian habitat; waterfowl population	[LADWP] Los Angeles Department of Water and Power. 1995. Draft Mono Basin stream and channel restoration plan. Los Angeles: Department of Water and Power
	Russian River	Other	Reduced flow to a more natural state.	To restore flow to the Eel River (90% diversion), to benefit chinook, coho & steelhead	Planned/ Proposed	Not indicated	Pejchar, L & K. Warner. 2001. Forum: A River Might Run Through It Again: Criteria for Consideration of Dam Removal and Interim Lessons from California. *Environ. Mgmt* 28(5): 561-575
	Russian River	Dam re-operation	Increased fall flows	To benefit chinook salmon	Planned/ Proposed	Chinook salmon spawning runs	Sierra Club. 2004. August Water Report.
	Sacramento River	Dam re-operation	To restore more natural flow regime	To restore ecological health to the river system	Implemented	Delta smelt, splittail, chinook salmon, steelhead; water quality	Freshwater Initiative,The Nature Conservancy. Site Profile: Sacramento/ San Joaquin Bay-Delta System. www.freshwaters.org
	San Joaquin River	Dam re-operation	Increased flows; more flow variability; higher peak flows of shorter duration	To sustain native fish; restore terrestrial & aquatic habitats; to benefit fish populations	Planned/ Proposed	Chinook salmon & steelhead; rainbow trout; American shad; splittail, & sturgeon	Jones & Stokes. 2001. A compendium of existing flow recommendations for Central Valley streams. August. (J&S 01024.) Sacramento, CA. Prepared for CALFED Bay-Delta Program, Environmental Water Program.
	Santa Margarita River	Other	Increased flows; high & low flow events	To maintain & restore river ecosystem	Planned/ Proposed	Arroyo chub; arroyo toad; Bell's vireo; Southern steelhead	The Nature Conservancy. Santa Margarita River. Available upon request.
	Solstice Creek	Dam Removal	Not specified	To restore spawning habitat for steelhead	Implemented	Fish population	American Rivers. 2002. Dam Removal. Internet available.
	Stanislaus River	Other	Establish minimum seasonal flows	To protect all life stages of anadromous fish; American shad, chinook salmon & steelhead	Planned/ Proposed	Fish populations	Jones & Stokes. 2001. A compendium of existing flow recommendations for Central Valley streams. August. (J&S 01024.) Sacramento, CA. Prepared for CALFED Bay-Delta Program, Environmental Water Program.

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	RIVER	TYPE OF FLOW	RESTORED FLOW COMPONENTS	ECOLOGICAL PURPOSES	PROJECT STATUS	MONITORING INDICATORS	REFERENCE
California (cont)	Trinity River	Dam re-operation	Flushing flows	To maintain active channel width; sediment transport; & benefit aquatic and riparian habitats	Implemented	Sand and gravel transport analysis	Kondolf, G.M. & P.R. Wilcox. 1996. The flushing flow problem:Defining and evaluating objectives. *Water Resources Research* Vol. 32, No.8 : 2589-2599.
	Trinity River	Dam re-operation	Mimic more natural , variable flow;	To establish processes that create & maintain aquatic habitat; create spawning & rearing habitat for fish.	Implemented	Monitoring adult salmon returns; juvenile salmon tolerance to water temperature; gravel bars;steelhead.	McBain & Trush, Inc. 2000. Trinity River Restoration Program. Summary of the U.S. Secty. Of the Interior Record of Decision, December 19, 2000.
	Trinity River	Dam re-operation	Mimic timing and magnitude of peak flow	To benefit habitat, riparian vegetation; fish flows	Implemented	Salmon population	Barinaga M. 1996. A recipe for river recovery? *Science* 273: 1648-1650.
	Trinity River	Dam re-operation	Increased seasonal flows	To restore salmon & steelhead habitat	Planned/ Proposed	Salmon & steelhead	Greenwire. 2004. Interior may increase dam flows to protect fish habitat, court rules. July, 14, 2004. E & E Publishing. Internet.
	Trinity River	Dam re-operation	Increased flow (3 weeks) in fall (from Trinity River reservoir)	To benefit migrating salmon	Implemented	Water temperature, salmon, water quality	U.S. Bureau of Reclamation. 2004. Trinity River Flows Increase to Assist Fall Fish Migration on Lower Klamath and Trinity Rivers. News release: August 20, 2004
	Truckee River	Dam re-operation	Mimic timing, magnitude, and duration of peak flow, and it's rate of change during recession	To restore riparian trees, especially cottonwoods	Implemented	Cottonwood population	Klotz, JR & S. Swanson. 1997. Managed instream flows for woody vegetation recruitment, a case study. Pages 483-489 *In Water Works Association*; American Water Works Association. 6/29 -7/3; Keystone, CO.
	Tuolumne River	Other	Increase in minimum seasonal flows	Primarily for benefit of chinook salmon; protect & restore riparian habitat	Planned/ Proposed	Chinook salmon	Jones & Stokes. 2001. A compendium of existing flow recommendations for Central Valley streams. August. (J&S 01024.) Sacramento, CA. Prepared for CALFED Bay-Delta Program, Environmental Water Program
	Ventura River	Dam Removal	Increased flow	For beach nourishment	Implemented	Beach composition	The Aspen Institute. 2002. Dam Removal: A New Option for a New Century.
	Walker Creek	Dam re-operation	Flows restored	For ecosystem health	Implemented	Habitat	California Trout. 2002. Protection of the Public Trust. Internet: www.caltrout.org/about/consvict

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	RIVER	TYPE OF FLOW	RESTORED FLOW COMPONENTS	ECOLOGICAL PURPOSES	PROJECT STATUS	MONITORING INDICATORS	REFERENCE
California (cont)	West Panther Creek	Dam Removal	Restored natural flow regime	To benefit ecosystem	Implemented	Sediment, trout habitat	American Rivers. 2004. Dams Removed from 1999-2003.Internet: americanreivers.org
	Wilder Creek	Dam Removal	Increased flows	To provide habitat for endangered species	Implemented	Rainbow & steelhead trout, red-legged frogs, aquatic habitat, water temp, sediment, vegetation.	California Dept. of State Parks & Recreation. 2001. Final Aquatic Assessment & Monitoring Plan for Wilder Ranch State Park. Dec 1,2001.
	York Creek	Dam Removal	Free flow for 2.5 miles	To provide riverine habitat for steelhead & rainbow trout	Planned/ Proposed	Fish populations	American Rivers. 2002. Dam Removal. Internet available.
	Yuba River	Dam Removal	2 dam removals to restore more natural flow	To benefit salmon population; water quality, sediment transport	Planned/ Proposed	Fish populations; water quality; sediment transport & toxins (mercury)	Pejchar, L. & K. Warner. 2001. Forum: A River Might Run Through It Again: Criteria for Consideration of Dam Removal & Interim Lessons from California. *Environ. Mgmt* 28(5): 561-575.
	Yuba River	Other	Improved flows; reduce & control flow fluctuations	Improvements to benefit chinook salmon, steelhead, & American shad populations	Planned/ Proposed	Fish populations; water temperature	Jones & Stokes.2001. A compendium of existing flow recommendations for Central Valley streams. Aug. (J&S 01024.) Sacramento, CA. CALFED Bay-Delta Program, Environ. Water Program. Steering Committee, Sacramento, CA
Colorado	Arkansas River	Dam re-operation	Minimum flows	To benefit fishery	Implemented	Fishery	Dils, R. 2004. Report on the 2004 Arkansas River Basin Water Forum. *Colorado Watershed Assembly* Newsletter, Spring 2004.
	Birdseye Gulch	Reduction of water usage	Increased flows through leasing & appropriation of rights	To protect the ecosystems	Planned/ Proposed	Biologic & hydraulic data	Colorado Water Conservation Board. 2004. Memorandum. January 13, 2004.
	Blue River	Reduction of water usage	Increased instream flows	To protect & improve the ecosystem	Implemented & Planned	Brook trout, rainbow trout, habitat	Colorado Water Conservation Board. 2004. Summary Report: Proposed Water Right Acquisition, Boulder Creek & the Blue River.
	Boulder Creek	Reduction of water usage	Increased instream flows	To protect & improve the ecosystem	Implemented & Planned	Rainbow & Brown trout, habitat	Colorado Water Conservation Board. 2004. Summary Report: Proposed Water Right Acquisition, Boulder Creek & the Blue River.
	Colorado River	Dam re-operation	15-Mile Reach: base flows	To improve habitat availability for warm water fish	Planned/ Proposed	Community structure, density & biomass for fish assemblages	Colorado Division of Wildlife. 2005. Native Fish Habitat Preference Study. 1/05/2005. Internet: http://wildlife.state.co.us/aquatic/native/index.asp

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	RIVER	TYPE OF FLOW	RESTORED FLOW COMPONENTS	ECOLOGICAL PURPOSES	PROJECT STATUS	MONITORING INDICATORS	REFERENCE
Colorado (cont)	Currant Creek	Reduction of water usage	Increased flows through leasing & appropriation of rights	To protect the ecosystems	Planned/ Proposed	Biologic & hydraulic data	Colorado Water Conservation Board. 2004. Memorandum. January 13, 2004.
	Dyke Creek	Reduction of water usage	Increased flows through leasing & appropriation of rights	To protect the ecosystems	Planned/ Proposed	Biologic & hydraulic data	Colorado Water Conservation Board. 2004. Memorandum. January 13, 2004.
	East Branch Sayres Gulch	Reduction of water usage	Increased flows through leasing & appropriation of rights	To protect the ecosystems	Planned/ Proposed	Biologic & hydraulic data	Colorado Water Conservation Board. 2004. Memorandum. January 13, 2004.
	Fourmile Creek	Reduction of water usage	Increased flows through leasing & appropriation of rights	To protect the ecosystems	Planned/ Proposed	Biologic & hydraulic data	Colorado Water Conservation Board. 2004. Memorandum. January 13, 2004.
	Green Creek	Reduction of water usage	Increased flows through leasing & appropriation of rights	To protect the ecosystems	Planned/ Proposed	Biologic & hydraulic data	Colorado Water Conservation Board. 2004. Memorandum. January 13, 2004.
	Gunnison River	Dam re-operation	Mimic magnitude, timing, and duration of peak flow; vegetation	For recovery of endangered fish, aquatic species &	Implemented	Vegetation, sediment transport	Sanford, JA. 1994. Instream flows to assist the recovery of endangered fishes of the Upper Colorado River Basin. UD Dept of the Interior, Natl. Biological Report #24.Survey.
	Gunnison River, North Fork	Reduction of water usage	Increased instream flow year- round	To restore natural river processes; allow for native & migratory fish populations	Implemented	Stream morphology; riparian vegetation; aquatic habitat; water quality; fish populations	North Fork River Improvement Assn. Internet: www.nfria.paonia.com
	La Plata Gulch	Reduction of water usage	Increased flows through leasing & appropriation of rights	To protect the ecosystems	Planned/ Proposed	Biologic & hydraulic data	Colorado Water Conservation Board. 2004. Memorandum. January 13, 2004.
	Little Cochetopa Creek	Reduction of water usage	Increased flows through leasing & appropriation of rights	To protect the ecosystems	Planned/ Proposed	Biologic & hydraulic data	Colorado Water Conservation Board. 2004. Memorandum. January 13, 2004.
	Little Dolores River	Reduction of water usage	Increased flows through leasing & appropriation of rights	To protect the ecosystems	Planned/ Proposed	Biologic & hydraulic data	Colorado Water Conservation Board. 2004. Memorandum. January 13, 2004.
	Medano Creek	Other	Environmental flows	To protect Great Sand Dunes National Park ecosystem	Planned/ Proposed	Groundwater, aquatic & wetland vegetation, wildlife, habitats	US Dept of the Interior. 2004. Application for Approval of Absolute Ground Water Rights. District Court, Water Division No. 3. Colorado. Case # 2004CW35.
	North East Creek	Reduction of water usage	Increased flows through leasing & appropriation of rights	To protect the ecosystems	Planned/ Proposed	Biologic & hydraulic data	Colorado Water Conservation Board. 2004. Memorandum. January 13, 2004.

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	RIVER	TYPE OF FLOW	RESTORED FLOW COMPONENTS	ECOLOGICAL PURPOSES	PROJECT STATUS	MONITORING INDICATORS	REFERENCE
Colorado (cont)	North Fork West Creek	Reduction of water usage	Increased flows through leasing & appropriation of rights	To protect the ecosystems	Planned/ Proposed	Biologic & hydraulic data	Colorado Water Conservation Board. 2004. Memorandum. January 13, 2004.
	North Platte River Basin	Other	Increased flows	To improve stream flows	Implemented	Tree types & density, snow & rainfall	Troendle, CA, JM Nankervis, & LS Porth. 2003. The Impact of Forest Service Activities on the Stream Flow Regime in the Platte River.Internet www.fs.gov
	Ouzel Creek	Dam Removal	Returned Bluebird Lake to its natural elevation & seasonal fluctuations; creek return to more natural unimpeded flow	To return area to natural state, benefit the greenback cutthroat trout	Implemented	Vegetation and aquatic habitat, fish populations, water quality	American Rivers, Friends of the Earth, & Trout Unlimited. 1999. Dam Removal Success Stories. Pp 87-90. Internet: www.tu.org
	Piedra River	Other	Natural high and low flows & flood flows simulating natural regime	For subsistence & maintenance of biological function within the aquatic & terrestrial ecosystems	Planned/ Proposed	brown & brook trout; juventile fish; speckled dace; sediment; alder, willows, red-osier; cottonwood	USDA- Forest Service, Rocky Mt. Region & San Juan National Forest. 1991. Instream Flow Needs Assessment and Recommenda-tions for the Proposed Piedra Wilderness.
	Platte River	Other	Pulse flow; base flow augmentation	To benefit endangered species	Planned/ Proposed	Wildlife; endangered species; habitat; water quality; ground water levels.	US Dept of the Interior. 2001. Ground Water and River Flow Analysis. Tech. Report of the Platte River EIS Team. US. Dept of Interior, Bureau of Reclamation, Fish and Wildlife Svc.
	Potter Creek	Reduction of water usage	Increased flows through leasing & appropriation of rights	To protect the ecosystems	Planned/ Proposed	Biologic & hydraulic data	Colorado Water Conservation Board. 2004. Memorandum. January 13, 2004.
	Roubideau Creek	Reduction of water usage	Increased flows through leasing & appropriation of rights	To protect the ecosystems	Planned/ Proposed	Biologic & hydraulic data	Colorado Water Conservation Board. 2004. Memorandum. January 13, 2004.
	Sand Creek	Other	Environmental flows	To protect Great Sand Dunes National Park ecosystem	Planned/ Proposed	Groundwater, aquatic & wetland vegetation, wildlife, habitats	US Dept of the Interior. 2004. Application for Approval of Absolute Ground Water Rights. District Court, Water Division No. 3. Colorado. Case # 2004CW35.
	Spring Creek	Reduction of water usage	Increased flows through leasing & appropriation of rights	To protect the ecosystems	Planned/ Proposed	Biologic & hydraulic data	Colorado Water Conservation Board. 2004. Memorandum. January 13, 2004.
	Thirtyone Mile Creek	Reduction of water usage	Increased flows through leasing & appropriation of rights	To protect the ecosystems	Planned/ Proposed	Biologic & hydraulic data	Colorado Water Conservation Board. 2004. Memorandum. January 13, 2004.
	Tunnel Creek	Reduction of water usage	Increased flows through leasing & appropriation of rights	To protect the ecosystems	Planned/ Proposed	Biologic & hydraulic data	Colorado Water Conservation Board. 2004. Memorandum. January 13, 2004.

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	RIVER	TYPE OF FLOW	RESTORED FLOW COMPONENTS	ECOLOGICAL PURPOSES	PROJECT STATUS	MONITORING INDICATORS	REFERENCE
Colorado (cont)	West Antelope Creek	Reduction of water usage	Increased flows through leasing & appropriation of rights	To protect the ecosystems	Planned/ Proposed	Biologic & hydraulic data	Colorado Water Conservation Board. 2004. Memorandum. January 13, 2004.
	Yampa River	Dam re-operation	15-Mile Reach: base flows	To improve habitat avail-ability for warm water fish	Planned/ Proposed	Community structure, density & biomass for fish assemblages	Colorado Division of Wildlife. 2005. Native Fish Habitat Preference Study. 1/05/2005. Internet: http://wildlife.state.co.us/aquatic/ native/index.asp
	Yampa River	Dam re-operation	Increased flows	To benefit endangered fish	Planned/ Proposed	Humpback chub, bonytail, Colorado pike-minnow, razorback sucker	Reese, A. 2005. Yampa River agreement aims to meet needs of people and fish. *Land Letter.* Thurs, Jan. 27, 2005.
Connecticut	Colebrook River	Dam re-operation	Improved water releases; improved draw down methods	To improve spawning habitat; prevent soil erosion; improve aquatic habitat	Implemented	Habitats & populations	US Army Corps of Engineers. 2000. Recreational Fisheries Action Plan Annual Report. Fiscal Year 2000.
	Farmington River	Dam re-operation	Augment low flows	To improve fisheries & water quality	Implemented	Not indicated	US Army Corps of Engineers.2000.Recreational Fisheries Action Plan Annual Report FY 2000.
	Naugatuck River	Dam Removal	Eight dam removals; restores 32 miles of river to a natural free-flowing state	To restore fish populations; water quality;	*5 Implemented 3 planned	Water quality, sea-run brown trout, American shad, alewives, blueback herring	American Rivers, Friends of the Earth, Trout Unlimited. 1999. Dam Removal Success Stories. Pp 79-82. Internet: www.tu.org
	Salmon River	Dam Removal	Free flow	For fish passage	Implemented	Atlantic Salmon; Ice regime	White, K.D. & J.J.Moore. 2002. Impacts of Dam Removal on Riverine Ice Regime. *J of Cold Regions Engrg.* March: 2-16.
Delaware	Delaware River Basin	Dam re-operation	Prescribing permanent increase in base flow and reducing ramping rates and peak amplitudes	To restore flow & temp. to normal levels to protect habitat for aquatic fauna & restore brook trout fisheries	Planned/ Proposed	Not indicated	Trout Unlimited. Strategy for Sustainable Management of the Upper Delaware River Basin. Internet www.tu.org
District of Columbia							
	Kenilworth Marsh	Other	Revert back to a freshwater tidal marsh	To clean up & restore the Anacostia River, provide mammal habitat, waterfowl, fish, benthic community	Implemented	Not Indicated	EPA River Corridors & Wetlands Restoration Kenilworth Marsh. Internet: yosemite.epa.gov/ water/restorat.nsf/ProjectByState? OpenView

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Florida

RIVER	TYPE OF FLOW	RESTORED FLOW COMPONENTS	ECOLOGICAL PURPOSES	PROJECT STATUS	MONITORING INDICATORS	REFERENCE
Alafia River	Other	Minimum flows	To benefit the ecosystem	Planned/ Proposed	Not indicated	Southwest Florida Water Management District. 2002. SWFWMD's Northern Tampa Bay II projects. 09/03/2004. Internet: www.swfwmd. state.fl.us
Apalachicola River	Dam re-operation	For connectivity of the river; provide a sufficient flow regime	To ensure health of all native species and communities	Planned/ Proposed	Numerous fish communities; mussels and other aquatic communities; low flow water levels.	Freshwater Initiative, The Nature Conservancy. Site Profile of Apalachicola River and Bay. Available upon request
Blackwater River	Other	Reclaim & restore man-induced erosion & restore hydrology to blocked wetland areas	To restore damaged wetland areas; to increase the wetland habitat for wildife; water quality	Planned/ Proposed	Not indicated	EPA River Corridors & Wetlands Restoration. Blackwater River Project. Internet: yosemite/ epa.gov/ water/restorat. nsf/ProjectByState? OpenView
Braden River	Other	Minimum Flows	To benefit the aquatic system	Planned/ Proposed	Not indicated	Southwest Florida Water Management District. 2002.SWFWMD's Northern Tampa Bay II Projects. 9/3/02. Internet: swfwmd. state.fl.us
Caloosahatchee River	Dam re-operation	Minimum flows	To benefit the downstream estuary	Planned/ Proposed	Aquatic vegetation; tapegrass; salinity	Southwest Florida Water Management District. 2003. Caloosahatchee River and Estuary. Internet: swfwmd.gov/org/wsd/mfl/calfl/
Chipola River	Dam Removal	Produced a more constant flow; a more natural flow regime	To increase biodiversity	Implemented	Fish species (increase from 34-61); riparian habitat; macrophytes; backwater areas.	Bednarek, Angela T. 2001. Undamming rivers: a review of the ecological impacts of dam removal. *Environmental Mgmt:* (27)6 803-814.
Chipola River	Dam Removal	Natural flood & drought cycles	To restore aquatic plant and fish species to Dead Lakes	Implemented	Post-removal study, flora & fauna; water quality; Striped bass; invasive species; sediment & riverbed qualities	American Rivers, Friends of the Earth, & Trout Trout Unlimited. 1999. Dam removal Success Success Stories. Internet: www.tu.org
Everglades	Other	Increased & more natural flows; drawdown pattern	To improve health of the ecological system	Implemented	Field surveys, water level, bird population	Walters, C, Gunderson, L & Holling, CS. 1992. Experimental Policies for Water Management in the Everglades. *Ecological Applications*, Ecological Society of America 2(2):189-202.
Henderson Creek	Dam re-operation	More natural flow into estuary	To benefit estuary habitat & aquatic life	Planned/ Proposed	Nutrient load, aquatic habitat	EPA. 2001. Protecting and Restoring America's Watersheds. Internet document: EPA-840-R-00-001.

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	RIVER	TYPE OF FLOW	RESTORED FLOW COMPONENTS	ECOLOGICAL PURPOSES	PROJECT STATUS	MONITORING INDICATORS	REFERENCE
Florida (cont)	Hillsborough River	Other	Minimum flows	To benefit aquatic life	Implemented	Salinity; aquatic life	Southwest Florida Water Management District. 2001. Minimum Flows and Levels. Internet: www.swfmd.state.fl.us/about/isspapers/mfl
	Kissimmee River	Other	Restore flow to more normal hydrology	For the health of the ecosystem	Implemented	Numerous biotic and abiotic components	Kissimmee River Restoration. Special Issue. Sept. 1995. *Restoration Ecology*. Vol. 3, No. 3. All articles in journal are on various aspects of the restoration project.
	Kissimmee River	Other	Increased water flow using notched weirs and diverted water over former floodplains	To recolonize native aquatic plants and insects, increased fish and waterfowl biomass	Implemented		Toth, 1991. Environmental responses to the Kissimmee River Demonstration Project. S. Fla. Water Manage. Dist., *Tech. Publ. #91-2*, West Palm Beach, FL. 96 pp.
	Kissimmee River	Dam re-operation	Mimic magnitude, duration, rate of change, and timing of high- and low- flow periods	To restore floodplain inundation to recover wetland functions; reestablish in-channel habitats for fish and other aquatic species	Implemented		Toth LA. 1995. Principles and guidelines for restoration of river/floodplain ecosystems-Kissimmee River, FL. Pp 49-73. In *Rehabilitating damaged ecosystems*. 2nd ed. (Cairns J, ed.) Boca Raton (FL): Lewis Publishers/CRC Press.
	Little Manatee River	Other	Minimum flows	To benefit aquatic life	Implemented	Salinity, aquatic life	Southwest Florida Water Management District. 2001. Minimum Flows and Levels. Internet: www.swfmd.state.fl.us/about/isspapers/mfl
	Lower Peace River	Other	Minimum flows	To benefit aquatic life	Implemented	Salinity, aquatic life	Southwest Florida Water Management District. 2001. Minimum Flows and Levels. Internet: www.swfmd.state.fl.us/about/isspapers/mfl
	Loxahatchee River	Reduction of water usage & Dam re-op	Increased flows	To benefit estuaries	Planned/ Proposed	Salinity, water quality, bald cypress, mangrove encroachment	Alber, M & J Flory. 2002. The Effects of Changing Freshwater Inflow to Estuaries: A Georgia Perspective. Georgia Coastal Research Council
	Manatee River	Other	Minimum flows	To benefit aquatic life	Implemented	Salinity, aquatic life	Southwest Florida Water Management District 2001. Minimum Flows and Levels. Internet: www.swfmd.state.fl.us/about/isspapers/mfl
	Middle Peace River	Other	Minimum Flows	To benefit aquatic life	Planned/ Proposed	Not specified	Southwest Florida Water Management District 2001. Minimum Flows and Levels. Internet: www.swfmd.state.fl.us/about/isspapers/mfl

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	RIVER	TYPE OF FLOW	RESTORED FLOW COMPONENTS	ECOLOGICAL PURPOSES	PROJECT STATUS	MONITORING INDICATORS	REFERENCE
Florida (cont)	Northwest Fork Loxahatchee River	Other	Increase minimum flow, dry season flows	To reduce salinity in estuary	Planned/ Proposed	Salinity, vegetation, aquatic habitat, hardwood trees	South Florida Water Management District. 2002. MFLs for the Loxahatchee River and Estuary. Appendix R. 07/10/02.
	Ocklawaha River	Dam Removal	Natural free flow river restoration	To improve fish runs; access for manatees, bird populations	Planned/ Proposed	sediment movement; river morphology; water quality; floodplain contour; vegetation	Shuman, J.R. 1995. Environmental considerations for assessing dam removal alternatives for river restoration. *Reg. Rivs.: Res & Mgmt:* Vol.11, 249-261.
	St. Johns River Basin (Upper)	Other	Increased flow needed to restore marsh hydroperiod; establish a more natural hydrolic regime	To restore wetland habitat, improve water quality, decrease freshwater discharge into lagoon.	Implemented	Water quality, nutrient levels in water, discharge rates; wildlife (panther, ducks, snail kite, game fish)	EPA River Corridors & Wetlands Restoration. Upper St. Johns River Basin. Internet: yosemite.epa.gov/water/restorat.n sf/ ProjectByState?OpenView
	St. Lucie River	Dam re-operation	Minimum flows	To benefit the aquatic ecosystem & estuary	Implemented	Water quality, fish & wildlife, habitat, oligohaline organisms, salinity, sediment loads	Southwest Florida Water Management District. 2002. St. Lucie River: Minimum Flows and Levels. Internet: www.swfwmd.gov/org/wsd/ mfl/stmfl/index.html
	Sulphur Springs	Other	Increased flow	To benefit the Lower Hillsborough River	Planned/ Proposed	Aquatic plant & animal abundance & diversity, salinity	Southwest Florida Water Management District. 2002. SWFWMD's Northern Tampa Bay II projects. 09/03/2002. Internet: www.swfwmd. state.fl.us
	Upper Myakka River	Other	Minimum flows	To benefit aquatic system	Planned/ Proposed	Not specified	Southwest Florida Water Management District. 2002. SWFWMD's Northern Tampa Bay II projects. 09/03/2002. Internet: swfwmd. state.fl.us
	Weekiwachee River	Other	Minimum Flow	To benefit aquatic system	Planned/ Proposed	Aquatic habitat, vegetation, biotic community, macroinvertebrates, fisheries	Southwest Florida Water Management District. 2002. SWFWMD's Northern Tampa Bay II Projects. As of 09/03/2002. Internet: www.swfwmd.state.fl.us
Georgia	Altamaha River	Reduction of water usage & Dam re-op	Increased flows, flooding flows	To benefit estuaries	Planned/ Proposed	Salinity, water quality, sediment flow, crabs, fish, vegetation	Alber, M & J Flory. 2002. The Effects of Changing Freshwater Inflow to Estuaries: A Georgia Perspective. Georgia Coastal Research Council
	Hiwassee River	Dam re-operation	Increased flows in dry season; pulsing flows; reduced fluctuations; increased minimum flows.	To improve water quality & benefit fish & aquatic life	Implemented	Water quality; fish populations; mussel populations	Tennessee Valley Authority. 2001 Report. Internet: www.tva.com

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	RIVER	TYPE OF FLOW	RESTORED FLOW COMPONENTS	ECOLOGICAL PURPOSES	PROJECT STATUS	MONITORING INDICATORS	REFERENCE
Georgia (cont)	Oconee River	Dam re-operation	Spring flows	To benefit spring spawning season, recruitment of redhorse sucker	Implemented	Redhorse sucker	Irwin, ER & MC Freeman. 2002. Proposal for Adaptive Management to Conserve Biotic Integrity in a Regulated River Segment of the Tallapoosa River, Alabama, USA. *Conservation Biology* (16)5:1212-1222.
	Ocmulgee River	Dam re-operation	Improved variable minimum flows	To improve aquatic habitat	Implemented	Habitat, fish populations	Cowie, G. (Ed.) 2002. Reservoirs in Georgia: Meeting Water Supply Needs While Minimizing Impacts. UGA River Basin Science & Policy Center. Internet: www.rivercenter.uga.edu.
	Ogeechee River	Reduction of water usage & Dam re-op	Increased flows, flooding flows	To benefit estuaries	Planned/ Proposed	Salinity, water quality, sediment flow, crabs, fish, vegetation	Alber, M & J Flory. 2002. The Effects of Changing Freshwater Inflow to Estuaries: A Georgia Perspective. Georgia Coastal Research Council
	Satilla River	Reduction of water usage & Dam re-op	Increased flows, flooding flows	To benefit estuaries	Planned/ Proposed	Salinity, water quality, sediment flow, crabs, fish, vegetation	Alber, M & J Flory. 2002. The Effects of Changing Freshwater Inflow to Estuaries: A Georgia Perspective. Georgia Coastal Research Council
	Savannah River	Dam re-operation	Spring flood pulses	To benefit the ecosystem	Implemented	Not indicated	Davis, Kelly. 2004. Savannah River recovers pulse. *Independent-Mail.* March 16, 2004.
	St. Marys River	Reduction of water usage & Dam re-op	Increased flows, flooding flows	To benefit estuaries	Planned/ Proposed	Salinity, water quality, sediment flow, crabs, fish, vegetation	Alber, M & J Flory. 2002. The Effects of Changing Freshwater Inflow to Estuaries: A Georgia Perspective. Georgia Coastal Research Council
	Tallulah River	Dam re-operation	Increased minimum flows, higher fall flow	To improve aquatic & wetland system	Implemented	Not indicated	American Rivers. 2003. Run of The River. Regional Relicensing Reports. Tallualah River GA, North Georgia Project. Internet: www.americanrivers.org
Hawaii	Hakalaoa Stream	Reduction of water usage	Fully restored flows	To benefit stream ecosystem & downstream Taro fields	Implemented	Not specified	Earthjustice. Internet: www.earthjustice.org
	Hiilawe Stream	Reduction of water usage	Fully restored flows	To benefit stream ecosystem & downstream taro fields	Implemented	Not specified	Earthjustice. Internet: www.earthjustice.org
	Lalakea Stream	Reduction of water usage	Fully restored flow	To benefit aquatic life; restore native taro fields	Implemented	Not specified	Earthjustice. Internet: www.earthjustice.org

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	RIVER	TYPE OF FLOW	RESTORED FLOW COMPONENTS	ECOLOGICAL PURPOSES	PROJECT STATUS	MONITORING INDICATORS	REFERENCE
Hawaai (cont)	Waiahole Stream	Reduction of water usage	Increased flows, particularly in the summer months	To restore native stream life and support productivity in downstream estuary	Implemented	Not specified	Earthjustice. Internet: www.earthjustice.org
	Waianu Stream	Reduction of water usage	Increased flows, particularly in the summer months	To restore native stream life and support productivity in downstream estuary	Implemented	Not specified	Earthjustice. Internet: www.earthjustice.org
	Waikane Stream	Reduction of water usage	Increased flows, particularly in the summer months productivity in downstream estuary	To restore native stream life and support	Implemented	Not specified	Earthjustice. Internet: www.earthjustice.org
Idaho	Bear River	Dam re-operation	4 dams re-operated with minimum flows, reduced fluctuations	To protect and restore habitat and native trout population	Implemented	Bonneville cutthroat, rainbow and brown trout; aquatic habitat and water quality; riparian vegetation.	Idaho Rivers United. Bear River. Hydropower page. Internet: www.idahorivers.org/hydrobearair.html
	Big Hat Creek	Reduction in water usage	Increased flow April-October	To benefit fisheries	Implemented	Bull trout, spring chinook & summer steelhead	Columbia Basin Water Transactions Program. 2004. Internet: www.cbwtp.org
	Boise River	Dam re-operation	Minimum flows & flood releases	To benefit ecosystem	Implemented	Not indicated	Dyson, M,G. Bergkamp & J Scanlon (eds) 2003. Flow. The Essentials of Environmental Flows. IUCN, Gland, Switzerland & Cambridge, UK. xiv + 118 pp.
	Clearwater River	Dam Removal	Dam removal on South Fork, & mouth of the mainstem-opened hundreds of miles of river	To improve fish habitat & spawning grounds	Implemented	Salmon & Steelhead population	American Rivers, Friends of the Earth, & Trout Unlimited. 1999. Dam Removal Success Success Stories. Internet: www.tu.org
	Clearwater River	Dam re-operation	Increased flows	To benefit salmon & trout	Planned/ Proposed	Salmon & trout populations, fish habitat	Freeman, AA. 2004. Parties reach deal on tribal rights, Snake River Flows. 2004. *Greenwire.* May 17, 2004. Internet: eee.eenews.net/ Greenwire/Backissues/05172004/05170412.htm
	Colburn Creek	Dam Removal	Dam and sediment removal; enhanced wetlands	To provide spawning habitat for west-slope cutthroat, kamloops rainbow trout, & bull trout	Implemented	Not Indicated	Trout Unlimited. Small Dams Campaign. Idaho Panhandle Chapter, Colburn Creek, Idaho. Internet: http://www.tu.org/small_ dams/removal/3 g-removal_colburn.html.
	Colburn Creek	Dam Removal	Free flow to lake; enhanced wetlands	For fish passage & habitat and spawning grounds; water quality	Implemented	Population of West-slope cutthroat, kamloops rainbow trout, water quality	American Rivers, Friends of the Earth, & Trout Unlimited. 1999. Dam Removal Success Stories. Internet: www.tu.org

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	RIVER	TYPE OF FLOW	RESTORED FLOW COMPONENTS	ECOLOGICAL PURPOSES	PROJECT STATUS	MONITORING INDICATORS	REFERENCE
Idaho (cont)	Forth of July Creek	Reduction in water usage	Increased flow May-October	To benefit fisheries	Implemented	Bull trout, spring chinook & summer steelhead	Columbia Basin Water Transactions Program. 2004. Internet: www.cbwtp.org
	Garden Creek	Reduction in water usage	Increased flow during irrigation season	To benefit habitat	Implemented	Spawning habitat for Yellowstone cutthroat	Trout Unlimited. 2004. Trout Unlimited 2003 Annual Report. Internet: www.tu.org
	Henrys Fork	Dam re-operation	Increased winter minimum flows	To benefit the aquatic community	Implemented	Macrophytes; juvenile trout (brook & rainbow/cutthroat hybrids); spawning & rearing habitat of trout; trumpeter swans	Van Kirk, RW & Griffin, CB.1997. Building a Collaborative Process for Restoration: Henrys Fork of Idaho & Wyoming. In *Watershed Restoration*: *Principles & Practices*(Williams, Woods & Dombeck, Eds.) Pp 253-273.
	Kootenai River	Dam re-operation	Flow augmentation, Mimic the natural flow regime	To reestablish successful reproduction of white sturgeon to prevent extinction	Implemented	Monitoring to determine the movement and survival of the larval white sturgeon is ongoing.	Duke SD, Hallock R. 2001. Recovery Progress Report for the Endangered Kootenai River White Sturgeon. *Endangered Species Update*: Vol. 18 No. 3:75-78
	Kootenai River	Dam re-operation	Summer flows & augmented spring flows	To benefit endangered white sturgeon, threatened bull trout, & ESA listed anadromous species downstream	Implemented	Fish populations	Marotz,BM et al. 2001. Kootenai River white sturgeon: Recovery through regulated flow management, conservation aquaculture and lake fertilization. *Symposium: Practical Approaches for Conserving Native Inland Fishes of the West*. Brad Shepard, Ed. Univ. of Montana
	Otter Creek	Reduction in water usage	Increased flow April-October	To benefit fisheries	Implemented	Bull trout, spring chinook & summer steelhead	Columbia Basin Water Transactions Program. 2004. Internet: www.cbwtp.org
	Pend Oriello River	Dam re-operation	Higher Winter Water Levels	To benefit Kokannee habitat	Implemented	Kokannee habitat & population	US Army Corps of Engineers. 2000. Recreational Fisheries Action Plan Annual Report. Fiscal Year 2000.
	Sheridan Creek	Other	Increased flow	To restore physical & water quality of creek	Implemented	Not indicated	Natural Resources Law Center. 1997. *Restoring the Waters.* Pp 36-37. Univ of Colorado, Boulder, CO. May 1997
	Silver Creek	Reduction of water usage	Preserve natural constant flow; reverse hydrologic condition caused by groundwater pumping & surface water diversions.	To restore/preserve aquatic & riparian plant communities	Planned/ Proposed	Wood River sculpin; loggerhead; booth willow; quaking aspen; red osier dogwood; water levels	Freshwater Initiative of The Nature Conservancy. Site Profile of Silver Creek. 2000. Available upon request.

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	RIVER	TYPE OF FLOW	RESTORED FLOW COMPONENTS	ECOLOGICAL PURPOSES	PROJECT STATUS	MONITORING INDICATORS	REFERENCE
Idaho (cont)	Snake River	Dam re-operation	Reduced fluctuations, increased in base flow	To improve sediment transport & restore integrity of river	Planned/ Proposed	Aquatic habitat, vegetation, wildlife, fish population	Flathead Lake Biological Station & the U.S. Bureau of Reclamation. Cooperative Agreement for Biologically Based System Management Information.
	Snake River	Dam re-operation	Increased flows	To benefit salmon & trout	Planned/ Proposed	Salmon & trout populations, fish habitat	Freeman, AA. 2004. Parties reach deal on tribal rights, Snake River Flows. 2004. *Greenwire.* May 17, 2004. Internet: eee.eenews.net/ Greenwire/Backissues/05172004/05170412.htm
	South Fork Snake River	Dam re-operation	Spring flows	To reduce the number of rainbow trout & promote spawning of native trout	Implemented	Yellowstone cutthroat trout	Thornberry, Rob. 2004. Flushing the fish. *Idahonews.com.* May, 2004.
	South Fork Snake River	Dam re-operation	Minimum & seasonal flows	For aquatic health of river	Planned/ Proposed	Yellowstone cutthroat trout, Yellow Billed Cuckoo, aquatic habitat	US Bureau of Reclamation. 2002. Biologically Based System Management Project, FAQ's. Internet.
Illinois	Brewster Creek	Dam Removal	Free flow	To improve ecosystem	Implemented	Channel formation	River Revival. 2003. Dam removal process never before in Illinois to begin on Brewster Creek. *River Revival Bulletin* No 48, 5/27/03
	Des Plaines River	Dam Removal	3 dams removed to create free flow	To improve river ecosystem.	Planned/ Proposed	Fish populations; oxygen levels	Brink, E. & W. Dvorak, EDS. River Revival Bulletin. No. 24. March 19, 2001. Internet: www.irn.org/revival
	Fox River	Dam Removal	Not Indicated	To provide fish habitat & fish migration	Implemented	Not Indicated	American Rivers. 2002. Dam Removal. Internet available.
	Illinois River	Dam re-operation	Daily hydrologic variation vs. average annual conditions	For floodplain restoration; forest diversity	Planned/ Proposed	Not indicated	Braden, J.B. et al. 1998. Strategic Renewal of Large Floodplain Rivers: A Preliminary Status Report. *Proceedings of 1998 Water & Watershed Prgm Review*. NSF & EPA: p. 25
	Illinois River	Dam re-operation	Reconnect river to floodplain/ backwater; more natural, ecologically sensitive flow regime	To improve natural habitat of the river system/floodplain; improve water quality	Planned/ Proposed	Aquatic communities; false aster; ancient fishes	Freshwater Initiative,The Nature Conservancy. Site Profile of Illinois River. Available upon request.

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	RIVER	TYPE OF FLOW	RESTORED FLOW COMPONENTS	ECOLOGICAL PURPOSES	PROJECT STATUS	MONITORING INDICATORS	REFERENCE
Illinois (cont)	Mackinaw River	Other	Restore base flow, reduce storm peaks	To protect ecosystem	Planned/ Proposed	Fish assemblages, mussels, algal biomass, water quality	Braun, DP, LB Bach, KA cIRUNA, atWarner. 2000. Watershed-Scale Abatement of threats to Freshwater Biodiversity: The Nature Conservancy's Freshwater Initiative. *Watershed 2000 proceedings.* Water Environment Federation. Vancouver, Canada. 7/9-12, 2000.
Iowa	Missouri River	Dam re-operation	Test spring pulse, steady releases during bird nesting season	For river ecosystem health	Planned/ Proposed	Fish, pallid sturgeon, interior least tern, piping plover, habitat, water quality	US Army Corps of Engineers. 2004. Missouri River Mainstem System 2004-2005 Annual Operating Plan.
Kansas	Cottonwood River	Dam re-operation	Maintaining springtime flows for spawning as well as minimum flows during low-water times	For survival of the Neosho madtom (ictalurid) populations	Planned/ Proposed	Neosho madtom pops., site densities for Neosho madtoms, channel catfish, stone cats & non-Neosho madtoms	Ictalurid Populations in Relation to the Presence of a Main-Stem Reservoir in a Midwestern Warm- water Stream with Emphasis on the Threatened Neosho Madtom(2000); *Transactions of the Am. Fish. Soc* 129:1264-1280.
	Fall River	Dam re-operation	Minimum flow, environmental flows	To maintain ecological function & water quality	Planned/ Proposed	Water quality, sediment, aquatic life, threatened & endangered species, fish	Kansas Water Plan. 2003. Verdigris Basin Section. Internet: www.kwo.org
	Missouri River	Dam re-operation	Six states to test flow changes to help restore the river, "Flexible Flow" alternative	For river ecosystem health	Planned/ Proposed	Will be highly monitored	American Rivers. 2/13/02 Press Release. Six States Urge Feds to Test Flow Changes to Restore Missouri River; & Missouri River Dam Operations. Internet: www.americanrivers.org
	Missouri River	Dam re-operation	Test spring pulse, steady releases during bird nesting season	For river ecosystem health	Planned/ Proposed	Fish, pallid sturgeon, interior least tern, piping plover, habitat, water quality	US Army Corps of Engineers. 2004. Missouri River Mainstem System 2004-2005 Annual Operating Plan.
	Neosho River	Dam re-operation	Maintaining springtime flows for spawning as well as minimum flows during low-water times	For survival of the Neosho madtom (ictalurid) populations	Planned/ Proposed	Neosho madtom pops., site densities for Neosho mandtoms, channel catfish, stone cats & non-Neosho madtoms	Ictalurid Populations in Relation to the Presence of a Main-Stem Reservoir in a Midwestern Warm- water Stream with Emphasis on the Threatened Neosho Madtom (2000);*Transactions of the Am. Fish. Soc* 129:1264-1280
	Verdigris River	Dam re-operation	Minimum flow, environmental flows	To maintain ecological function & water quality	Planned/ Proposed	Water quality, sediment, aquatic life, threatened & endangered species, fish	Kansas Water Plan. 2003. Verdigris Basin Section. Internet: www.kwo.org

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Kentucky	Green River	Dam re-operation	Delayed fall releases; using releases to mimic natural variations	To benefit plants, animals, fish & mussels	Planned/ Proposed	Fish & mussel species	The Nature Conservancy. 2002. Press Release. The Nature Conservancy & U.S. Army Corps of Engineers Announce Partnership to Improve Management of US Rivers. www.tnc.org
	Green River	Dam re-operation	Natural flow & temperature regime	To maintain biodiversity, improve water quality	Implemented	Monitoring of flora & fauna, fish, mussels, water quality, groundwater basins, invasive species	US Army Corps of Engineers, Louisville District. 2003. Louisville District & TNC Common Interests.
Louisiana	Black River	Other	Restored flood patterns	To decrease turbidity & to increase fisheries	Implemented	Fish population; water quality	Ewing, M.S. 1991. Turbidity control and fisheries enhancement in a bottomland hardwood back-water system in Louisiana, USA. *Reg. Rivs*: *Res. & Mgmt.,*Vol 6, 87-99
	Red River	Other	Restored flood patterns	To decrease turbidity & to increase fisheries	Implemented	Fish population; water quality	Ewing, M.S. 1991. Turbidity control and fisheries enhancement in a bottomland hardwood back-water system in Louisiana, USA. *Reg. Rivs*: *Res. & Mgmt.,*Vol 6, 87-99
Maine	Androscoggin River	Dam re-operation	Improved flows & improved reservoir drawdown	For ecological restoration	Implemented	Not specified	American Rivers. 2003. Run of The River. Regional Relicensing Reports. Androscoggin River, ME: Union Water Power Projects. Internet: www.americanrivers.org
	Dennys River	Dam re-operation	Revised seasonal flows, revised reservoir drawdown/fill schedule	To sustain wild salmon population	Planned/ Proposed	Atlantic salmon population, habitat, other freshwater fish, macro-invertebrates	Kleinschmidt. 2002. Maine Atlantic Salmon Commission: Dennys River Instream Flow Study. Report. October, 2002.
	East Machias River	Dam Removal	Over 300 miles of free flowing river	To eliminate fish blockages (Inc. Atlantic salmon) during certain flow conditions	Implemented	Atlantic salmon population	Downeast Salmon Federation. The East Machias Dam Removal Before, During, and After. Wild Salmon Resource Center. Internet: www.mainesalmonrivers.org
	Kennebec River	Dam Removal	Restoring free-flow to the sea	For fish migration & spawning	Implemented	Water quality, American shad, alewives, Atlantic salmon, shortnosed sturgeon, rainbow smelt & striped bass	Trout Unlimited. Small Dams Campaign. Kennebec Valley Chapter, Kennebec River, ME. Internet: www.tu.org/small_dam/removal
	Mopang Stream	Reduction of water usage	Increased summer flows	To benefit Atlantic Salmon & habitat	Implemented	Salmon populations; water quality	Maine State Planning Office. 2001. Downstream Salmon Rivers Water Use Mgmt Plan: Pleasant, Narraguagus Rivers, Mopang Stream. Internet: :www.state.me.us

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	RIVER	TYPE OF FLOW	RESTORED FLOW COMPONENTS	ECOLOGICAL PURPOSES	PROJECT STATUS	MONITORING INDICATORS	REFERENCE
Maine (cont)	Narraguagus River	Reduction of water usage	Increased summer flows	To benefit the Atlantic salmon and its habitat	Implemented	Water quality, salmon population and habitat	Maine State Planning Office. 2001. Downstream Salmon Rivers Water Use Mgmt Plan: Pleasant, Narraguagus Rivers, Mopang Stream. Internet: www.state.me.us
	Penobscot River	Dam Removal	Improved flows	To provide access for Atlantic salmon migration	Planned/ Proposed	Water quality, fisheries, habitat, sediment	Penobscot Partners. 2004. Penobscot River Restoration Project. Internet: www.penobscotriver.org
	Pleasant River	Dam Removal	Restored flow to tidal habitat; opened entire river system	To allow for Atlantic salmon habitat/spawning access; improve smelt spawning tidal habitat	Implemented	Fish pops.(incl. Atl. salmon, blueback herring, alewife, lamprey, trout, striped bass, & Am. Eel, smelt), water quality	American Rivers, Friends of the Earth, & Trout Unlimited. 1999. Dam Removal Success Stories. Pp 91-94. Internet: www.tu.org
	Presumpscot River	Dam Removal & other	Free flow on lower river	To create habitat for fish, fish passage, & river & estuary health	Implemented	Atlantic Salmon, striped bass, blueback river herring, American eel, American shad, alewives, habitat, water quality, estuary sediment &	Presumpscott River Plan Steering Committee. 2003. A Plan for the Future of the Presumpscot River. March 26, 2003.
	Presumpscot River	Dam re-operation	Improved flows	To improve water quality & benefit fish populations	Planned/ Proposed	Water quality, fish passage,, American eel	Hydropower Reform Coalition. 2005. The Maine Supreme Court issues important decision on state water quality permitting authority at hydropower dams. *The Newsletter for Hydropower Reform*, January 2005.
	Saco River	Reduction of water usage & Dam re-op	Minimize water level fluctuations; maintain necessary flow	To protect ecosystem including rare species.	Implemented	scirpus longii, Am. Germander; insects, silverling, aquatic plants	Freshwater Initiative, The Nature Conservancy Site Profile of the Saco River Floodplain Project. Available upon request.
	Sebastcook River	Dam Removal	Free flow	To provide fish passage	Planned/ Proposed * removed 2002	Not indicated	Hydropower Reform Coalition. 2004. Battle Won at Fort Halifax. *Running Rivers*. May 2004
	Soundabscook River	Dam Removal	Not specified	To restore habitat for migratory fish	Implemented	Fish migration	Bowman, MB. 2002. Legal Perspectives on Dam Removal. *BioScience.* (52)8: 739-747.
	St George River	Dam Removal	Free Flow	To restore fish passage & habitat for Atlantic Salmon	Implemented	Atlantic Salmon	NOAA. 2002. Sennebec Dam Removal. Internet: www.nmfs.noaa.gov

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	RIVER	TYPE OF FLOW	RESTORED FLOW COMPONENTS	ECOLOGICAL PURPOSES	PROJECT STATUS	MONITORING INDICATORS	REFERENCE
Maine (cont)	Upper Kennebec River	Dam re-operation	Improved flows	To protect riverine fisheries	Implemented	Fish population	American Rivers. 2003. Run of The River. Regional Relicensing Reports. Upper Kennebec River, ME-Multiple Projects Internet: www. americanrivers.org
Maryland	Muddy Bridge Branch	Other	Reduced flood flows	To restore the aquatic ecosystem	Implemented	Sediment, water quality, fish population	Maryland Dept. of Natural Resources. 2001. The Sawmill Creek Targeted Watershed Project.
	Patuxent River	Dam re-operation	Reduction in low flows; Reduction in high flows	To protect downstream biota, benthic macroinvertebrate populations.	Implemented	Benthic macroinvertebrates	Morgan, RP et al. 1991. Effects of Flow Alteration on Benthic Macroinvertebrate Communities below the Brighton Hydroelectric Dam. *J. of Freshwater Ecol.* Vol. 6, No. 4, pp 419-229.
	Potomac River	Dam re-operation	Increase in base flows	To protect the river ecosystem	Planned/ Proposed	Fish population, habitat, water quality, mussels, aquatic plants	Maryland Dept. of Natural Resources. 2003. Habitat Assessment of the Potomac River from Little Falls to Seneca Pool. Report: PPAD-03-1.
	Sawmill Creek	Reduction of water usage & other	Base flows increased, reduced peak flows	To restore water quality & fish habitat & population	Implemented	Water quality, fish populations sediment	Maryland Dept. of Natural Resources. 2001. The Sawmill Creek Targeted Watershed Project.
	Susquehanna River	Dam re-operation	Summer minimum flow	To enhance benthic macroinvertebrates community	Implemented	Invertebrate density including chironomids & net spinning trichopterans	Weisberg,SB, AJ Janicki, J Gerritsen & HT Wilson. 1990. Enhancement of benthic macro-invertebrates by minimum flow from a hydro-electric dam. *Reg Rivs*: *Res & Mgmt* Vol 5, 265-277.
Massachusetts	Bellingham streams	Other	Alleviate low flows	To improve water quality, increase groundwater recharge	Planned/ Proposed	Water quality	Comprehensive Water Resources Management Plan & Environmental Impact Report. Internet: www.crwa.org/ events/bellingham.CWRMP
	Deerfield River	Dam re-operation	Increased min. flows; seasonal variations; re-watered dry river segments; restricted reservoir drawdowns (8 dams)	To benefit fish & wildlife populations	Implemented	Trout; Atlantic salmon; shortnosed sturgeon; smallmouth bass	Kimball, KD. 1997. 'Using Hydroelectric Relicensing in Watershed Restoration: Deerfield Riv. Watershed of VT & MA. In *Watershed Restoration: Principles & Practices.* Williams, JE, CA Wood & MP Dombeck Eds. Pp. 179-197

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	RIVER	TYPE OF FLOW	RESTORED FLOW COMPONENTS	ECOLOGICAL PURPOSES	PROJECT STATUS	MONITORING INDICATORS	REFERENCE
Massachusetts (cont)	Falls River	Dam Removal	Dam breech restored flow	To created fish passage, restore water temperature, & improve sediment transport	Implemented	Salmon population; water quality, temperature, oxygen content	Massachusetts River Restore Program. 2000. Dams in Massachusetts. Department of Fisheries, Wildlife & Environment Law Enforcement. Internet: www.state.ma
	Housatonic River, East Branch	Dam Removal	Free flow available to the cold water fishery (trout)	To double the habitat	Implemented	Trout and trout habitat; river bed; sediment transport	Mass. River Restore Program. 2000. River Restore & Crane & Co. *Celebrate Dam Removal. Newsletter*: Insert Early Winter 2000-1. Internet: www.state.ma.us
	Ipswich River	Other	Simulation study to define flow regime to mimic natural flow regime	To improve stream habitat & fish communities	Planned/ Proposed	Habitat diversity and quality; fish populations (composition and abundance); Water temperatures.	Armstrong, DS, Richards, TA, & GW Parker. 2001. Assessment of Habitat, Fish Communities, & Streamflow Requirements for Habitat Protection, Ipswich Riv., MA, 1998-99. *Water-Res. Invest.Report* 01-4161. MA Div of Fish & Wildlife.
	Ipswich River	Reduction of Water Usage	Increased flow during low flow period (May-Sept.)	To promote a healthier river system	Implemented	Not indicated	Mass. Dept. of Environmental Protection. 2003. State Strikes Balance with Water Withdrawal Permits for Ipswich River Basin Communities. *DEP News,* 5/20/2003.
	Ipswich River Basin	Other	Hypothetical Mgmt. Options study to sustain flows in system	For habitat protection and to meet water supply needs	Planned/ Proposed	Computer model of water levels	Zarriello, P.J. 2002. Effects of Water-Mgmt Alternatives on Streamflow in the Ipswich Riv Basin, MA. Mass. Water Resources Div.; Open-File *Report 01-483*. Internet: www.ma.water.usgs.gov
	Neponset River	Dam Removal	To restore free flow	For fish populations (herring, shad, & smelt)	Planned/ Proposed	Sediment; water quality; fish populations; effects on flooding; wetlands	American Rivers. 2002. Neponset River Dam Removal. Internet: www.amrivers.org
	Quinebaug River	Dam re-operation	Higher base flows, flood flows, reduction in fluctuations	To benefit fish populations & riverine habitat	Planned/ Proposed	Fallfish, common shiner, white sucker, longnose dace, blacknose dace, macro-invertebrates, invertebrates & water temperature.	Parasiewicz, P. & AS Gallagher. 2002. Ecohydrology study of Quinebaug River: Interim Report to Project Mgmt Committee & New England Interstate Water Pollution Control Commission.
	Sawmill Brook	Other	Restore stream flow	To restore smelt habitat	Implemented	Smelt egg deposits; water flows	Massachusetts Riverways Programs. 2001. Adopt-A-Stream Update, North Coastal Watershed. *Riverways Newsletter,* Fall 2001 Pg. 7. Internet: State.ma.us

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Massachusetts	Third Herring Brook	Dam Removal	Restore free flow	To benefit anadromous fish & restore habitat	Planned/ Proposed	Herring, rainbow smelt, water quality, habitat, wildlife	North and South River Watershed Association. 2003. Anadromous Fishway Restoration. Internet: www.nsrwa.org
	Town Brook	Dam Removal	Unobstructed flow	To return the river's natural functions and free-flowing state	Planned/ Proposed * Removed 2002	Alewife population	Massachusetts River Restore Program. 1999. Case Study: Town Brook, Plymouth. Dept of Fisheries, Wildlife & Environment Law Enforcement.Internet: www.state.ma.us
	Yokum Brook	Dam Removal	Free flowing for 5 miles	To provide fish passage and habitat	Implemented	Atlantic Salmon migration	Yokum Brook Restoration Partners. 2003. Celebrate the Removal of "Silk Mill Dam" & Restoration of Yokum Brook. Internet Press Release. April, 2003.
	Yokum Brook	Dam Removal	Free Flow for whole brook	To provide fish passage and habitat	Planned/ Proposed	Atlantic Salmon	Yokum Brook Restoration Partners. 2003. Celebrate the Removal of "Silk Mill Dam" & Restoration of Yokum Brook. Internet Press Release. April, 2003.
Michigan	AuSable River	Dam Removal	Restored river to its free flowing state	Removal for non-ecological purposes	Implemented	Water quality; sediment	Shuman, J.R. 1995. Environmental considerations for assessing dam removal alternatives for river restoration. *Reg. Rirs: Res. & Mgmt.* Vol 11, 249-261.
	Chippewa River	Dam Removal	Free Flow	To restore habitat for steelhead, bluegills & other fish	Planned/ Proposed	Fish population	American Rivers. 2002. Dam Removal. Internet available.
	Muskegan River	Dam Removal	Several dams removed, flow restored not specific	For ecological health of river system	Implemented	Water quality & Temp.; Invertebrates; fish pops.; Amphibians; reptiles; birds; oxbow; willow tag alder; blue iris Rivularia; biomass diversity	Environmental Mgmt Studies Ctr. 2000. Removal of the Big Rapids Dam Remnant: An environmental assessment, Summer. Ferris State Univ; Grand Rapids, Michigan
	Muskegon River	Dam re-operation	Mandated stream flows through 3 dams	To benefit fish , aquatic invertebrates, mussels, & improve water quality	Implemented	Fish, invertebrates, mussels, water quality, water temperature, dissolved oxygen levels	O'Neal, Richard P. 1997. Muskegon River Watershed Assessment. State of Michigan. Dept of Natural Resources *Special Report #19.*
	Ontonogan River	Dam re-operation	Minimum flows; variable seasonal flows to mimic natural flow regime	To protect aquatic resources; to protect riparian dependent species	Implemented	Bald eagle; gray wolf; osprey; loon; spawning fish; water quality, temp & dissolved oxygen; invertebrates; brook trout; benthotic community; walleye; sturgeon	USDA Forest Service, Eastern Region. 2002. Record of Decision. Bond Falls Project Supplemental Environmental Impact Statement.

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	RIVER	TYPE OF FLOW	RESTORED FLOW COMPONENTS	ECOLOGICAL PURPOSES	PROJECT STATUS	MONITORING INDICATORS	REFERENCE
Michigan (cont)	Pine River	Dam Removal	Dam removal in process, flow component not indicated	To benefit native trout population; sediment transport	Implemented	Native trout population; sediment	Bednarek, AT. 2001. Undamming rivers: a review of the ecological impacts of dam removal. *Environ. Mgmt* (27) 6: 803-814
	Sturgeon River	Dam Removal	Free-flowing after dam decommissioning & removal	To benefit the aquatic ecosystem	Implemented	Fish migration, water quality & temperature, aquatic habitat, insect population, smallmouth bass population.	WE Energies. 2004. Sturgeon River Restoration Project. Internet: www.we-energies.com
	Thornapple River	Dam re-operation	Run-of-river mode	To protect aquatic & wildlife resources from rapidly fluctuating stream flows	Implemented	Water quality, temperature; bank erosion; sediment; bald eagle; Indiana bat; woodduck; mallard; osprey	Federal Energy Regulatory Commission. March 27, 2002. Order Issuing License Internet: http://ferris.ferc.gov
	Thunder Bay River	Dam re-operation	Run-of-river operation	For fish passage & aquatic habitat improvement	Implemented	Water quality, fish population & migration & aquatic habitat	American Rivers. 2003. Run of The River. Regional Relicensing Reports. Internet www.americanrivers.org
Minnesota	Cannon River	Dam Removal	Dam removal and built up sediment removal restored natural free flow condition	To allow for fish passage, improved water quality & improve fish habitat	Implemented	Fish population including muskellunge, flathead catfish, bowfin, longnose gar, mooneye & gizzard shad; water quality	American Rivers, Friends of the Earth, & Trout Unlimited. 1999. *Dam Removal Success Stories*. Pp17-20
	Kettle River	Dam Removal	Restored free-flow conditions to entire length of the river	To restore fish habitat	Implemented	Migration of fish population & diversity, Lake Sturgeon, smallmouth bass, walleye, northern pike, mussels	American Rivers, Friends of the Earth, Trout Unlimited. 1999. Dam Removal Success Stories. Pp 65-68. Internet: www.tu.org
	Mississippi River	Dam re-operation	Reduced water levels to re-establish low water periods; restore more natural fluctuations	To benefit fish & wildlife habitat; sedimentation in backwater ecosystem	Planned/ Proposed	Marsh vegetation; Am. wild celery & arrowhead; macrophytes; sediment suspension; light penetration; seed germination	Woltemade, CJ. 1997. Water Level Management Opportunities for Ecological Benefit, Pool 5 Mississippi River. *J. of the Amer. Water Resources Assn*. Vol 33, No. 2: 443-454
	Rainy River	Dam re-operation	Change in timing of drawdowns, Reduced fluctuations in winter	To benefit habitat, wildlife, & nesting birds	Planned/ Proposed	Habitat, aquatic vegetation	Flug, M. 1997. Ecosystem resource considerations in reservoir management. *Water resources Update Summer* 1997: 43-56
	Rock River	Dam removal	More natural flows	To benefit endangered Topeka Shiner	Planned/ Proposed	Habitat, fish, mussels, wildlife, sediment, birds	Kuitunen, A. 2001. Microhabitat and Instream Flow Needs of the Topeka Shiner in the Rock River Watershed, MN. Minnesota Dept. of Natural Resources, Division of Ecological Stream Services Stream Habitat Program

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	RIVER	TYPE OF FLOW	RESTORED FLOW COMPONENTS	ECOLOGICAL PURPOSES	PROJECT STATUS	MONITORING INDICATORS	REFERENCE
Mississippi	Oaklimiter Creek	Dam Removal	Free flow	To benefit ecosystem	Implemented	Channel morphology, vegetation	Pizzuto, J. 2002. Effects of Dam Removal on River Form and Process. *BioScience.* (52)8: 683-691
Missouri	Mississippi River System (Upper)	Dam re-operation	Lowered flood flow levels	To naturalize flood regime	Implemented	Vegetation	Sparks, R.E., Nelson, J.C. & Yin, Y. 1998. Naturalization of the Flood Regime in Regulated Rivers, The case of the upper Mississippi River. *Bioscience* 48(9):706-720
	Missouri River	Dam re-operation	Mimic the natural rise and fall of water levels	To trigger fish reproduction, build sandbars & regenerate cottonwoods in spring	Planned/ Proposed	Cottonwood regeneration	American Rivers Organization. Press Release: 04/ 11,/01. Ambrose urges leaders to support Missouri "spring rise." Internet:American Rivers.
	Pomme de Terre River	Dam re-operation	Reduced winter flood releases, continuous spring releases, increased summer releases,	To benefit fish population & aquatic habitat & biota	Implemented	Nutrient & sediment load, water quality, walleye, white, striped & black bass, gizzard shad, Niangua darter, blacknose shiner & mooneye	Groshens, TP, MA Bayless & RJ Dent. 1999. Pomme de Terre River Watershed Inventory & Assessment. Missouri Dept. of Conservation.
	White River	Dam re-operation	Reduce peaking activity, higher low flows	To benefit fish, & aquatic habitat	Planned/ Proposed	Water quality, fish populations, invertebrates	State of Missouri. 2002. White River Water-shed: Hydrology Chapter. Internet document.
Montana	Big Hole River	Reduction of water usage	Increased summer flows	To benefit the river system	Implemented	Arctic grayling, water temperature	US Fish & Wildlife Service. 2004. Flow Enhancement. Internet: http://montana partners.fws.gov/mt3c6a.htm.
	Bitterroot River	Dam re-operation	Increased flows	To benefit fisheries	Implemented	Bull trout, westslope cutthroat trout	Devlin, S. 2004. Agreement seals water deal for Bitterroot River's fishery. *The Missoulian.* 7/9/04.
	Blackfoot River	Dam Removal	A return to a free-flowing state	To improve water quality and fish passage	Planned/ Proposed	Water quality; sediment; trout migration	Environmental Protection Agency. Superfund Program Clean-up Proposal: Milltown Reservoir Sediments Operable Unit. Internet: www.epa.gov/ region8/superfund/sites/mt
	Blackfoot River	Reduction of water usage	Increased flows in drought years	To protect fisheries	Implemented	Fish populations	EPA. 2001. Watershed Events: A Bulletin on Sustaining Water Resources and Ecosystems. EPA 840-B01-004, Winter 2001.
	Blanchard Creek	Reduction of water usage	Increased flow during irrigation season	To benefit fish and river system health	Implemented	Fish habitat, water quality, fish spawning populations	Environmental Quality Council.1998. Montana Dept. of Fish, Wildlife & Parks Water Leasing Study.*Final Report to the 56th Legislature.*

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	RIVER	TYPE OF FLOW	RESTORED FLOW COMPONENTS	ECOLOGICAL PURPOSES	PROJECT STATUS	MONITORING INDICATORS	REFERENCE
Montana (cont)	Boulder River	Reduction of water usage	Increased flow	To benefit fish & water quality	Implemented	Fish & water quality	Trout Unlimited. 2004. Private Water Leasing-A Montana Approach.
	Camp Creek	Reduction of water usage	Increased flow	To benefit fish & water quality	Implemented	Fish & water quality	Trout Unlimited. 2004. Private Water Leasing-A Montana Approach.
	Cedar Creek	Reduction of water usage	Increased flow during irrigation season	To benefit fish and and river system health	Implemented	Fish habitat, water quality, fish spawning populations	Environmental Quality Council. 1998. Montana Dept of Fish, Wildlife & Parks' Water Leasing Study. *Final Report to the 56th Legislature*.
	Chamberlain Creek	Reduction of water usage	Increased flow during irrigation season	To benefit fish and and river system health	Implemented	Fish habitat, water quality, fish spawning populations	Environmental Quality Council. 1998. Montana Dept of Fish, Wildlife and Parks' Water Leasing Study. *Final Report to the 56th Legislature*.
	Cherry Creek	Reduction of water usage	Increased flow	To benefit fish & water quality	Implemented	Fish & water quality	Trout Unlimited. 2004. Private Water Leasing-A Montana Approach.
	Clark Fork Creek	Reduction of water usage	Increased flow during irrigation season	To benefit fish and and river system health	Implemented	Fish habitat, water quality, fish spawning populations; rainbow and cutthroat trout	Environmental Quality Council. 1998. Montana Dept of Fish, Wildlife and Parks' Water Leasing Study. *Final Report to the 56th Legislature.*
	Clark Fork River	Dam Removal	A return to a free flowing state	To improve water quality and fish passage	Planned/ Proposed	Water quality; sediment; trout, salmon	E.P.A. . Superfund Program Clean-up Proposal: Milltown Reservoir Sediments Operable Unit. Internet: www.epa.gov
	Cottonwood Creek	Reduction of water usage	Increased flow	To benefit fish & water quality	Implemented	Fish & water quality	Trout Unlimited. 2004. Private Water Leasing-A Montana Approach.
	Hells Canyon Creek	Reduction of water usage	Increased flow during irrigation season	To benefit fish and and river system health	Implemented	Fish habitat, water quality, fish spawning populations	Environmental Quality Council. 1998. Montana Dept of Fish, Wildlife and Parks' Water Leasing Study. *Final Report to the 56th Legislature*.
	Flathead River	Dam re-operation	Minimum flow increased, other measures recommended	To protect salmonid eggs & juveniles	Implemented	Benthic organisms & insects; phytoplankton; zooplankton; water temp; fish growth; fish	Fraley, B et al 1989. Mitigation, Compensation, & Future Protection for Fish Populations Affected by Hydropower Devel. in the Upper populations.Columbia System. *Reg. Rivs: Res. & Mgmt* (3)3: 3-18
	Flathead River	Dam re-operation	Experimental ramping flows	To evaluate biotic responses	Implemented	Aquatic macroinvertebrates, fish population & stranding	R2 Resource Consultants. Kerr Dam Ramping Rate Biological Studies. Project Reports. Internet: www.r2usa.com

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	RIVER	TYPE OF FLOW	RESTORED FLOW COMPONENTS	ECOLOGICAL PURPOSES	PROJECT STATUS	MONITORING INDICATORS	REFERENCE
Montana (cont)	Jefferson River	Dam re-operation & Reduction of water usage	Spring peak flows *Increased flows	To benefit fisheries & aquatic habitat	Planned/ Proposed *Implemented	Fisheries, habitat, sediment	Farling, Bruce. 1998. A River Revival: The Jefferson River Project. *Montana Trout,* Issues & Projects. Internet: www.montanatu.org
	Kootenai River	Dam re-operation	Flow augmentation; spring refill period for conservation storage depending upon runoff forecasts in an attempt to better mimic natural flow regime	To reestablish successful reproduction of white sturgeon to prevent extinction	Implemented	Monitoring to determine the movement and survival of the larval white sturgeon is ongoing.	Duke SD, Hallock R. 2001. Recovery Progress Report for the Endangered Kootenai River White Sturgeon, Acipenser transmontanus. *Endangered Species Update:* Vol. 18 No. 3: 75-78
	Kootenai River	Dam re-operation	Summer flows & augmented spring flows	To benefit endangered & threatened species	Implemented	White sturgeon, bull trout, & anadromous species	Marotz,BM et al. 2001. Kootenai River white sturgeon: Recovery through regulated flow management, conservation aquaculture and and lake fertilization. *Symposium: Practical Approaches for Conserving Native Inland Fishes of the West.* Brad Shepard, Ed.
	Locke Creek	Reduction of Water Usage	Higher flows	To benefit genetically pure cutthroat trout population	Implemented	Cutthroat trout population & migration	Helena Independent Record. 2001. Pure cutthroats: Fish predicament spawns united effort between landowner, agency. Helena, MT. 7/8/2001.
	Marias River	Dam re-operation	Restoration of spring pulse; increase in magnitude of flood levels	To attract Pallid Sturgeon population	Implemented	Fish population survival rate & movement	Gardner, WM. 2001. Pallid Sturgeon, Recovery Efforts in the Upper Missouri River, Montana. *Symposium: Practical Approaches for Conserving Native Inland Fishes of the West.* Brad Shepard, Ed. The University of Montana
	Mill Creek	Reduction of water usage	Increased flow during irrigation season	To benefit fish and and river system health	Implemented	Fish habitat, water quality, fish spawning populations	Environmental Quality Council. 1998. Montana Dept of Fish, Wildlife and Parks' Water Leasing Study. *Final Report to the 56th Legislature*.
	Missouri River	Dam re-operation	Six states to test flow changes to help restore the river; "Flexible Flow" alternative	For river ecosystem health	Planned/ Proposed	Will be highly monitored	American Rivers. 2/13/02 Press Release. Six States Urge Feds to Test Flow Changes to Restore Missouri River; & Missouri River Dam Operations. Internet: www.americanrivers.org
	Missouri River	Dam re-operation	Test spring pulse, steady releases during bird nesting season	For river ecosystem health	Planned/ Proposed	Fish, pallid sturgeon, interior least tern, piping plover, habitat, water quality	US Army Corps of Engineers. 2004. Missouri River Mainstem System 2004-2005 Annual Operating Plan.

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	RIVER	TYPE OF FLOW	RESTORED FLOW COMPONENTS	ECOLOGICAL PURPOSES	PROJECT STATUS	MONITORING INDICATORS	REFERENCE
Montana (cont)	Moose Creek	Reduction of water usage	Increased flow	To restore instream flows for fish & improved health & access to the Madison River	Implemented	Water levels, temp & fish population	Trout Unlimited. Historic Water Lease Benefiting Madison River Fishery Announced Press Release, 8/21/01. Internet: www.tu.org
	Nine Mile Creek	Reduction of water usage	Increased flow	To benefit fish & water quality	Implemented	Fish & water quality	Trout Unlimited. 2004. Private Water Leasing- A Montana Approach.
	North Fork Blackfoot River	Reduction of water usage	Increased summer flows	To benefit bull & cutthroat trout	Implemented	Trout populations	Devlin, Sherry. 2004. Water lease to improve river flows for trout. *Headwater News: Missoulian*. May, 2004. Internet: www. headwaternews.org
	O'Brien Creek	Reduction of water usage	Increased flow	To benefit fish & water quality	Implemented	Fish & water quality	Trout Unlimited. 2004. Private Water Leasing- A Montana Approach.
	Pearson Creek	Reduction of water usage	Increased flow during irrigation season	To benefit fish and and river system health	Implemented	Fish habitat, water quality, fish spawning populations	Environmental Quality Council. 1998. Montana Dept of Fish, Wildlife and Parks' Water Leasing Study. *Final Report to the 56th Legislature*.
	Poorman Creek	Reduction in water usage	Increased flow	To benefit fisheries	Implemented	Bull trout, westslope cutthroat trout	Columbia Basin Water Transactions Program. 2004. Internet: www.cbwtp.org
	Rock Creek	Reduction in water usage	Increased flow	To benefit fisheries	Implemented	Bull trout, ,westslope cutthroat trout	Columbia Basin Water Transactions Program. 2004. Internet: www.cbwtp.org
	Sawmill Creek	Reduction of water usage	Increased flow	To benefit fish & water quality	Implemented	Fish & water quality	Trout Unlimited. 2004. Private Water Leasing- A Montana Approach.
	Spanish Creek	Reduction of water usage	Increased flow	To benefit fish & water quality	Implemented	Fish & water quality	Trout Unlimited. 2004. Private Water Leasing- A Montana Approach.
	Squaw Creek	Reduction of water usage	Increased flow	To restore instream flows for fish & improved health & access to the Madison River	Implemented	Water levels, temp & fish population	Trout Unlimited. Historic Water Lease Benefiting Madison River Fishery Announced Press Release, 8/21/01. Internet: www.tu.org
	Streams of the Upper Mid-West	Dam re-operation	Minimum flows; multiple outlets for flows; Minimize flow fluctuations; maximum flow limits	To sustain good survival habitat for aquatic life; vegetation; fish & water quality	Planned/ Proposed	Montana method recommendations	Tennant, D.L. 1976. Instream Flow Regimes for Fish, Wildlife, Recreation and Related Environmental Resources. *Fisheries* (1) 4, 6-10

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	RIVER	TYPE OF FLOW	RESTORED FLOW COMPONENTS	ECOLOGICAL PURPOSES	PROJECT STATUS	MONITORING INDICATORS	REFERENCE
Montana (cont)	Story Creek	Reduction of water usage	Increased flow	To benefit fish & water quality	Implemented	Fish & water quality	Trout Unlimited. 2004. Private Water Leasing- A Montana Approach.
	Tin Cup Creek	Reduction of water usage	Increased flow during irrigation season	To benefit fish and and river system health	Implemented	Fish habitat, water quality, fish spawning populations	Environmental Quality Council. 1998. Montana Dept of Fish, Wildlife and Parks' Water Leasing Study. *Final Report to the 56th Legislature*.
	Threemile Creek	Reduction in water usage	Increased flow April-October	To benefit fisheries	Implemented	Westslope cutthroat trout	Columbia Basin Water Transactions Program. 2004. Internet: www.cbwtp.org
	Warm Springs Creek	Dam re-operation	Increased flows during irrigation season	To benefit fisheries	Implemented	Not indicated	Trout Unlimited. 2004. Trout Unlimited Annual 2003 Report. Internet: www.tu.org
	Wolf Creek	Reduction of water usage	Increased flow	To restore instream flows for fish, improved health & access to the Madison River	Implemented	Water levels, temperature and fish population	Trout Unlimited. Historic Water Lease Benefiting Madison River Fishery Announced. Press Release, 8/21/01. Internet: www.tu.org/
	Yellowstone River	Dam re-operation	Enhanced spring flow releases	To benefit sauger population	Implemented	Sauger population	McMahon,TE, et al. 2001. Challenges to Recovering Large River Fishes: The Case of Auger in Montana. *Symposium*: *Practical Approaches for Conserving Native Inland Fishes of the West.* Brad Shepard, Ed. Pg 10. Univ. of Montana.
Nebraska	Missouri River	Dam re-operation	6 states to test flow changes to help restore the river, "Flexible Flow" alternative	For river ecosystem health	Planned/ Proposed	Will be highly monitored	American Rivers. 2/13/02 Press Release. Six States Urge Feds to Test Flow Changes to Restore Missouri River; & Missouri River Dam Operations. Internet: www.americanrivers.org
	Missouri River	Dam re-operation	Test spring pulse, steady releases during bird nesting season	For river ecosystem health	Planned/ Proposed	Fish, pallid sturgeon, interior least tern, piping plover, habitat, water quality	US Army Corps of Engineers. 2004. Missouri River Mainstem System 2004-2005 Annual Operating Plan.
	Platte River	Other	Pulse flow; base flow augmentation	To benefit endangered species	Planned/ Proposed	Wildlife; endangered species; habitat; water quality; ground water levels.	US Dept of the Interior. 2001. Groundwater & River Flow Analysis. Tech. Report of the Platte River EIS Team. US. Dept of Interior, Bureau of Reclamation, Fish & Wildlife Service.
	Streams of the Upper Mid-West	Dam re-operation	Minimum flows; Minimize flow fluctuations; maximum flow limits	To sustain habitat for aquatic riparian vegetation, fish & improve water quality	Planned/ Proposed	Montana method recommendations	Tennant, D.L. 1976. Instream Flow Regimes for Fish, Wildlife, Recreation & Related Environmental Resources. *Fisheries* (1) 4, 6-10

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Nevada	Beaver Creek	Other	Culvert removal- increase in low flows & reconnected to Maggie Creek	To benefit Lahontan cutthroat trout	Implemented	Cutthroat trout, sediment, water temp, riparian vegetation, habitat	Trout Unlimited. 2003. Reconnecting Fragmented Lahontan Cutthroat Trout Habitats. Restoration Activities in the Maggie Creek Basin, NE Nevada, 2001-2003.
	Little Truckee River	Dam re-operation	Spring flows, flushing flows, increased summer flows	To benefit chui-ui population	Implemented	Cui-ui	Rood, S.B. et al. 2003. Flows for Floodplain Forests: A Successful Riparian Restoration. *BioScience*, Vol. 53, No. 7:647-656.
	Maggie Creek	Other	Increase in low flow levels	To benefit Lahontan cutthroat trout	Implemented	Cutthroat trout, sediment, water temp, riparian vegetation, habitat	Trout Unlimited. 2003. Reconnecting Fragmented Lahontan Cutthroat Trout Habitats. *Restoration Activities in the Maggie Creek Basin, NE Nevada, 2001-2003.*
	Marys River	Reduction of water usage	Minimum flows	Primarily to benefit Lahontan cutthroat trout population; to restore native aquatic species & watershed health	Implemented	Comprehensive monitoring of fish populations and aquatic habitat inventory	Gutzwiller, LA, McNatt, RM & Price, RD. 1997. Watershed Restoration & Grazing Practices in the Great Basin: Marys River of Nevada. In Watershed Restoration: Principles & Practices Practices. Williams, Wood & Dombeck, Eds. Pp 360-380
	Truckee River	Dam re-operation	High flows	For cottonwood recruitment recruitment & fish population	Implemented	Cottonwoods & fish population	Hughes, FMR & SB Rood. 2003. Allocation of River Flows for Restoration of Floodplain Forest Ecosystems: A Review of Approaches and their Applicability in Europe. *Environ. Mgmt.* Vol 32, No. 1:12-33.
	Truckee River	Dam re-operation/ water reduction	To improve hydrologic regime to more natural state; timing & magnitude of flows	To maintain and improve biodiversity of the Truckee River and Pyramid Lake	Planned/ Proposed	Riparian Patch Mosaic; migratory avifauna; cottonwood; willow gallery forests; cui-ui; Lahontan cutthroat trout; water temperature.	Freshwater Initiative of The Nature Conservancy. Site Profile of Truckee River. Internet: www.freshwaters.org
New Hampshire							
	Ashuelot River	Dam Removal	Two dams removed restoring 15 miles to free-flowing state	To provide fish passage and improve water quality	Implemented	Water quality, Atlantic salmon, American shad, river herring, dwarf wedgemussel	New Hampshire Dept of Environmental Svcs. 2002. Dam Removal and River Restoration Program. Internet: www.des.state.nh.us
	Bearcamp River	Dam Removal	28 miles of free flow	To restore natural habitat; fish migration	Implemented	Native trout & land-locked salmon, woody debris	New Hampshire Dept of Environ. Svcs. & New Hampshire Fish & Game Department. *Bearcamp River Dam Removal.* Internet.

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	RIVER	TYPE OF FLOW	RESTORED FLOW COMPONENTS	ECOLOGICAL PURPOSES	PROJECT STATUS	MONITORING INDICATORS	REFERENCE
New Hampshire (cont)	Bellamy River	Dam Removal	Free flow through river segment	To expand anadromous fish habitat	Planned/ Proposed	Fish population & habitat	State of New Hampshire, Dept of Environ Svcs. Anadromous Fish Restoration. Internet.
	Black Brook	Dam Removal	Remove pond & return natural flow for 6 miles	For water quality	Planned/ Proposed	Water quality; sediment transport; macroinvertebrates; fish population.	City of Manchester, N.H.. Manchester Urban Ponds Restoration Program. Internet.
	Cold River	Dam Removal	Free flow	To restore fish passage & restore aquatic habitat	Implemented	Brown & rainbow trout, minnows, salmon & insects	Henry, T. 2003. River advocates celebrate removal of Cold River dam.*Brattleboro Reformer*
	Connecticut River (Upper)	Dam re-operation	Minimum flows & Maximum flows to more closely mimic nature; Re-establish riparian buffers & wetlands	To restore ecological health to the river & improve water quality populations	Planned/ Proposed	Biomonitoring under varied flow conditions; monitor aquatic communities, fish and wildlife	Connecticut River Joint Commissions. *Connecticut River Corridor Management Plan*. May, 1997. Internet: crjc.org/corridor-plan/plan-TOC.html
	Contoocook River	Dam Removal	15 miles of free flow condition	To provide habitat for trout, Atlantic salmon & American eel	Planned/ Proposed	Not specified	US Environmental Protection Agency New England. 2003. Dam removal project in Henniker, NH receives conservation grant. *Press release,* 11/24/2003. Release # 03-11-16. Internet available.
	Lamprey River	Dam re-operation	Minimum flow & flood flows	To protect the resources of the river	Planned/ Proposed	Not Indicated	State of New Hampshire, Dept of Environ. Svcs. 2003. Chapter Env-Ws 1900. *Rules for the Protection of Instream Flows and Water Management Plans*.
	Lamprey River	Dam Removal	Free flow for river segment	To expand anadromous fish habitat	Planned/ Proposed	Fish population	State of New Hampshire, Dept of Environ Svcs. Anadromous Fish Restoration. Internet available
	Pemigewasset River	Dam re-operation	Reduce frequency of high flows during summer low flow season; reduce rate of change between low & high lows during hydropower cycle	To enhance native Atlantic salmon recovery	Implemented	Fish population (Atlantic salmon)	Federal Energy Regulatory Commission. 1995. Relicensing the Ayers Island hydroelectric project in the Pemigewasset/ Merrimack River Basin. Washington (DC): FERC Project # 2456-009.
	Saco River	Reduction of water usage & Dam re-op	Minimize water level fluctuations; maintain necessary flow	To protect ecosystem including rare species.	Implemented	Beach; scirpus longii; Am. Germander; Silverling; aquatic communities; wetland & fen plant communities; insects.	The Nature Conservancy. Site Profile of the Saco River Floodplain Project. Available upon request.
	Souhegan River	Dam re-operation	Minimum flows & flood flows	To protect the rivers resources	Planned/ Proposed	Not indicated	State of New Hampshire, Dept of Environ Svcs. 2003. Chapter Env-Ws 1900. *Rules for the Protection of Instream Flows and Water Management Plans.*

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	RIVER	TYPE OF FLOW	RESTORED FLOW COMPONENTS	ECOLOGICAL PURPOSES	PROJECT STATUS	MONITORING INDICATORS	REFERENCE
New Hampshire (cont)	Winnicut River	Dam Removal	Free flow	To restore native diadromous & resident fisheries	Planned/ Proposed	Fish, including alwife, blueback herring, rainbow smelt, riverine habitat	New Hampshire Dept. of Environmental Svcs. Watershed Management Bureau. 2004. Winnicut River Dam Removal Feasibility Study
New Jersey	Little Piece Meadows	Other	Restoration of floodplain wetlands	To restore flood capacity, wildlife habitat, vegetation, & reverse effects of mining operation	Implemented	Not indicated	EPA River Corridors & Wetlands Restoration C & C Builders. Internet: yosemite.epa.gov/ water/ restorat.nsf.ProjectByState?OpenView
New Mexico	Bluewater Creek	Other	Reduce flood peaks & prolonged baseflows; Channel stability; meander reestablishment	For water quality, & habitat for fish & wildlife	Implemented	Water quality; fish & wildlife productivity; sedimentation	FISRWG (10/1998). *Stream Corridor Restoration: Principles, Processes, and Practices*. By the FISRWG.
	Gila River	Other	To restore natural flow regime, including flood flows	To restore the river's native species & natural communities	Planned/ Proposed	Sonora sucker; desert sucker; roundtail chub; spikedace; Gila trout; longfin dace; speckled dace; loach minnow;amphibians	Freshwater Initiative of The Nature Conservancy. Site Profile of Gila River. Available upon request.
	Middle Rio Grande	Dam re-operation	Restoration of flood regime	To restore ecosystem & reduce invasive species	Planned/ Proposed	Populus & Tamarix seedlings, salinity	Sher, AA, DL Marshall & SA Gilbert. 2000. Competition between Native Populus deltoides and Invasive Tamarix ramosissima and the Implications for Reestablishing Flooding Disturbance. *Conservation Biology.* Vol 14 (6): 1744-1754.
	Mimbres River	Reduction of water usage	Restore water level	To conserve biodiversity & rare species & water quality	Planned/ Proposed	Water quality; Riparian vegetation & wildlife, Chihuahua chub, Chiricahua leopard frog, Mimbres hotspring snail	Freshwater Initiative of The Nature Conservancy. Site Profile of the Mimbres River. Available upon request.
	Pecos River	Dam re-operation	Duration & magnitude of summer irrigation releases to mimic spawning flow "spikes"; maintain minimum flows	To determine spawning & habitat needs for threatened fish species	Implemented	Fish populations	Robertson L. 1997. In press. Water operations on the Pecos River, New Mexico and the Pecos bluntnose shiner, a federally-listed minnow. *US Conf.* on irrigation & Drainage Symposium.
	Rio Grande River	Dam re-operation	Mimic timing and duration of floodplain inundation	For ecosystem processes	Implemented	Microbial processes, litter composition	Molles MC, Crawford CS, Ellis LM. 1995. Effects of an experimental flood on litter dynamics in the Middle Rio Grande riparian ecosystem. *Reg. Rivs: Res. & Mgmt*. 11: 275-281.

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	RIVER	TYPE OF FLOW	RESTORED FLOW COMPONENTS	ECOLOGICAL PURPOSES	PROJECT STATUS	MONITORING INDICATORS	REFERENCE
New Mexico (cont)	Rio Grande	Dam re-operation	Environmental flow (30,000 acre feet reserved)	To protect silvery minnow	Implemented	Silvery minnow	*Greenwire*. 2005. Albuquerque, environs agree to landmark water preservation plan. News release, Feb. 24, 2005. Internet: www.eenews
	San Juan River	Dam re-operation	Mimic magnitude, timing, and duration of peak flow; restore low winter baseflows	For recovery of endangered fish species	Implemented	Fish population	Poff, N.L. et al.1997. The Natural Flow Regime, A paradigm for river conservation and restor-ation. *Bioscience* 47(11): 769-784
New York	Beaver River	Dam re-operation	Base flows, reduced peaking, rewatering dry river segments	For riverine health	Implemented	Fish populations, habitat	Taub, M. 2003. Bruce Carpenter, New York Rivers United. *American Rivers,* February 14, 2003 news release.
	Black River	Dam re-operation	Improved base flows, reduced fluctuations	For river health	Implemented	Fish populations	New York Rivers United. 2002. St. Lawrence River & Lake Ontario Ecosystem.
	Delaware River Basin	Dam re-operation	Increase in low flows	To benefit the ecological health of the river basin & estuaries; water quality	Implemented	Fisheries, water temperature, salinity of estuaries, water quality, macroinvertebrates	Delaware River Basin Commission. 2003. Water Resources Program. *Resolution No. 2003-6,* 3/19/2002.
	Esopus Creek	Dam re-operation	Improved flow regime	To benefit aquatic habitat & fisheries	Implemented	Fisheries, habitat, water temperature	New York State Dept. of Environmental Con-servation, Bureau of Fisheries. 2003. Annual Report, Highlights & Accomplishments 2002/ 2003
	Genesee River	Dam re-operation	Minimum flows in bypass reaches	To benefit the river ecosystem	Implemented	Water quality, sediment, aquatic habitat	New York State Dept. of Environmental Con-servation. 1994. Court Ruling, 04/20/94. Rochester Gas & Elec Corp application for Water Quality Certifications.
	Neversink River	Dam re-operation/ dam removal	Mimic a more natural flow	To restore/maintain full range of native aquatic biodiversity	Planned/ Proposed	Dwarf Wedgemussel, Brook Floater, alewife & triangle floater, Am. Eel, squawfoot, eastern elliption, Am. & hickory shad, striped bass, spatterdock, darner, tesselated darted;,slimy sculpin, mottled sculpin	Freshwater Initiative of The Nature Conservancy. Site Profile of Neversink River. Available upon request.
	Neversink River	Dam Removal	Restored free-flowing character	For passage of migratory fish	Implemented	Trout; sculpin & darters; dwarf wedgemussel; American Shad; hickory shad; striped bass; American eel	Natl. Ocean & Atmospheric Admin. 2000. NOAA Announces NE Habitat Restoration *Grants for 2000*. Press Release. Internet: www.publicaffairs.Noaa.gov

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	RIVER	TYPE OF FLOW	RESTORED FLOW COMPONENTS	ECOLOGICAL PURPOSES	PROJECT STATUS	MONITORING INDICATORS	REFERENCE
New York (cont)	Oswego River	Dam re-operation	Base flows; reduced fluctuation; re-watering of dry river segments	For fish passage & improved aquatic habitat	Implemented	American eel, northern pike, walleye, salmonids, smallmouth bass, panfish, prey fish & invertebrates.	US Fish & Wildlife Service, New York Field Office. 2003. Oswego River Settlement Offer Signed by USFWS. News Release. 4/28/03.
	Raquette River	Dam re-operation	Seasonally variableminimum flows, High flows (spawning season), minimized fluctuations, limits on spring & fall drawdowns	To protect fish & wildlife & enhance	Implemented	Water quality; walleye; fishery resources; bald eagles; yellow	Federal Energy Regulatory Commission. USA. *Order Approving Settlement Offer and*
	Sacandaga River	Dam re-operation	Year-round flows guaranteed, reduction in flow fluctuations	To improve aquatic and wetland habitat	Implemented	Fish populations & migration, aquatic habitat	New York State. 2000. Governor: Hudson-Sacandaga Hydroelectric Pact Finalized. Press Release, 07/12/2000.
	Salmon River	Dam re-operation	Improved base flows, reduced fluctuations	For river health	Implemented	Fish populations	New York Rivers United. 2002. St. Lawrence River & Lake Ontario Ecosystem.
	St. Lawrence River	Dam re-operation	Reduced fluctuation; improved seasonal flows	To improve fisheries & to provide fish & wildlife habitat	Planned/ Proposed	Fish populations, habitat	American Rivers. 2003. Run of The River. Regional Relicensing Reports. Internet: www.americanrivers.org
	Upper Delaware River & tributaries	Dam re-operation	Increased minimum flows	To improve the ecosystem	Planned/ Proposed	Water quality; aquatic habitat; aquatic species	River Reporter. 2003. Congress funds Upper Delaware flows study. December 18-24, 2003.
	Westkill Stream	Other	Improve baseflow, bank & bed stabilization	For habitat for fish , riparian vegetation, water quality	Planned/ Proposed	Native trout, water quality	EPA River Corridors & Wetlands Restoration Westkill Stream Assessment and Restoration. Internet: yosemite.epa gov/water/restorat.n sf/ProjectByState?OpenView
North Carolina	East Fork Tuckasegee River	Dam re-operation	Minimum flows	To protect fishery & wildlife	Implemented	Fish, wildlife, habitat, water quality	FERC. 1998. Nantahala Project Settlement Agreement. FERC Project #2686.
	East Prong Roaring River	Other	Reestablished historic channel, and floodplain & wetlands	For river health, stream corridor, trout habitat	Implemented	Stream morphology, trout habitat	EPA River Corridors & Wetlands Restoration. Stone Mountain State Park River Restoration. Internet: yosemite.epa.gov /water/restorat.nsf/ ProjectByState?OpenView
	Hiwassee River	Dam re-operation	Increased flows in dry weather season; pulsing flows; reduced fluctuations in flows; increased minimum flows	To lower water temps; improve dissolved oxygen levels; improve quality for fish & aquatic life	Implemented	Water quality; fish populations; mussel populations	Tennessee Valley Authority. 2001 Report. Internet: www.tva.com

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	RIVER	TYPE OF FLOW	RESTORED FLOW COMPONENTS	ECOLOGICAL PURPOSES	PROJECT STATUS	MONITORING INDICATORS	REFERENCE
North Carolina (cont)	Little River	Dam Removal	Restored natural flow	To restore flow & habitat for fish & warf dwedge mussel & tar spiny mussel	Implemented	Fish and mussel populations	American Rivers, Friends of the Earth, & Trout Unlimited. 1999. Dam Removal Success Pp 86. Internet: www.tu.org
	Little Sugar Creek	Dam Removal	Free flow	To restore water quality & fish habitat	Implemented	Water quality, aquatic habitat	American Rivers. 2003. Dams Slated for Removal in 2003 & Dams Removed in 1999, 2000, 2001, & 2002. Internet: americanrivers.org
	Nantahala River	Dam re-operation	Minimum flows	To protect fishery & wildlife	Implemented	Fish, wildlife, habitat, water quality	FERC. 1998. Nantahala Project Settlement Agreement. FERC Project #2692.
	Neuse River	Dam Removal	Opened 900 miles of river	To benefit fish population	Implemented	Shad; striped bass; sturgeon	Brink, E. & W. Dvorak, EDS. 2001. River Revival Bulletin, No. 24. March 19, 2001 Internet: www.irn.org/revival
	Neuse River	Dam Removal	Restored flow and 1000 miles habitat	For access for migratory fish	Implemented	Striped bass, Am. & hickory shad, alewife, blueback herring, shortnose sturgeon, American eel, dwarf wedge mussel.	American Rivers, Friends of the Earth, & Trout Unlimited. 1999.Dam Removal Success Stories. Pp 83-86. Internet: www.tu.org
	Pee Dee River	Dam re-operation	Increase in low flows	To prevent salt intrusion	Implemented	Salinity, water quality	Progress Energy. 2004. Yadkin-Pee Dee River Project; Water Resources working group; Issues Evaluation Template. January, 2004.
	Pigeon River	Dam re-operation	Minimum flows	For water quality & fish & wildlife	Implemented	Water quality, fish, habitat	FERC. 1994 . Walters Settlement Agreement. FERC Project #2748.
	Queens Creek	Dam re-operation	Seasonally variable minimum flows, modified drawndown regime, & reservoir elevations	To benefit ecosystem	Implemented	Aquatic community	FERC. 2000. Queens Creek Project Settlement Agreement. FERC Project #2694
	Roanoke River	Dam re-operation	More natural spring flow pattern; more natural flooding flow regimes	To improve water quality; conservation of biological diversity	Implemented	Water quality	Freshwater Initiative of The Nature Conservancy. Site Profile of the Roanoke River Bioreserve. Available upon request.
	Roanoke River	Dam re-operation	Flood flows from 6 dams; max. & minimum releases; increase of minimum flows; fish spawning protocols	To restore & maintain riparian wetland ecosystems	Planned/ Proposed	Bottomland hardwood forest seedlings; nesting bird population; Tulepo & Swamp black gum forests; salt intrusion, fisheries; tree populations plants, animals & macroledidoptera	Pearsall, SH, BJ McCrodden & PA Townsend. In Review. Adaptive Management of Flows in the Lower Roanoke River, North Carolina. *Rivers.*

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	RIVER	TYPE OF FLOW	RESTORED FLOW COMPONENTS	ECOLOGICAL PURPOSES	PROJECT STATUS	MONITORING INDICATORS	REFERENCE
North Carolina (cont)	Roanoke River	Dam re-operation	Normalized flow regime during striped bass spawning season	To benefit striped bass population	Implemented	Striped bass	Sinclair, T, Ed. 2003. Striped Bass Restoration in the Southeast. In *Return of the Natives.* Southest Watershed Forum.
	Scuppernong River	Other	Restore more natural hydrologic function	To offset lost wetlands	Implemented	Not Indicated	EPA River Corridors & Wetlands Restoration. Scuppernong River Corridor Mitigation Project. Internet: yosemite.epa.gov/water/restorat. n sf/ProjectByState?OpenView
	West Fork Tuckasegee River	Dam re-operation	Minimum flows	To protect fishery & wildlife	Implemented	Fish, wildlife, habitat, water quality	FERC. 1998. Nantahala Project Settlement Agreement. FERC Project #2686.
North Dakota	Missouri River	Dam re-operation	Kansas, Montana, Nebraska, N. & S. Dakota, Wyoming to test flow changes to help restore the river, "Flexible Flow" alternative	For river ecosystem health	Planned/ Proposed	Will be highly monitored	American Rivers. 2/13/02 Press Release. Six States Urge Feds to Test Flow Changes to Restore Missouri River; & Missouri River Dam Operations. Internet: www.americanrivers.org
	Missouri River	Dam re-operation	Increased spring flows	To benefit sport fishery	Implemented	Not indicated	Coyne, Marty. 2004. Missouri River: Corps boosts flows for spawning sport fish. *Greenwire*. 04/30/2004. www.eenews.net
	Missouri River	Dam re-operation	Test spring pulse, steady releases during bird nesting season	For river ecosystem health	Planned/ Proposed	Fish, pallid sturgeon, interior least tern, piping plover, habitat, water quality	US Army Corps of Engineers. 2004. Missouri River Mainstem System 2004-2005 Annual Operating Plan.
Ohio	Cuyahoga River	Dam re-operation	Dam removal or re-operation (3 dams) being considered	For watershed improvement; wetland restoration; habitat restoration	Planned/ Proposed	Water quality; diverse ecological inventory monitoring	EPA. Cuyahoga American Heritage River, *State Of The River, 2001*. Internet: www.epa.gov/rivers
	Little Cuyahoga River	Dam Removal	Free Flow	To benefit aquatic habitat & inhabitants, and for fish passage	Implemented	Not indicated	American Heritage Rivers. 2001 Breaching the Dams. *American Heritage Rivers Updates*. Vol 4, #3, Pg 4
	Little Miami River	Dam Removal	Plans to establish natural, free-flow in river - dam removal already begun	To preserve the rich biodiversity of the ecosystem	Planned/ Proposed	Not indicated	American Rivers, Friends of the Earth, & Trout Unlimited. 1999. *Dam Removal Success Stories*. P. 69-72. Internet: www.tu.org
	Mahoning River	Dam Removal	Increased flows	To benefit the river system	Planned/ Proposed	Water quality, mussels, aquatic habitat	Mahoning River Consortium. 2003. Mahoning River Consortium Position on Removal of Dams from the Lower Mahoning River. Internet: www.mahoningriver.co.trumbull.oh.us

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	RIVER	TYPE OF FLOW	RESTORED FLOW COMPONENTS	ECOLOGICAL PURPOSES	PROJECT STATUS	MONITORING INDICATORS	REFERENCE
Ohio (cont)	Olentangy River	Dam Removal	Increased flows	To benefit the ecosystem	Implemented	Water quality, fish & aquatic habitat	American Rivers. 2003. Dams Slated for Removal in 2003 & Dams Removed in 1999, 2000, 2001 & 2002. Internet: americanrivers.org
	Olentangy River Wetlands	Other	Reconnecting the river and a forest wetland	To increase flood frequency and flood area	Implemented	Not specified	EPA River Corridor & Wetlands Restoration. Bottomland Hardwood Forest Restoration at Olentangy River Wetland Research Park. Internet: yosemite.epa.gov/water/restorat.
	Sandusky River	Dam Removal	Free flow	To benefit river ecosystem	Implemented	Water quality, sediment, habitat	Bates, K. 2003. Demolition project on Sandusky River begins. *Toledo Blade*. March 19, 2003.
Oklahoma	Cottonwood River	Dam re-operation	Maintain spring flows for spawning; minimum flows during low-water events	For the survival of the Neosho madtom populations	Planned/ Proposed	Meosho madtom pops (site density), channel catfish, stone cats Neosho madtoms	Ictalurid Populations in Relation to the Presence of a Main-Stem Reservoir in a Midwestern Warm- water Stream with Emphasis on the Threatened Neosho Madtom(2000);*Transactions of the Am. Fish. Soc* 129:1264-1280
	Missouri River	Dam re-operation	Six states to test flow changes to help restore the river, "Flexible Flow" alternative	For river ecosystem health	Planned/ Proposed	Will be highly monitored	American Rivers. 2/13/02 *Press Release*. Six States Urge Feds to Test Flow Changes to Restore Missouri River; & Missouri River Dam Operations. Internet: www.americanrivers.org
	Neosho River	Dam re-operation	Maintain spring flows for spawning; minimum flows during low-flow events	For survival of the Neosho madtom (ictalurid) populations	Planned/ Proposed	Neosho madtom pops. (site density) channel catfish, stone cats	Ictalurid Populations in Relation to the Presence of a Main-Stem Reservoir in a Midwestern Warm- water Stream with Emphasis on the Threatened Neosho Madtom(2000);*Transactions of the Am. Fish. Soc* 129:1264-1280
Oregon	Bear Creek	Dam Removal	To restore flow & access for fish migration & spawning; free-flow during non-irrigation season	To remove barrier for fish restore degraded habitat; improve water quality	Implemented	Water quality, coho & chinook salmon, steelhead & other fish	American Rivers, Friends of the Earth, & Trout Unlimited.1999. Dam Removal Success Stories. Pp 9-12. Internet: www.tu.org
	Bear Creek/ Rogue River Basin	Dam Removal	Restored free-flowing stream when irrigation not needed; minimum instream flow throughout irrigation season	To benefit migration/ habitat for Pacific salmon; water quality	Implemented	Fish populations (Coho , steelhead, chinook salmon); water quality	Smith, L.W., E. Dittmer, M. Prevost, D.R. Burt. 2000. Breaching of a small dam in Oregon: A case History. North American *Journal of Fisheries Management* 20: 205-219.

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	RIVER	TYPE OF FLOW	RESTORED FLOW COMPONENTS	ECOLOGICAL PURPOSES	PROJECT STATUS	MONITORING INDICATORS	REFERENCE
Oregon (cont)	Buck Hollow Creek	Reduction of water usage	Restored spring & summer flow	To benefit the salmon & steelhead populations & habitat	Implemented	Fish population (salmon & steelhead)	Natural Resources Law Center. 1997. *Restoring the Waters.* Pg 8. Univ. of Colorado School of Law; Boulder, CO; May 1997.
	Calapooia River	Reduction of water usage	Increased flows	To benefit fisheries	Implemented	Spring chinook, winter steelhead, pacific lamprey, spewing steelhead	Columbia Basin Water Transactions Program. 2004. Internet: www.cbwtp.org
	Clackamas River	Dam re-operation	Improved flows	To benefit aquatic ecosystem	Planned/ Proposed	Pacific salmon, steelhead, lamprey, habitat	R2 Resource Consultants. Fish Impact Analysis Clackamas River Hydroelectric Project. Internet: www.r2usa.com
	Courtney Creek	Reduction of water usage	Increased flow	To improve stream flow for steelhead & chinook	Implemented	Fish populations	Oregon Water Trust. Special Project Profiles. Courtney Creek Permanent Water Right Donation. Internet: www.owt.org
	Couse Creek	Reduction of water usage	Increased spring and summer flows	To benefit migrating & spawning steelhead	Implemented	Fish populations	Oregon Water Trust. Special Projects: Couse Creek Long-Term Lease. Internet: www.owt.org
	Crooked River	Reduction of water usage	Increased flows	To benefit river system	Implemented	Not specified	Deschutes Resources Conservancy. 2004. Annual Water Leasing Program. Internet: www.deschutesrc.org
	Deschutes River	Reduction of water usage	Increased flows	To benefit river system	Implemented	Not specified	Deschutes Resources Conservancy. 2004. Annual Water Leasing Program. Internet: www.deschutesrc.org
	Deschutes River	Dam re-operation	Fall & spring fish flows	To benefit Chinook salmon spawning	Implemented	Chinook, water quality, habitat	Pelton Round Butte Fact Sheet. 2004. Portland General Electric. July 13, 2004
	Eighteenmile Creek	Reduction of water usage	Increased flows	To benefit aquatic ecosystem	Implemented	Fish populations	Oregon Water Trust. 2001. 2001 Deals. Internet: www.owt.org
	Elk Creek	Dam Removal	Increased flows	For fish passage & habitat	Planned/ Proposed	Coho & chinook salmon & steelhead & cutthroat trout	Oregon Natural Resource Council. 2002. Elk Creek Dam - Sept. 2002 - Update & back-ground. Internet: www.onrc.org
	Evans Creek	Reduction of water usage	Increased flows	To benefit aquatic ecosystem	Implemented	Fish populations	Oregon Water Trust. 2001. 2001 Deals. Internet: www.owt.org
	Fifteenmile Creek	Reduction of water usage	Increased flows	To benefit aquatic ecosystem	Implemented	Fish populations	Oregon Water Trust. 2001. 2001 Deals. Internet: www.owt.org

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Oregon (cont)	Hood River	Dam Removal	Free Flow	To aid salmon & steelhead recovery; habitat for fish & wildlife	Planned/ Proposed	Fish populations	American Rivers. 2003. Oregon Governor, PacifiCorp, parties, announce settlement to decommission the Powerdale Hydroelectric Project in Hood River, Ore. Press release. June 6, 2003.
	Hood River	Other	Increased flows	To benefit fish & habitat area	Planned/ Proposed	Not indicated	Department of the Interior. 2004. Secretary Norton Awards $4 Million in Grants for Water Conservation Projects in the West. Internet: www.doi.gov/water2025/grant.html
	Jenny Creek	Reduction of water usage	Increased flows	To benefit aquatic ecosystem	Implemented	Fish populations	Oregon Water Trust. 2001. 2001 Deals. Internet: www.owt.org
	Johnson Creek	Other	Increase summer base flows, decrease flashiness of peak flows	For the ecological health of the watershed	Implemented & Planned/ Proposed	Water quality, fish (incl. salmon), sediment, habitat, wildlife, benthic` macroinvertebrates	Johnson Creek Watershed Council. 2003. Johnson Creek Watershed Action Plan: An Adaptive Approach.
	Klamath River	Dam re-operation	Improved environmental flows	For salmon & water quality	Planned/ Proposed	Water quality, macroinvertebrates, habitat, sediment transport, fisheries, vegetation, amphibians, reptiles, wildlife, mollusks	Pacificorp. 2002. Study Status Reports: Klamath Hydro Relicensing Project, FERC Project No. 2082.
	Little Applegate	Other	Increased flows; increased, protected summer flows	To benefit salmon & trout, Pacific lamprey; & health of watershed	Planned/ Proposed	Fish population; habitat; streambed & riparian corridor	Oregon Water Trust. Little Applegate Stream-flow and Fish Habitat Improvement Project Summary. Internet: www.owt.org
	Little Bear Creek	Reduction of water usage	Increased flows	To benefit fisheries	Implemented	Not specified	Columbia Basin Water Transactions Program. 2004. Internet: www.cbwtp.org
	Little Butte Creek	Reduction of water usage	Increased summer flows	To benefit rearing & Spawning for coho, chinook, & steelhead.	Implemented	Fish populations	Oregon Water Trust. Special Projects Profiles: Little Butte Creek Permanent Water Right Acquisition. Internet: www.owt.org
	Little Sandy River	Dam Removal	Variable flows	To protect threatened species & their habitats	Implemented	Winter steelhead; chinook salmon; northern spotted owl; state listed species	Tressler, RG Concannon & D Cramer. 2001. Bull Run Hydroelectric Project Decommissioning *Dam and reservoir Mgmt and Facility Decommissioning Conf*. Pg 2
	Lostine River	Dam re-operation & Other	Increased summer flows	To protect aquatic habitat & fish populations	Planned/ Proposed	Water quality, sediment, aquatic habitat, Chinook & coho salmon, steelhead, bull & rainbow trout	R2 Resource Consultants. Lostine River instream Flow Study. *Projects.* Internet: www.r2usa.com

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	RIVER	TYPE OF FLOW	RESTORED FLOW COMPONENTS	ECOLOGICAL PURPOSES	PROJECT STATUS	MONITORING INDICATORS	REFERENCE
Oregon (cont)	Middle Fork John Day River	Reduction of water usage	Increased flows	To benefit aquatic ecosystem	Implemented	Fish populations	Oregon Water Trust. 2001. Projects. Internet: www.owt.org
	North Umpqua River	Dam Removal & dam re-operation	Release of more natural flows	For watershed health & fish passage	Planned/ Proposed	Fish populations	American Rivers. 2003. Run of The River. Regional Relicensing Reports. Internet: www.americanrivers.org
	Ochoco River	Reduction of water usage	Increased flows	To benefit fisheries	Implemented	Not specified	Columbia Basin Water Transactions Program. 2004. Internet: www.cbwtp.org
	Paulina Creek	Reduction of water usage	Increased flows (April-Nov & August)	To benefit fisheries	Implemented	Not specified	Columbia Basin Water Transactions Program. 2004. Internet: www.cbwtp.org
	Rogue River	Other	Restore natural flow	To increase salmon & steelhead populations	Planned/ Proposed	Fish population	Environmental News Network. Oregon river dam giving way to salmon, 10/17/2001. Internet: www.enn.com
	Sandy River	Dam Removal	To restore variable flows to the rivers	To protect threatened species & their habitats	Implemented	Winter steelhead; chinook salmon; northern spotted owl; state listed species	Tressler, RG Concannon & D Cramer. 2001. Bull Run Hydro- electric Project Decom-missioning. *Dam and reservoir Mgmt and*
	Snake River	Dam re-operation	Minimum instream flow	To meet requirements of fish	Implemented	Not indicated	Collier,M., R.H.Webb, & J.C.Schmidt. 1996. *Dams and Rivers*. U.S.Geological Survey; Circular #1126. Tucson, Arizona. June 1996.
	South Fork Little Butte Creek	Reduction of water usage	Increased summer flows	To eliminate fish migration barriers & improve streamflow for fish populations	Implemented	Coho, chinook & steelhead	Oregon Water Trust. Special Projects: South Fork Little Butte Creek Conserved Water Project. Internet: www.owt.org
	Sprague River	Reduction of water usage	Natural flow and water quality	For water quality; restore/maintain aquatic diversity	Planned/ Proposed	Endangered fish populations, mussels, amphibians, and other wildlife; water quality.	Freshwater Initiative of The Nature Conservancy. Site Profile of Upper Klamath Basin. Available upon request
	Squaw Creek	Reduction of water usage	Increased instream flows; protected higher summer flows	To provide sufficient flow for fish populations	Implemented	Bull trout, redband trout, and spawning Kokanee	Oregon Water Trust. Smith-Barclay Ditch Project. Squaw Creek, Deschute Basin, Oregon. Internet: www.owt.org
	Sucker Creek	Reduction of water usage	To provide increased flow during dry months	To benefit chinook salmon, coho & steelhead	Implemented	Fish population	Natural Resources Law Center.1997. *Restoring the Waters*: pg 9. Univ. of Colorado School of Law, Boulder, CO. May 1997

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	RIVER	TYPE OF FLOW	RESTORED FLOW COMPONENTS	ECOLOGICAL PURPOSES	PROJECT STATUS	MONITORING INDICATORS	REFERENCE
Oregon (cont)	Sycan Marsh Preserve	Other	Restore historic hydrologic function to streams	For habitat for waterfowl, benthic community, endemic species	Implemented	Groundwater Elevations, vegetation changes	EPA River Corridors & Wetlands Restoration. Chocktoot Drain. Internet: yosemite.epa.gov/ water/ restorat.nsf/ ProjectByState?OpenView
	Sycan River	Reduction of water usage	Restore natural flow and water quality	For water quality; restore/maintain aquatic diversity	Planned/ Proposed	Endangered fish populations, mussels, amphibians, and other wildlife; water quality	Freshwater Initiative of The Nature Conservancy. Site Profile of Upper Klamath Basin. Available upon request
	Trout Creek	Reduction of water usage	Increased flows	To benefit aquatic ecosystem	Implemented	Fish populations	Oregon Water Trust. 2001. 2001 Deals. Internet: www.owt.org
	Tumalo Creek	Reduction of water usage	Increased flows	To benefit river system	Implemented	Not specified	Deschutes Resources Conservancy. 2004. Annual Water Leasing Program. Internet: www.deschutesrc.org
	Umatilla River	Other	Increased flows	To benefit native and migrating fish	Implemented	Native fish; chinook & coho salmon & steelhead	Natural Resources Law Center.1997. *Restoring the Waters*, Pp 22-23. Univ of Colorado School of Law, Boulder, CO, May 1997.
	Walla Walla River	Reduction of water usage	Restore flows to minimum flow	To protect bull trout	Implemented	Not indicated	American Rivers Org. 6/28/01. Conservation Groups Support Endangered Species Deal to Restore Flow in the Walla Walla Riv. Internet: www.americanrivers.org
	Williamson River	Reduction of water usage	Restore natural function of river channel & reconnect river to its floodplain	To restore hydrologic regime to support aquatic biodiversity, water quality	Planned/ Proposed	Bull trout, Steelhead trout, chinook salmon, redband trout, mussels, aquatic community, water quality	Freshwater Initiative of The Nature Conservancy. Site Profile of Upper Klamath Basin. Available upon request
	Yamhill River	Reduction of water usage	Increased flow during irrigation season	For habitat &migration of cutthroat trout & steelhead	Implemented	Fish populations	Oregon Water Trust. Instream Water Rights Act. Internet: www.owt.org
Pennsylvania	Bushkill Creek	Other	Restore normal flows	To restore & protect instream habitat & riparian habitat	Planned/ Proposed	Brown trout, aquatic & riparian habitat	US Army Corps of Engineers,Philadelphia District. 2002. Preliminary Restoration Plan: Bushkill Creek Environmental Restoration. November, 2002.
	Catawissa Creek	Dam Removal	Restored to free flow	For fish passage	Implemented	Threatened & endangered species	Pennsylvania Fish and Boat Commission, Division of Environmental Services, Fish Passage & Habitat Restoration Unit. 2005.

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Pennsylvania (cont)	Clarion River	Dam re-operation	Restoration of a more natural flow regime, reduce peaking	To benefit ecosystem	Planned/ Proposed	Aquatic community, trout, habitat	Young, L.M. 2001. Fish Habitat and Flow: What's the Connection? State of Pennsylvania, Fish & Boat Commission.
	Clarion River	Dam Removal	Restored to free flow	For fish passage	Implemented	Threatened & endangered species	Pennsylvania Fish and Boat Commission, Division of Environmental Services, Fish Passage & Habitat Restoration Unit. 2005.
	Cocalico Creek	Dam Removal	Restored to free flow	For fish passage	Implemented	Threatened & endangered species	Pennsylvania Fish and Boat Commission, Division of Environmental Services, Fish Passage & Habitat Restoration Unit. 2005.
	Codorus Creek South	Dam Removal	Restored to free flow	For fish passage	Implemented	Threatened & endangered species	Pennsylvania Fish and Boat Commission, Division of Environmental Services, Fish Passage & Habitat Restoration Unit. 2005.
	Conestoga River	Dam Removal	7 dams removed from river & tributaries; plans to restore river to free- flowing state	To restore access to historic spawning grounds for Am. Shad & migration of other fish	Implemented	Fish & insect population surveys; stream gradient; bank stability, river herring, Am. eel, water quality	American Rivers, Friends of the Earth, & Trout Unlimited. 1999. *Dam Removal Success Stories*. Pp 45-49. Internet: www.tu.org
	Conewago Creek	Dam Removal	Restored to free flow	For fish passage	Implemented	Threatened & endangered species, water quality	Pennsylvania Fish and Boat Commission, Division of Environmental Services, Fish Passage & Habitat Restoration Unit. 2005.
	Conodoguinet Creek	Dam Removals (2)	Restored to free flow	For fish passage	Implemented	Threatened & endangered species, sediment volume & composition	Pennsylvania Fish and Boat Commission, Division of Environmental Services, Fish Passage & Habitat Restoration Unit. 2005.
	Cooks Creek	Dam Removal	Restored to free flow	For fish passage	Implemented	Threatened & endangered species	Pennsylvania Fish and Boat Commission, Division of Environmental Services, Fish Passage & Habitat Restoration Unit. 2005.
	Deep Creek	Dam Removal	Restored to free flow	For fish passage	Implemented	Threatened & endangered species	Pennsylvania Fish and Boat Commission, Division of Environmental Services, Fish Passage & Habitat Restoration Unit. 2005.
	Doe Creek	Dam Removal	Restored to free flow	For fish passage	Implemented	Threatened & endangered species	Pennsylvania Fish and Boat Commission, Division of Environmental Services, Fish Passage & Habitat Restoration Unit. 2005.

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Pennsylvania (cont)	Eshelman Run	Dam Removal (2)	Restored to free flow	For fish passage	Implemented	Threatened & endangered species	Pennsylvania Fish and Boat Commission, Division of Environmental Services, Fish Passage & Habitat Restoration Unit. 2005.
	Fishing Creek	Dam Removal	Restored to free flow	For fish passage	Implemented	Threatened & endangered species	Pennsylvania Fish and Boat Commission, Division of Environmental Services, Fish Passage & Habitat Restoration Unit. 2005.
	Frankstown Br Jun	Dam Removal	Restored to free flow	For fish passage	Implemented	Threatened & endangered species	Pennsylvania Fish and Boat Commission, Division of Environmental Services, Fish Passage & Habitat Restoration Unit. 2005.
	Furnace Run	Dam Removal	Restored to free flow	For fish passage	Implemented	Threatened & endangered species	Pennsylvania Fish and Boat Commission, Division of Environmental Services, Fish Passage & Habitat Restoration Unit. 2005.
	Hammer Creek	Dam Removal	Restored to free flow	For fish passage	Implemented	Threatened & endangered species	Pennsylvania Fish and Boat Commission, Division of Environmental Services, Fish Passage & Habitat Restoration Unit. 2005.
	Huston Run	Dam Removals (2)	Restored to free flow	For fish passage	Implemented	Threatened & endangered species	Pennsylvania Fish and Boat Commission, Division of Environmental Services, Fish Passage & Habitat Restoration Unit. 2005.
	Kettle Creek	Dam Removal	Restored to free flow	For fish passage	Implemented	Threatened & endangered species	Pennsylvania Fish and Boat Commission, Division of Environmental Services, Fish Passage & Habitat Restoration Unit. 2005.
	Kishacoquillas Creek	Dam Removal	Restored to free flow	For fish passage	Implemented	Threatened & endangered species	Pennsylvania Fish and Boat Commission, Division of Environmental Services, Fish Passage & Habitat Restoration Unit. 2005.
	Lackawaxen River	Dam re-operation	Restoration of a more natural flow regime, reduce peaking	To benefit ecosystem	Planned/ Proposed	Aquatic community, trout, habitat	Young, L.M. 2001. Fish Habitat and Flow: What's the Connection? State of Pennsylvania, Fish & Boat Commission.
	Laural Run	Dam Removal	Restored to free flow	For fish passage	Implemented	Threatened & endangered species	Pennsylvania Fish and Boat Commission, Division of Environmental Services, Fish Passage & Habitat Restoration Unit. 2005.

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Pennsylvania (cont)	Laurel Run	Dam Removal	Restored to free flow	For fish passage	Implemented	Threatened & endangered species	Pennsylvania Fish and Boat Commission, Division of Environmental Services, Fish Passage & Habitat Restoration Unit. 2005.
	Lehigh River	Dam re-operation	Releases to augment low flows	For fish habitat	Implemented	Not indicated	US Army Corps of Engineers. 2000. Recreation-al Fisheries Action Plan *Annual Report. Fiscal Year 2000.*
	Lehigh River	Dam re-operation	Increase in summer releases	To benefit aquatic ecosystem & water quality	Implemented	Water quality, macroinvertebrates, carp, white suckers, sediment, algae, trout & smallmouth bass	Lehigh River Watershed Association. 2000. Lehigh River Watch Report. Internet: www.lrsa.ord/rivernews.html
	Lititz Run	Dam Removal	Two dams removed to restore free flowing character	To improve water quality and fish habitat for stream and watershed	Implemented	Not Indicated	Trout Unlimited. Small Dams Campaign. Donegal Chapter, Muddy River and Lititz Run, Pennsylvania. Internet: www.tu.org
	Little Lehigh Creek	Dam Removal	Restored to free flow	For fish passage	Implemented	Threatened & endangered species	Pennsylvania Fish and Boat Commission, Division of Environmental Services, Fish Passage & Habitat Restoration Unit. 2005.
	Manatawny Creek	Dam Removal	Free Flowing	For ecosystem health	Implemented	Sediment; Food Webs; Mussels; fish pops.; macroinvertebrates; riparian vegetation	Academy of Natural Sciences. 2002.Manatawny Creek: Ecological Studies of Dam Removal. Internet: www.acnatsci.org
	Manhantango Creek	Dam Removal	Restored to free flow	For fish passage	Implemented	Threatened & endangered species	Pennsylvania Fish and Boat Commission, Division of Environmental Services, Fish Passage & Habitat Restoration Unit. 2005.
	Middle Creek	Dam Removal	Restored to free flow	For fish passage	Implemented	Threatened & endangered species	Pennsylvania Fish and Boat Commission, Division of Environmental Services, Fish Passage & Habitat Restoration Unit. 2005.
	Milesburn Run	Dam Removal	Restored to free flow	For fish passage	Implemented	Threatened & endangered species	Pennsylvania Fish and Boat Commission, Division of Environmental Services, Fish Passage & Habitat Restoration Unit. 2005.
	Mill Creek	Dam Removal	Restored to free flow	For fish passage	Implemented	Threatened & endangered species	Pennsylvania Fish and Boat Commission, Division of Environmental Services, Fish Passage & Habitat Restoration Unit. 2005.

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Pennsylvania (cont)	Muddy Run	Dam Removal	Seven dams removed to restore flow	To restore coldwater fish habitat, improve water quality	Implemented	Not Indicated	Trout Unlimited. Small Dams Campaign. Donegal Chapter, Muddy Creek and Lititz Run, Pennsylvania. Internet: www.tu.org
	Paddy Run	Dam Removal	Restored to free flow	For fish passage	Implemented	Threatened & endangered species,	Pennsylvania Fish and Boat Commission, Division of Environmental Services, Fish Passage & Habitat Restoration Unit. 2005.
	Perkiomen Creek	Dam Removal	Restored to free flow	For fish passage	Implemented	Threatened & endangered species, sediment volume & composition & contaminants, water quality	Pennsylvania Fish and Boat Commission, Division of Environmental Services, Fish Passage & Habitat Restoration Unit. 2005.
	Rattlesnake Creek	Dam Removal	Restored to free flow	For fish passage	Implemented	Threatened & endangered species	Pennsylvania Fish and Boat Commission, Division of Environmental Services, Fish Passage & Habitat Restoration Unit. 2005.
	Ridley Creek	Dam Removal	Restored to free flow	For fish passage	Implemented	Threatened & endangered species, sediment volume, composition & contaminants, algae	Pennsylvania Fish and Boat Commission, Division of Environmental Services, Fish Passage & Habitat Restoration Unit. 2005.
	Rife Run	Dam Removal	Restored to free flow	For fish passage	Implemented	Threatened & endangered species	Pennsylvania Fish and Boat Commission, Division of Environmental Services, Fish Passage & Habitat Restoration Unit. 2005.
	South Fork Little Conemaugh	Dam Removal	Restored to free flow	For fish passage	Implemented	Threatened & endangered species	Pennsylvania Fish and Boat Commission, Division of Environmental Services, Fish Passage & Habitat Restoration Unit. 2005.
	Spring Creek	Dam Removal	Restored to free flow	For fish passage	Implemented	Threatened & endangered species	Pennsylvania Fish and Boat Commission, Division of Environmental Services, Fish Passage & Habitat Restoration Unit. 2005.
	Tea Creek	Dam Removal	Restored to free flow	For fish passage	Implemented	Threatened & endangered species, macroinvertebrates, sediment composition & volume, water quality	Pennsylvania Fish and Boat Commission, Division of Environmental Services, Fish Passage & Habitat Restoration Unit. 2005.
	Tulpehocken Creek	Dam Removal	Restored to free flow	For fish passage	Implemented	Threatened & endangered species	Pennsylvania Fish and Boat Commission, Division of Environmental Services, Fish Passage & Habitat Restoration Unit. 2005.

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Pennsylvania (cont)	Unt Codorus Creek	Dam Removal	Restored to free flow	For fish passage	Implemented	Threatened & endangered species, sediment composition, volume & contaminants, water quality	Pennsylvania Fish and Boat Commission, Division of Environmental Services, Fish Passage & Habitat Restoration Unit. 2005.
	Wallenpaupack Creek	Dam re-operation	Restoration of a more natural flow regime, reduce peaking	To benefit ecosystem	Planned/ Proposed	Aquatic community, trout, habitat	Young, L.M. 2001. Fish Habitat and Flow: What's the Connection? State of Pennsylvania, Fish & Boat Commission.
	West Branch Hammer Creek	Dam Removal (2)	Restored to free flow	For fish passage	Implemented	Threatened & endangered species	Pennsylvania Fish and Boat Commission, Division of Environmental Services, Fish Passage & Habitat Restoration Unit. 2005.
	Wiconisco Creek	Dam Removal	Restored to free flow	For fish passage	Implemented	Threatened & endangered species	Pennsylvania Fish and Boat Commission, Division of Environmental Services, Fish Passage & Habitat Restoration Unit. 2005.
	Wolk Creek	Dam Removal	Restored to free flow	For fish passage	Implemented	Threatened & endangered species	Pennsylvania Fish and Boat Commission, Division of Environmental Services, Fish Passage & Habitat Restoration Unit. 2005.
	Wyomissing Creek	Dam Removal	Restored to free flow	For fish passage	Implemented	Threatened & endangered species	Pennsylvania Fish and Boat Commission, Division of Environmental Services, Fish Passage & Habitat Restoration Unit. 2005.
	Yellow Breeches Creek	Dam Removal	Restored to free flow	For fish passage	Implemented	Threatened & endangered species	Pennsylvania Fish and Boat Commission, Division of Environmental Services, Fish Passage & Habitat Restoration Unit. 2005.
Rhode Island	Rivers & streams	Other	Instream flow standards	To protect the natural environment	Planned/ Proposed	Not specified	Rhode Island Water Resources Board. Water Allocation Project: Impact Analysis Subcommittee, Preliminary Recommendations. Internet: www.wrb.state.ri.us/programs
	Fisherville Brook	Other	Increased flows, higher summer flows	For river biodiversity	Planned/ Proposed	Water quality & temp, habitat, sediment, fish populations, riparian vegetation	Armstrong, DS & GW Parker. 2003. Assessment of Habitat and Streamflow Requirements for Habitat Protection, Usquepaug-Queen River, Rhode Island 1999-2000. Open-File Report 02-438.

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	RIVER	TYPE OF FLOW	RESTORED FLOW COMPONENTS	ECOLOGICAL PURPOSES	PROJECT STATUS	MONITORING INDICATORS	REFERENCE
Rhode Island (cont)	Locke Brook	Other	Increased flows, higher summer flows	For river biodiversity	Planned/ Proposed	Water quality & temp, habitat, sediment, fish populations, riparian vegetation	Armstrong, DS & GW Parker. 2003. Assessment of Habitat and Streamflow Requirements for Habitat Protection, Usquepaug-Queen River, Rhode Island 1999-2000. Open-File Report 02-438.
	Queen River	Other	Increased flows, higher summer flows	For river biodiversity	Planned/ Proposed	Water quality & temp, habitat, sediment, fish populations, riparian vegetation	Armstrong, DS & GW Parker. 2003. Assessment of Habitat and Streamflow Requirements for Habitat Protection, Usquepaug-Queen River, Rhode Island 1999-2000. Open-File Report 02-438.
	Usquepauge River	Other	Increased flows, higher summer flows	For river biodiversity	Planned/ Proposed	Water quality & temp, habitat, sediment, fish populations, riparian vegetation	Armstrong, DS & GW Parker. 2003. Assessment of Habitat and Streamflow Requirements for Habitat Protection, Usquepaug-Queen River, Rhode Island 1999-2000. Open-File Report 02-438.
South Carolina	Pee Dee River	Dam re-operation	Increased low flows	To prevent saltwater intrusion	Implemented	Salinity, water quality	Progress Energy. 2004. Yadkin-Pee Dee River Project, Water Resources Working Group, Issues Evaluation Template. 2004.
	Waacamaw River	Dam re-operation	Increased low flows	To prevent saltwater intrusion	Implemented	Salinity, water quality	Progress Energy. 2004. Yadkin-Pee Dee River Project, Water Resources Working Group, Issues Evaluation Template. 2004.
South Dakota	Missouri River	Dam re-operation	Six states to test flow changes to help restore the river, "Flexible Flow" alternative	For river ecosystem health	Planned/ Proposed	Will be highly monitored	American Rivers. 2/13/02 Press Release. Six States Urge Feds to Test Flow Changes to Restore Missouri River; & Missouri River Dam Operations. Internet: www.americanrivers.org
	Missouri River	Dam re-operation	Decrease in releases from Gavin's Point Dam in fall	To benefit habitat	Implemented	Not indicated	Greenwire. 2004. Missouri River: Corps begins to decrease dam releases. Internet: www.eenews.net. October 07, 2004.
	Missouri River	Dam re-operation	Test spring pulse, steady releases during bird nesting season	For river ecosystem health	Planned/ Proposed	Fish, pallid sturgeon, interior least tern, piping plover, habitat, water quality	US Army Corps of Engineers. 2004. Missouri River Mainstem System 2004-2005 Annual Operating Plan.
Tennessee	Cheohah River	Dam re-operation & Other	Minimum flows restored	To restore & preserve biodiversity to previously dry river segments	Implemented	Habitat; fish & wildlife	American Rivers' River Policy Update. Week of May 17, 2004

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	RIVER	TYPE OF FLOW	RESTORED FLOW COMPONENTS	ECOLOGICAL PURPOSES	PROJECT STATUS	MONITORING INDICATORS	REFERENCE
Tennessee (cont)	Duck River	Dam re-operation	Minimum flows restored	To improve & preserve water quality & aquatic populations	Implemented	Mollusks, water quality	Ahlstedt, SA et al. 2003. Freshwater Mollusk Inventory of the Duck River Basin, Tennessee: A Preliminary Report. Internet: http://tn.water.usgs.gov/pubs/poster/NABS_poster.final.pdf
	French Broad River	Dam re-operation	Minimum flows	To improve water quality & ecosystem health	Implemented	Lake sturgeon, water quality, fish populations & benthic fauna	Todd, R & SF Novak. 2004. Long Live the King: Lake Sturgeon Reintroduced to the Upper Tennessee River. *Community Guide for Restoration of Fish & Aquatic Species.* Southeast forum.org
	Hiwassee River	Dam re-operation	Increased flows during dry weather season, pulsing flows, reduced fluctuations, increased minimum flows	To lower water temperature; improve dissolved oxygen levels & improve habitat	Implemented	Water quality; fish populations; mussel populations	Tennessee Valley Authority. 2001 Report. Internet: www.tva.com
	Little Tennessee River	Dam re-op & Other	Minimum flows restored	To restore biodiversity to previously dry river segments	Implemented	Habitat; fish & wildlife	American Rivers' River Policy Update. Week of May 17, 2004
	Tennessee River & system	Dam re-operation	Increased flow quality and quantity	To improve water	Implemented	Benthic macroinvertebrates; mayflies; caddisflies; stoneflies; oligochaetes; chironomids	Bednarek, A 2001. The ecological impacts of dam mitigation: the TVA's Reservoir Mgmt Reservoir Release Improv. Prog. *Dam and Facility Decommissioning Conf.* Pg 6. CO State Univ; Fort Collins, CO
Texas	Big Cypress Creek	Reduction of water usage	Increased flows	To improve Lake Caddo ecosystem	Planned/ Proposed	Mercury pollution, lake fish	Robb, Julia. 2004. Life of A Lake: Clean-up Effort at Caddo. *Marsall News Messenger. com*. September 21, 2004.
	Colorado River	Dam re-operation	Target & critical flows	To benefit estuary	Planned/ Proposed	Salinity, finfish, shellfish, water quality	Alan Plummer Assoc., Inc. 2005. East Texas Region Regional Water Plan, Environmental Flow Requirements-Review Draft.
	Comal Springs	Reduction of water usage	Increased flows	To benefit threatened & endangered aquatic species	Implemented	Fountain darter	Fitzhugh, TW, & BD Richter. 2004. Quenching Urban Thirst: Growing Cities and their Impacts on Freshwater Ecosystems. *Bioscience,* Vol. 54, No. 8, pp 741-754.
	Guadalupe River	Dam re-op & Reduction of water usage	Increased flows	To benefit the Guadalupe Estuary	Planned/ Proposed	Blue crab, Oyster, red drum, black drum, spotted seatrout, brown & white shrimp, sediment input, nutrient load, salinity	Texas Parks & Wildlife Department. 2001. Environmental Target Flows-Freshwater Inflow Recommendation. Internet: www.tpwd.state.tx.us

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Texas (cont)	Lavaca River	Dam re-operation	More seasonal flows	To benefit Matagorda Bay	Planned/ Proposed	Salinity, Species productivity (finfish & shellfish), nutrient inflows.	Texas Parks & Wildlife Dept. Matagorda Bay. Texas Water Homepage: Environmental Flows. Internet: www.tpwd.state.tx.us
	Nueces River	Dam re-operation	Restore historic flows, Spring flows	To benefit Nueces Estuary	Planned/ Proposed	Salinity, red drum, black drum, seatrout, brown shrimp, blue crab	Texas Parks & Wildlife. Freshwater inflow Recommendation for the Nueces Estuary. Internet: www.tpwd.state.tx.us
	Rio Grande	Other	Improve flows	To benefit fish, wildlife, & ecosystem,	Planned/ Proposed	Fish, riparian habitat, wildlife	Stuart, A. 2005. Trust formed to protect Rio Grande flows. *The Desert-Mountain Times.* January 13, 2005.
	Sabine River	Dam re-operation	More natural flows	To benefit estuary	Planned/ Proposed	Salinity, water quality, habitats, fisheries, sediment	Alan Plummer Assoc., Inc. 2005. East Texas Region Regional Water Plan, Environmental Flow Requirements-Review Draft.
	Trinity River	Dam re-operation	More natural flows	To benefit estuary	Planned/ Proposed	Salinity, water quality, habitats, fisheries, sediment	Alan Plummer Assoc., Inc. 2005. East Texas Region Regional Water Plan, Environmental Flow Requirements-Review Draft.
	Upper San Marcos River	Dam re-operation	Improved spring flows	To benefit river ecosystem & estuary	Planned/ Proposed	Water quality, aquatic plants, habitats	Texas Parks & Wildlife. 2002. Upper San Marcos River Needs Range of Spring Flows. TPW News release: June 24, 2002.
Utah	American Fork Creek	Dam Removal	Increased flows	To restore American Creek Canyon	Planned/ Proposed	Bonneville cutthroat trout; water quality & quantity	Israelsen, Brent.2003. Hydropower Relic Heads Into History. *The Salt LakeTribune.* 02/25/2003.
	Green River	Dam re-operation	Increased flows; summer flow regimes & temperature to more closely resemble historic regime; winter & spring research flows	To benefit endangered fish populations	Implemented	Pikeminnow; humpback chub.	US Bureau of Reclamation, Upper Colorado Region. Operation of Flaming Gorge Dam: Environmental Impact Statement. Internet: www.uc.usbr.gov
	Green River	Dam re-operation	Mimic timing & duration of peak flow , duration and timing of non-peak flows; reduce rapid baseflow fluctuations from hydropower generation	For recovery of endangered fish species; enhance other native fisheries	Implemented	Fish population	Stanford, JA. 1994. Instream flows to assist the recovery of endangered fishes of the Upper Colorado River Basin. Wash (DC): US Dept. of the Interior, Natl. Biological Survey. Biological Report # 24.
	Green River	Dam re-operation	Increased flows to simulate natural flows; warmer flows	To benefits fish population & improve habitat	Planned/ Proposed	Razorback sucker, pikeminnow, humpback chub & bonytail, sandbar formation.	Reese, April. 2004. BuRec proposes boosting Flaming Gorge Dam flows to aid fish.*Greenwire,* Sept. 17, 2004. Internet: www.eenews.net

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	RIVER	TYPE OF FLOW	RESTORED FLOW COMPONENTS	ECOLOGICAL PURPOSES	PROJECT STATUS	MONITORING INDICATORS	REFERENCE
Utah (cont)	Hobble Creek	Other	Increased flow	For ecosystem conservation	Implemented	Not indicated	Central Utah Water Conservation District. 2004. Utah Lake Drainage Basin Water Delivery System - Water Releases.Internet: Internet: www.cuwcd.com
	Lower Provo River	Other	Increased flow	For ecosystem conservation	Implemented	Not indicated	Central Utah Water Conservation District. 2004. Utah Lake Drainage Basin Water Delivery System-Water Releases.Internet: www.cuwcd.com
	Manti Creek	Dam re-operation	Increased base flows	To restore partially dewatered section of creek; revised flow regime to mimic natural hydrograph	Implemented	Riparian vegetation and stream channel bed.	Foster, Katherine. Jan 2003. A Revised Hydropower Bypass Flow Regime Designed to Mimic Natural Processes. *Stream Notes*. Stream Systems Technology Center.
	Provo River	Dam re-operation	Increased spring flows	For spawning June suckers	Implemented	June sucker population	*The Salt Lake City Tribune*. 2004. Provo River flow to increase for fish. 04/23/2004.
	Provo River	Dam re-operation Other	More natural flow regime	For ecosystem health	Implemented	Fisheries, vegetation, birds, wildlife, insects, habitat, sediment	Utah Reclamation Mitigation & Conservation Commission. Provo River Restoration Project. Internet: http://137.77.133.41/prrp/prrp.
	San Juan River	Dam re-operation	Mimic magnitude, timing, and duration of peak flow; restore low winter baseflows	For recovery of endangered fish species	Implemented	Fish population	Poff, N.L. et al.1997. The Natural Flow Regime, A paradigm for river conservation and restoration. *Bioscience* 47(11):769-784
	Spanish Fork River	Other	Increased flow	For ecosystem conservation	Implemented	Not indicated	Central Utah Water Conservation District. 2004. Utah Lake Drainage Basin Water Delivery System-Water Releases. Internet: cuwcd.com
	Strawberry Creek	Other	Increased flow	For ecosystem conservation	Implemented	Not indicated	Central Utah Water Conservation District. 2004. FY 2005 Prioritization Committee-Preliminary Project Rankings - Section 207. Internet: www.cuwcd.com
	Virgin River	Reduction of water usage	Increased Flow	To benefit endangered Species	Planned/ Proposed	Endangered roundfin; Virgin River chub; Southwestern willow flycatcher	US Fish & Wildlife Service. 2001, News Release US Fish & Wildlife Service Awards $16 Million in Grants to States for Endangered Species Conservation. Internet: news.fws.gov

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Vermont	Clyde River	Dam Removal	Increased flow; restored flow to a 170 ft. section of river	For migration & spawning habitat for landlocked Atl. Salmon, steelhead & walleye	Implemented	Atlantic salmon, trout, smallmouth bass; water quality; bank stability	American Rivers, Friends of the Earth, & Trout Unlimited. 1999. *Dam Removal SuccessStories.* P 33-36. Internet: www.tu.org
	Connecticut River (Upper)	Dam re-operation	Minimum & maximum flows to more closely mimic natural natural regime	To restore ecological health to iver & improve water quality	Planned/ Proposed	Biomonitoring under varied flow conditions; monitor aquatic communities, fish and wildlife	Connecticut River Joint Commissions. Conn. River Corridor Management Plan. May, 1997. Internet: crjc.org/corridor-plan/plan-TOC.html
	Deerfield River	Dam re-operation	Increased min. flows; seasonal variations; re-watered dry river segments; restricted reservoir drawdowns 8 dams)	To benefit fish & wildlife populations	Implemented	Trout; Atlantic salmon; shortnosed sturgeon; smallmouth bass	Kimball, KD. 1997. 'Using Hydroelectric Re-licensing in Watershed Restoration: Deerfield Riv. Watershed of VT & MA. In *Watershed Restoration*: *Principles & Practices*. Williams, JE, CA Wood & MP Dombeck Eds. Pp. 179-197
	Lamoille River	Dam Removal	Free flow at mouth of river	To provide fish passage & improve water quality	Planned/ Proposed	Not Indicated	Central Vermont Public Service Corp. 2003. Petition to State of Vermont Public Service Board; FERC No. 2205.
	Lamoille River	Dam re-operation	Minimum Flow for 4 dams; more stable flows	To provide fish passage & improve water quality	Implemented	Water quality; Atlantic salmon; walleye population	Crawford, M. (no date) Peterson Dam decision should boost fishing. *BurlingtonFree Press.com.*
Virginia	Blackwater River	Dam Removal	To restore natural flow	For river health	Planned/ Proposed	Not indicated	EPA River Corridors & Wetlands Restoration. Burdette Dam. Internet: yosemote.epa.gov/ water/ restorat.nsf/ProjectByState?OpenView
	Cat Point Creek	Other	Free flow	To provide habitat for mammals, waterfowl & fish	Planned/ Proposed	Wildlife population, water quality, silt monitoring	EPA River Corridors & Wetlands Restoration. Cat Point Creek; Research Project. Internet: yosemite/epa.gov/water/restorat.nsf/ProjectBy State?OpenView
	James River Basin (upper)	Dam re-operation	Simulation to identify optimum flows	To protect aquatic life	Planned/ Proposed	9 target fishes	Orth, DJ & PM Leonard. 1990. Comparison of Discharge Methods and Habitat Optimization for Recommending Instream Flows to Protect Protect Fish Habitat. *Reg. Rivers: Res. & Mgmt.*, Vol 5, 129-138
	Rappahanock River	Dam Removal	Free flowing	To allow for fish passage f	Planned/ Proposed *Implemented 2004	Fish populations	American Rivers. Mid Atlantic: Rappahanock River, VA. Internet: www.amrivers.org

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	RIVER	TYPE OF FLOW	RESTORED FLOW COMPONENTS	ECOLOGICAL PURPOSES	PROJECT STATUS	MONITORING INDICATORS	REFERENCE
Virginia (cont)	Roanoke River	Dam re-operation	Mimic more natural patterning of spring flows; reduce rate of change between low and high flows	To increase reproduction of striped bass	Implemented	Fish population	Rulifson RA, Manooch CS, eds. 1993. Roanoke River water flow committee report for 1991-1993. Albemarle-Pamlico estuarine study. Raleigh (NC): *US Environ Prot. Agency. Proj. nr APES 93-18*.
Washington	Beaver Creek	Reduction of water usage	Increased flows	To benefit ecosystem	Implemented	Not specified	Washington State Dept of Ecology. 2000. News Release. Nov. 6, 2000.
	Boulder Creek	Reduction of water usage	Increased flows	To protect listed salmonids	Planned/ Proposed	Salmonid population, water quality, habitat	Northwest Power Planning Council. 2002. Washougal River Subbasin Summary, Draft.
	Carbon River	Reduction of water usage	Minimum flows	To benefit fisheries	Implemented	Chinook, coho, pink & chum salmon & steelhead, water quality, sediment	Washington State Dept of Ecology, Water Resource Policy Development Section. 1979. Puyallup River Basin Instream Resources Protection Program.
	Cedar River	Other	Flushing flows	To relieve sediment build up; reduce flooding; water quality and quantity; aquatic habitat	Planned/ Proposed	Salmon & steelhead populations	Wissman, R.C. & Beschta, R.L. 1998. Restoration and management of riparian ecosystems: a catchment perspective. *Freshwater Biology* 40(3) 571-585.
	Cedar River	Dam-re-operation	Minimum & supplemental flows	To benefit fish & habitat	Implemented	Fish populations, habitat	Seattle Public Utilities. 2004. Guaranteed Instream Flow. Internet: www.cityofseattle.net
	Columbia River	Dam re-operation	Enhanced spring and summer flows	To improve smolt survival	Implemented	Fish population	Williams, R.N., chair, et al. (Independent Scientific Group). 1999. Return to the River: Scientific Issues in the Restoration of Salmonid Fishes in the Columbia River. *Fisheries Mgmt*, (24)3, 10-19. March 1999.
	Columbia River	Dam re-operation	Higher spring Freshet flows	To improve survival rate of salmonids	Implemented	Salmonid population	Walters, Carl. 1997. Challenges in adaptive management of riparian and coastal ecosystems. *Conservation Ecology* 1(2): 1.
	Columbia River	Dam re-operation	Vernita Bar reach-min winter flow, reduced spring fluctuations	To benefit chinook salmon	Implemented	Chinook salmon	NW Fishletter. 2004. Grant PUD Sets Winter Flows for Vernita Bar Spawners. Cyrus Noe, Publisher. 12/07/2004.
	Cowlitz River	Dam re-operation	Flow releases from 3 dams to mimic natural flow pattern	To protect wild stocks of salmon & steelhead	Implemented	Fish populations	Federal Energy Regulatory Commission (FERC).2002. Cowlitz River Hydroelectric Project No. 2016-004.

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Washington (cont)	Dakota Creek	Other	Increased summer flows	To prevent dewatering & fish kills	Implemented	Water quality, fish habitat	WRIA 1, Watershed Management Project. 2003. Fresh Sheet #5. August 2003. Internet: www.wria1project.wsu.edu
	Dungeness River	Reduction of water usage	Increased flows	To protect salmon	Implemented	Chinook salmon	Washington State Dept. of Ecology. 1998. Historic Water-Trust Agreement Signed in Sequim. Press Release. 04/16/1998.
	Elwha River	Dam Removal	To restore free natural flow in historic channel location	For fish passage & sediment transport	Planned/ Proposed	Fish population; sediment characteristic; water quality	Federal Interagency Stream Corridor Restoration Working Group. Stream Corridor Restoration; Principles, Processes, & Practices. Internet: www.usda.gov
	Elwha River	Dam Removal	To restore natural flow and channel for river	For Pacific salmon (chinook, coho, sockeye, pink, & chum), trout (steelhead, cutthroat & Dolly Varden char)	Planned/ Proposed	Fish population; sediment transport	Shuman, J.R. 1995. Environmental considerations for assessing dam removal alternatives for river restoration. *Reg Rivs: Res & Mgmt*. Vol. 11, 249-261.
	Entiat River	Other	Protective flows	For the protection of the ecosystem	Planned/ Proposed	Water quality, fish & wildlife habitat	Washington State, Dept of Ecology. 2004. Entiat Water Mgmt. Rule Recommendation. November, 2004.
	Frazer Creek	Reduction in water usage	Increased flow May-Sept	To protect fisheries	Implemented	Steelhead, chinook, redband trout, pacific lamprey, westslope cutthroat	Columbia Basin Water Transactions Program. 2004. Internet: www.cbwtp.org
	Friday Creek	Dam re-op & Other	Instream flow levels	To protect the ecosystem	Planned/ Proposed	Fish, wildlife, water quality	Washington State Department of Ecology. 2004. Proposed Samish Water Management Rule. November, 2004.
	Gilligan Creek	Other	Minimum flows set	To benefit ecosystem	Implemented	Water quality, habitat, fish populations	Geller, LD, Ed. 2003.A Guide to Instream Flow Setting in Washington State. Dept. of Ecology, Water Resources Program.
	Gold Creek	Reduction of water usage	Increased flows	To benefit ecosystem	Implemented	Not indicated	Washington Water Trust. 2004. 2003 Transactions. Internet: www.thewatertrust.org
	Goldsborough Creek	Dam Removal	Free flow for 25 miles	To benefit salmon population	Implemented	Chum & coho salmon, cutthroat trout	Dodge, J. 2003. Dam's removal yields creek teeming with young salmon. *The Olympian.* 4/18/2003.

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	RIVER	TYPE OF FLOW	RESTORED FLOW COMPONENTS	ECOLOGICAL PURPOSES	PROJECT STATUS	MONITORING INDICATORS	REFERENCE
Washington (cont)	Green/ Duwamish Watershed	Other	Restore variation in flow , magnitude, frequency, duration, & rates of change (mimic natural regime)	Primarily to benefit salmon, but for ecosystem integrity as well	Planned/ Proposed	Water quality & temp.; nutrient retention; turbidity; benthic macroinvertebrates; vegetation; aquatic species; habitat use; salmon populations	Kings County. Dept of Natural Resources, Water & Land Resources. 2001. *Normative Flow Studies*. Request for proposal, Dec 6, 2001
	Icicle Creek	Dam Removal & other	Increased flows due to 3 dam and a diversion removal	To benefit salmon & steelhead population	Implemented	Salmon & steelhead populations, habitat, water quality	American Rivers. 2004. Dams Removed from 1999-20003. www.americanrivers.org
	Jones Creek	Reduction of water usage	Increased flows	To protect listed salmonids	Planned/ Proposed	Salmonid population, water quality, habitat	Northwest Power Planning Council. 2002. Washougal River Subbasin Summary, Draft.
	Kalama River	Dam re-operation	Minimum flows	To benefit ecosystem	Planned/ Proposed	Fish population & habitat, water quality, sediment	Caldwell, B, J Shedd & H Beecher. 1999. Kalama River Fish Habitat Analysis Using the Instream Flow Incremental Methodology. Washington State Publ. # 99-152
	Kennedy Creek/ Goldsborough Cr watershed	Other	Established instream flows	To protect wildlife, fish & water quality	Implemented	Fish populations, water quality	Washington State Dept of Ecology. 1988. Instream Resources Protection Program. CH. 173-514 WAC
	Kitsap Watershed	Other	Established instream flows	To protect wildlife, fish & water quality	Implemented	Fish populations, water quality	Washington State Dept of Ecology. 1988. Instream Resources Protection Program. CH. 173-515 WAC
	Lacamas Creek	Dam re-operation	Increased flows	To protect listed salmonids	Planned/ Proposed	Chum, water quality, habitat	Northwest Power Planning Council. 2002. Washougal River Subbasin Summary, Draft.
	Libby Creek	Reduction of water usage	Increased flows (April-Nov)	To benefit ecosystem	Implemented	Summer Steelhead	Columbia Basin Water Transactions Program. 2004. Internet: www.cbwtp.org
	Little Boulder Creek	Reduction of water usage	Increased flow in late summer and early fall	To provide instream flow	Implemented	Not indicated	Natural Resources Law Center. 1997. *Restoring the Waters*. Pp 10-11. Univ of Colorado School of Law; Boulder, CO. May 1997
	Little Spokane River Basin	Other	Established instream flows	To protect wildlife, fish & water quality	Implemented	Fish populations, water quality	Washington State Dept of Ecology. 1988. Instream Resources Protection Program. CH. 173-555 WAC
	Little Washougal River	Reduction of water usage & Dam re-op	Fish flows (spawning & rearing)	To protect listed salmonids	Planned/ Proposed	Water quality, habitat, wildlife, crayfish, steelhead, coho, chinook, chum salmon.	Northwest Power Planning Council. 2002. Washougal River Subbasin Summary, Draft.

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Washington (cont)	Lower Cold Creek	Reduction of water usage	Increased flows	To benefit ecosystem	Implemented	Not indicated	Washington Water Trust. 2004. 2003 Trans-actions. Internet: www.thewatertrust.org
	Lower East Fork Lewis River	Other	Restoration of wetlands floodplain and instream conditions	To remove invasive species, restore riparian habitat for fish population, water quality	Implemented	Monitoring for water quantity & quality	EPA River Corridors & Wetlands Restoration. Lower East Fork Lewis, River Riparian Restoration. Internet: yosemite.epa.gov
	Lower Skagit River	Other	Minimum flows set	To benefit ecosystem	Implemented	Water quality, habitat, fish populations	Geller, LD, Ed. 2003.A Guide to Instream Flow Setting in Washington State. Dept. of Ecology, Water Resources Program.
	Mad River	Other	Protective flows	For the protection of the ecosystem	Planned/ Proposed	Water quality, fish & wildlife habitat	Washington State, Dept of Ecology. 2004. Entiat Water Mgmt Rule Recommendation. November, 2004.
	Marshall Creek	Other	Restored stream to original location; Increased flow	For habitat for mammals, waterfowl, fish, vegetation	Implemented	Not indicated	EPA River Corridors & Wetlands Restoration. Upper Palouse Project. Internet: yosemite.epa.gov
	Methow River	Reduction of water usage	Increase in base flow in late summer	To prevent dry creek condition in late summer	Implemented	Not Indicated	Natural Resources Law Center. 1997. *Restoring the Waters.* Pg 11. Univ of Colorado School of Law, Boulder, CO. May 1997.
	Methow River	Reduction of water usage	Increased flows (April-Oct)	To benefit fisheries	Implemented	Summer Steelhead, spring chinook, redband trout, pacific lamprey, westslope cutthroat	Columbia Basin Water Transactions Program. 2004. Internet: www.cbwtp.org
	Mill Creek	Reduction of water usage	Increased flows	To benefit ecosystem	Implemented	Not indicated	Washington Water Trust. 2004. 2003 Trans-actions. Internet: www.thewatertrust.org
	Mundt Creek	Other	Minimum flows set	To benefit ecosystem	Implemented	Water quality, habitat, fish populations	Geller, LD, Ed. 2003.A Guide to Instream Flow Setting in Washington State. Dept. of Ecology, Water Resources Program.
	Naches River	Reduction of water usage	Increased summer flows	To restore habitat for salmon	Implemented	Salmon, steelhead, & bull trout habitat	Washington State Dept of Ecology. 2003. Ecology Department acquires water rights to help Yakima basin flows. *News Release*, Jan 28,2003. Internet: www.ecy.wa.gov.news
	Nisqually River	Dam re-operation	Established minimum flows	To protect wildlife, fish, and water quality	Implemented	Hydrologic data, snow pack, precipitation, flow from tributaries	Culhane, T. 2001. Flow Investigation of the Nisqually River Lower Reach. Washington State Publ # 01-11-015.

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	RIVER	TYPE OF FLOW	RESTORED FLOW COMPONENTS	ECOLOGICAL PURPOSES	PROJECT STATUS	MONITORING INDICATORS	REFERENCE
Washington (cont)	Nooksack River Basin	Other	Established instream flows	To protect wildlife, fish & water quality	Implemented	Fish populations, water quality	Washington State Dept of Ecology. 1988. Instream Resources Protection Program. CH. 173-501 WAC
	Puyallup River	Reduction of water usage	Minimum flows	To benefit fisheries	Implemented	Chinook, coho, pink & chum salmon & steelhead, water quality, sediment	Washington State Dept of Ecology, Water Resource Policy Development Section. 1979. Puyallup River Basin Instream Resources Protection Program.
	Salmon Creek	Reduction of water usage	Increased flows	To benefit ecosystem	Implemented	Not indicated	Washington Water Trust. 2004. 2003 Transactions. Internet: www.thewatertrust.org
	Salmon Creek	Other	Minimum flows set	To benefit ecosystem	Implemented	Water quality, habitat, fish populations	Geller, LD, Ed. 2003.A Guide to Instream Flow Setting in Washington State. Dept. of Ecology, Water Resources Program.
	Salmon Creek	Dam re-operation	Increased stream flows	To benefit fisheries	Planned Proposed	Fishery, vegetation	Bonneville Power Administration. 2005. Salmon Creek EIS. *Journal.* January 2005
	Samish River Basin	Dam re-op & Other	Instream flow levels	To protect the ecosystem	Planned/ Proposed	Fish, wildlife, water quality	Washington State Department of Ecology. 2004. Proposed Samish Water Management Rule. November, 2004.
	Skagit River	Other	Natural flow regime	To restore high quality spawning & rearing habitat for 5 wild salmonids; water quality	Planned/ Proposed	Invasive species; fish populations; water quality; riparian community; beaver activity & management	Freshwater Initiative of The Nature Conservancy. Site Profile of Skagit River System. Available upon request.
	Skagit River	Dam re-operation	Higher minimum flows, reduced daytime fluctuations, more gradual flow reductions	To benefit wild salmon population	Implemented	Spawning densities; pink, chum, chinook salmon; steelhead	Glaser, Nancy. 2003. Fish power: Skagit River Salmon are back in huge numbers. *The Seattle Times.* 2/9/2003.
	Snohomish River Basin	Other	Established instream flows	To protect wildlife, fish & water quality	Implemented	Fish populations, water quality	Washington State Dept of Ecology. 1988. Instream Resources Protection Program. CH. 173-507 WAC
	Stillaguamish River Basin	Other	Protective flows	To benefit fish, wildlife & water quality	Planned/ Proposed	Salmon population, water quality, wildlife & habitats	Washington State Dept of Ecology. 2004. Stillaguamish River Basin-Proposed water management rule.

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Washington (cont)	Teanaway River	Reduction of water usage	Increased flow during irrigation season	For the restoration of salmonid habitat	Implemented	Spring chinook, coho & steelhead; sedimentation; water temperature	Clean Water Action Plan. Sept. 2000. Watershed Success Stories. Internet: www.cleanwater.gov
	Teanaway River	Reduction of water usage	Increased flows	To benefit anadromous fish	Implemented	Redds, spring chinook	Redding, John. 2004. Fish Counts Increase at Teanaway River Salmon Restoration Project. In *People, Land & Water*. Vol 10, No 3, US Dept of the Interior, Bureau of Reclamation
	Texas Creek	Reduction of water usage	Increased summer flows	To protect listed salmonids	Planned/ Proposed	Salmonid population, water quality, habitat	Northwest Power Planning Council. 2002. Washougal River Subbasin Summary, Draft.
	Touchet River	Reduction of water usage	Increased flows	To benefit ecosystem	Implemented	Not indicated	Washington Water Trust. 2004. 2003 Transactions. Internet: www.thewatertrust.org
	Tucannon River	Dam re-operation	Increased minimum flows seasonally variable	To restore ecosystem & fish community	Planned/ proposed	Fish populations, habitat, chinook & steelhead, bull trout	Washington State Dept of Ecology. 2004. Middle Snake River Watershed Level 1 assessment; Section 9 - Instream Flow.
	Turner Creek	Other	Minimum flows set	To benefit ecosystem	Implemented	Water quality, habitat, fish populations	Geller, LD, Ed. 2003.A Guide to Instream Flow Setting in Washington State. Dept. of Ecology, Water Resources Program.
	Upper Skagit River	Other	Minimum flows set	To benefit ecosystem	Implemented	Water quality, habitat, fish populations	Geller, LD, Ed. 2003.A Guide to Instream Flow Setting in Washington State. Dept. of Ecology, Water Resources Program.
	Walla Walla River Basin	Other	Theoretical modeling approach for surface flow & groundwater	To benefit spring chinook salmon & summer steelhead	Planned/ Proposed	Fish populations	Willis, D.B. & N.K.Whittlesey. 1998. Water Management Policies for Streamflow Augmentation in an Irrigated River Basin. *J.of Agri & Res. Economics* 23(1): 170-190. Western Agricultural Economics Assn.
	Walla Walla River Basin	Reduction of water usage	Increased flows	To benefit salmon & ecosystem	Implemented	Fish population, water quality	Washington State Dept of Ecology. News Release, Nov 24, 2003.
	Washougal River	Reduction of water usage & Dam re-op	Fish flows (spawning & rearing)	To protect listed salmonids	Planned/ Proposed	Water quality, habitat, wildlife, crayfish, cutthroat & steelhead, coho, chinook salmon.	Northwest Power Planning Council. 2002. Washougal River Subbasin Summary, Draft.

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	RIVER	TYPE OF FLOW	RESTORED FLOW COMPONENTS	ECOLOGICAL PURPOSES	PROJECT STATUS	MONITORING INDICATORS	REFERENCE
Washington (cont)	Wenatchee River Basin	Other	Established instream flows	To protect wildlife, fish & water quality	Implemented	Fish populations, water quality	Washington State Dept of Ecology. 1988. Instream Resources Protection Program. CH. 173-545 WAC
	White Salmon River	Dam Removal	Free flow	To allow for salmon migration	Planned/ Proposed (2006)	Salmon population	Environmental News Network. 1999. Dam Removal Part 2: Restoring salmon in the Pacific Northwest. Internet: www.enn.com /features/1999/120799/dams_7220.asp
	White Salmon River	Dam Removal	Will return to free-flowing state	For salmon & steelhead & general ecosystem health	Planned/ Proposed	Salmon and steelhead populations; trout; wildlife habitats	River Currents. 4/25/03. River Star of the Week: Meet Phyllis Clausen. Internet: www.americanrivers.org
	Whitestone Creek	Dam Removal	Return to natural free flowing state	For safety & environmental reasons	Implemented	Not Indicated	American Rivers. Whitestone Creek, WA: Removal of the Rat Lake Dam. Internet: www.americanrivers.org
	Wolf Creek	Reduction of water usage	Flow levels will increase at varying levels	To benefit fish populations	Planned/ Proposed	Steelhead; spring chinook & bull trout	US Fish & Wildlife Service. 2001,News Release. US Fish & Wildlife Service Awards $16 Million in Grants to States for Endangered Species Conservation. Internet: news.fws.gov/ News
	Yakima River	Dam re-operation	Mimic historic flow regime	To benefit anadromous fish resources	Implemented	Salmonid population, aquatic habitat, water quality	The System Operations Advisory Committee (SOAC). 1999. Report on Biologically Based Flows for the Yakima River Basin. Report to The Secty of the Interior. 5/4/1999. Yakima, Washington
	Yakima River Basin	Other	Ensure flows for river channel maintenance and restoration of flood plains and riverside vegetation	To protect steelhead and bull trout, to improve stream flows for salmon, & to stabilize agricultural water supplies	Implemented	Measuring, metering & reporting diversion quantities of water.	American Rivers Organization. Yakima Watershed Initiative. Internet: www.americanrivers.org/instreamflow/ yakimacasestudy.htm
Wisconsin	Apple River	Dam Removal	Increased flows (3 dams removed)	To provide small-mouth bass habitat	Implemented	Small mouth bass, aquatic habitat, sediment	Wisconsin Dept of Natural Resources. Dam Removal. Internet: www.dnr.state.wi.us/org
	Bad River	Dam Removal	50' of natural falls and stream uncovered	For trout habitat	Implemented	Trout population	Wisconsin Dept of Natural Resources. Dam Removal. Internet: www.dnr.state.wi.us/org

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	RIVER	TYPE OF FLOW	RESTORED FLOW COMPONENTS	ECOLOGICAL PURPOSES	PROJECT STATUS	MONITORING INDICATORS	REFERENCE
Wisconsin (cont)	Baraboo River	Dam Removal	6 dams removed creating free flow for main stem of river	For water quality; fish habitat &spawning	Implemented	Paddlefish, lake sturgeon, walleye, smallmouth bass; water quality	American Rivers, Friends of the Earth, & Trout Unlimited. 1999. *Dam Removal Success Stories*. pp 3-7. Internet: www.tu.org
	Bark River	Dam Removal	Increased flows	To benefit ecosystem health	Implemented	Sediment transport, biodiversity, vegetation & channel geomorphology	River Alliance of Wisconsin, University of Wisconsin. 2002. Project FAF-0119: Sediment Management Research Project. Final Report. Internet: www.wisconsinrivers.org
	Bass Creek	Dam Removal	Free flow	To improve fishery & aquatic habitat	Implemented	Habitat, minnows, gamefish	Wisconsin Department of Natural Resources. 2002. Afton Dam Removal Begins This Week. Internet: www.dnr.state.wi.us News Release September 11, 2002.
	Black Earth Creek	Dam Removal	Increased flows	To benefit ecosystem health	Implemented	Sediment transport, biodiversity, vegetation & channel geomorphology	River Alliance of Wisconsin, University of Wisconsin. 2002. Project FAF-0119: Sediment Management Research Project. Final Report. Internet: www.wisconsinrivers.org
	Cedar Creek	Dam Removal	Free flow	To improve water quality & aquatic habitat	Implemented	Water quality, fish population	American Rivers. 2003. Dams Slated for Removal in 2003 & Dams Removed in 1999, 2000, 2001, & 2002. Internet: www.americanrivers.org
	Chippewa River	Dam re-operation	(6 dams) to moderate water fluctuations; more natural flows	To improve fish & wildlife habitat	Implemented	Not indicated	River Alliance of Wisconsin. 2001. C.A.N.O.E. *Newsletter,* Vol. 4, Issue 2, 1/18/2001.
	Deerskin River	Dam Removal	To restore to free-flowing state	To improve water quality, sediment transport, & fish population	Planned/ Proposed *Implemented	Water quality; trout population & habitat	River Alliance of Wisconsin. Restoring the Deerskin River by Removing the Deerskin Dam. Internet: www.wisconsinrivers.org
	Eighteen-Mile Creek	Dam Removal	Bank stabilization, removal of excess sediment, flow consistency	To improve water temperature and flow consistency, improve fish habitat	Implemented	Field survey of fish populations	Trout Unlimited. Small Dams Campaign. Ojibleau Chapter, Eighteen-Mile Creek, Wisconsin. Internet: www.tu.org/small l_dams/removal/3d-removal_18-mile.html.
	Flambeau River	Dam Removal	Increased flows for 5 miles	To improve fisheries	Implemented	Cold water fish population	Wisconsin Dept. of Natural Resources. Dam Removal. Internet: www.dnr.state.wi.us
	Fox River	Dam Removal	Increased flows	To benefit migrating fish	Implemented	Spawning sturgeon & walleye, flathead catfish	The Sportsman's Guide. 2004. Wisconsin Leads Nation in Dam Removal and River Restoration. Internet: www.ussfin.com

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Wisconsin (cont)	Kamrath Site	Dam Removal	Dam removals (2) on unnamed tributary to the Onion River to allow natural flow and re-forming the natural historic channel	To restore flow to provide natural temperature and habitat for fish population (brown & native brook trout)	Implemented	Field surveys	Trout Unlimited. Small Dams Campaign. Kamrath Restoration, Onion River Headwaters, Wisconsin. Internet: www.tu.org/small_dams/whats_ tu_doing/2d-demo/2d_kamrath.html.
	Koshkonong Creek	Dam Removal	Restored flow to section of creek	To benefit ecosystem health	Implemented	Channel morphology, bank characteristics, sediment transport, water quality, nutrient retention	Stanley, EH & MW Doyle. 2002. A Geomorphic Perspective on Nutrient Retention Following Dam Removal.*BioScience* Vol 52,No 8: 693-701
	Manitowoc River	Dam Removal	Increased flows (2 dams removed)	To benefit ecosystem	Implemented	Water quality, fish migration, aquatic habitat, spawning habitat, fish population (salmon, trout northern pike, panfish, minnows, lake sturgeon)	Wisconsin Department of Natural Resources. 2000. The State of the Lakeshore Basin. Report: PUB WT 667 2000. Internet available: http://dnr.wi.gov/org/gmu/lakeshore_main.pdf
	Maunesha River	Dam Removal	Increased flows	To benefit ecosystem health	Implemented	Sediment transport, biodiversity, vegetation & channel geomorphology	River Alliance of Wisconsin, University of Wisconsin. 2002. Project FAF-0119: Sediment Management Research Project. Final Report. Internet: www.wisconsinrivers.org
	Menominee River	Dam Removal	Increased flows (removal of 3 dams on tributaries, & other measures for 8 hydro projects	Not specified	Planned/ Proposed *implemented, 2000	Not specified	American Rivers. Great Lakes Region, Menominee River Basin. Internet: www.american rivers.org *www.dnr.state.wi.us
	Milwaukee River	Dam Removal	Dam removals implemented and planned for entire river	To restore water quality & biodiversity; & clean up sedimentation problems	Planned/ Proposed	Intensive, ongoing studies of fish population (incl greater redhorse), water quality, biotic integrity	American Rivers, Friends of the Earth, & Trout Unlimited. 1999. *Dam Removal Success Stories*. Pp 73-77
	Milwaukee River	Dam Removal	To open flow from Lake Michigan (30 miles)	For fish passage (salmon & other fish)	Implemented	Fish populations	Wisconsin Dept of Natural Resources. Dam Removal. Internet: www.dnr.state.wi.us.org
	Milwaukee River	Dam Removal	Stream flow restoration	For fish habitat (smallmouth bass)	Implemented	Smallmouth bass population; river bed composition; sediment levels; pool depths	Shuman, J.R. 1995. Environmental considerations for assessing dam removal alternatives for river restoration. *Reg Rivs: Res & Mgmt* Vol. 11, 249-261.
	Oconto River	Dam re-operation	Run-of-river flow restoration	To prevent fish mortality caused by highly fluctuating flows	Implemented	Multiple monitoring required by FERC	Federal Energy Regulatory Commission. 2001. FERC Order Amending License Project # 2689-021.

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Wisconsin (cont)	Onion River	Dam Removal	Two unnamed headwater tributaries had ll dams removed restoring original flow patterns	To benefit wild trout fisheries	Implemented	Water quality, trout population	River Alliance of Wisconsin. Twenty by 2000 Campaign Updates: Onion River Restoration Project. Internet: www.wisconsinrivers.org
	Ontonogan River	Dam re-operation	Minimum flows; variable seasonal flows to mimic natural flow regime	To protect aquatic resources; to protect riparian dependent species	Implemented	Bald eagle; gray wolf; osprey; loon; spawning fish; water quality, temp & dissolved oxygen; invertebrates; brook trout; walleye; sturgeon	USDA Forest Service, Eastern Region. 2002. Record of Decision. Bond Falls Project Supplemental Environmental Impact Statement.
	Paint River	Dam re-operation	Increase in minimum flows	To improve fishery habitat	Implemented	Aquatic habitat	Anglers of the Au Sable, Inc. 2002. Another Milestone Agreement. Internet: www.ausableanglers.org/Riverwatch.
	Peshtigo River	Dam re-operation	Run-of-river operation	To protect aquatic resources	Implemented	Water quality, aquatic habitat, invasive & exotic species, wildlife	American Rivers. 2003. Run of The River. Regional Relicensing Reports. Internet www.americanrivers.org
	Pine River	Dam Removal	Would restore to free-flowing state (*2 dams already removed)	For ecosystem health	Planned/ Proposed	Trout habitat & population	River Alliance of Wisconsin. 20 by 2000 Campaign Updates: Pine Dam, Pine River, Florence Co. Internet: www.wisconsinrivers.org. * www.dnr.state.wi.us
	Praire River	Dam Removal	Completely free- flowing river	To benefit fish populations; transport sediment; wetland restoration	Implemented	Brown & brook trout, northern pike, walleye, smallmouth bass; sediment; muskellunge; wetland habitat	River Alliance of Wisconsin. Facts on the Praire River and the Ward Paper Mill Dam. Internet: www.wisconsinrivers.org
	Sheboygan River	Dam Removal & Other	Free-flow (10 mi), & increased flow	To restore water quality, provide fish passage, restore riparian corridor	Implemented 2001	Water quality; northern pike; smallmouth bass; & aquatic animals.	River Alliance of Wisconsin. Restoring the Sheboygan River through Franklin Dam Removal. Internet: www.wisconsinrivers.org
	Silver Springs Complex	Dam Removal	(13 dams)	To improve water quality, temperature, and fish habitat	Implemented	Stream temperatures, benthic macroinvertebrates, and fisheries	Trout Unlimited. Small Dams Campaign. Silver Springs Restoration, Onion River Headwaters, Wisconsin. Internet: www.tu.org/small_dams
	St. Croix River	Dam re-operation	Increase in minimum flows, decrease maximum discharges, run-of-river operation	To benefit aquatic habitat & fish population	Planned/ Proposed	Fish populations, including endangered & threatened species, game fish, vegetation, (walleye, muskellunge, gilt darter, crystal darter, river redhorse, black buffalo, blue sucker, northern pike, lake sturgeon,catfish, sauger	Benike, HM & WJ Michalek. 2001. Lower St. Croix River Baseline Monitoring Fisheries Inventory. Wisconsin Department of Natural Resources. December, 2001.

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Wisconsin (cont)	Token Creek	Dam Removal	Increased flows	To benefit ecosystem health	Implemented	Sediment transport, biodiversity, vegetation & channel geomorphology	River Alliance of Wisconsin, University of Wisconsin. 2002. Project FAF-0119: Sediment Management Research Project. Final Report. Internet: www.wisconsinrivers.org
	Tomorrow River	Dam Removal	30 miles of free flow	To benefit trout fishery	Implemented	Trout, water quality & temperature, vegetation	Rogers, G. 2000. Nelsonville stretch of Tomorrow River shows nature can recover. *The Portage County Gazette*. June, 2000. Internet: www.pcgazette.com
	Turtle Creek	Dam Removal	Free Flow	To restore habitat for fish& improve water quality	Planned/ Proposed *Removed, 2000	Smallmouth bass; northern pike; walleye; catfish; ozark minnow; greater redhorse; gravel chub; water	River Alliance of Wisconsin. Dec. 2000. Restoring Turtle Creek through Shoiere Dam Removal. Internet: www.wisconsinrivers.org
	Willow River	Dam Removal	Free flowing for 2.5 miles (2 dams)	To improve water quality (temperature & oxygen level); to benefit brown & rainbow trout	Implemented	Water quality; trout populations	River Alliance of Wisconsin. Restoring Willow River Through Selective Dam Removal. Internet: www.wisconsinrivers.org
	Woods Creek	Dam Removal	Free flow	To improve aquatic habitat & fish access	Implemented	Brook trout, sediment load, habitat	American Rivers.2003.Dams Slated for Removal in 2003 & Dams Removed in 1999, 2000, 2001, & 2002. Internet:americanrivers.org
	Yahara River	Dam Removal	Increased flows	To improve fish population & improve water quality	Implemented	Water quality, fish populations	Jaeger, RW. A Tide of Support to Dump The Dams. *Wisconsin State Journal.* Internet: www.wisconsinrivers.org/SmallDams/
Wyoming	Bighorn River	Other	Environmental flows	To benefit fisheries	Planned/ Proposed	Fish populations, channel conditions Shovelnose sturgeon	Annear, T.C. & P.D. Dey. 2001. Wyoming Game & Fish Dept. Instream Flow Program Five Year Plan, 2001-2005.
	Clear Creek	Other	Late summer flows	To benefit fisheries	Planned/ Proposed	Fish populations, channel conditions	Annear, T.C. & P.D. Dey. 2001. Wyoming Game & Fish Dept. Instream Flow Program Five Year Plan, 2001-2005.
	Douglas Creek	Dam re-operation	Increased minimum flow	To benefit fisheries	Implemented	Brown trout population & habitat	Harris, DD, Hubert, WA, Wesche, TA. 1991. Brown Trout Population and Habitat Response to Enhanced Minimum Flow in Douglas Creek, Wyoming. *Regulated Rivers*: 2(4): 285-294.
	Green River	Dam re-operation	Experimental high flows	For riparian area health	Implemented	Riparian vegetation, fish populations	National Academy of Sciences. 2002. *Riparian Areas: Functions & Strategies for Management.* National Academy Press, Washington, D.C.

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Wyoming (cont)	Greybull Creek	Other	Environmental flows	To benefit fisheries	Planned/ Proposed	Fish populations, channel conditions, Yellowstone cutthroat trout	Annear, T.C. & P.D. Dey. 2001. Wyoming Game & Fish Dept. Instream Flow Program Five Year Plan, 2001-2005.
	Henrys Fork	Dam re-operation	Increased winter minimum flows	To benefit the aquatic community	Implemented	Macrophytes; juvenile trout (brook & rainbow/cutthroat hybrids); spawning & rearing habitat of trout; trumpeter swans	Van Kirk, RW & Griffin, CB.1997. Building a Collaborative Process for Restoration: Henrys Fork of Idaho & Wyoming. In *Watershed Restoration: Principles & Practices* (Williams, Woods & Dombeck, Eds.) Pp 253-273.
	Missouri River	Dam re-operation	Six states (Kansas, Montana, Nebraska, N. & S. Dakota, Wyoming) to test flow changes to help restore the river; "Flexible Flow" alternative	For river ecosystem health	Planned/ Proposed	Will be highly monitored	American Rivers. 2/13/02 Press Release. Six States Urge Feds to Test Flow Changes to Restore Missouri River; & Missouri River Dam Operations. Internet: www.americanrivers.org/missouririver
	North Platte River	Dam re-operation	Summer flow increased	To benefit endangered species & habitat	Implemented	Not indicated	Boyle Engineering Corp. 2000. Reconnaissance Level Water Action Plan, Platte River Research Cooperative Agreement. Sept. 14, 2000.
	Pine Creek	Other	Winter flows	To benefit fisheries	Planned/ Proposed	Fish populations, channel conditions	Annear, T.C. & P.D. Dey. 2001. Wyoming Game & Fish Dept. Instream Flow Program Five Year Plan, 2001-2005.
	Platte River	Other	Pulse flow; base flow augmentation	To benefit endangered species (whooping crane, piper plover, interior least tern, pallid sturgeon)	Planned/ Proposed	Wildlife; endangered species; habitat; water quality; ground water levels.	US Dept of the Interior. 2001. Ground Water and River Flow Analysis. Tech. Report of the Platte River EIS Team. US. Dept of Interior, Bureau of Reclamation, Fish and Wildlife Service.
	Shoshone River	Dam re-operation	Higher & more stable winter flows	To benefit trout fisheries & water quality	Planned/ Proposed	Brown & cutthroat trout; micro & meso-habitat, water quality, invertebrates	Dey, PD, TC Annear, S Yekel & R McKnight. 2003. Winter Flow Recommendations for the Shoshone River below Buffalo Bill Dam. Report for the Wyoming Game & Fish Dept.
	Streams of the Upper Mid-West	Dam re-operation	Minimum flows; multiple outlets for flows; Minimize flow fluctuations; maximum flow limits (Montana Method)	To sustain good survival habitat for aquatic life; riparian vegetation; fish; water quality	Planned/ Proposed	Montana method recommendations	Tennant, D.L. 1976. Instream Flow Regimes for Fish, Wildlife, Recreation and Related Environmental Resources. *Fisheries* (1) 4, 6-10

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	RIVER	TYPE OF FLOW	RESTORED FLOW COMPONENTS	ECOLOGICAL PURPOSES	PROJECT STATUS	MONITORING INDICATORS	REFERENCE
Wyoming (cont)	Swift Creek	Other	Environmental flows	To benefit fisheries	Planned/ Proposed	Fish populations, channel conditions	Annear, T.C. & P.D. Dey. 2001. Wyoming Game & Fish Dept. Instream Flow Program Five Year Plan, 2001-2005.
	Wood River	Other	Environmental flows	To benefit fisheries	Planned/ Proposed	Fish populations, channel conditions Yellowstone cutthroat trout	Annear, T.C. & P.D. Dey. 2001. Wyoming Game & Fish Dept. Instream Flow Program Five Year Plan, 2001-2005.
Uzbekistan							
	Amudarya River	Water Usage reduction	Increased flows	To benefit the Aral Sea	Planned/ Proposed	Salinity, water quality, fisheries, wetlands	Hirji, R & T Panella. 2003. Evolving policy reforms & experiences for addressing down-stream impacts in World Bank water resources projects. *Riv Res Applic.* 19: 667 -681.
	Syrdarya River	Water Usage reduction	Increased flows	To benefit the Aral Sea	Planned/ Proposed	Salinity, water quality, fisheries, wetlands	Hirji, R & T Panella. 2003. Evolving policy reforms & experiences for addressing down-stream impacts in World Bank water resources projects. *Riv Res Applic.* 19: 667 -681.
Zambia							
	Kafue River	Dam re-operation	Flood releases (freshets) implemented; low flows during dry season proposed.	To restore biodiversity, restore floodplain swamps & marshlands & wildlife	Implemented	Kafue lechwe, fish populations	Acreman, MC et al. 2000. Managed flood releases from reservoirs: issues & guidance. Report to DFID and the World Commission on Dams. Centre for Ecology & Hydrology, Wallingford, UK
Zimbabwe							
	Odzi River	Dam re-operation	Simulated naturalized flows	For river ecosystem health	Implemented	Simulation with hydrologic data	Symphorian, GR, Madamombe, E & P van der Zaag. 2002. Dam Operations for Environmental Water Releases: the Case of Osborne Dam, Save Catchment, Zimbabwe. *3rd WaterNet/ Warfa Symposium,* Dar es Salaam, Oct 2002.

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